

**SCOTTISH WATER**

**WICS ANNUAL RETURN 2021/22**

Document Control

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Annual Return Overview 2021-22

# Overview

## Executive Summary

This overview reports on our performance and activities in 2021/22, the first year of the 2021 - 2027 regulatory period. Unless otherwise stated, figures are taken from the published Annual Report & Accounts: Performance & Prospects 2021/22.

The year 2021/22 was challenging, with extreme weather impacting our ability to provide the continuous water and waste water services our customers rely on. A very dry spring and summer led to pressures on water supply and the quality of water at customers’ taps in some areas. Areas of Scotland such as Clackmannan, Dunbartonshire, Perth and Kinross, Renfrewshire, Stirling and Falkirk, City of Glasgow and West Lothian had their hottest summer on record since 1884.

The dry summer was interrupted by heavy rainstorms that deluged drainage systems and impacted local waste water networks. This resulted in an increase in sewer flooding of some customers’ properties and spills to the environment.

Storm Arwen struck in November with 100 mile-per-hour winds and caused the loss of electricity and communications, which in turn caused problems at our treatment works and interruptions to some customers’ water supplies. In advance of the storm we put 58 of our water treatment works - which served 1.5 million customers - onto emergency electricity generation. During the storm we deployed another 30 mobile generators to water pumping stations to pump water from tanks in our distribution network to customers. We operated a fleet of road tankers to sustain water supplies and support faster recovery of affected water networks. Around 17,000 customers were impacted, mostly with interruptions to their water supply. Within 24 hours this had reduced to 5,000 and on the second day to less than 500, with all customers back in supply within 72 hours. We received 1,800 calls to our call centre over the four days following the storm. We delivered more than 120,000 litres of water to communities that were out of supply for a significant length of time and hand delivered bottled water directly to 500 more remote properties.

Despite these challenges we continued to deliver high quality services to customers and our key performance measures are mostly at or around similar levels to previous years.

Our performance in some of our key metrics is set out below.

### Outcome Performance Assessment

Our Outcome Performance Assessment (OPA) performance for the last year has been calculated at 398. Largely as a result of the above weather challenges, OPA performance in 2021/22 was 10 points lower on a like-for-like basis than in 2020/21 (if this had been calculated applying the SR21 methodology). The main drivers for this reduction were an increase in Category 1 and 2 EPIs and Interruptions to Supply.

### Customer Experience

Our Household Customer Experience Measure (hCEM) for the last year was 86.0 (Line B5.1), broadly similar to the previous year when calculated on a like-for-like basis. The Non-household Customer Experience Measure (nhCEM) of 87.2 (Line B6.1) was also broadly similar to the previous year when calculated on a like-for-like basis.

### Drinking Water Quality

The quality of water we supplied to customers during 2021 remained high. Sampling at customers’ taps was significantly impacted across the year due to COVID-19-associated restrictions. Tests taken during 2021 showed a compliance rate of 99.93% (Line 10.15a) out of 296,659 samples tested, which is consistent with previous years.

The breakdown of compliance (as reported in Table B10) is:

* Water treatment works 99.960% (Line B10.14)
* Service reservoirs 99.951% (Line B10.14)
* Customers’ taps 99.919% (Line B10.14)

For other water quality parameters:

* The number of coliform sample fails at service reservoirs was 44, 10 fewer than in 2020 (Line B10.3)
* The number of sample fails at water treatment works remained the same as last year (24) (Line B10.14)
* The number of *Cryptosporidium* detections not mitigated by UV treatment was 4 higher than in 2020 (10)

### Interruptions to Supply

There were 9,504 (total weighted properties for OPA calculation in Line B2.24) unplanned interruptions to supply in 2021/22 lasting greater than 6 hours - compared with 6,091 in 2020/21. We have determined that around 4,000 of these were due to significant storm events.

The actual number of properties affected by unplanned interruptions greater than 6 hours was 6,804 (Line B2.21) of which 2,438 were due to the impact of the storms.

The breakdown of these figures into the actual number of properties affected by unplanned interruptions greater than 6, 12 and 24 hours is provided in the commentary to Section B.

### Leakage

The annual average leakage level for the year stood at 459 ML/D (Line A2.21), a reduction from 463 ML/D in 2020/21.

### Environmental Pollution Incidents (EPI)

This year we reported 282 EPIs (Line B11a.15), an increase of 79 from 2020/21. Ten of the EPIs were in the more serious Category 1 and 2 incidents (Line B11a.13) - this is 5 more than in 2020/21. The majority of these incidents were associated with waste water networks, sewer blockages and water and waste water maintenance activities.

### Other waste water parameters

407 properties were affected by internal sewer flooding. This is a decrease of 192 properties from 2020/21. (Line B3.2 + Line B3.7 – Line B3.4a)

The compliance rate at waste water treatment works for 2021/22 was 96.66% compared to 97.49% for 2020/21.

The number of odour complaints directed to us, has increased to 196, nine more than the previous year.

### New Connections

In 2021/22 we completed 23,731 water connections and 21,581 waste water connections. This was a slight increase in water connections - up from 23,627 - and a reduction in waste water connections which were at 22,067 last year.

### Energy Efficiency

In the last year we completed 38 energy efficiency projects which will save 7GWh annually – a significant increase in delivery compared to 2020/21 when we delivered 1GWh.

### Renewables

A total of 45GWh of renewable electricity was generated on-site again this year. In addition to renewable energy we have generated, our PFI partners have generated a further 32GWh from biogas produced during treatment processes.

### Investment

Tier 2 Investment – our planned capital work - total for the year was £623 million (sum of lines G1.76 and G1.77), £11 million above our target.

Tier 1a Investment - responsive repair and refurbishment of assets - was £152 million (line G1.75), £63 million below the Long-term Normative Charge level.

Total Investment on a like-for-like basis compared to that in 2020/21 was £799 million (line G1.28) and reflected cost capture in line with SR21 principles of c. £53m of costs associated with Tier 1a activities that would previously have been classified as operating costs.

### Financial Sustainability

The 2021/22 financial contribution from customer revenue to planned investment was £336 million; £39 million higher than the mid-point of the 2021/22 to 2022/23 Delivery Plan, updated to reflect out-turn inflation for the year.

This was towards the top end of the range set out in our 2021/22 to 2022/23 Delivery Plan for 2021/22 and the reforecast set out in our Interim Prospects and Performance Report to 30 September 2021. The £39 million improvement was primarily driven by a higher volume of household billings, increased wholesale consumption as businesses benefited from the easing of constraints associated with the pandemic and proceeds from the sale of assets. Costs before items subject to long term normative charge (responsive repair and refurbishment, developer contributions and tax) were £15 million below the updated Delivery Plan mid-point after reflecting out-turn inflation in the year. Operating costs were £5 million lower reflecting lower travel, energy and regulatory costs. PFI costs were £7 million lower primarily due to one-off negotiated contractual changes for two of our PFI contracts and interest charges were £3 million lower.

### Governance of the Annual Return

Scottish Water’s Board has endorsed this Annual Return Overview and charged the Chief Executive with the responsibility of establishing and maintaining sound systems of internal control that support the completion of the Annual Return submission to the Water Industry Commission. The Board assurance statement signed by the Chief Executive is included in Appendix 1.

## Key Outputs and Service Delivery

### Empowering Customers and Communities

#### Outcome Performance Assessment

Evaluating how we deliver water and waste water services is critical to understanding how we are performing. Our OPA performance for the last year has been calculated at 398. OPA performance in 2021/22 was 10 points lower than in 2020/21 if this had been calculated applying the new methodology. The major impacts on the OPA score were as a result of performance in interruptions to supply and Category 1 & 2 Environmental Pollution Incidents (EPIs).

#### Customer Experience

Our Household Customer Experience Measure (hCEM) for the last year was 86.0 (Line B5.1) which was broadly similar to the previous year when calculated on a like-for-like basis. This was achieved in many ways, including prompt and effective responses to weather incidents, continued investment to tackle known issues and personalised engagement when customers experienced service issues.

Ensuring excellent service for wholesale customers also remained a focus for us. The Non-household Customer Experience Measure (nhCEM) of 87.2 (Line B6.1) was also broadly similar to the previous year when calculated on a like-for-like basis.

The impact of adverse weather conditions on our services caused a significant rise in customer service contacts. Over the course of the year there were 346,264 (Line B5.24) service issue contacts received by our Customer Engagement Centre from household customers. This was a rise of almost 40,000 on the previous year.

Over the last 12 months we have made a number of changes impacting the development community, such as the delivery of network reinforcements to support new development and have managed to maintain a high level of satisfaction. The number of network reinforcements required has started to increase since this change was implemented. We continue to review our approach to determine what measures can be taken to further improve the service offered to the development community.

### Delivering Consistently Excellent Water Supply

The water we supply to our customers must meet independently monitored standards. Water at treatment works and customers’ taps is tested on average once every two minutes to ensure it meets regulatory parameters and our customers’ expectations and needs.

#### Drinking Water Quality

The quality of water we supplied to customers during 2021 remained high. Sampling at customers’ taps resumed in early summer 2021 but was paused again at the end of the year due to further restrictions. Although this impacted on our ability to test at customers’ taps, we still completed the equivalent number of tests by using service reservoirs, volunteer properties and commercial premises to ensure the protection of public health. Tests taken during 2021 showed a compliance rate of 99.93%, which is consistent with previous years. A breakdown of the compliance at water treatment works, service reservoirs and customers’ taps is given in the executive summary.

In 2021, the DWQR declared a major incident due to the discolouration of water supplies from Daer reservoir, which also affected nearby Camps reservoir. The discolouration was caused by low water levels and high levels of manganese which could not be effectively treated by our works. A review of the event has taken place to ensure any similar incidents are effectively managed.

#### Interruptions to Supply

There were 9,504 (Line B2.24) unplanned interruptions to supply in 2021/22 compared with 6,091 in 2020/21 - and we have determined that around 4,000 of these were due to the significant storms. When this is taken into consideration the level of unplanned interruptions was broadly in line with previous years. To reduce interruptions, we are continuing to make the network more resilient using a range of approaches, from replacing water pipes in areas subject to frequent interruptions to more innovative solutions which pilot the use of pressure sensors.

To mitigate the impact of future significant storms on power supplies at our water assets and therefore reduce the risk of interruptions our approach is to:

* Ensure that existing stand-by power assets installed over previous investment periods are fully maintained in order to continue providing the necessary levels of standby power coverage
* Ensure that our standby power assets are safe to operate at all times in response to a power outage

This approach will be reviewed by April 2023.

#### Leakage

Year-on-year leakage reduction performance came under pressure during 2021/22 due to extreme weather conditions. Despite this, we succeeded in reducing leakage from 463 ML/D in 2020/21 to 459 ML/D (Line A2.21) in this last year.

We are committed to reducing leakage across the network. Innovation and digital technology will help us improve monitoring, detection and repairs.

### Transforming Waste Water Services

Dealing with Scotland’s waste water is energy intensive and increasingly affected by extreme weather.

#### Environmental Pollution Incidents (EPIs)

An EPI is an unlicensed discharge from the waste water network into a water environment such as a river or the sea and are reported to SEPA for investigation.

In 2021/22, we have had a total of 282 EPIs (Line B11a.15), up 79 from the previous year’s figure of 203. 10 of the EPIs were more serious Category 1 and 2 incidents (Line B11a.13) - this is 5 more than in 2020/21 but still a significant reduction compared to a decade ago. The majority of these incidents were associated with waste water networks, sewer blockages and water and waste water maintenance activities. When EPIs occur a full analysis of the root cause is undertaken to determine what, if any, improvement plans are needed. Root cause analysis showed that the two main causes of EPIs were sewer blockage (58% of incidents compared to 61% in 2020/21) and waste water treatment works non final effluent point discharge (14% of incidents compared to 6% in 2020/21).

The proportion in the number of Cat 1-3 incidents reported by SEPA and customers has also increased compared to the previous year. 37% of incidents were reported by customers compared to 32% in 2020/21. SEPA reported 44% of incidents compared to 41% in 2020/21. As we move through SR21 our focus will be on reducing the significant proportion of incidents which occur on our wastewater network through increased intelligence and targeted planned maintenance.

#### Sewer Flooding

Changing weather patterns present complex challenges for our waste water system. Dry weather can mean debris in the system does not clear while wet conditions can overwhelm sewers and lead to flooding. The late summer storms in Central Scotland, where parts of Edinburgh and Glasgow were worst hit, were among the most severe ever measured by the Met Office, with record rainfall over a short period. This also led to a rise in the number of EPIs recorded in the year.

The impact of a changing climate means that managing surface water in our wastewater network is a growing challenge for us. We are committed to examining new ways to reduce flood risk and are looking at longer-term, sustainable solutions with our main aim being a reduction in the amount of surface water entering our sewers.

### Enabling Sustainable and Inclusive Economic Growth

Our investment programme enables economic activity and growth across Scotland as well as the creation of jobs, skills development and innovation. The 2021 Hydro Nation report Hydro Nation: annual report 2021 - gov.scot (www.gov.scot) highlighted that the water sector, including our work, is worth £1.7 billion to the country’s economy.

#### Working with Developers

We invest in water and waste water assets to enable new housing and other economic development across the country.

Between April 2021 and March 2022, we completed 23,731 water connections and 21,581 waste water connections. This was a slight increase in water connections - up from 23,627 - and a reduction in waste water connections which were at 22,067 last year.

Development across Scotland has been recovering from the impact of COVID-19 throughout 2021/22. In 2021/22 we invested over £30 million in new waste water capacity to support new development. There was an increase of 6% in the number of applications we received within the same period.

This year we maintained our focus on building strong relationships with the development community. As a result, we continue to see our development customer service scores increase with a month-on-month improvement from September to the year end. This progress was driven through streamlining our processes and responding faster with better quality responses to ensure developments can proceed and connect when required. A customer portal, which allows development customers to self-serve, now accounts for 90% of requests from developers.

### Beyond Net Zero Emissions

Over the past year progress has been made in delivering planned Net Zero activities. We have also developed a deeper understanding of operational emissions, measures to reduce them, cost intelligence and the actions needed to accelerate reductions.

#### Reducing our Carbon Emissions

We have updated our ambitious pathway to achieve Net Zero operational emissions by 2030, ten years ahead of the original commitment in our route map. This reflects an increased potential for new renewables on our assets - our forecast has grown from 90GWh to 120GWh to be delivered by 2030.

Our operational greenhouse gas emissions reduced over 2021/22. Our carbon footprint (CFP) was 233,000t CO2e - representing a 6% reduction on the previous year.

#### Energy Efficiency

Electricity is our largest source of emissions and in line with our route map we are looking to reduce the amount that we consume. In the last year we completed 38 energy efficiency projects which will save 7GWh annually – representing an increase in delivery since 2020/21 when we delivered 1GWh. The focus has been on improving the efficiency of waste water aeration. Two major projects were completed which saw aeration systems replaced at Daldowie in Glasgow and East Kilbride’s Phillipshill WWTWs. Daldowie is one of our largest sites, and the project enabled a 4.2GWh benefit, nearly 1% of our electricity use.

#### Renewables

A total of 45GWh of renewable electricity was generated on-site again this year. In addition to the renewable energy we generated within Scottish Water, our PFI partners have generated a further 32GWh from biogases produced by waste water treatment processes.

We continue to install solar photovoltaic (PV) equipment across our sites, delivered by Scottish Water Horizons.

Across all of our installed PV schemes we generated 7.8GWh - the previous year it was 6.3GWh.

The first battery storage facility has been installed in Perth, allowing for the storage of energy generated by the PV scheme during the day and allowing 94% of the energy generated to be used on-site. This will cut the carbon footprint of the city’s treatment works by around 160 tonnes of CO2 e per year.

### Great Value and Financial Sustainability

2021/22 has been a successful transition year with a significant rise in our level of capital investment.

Our total Tier 2 planned investment was £623 million, £11 million above our target projection for the year. On a like-for-like basis with 2020/21 - when including responsive repair and refurbishment expenditure (classed as Tier 1a expenditure) of £152m and reasonable cost contributions (RCC) for developers of £24m our total investment was £799 million. Included within the £152m of Tier 1a expenditure was approximately £53m of responsive repair costs which in previous years would not have been allocated to projects but expensed as an operating cost. The revised cost capture of all responsive and planned asset interventions within projects, in line with SR21 principles, has standardised our data capture processes and has provided greater visibility, governance and understanding of our asset performance and associated repair costs.

This increase in total investment to £799 million is a significant achievement when considered in the context of the historic trend among regulated utilities for investment levels to fall at the start of a new regulatory period.

During 2021/22 a total of 6,212 projects were delivered. These either maintained the level of service we currently provide, facilitated growth within communities or enhanced the capability of our assets to provide improved levels of service. Capturing all asset interventions within projects provides a greater understanding of our asset performance and facilitates planning and forecasting activities.

## Development and delivery of the Capital Investment programme

The investment Planning and Prioritisation framework sets out how investment needs are prioritised and developed and how projects and programmes to meet the prioritised needs are identified and delivered ([Water industry: governance note 2021 to 2027 - gov.scot (www.gov.scot)](https://www.gov.scot/publications/water-industry-governance-note-2021-2027/). Progress with the development and delivery of the Capital Investment programme is monitored quarterly by the Investment Planning and Prioritisation Group (IPPG), the Delivery Assurance Group (DAG) and associated Working Groups.

Over 2021-2022, 16 new needs were approved by Ministers for inclusion in the Development List (the list of needs and opportunities that have been prioritised for development – this can be found on the Scottish Government Objective Connect platform) following IPPG endorsement. At the end of the year the Development List included a total of 218 needs.

Each quarter we report to IPPG on our progress in developing interventions to address the needs on the Development List. Our indicator of overall progress towards the Committed List (PCL) is a high-level measure of the overall volume of intervention development relative to what is required for expected investment levels in future years. A score of less than 100% indicates that the rate of overall progress in developing interventions may not be sufficient. A score of more than 100% indicates that the rate of overall progress is more than sufficient to achieve planned investment. At the end of March 2022, PCL out turned at 117%.

Over the course of the year projects for a total value of £167m (excluding those carried over from SR15) and programmes of work for a total value of £582m were sufficiently developed to be committed for delivery and were therefore added to the Committed List (the list of projects and programmes Scottish Water has committed to deliver - this can be found on Objective connect and Table G6). The total value of the Committed List, at the end of March 2022 was £1,247m (Table G6).

The Committed List also includes 86 projects previously planned for delivery within the SR15 period that have been delayed. At the end of March 2022 we had planned to have 68 of these complete on site with the customer receiving benefit. Unfortunately, due to the realisation of identified risks, 21 of these projects still had to achieve the acceptance milestone (Gate 100). At the end of the year, with the exception of one (Yarrowfues WTW main-out), all were forecasting to achieve this Milestone by the end of March 2023.

Progress in delivering the Committed List for projects over £1m[[1]](#footnote-2) is measured at high level by our Indicator of Progress of Overall Delivery (IPOD), which assesses the progress of investment projects monitored by DAG across 3 delivery milestones[[2]](#footnote-3) combining this information to give an overall score. At the end of March 2022 IPOD out turned at 332 points (Line G4b.40), ahead of the central target of 316.

While the overall investment programme is progressing in line with forecasts, many projects were impacted by COVID-19 delays, and the safe systems of work adopted to combat the risk to the workforce or the public and the realisation of “normal” delivery risk such as third-party issues, construction risks and/or wider market conditions risks.

Market conditions in particular have changed and evolved rapidly throughout the year with cost pressures and availability of materials, labour, and commodities presenting us with challenges across the capital programme. We have and will continue to monitor these risks and work with our delivery partners and procurement team to understand and manage the impacts.

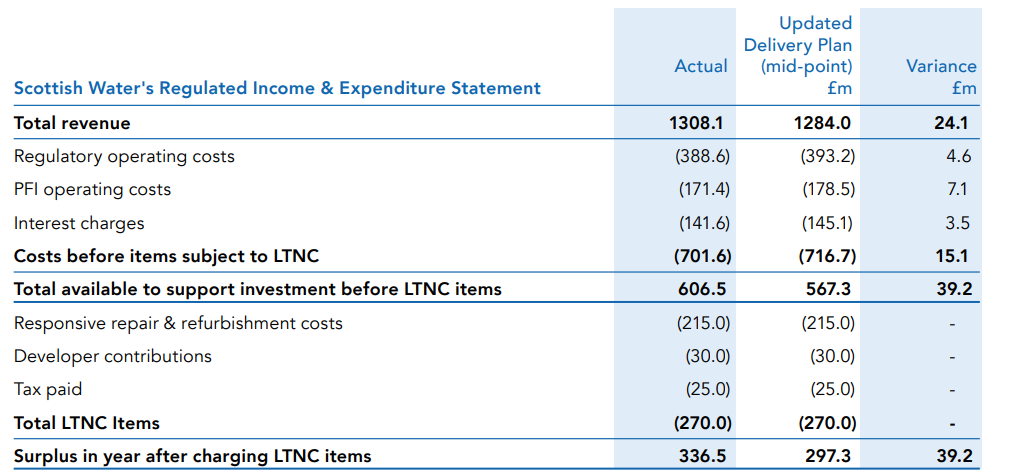
## Financial Performance

Our regulated financial performance over the last year has been strong, with revenues recovering as our customers benefited from the easing of constraints associated with the pandemic, coupled with strong cost control. This has enabled us to generate £39 million greater than planned to support further investment. This performance was towards the top end of the range set out in our Delivery Plan for 2021/22 with a regulatory surplus of £336 million after allowing for £215 million of responsive repair and refurbishment costs. This surplus provides the largest element of funding for our capital programme including water quality and environmental improvement projects and replacing or refurbishing ageing assets. The balance of the capital investment programme was financed by new borrowing from the Scottish Government.

### Regulated Services – Performance

The financial performance of our regulated activities in the new format Regulated Income & Expenditure Statement for the 2021-2027 period is presented in the Table 1: below.

Table 1:Regulated Income & Expenditure Statement



Note: LTNC Items - Responsive repair and refurbishment costs, developer contributions and tax.

The 2021/22 financial contribution from customer revenue to planned investment was £336 million, £39 million higher than the mid-point of the original Delivery Plan, updated to reflect out-turn inflation for the year. The original Delivery Plan assumed that CPI inflation would be 2% over the year but actual average CPI inflation for the year was just below 4%.

This performance was towards the top end of the range set out in our original Delivery Plan for 2021/22 and the reforecast set out in our Interim Prospects and Performance Report to 30 September 2021. The £39 million improvement was primarily driven by: a higher volume of household billings; increased wholesale consumption as businesses benefited from the easing of constraints associated with the pandemic; and proceeds from the sale of assets.

Costs before items subject to long term normative charge (LTNC) were £15 million below the updated Delivery Plan mid-point after reflecting out-turn inflation in the year. Operating costs were £5 million lower, reflecting lower travel, energy and regulatory costs. PFI costs were £7 million lower primarily due to one-off negotiated contractual changes for two of our PFI contracts and interest charges were £3 million lower.

Responsive repair and refurbishment expenditure is difficult to predict over a short-term time horizon as there can be significant variability in the annual level of expenditure associated with, for example, significant water main bursts or collapsed sewers. During 2021/22 we have developed our processes to enhance cost capture.

These changes have informed our decision to increase the forecast overall responsive repair and refurbishment costs with the offset being in regulated operating costs. The rebased annual normative charge of £215 million (original: £185 million) has therefore been applied. Actual expenditure in the year was £152 million.

Developer contributions and taxation may also experience significant annual variability and hence we have adopted a similar normative charge approach in these areas with normative charges of £30 million for developer contributions and £25 million for tax paid being applied. In 2021/22 actual expenditure was £25 million and £15 million respectively. So, total actual expenditure on LTNC items in the year was £191 million, £79 million lower than the LTNC.

Net interest payable in 2021/22 decreased by £1 million to £142 million.

As of 31 March 2022, the weighted average interest cost of the outstanding long-term debt within Scottish Water’s regulated business reduced to 3.2% (2021: 3.4%). This was due to the repayment of £125 million of loans with a weighted average interest rate of 5.5%, offset by £360 million new and replacement loans drawn down during the year from the Scottish Government with a weighted average interest rate of 1.2%. Net new loans during the year were £50 million higher than forecast in our Delivery Plan reflecting accelerated borrowing provided by the Scottish Government. It is anticipated that new borrowing will be reduced by this amount in the latter years of the 2021-27 regulatory period.

Cash balances within Scottish Water were within our forecast range and increased by £87 million to £516 million due to: strong financial performance in the year (£39 million greater than plan); the ending of the temporary relaxation of prepaid wholesale charges introduced as part of the COVID-19 market measures for Licensed Providers; and £50 million additional borrowing received from the Scottish Government to finance our investment programme.

Our cash balances each year are largely a function of when we borrow from the Scottish Government relative to when we invest. Before the pandemic our risk appetite determined that as a regulated business, we should always hold a minimum cash balance of £100 million. However, considering the increased risks faced as a consequence of the pandemic, we increased this to holding a minimum £200 million cash balance, which is equivalent to approximately eight weeks expenditure. Given the current uncertain economic environment we will continue to hold a £200 million minimum cash balance.

## Key Supporting Information

For the financial year 2021/22, there are several notable changes relating to the reporting.

Firstly, as this is the first year beyond the end of the SR15 investment period, Security of Supply Index (SoSI), is no longer part of our Outcome Performance Assessment (OPA). The previous planned target of 91 SoSI points is still described in the B9 Tables, although this (and the resulting translation into OPA) is now purely for comparative purposes.

Secondly, we have agreed with WICS to re-introduce reporting of the B Tables which cover service performance, and in the process several improvements and updates have been introduced:

* Water Available for Supply (WASI) values that were previously reported in Table G3 are now included in the B9 Table and is directly calculated from the SoSI data
* Table B1 has been amended to describe the use of Water Shortage Orders rather than Hosepipe Bans, reflecting the current legislation
* Tables B9a to B9c have been replaced by B9a to B9f, covering a greater range of Level of Service intervals than previously possible
* Table B9 is a new summary table linked to the daughter Tables B9a to B9f, displaying several useful metrics, also incorporating the previous OPA scoring mechanisms for SoSI

We are reporting a new set of C Tables covering our progress on carbon emissions and net zero.

In some instances, the confidence grades M and N have been used. The definitions for these have been taken from a previous matrix and are:

* M – Missing data
* N – Not applicable to Scottish Water

We have changed our focus on investment reporting, which now involves quarterly reporting to stakeholders on three new measures.

* **Progress to Committed List (PCL)** – This measure tracks the volume of needs on the Development List, progressing through investment gateways to the Committed List. It maintains stakeholder confidence in the development of needs.​
* **Indicator of Progress of Overall Delivery (IPOD) -** Delivery programmes and projects tracked and completed.​ To continue to maintain stakeholder confidence in the progress of delivery from commitment to completion.​
* **Investment Forecast Accuracy at Commitment -** Expenditure vs forecast when added to the Committed List for those projects that have completed during the year.​ As such we have developed with WICS a new set of G Tables for investment reporting, and these are being used for the first time in this year’s Annual Return.

## Further Information

### Board Changes

Two new Non-executives, Catriona Schmolke joined our Board in November 2021 and Graham Dalton in April 2022. Board member Jim Coyle stepped down in March 2022 after five and a half years on our Board and four years as Chair of the Audit Committee.

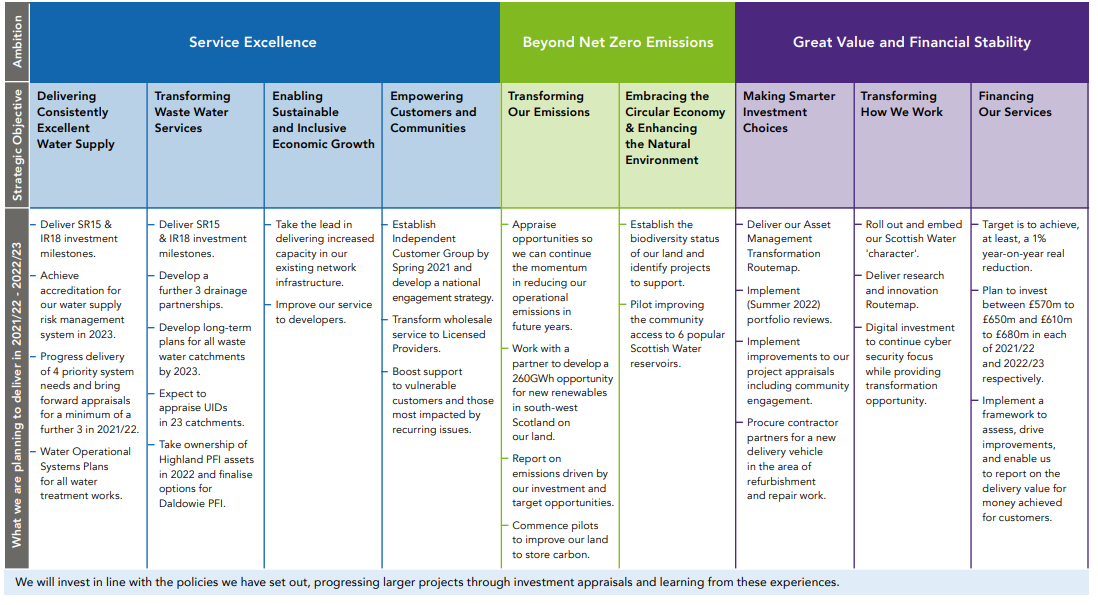
## Looking Forward

We are implementing a comprehensive Transformation Plan that will enable the changes required over the next 10-20 years to deliver our ambitions. The key initiatives and change programmes we will deliver over the next two years beyond our transformation activities are set out in Table 2 on the next page.

More information can be found in the following publications:

* [A Sustainable Future Together Delivery Plan 2021/22 - 2022/23](https://www.scottishwater.co.uk/-/media/ScottishWater/Document-Hub/Key-Publications/Delivery-and-Business-Plans/170821ScottishWaterDeliveryPlan.pdf)
* [2021/22 Annual Report and Accounts: Performance and Prospects](https://www.scottishwater.co.uk/-/media/ScottishWater/Document-Hub/Key-Publications/Annual-Reports/210722SCW2204AnnualReport2022AWNonRestricted_V3.pdf)

Table 2: key initiatives and change programmes (extract from Scottish water Delivery Plan 2021-22 to 2022-23)



Section A - Base Information

Tables A1, A2 and A3 provide base information on connected and billed properties and population, volumes and loads.

# Table A1 - Connected and Billed Properties Introduction

## Introduction

Table A1 provides information on water properties and population served by Scottish Water. Properties includes a breakdown of all metered and unmetered household and non-household properties served by Scottish Water with the provision of water and/or waste water services.

Population cells record the population within each of the measured and unmeasured household categories.

The information in this table is used for the Water Delivered unit cost analysis and for tariff and charging purposes.

### Data sources and confidence grades

All property numbers for the report are from 30 September 2021 which was the latest update from local councils available at the end of March 2022

The confidence grade for Household Properties remains at B2 for AR22. While the unmeasured household data is sourced from local authority corporate systems. Once received by Scottish Water it is held on spreadsheets with some minor derivation required due to reporting constraints with some local authority billing systems.

Unmeasured household property numbers are taken from the 30 September 2021 WIC4 Returns submitted by local authorities.

Measured Household numbers have been sourced from Scottish Water’s FAB billing system and provide the numbers billed for water, wastewater and drainage at 30 September 2021.

The Non-household figures are sourced from settlement reports supplied by the Central Market Agency (CMA), using the September 2021 second reconciliation (R2), which was the latest update available at the end of March 2022.

In this Annual Return the vacancy status, which is used to determine whether the property is ‘occupied’ or ‘vacant’, was sourced from the September settlement report. In previous Annual Returns the vacancy status was taken from the Market Data Set. The change of data source had minimal impact on the number of vacant premises reported.

The presence of a meter at the supply point on the 30September has been used to categorise the property as “Measured”, or “Unmeasured” if there is no meter.

A confidence grade of B3 has been applied to the figures reported in Table A1 for Non-household properties, this remains consistent with last year.

Further detailed information on how individual cells were calculated, including the components of the calculation, is contained in the assurance report for the A tables.

### Data Improvement Programmes

No significant data improvement programmes were undertaken this year for Household properties.

Previously, Business Objects was used to collate the CMA settlement reports and calculate the non-household property numbers. This system was end-of-life and has now been replaced by a new reporting platform based on Microsoft Azure and Power Bi. The new reporting tool provides more flexible and enhanced reporting capabilities.

The CMA files are now loaded into a Microsoft Azure data lake, from which the data is extracted to create a data model and reports in Microsoft Power Bi.

This change allows us to compile numbers in a more accurate way, based on properties in charge on 30 September from the settlement report, as opposed to taking the count from September as a whole, which included properties in charge for a partial month. Where a property is removed part-way through a month it is no longer included in the property numbers.

To validate the property numbers calculated by the new reports, AR20 was recreated in Power Bi and reconciled against the previously reported valued from Business Objects. A reconciliation can be found in Appendix 2: A Tables Comparison BP20-21 v BI 20-21 accompanying this document.

During the reconciliation process it was identified that a data filter in the previously used Business Objects report used to identify Non-household Occupied and Non-household Vacant properties, billed for surface drainage only (**lines A1.26a and A1.26b**), based on a field in the CMA files which is not maintained. The report has therefore misidentified which Supply Point IDs (SPIDs) should be included in these numbers; and values reported in previous Annual Returns were therefore understated. Removing this filter increased Occupied by 5,622 and Vacant by 1,234. The correctly restated numbers are shown in Appendix 2.

Table 3, below, contains the net occupancy changes, by year, since 2012. The proportion of vacant SPIDs has gradually decreased from the COVID-19-related peak of 12.2% in March 2020, to 9.97% as the first Wholesale Charge Deferral Scheme, introduced in response to COVID-19, has reversed.

A second deferral scheme was introduced in May 2021. This enabled Licensed Providers (LPs) to defer a proportion of charges during 2021/22. Again, this was administered by moving SPID vacant status at the CMA, and further accounts for the decrease. A total of 20 SPIDs remain flagged as vacant under the scheme.

Table 3: Net occupancy changes by year since 2012

|  |  |  |  |
| --- | --- | --- | --- |
| **Occupancy status changes in 12 months prior to Annual Return data cut** | **Occupied to Vacant** | **Vacant to Occupied** | **Net change in occupied SPIDs** |
| 2012 | 33,938 | 27,896 | -6,042 |
| 2013 | 23,334 | 30,722 | 7,388 |
| 2014 | 22,433 | 19,806 | -2,627 |
| 2015 | 25,507 | 22,713 | -2,794 |
| 2016 | 24,235 | 26,796 | 2,561 |
| 2017 | 21,855 | 25,241 | 3,386 |
| 2018 | 14,232 | 14,805 | 573 |
| 2019 | 13,336 | 16,670 | -2,666 |
| 2020 | 25,695 | 12,590 | -13,105 |
| 2021 | 11,051 | 17,784 | 6,733 |

### Assumptions used for forecasted data

The Measured Households forecast is based on average movement over the last two years. This is consistent with previous years.

The forecast growth for Unmeasured Households is based on the Scottish Water Delivery Plan. For 22/23 it is assumed to be 0.65% on the current year Billed Properties for Water, giving an increase of 15,982 for 22/23.

The SR21 Delivery Plan assumes 0.75% growth in non-household revenue, and we have made an assumption of a 1% increase in property numbers for the 2022/23 forecast.

## Commentary

The overall number of connected Non-household properties has seen a modest increase on last year’s numbers; Water increased by 1.25% (line A1.8 & A1.9) and Foul Sewerage increased by 1.2% (line A1.18 & A1.19). Table 4 and Table 5 below provide a breakdown of the connected property movements by reason.

Table 4: Changes to Unmeasured Connected Non-Household Properties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Removed** | **Total** | **Deregistered/ Permanently Disconnected** | **Remove Unmeasured Service Element** | **Unmeasured to Measured** |
| Water | 1101 | 344 | 413 | 344 |
| Sewerage | **963** | 231 | 409 | 323 |
| **Added** | **Total** | **Gap Site/ New Connection/**  **Change of Use** | **Unmeasured Service Element Added** | **Measured to Unmeasured** |
| Water | **2072** | 1961 | 9 | 102 |
| Sewerage | **1706** | 1494 | 123 | 89 |

Table 5: Changes to Measured Connected Non-Household Properties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Removed** | **Total** | **Deregistration/ Permanent Disconnection** | **Remove Metered Service Element** | **Measured to Unmeasured** |
| Water | **1789** | 749 | 933 | 107 |
| Sewerage | **1416** | 512 | 815 | 89 |
| **Added** | **Total** | **Gap Site/ New Connection/Change of Use** | **Metered Service Element Added** | **Unmeasured to Measured** |
| Water | **2724** | 2373 | 7 | 344 |
| Sewerage | **2182** | 1747 | 112 | 323 |

The separate Property Drainage Charge which applied to premises with a property drainage connection (prior to April 2021) and Roads Drainage Charge (also prior to April 2021) which applied to all premises that had either a foul sewerage or property drainage service have been replaced by a single drainage charge which applies to all premises with a property drainage connection. This change resulted in 2,959 properties, which were only charged Roads Drainage charges, being removed from the market.

### Lines A1.1-A1.5 - Billed Properties Water

#### A1.1 Unmeasured household billed properties - potable water (including exempt)

The number of unmeasured households billed for water services (including exempt households) has increased to 2,554,292.

Unmeasured Billed Household property numbers increased by 25,309 more than forecast. This is in line with the increase in properties registered at the Scottish Assessors Association (SAA), with the increase in the year to September 2021 being around 21,000; a return to the average annual increase after the impact in 2020/21 of COVID-19 on the level of house building.

It is worth noting that the increase in the number of billed household properties is not directly comparable to the number of new connections due to the timing difference between properties being connected to our services and coming into charge. For example, houses could be connected to our networks well before they are assigned a council tax band, or before they are occupied, and charges would not apply until both of these take place.

Comparison of the SAA movement with the movement in the WIC4 returns highlighted a difference in the Angus LA figures (of around 6,000) where their report appears to have double counted some properties that have moved from a ‘No Reduction’ category into a ‘Reduction’ category. As the difference represents only 0.22% of the total number of connected properties it was agreed that no change would be made to the reported figures. The error was resolved for future reporting. This accounts for the bulk of the difference between the increase in billed property numbers and the increase in properties registered at the SAA, as quoted above.

#### A1.2 Measured household billed properties - potable water

Numbers continued to reduce from 369 in AR21 to 345 for AR22, an ongoing, decreasing trend as customers switch to Council Tax-based charges which they determine to be more economical for them.

#### A1.3a Unmeasured non-household occupied billed properties - potable water (including exempt)

This has increased from 19,629 in AR21 to 20,589 in AR22. This is not a material change and follows the marginally increasing trend reported since 2019-20 (noting that prior to the 2019-20 submission the sum of **Lines 1.3a and 1.3b** were reported as single line, **Line 1.3**).

#### A1.3b Unmeasured non-household vacant billed properties - potable water (including exempt)

This has increased from 3,914 in AR21 to 3,925 in AR22. This is not a material change and follows the marginally increasing trend reported since 2019-20 (noting that prior to the 2019-20 submission the sum of **Lines 1.3a and 1.3b** were reported as single line, 1.3).

#### A1.4a Measured non-household occupied billed properties - potable water

This has increased from 115,261 in AR21 to 120,800 in AR22. The number of Measured Non-household Occupied Billed Properties has not yet returned to pre-COVID-19 levels as there are a number of premises still recorded as vacant in the market data set because either they genuinely remain vacant or are still part of the charge deferral arrangements. Similar movement can be seen in a corresponding decrease in the number of occupied measured properties (**Line A1.4b**).

#### A1.4b Measured non-household vacant billed properties - potable water

Vacant measured properties decreased by 4,604 from 14,112 in AR 21 to 9,508 in AR22. As mentioned above, this movement was the result of COVID-19 and the reversal of the associated deferral scheme. A similar movement is visible in the corresponding increase in number of occupied measured properties (**Line A1.4a**).

#### A1.5 Total number of billed properties – potable water

This line is a calculated line and the explanation for changes is explained in lines A1.1 to A1.4b. It has increased from 2,682,268 in AR21 to 2,709,459 in AR22. This increase is consistent with the marginally increasing trend reported in previous years.

### Lines A1.6-A1.10 - Connected Properties Water

#### A1.6 Unmeasured household connected properties

The number of unmeasured households that are connected to the water service (including exempt and vacant dwellings) has increased from 2,579,564 in AR21 to 2,607,439 in AR22.

The Connected Household Properties change (Water: 27,875) is higher than the Billed Household change as this also includes newly connected properties which are initially vacant and which are, therefore, not included in the number of billed households.

#### A1.7 Measured household connected properties

This has decreased from 369 in AR21 to 345 in AR22. This is not a material change and continues to follow the decreasing trend reported in previous years as customers switch to Council Tax-based charges which are deemed to be more economical for them.

#### A1.8 Unmeasured non-household connected properties

This has increased from 23,543 in AR21 to 24,514 in AR22. This increase, against the previous year’s decreasing trend, is most likely due to a change in approach that allows premises to be added to the market through the gap site process prior to being metered. Prior to this change gap sites had to be metered (wherever possible) before being added to the market.

#### A1.9 Measured non-household connected properties

This has increased from 129,373 in AR21 to 130,308 in AR22 continuing the slightly increasing trend reported since 2017-18.

#### A1.10 Total number of connected properties

This has increased from 2,732,849 in AR21 to 2,762,606 in AR22 following the increasing trend reported and marginally above the previous year’s forecast.

### Lines A1.11-A1.15 - Billed Properties Foul Sewerage

#### A1.11 Unmeasured household billed properties (including exempt)

This value increased more than forecast (Waste: 24,357) to 2,451,258 in AR22. This is in line with the increase in properties registered at the SAA; the increase in the year to September 2021 being approximately 21,000, a return to the average annual increase after the impact in 2020/21 of COVID-19 on the construction industry.

As mentioned for line A1.1, comparison of the SAA movement to the movement in the WIC4 returns highlights a difference in the Angus LA figures (around 6,000). This accounts for the bulk of the difference between the increase in billed property numbers and the increase in properties registered at the SAA, as quoted above.

#### A1.12 Measured household billed properties

This reduced from 82 in AR21 to 74 in AR22, in line with the decreasing trend reported since AR18.

#### A1.13a Unmeasured non-household occupied billed properties (including exempt)

This increased from 16,824 in AR21 to 17,592 in AR22. This line was introduced in AR20 and is the disaggregation of **Line A1.13**

#### A1.13b Unmeasured non-household vacant billed properties (including exempt)

This reduced from 3,576 in AR21 to 3,551 in AR22. This line was introduced in AR20 and is the disaggregation of **Line A1.13**.

#### A1.14a Measured non-household occupied billed properties

This increased from 93,195 in AR21 to 97,946 in AR22. This line was introduced in AR20 and is the disaggregation of **Line A1.14**.

#### A1.14b Measured non-household vacant billed properties

This decreased by 3,985 to 8,459 in AR22. As mentioned above, these movements were the result of COVID-19 measures and the reversal of the associated deferral scheme. A similar movement is included in the corresponding increase in number of occupied measured properties and **Line A1.14a,** which was introduced in AR20 and is the disaggregation of **Line A1.14**.

#### A1.15 Total number of billed properties - foul sewerage

This has increased from 2,553,022 in AR21 to 2,578,880 in AR22. This change is not material and continues the marginally increasing trend reported since AR18.

### Lines A1.16-A1.20 - Connected Properties Foul Sewerage

#### A1.16 Unmeasured household connected properties

The Connected Household Properties movement – Wastewater. This reduction of 26,911 to 2,502,489 in AR22 is higher than Billed Household movement, as it includes previously connected properties moving from vacant (void) into charge(**Line A1.17**) Measured household connected properties.

#### A1.17 Measured non-household connected properties

This has reduced from 82 in AR21 to 74 in AR22. This change is not material and continues the marginally decreasing trend reported in previous years.

#### A1.18 Unmeasured non-household connected properties

This has increased from 20,400 in AR21 to 21,143 in AR22. This change is not material, and the numbers are consistent with those reported in previous years.

#### A1.19 Measured non-household connected properties

This has increased from 105,639 in AR21 to 106,405 in AR22. This change is not material and continues the marginally increasing trend reported in previous years.

#### A1.20 Total number of connected properties

This has increased from 2,601,699 in AR21 to 2,630,111 in AR22. This change is not material and continues the marginally increasing trend reported in previous years.

### Lines A1.21-A1.27 - Billed Properties Surface Drainage

#### A1.21 Unmeasured household billed properties (including exempt) not billed for surface drainage

This has remained at 0.

#### A1.22 Measured household billed properties not billed for surface drainage

This has reduced from 16 in AR21 to 9 in AR22. This change is not material, and the numbers are consistent with those reported in previous years.

#### A1.23 Unmeasured non-household billed properties not billed for surface drainage

The number of non-household premises with an unmeasured sewerage service that are not charged for surface drainage has increased from 38 in AR21 to 359 in AR22. This is largely attributable to the removal of road's drainage from properties which previously attracted both foul sewerage and roads drainage, but now only have foul sewerage.

#### A1.24 Measured non-household billed properties not billed for surface drainage

The number of non-household premises with a metered sewerage service and not charged for surface drainage has increased from 7,405 in AR21 to 10,206 in AR22. This is primarily attributed to the change in rainwater drainage charging introduced in April 2021 (described below).

The separate Property Drainage Charge, which applied to premises with a property drainage connection (prior to April 2021), and Roads Drainage Charge (also prior to April 2021), which applied to all premises that had either a foul sewerage or property drainage service, were replaced by a single drainage charge applicable to all premises with a property drainage connection.

This change resulted in 2,959 properties which attracted Roads Drainage-only charges being removed from the market.

#### A1.25 Household properties billed for surface drainage only

This has remained at 0. This has been the trend in previous years.

#### A1.26a Non-household occupied properties billed for surface drainage only

This has increased from 44,022 in AR21 to 49,413 in AR22. This line was introduced in AR20 and is the disaggregation of **Line A1.26**.

#### A1.26b Non-household vacant properties billed for surface drainage only

This has increased from 6,498 in AR21 to 8,341 in AR22. This line was introduced in AR20 and is the disaggregation of **Line A1.26**.

#### A1.27 Total number of billed properties

This has increased from 2,596,083 in AR21 to 2,626,060 in AR22.

### A1.28-A1.32 Connected Properties Surface Drainage

#### A1.28 Unmeasured household connected properties

This has increased from 2,475,578 in AR21 to 2,502,489 in AR22. This change is not material, and the numbers are consistent with those reported in previous years.

#### A1.29 Measured household connected properties

This has decreased from 501 in AR21 to 483 in AR22. This change is not material, and the numbers are consistent with those reported in previous years.

#### A1.30 Unmeasured non-household connected properties

This has increased from 74,407 in AR21 to 78,538 in AR22. This change is not material and continues the increasing trend reported in previous years.

#### A1.31 Measured non-household connected properties

This has increased from 95,970 in AR21 to 96,199 in AR22. This change is not material, and the numbers are consistent with those reported in previous years.

#### A1.32 Total number of connected properties

This has increased from 2,646,456 in AR21 to 2,677,709 in AR22.

### Lines A1.33-A1.36 - Trade Effluent

#### A1.33 Billed Properties

This has decreased slightly. 1,278 properties were billed as Trade Effluent (TE) in P06\_22 vs 1,297 for P06\_21. The forecast number of billed properties decreased slightly from 1,286 in AR21 to 1,269. This is the number of properties that existed at P06 and that were also billed at P12. The confidence grade for the report period and forecast is A2 and A3 respectively.

#### A1.34 Connected Properties

The number of billed and connected properties increased from 3,462 to 3,512. This reflects the fact that Scottish Water continues to issue an increasing proportion of “Letters of Authorisation” to small dischargers, rather than full consents. The forecast number of billed and connected properties based on properties that were billed/connected at P06 and P12 is 3,462. The confidence grade for the current and forecast years remains at A2 and A3 respectively.

#### A1.35 Trade Effluent load receiving secondary treatment

The total BOD load receiving secondary treatment reported has increased to 11,562t/yr in AR22 from 10,446t/yr in AR21. The forecast figure is approximately the same at 11,570t/yr.

The confidence grade remains at B4 as this figure is reliant on LPs correctly reading meters for the volume discharged and carrying out accurate sampling.

#### A1.36 Trade Effluent load receiving secondary treatment

The reported total COD load receiving secondary treatment has also increased from 22,306t/yr in AR21 to 23,816t/yr for AR22.

The forecast is 23,832t/yr.

The confidence grade remains at B4 as it is reliant on LPs correctly reading meters for the volume discharged and carrying out accurate sampling.

The breakdown of deregistration volume by reason, mirroring those in the operational code, is detailed in Table 6 below. The total for wastewater includes supply points with foul sewerage and those with surface drainage only (i.e. the ‘drainage only’ column of Table 6) is a subset of the ‘wastewater’ column.

### Lines A1.37-A1.47 - Vacant Charging and Disconnections

#### A1.37 Non-household water properties de-registered from the market

Non-household permanent disconnections increased in AR22 to 467 from 205 in AR21. This is due, in part, to last year’s figure being low as a result of the COVID-19 restrictions. Field work has resumed where access to premises has been possible, as the restrictions forcing closure due to Government guidance is lifted, and a continuous, slightly increasing trend is reported since 2017-18.

#### A1.38 Non-household water properties de-registered from the market

The breakdown of deregistration volume by reason, mirroring those listed in Operational Code Form O, is detailed in Table 6 below. The total for wastewater includes supply points with foul sewerage and/or drainage. Those with surface drainage only (i.e. the ‘drainage only’ column of Table 6) are a subset of the ‘wastewater’ column. The large number of ‘No Drainage’ de-registrations this year is largely related to the introduction of a single combined drainage charge in April 2021, as mentioned above.

Table 6: Breakdown of deregistration volume

|  | **De-registered Properties** | | |
| --- | --- | --- | --- |
| **Categories** | **Water** | **Wastewater** | **Drainage Only** |
| Bulk (landlord) Meter | 46 | 72 | 52 |
| Demolished | 130 | 373 | 249 |
| Domestic | 1406 | 1173 | 117 |
| Duplicate SPID | 104 | 114 | 63 |
| Merged Property | 242 | 947 | 714 |
| No Drainage | 0 | 3431 | 3431 |
| No Sewerage Connection | 0 | 115 | 0 |
| No Water Connection | 188 | 0 | 0 |
| Other | 150 | 345 | 225 |
| **Grand Total** | **2266** | **6570** | **4851** |

#### A1.39 Non-household wastewater properties de-registered from the market

See Table 6 above.

#### A1.40 Non-household drainage only properties de-registered from the market

See Table 6 above.

### Lines A1.41-A1.43 - Non-household properties under successful temporary transfer to Scottish Water

The number of non-household properties (**Lines A1.41-A1.43**) which successfully transferred to Scottish Water temporarily has increased from 88 in AR21 to 127 in AR22 for water properties; and from 95 in AR21 to 134 in AR22 for wastewater properties. Drainage-only properties remain at 7. Business Stream is still working through a large volume of approximately 1,000 accounts that are prospective transfer candidates with potential increases to be expected as and when debt recovery processes fully resume. The pending volume refers only to those applications which are works in progress or pending review with an outcome to be determined.

#### A1.44 Non-household water properties pending temporary transfer to Scottish Water

This has decreased from 3 in AR21 to 1 in AR22. The change is not material and is consistent with the decreasing trend reported since the line was introduced in AR19.

#### A1.45 Non-household wastewater properties pending temporary transfer to Scottish Water

This has decreased from 3 in AR21 to 1 in AR22. The change is not material and is consistent with the decreasing trend reported since the line was introduced in AR19.

#### A1.46 Non-household drainage only properties pending temporary transfer to Scottish Water

This has reduced from 1 to 0. The change is not material and is consistent with the decreasing trend reported since the line was introduced in AR19.

#### A1.47 Discontinuation of Trade Effluent services

This has remained at 0, continuing the trend reported since 2017-18.

# Table A2 - Population, Volumes and Loads

## Introduction

Table A2 provides information on water volumes and the water balance.

Volume figures record the total volume of water, in mega litres per day, which is delivered to measured and unmeasured household properties and non-household properties.

A number of the components included in this table, such as per household consumption, meter under-registration or unmeasured non-household property use, are used to estimate volumes of water delivered.

Water delivered data is used for charging and tariff balance purposes.

### Data Sources

The base population data is sourced from the National Records for Scotland (NRS) using the latest published data including Local Authority (LA) breakdowns. For AR22 this is NRS 2018-based reporting, and the same data was used for AR21, as this is the most recent data split by LA area. Three reports are used:

* NRS Population Projections – Projected total population by Scottish Area
* NRS Household Projections – Projected households by council area
* NRS Household Population Projections – Projected private household population by council area

In addition, data from the WIC4 return are used to determine the ratio of Dwellings with Water to Total Dwellings.

The winter tourist population uses data from Visit Scotland and business classifications from the Address Based Premium (ABP). The lowest winter visitor month according to Visit Scotland statistics (December) was used. The Total Population with Water is the sum of four figures, each derived as follows:

Population Not in Households with Water:

* Population Not in Households is taken to be the difference between NRS Total Population and NRS Private Household Population. The ratio of Dwellings with Water to Total Dwellings is then applied to calculate the Population Not in Households with Water.

  Winter Tourists with Water:

* The lowest winter visitor month according to Visit Scotland statistics (December) was used.

Due to the age of the source data (2018), the extrapolation of ratios from the WIC4 report to the population data, and the inclusion of the Winter Tourist Population, the figures are given a confidence grading of B2.

### Data Improvement Programmes

No significant data improvement programmes were undertaken this year for Household properties.

### Assumptions used for forecasted data

Forecast populations are taken from the NRS projections and ratios applied to the forecast population.

## Commentary

### Lines A2.1-A2.2 - Summary Population Water

#### A2.1 Winter and A2.2 Summer

The largest change to the figures in 2021/22 is the movement in Winter Tourist Population.

The latest visitor numbers reported in the Scottish Accommodation Occupancy Survey are for 2020, therefore there is a one-year lag in the tourist numbers reported.

The Winter Tourist numbers used in AR22 are based on the Visit Scotland data for the year Jan-Dec 2020. The Winter Tourist Population is usually based on the January figures, as the lowest visitor numbers in the year. This year the lowest figures are those from December 2020 and these are significantly lower than those reported in AR21 (-51k), reflecting the impact of COVID-19 restrictions on the tourism industry in Scotland.

The 2021 Total Winter Population (**Line A2.1**) as shown below, decreased by -38,534 from 2020. The increase in Household population (+13k), as per NRS projections, is offset by the decrease in the Winter Tourist population (-51k).

The Tourist property occupation statistics data as supplied by Visit Scotland are shown in Table 8 below with comparison to the AR21 (Table 7 below), highlighting the effect of COVID-19 on these numbers.

Table 7: Visit Scotland Occupation statistics

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Visit Scotland Category** | **Jan Rm Occ** | **Feb Rm Occ** | **Mar Rm Occ** | **Apr Rm Occ** | **May Rm Occ** | **Jun Rm Occ** | **Jul Rm Occ** | **Aug Rm Occ** | **Sep Rm Occ** | **Oct Rm Occ** | **Nov Rm Occ** | **Dec Rm Occ** |
| Guest House & B&B | 27% | 29% | 28% | 47% | 65% | 62% | 69% | 80% | 65% | 41% | 36% | 31% |
| Hostel | 27% | 41% | 44% | 59% | 71% | 71% | 78% | 75% | 63% | 51% | 37% | 33% |
| Hotel | 48% | 58% | 63% | 71% | 81% | 84% | 83% | 86% | 82% | 72% | 61% | 54% |
| Self-catering | 32% | 35% | 37% | 52% | 56% | 59% | 64% | 67% | 54% | 49% | 33% | 32% |
| Touring | 17% | 20% | 21% | 38% | 54% | 52% | 55% | 57% | 46% | 26% | 21% | 20% |

Table 8: AR22 Visit Scotland Tourist Occupation Statistics

| **Visit Scotland Category** | **Jan Rm Occ** | **Feb Rm Occ** | **Mar Rm Occ** | **Apr Rm Occ** | **May Rm Occ** | **Jun Rm Occ** | **Jul Rm Occ** | **Aug Rm Occ** | **Sep Rm Occ** | **Oct Rm Occ** | **Nov Rm Occ** | **Dec Rm Occ** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Guest House & B&B | 21% | 13% | 20% | 0% | 0% | 1% | 4% | 43% | 36% | 21% | 16% | 8% |
| Hostel | 31% | 25% | 0% | 0% | 0% | 0% | 0% | 29% | 23% | 13% | 0% | 29% |
| Hotel | 53% | 44% | 35% | 0% | 1% | 1% | 15% | 53% | 53% | 38% | 26% | 19% |
| Self-catering | 24% | 29% | 19% | 5% | 3% | 4% | 19% | 51% | 45% | 39% | 11% | 4% |
| Touring | 16% | 16% | 14% | 0% | 0% | 0% | 14% | 66% | 61% | 39% | 9% | 3% |

To calculate the Water Winter Population reported in **Line A2.1** we use the sum of the Water Resident Population (Unmeasured and Measured Household Water Populations) and the Water Population Not Resident in Households plus the Water Winter transient Tourist Population. The calculation details are included in Table 9 below.

Table 9: Summary Population – Water - Winter

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Summary - Population - Water** | **2020-21** | **2021-22** | **Movement** |
|  | Population of unmeasured household properties | 5,194,144 | 5,207,278 | 13,134 |
|  | Winter Tourist Populations - Water | 79,957 | 28,467 | -51,490 |
|  | Population Not in Households - Water | 120,161 | 120,037 | -124 |
|  | Population of measured household properties | 785 | 732 | -54 |
| A2.1 | Winter Population - Water | 5,395,048 | 5,356,514 | -38,534 |

To calculate the Water Summer Population reported in **Line A2.2** we use the sum of the Total Resident Population (measured and unmeasured household water population) plus the Summer Transient Tourist Population plus the Population Not in Households (120,038 for 2021-22), as contained in Table 10 below.

Table 10: Summary Population – Water - Summer

|  |  |  |
| --- | --- | --- |
| Summary - Population – Water | | 2021-22 |
|  | Population In Unmeasured Households with Water | 5,207,278 |
| Summer Transient Tourist Population - Water | 116,888 |
| Population Not in Households - Water | 120,038 |
| Population of measured household properties - Water | 732 |
| A2.2 | **Summer Population - Water** | 5,444,936 |

### Lines A2.3-A2.5 Household Population Water

#### A2.3 Population of **unmeasured** households with water

The population of unmeasured households with water has increased by 13,134 from 5,194,144 in AR21 to 5,207,278 in AR22. This is consistent with the increasing trend reported since AR19.

The ratio of Dwellings with Water to Total Dwellings (from WIC4 data supplied by the councils) is applied to the National Records of Scotland (NRS) Private Household Population to give the Population of Unmeasured Households with Water.

#### A2.4 Population of measured households with water

This has reduced by 53 from 785 in AR21 to 732 in AR22 which is consistent with the increasing trend reported in previous years and reflects the movement of household customers switching to Council Tax based charges.

The average Population per Household is calculated from NRS Private Household Populations and NRS Total Households. This average is applied to the number of measured properties for water to give Population in Measured Households with Water.

#### A2.5 Household population connected to the water service

The total connected population has slightly increased from 5,194,930 in AR21 to 5,208,010 in AR22.

### A2.6-A2.17 Water Balance

#### A2.6 Net distribution input treated water (water put into supply)

AR21 saw a large increase in Distribution Input (DI) of 54.82 Ml/d (to 1,824.53 Ml/d) primarily due to changing demand patterns and customer behaviours in relation to COVID-19 restrictions and the impact of winter weather events. For AR22 the DI increased again, by 12.32 Ml/d (to 1,836.95 Ml/d), as demand patterns appear to be re-aligning to post-pandemic levels (increased non-household consumption as the economy opens up, but a smaller decrease in household consumption as hybrid working becomes more widespread).

During AR22, 3.73% of data was estimated or constant, which is slightly up from 2.52% for AR21. However, this is still within a range of 1% to 5% over the past 12 years. Manually read data accounts for 1.72% of DI (down from 3.66% at AR21 due to some manually read sites moving to estimated) with 93.98% based on telemetry data (AR21 93.82%).

No new meters were installed during the year, with six replacement meters.

#### A2.7 Unmeasured household volume of water delivered (including losses)

The Household Consumption Monitor estimates an Unmeasured Household Volume of Water Delivered for AR22 of 1,078.30 Ml/d, which is down 28.83 Ml/d or 2.6% from AR21 (1,107.12 Ml/d). However, this is still markedly above (+8%) our pre-pandemic levels of 992.81 Ml/d reported in AR20.

The per household value for unmeasured properties of 371.12 l/prop/day excluding underground supply pipe leakage is down by 2.5% from 380.43 l/prop/day at AR21 but still 7.0% above the pre-pandemic value of 346.00 l/prop/day at AR20. There was no change of methodology for AR22. There are 135 zones in the monitor with the removal of one zone due to unrepresentative flows (Riverside Place Flats, 233 properties) in the year. The monitor now contains 9,644 properties, a net decrease of 233 from AR21. There was no substantial change in the proportion of properties in the monitor in the 6 ACORN categories.

#### A2.8 Measured household volume of water delivered (including losses)

Measured household consumption (excluding underground supply pipe leakage) at 339.01 l/hd/day is 21.1% higher than reported at AR21 after a 19.7% decrease last year, and still 2.7% below the pre-pandemic value of 348.55 l/hd/day at AR20. As there are only 345 measured households (369 at AR21) we would expect some volatility in the estimated value and as the measured household volume is only 0.24 Ml/d it is not a significant component of the water balance.

#### A2.9 Unmeasured non-household volume of water delivered (including losses)

This volume fell slightly by 0.4 Ml/d to 15.25 Ml/d at AR22.

#### A2.10 Measured non-household volume of water delivered (including losses)

This increased by 21.2 Ml/d to 361.78 Ml/d at AR22. The increase follows a fall of 25.9 Ml/d at AR21 due to COVID-19 restrictions. There were no changes to methodology in the year. It appears that this component of water use is almost back to pre-pandemic levels.

#### A2.11 Water taken unbilled – legally

This decreased slightly by 1.4 Ml/d to 57.32 Ml/d in AR22 following a 3.68 Ml/d decrease in AR21. There have been only minor changes in the individual components, and this is a small element of the overall water balance.

#### A2.12 Water taken unbilled – illegally

This increased by 0.21 Ml/d to 1.55 Ml/d in AR22 mainly as a result of higher levels of illegal standpipe use which we record and confirm annually. Many of the components used to calculate this value are estimated from assumptions

#### A2.13 Water taken unbilled - Distribution System Operational Use (DSOU)

DSOU rose marginally from 6.79 to 6.82 Ml/d in AR22. There were only small changes to the components.

#### A2.14 Net Consumption (including supply pipe losses)

The headline changes were that household consumption decreased from AR21 by 28.80 Ml/d which was partially offset by a 20.76 Ml/d increase in non-household demand with a net decrease of 9.2 Ml/d. The trend in both household and non-household consumption is attributed to a further return to post COVID-19 consumption behaviours.

#### A2.15 Distribution losses (including trunk mains and reservoirs)

Distribution losses increased by 21.6 Ml/d from AR21. This is the overall trend of the key components of the top-down water balance.

#### A2.16 Customer supply pipe losses

The estimate of customer supply pipe losses, at 115.24 Ml/d, is 12.1% lower than that of 131.10 Ml/d at AR21. The explanation for this trend is changes in the data used in the calculation and also an increased focus on the management activities to reduce the losses volume.

#### A2.17 Overall water balance

The overall water balance remained at a confidence grade of B3 for AR22. There have been no changes to individual data component confidence grades this year.

### Lines A2.18-A2.21 - Leakage

#### A2.18 Total Leakage (pre-MLE Adjustment)

Total leakage pre MLE adjustment fell by 6.51 Ml/d compared to AR21 to 463.92 ML/d for AR22.

#### A2.19 Water Balance Closing Error

The gap between top-down and bottom-up leakage decreased by 12.93 Ml/d to -32.98 Ml/d, which is -1.80% of DI.

#### A2.20 MLE Adjustment

The MLE adjustment for AR22 is -5.52 Ml/d which is a reduction in overall volume from -7.76 Ml/d for AR21.

#### A2.21 Total Leakage (post-MLE Adjustment)

Scottish Water reports MLE leakage of 458.39 Ml/d for 2021/22 (rounded to 459 in the Performance and Prospects report), which is 0.61 Ml/d below an OPA target of 459 Ml/d for AR22. The AR22 leakage value is 3.27 Ml/d lower than the 462.66 Ml/d at AR21 on a like for like basis (Table 11).

Table 11: Total leakage post MLE comparison

| **Report Year** | **Top-Down Leakage**  **(Ml/d)** | **Bottom-Up Leakage (Ml/d)** | **MLE Leakage (Ml/d)** |
| --- | --- | --- | --- |
| AR11 | 757 | 693 | 699 |
| AR12 | 661 | 617 | 629 |
| AR13 | 617 | 561 | 575 |
| AR14 | 608 | 553 | 566 |
| AR15 | 590 | 531 | 544 |
| AR16 | 531 | 492 | 500 |
| AR17 | 559 | 480 | 495 |
| AR18 | 543 | 480 | 492 |
| AR19 | 472 | 482 | 492 |
| AR20 | 454 | 467 | 465 |
| AR21 | 426 | 471 | 463 |
| AR22 | 431 | 464 | 459 |

### Line A2.22 - Water Delivered – Non-potable

#### A2.22 Volume of non-potable water delivered

Volume of non-potable water delivered reduced from 14.354Ml/d in AR21 to 12.912Ml/d in AR22.

### Lines A2.23-A2.26 - Water delivered – Components

#### A2.23 Per Household consumption (unmeas'd h'hold - excl s/pipe leakage) PHC

The estimate of per household consumption unmeasured, at 371.12 l/household/day is 2.4% lower than that of 380.43 l/household/day at AR21.

#### A2.24 Per Household **consumption** (meas'd h'hold - excl s/pipe leakage) PHC

The estimate of per household consumption measured, at 684.35 l/household/day is 19.4% higher than that of 573.29 l/household/day at AR21. Due to the small number of metered households in Scotland the explanation for this trend is not clear.

#### A2.25 Meter under-registration (measured households) (included in water delivered)

The estimate of meter under-registration (measured households), at 0.010 Ml/d is 10% higher than that of 0.009 Ml/d at AR21.

#### A2.26 Meter under-registration (measured non-households) (included in water delivered)

The estimate of meter under-registration measured non-households at 16.111 Ml/d is 6.3% higher than that of 15.16 Ml/d at AR21.

# Table A3 - Population, volumes and loads – Wastewater

## Introduction

Table A3 provides information on waste water properties and population served by Scottish Water.

### Data Sources

The source data and the methodology used for Wastewater Population is the same as for Water Population, using the ratio of Dwellings with Wastewater to Total Dwellings, from the WIC4 return supplied by the councils.

As with Water Population, the figures are given a confidence grading of B2, consistent with last year.

### Data improvement programmes

No significant data improvement programmes were undertaken this year for Household properties.

### Assumptions used for forecasted data

Forecast populations are taken from the NRS projections and ratios applied to the forecast population as described above. These are based on the forecast Dwellings as described in Table A1.

## Commentary

### Lines A3.1-A3.3 - Summary – Population

#### A3.1 Winter

As for Water, the increase in Household Population is offset by the decrease in Winter Tourist population (-38,000) giving a movement of -24,659 in the Total Population.

#### A3.2 Summer

Refer to commentary for **Lines A2.1, A2.2 and A3.3 below.**

#### A3.3 **Household** Population connected to the wastewater service

The individual components used to calculate the values reported in lines A3.3 and A3.2 are contained in Table 12 below.

Table 12: Summary Population – Water - Summer

|  |  |  |
| --- | --- | --- |
| Summary - Population – Wastewater | | 2021-22 |
| A3.3 | Population In Unmeasured Households with Wastewater | 5,000,492 |
| Population of measured household properties with Wastewater | 157 |
| **Household Population connected to the wastewater service** | **5,000,649** |
| Summer Transient Tourist Population - Wastewater | 79,032 |
| Population Not in Households - Wastewater | 116,408 |
| A3.2 | **Summer Population - Wastewater** | **5,196,089** |

Household Population increased by 13,431 for the reasons given in A2 above for Water below). The Population of Measured Household Properties dropped by 18.

Table 13: Movement in summary population between 2020-21 and 2021-22

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Summary - Population – Waste Water** | **2020-21** | **2021-22** | **Movement** |
|  | Population of unmeasured household properties | 4,987,061 | 5,000,492 | 13,430 |
|  | Winter Tourist Populations – Waste Water | 60,641 | 22,712 | -37,929 |
|  | Population Not in Households – Waste Water | 116,551 | 116,408 | -142 |
|  | Population of measured household properties | 175 | 157 | -18 |
| A3.1 | Winter Population - Waste Water | 5,164,428 | 5,139,769 | -24,659 |

### Lines A3.4-A3.10 - Sewage Volumes

#### A3.4 Unmeasured household volume (including exempt)

The volume marginally increased from 894.695 M/ld in AR21 to 899.952 M/ld in AR22. This is not a material change and reflects the increase in the number of connections to the network.

#### A3.5 Measured household volume

The volume increased from 0.025 Ml/d in AR21 to 0.027 Ml/d in AR22. This is not a significant increase.

#### A3.6 Unmeasured non-household foul volume (including exempt)

The volume slightly decreased from 12.688 M/ld in AR21 to 12.559 M/ld in AR22.

#### A3.7 Measured non-household foul volume

The volume increased from 114.666 M/ld in AR21 to 129.669 M/ld in AR22. This 13.08% increase is attributed to a partial ‘bounce-back’ from the 20.07% decrease experienced in 2020-21 due to relaxed COVID-19 lockdown restrictions that have impacted wholesale water usage in business premises.

#### A3.8 Trade Effluent Volume

The volume of Trade Effluent discharged increased slightly from 60.929Ml/d in AR21 to 61.039Ml/d in AR22.

The forecast is for this to increase slightly to 61.067Ml/d. This is calculated by pro-rating the current year’s volume, based on the number of Discharge Point IDs (DPIDs) billed at P06 that were still active at P12.

The confidence grades remain at B2 and B4 for the reporting and forecast years respectively.

Approximately 10% (132) of DPIDs have a discharge volume less than zero, as calculated using the CMA reconciliation reports. This is clearly incorrect but illustrates the problems caused by faulty meters, incorrect allowances and/or bad meter reads submitted by LPs.

The total calculated negative volume is 0.844Ml/d which has no significant impact on the reported or forecast figures.

#### A3.9 Total volume

As discussed above, this line is a summation of **Lines A3.4 to A3.8** and is an estimate of the Total Foul Sewage Volume entering the system calculated as 95% per household consumption (**Line A2.23**) multiplied by the number of properties connected to the foul sewer system (**Line A1.16**). The overall volume for Sewage has increased from 1,083.003M/ld in AR21 to 1,103.246Ml/d in AR22.

#### A3.10 Volume septic tank waste

Septic tank volume is part of the tankered waste controlled by the Gemini system. The volume has slightly decreased from 56.528 M/ld in AR21 to 52.459 M/ld in AR22.

### Lines A3.11-A3.25 - Sewage Load (BOD/yr)

#### A3.11 Unmeasured household load (including exempt)

The load slightly increased from 109,210.900t in AR21 to 109,504.100t in AR22.

#### A3.12 Measured household load

The load increased from 2.936t in AR21 to 3.149t in AR22.

#### A3.13 Unmeasured non-household foul load (including exempt)

The load slightly decreased from 1,389.237t in AR21 to 1,375.239t in AR22.

#### A3.14 Measured non-household foul load

The load increased from 12,555.952t in AR21 to 14,198.683t in AR22. AR21 was lower than AR20 (15,704.750t) due to the impact of the COVID lockdown on businesses. The AR22 load showed that there was lower business activity than in previous years, but not to the extent shown in AR21.

#### A3.15 Trade effluent load

The total BOD load discharged to the network increased significantly from 10,831.840t in AR21 to 12,022.000t in AR22. This is due to more DPIDs increasing loads due to increased strengths and/or volumes rather than actual decreases.

The forecast figure is approximately the same at 12,030t. The confidence grades remain at B2 and B4 for the reporting and forecast years respectively.

#### A3.16 Total load discharged from primary services

The overall load slightly increased from 133,990.865t in AR21 to 137,103.171t in AR22.

#### A3.17 Private septic tank load

The load increased from 205.232t in AR21 to 213.958t in AR22. This change is not material and continues the increasing trend reported in previous years.

#### A3.18 Public septic tank load

The load decreased significantly from 164.629t in AR21 to 129.279t in AR22. This change is not material as reported in previous years.

#### A3.19 Other tanker load

The load has significantly decreased from 340.767t in AR21 to 105.491t in AR22. The reduction was due to improvements and corrections in the source data. There were some Settled BOD (mgO2/l) values that are referenced off the 'Sample' worksheet corrected this year, that had been referencing the wrong values in AR21. This caused a drop in tBOD at several sites, but mainly affected Shieldhall whose tBOD reduced from 246,523kg to 69,489kg (11,257 PE to 3,173 PE).

There was also less volume reported at many sites due to the weather being relatively dry over the year, which meant less leachate was tankered in. There were also sewage treatment works undergoing replacement or enhancement work this year that necessitated the diversion of waste to alternative sites, including Carlisle. As Carlisle is not in Scotland, these loads were not included in the Scottish Water total. Cumnock STW had high pH readings this year therefore, to remain within consent parameters, this works took fewer tanker loads than usual.

#### A3.20 Total load entering sewerage system (BOD/yr)

The overall load slightly increased from 134,701.493t in AR21 to 137,551.899t in AR22. This increase is consistent in trend reported in previous years.

#### A3.21 Average COD concentration

There is no change from AR21 to AR22.

#### A3.22 Average suspended solids concentration

There is no change from AR21 to AR22.

#### A3.23 Equivalent population served (resident)

There is a slight increase in population from 6.3m in AR21 to 6.4m in AR22. This increase is caused by the return to normal following Covid, to some extent, in non-household (measured and unmeasured) loads, as described in A3.14. There has also been an increase in the unmeasured household load. Table 14 below details the changes in equivalent population served.

Table 14: Changes in Equivalent population served between 2020/21 and 2021/22

|  |  |  |  |
| --- | --- | --- | --- |
| **Description** | **AR22** | **AR21** | **Difference** |
| Unmeasured\_Household\_PE | 5,000,187.2 | 4986799 | 13388 |
| Measured\_Household\_PE | 157.5 | 175 | -17 |
| Non\_Household | 711138.0 | 636774 | 74364 |
| Trade\_Effluent\_PE\_RY | 530,087.6 | 503215 | 26,873 |
| SumOfPublic\_ST\_PE | 5,903.1 | 7517 | -1614 |
| SumOfPrivate\_ST\_PE | 9769.8 | 9371 | 399 |
| SumOfWTW\_Sludge\_PE | 12,736.8 | 11163 | 1574 |
| SumOfWwTW\_Sludge\_PE | 162,423.8 | 107480 | 54944 |
| Other\_Tanker\_PE | 4,816.9 | 15560 | -10743 |
| Return\_Liquors\_PE | 11,632.8 | 12151 | -518 |
| Total\_Equivalent population Served (resident) (A3.23) | 6,448,853.5  (reported as 6,448,854) | 6290205 | 158650 |

This increase is consistent in trend reported in previous years.

#### A3.24 Equivalent population served (resident) (numerical consents)

There is a slight decrease in population from 5.9m in AR21 to 5.6m in AR22. The source of the consent information has changed this year to SEPA Licences held in Power BI. Improved identification of active licences reduced the number that were shown to have numerical consents and this therefore reduced PE served.

This decrease is consistent in trend reported in previous years.

#### A3.25 Total load receiving treatment through PPP treatment works

The load has significantly increased from 61,317.708t in AR21 to 63,078.295t in AR22. This has mainly been driven by the return of Trade Effluent and non-household loads to volumes reported prior to the COVID-19 lockdown period.

### Lines A3.26-A3.28 - Sewage Sludge Treatment and Disposal

The reported mass of wastewater treatment sludge recycled was 119.15 ttds in AR22 (compared to 117.39 ttds in AR21), of which the majority came from the PPP/PFI works - 105.57 ttds, with the Scottish Water figure equating to 13.58 ttds. As with previous Annual Return submissions all the Scottish Water figures reported were taken directly from the Scottish Water Corporate Gemini system and recycling contractors invoice tracker data sheets and duty of care documentation. As in previous years we retained the existing confidence grade of B4.

For Scottish Water sludge there was a decrease of 2.42 ttds in the volume of enhanced treated sludge produced. The reason for this is due to a new supplier for services being employed at Kinneil, Kerse and Perth and commissioning issues with new equipment causing delays to treatment start up.

A slight increase in the volume of conventionally treated sludge produced from the previous year by 0.57 ttds should be noted. This is due to Cumnock STC achieving the required compliance standard more often than the previous year.

It should be noted that there was a slight decrease in material diverted to land reclamation, a decrease of 0.98 ttds. This is due to internal alternatives to land restoration being identified; mainly increases in cake imports to Nigg PFI.

A significant reliance is still placed on the use of land restoration outlets due to untreated/non-compliant sludge cakes at a number of Scottish Water operated sludge treatment centres.

There is 0.42 ttds of untreated/raw sewage sludge cake which continues to be landfilled in the Shetland Islands.

The Scottish Water Biosolids Assurance Scheme Certificate of Conformity was awarded in June 2022 and is valid from June 2022 to June 2023. A surveillance audit, which is part of the BAS scheme, took place on 27-29 April 2022 covering three sites (Hawick, Cumnock and Allanfearn). Following two years of virtual audits due to COVID-19, this year there was a hybrid audit with two site visits (Hawick and Cumnock) as well as virtual, desktop audits.

# Table A4 – Population by Local Authority

## Introduction

Table A4 provides information on populations within each Local Authority Area and is a new table requested by WICS for AR22.

### Data Sources

The source data and the methodology used for Population is the same as for Water Population, **Line A2.1**. and Wastewater **Line A3.1**. The Winter Tourist numbers used in AR22 are based on the Visit Scotland data for the year Jan-Dec 2020. The Winter Tourist Population is usually based on the January figures as this often represents the lowest visitor numbers in the year. This year the lowest figures are those from December 2020 . These are significantly lower than those reported in AR21 (-51k), reflecting the impact of COVID-19 restrictions on the tourism industry in Scotland.

As with Water and Wastewater Population, the figures are given a confidence grading of B2, consistent with last year.

### Data improvement programmes

No significant data improvement programmes were undertaken this year.

### Assumptions used for forecasted data

Forecast populations are taken from the NRS projections and ratios applied to the forecast population. These are based on the forecast Dwellings as described in Table A1.

## Commentary

Table A4 provides information on the tourist population receiving Water and Wastewater services during the winter season in each Local Authority area.

Section B - Outputs to Customers

The B Tables were last included in the AR10 submission. During that time Serviceability Measures were included in Table G3. Section B has now been reinstated, and line definitions agreed with WICS, for the AR22 submission. Changes from the original Section B are described in the relevant sections. Where data has not been reported in the interim, reference is made to the Assurance Report for comparison.

# Table B1 – Restrictions on Water Use

## Introduction

Since the AR10 submission this table has been amended to describe the use of Water Shortage Orders (WSOs) rather than Hosepipe Bans, reflecting the current legislation. This is the first year that Scottish Water has reported on WSOs as part of the AR submission.

### Data sources and confidence grades

Data sources and confidence grades are detailed in the Commentary section, where relevant.

Further detailed information on how individual cells were calculated, including the components of the calculation, is contained in the Assurance Report for Section B which is provided as part of the AR22 submission.

### Data Improvement Programmes

There were no data improvement programmes during AR22.

### Assumptions used for forecast data

It is not feasible to forecast data for AR23, for this table.

## Commentary

### Lines B1.1–B1.8 - Restrictions on Water Use

#### B1.1: Household population connected to the water service

The “*Household population connected to the water services*” is calculated as outlined in Table 15 below. The reported number does not include the transient tourist population. The reported number, 5,328,071 is calculated as presented in Table 15 below.

The population reported in B1.1 also includes ‘population not in households’ (an extra 120,037). This is consistent with the total of zonal populations used in the calculation of SoSI reported in the B9 tables.

Table 15: Calculations for household population connected to the water service

| **Line description and number** | **Value** |
| --- | --- |
| Unmeasured household population  (line A2.3) | 5,207,278 |
| Measured household population\* (line A2.4) | 756 |
| Population Not In-Households – Water | 120,037 |
| **Total** | **5,328,071** |

\*During our review for the AR Tables we noted that the number used for the calculation should have been 731 (as reported in Line A2.4). The difference of 24 will not affect the SoSI outcome in any meaningful way and checks have been put in place to ensure that next year’s value is the AR reported value

Population Not in Households is taken to be the difference between NRS Total Population and NRS Private Household Population. The ratio of Dwellings with Water to Total Dwellings is then applied to calculate the Population Not in Households with Water

The term ‘population not in households’ describes the estimates of population generally assumed to be incarcerated/institutionalised in prison or hospitals. Section 3.1.1 of the Tables Commentary document describes them as ‘Population Not in Households is taken to be the difference between NRS Total Population and NRS Private Household Population. The ratio of Dwellings with Water to Total Dwellings is then applied to calculate the Population Not in Households with Water.’

It is the first year that this line has been reported therefore no comparison with previous AR submissions can be made

#### B1.2: Population affected by Water Shortage Orders

This measure is the sum of the population impacted by Water Shortage Orders (WSO) in the reporting year. This number is derived from the number of people affected by a WSO; the total for the year being the sum of each discrete WSO. This includes where a WSO may have to be imposed more than once in a WRZ, in the year.

No emergency Water Shortage Orders were imposed in 2021-22. Consequently, the confidence grade of A1 has been applied.

#### B1.3: % Population affected by Water Shortage Orders

This measure is a calculated line and is the result of **Line B2.2**, the number of people that were subject to Water Shortage Orders in the year, divided by **Line B2.1**, the total reported household population reported. The percentage population affected by Water Shortage Orders this year is 0**.** It is the first year that this line has been reported therefore no comparison with previous AR submissions can be made.

As there were no emergency Water Shortage Orders imposed in 2021-22, the confidence grade of A1 has been applied.

#### B1.4: Population affected by emergency Water Shortage Orders

This measure is the sum of the population impacted by emergency Water Shortage Orders (eWSO) in the reporting year. This number is derived from the number of people affected by an eWSO; the total for the year being the sum of each discrete order, including where eWSO may have to be imposed more than once in a WRZ, in the year.

No emergency Water Shortage Orders were imposed in 2021-22. This is the first year that this line has been reported therefore no comparison with previous AR submissions can be made.

#### B1.5: % Population affected by emergency Water Shortage Orders

This measure is a calculated line and is the result of **Line B2.4**, the number of people that were subject to emergency Water Shortage Orders in the year, divided by **Line B2.1** the total reported household population reported. Thus is the first year this line has been reported therefore no comparison with previous years can be made.

As there were no emergency Water Shortage Orders imposed in 2021-22, the confidence grade of A1 has been applied.

#### B1.6: Number of zones breaching the drought impact trigger

There were 4 zones breaching the drought impact trigger during 2021/22 where drought plans were initiated:

* Picketlaw
* Muirdykes
* Tolsta
* Stornoway

This is the first year this line has been reported therefore no comparison with previous AR submissions can be made.

#### B1.7 and B1.8: Total number of reservoir sources

These are 2 new lines requested by WICS for AR22. The reported numbers are based on a count of individual reservoir and loch storage sources; the monitored sources are reported internally on a weekly basis for water resources purposes. Further information on the total number of reservoirs – both operational and non-operational - can be found in tables E and H.

Scottish Water would welcome further discussion on the appropriateness of this data as a reporting measure prior to the next AR submission.

#### B1.7: Total Number of Reservoir Sources Monitored

The total number of reservoir sources monitored is 116.

#### B1.8: Total Number of Reservoir Sources Not Monitored

The total number of reservoir sources not monitored is 73.

# Table B2 – Pressure and Interruptions

## Introduction

Table B2 provides information on properties receiving low pressure of supply and interruptions to supply (ITS). The overall increase in properties experiencing unplanned interruptions to supplies this reporting year can largely be attributed to the high impact of named Storms Arwen, Malik and Corrie and was due to widespread power failures. The primary cause of the storm related ITS was failure of the power supply and the unavailability of the auxiliary power generation units needed to provide a temporary supply for pumping stations in remote and rural locations.

### Data sources and confidence grades

Information on properties receiving low pressure is held on Scottish Water’s Low Pressure Register within Dynamics. Potential, new low-pressure problems are identified from customer contacts and investigations in connection with investment projects and operational changes. All property numbers contained in Dynamics are address-specific and have been subject to data cleansing and checking by pressure logging.

A surrogate reference level of 15m at the distribution main was used to check for low pressure. No allowance was made for properties with longer service pipes, or for multiple properties served from a common service pipe.

### Data improvement programmes

During 2021-22, Scottish Water initiated investigations at existing properties where it was believed the historically reported low pressure could be resolved or was erroneous. The pressure was logged at identified sites and, where relevant, the properties were removed from the register. No new investigations were initiated by Scottish Water to identify new low-pressure properties during the year.

There were no substantial changes to the methodology of previous years.

### Assumptions used for forecast data

There is no forecast data for the Table B2, with the exception of the properties below reference level (**Lines B2.1 - B2.4**). The forecast data for these lines is based on the current number of planned projects for the coming year. The remainder of the lines refer to interruptions which it is not feasible to forecast for AR23.

## Commentary

### Lines B2.1-B2.4 – Properties receiving pressure/flow below reference level

At the end of the reporting year 2021-22 the overall number of low-pressure properties, increased by 11 properties. Line B2.3, Properties below reference level at end of year, increased from 34 in 2020-2021 to 45 in 2021-2022. The total number of low-pressure properties in 2021-22 was 222 (**Line B2.3+B2.4**). Of these, 47 properties were added due to better information (39) and asset deterioration (8). Targeted investigation (27) and improved network operations (9) have improved pressure to 36 properties. During the reporting year 2021-22 the 177 properties within 10.5m head of service reservoirs where the required service level cannot be met (**Line B2.4**) has remained the same as the previous year[[3]](#footnote-4). This is summarised in Table 16 below.

Table 16Error! Reference source not found.

|  |  |
| --- | --- |
| Line Reference | 2021-22 |
| Total connected properties (Line B2.1 – BF line A.10) | 2,780,117 |
| Properties below reference level at start of year (Line B2.2) | 211 |
| Properties below reference level at end of year (line B2.3) | 45 |
| Properties receiving low pressure but excluded from line B2.3 (Line B2.4) | 177 |
| Net increase/decrease | + 11 |

### Lines B2.5-B2.8 - Properties affected by planned interruptions

Planned interruptions lasting more than 3 hours in 2021-22 (**Line B2.5**) affected 37,532 properties, an increase of 17,178 (84.40%) from 2020-2021 (see Assurance Report). This was largely driven by the ability to carry out more planned rehabilitation work following the relaxation of COVID-19 restrictions.

Planned interruptions lasting more than 6 hours in 2021-22 (**Line B2.6**) affected 3,849 properties, a reduction of 500 (-11.50%) from 2020-2021 (see Assurance Report).

There were no planned interruptions lasting more than 12 or 24 hours in the last 2 years.

### Lines B2.9-B2.12 - Properties affected by unplanned interruptions

The overall increase in properties experiencing unplanned interruptions to supply this reporting year can be largely attributed to the high impact from named Storms Arwen, Malik and Corrie, and was due to widespread power failures. The primary cause of the storm related ITS was failure of the power supply and the unavailability of the auxiliary power generation units needed to provide a temporary supply for pumping stations in remote and rural locations. Without these events, performance would have been back to pre-COVID-19 levels.

A comparison of the number of properties affected by unplanned interruptions to supply is provided in Table 17 below.

Table 17: Properties affected by unplanned interruptions in 2020-21 and 2021-22

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Line reference | 2020-21[[4]](#footnote-5) | 2021-22 | Variance | % |
| B2.9 More than 3 hours unplanned | 93,405 | 114,815 | + 21,410 | + 22.9% |
| B2.10 More than 6 hours unplanned | 5,381 | 6,759 | + 1,378 | + 25.6% |
| B2.11 More than 12 hours unplanned | 596 | 1,626 | + 1,030 | + 172.8% |
| B2.12 More than 24 hours unplanned | 57 | 531 | + 474 | + 831.6% |

### Lines B2.13-B2.16 - Interruptions caused by third parties

Overall Interruptions caused by third parties reduced in 2021-22 compared to 2020-21 (Table 18).

Table 18: Summary of Interruptions to supplies caused by 3rd parties for 2020-21 and 2021-22

| Line reference | 2020-21[[5]](#footnote-6) | 2021-22 | Variance | % |
| --- | --- | --- | --- | --- |
| More than 3 hours caused by third parties (line B2.13) | 7,286 | 5,474 | - 1,812 | - 24.9% |
| More than 6 hours caused by third parties (Line B2.14) | 2,366 | 2,133 | - 233 | - 9.8 % |
| More than 12 hours caused by third parties (Line B2.15) | 144 | 0 | - 144 | - 100% |
| More than 24 hours caused by third parties (Line B2.16) | 0 | 1 | + 1 | n/a |

### Lines B2.17-B2.19 - Unplanned interruptions (overrun of planned interruptions)

Overall, fewer events overran their planned times this year, partly due to improved stakeholder communication and network controls.

The comparison of individual lines for 2020-2021 and 2020-2022 is contained in Table 19 below.

Table 19: Summary of Unplanned interruptions (overrun of planned interruptions) for 2020-21 and 2021-22

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Line reference | 2020-21[[6]](#footnote-7) | 2021-22 | Variance | % |
| B2.17 More than 6 hours unplanned (overruns of planned interruptions) | 95 | 45 | - 50 | - 52.6% |
| B2.18 More than 12 hours unplanned (overruns of planned interruptions) | 0 | 10 | + 10 | n/a |
| B2.19 More than 24 hours unplanned (overruns of planned interruptions) | 0 | 1 | + 1 | n/a |

#### Line B2.20 - Average supply interruption greater than three hours (minutes per property)

Average supply interruption greater than 3 hours (minutes per property) was 16.372 mins/property (**Line B2.20**) compared with 13.130 mins/property in 2020-21 (AR21 - **Line G3.18** reported as 0.219 hrs/properties). This increase was mostly driven by the increase in the number of ITS (planned and unplanned).

### Lines B2.21-B2.24 - Total weighted properties for OPA

As explained in the commentary, for the preceding lines the overall increase in properties experiencing unplanned interruptions to supply this reporting year can be largely attributed to widespread power failures caused by named Storms Arwen, Malik and Corrie. This resulted in a total of 48 events affecting 2,438 properties (equating to 4,000 properties in OPA weighted figures) over a short period of time.

A comparison of total weighted properties for OPA for 2020-2022 is provided in Table 20 below and shows an overall increase.

Table 20: Total weighted properties for OPA for 2020-21 and 2021-22

| Line reference | 2020-21[[7]](#footnote-8) | 2021-22 | Variance | % |
| --- | --- | --- | --- | --- |
| B2.21 Total number of properties restored > 6 hours | 5,381 | 6,804 | + 1,423 | + 26.4% |
| B2.22 Total number of properties restored > 12 hours | 596 | 1,636 | + 1,040 | + 174.5% |
| B2.23 Total number of properties restored > 24 hours | 57 | 532 | + 475 | + 833.3% |
| B2.24 Total weighted properties for OPA (>6 hours) | 6,091 | 9,504 | + 3,413 | + 56.0% |

It should be noted the weighting has only been applied to **Line B2.24.**

The calculations applied for total weighted properties (OPA) are contained in Table 21 21.

Table 21 21: calculations applied for total weighted properties

|  |  |  |  |
| --- | --- | --- | --- |
| **Line ref** | **Description** |  | **OPA weight** |
| B2.21 | Total number of properties restored > 6 hours | B2.10+B2.17 | 1 |
| B2.22 | Total number of properties restored > 12 hours | B 2.11+ B2.18 | 2 |
| B2.23 | Total number of properties restored > 24 hours | B2.12+B2.19 | 4 |
| B2.24 | Total weighted properties for OPA (>6 hours) | 1\*(B2.21-B2.22)+2\*(B2.22-B2.23)+4\*(B2.23) |  |

# Table B3 - Sewage – Internal Flooding

## Introduction

Table B3 provides a summary of Scottish Water’s Internal Flooding Data for the year 2021/22. The biggest driver of flooding incidents was the frequent occurrence of short sharp storms producing extreme weather events causing significant widespread flooding and resulting in high level of customer contacts and stakeholder requests.

### Data sources and confidence grades

Data about Internal Flooding is held on the following software packages:

* Internal Flooding Cases/Calls are held within Scottish Water Customer Relationship Management Software (CRM), *Microsoft Dynamics*
* The Flooding Database which contains all Internal Flood Risk information, including the Internal “At Risk” Register, is held on *Infonet*

**Lines B3.2-B3.13** - a confidence grade of B3 has been applied to this section of Table B3. All internal cases and data are thoroughly assessed, and robust investigations are undertaken by the Flooding Team. There is a reliance on human input from Contact Centre and Sewer Response teams to correctly code the cases in order for the data to reach the Flooding Team.

**Lines B3.14-22** have not been included in the Annual Return since 2008. In 2008, properties on the “At Risk” Register, were assigned a confidence grade of B3.

In the last 14 years there have been significant improvements to the flooding investigation process. The available tools and resources during Internal Flooding Investigations are much improved due to better quality rainfall and modelling data. The advancement of smartphones has led to better quality data from picture/video to allow robust investigations and make better quality register decisions.

In addition, Flooding Investigation Reports (introduced in April 2021) detail the investigation undertaken by the Flooding Team and apply a layer of governance around “At Risk” Register decisions.

Given the above, the confidence grade has been changed from B3 to B2 reflecting that the greater accuracy range of B2 has been assigned to Annual Changes to Register and ‘At Risk’ Summary.

### Data Improvement Programmes

#### Flooding Investigation Report

During 2021-22, Scottish Water introduced a standardised Flooding Investigation Report format. This has resulted in more robust and consistent evidence to demonstrate investigation outcomes.

#### Project SWIFT/Salesforce

Project SWIFT was implemented to support our field teams to deliver our vital services. The Field Service Technology Enhancement which replaced IMS and CLICK with Salesforce Field Service has provided the Flooding Team with more detailed, accurate and comprehensive information regarding flooding incidents. This was implemented in January 2021.

### Assumptions used for forecast data

Forecasting has been provided for lines which directly match lines in the Sewer Flooding and Sewer Risk Output Activity RAG Status.

Forecasting for L**ines** **B3.2, B3.4, B3.6 and B3.7** is based on 3-year and 5-year average property numbers affected by Sewer Flooding.

Forecasting for **Lines B3.14-B3.16** is based on the current “At Risk” Register position and predicted additions and removals from the “At Risk” Register. These predicted additions and removals are based on historic addition trends and the status of the Flooding Programme.

## Commentary

As the majority of these lines did not form part of the previous submission comparative data for last year is extracted from the Assurance Report. Exceptions are highlighted in the line-by-line commentary, where applicable.

#### Line B3.1 – Number of properties connected to sewerage system

The content of this line is brought forward from Table A1, **Line A1.20**. The number of properties reported in this category increased from 2,601,699 in AR21 to 2,630,111 in AR22.

### **Lines** B3.2 -B3.5 Annual Flooding – Overloading Sewers, Annual Flooding – Other Causes

With the exception of **Line B3.2**, previously reported in Table G3 **Line G3.22**, this is the first year these lines have been reported as part of the AR submission.

A confidence grade of B3 has been assigned across all lines in this section. The grade has been assigned on the basis that while all internal cases and data are thoroughly assessed by the Flooding Team, and robust investigations are undertaken, there is a reliance on human input from the Contact Centre and Sewer Response teams for the data to reach the Flooding team.

A comparison with the previous year’s performance is provided in the Table 22 22 below.

Table 22 22: Summary of flooding incidents and properties flooded in 2020-21 and 2021-22

| **Line ref** | **Descriptions** | **2020-21** | **2021-22** | **Variance** | **%** |
| --- | --- | --- | --- | --- | --- |
| B3.2 | Number of properties flooded in the year | 332[[8]](#footnote-9) | 291 | - 41 | -12.3 |
| B3.3 | Number of flooding incidents in the year | 131 | 142 | + 11 | + 8.3 |
| B3.4 | Number of flooding incidents attributed to severe weather | 82 | 74 | - 8 | - 9.7 |
| B3.4a | Number of properties flooded during the year due to severe weather[[9]](#footnote-10) | n/a | 163 | - | n/a |
| B3.5 | Props. where flooding limited to uninhabited cellars only (o/loaded sewers) | 45 | 55 | + 10 | +22 |

While the reduction in flooding Incidents attributed to severe weather is slightly down from 2020-21, severe weather events remain the biggest driver of flooding incidents in 2021/22 with over 50% of Flooding Incidents in 2021/22 caused by the frequent occurrence of short sharp summer storms.

Overall, Internal Flooding Overloaded Sewer (IFOS) incidents seem higher than 2020-21, (**Line B3.3**) but each incident affected slightly less properties (**Line B3.2**).

### Lines B3.6-B3.13 - Annual Flooding – Other Causes

#### B3.6 - Number of properties flooded in the year (Main Sewers Only)

The number of properties in this category has fallen from 76 in 2020-21 to 74 in AR22.

#### B3.7 - Number of properties flooded in the year (All Sewers)

The number of properties in this category is 279. This is a new category for AR22.

#### B3.8 - Properties which have flooded more than once in the last ten years (other causes)

The number of properties in this category remained at 53 in AR22.

Producing this data required an amalgamation of 4 years of data from Microsoft Dynamics and 6 years of data from Promise. The challenge of doing this was discussed during the audit, and it was recognised that the confidence grading would be low.

On the advice of the Assurer, we have produced the same report using the data available since Scottish Water moved to Microsoft Dynamics. Therefore, **Line B3.8** is based on properties which flooded more than once since April 2019.

#### B3.9 - Flooding incidents due to equipment failure

The number of incidents in this category has increased from 2 in 2020-21 to 7 in AR22.

#### B3.9a - Number of properties suffering flooding incidents due to equipment failure

The number of properties in this category is 7. This is a new category for AR22.

#### B3.10 - Flooding incidents due to blockages

The number of incidents in this category has fallen from 59 in AR21 to 54 in AR22. The 54 events affected66 properties (**Line B3.10a**)

#### B3.10a - Number of properties suffering flooding incidents due to blockages

The number of properties in this category is 66. This is a new category for AR22.

#### B3.11- Flooding incidents due to sewer collapses

The number of incidents in this category has fallen from 5 in 2020-2021 to 1 in AR22.

#### B3.11a - Number of properties suffering flooding incidents due to sewer collapses

The number of properties in this category is 1. This is a new category for AR22.

#### B3.12 - Props. where flooding limited to uninhabited cellars only (other causes)

The number of properties in this category has increased from 23 in 2020-2021 to 28 in AR22.

#### B3.13- Number of flooding incidents in the year

The number of properties in this category has fallen from 66 in 2020-2021 to 62 in AR22. This is calculated as the sum of lines **B3.9, B3.10 and B3.11**.

### Lines B3.14-B3.17 - Properties on the "At Risk" Register - (i) At risk summary

#### B3.14 - 2 in 10 at end of year

The number of properties reported in this category has fallen from 198 in 2020-2021 to 180.

#### B3.15 - 1 in 10 at end of year

The number of properties reported in this category has fallen from 116 in 2020-2021 to 110.

#### B3.16 - Total 1 in 10 and 2 in 10 properties at risk at end of year

The number of properties reported in this category has fallen from 314[[10]](#footnote-11) to 290. The value in this line is the sum of **Lines B3.14 and B3.15**.

#### B3.17 1 in 20 risk at end of year

The number of properties reported in this category has increased from 159 in 2020-2021 to 165.

### Lines B3.18-B3.19 - Properties on the "At Risk" Register - (ii) Problem status of properties on the register

#### B3.18 - Solved but temporary or being tested

The number of properties reported in this category has fallen from 165 in 2020-2021 to 158.

#### B3.19 - Number of properties on the At Risk register still to be resolved

The number of properties reported in this category has fallen from 149 in 2020-2021 to 132.

### Lines B3.20-B3.22 - Properties on the "At Risk" Register - (iii) Annual changes to register

#### B3.20 - Removed by Scottish Water action

The number of properties reported in this category is 35, compared to 32 in 2020-2021.

#### B3.21 - Removed because of better information

The number of properties reported in this category is 4, compared to 2 in 2020-2021.

#### B3.22 - Added because of better information

The number of properties reported in this category is 15, compared to 67 in 2020-2021. This can be largely attributed to the introduction of a requirement to produce a standardised Flooding Investigation Report before any investigation can be closed, regardless of the outcome of the investigation. While this has marginally slowed down the investigation process it has resulted in more robust and consistent evidence to demonstrate investigation outcomes. In addition, a high number of our investigations have concluded that flooding was due to severe weather which again leads to a reduction in the number of properties added to the “At Risk” Register.

#### B3.23 - Percentage of population at risk of sewer flooding in a 1-in-50-year storm, based on modelled predictions

The percentage of the population at risk of sewer flooding in a 1-in-50-year storm, based on modelled predictions, was calculated at 4% during 2021-22. This is a new category for AR22.

The data is the result of modelling carried out to assess the risk of flooding from our sewers in compliance with Section 16 of the Flood Risk Management (Scotland) Act 2009. The modelling covers around 90% of our sewer catchments and it is produced every 6 years.

# Table B3a - Sewage – External Flooding

## Introduction

Table B3a provides a summary of Scottish Water’s External Flooding programme for the year 2021-22

### Data sources and confidence grades

Data sources are the same as for Table B3

A confidence grade of B4 has been assigned to all lines in Table B3a, lower than the confidence grade applied to Table B3 due to the following:

* The Flooding Investigation Team does not review all External Flooding Cases. Only high priority and high impact cases are reviewed and assessed.
* Approximately 10%-15% of the External “At Risk” Register data is of poor quality; inherited from Scottish Water predecessor organisations.

### Data Improvement Programmes

There were no specific data improvement programmes related to External Data. However, the data improvement programmes covered in Table B3 apply to Table B3a.

### Assumptions used for forecast data

No forecast data is available for Table B3a

## Commentary

As the majority of these lines did not form part of the previous submission comparative data for last year is extracted from the Assurance Report. Exceptions are highlighted in the line-by-line commentary where applicable

### Lines B3a.1-B3a.6 - Annual Flooding summary - (i) Overloaded sewers

#### B3a.1 - Areas flooded externally in the year (overloaded sewers)

The number of areas in this category has fallen from 513 in 2020-2021 to 350 in AR22.

On review of both 2020-2021 and AR22 data, it is suspected that this decrease relates to a small number of incidents in 2020-2021, which were noted as affecting a high number of properties (e.g. 101 properties to 1 incident). No incidents of this type were logged in AR22.

#### B3a.2 - Curtilage flooding incidents in the year (overloaded sewers)

The number of incidents in this category has fallen from 158 in 2020-2021 to 137 in AR22.

#### Ba3.3 - Highway flooding incidents (overloaded sewers)

The number of incidents in this category has fallen from 129 in 2020-2021 to 96 in AR22.

#### B3a.4 - Other flooding incidents (overloaded sewers)

The number of incidents in this category is 27. The same as 2020-2021.

#### B3a.5 - Total flooding incidents (overloaded sewers)

The number of incidents in this category has fallen from 314[[11]](#footnote-12) in AR21 to 260 in AR22. This line is the sum of **Lines B3a.2, B3a.3 and B3a.4.**

#### B3a.6 - External flooding incidents (overloaded sewers attributed to severe weather)

Not available.

The number of initial reports of external flooding is much greater than the number of initial reports of internal flooding. Resource implications prevent these being investigated in the same way as internal incidents.

At the moment the Flooding Investigation Team is only able to carry out external investigations of external incidents that are directly linked to investigations of internal incidents, or where we have had political pressure to do so, for example as a result of political correspondence.

Even where storm analysis had been carried out against a location and incident it would not be appropriate to claim an exception for the incident without carrying out storm analysis against every external incident and location. In addition, exclusions for severe weather in relation to internal flooding have a direct bearing on OPA, while external flooding does not form part of OPA. As a result, priority is given to internal incidents.

### Lines B3a.7-B3a.10 - Annual Flooding summary – (ii) Other causes

#### B3a.7 - Areas flooded externally in the year (other causes)

The number of areas in this category has increased from 3,431 in 2020-2021 to 3,863 in AR22.

#### B3a.8 - Flooding incidents (other causes - equipment failure)

The number of incidents in this category has fallen from 20 in 2020-2021 to 12 in AR22.

#### B3a.9 - Flooding incidents (other causes - blockages)

The number of incidents in this category has fallen from 1,766 in 2020-2021 to 1,356 in AR22.

#### B3a.10 - Flooding incidents (other causes - collapses)

The number of incidents in this category has increased from 14 in 2020-2021 to 23 in AR22.

### Lines B3a.11-B3a.14 - Areas on the 1:10, 2:10, 1:20 at risk register – (i) At risk summary

#### B3a.11 - 2 in 10 risk at end of year

The number of areas reported in this category has increased from 1,523 in 2020- 2021 to 1,526.

#### B3a.12 - 1 in 10 risk at end of year

The number of areas reported in this category has fallen from 1,028 in 2020-2021 to 1,002.

#### Ba3.13 - 1 in 20 risk at end of year

The number of areas reported in this category has increased from 72 in 2020-2021 to 101.

#### Line B3a.14 - 1 in 10, 2 in 10, 1 in 20 risk at end of year

The number of areas reported in this category has fallen from 2,497 in 2020-2021 to 2,495.

### Lines B3a.15-B3a.16 - Areas on the 1:10, 2:10, 1:20 at risk register - (ii) Problem status

#### B3a.15 - Problems solved by temporary measures or subject to testing

The number of areas reported in this category is 134. It is the first year this line has been reported.

#### B3a.16 - Problems awaiting solution

The number of areas reported in this category is 2,495. It is the first year this line has been reported.

### Lines B3a.17-B3a.21 - Areas on the 1:10, 2:10, 1:20 at risk register - (iii) Annual changes to 1:10, 2:10, 1:20 register

#### B3a.17 - Removed by Scottish Water action

The number of areas reported in this category is 44, compared to 41 in 2020-21. The reduction was the result of 7 Capital Solution Projects.

#### B3a.18 - Removed because of better information

The number of areas reported in this category is 45, compared to 32 in 2020-21.

#### B3a.19 - Added because of better information

The number of areas reported in this category is 97, compared to 106 in 2020-21.

#### B3a.20 - Added because of increased demand

No available information.

All additions to the “At Risk” Register are identified as being due to better information. We do not consider it to be practicable to identify flooding due to increased demand. For this reason, **Line B3a.20** is reported as zero. We would be happy to discuss the possibility of removing this line in future Annual Return submissions.

#### B3a.21 - Moved from external to internal register

The number of areas reported in this category is 2, compared to 3 in in 2020-21.

# Table B4 - Customer Service

## Introduction

Table B4 provides information on written complaints and telephone contacts received by Scottish Water. Scottish Water is reporting a minor increase in the number of formal complaints received in this reporting year i.e. 614 compared to 613 in the previous year.

### Data sources and confidence grades

In this reporting year data for customer contacts and written complaints is taken from *Dynamics*. Telephone statistics come direct from calls logged on Scottish Water’s telephony management system, *Puzzle*.

### Data improvement programmes

There were no data improvement programmes this year.

### Assumptions used for forecast data

There are no forecasts for the B4 Tables

## Commentary

### Lines B4.1-B4.3 - New Written Complaints

#### B4.1 Formal complaints

Scottish Water is reporting a minor increase in the number of formal complaints received in this reporting year i.e. 614 compared to 613 in the previous year. The following areas have seen an increase or decrease in complaints this year:

* Waste-Water Contacts decreased by 1.88%, or 4 complaints, from previous year.
* Water Quality contacts decreased by 53.33%, or 16 complaints, from previous year
* Water contacts increased by 9.50%, or 23 complaints, from previous year
* Infrastructure contacts increased by 34.33%, or 23 complaints, from previous year

#### B4.2 Regulator upheld complaints

Scottish Water is reporting 0 regulator upheld complaints this year. Which is the same as the previous year.

#### B4.3 No. dealt with within 5 working days

All 614 complaints were dealt with within 5 working days. This mirrors last year’s performance of 613 which were also dealt with within 5 working days.

### Lines B4.4-B4.11 - Telephone Contacts

#### B4.4 Total calls received on customer contact lines

We received 324,939 calls in this reporting year compared to 293,606 calls in 2020-21, a rise of 31,333 calls or an overall 10.67% increase against previous year.

#### B4.5 Total calls answered on customer contact lines

We answered 311,494, or 95.86%, of calls in this reporting year compared to 288,103 or 98.12% in the previous year.

#### B4.6 Total calls answered within 30 seconds on customer contact lines

There were 262,259 calls, or 80.71% of calls, answered within 30 seconds compared to 276,728 calls, or 94.25% of calls, answered within 30 secs in AR21.

#### B4.7 Total calls answered in more than 30 seconds on customer contact lines

There were 49,235 calls answered in more than 30 seconds (15.15%) compared to 11,375 (3.87%) calls in AR21.

#### B4.8 Average time taken to answer a call on customer contact lines

The average time taken to answer a call on customer contact lines was 60 seconds compared to 9 seconds in AR21. This is as a result of period of extremes in weather variability, impacting on our ability to answer calls.

#### B4.9 All lines busy

There was 1 instance of all lines busy compared to 0 in 20/21.

#### B4.10 Total of abandoned calls on customer contact lines

The Total of abandoned calls on customer contact lines were 13,445 calls compared to 5,503 calls in 20/21. This is a result of period of extremes in weather variability, impacting on our ability to answer calls.

#### B4.11 Total Telephone complaints

The total number of telephone contacts recorded at initial conversation as a complaint/fault was 100,084 compared with 93,916 in previous year. As per **Lines B4.8 and B4.10** the period of extremes in weather variability has had an impact on call volumes. Scottish Water continues to drive improvements in the service experienced by customers who contact Scottish Water.

# Table B5 - Customer Service

## Introduction

The purpose of the Household Customer Experience Measure (hCEM) is to capture service levels delivered to household customers and provide a robust means of measuring the quality of, and tracking changes in, the service experience provided to household customers. Performances against a number of quantitative and qualitative indicators are combined to produce an Annual hCEM Score out of 100.

For SR21 we have altered the methodology by the removal of the All lines busy/Calls Abandoned element and the addition of an Escalation element. Throughout the year we successfully ran the SR15 and SR21 hCEM measures in parallel to test whether these were comparable, confirming that the changes would not result in meaningful differences in outputs.

### Data sources and confidence grades

Data for these tables are derived from Scottish Water’s corporate systems, the details can be found in the nhCEM Reporter’s report

### Data improvement programmes

No significant data improvements were carried out in the year

### Assumptions used for forecast data

There are no assumptions in table B5

## Commentary

### Lines B5.1-B5.8 - Household CEM

#### B5.1 hCEM overall score

The hCEM overall score has increased from 86.06 last year to 86.09 this year, an increase of 0.03.

This score is the sum of lines B5.39 (hCEM Qualitative score) and B5.34 (hCEM Quantitative score). The confidence grade for this line is B3 to reflect the grades for the lines used in the calculations.

#### B5.2 Customer experience survey

Customer experience survey has decreased from 94.08% last year to 92.39% this year, a decrease of 1.69%.

The confidence grade for this line is B2 to reflect the confidence grades for the lines that contribute to this total (lines B5.40, B5.25 and B5.26) which have the B2 confidence grade.

#### B5.3 No experience no contact

No experience no contact has decreased from 94.68% last year to 93.46% this year, a decrease of 1.23%.

#### B5.4 Experience no contact

Experience no contact has increased from 79.42% last year to 80.42% this year, an increase of 1.00%.

#### B5.5 Escalations

This is a new element to replace All Lines Busy/Calls Abandoned for last year. Therefore, there is no comparison year-on-year. For AR22 the figure is 769.

#### B5.6 Service issue contacts

Service issue contacts increased from 305,640 last year to 346,264 this year, an increase of 40,264, or 13.29%. Contacts were affected by the events of Storm Arwen & the Daer incident where between August 2021 and October 2021 elevated manganese levels were experienced throughout the Daer operational area resulting in multiple manganese PCV failures and extensive customer contacts affecting a population of 329,347.

#### B5.7 Formal complaints

Formal complaints have increased from 426 last year to 469 this year, an increase of 43, or 10.09%. The main movements in complaint volumes relate to Infrastructure (+24), Waste Water (+5) and Water Supply (+38), offset by a reduction of complaints relating to Planned Works/ Maintenance (-5) and Water Quality (-12).

#### B5.8 Regulatory upheld complaints

There were 0 regulatory upheld complaints this year. This mirrors our performance from 20/21.

#### Line B5.9 - Customer Satisfaction Survey

We no longer capture this element.

### Lines B5.10-B5.16 - Assessed Customer Service

Scottish Water no longer captures Assessed Customer Service performance for OPA, as of April 2021 and, therefore, the information is no longer captured. As our overall service score has not changed, we assume that performance has been maintained. The Assessed Customer Service score is used to calculate the SR15 OPA for comparative purposes. A fixed score of 35.5 is utilised for the calculation as this was consistently achieved throughout the last period. We suggest that these lines are deleted for future Annual Returns.

#### B5.10 Revenue and Debt Collection

Scottish Water’s performance in relation to revenue and debt collection from domestic customers is dependent on the performance of the 32 local authorities (LAs) who manage these customer relationships along with us. Scottish Water also manages a few metered domestic customers.

It is not practical to measure the performance of each of the 32 LAs. The assessment previously included a sample of five LAs plus our metered customer revenue and debt collection facilities. The sample LAs chosen were Clackmannanshire, Glasgow City, Scottish Borders, Shetland Islands and South Ayrshire. WICS had previously endorsed this approach following trial assessment with What Works Scotland.

We have not altered this since WaterWatch Scotland (WWS) was disbanded, as Scottish Water has little or no ability to alter the way in which LAs decide to bill customers. There is also a scoring element within this section which relates to the Watervoice Assessment of debt and revenue collections, as Watervoice no longer exists as an organisation its views of the debt and revenue procedures of the 32 LAs cannot be ascertained.

Given actual data is not available and for the purposes of this submission, we have reported the previous year’s score of 2.

#### B5.11 Information to Customers

We do not send any unsolicited mail, apart from our leaflet explaining charges, to our customers. All of the required information is available on our website or available upon request. Our approach of not sending unsolicited mail is a positive feature, as this in itself can be a cause for complaint for customers.

Given actual data is not available and for the purposes of this submission, we have reported the previous year’s score of 1

#### B5.12 Telephone Contact Hours

We operate a 24/7 Customer Engagement Centre and this has not changed since 2002. For the purposes of this submission, we have reported the previous year’s score of 2

#### B5.13 Compensation Policy

We previously operated two compensation policies for customers, the Guaranteed Service Standards (GSS) and Price Promise compensation policy. From year commencing 2015/16 Scottish Water has combined these two policies and increased the standard value of what was the GSS compensation policy from £20, to £30. The new Service Standards policy remains similar in structure to previous years.

Given actual data for this line is not available and for the purposes of this submission, we have reported the previous year’s score of 1.

#### B5.14 Supply Pipe Repair Policy

We operate a supply pipe repair policy and publicise this to customers via our website. Specific data on this measure is no longer captured. We have therefore reported the previous year’s score of 1.

#### B5.15 Service for Disabled and Elderly Customers

We use our website to let customers know about the additional services we provide to meet the needs of those in vulnerable circumstances. Scottish Water operates a Priority Services Register to prioritise these customers in the event of a loss of supply. Specific data on this measure is no longer captured. We have therefore reported the previous year’s score of 1.

#### B5.16 Complaints Handling

The written complaints audit underwent some changes after WWS was disbanded in August 2011. WWS audited 25 complaints selected randomly on an annual basis. In agreement with WICS, we moved to a method of ongoing self-assessment for this measure, whereby 25 randomly selected complaints were audited under the same criteria on a quarterly basis. The average score recorded from the four quarterly periods was used to calculate the performance for this section. Specific data on this measure is no longer captured. We have therefore reported the previous year’s score of 1.

This audit no longer takes place as there is no ongoing OPA requirement.

### Lines B5.17-B5.24 - Service Issue Contacts – household customers

The impact of adverse weather conditions on our services caused a significant rise in customer service contacts. Over the course of the year there were 346,264 (**Lines B5.6 and B5.24**) service issue contacts received from household customers by our Customer Engagement Centre. This is a rise of almost 40,000 on the previous year.

The individual elements are outlined below.

#### B5.17 Phone Contacts

Phone Contacts increased from 288,063 last year to 320,254 this year, an increase of 32,191, or 11.17%.

#### B5.18 E-mail Contacts

E-mail Contacts increased from 19,882 last year to 22,746 this year, an increase of 2,864, or 14.40%.

#### B5.19 Social Media Contacts

Social Media Contacts have increased from 19,409 last year to 20,735 this year, an increase of 1,326, or 6.83%.

#### B5.20 Portal

Portal contact have increased from 31,657 last year to 37,390 this year, an increase of 5,733, or 18.11%.

#### B5.21 Total Contacts

This year saw an increase in the total number of contacts from 359,011 in AR21 to 401,125 in AR22, up 42,114 or 11.73%. This was across all customer channels but the majority of contacts were by telephone.

#### B5.22 Wanted Contact

Wanted Contact increased from 34,308 last year to 34,929 this year, an increase of 621, or 1.81%.

#### B5.23 Non-household Contacts

Non-Household Contacts increased from 19,063 last year to 19,932 this year, an increase of 869, or 4.56%.

#### B5.24 Total Service Issue Contacts (total 'unwanted' HH contacts)

This is the same as **Line** **B5.6** (see above). Lines B5.25-B5.30 - Household Customer Experience

#### B5.25 Customer experience survey – total

This decreased from 19,666 last year to 15,181 this year, a decrease of 4,485, or 22.81%.

#### B5.26 Customer experience survey – satisfied

This decreased from 18,502 last year to 14,026 this year, a decrease of 4,476, or 24.19%.

#### B5.27 No experience, no contact survey – total

The total decreased from 4,382 last year to 4,166 this year, a decrease of 216, or 4.92%.

#### B5.28 No experience, no contact survey – satisfied

This decreased from 4,149 last year to 3,893 this year, a decrease of 256, or 6.17%

#### B5.29 Experience, no contact survey – total

This increased from 1,307 last year to 1,370 this year, an increase of 63, or 4.82%

#### B5.30 Experience, no contact survey – satisfied

This increased from 1,038 last year to 1,102 this year, an increase of 64, or 6.16%

### Lines B5.31-B5.42 - Household Customer Experience Measure

#### B5.31 Household customer experience target (range)

In AR21 this would have been a fixed target score. This changed to a target range of 85.00-87.78 for AR22. For the purposes of the WICS information request we have established a baseline figure of 85, which is the lower range of the target.

#### B5.32 Household customer experience - total score

This is the same as **Line B5.1**.

The reported score in this line is the sum of lines B5.34 and B5.39. The confidence grade for this line is B3 reflecting the confidence grades for Line B5.34 and B5.39.

#### B5.33 Total connected properties at year end

The total is 2,607,784 for AR22. This represents an increase from the 2,579,933 reported in AR21 of 27,851. As in previous years we cannot calculate this number using the definition provided, as we cannot count connections to individual properties. As such this figure is the sum of **Lines A1.6 and A1.7**, which is the total number of properties (measured and unmeasured) connected to Water. Water is used as proxy for total connected properties as it has a higher number of connected properties compared to Wastewater

#### B5.34 hCEM quantitative score

This is 41.74 for AR22 and represents an increase from the 41.12 reported in AR21 of 0.62. The improvement to the score was driven by the Escalations element.

The confidence grade is A3 to reflect the confidence grade allocated to one of the component lines (B5.35 which is A3).

#### B5.35 Service issue contacts (points lost)

This is 5.53 for AR22 and represents an increase from 4.94 reported in AR21 of 0.59. As mentioned in **Line B5.6** this was mainly due to the events of Storm Arwen and the Daer incident.

#### B5.36 Escalations (points lost)

This is 1.23 for AR22. This represents a decrease of 1.34 from the 2.57 reported in AR21.

#### B5.37 Written complaints (points lost)

This is 1.50 for AR22 and represents an increase of 0.12 from the 1.38 reported in AR21. For further details refer to **Line B5.7**.

#### B5.38 Regulator upheld complaints (points lost)

This is 0.00 for AR22 and remains the same as AR21 levels.

#### B5.39 hCEM qualitative score

This is 44.35 for AR22. This represents a decrease of 0.59 from the 44.94 reported in AR21. The change to the score was driven by the Customer Experience survey element.

The confidence grade for this line is B2 to reflect the lowest confidence grade allocated to the component line B5.40.

#### B5.40 Customer experience survey (points lost)

This is 2.22 for AR22, which represents an increase of 0.49 from the 1.73 reported in 20/21.

The score reported in this line is calculated using the values reported in Lines B5.2, B5.25 and B5.26. All 4 lines have the same confidence grade, B2.

#### B5.41 No experience, no contact (points lost)

This is 1.14 for 21/22, which represents an increase of 0.21 from the 0.93 reported in 20/21.

The score reported in this line is calculated using the values reported in lines B5.3, B5.27 and B5.28 all of which have a confidence grade of A2. As a consequence the confidence grade for Line B5.41 is A2.

#### B5.42 Experience, no contact (points lost)

This is 2.28 for AR22, which represents a decrease of 0.12 from the 2.40 reported in 20/21.

The score reported in this line is calculated using the values reported in lines B5.4, B5.29 and B5.30. All have a confidence grading of A2. As a consequence the confidence grade for Line B5.42 is A2.

# Table B6 - Customer Service

## Introduction

The purpose of the Non-household Customer Experience Measures (nhCEM) is to capture the service levels delivered to non-household customers and provide a robust means of measuring the quality of, and tracking changes in, the service experience provided to non-household customers. Performances against a number of quantitative and qualitative indicators are combined to produce an Annual nhCEM Score out of 100

### Data sources and confidence grades

Data for this table is derived from Scottish Water’s corporate systems, the details can be found in the nhCEM Reporter’s Report.

### Data improvement programmes

There were no significant data improvement programmes this year.

### Assumptions used for forecast data

There are no forecasts in table B6.

## Commentary

It should be noted that this reporting year includes a weighting factor applied to the survey scores in the 1-4 bracket, but excludes data relating to developers, which has been moved to a dCEM calculation and is currently being trialled.

### Lines B6.1-B6.7 - Non-household CEM

#### B6.1 nhCEM overall score

This has decreased slightly from 87.36 to 87.26, a decrease of 0.10 points, or 0.11%.

#### B6.2 LP Experience Survey

This score increased from 95.58% last year to 96.48%, an increase of 0.9%. The number of surveys increased and there was a higher proportion of scores in the 5-7 satisfaction bracket.

The Wholesale Service Desk (WSD) team has done a lot of work in the last year on collating customer feedback including keeping in touch with LPs to encourage as high a response as possible. There were also minor updates throughout the year to email addresses, for example, to ensure that surveys were being sent to the right place.

#### B6.3 Business End User Survey

This score dropped from 93.00% last year to 90.61% this year. The number of returned surveys increased but the proportion of surveys in the 5-7 bracket decreased, which had the effect of driving down the satisfaction score.

The confidence grade for this line is B2, to reflect the confidence grades in B6.5, B6.25, B6.26 and B6.47.

#### B6.4 Service issue contacts (WSD & CSC)

These increased from 27,369 last year to 31,598 this year, an increase of 4,229 contacts, or 15.45%. This figure is brought forward from B6.17. The breakdown of this figure is included in the commentary below relating to Service Issue Contacts **Lines B6.8 to B6.16**.

The confidence grade for this line is A3.

#### B6.5 Formal complaints

These decreased from 176 last year to 143 this year. This represents a drop of 33 complaints, or 18.75%. The main areas that saw this reduction were Waste Water (-8), and Water Supply (-15). This figure is brought forward from B6.19.

#### B6.6 Escalations

These decreased from 163 last year to 131, a drop of 33 Escalations, or 19.63%. This figure is brought forward from B6.18.

#### B6.7 Regulatory complaints

There were 0 regulatory upheld complaints this year and this mirrors our performance from 20/21. This figure is brought forward from B6.20.

#### Lines B6.8-B6.17 - Service Issue Contacts - non-household customers

It should be noted that Service Issue Contacts were up this year compared to the previous year. The main reason for this was the impact of COVID-19 lockdown on businesses, particularly during the months of April and May 2020 in AR21. Service issue contacts were, on average, only 43% compared to the previous year (2019) during these months.

#### B6.8 Contacts from Licenced Providers (LPs) via Wholesale Desk and Portal - all calls

These contacts increased from 3,878 last year to 4,395 this year, an increase of 517, or 13.33%. Most of this difference occurred from April to June 2020 when there were fewer calls in AR21 due to lockdown.

#### B6.9 Contacts from Licenced Providers via Wholesale Desk and Portal - total emails

These contacts increased from 2,628 last year to 3,976 this year, an increase of 1,348, or 51.29%. There was a general increase in emails throughout the year averaging over 100 more each month compared to last year.

#### B6.10 Contacts from Licenced Providers via Wholesale Desk and Portal - total Portal

These contacts increased from 21,467 last year to 25,775 this year, an increase of 4,308, or 20.07%. Most of this increase happened in the first 6 months of the year and are linked to communications encouraging greater use of the Portal during lockdown.

#### B6.11 Contacts from Licenced Providers via Wholesale Desk and Portal - Bulk Uploads

These contacts decreased from 10,248 last year to 3,112 this year, a reduction of 7,136, or 69.63%. These fell dramatically during the first 6 months of the year and this is, in part, connected to the increase in Portal figures where Licensed Providers used the Portal rather than uploading in bulk.

#### B6.12 Contacts from Licenced Providers via Wholesale Desk and Portal - total wanted

These decreased from 25,217 last year to 20,775 this year, a reduction of 4,442, or 17.62%. This was mainly due to a reduction in Gap Site contacts, which were 5,510 higher in April to June 2020 at the peak of COVID-19 lockdown.

#### B6.13 Contacts from Licenced Providers via Wholesale Desk and Portal - contacts adjusted for permitted exclusions

These contacts, adjusted for permitted exclusions, increased from 13,004 last year to 16,483 this year, an increase of 3,479, or 26.75% (the reason for this is explained in the narrative to **Lines B6.8 to B6.12** above).

#### B6.14 Calls received through Customer Engagement Centre from Non household customers - all contacts

These contacts increased from 19,063 last year to 19.932 this year, an increase of 869 or 4.56%. Contacts increased in the first 3 months of the year compared to last year but then returned to a normal level for the rest of the year.

#### B6.15 Calls received through Customer Engagement Centre from Non household customers - wanted contacts

These contacts increased from 4,698 last year to 4,817 this year, an increase of 119, or 2.53%. Contacts increased in the first 3 months of the year compared to last year but then returned to a normal level for the rest of the year.

#### B6.16 Calls received through Customer Engagement Centre from Non household customers - contacts adjusted for permitted exclusions

These contacts increased from 14,365 last year to 15,115 this year, an increase of 750, or 5.22%. Contacts increased in the first 3 months of the year compared to last year but then returned to a normal level for the rest of the year.

#### B6.17 Non-household service issue contacts - Total unwanted contacts

This has been reported in **Line B6.4**.

The confidence grade for this line is A3.

### Lines B6.18-B6.26 - Non-Household Customer experience

#### B6.18 Escalations

This has been reported in **Line B6.6**.

#### B6.19 Formal complaints (Form G)

This has been reported in **Line B6.5**.

#### B6.20 Regulator upheld complaints

This has been reported in **Line B6.7**.

#### B6.21 LP Experience survey – total

This total increased from 882 last year to 1,478 this year, an increase of 596, or 67.57%. This increase is linked to COVID-19, with jobs increasing post-lockdown, and also communications to LPs about the importance of completing the survey.

The WSD team worked to secure customer feedback and keep in touch with LPs to encourage as high a response as possible during the year. This included work to update email addresses, for example, to ensure that surveys were going to the correct place.

#### B6.22 LP Experience survey – satisfied

This response increased from 843 last year to 1,426 this year, an increase of 583, or 69.16%. The increase is linked to COVID-19 with jobs increasing post lockdown, and also communications with LPs about the importance of completing the survey (as detailed in **Line B6.21**).

#### B6.23 Ease of service indicator line 1

Ease of service is not part of the nhCEM measure.

#### B6.24 Ease of service indicator line 2

Ease of service is not part of the nhCEM measure.

#### B6.25 Business End-User Experience Survey – total

This total increased from 800 last year to 927 this year, an increase of 127, or 15.86%. This is related to Business End User (BEU) direct contacts rather than septic tanks and is a result of the volume of BEU jobs increasing, especially in comparison to April-June 2020 when we were in lockdown.

#### B6.26 Business End-User Experience Survey – satisfied

(As **Line B6.25**). This increased from 744 last year to 840 this year, an increase of 96, or 12.90%. This is related to Business End User (BEU) direct contacts rather than septic tanks and is a result of the volume of BEU jobs increasing, especially in comparison to April-June 2020 when we were in lockdown.

### Lines B6.27-B6.38 - Developer CEM

Developer CEM is a new measure currently being trialled. There is no previous data to compare it with.

#### B6.27 Contacts from developers about water and wastewater connections – total

21,216 contacts from developers about water and wastewater connections were reported in the year. Contacts this year have remained consistent from month to month with a seasonal drop in December due to the holiday period.

#### B6.28 Contacts from developers about water and wastewater connections - excluded contacts (wanted contacts)

20,784 contacts were reported. Wanted contacts this year have lowered through the year before picking up again following the December holiday period.

#### B6.29 Contacts from developers about water and wastewater connections - contacts adjusted for permitted exclusions

432 contacts were reported this year. Unwanted contacts this year were influenced by the number of excluded contacts, with the total contacts remaining consistent.

#### B6.30 Development Services escalations

This year we had a total of 24 escalations. The main drivers of the escalations were communication issues.

#### B6.31 Development Services Formal complaints

This year we only had two formal complaints.

#### B6.32 Development Services Regulator upheld complaints

In AR22 we had 0 Regulator upheld complaints.

#### B6.33 Single house connection experience survey – total

In AR22 we had 510 survey returns.

#### B6.34 Single house connection experience survey – satisfied

In AR22 we had 410 satisfied returns. With just under 70% giving top score.

#### B6.35 (developer) Ease of service indicator line 1

In AR22 we had 586 survey returns.

#### B6.36 (developer) Ease of service indicator line 2

In AR22 we had 449 satisfied returns.

#### B6.37 Developer/Connections Experience survey- total

In AR22 we had 283 survey returns.

#### B6.38 Developer/Connections Experience survey- satisfied

In AR22 we had 219 satisfied returns.

### Lines B6.39-B6.50 - Non-household customer experience measure score

#### B6.39 Non-household customer experience target

In AR21 this would have been a fixed-target score. This has been changed to a target range of 85.4-88.66 for AR22. For the purposes of the WICS information request we have established a baseline figure of 85.4, which is the lower range of the target.

#### B6.40 Non-household customer experience - total score

This has been reported under Line B6.1.

The confidence grade for this line is B3, reflective of the confidence grade of the component lines B6.43 and B6.47.

#### B6.41 Connected non-household properties

The number of such properties this year is 154,822. This has increased from the 152,916 reported last year. The increase is 1,906, or 1.25%.

#### B6.42 nhCEM quantitative score

The nhCEM quantitative score has increased this year to 45.07 from 44.63 reported in 20/21. This is an increase of 0.44 points, or 0.99%.

The reported score in this line is calculated using the values reported in Lines B6.43, B6.44, B6.45 and B6.46. The confidence score for line B6.43 is A3 reflecting the confidence grade of the component line B6.16 (A3).

#### B6.43 Service issue contacts (points lost)

Points lost has increased to 2.13 from 1.84 reported in 20/21. This represents an increase of 0.29 points, or 15.76%.

#### B6.44 Escalations from Licensed Providers (points lost)

The escalations points lost has decreased this year to 0.88 from 1.10 reported in 20/21. This is a reduction of 0.22 points, or 20.00%.

#### B6.45 Formal non-household customer complaints (points lost)

This has decreased to 1.92 from 2.37 reported in 20/21 and represents a reduction of 0.45 points, or 18.99%.

#### B6.46 Regulator upheld complaints (points lost)

The number of points lost was 0.00 which mirrored last year’s performance.

#### B6.47 nhCEM qualitative score

This has deceased in 21/22 to 42.20 from the 42.74 reported in 20/21, a decrease of 0.54, or 1.26%. The decrease is due to the number of business End-user Experience points lost increasing, which was marginally offset by improved performance in the LP Experience Survey.

#### B6.48 LP Experience survey (points lost)

This decreased to 1.68 from 2.78 reported in 20/21. This is a reduction of 1.10 points, or 39.57%. For more detail on this refer to **Line B6.2**.

#### B6.49 Ease of service indicator (points lost)

This indicator is not an element of nhCEM.

#### B6.50 Business end-user experience (points lost)

This has increased in the reporting year to 6.12 from 4.48 in 20/21 and represents an increase of 1.64 points, or 36.61%. For more detail on this refer to **Line B6.3**.

### Lines B6.51-B6.62 - Developer customer experience measure score

The purpose of the Developer Customer Experience measure (dCEM) is to inform and drive improvements in service and satisfaction to all those in the Development Community (which includes customers who are making connections to the network for both household and non-household properties) in Scotland. Performances against a number of quantitative and qualitative indicators are combined to produce an Annual dCEM Score out of 100.

Developer CEM is a new measure currently being trialled. There is no previous data to compare it with.

#### B6.51 Developer customer experience target

This measure is being trialled this year and no target range was set.

#### B6.52 Developer customer experience - total score

This score was 86.92. It was driven mainly by performance in the quantitative elements with Service Issue Contacts, Complaints and Upheld Regulator complaints having a minor impact on the score.

The confidence grade for this line is B3, reflecting the fact that the this line is calculated using the scores reported in Line B6.54 (dCEM Quantitative Score – A1) and B6.59 (dCEM Qualitative Score – B1).

#### B6.53 Developer Connected properties

The number of Developer Connected properties for AR22 was 45,312.

#### B6.54 Developer CEM quantitative score

In AR22 the developer CEM quantitative score was 49.26. This was driven mainly by performance in Service Issue Contacts, Complaints and Upheld Regulator complaints having a minor impact on the score.

#### B6.55 Development services service issue contacts (points lost)

In AR22 the points lost for Development Services – Service Issue Contacts was 0.10.

#### B6.56 Development Services escalations (points lost)

In AR22 the points lost for Development Services – escalations were 0.55.

#### B6.57 Development Services formal complaints (points lost)

In AR22 the points lost for Development Services – formal complaints were 0.09.

#### B6.58 Development Services Regulator upheld complaints (points lost)

In AR22 the points lost for Development Services – formal complaints were 0.00.

#### B6.59 Developer CEM qualitative score

In AR22 the developer CEM qualitative score was 37.67. This was driven mainly by performance in both of the qualitative elements.

#### B6.60 Single house connection experience survey

The single house connection experience survey is combined with the development experience survey and a combined score is calculated. **Line B6.62** contains this combined score.

#### B6.61 Ease of service indicator

In AR22 the points for ease of service indicator were 6.34.

#### B6.62 Development experience survey

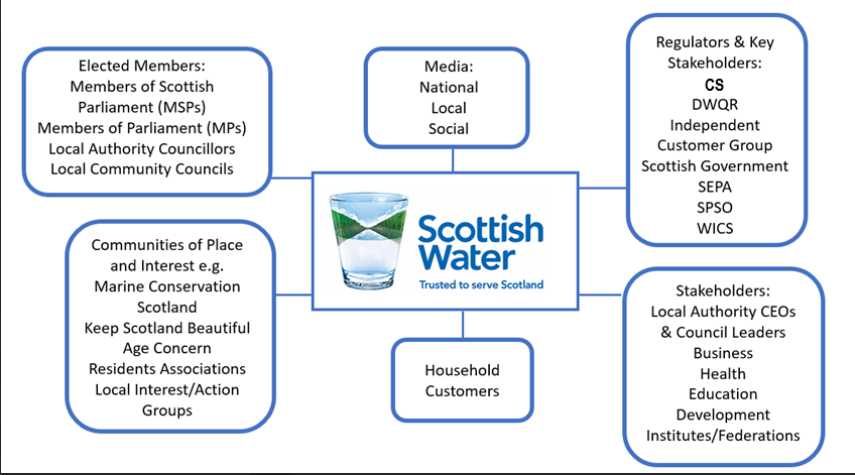
In AR22 the points for development experience survey were 5.99.

# Table B6a - Customer Service

## Introduction

The purpose of sCEM is to provide an overall measure of Scottish Water’s reputation as perceived by its stakeholders. It includes quantitative and qualitative components and stakeholder groups representing communities of place and interest including media, political, community representatives and customers as illustrated in Figure 1 below:

Figure 1: stakeholders groups included in SCEM



Stakeholder CEM is a new measure currently in being trialled therefore no comparison with previous years can be made.

### Data sources and confidence grades

Data for this tables are derived from Scottish Water’s corporate systems.

### Data improvement programmes

There were no significant data improvement programmes in 2021-221.

### Assumptions used for forecast data

There are no forecast data for table B6a.

## Commentary

#### B6A.1 sCEM overall score

The sCEM overall score was 76.77. The quantitative score comprised 39.61, or 51.59%, of the points; and the qualitative score comprised 37.17, or 48.41%. This is brought forward from **Line B6A.12**.

#### B6A.2 Stakeholder contacts Received

In AR22 we received 1,541 Stakeholder contacts.

#### B6A.3 Stakeholder enquiries not responded to / Deadline not met

In AR22 we received eight stakeholder enquiries not responded to/deadline not met contacts.

#### B6A.4 Stakeholder escalated / Formal Complaints

In AR22 we received 0 stakeholder escalated/formal complaints.

#### B6A.5 Scottish Government/ Regulator Upheld Stakeholder complaints

In AR22 we received 0 Scottish Government/Regulator Upheld Stakeholder complaints.

#### B6A.6 Monthly perception survey – Contact

In AR22 contact was reported as 80.56%.

#### B6A.7 Monthly perception survey - No Contact

In AR22 no contact was reported as 88.97%.

#### B6A.8 Monthly customer perception survey - No Experience No Contact (hCEM)

This is also reported in **Line B5.3**. No experience no contact decreased from 94.68% last year to 93.46% this year, a decrease of 1.23%.

#### B6A.9 MSP Survey (Annual Perception Survey)

In AR22 the MSP Survey (Annual Perception Survey) was 50.00%

#### B6A.10 Local Government Leadership Survey (Annual Perception Survey)

In AR22 the Local Government Leadership Survey (Annual Perception Survey) was 49.00%.

### Lines B6A.11-B6A.23 - Stakeholder customer experience measure score

#### B6A.11 Stakeholder customer experience target

The target range for AR22 was 77.5-87.5.

#### B6A.12 Stakeholder customer experience - total score

This is reported in Line B6A.1.

The score reported in this line is calculated using the values reported in lines B6A.18 (Stakeholder CEM qualitative score - B2) and B6A.13 (Stakeholder CEM quantitative score - A1). The confidence grade for this line is B2 reflecting the confidence grades for the lines used in the calculations.

#### B6A.13 Stakeholder CEM quantitative score

In AR22 the score was 39.61. This was driven mainly by performance in the Stakeholder Contacts Received category which lost 10.31 points.

The confidence grade for this line is A1.

#### B6A.14 Stakeholder contacts received

In AR22 points lost were 10.31.

#### B6A.15 Stakeholder contacts not responded to/deadline not met

In AR22 points lost were 0.08.

### B6A.16 Stakeholder escalated/formal complaints

In AR22 the points lost were 0.

#### B6A.17 Regulator upheld stakeholder complaints

In AR22 the points lost were 0.

#### B6A.18 Stakeholder CEM qualitative score (points lost)

In AR22 the score was 37.17. This was driven mainly by performance across all the elements with the exception of the monthly customer perception survey – No Experience No Contact (hCEM),which lost the least number of points at 1.35.

The confidence grade for this line is B2.

#### B6A.19 Monthly perception survey - 'contact' (points lost)

In AR22 contact points lost were 2.75.

The confidence grade for this line is B2.

#### B6A.20 Monthly perception survey - 'no contact' (points lost)

In AR22 points lost were 2.84.

The confidence grade for this line is B2.

#### B6A.21 Monthly You Gov survey - 'no experience, no contact' household customers (points lost)

In AR22 points lost were 1.35.

The confidence grade for this line is B2.

#### B6A.22 MSP annual perception survey (points lost)

In AR22 points lost were 2.92.

The confidence grade for this line is B2.

#### B6A.23 Local Government Leadership annual perception survey (points lost)

In AR22 points lost were 2.98.

The confidence grade for this line is B2.

# Table B7 - Customer Care – Service Standards Performance

## Introduction

From 1st April 2015 Guaranteed Service Standards (GSS) and Price Promise merged to a single set of standards called “Our Service Standards”.

If Scottish Water fails to comply with Our Service Standards set out in the Code of Practice, the customer is entitled to a payment. Most of the payments are automatically paid when Scottish Water identifies non-compliance and a small number require our customers to make a claim for payment.

### Data sources and confidence grades

Processes and procedures are in place which allow the Service Standards team to strictly monitor performance on all Scottish Water’s Service Standards. Information is accurately captured, and reports are produced that identify potential non-compliance with our standards. Each notified failure is fully investigated with the assistance of the relevant parties within the business and, if it is established that a failure has occurred, a payment will be issued to the customer.

Where there were no failures against a standard, we have applied N/A (non-applicable) as the confidence grade to the lines relating to payments against that standard.

Confidence grades relating to payments made are A1.

Due to COVID-19 office access has been restricted therefore fewer cheque runs are being carried out, which has resulted in a slight delay in these payments being processed. We have also noted a delay in customers providing bank details.

This team also has responsibility for processing all ex-gratia claims received via a public liability claim against Scottish Water.

The Service Standards team are fully accredited and operate to ISO9001 standard.

### Data improvement programmes

There were no significant data improvement programmes in 2021-221.

### Assumptions used for forecast data

There are no forecasts in Table B7.

## Commentary

### Lines B7.1-B7.4 Planned Interruptions

Planned interruptions warn customers 48 hours in advance and supply is restored within time given. Payment is made if Scottish Water fails to warn customers or supply is not restored at the time we have given.

#### B7.1 Number of Service Standards failure payments paid automatically (planned interruptions)

This was 0 in AR22, which mirrored the performance in AR21.

#### B7.2 Number of Service Standards failure payments claimed (planned interruptions)

Compared to the previous reporting year there was a decrease in the number of claims made against Scottish Water in relation to Interruption to Supply i.e. 12 claims compared to 24 in the previous year.

#### B7.3 Total number of Service Standards failure payments made (planned interruptions)

In AR22 this was 12 which represents a decrease of 12 from the 24 reported in 2020-21.

#### B7.4 Total amount paid out for Service Standards failure (planned interruptions)

The total amount paid out in AR22 was £390.00. This is a decrease of £440 on the £830.00 paid last year.

### Lines B7.5- B7.12 - Unplanned Interruptions - (burst main and so on) restore within 12 hours (48 hours for a large main supplying a large area)

#### B7.5 Number of Service Standards failure payments paid automatically (unplanned interruptions)

The Number of payments paid automatically was 0 in AR22, which mirrored the performance of last year.

#### B7.6 Number of Service Standards failure payments claimed (unplanned interruptions)

The number of payments claimed) was 58 in AR22, an increase of 42 from the 16 reported last year.

#### B7.7 Number of Service Standards failure payments claimed for two interruptions per year

This new line to the annual return and reporting will be developed to provide this information in the future. (Price Promise).

#### B7.8 Number of Service Standards failure payments claimed for three interruptions per year

This new line to the annual return and reporting will be developed to provide this information in the future. (Price Promise).

#### B7.9 Number of Service Standards failure payments claimed for four interruptions per year

This new line to the annual return and reporting will be developed to provide this information in the future. (Price Promise).

#### B7.10 Number of Service Standards failure payments claimed for five interruptions per year

This new line to the annual return and reporting will be developed to provide this information in the future. (Price Promise).

#### B7.11 Total number of Service Standards failure payments made (unplanned interruptions)

The number of payments claimed) was 58 in AR22, an increase of 42 from the 16 reported in AR21. (see **Line B7.6**).

#### B7.12 Total amount paid out for Service Standards failure (unplanned interruptions)

The total amount paid in AR22 was £2,275.00, which is an increase of £1,705 on the £570.00 paid last year.

### Lines B7.13-B7.20 - Internal wastewater flooding

#### B7.13 Number of payments to domestic properties for internal flooding from sewers due to being on the register

The number of payments made in AR22 is 124, compared to 165 in AR21.

#### B7.14 Number of payments to domestic properties for internal flooding from sewers due to not being on the register

The number of payments was 111 in AR22, compared to 113 in AR21, a decrease of 2.

#### B7.15 Total amount paid to domestic properties for internal flooding from sewers due to being on the register

Total amount paid to domestic properties is £36,000 compared to £32,357 last year.

#### B7.16 Total amount paid to domestic properties for internal flooding from sewers due to not being on the register

The total amount paid was £30,138.26 in AR22, compared to £30,043.00 in AR21, an increase of £95.26.

#### B7.17 Number of payments to non-domestic properties for internal flooding from sewers due to being on the register

This is a new line to the annual return. (Price Promise). However, these payments are not applicable to non-domestic customers and is therefore reported as N/A.

#### B7.18 Number of payments to non-domestic properties for internal flooding from sewers due to not being on the register

The number of payments to non-domestic properties for internal flooding from sewers due to not being on the register is 110 in AR22, compared to 66 in AR21, an increase 44.

#### B7.19 Total amount paid to non- domestic properties for internal flooding from sewers due to being on the register

This is a new line in the annual return. (Price Promise). However, these payments are not applicable to non-domestic customers and is therefore reported as N/A.

#### B7.20 Total amount paid to non-domestic properties for internal flooding from sewers due to not being on the register

The total amount paid was £78,016.26 in AR22, compared to £39,618.00 in AR21, an increase of £38,398.26.

### Lines B7.21-B7.24 - External wastewater flooding - Caused by wastewater from our sewers

#### B7.21 Number of payments to domestic properties for external flooding from sewers

In AR22 we made 8 payments to domestic properties for external flooding from sewers, this is the same number as AR21.

#### B7.22 Total amount paid to domestic properties for external flooding from sewers

In AR22 we paid £1,284.30 in payments to domestic properties for external flooding from sewers, compared to £1,360 in AR21.

#### B7.23 Number of payments to non-domestic properties for external flooding from sewers

This is a new line in the annual return. (Price Promise). However, these payments are not applicable to non-domestic customers.

#### B7.24 Total amount paid to non-domestic properties for external flooding from sewers

This is a new line in the annual return. (Price Promise). However, these payments are not applicable to non-domestic customers.

### Lines B7.25-B7.29 - Respond to questions about your bill and changing your payment methods - respond within 5 working days

There were no failures reported against this standard.

### Lines B7.30-B7.34 - Written response to a formal complaint - respond within 5 working days

There were no failures reported against this standard.

### Lines B7.35-B7.42 - Appointments - keeping appointments made more than 24 hours in advance

Due to reporting issues the figures below are for part-year only (from April to December 2021). This was caused by technical issues between corporate systems. Scottish Water installed a new scheduling system during 2021/22. The reports which detailed the appointment times are no longer available. New reporting approaches are being investigated by an internal working group with the view to new, quality checked reporting of appointments being available in 23/24.

#### B7.35 Number of appointments

The number of appointments was 2,487 in 21/22. The confidence grade for this line is B3.

#### B7.36 % of appointments made which are kept

The % of appointments made was 98.63% in AR22. The confidence grade for this line is B3.

#### B7.37 Number of two-hour time banded appointments made

The number of appointments was 2,487 in AR22. The confidence grade for this line is B3.

#### B7.38 % of two-hour time banded appointments made which are kept

The % of appointments made was 98.63% in AR22. The confidence grade for this line is B3.

#### B7.39 Number of Service Standards failure payments paid automatically (keeping appointments)

The number of payments paid automatically in AR22 was 32, an increase of 24 from 8 in 2020-2021.

#### B7.40 Number of payments made from claims for failure (keeping appointments)

The number of payments made in AR22 was 10. This increased from 1 in AR21, an increase of 9.

#### B7.41 Total number of Service Standards failure payments made (keeping appointments)

The total number of service standards failure payments made in AR22 was 42. This has increased from 9 in AR21, an increase of 33. In AR21 the number was exceptionally low as we offered fewer appointments due to COVID-19, rather than AR 22 being particularly high.

#### B7.42 Total amount paid out for Service Standards failure (keeping appointments)

The total amount paid out for service standards failure in AR22 was £1,250. This has increased from £270 in AR21, an increase of £980.

### Lines B7.43-B7.47 - Water in gas pipes - give you a call within 2 hours of reporting the fault to give details of what happens next

There were no failures reported against this standard.

### Lines B7.48-B7.52 - Water meters - applications. We will let you know the outcome within 10 working days of your application

There were no failures reported against this standard.

### Lines B7.53-B7.58 - Water pressure - we will tell you the outcome of our investigations within 5 working days

#### B7.53 Number of payments made within Service Standards period due to being on the register

The number of payments for AR22 is 48 compared to 19 in AR21. This is due to more customers being added to the low-pressure register. The confidence grade for this line is A1.

#### B7.54 Number not dealt with within Service Standards period

The number not dealt with within Service Standards period was 0 in AR22, this mirrored the performance from 2020-21*.*

#### B7.55 Number of payments for failure to respond (automatic)

The number of payments for failure to respond (automatic) was 0 in AR22, this mirrored the performance in 2020-21.

#### B7.56 Number of payments made from claims for failure to respond

The number of payments made from claims for failure to respond was 0 in AR22, this reduced from 2 in 2020-21.

#### B7.57 Total number of payments for failure to respond

The total number of payments for failure to respond was 0 in AR22, this reduced from 2 in 2020-21.

#### B7.58 Total amount paid for Service Standards failure

The total amount paid for Service Standards failure was £12,517.45 in AR22, compared to £4,489.44 in AR21. The confidence grade for this line is A1.

### Lines B7.59-B7.62 - Water quality - affecting the water quality where a 'boil water' or do not use notice' is in place for more than 3 months

There were no failures reported against this standard.

#### B7.59 Number of restrictions (e.g. boil notices, do not use notices)

The number of restrictions (e.g. boil notices, do not use notices) was 0 in AR22, this mirrors the performance in 2020-21.

#### B7.60 Number of restrictions (e.g. boil notices, do not use notices) in place for more than 3 months

The number of restrictions (e.g. boil notices, do not use notices) in place for more than 3 months was 0 in AR22, this mirrors the performance in 2020-21.

#### B7.61 Number of Service Standards failure payments made from claims (water quality)

The number of service standards failure payments made from claims (water quality) was 0 in AR22, this mirrors the performance in 2020-21.

#### B7.62 Total amount paid out for failure (water quality)

The total amount paid out for failure (water quality) was £0.00 in AR22, this mirrors the performance in 2020-21.

### Lines B7.63-B7.68 - Connection Services - where evidence confirms that we have caused a delay

There were no failures reported against this standard.

#### B7.63 Number not dealt within the Service Standards period (≤32mm outside diameter pipe)

The number not dealt within the Service Standards period (≤32mm outside diameter pipe) was 0 in AR22, this mirrors the performance in 2020-21.

#### B7.64 Number not dealt within the Service Standards period (>32mm outside diameter pipe)

The number not dealt within the Service Standards period (>32mm outside diameter pipe) was 0 in AR22, this mirrors the performance in 2020-21.

#### B7.65 Number of payments made from claims for failure to respond (≤32mm outside diameter pipe)

The number of payments made from claims for failure to respond (≤32mm outside diameter pipe) was 0 in AR22, this mirrors the performance in 2020-21.

#### B7.66 Number of payments made from claims for failure to respond (>32mm outside diameter pipe)

The number of payments made from claims for failure to respond (>32mm outside diameter pipe) was 0 in AR22, this mirrors the performance in 2020-21.

#### B7.67 Total number of payments made from claims for failure to respond

The total number of payments made from claims for failure to respond was 0 in AR22, this mirrors the performance in 2020-21.

#### B7.68 Total amount paid for Service Standards failure

The total amount paid for Service Standards failure was 0 in AR22, this mirrors the performance in 2020-21.

### Lines B7.69-B7.70 - Ex Gratia Payments Made

On receipt of a claim, Scottish Water fully investigates the details of the claim with the assistance of the relevant parties. If we establish that a failure has occurred, an offer of ex-gratia may be made to the customer. This payment is not considered as an admission of liability by Scottish Water, and this does not affect the claimant’s legal rights.

#### B7.69 Total number of ex-gratia payments made

The total number of ex-gratia payments made was in AR22 was 2,405 and includes 2,020 payments offered to customers following the impacts on service of Storm Arwen (1,966 payments) and Storms Malick and Corrie (45 payments). The storm-related payments were made following Scottish Water’s decision to waive the exceptional weather clause on our service standards. This has increased from the 312 in 2020-21 due to payments for pressure issues and chokes in sewers.

#### B7.70 Total amount paid out in ex-gratia payments

The total amount paid out in ex-gratia payments in AR22 was £228,122.77. This has increased from the £61,271.00 in 2020-21, an increase of £166,851.77. This was due to the impacts of Storms Arwen (£139,905.00) Malik and Corrie (£2,340.00), in addition to increases in payments for pressure issues and chokes in sewers.

### Lines B7.71-B7.75 - Major Incidents - A) Failure to provide information

There were no failures reported against this standard.

### Lines B7.76-B7.80 - Major Incidents - B) Failure to provide alternative supplies

There were no failures against this standard, however we proactively offered the payment to customers. In particular:

* November 2021 Storm Arwen - we proactively contacted the 5,446 household customers and 166 business customers impacted offering a payment in recognition of loss of services for over 24 hours as a result of electrical failures. 1,966 payments totalling £139,905.00 have been made to date and journaled to the incident work order.
* January 2022 Storms Malik and Corrie - we proactively contacted the 64 household customers and 4 business customers impacted, offering a payment in recognition of loss of services for over 24 hours as a result of electrical failures. 45 payments totalling £2,340.00 have been made to date and journaled to the incident work order.

These payments were due to the storm's impact on customers services over a prolonged period. On this occasion Scottish Water made a decision to wave the exceptional weather clause featured in our Service Standards. These are not defined as service standards and were paid from the storm incident code as an exceptional ex gratia payment to customers. These payments are included in the overall ex-gratia payment levels in Lines B7.69 and B7.70.

# Table B8 - Other Service Indicators – Water & Sewerage Service

## Introduction

The majority of lines reported in this table are repeated from other tables. The data derivations, observations and grades are discussed in their relevant table comments sections and referenced in this section, with limited summaries below.

The Distribution Input and Leakage components of this table, reported in **Lines B8.9 to B8.13**, are from Table A2 **Lines A2.6 to A2.21** and **Lines A2.23 to A2.26**.

### Data improvement programmes

The methodology for identifying and reporting burst data was revised and improved during 2021-22. The numbers reported for this return are derived from the approach in the methodology documentation dated February 2022 and is outlined in the commentary for Table E6, **Line E6.16**: Total Length of Mains, and **Line E6.19**: Water Mains Bursts; the base numbers used to derive the number for this line.

### Assumptions used for forecasted data

There are no forecasts in Table B8 except for Leakage.

## Commentary

### Line B8.1 - Water service – distribution

#### B8.1 Mains bursts per 1000 km

Reported performance of 137 bursts/1,000km was calculated from water mains bursts (6,695), and the total mains length of 48,945.39km.

The significant reduction in reported bursts (reduced 22% from AR21 to 6,695) in 2021-22, may be due to a combination of the revised methodology (and thereby better quality of the burst data) and milder weather in January and February 2021 compared to last year.

### Lines B8.2-B8.8 - Sewerage service

The numbers reported for this section are derived from the approach outlined in the commentary for Table E7. For reporting purposes, we include all cases where the pipe is damaged, and a repair has been necessary and rising mains are included in the reported numbers.

#### B8.2 Total number of sewer collapses

In this category Scottish Water reports as a “collapse” all cases where a sewer is damaged and a repair has been necessary. The WICS definition for this line states ‘All third-party damage should be excluded where costs are potentially (rather than actually) recovered from a third party’.

The number of reported collapses increased from 1,355 in AR21 to 1,434 in AR22 (1,430 gravity sewer failures and 4 rising main failures); a 5.83% increase.

#### B8.3 Sewer collapses per 1000 km

The reported performance of 26.75 sewer collapses/1,000km was calculated from the number of sewer collapses (1,434) divided by the total length of sewer (53,601.905km/1000).

#### B8.4 Number of unsatisfactory intermittent discharges

The number of UIDs increased from 649 in 2020-21 to 681 in AR22 which is an increase of 32 as a result of better information from studies which recently concluded.

#### B8.5 Number of intermittent discharges

This line reports the number of Scottish Water’s Intermittent Discharges. It includes emergency overflows at pumping stations and combined sewer overflows at wastewater treatment works.

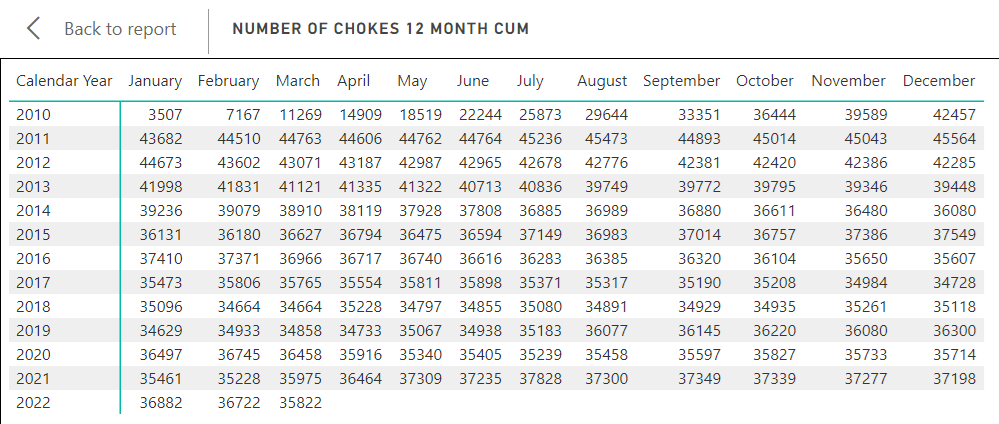
#### B8.6 Percentage of unsatisfactory intermittent discharges

**Line B8.6** is a calculated percentage line; the Number of Unsatisfactory Intermittent Discharges(**Line B8.4**) divided byNumber of Intermittent Discharges (**Line B8.5**).

### Lines B8.7 & B.8.8 Sewer Blockages

The data for this line is sourced from *Dynamics* through two advanced finds (one for cases and one for appointments/field tasks), which are merged to provide the reported data. The number of blockages (chokes) for 2021/22 is 35,822, compared to 35,975 in 2020/21 (see Table 23 below). It is not possible to forecast this data.

Table 23: Blockages (choke) report since 2010



### Lines B8.9-B.13 – Leakage

#### B8.9 Leakage

Total leakage MLE (post adjustment) as a percentage of Distribution Input (DI) is at 25% and was also at 25% the previous year.

#### B8.10 Total Leakage (post-MLE Adjustment)

Scottish Water reports MLE leakage of 458.39 Ml/d for AR22 (rounded to 459 in the WICS information request). The AR22 leakage value is 4.27 Ml/d lower than the 462.66 Ml/d at AR21 on a like-for-like basis (Table 24).

Table 24: Total leakage post MLE comparison

| Report Year | Top Down Leakage  (Ml/d) | Bottom Up Leakage (Ml/d) | MLE Leakage (Ml/d) |
| --- | --- | --- | --- |
| AR11 | 757 | 693 | 699 |
| AR12 | 661 | 617 | 629 |
| AR13 | 617 | 561 | 575 |
| AR14 | 608 | 553 | 566 |
| AR15 | 590 | 531 | 544 |
| AR16 | 531 | 492 | 500 |
| AR17 | 559 | 480 | 495 |
| AR18 | 543 | 480 | 492 |
| AR19 | 472 | 482 | 492 |
| AR20 | 454 | 467 | 465 |
| AR21 | 426 | 471 | 463 |
| AR22 | 431 | 464 | 459 |

#### B8.11 Net Distribution input (DI) treated water (water put into supply)

AR21 saw a large increase in DI of 54.82 Ml/d (to 1824.53 Ml/d) due to changing patterns of domestic use in relation to COVID-19 restrictions and winter weather events. In AR22 the DI has increased again. Domestic patterns remain higher with people continuing to work from home while non-domestic use has started to return to pre pandemic levels. Through AR22 we also experienced very high peak demands due to tourism and warm weather demand. We continue to monitor this position closely to understand the longer-term impacts.

At AR22, 3.73% of data was estimated or constant which is slightly up from 2.52% at AR21. However, this is still within a range of 1% to 5% over the past 12 years. Manually read data accounts for 1.72% of DI (down from 3.66% at AR21) with 93.98% based on telemetry data (AR21 93.82%).

No new meters were installed during the year, and 6 meters were replaced.

#### B8.12 Leakage target

The OPA target range is 447 to 462 Ml/d. Scottish Water uses a spot target of 459 Ml/d for AR22 to allow the calculation of **Line B8.13**.

#### B8.13 Leakage performance against the target

Scottish Water reports MLE leakage of 458.39 Ml/d for 2021/22 (rounded to 459 for the WICS Information request), which is 0.61 Ml/d (-0.13%) below the OPA target of 459 Ml/d for AR22. This year there was another reduction in leakage, which contributed to the year-on-year reduction achieved since 2006.

# Table B9, B9a – B9f – SoSI Summary

## Introduction

This is the first reported year of the SR21 Investment Period, and the first in which Security of Supply Index (SoSI) is not a component part of OPA. The previous Planned Target of 91 SoSI points is still described in Table B9, although this (and the resulting translation into OPA) is now purely for comparative purposes. The Supply Demand Balance (SDB) methodology used to generate SoSI scores has not changed, although numerous improvements made to data and modelling capability have enabled perhaps the largest revision of this investment needs planning tool in recent years.

Water Available for Supply (WASI) values that were previously reported in Table G3 are now included in Table B9 and directly calculated from the SoSI data.

Along with the usual raft of individual data updates that would be expected in-year to keep the SDB a relevant and useful model, a much larger review of our Water Resource Zone (WRZ) composition was undertaken. This review has taken 8 existing WRZs and reallocated their component Water Operational Areas (WOA) into a new and re-organised Hydraulic Structure (the logical relationships between WRZs and their WOAs) of 14 entirely new WRZs.

Recent improvements in WOA resolution component data availability and model capability have enabled these changes, which we believe are now a much better reflection of the operational reality of the water supply systems. In doing so, an improved understanding of supply risk has emerged in these WRZs, which has a resultant impact on SoSI.

To summarise, the various updates applied for AR22 are:

* Rezoning of 8 WRZs into 14 new WRZs, giving a new total of 191 operational WRZ
* Changes to Yield values in specific Water Resource Zones arising from hydrology investigations
* Updates to Peak Factors following a demand led review of all operational WTW and WRZ
* Update CAR License abstraction volumes
* Updates to some WTW capacity constraints following improved understanding or operational capability
* Update to Outage for the Fife WRZ

A more detailed breakdown of changes introduced by the rezoning exercise are described in Appendix 3.

## Commentary

### SOSI Summary

Table B9 is a new summary table linked to the daughter Tables B9a to B9f, incorporating the prior OPA scoring mechanisms for SoSI. Historic Tables B9a to B9c have been replaced by B9a to B9f, and these cover a greater range of Level of Service intervals than was previously possible.

Table B9a: Planned Level of Service (LoS) and Table B9b: Critical Period Level of Service have been completed as for previous years for the 1 in 40-year LoS but additionally Tables B9c and B9d are populated with equivalent data for the 1 in 100-year LoS. Tables B9e and B9f (1 in 150-year LoS), as agreed with WICS, have not been populated for this year’s submission.

Most analysis and comparison described in this commentary, unless otherwise stated, will focus on the 1 in 40-year service interval as this has the most comparative value against previous years.

For AR22:

* The Dry Year Annual Average (DYAA) demand scenario score (Table B9a) is reported at 69 points (69.895 unrounded), a reduction of -22 points from last year’s reported position of 92. This score is now within SoSI Band C performance (50 to 89 points), indicating significant deficits against target headroom.
* The Critical Period Score (Table B9b) is 51 points; a decrease of -33 points from AR21 reported position of 84.

Charts showing the top ten SoSI impacts by individual Water Resource Zone, for both the DYAA and DYC scenarios, are available in Appendix 4.

### Demand and Population Updates

Table B9a - Annual Average Demand (Distribution Input) increased by 25.4 Ml/d in AR22 to 1,836.95 Ml/d from last year’s leakage normalised annual average of 1,811.54 Ml/d. Basing this change instead on the default un-normalised Water Balance reported DI, this year’s demand has increased by 12.43 ML/d from a value of 1,824.53 ML/d.

A process of demand normalisation (as in AR21) was not undertaken this year despite reported demand being higher. The justification for normalisation in AR21 was specifically the unusually high rate of winter leakage. The demand data inclusive of this excess leakage was not an ideal base year data set for use in the Supply Demand Balance model and Demand Forecast. In the AR22 reporting year there has not been a similar event which was significant enough to justify repeating this process.

The impact on SoSI from this demand change in isolation (as compared to equivalent AR21 volumes) is a loss of 2.77 points.

Population data for AR22 displays an increase of 13,010 people in total, from a population of 5,315,061 to 5,328,071. This is an overall change of 0.24%.

### Dry Year Critical (DYC) SOSI

Table B9b - The Dry Year Critical score for AR22 is 51 points (51.769 unrounded), a loss of over 31 points from the AR21 position of 83.

The explanations for these changes align largely with the DYAA analysis, the only difference in the DYC scenario being that Critical Demand includes a Peak Demand uplift in zones where the Critical Period is assessed as ‘Peak’. Of the 191 operational WRZs, 105 of them include peak demand uplifts in the Critical Scenario.

All the individual Peak Factors for WTWs and WRZs (additionally where >1 WTW supplies a WRZ) have been reassessed during AR22 using up-to-date daily demand series’ stretching back to 2014. Of 92 changes applied to WRZs in total, 40 Peak Factors have been updated in zones where the Critical Period is also Peak.

### WASI and 1 in 100-year loss

The Water Available for Supply Index (WASI) was previously based on the percentage population in surplus WRZs for two different service levels, 1 in 40-years and 1 in 100-years, using the Dry Year Critical (DYC) demand scenario. Although the new layout enables Yield Levels of Service intervals of 1 in 40, 100, and 150 years to be reported, at this stage it is our intention to report only the 1 in 40 and 1 in 100 intervals.

For AR22 the 1 in 40 and 1 in 100 values are as follows in Table 25:

Table 25: The history of reported WASI results formerly from AR Table G3.

|  |  |  |
| --- | --- | --- |
| **Year** | **1 in 40** | **1 in 100** |
| AR14 | 96.50% | 77.60% |
| AR15 | 88.90% | 71.50% |
| AR16 | 87.30% | 77.30% |
| AR17 | 86.80% | 82.20% |
| AR18 | 86.70% | 70.10% |
| AR19 | 86.70% | 71.40% |
| AR20 | 86.60% | 75.90% |
| AR21 | 79.80% | 61.40% |
| **AR22** | **76.75%** | **55.19%** |
| % Change (AR21 to AR22) | -3.05% | -6.21% |

The decrease in WASI scores for AR22 is perhaps not as dramatic as the reduction of SoSI scores this year, and that is explained by the fact that most of the percentages of population that were already in deficit zones for AR21 are still in deficit zones for AR22.

### Deficit Banding

Despite the relatively low new SoSI and WASI scores for AR22, looking at the detail of the severity of zonal deficits demonstrates that very low proportions of deficit zones or percentage populations are in the lowest banded categories - Table 26 and Table 27 below.

Table 26: Counts of WRZ by Surplus or Deficit Banding

|  |  |  |
| --- | --- | --- |
| **Category** | **DYAA** | **DYC** |
| Band 1 (>=0% Surplus) | 145 | 110 |
| Band 2 (<0% to >-10% Deficit) | 24 | 29 |
| Band 3 (<=-10% to >-25% Deficit) | 18 | 28 |
| Band 4 (<=-25% to >-50% Deficit) | 2 | 18 |
| Band 5 (<=-50% Deficit) | 2 | 6 |

Table 27: Percentages of population by Surplus or Deficit Banding

| **Category** | **DYAA** | **DYC** |
| --- | --- | --- |
| Band 1 (>=0% Surplus) | 83.8% | 76.8% |
| Band 2 (<0% to >-10% Deficit) | 8.2% | 14.4% |
| Band 3 (<=-10% to >-25% Deficit) | 6.4% | 7.0% |
| Band 4 (<=-25% to >-50% Deficit) | 1.7% | 1.8% |
| Band 5 (<=-50% Deficit) | 0.0% | 0.0% |

# Table B10 – Scottish Water Compliance with Water Quality Regulations

## Introduction

This information was previously submitted by DWQR as an Annual Return to the Water Industry Commission for Scotland (WICS). It details Scottish Water’s compliance with Water Quality Regulations

The content of the table and associated commentary have been agreed with the Drinking Water Quality Regulatory (DWQR).

## Commentary

### Lines B10.1-B10.14 - Parametric Compliance – Parameter Name

COVID-19 affected sampling from Regulatory Supply Zones (RSZ) during 2021 and restrictions prevented normal randomised customer tap sampling between January and June and from mid-December onwards. During these periods, and in agreement with DWQR, RSZ samples were taken from alternative locations that included service reservoir outlets, Scottish Water samplers’ properties, depots, and offices. Regulatory sampling at Water Treatment Works (WTW) and Service Reservoirs (SR) were unaffected by COVID-19 restrictions.

Customer tap compliance was 99.919% (**Line B10.14**) for 2021, compared with 99.945% for 2020. The decrease in compliance was largely due to increased manganese failures. Low rainfall saw many reservoirs in the south and west draw down to exceptionally low levels, resulting in high dissolved manganese in the raw water, which passed through our traditional treatment processes. The Daer-Camps water supply system accounted for 16 of the 33 manganese failures in 2021. These issues also caused increased numbers of WQ Discoloured Water contacts noted in **Line** **B10.19** and led to two Letters of Commitment (**Line** **B10.17**) being agreed with DWQR relating to improvement works at Daer WTW and the development of a Scottish Water Wide Manganese Management Strategy.

Nickel failures increased from 7 in 2020 to 11 in 2021. COVID-19 restrictions moved regulatory sampling for Nickel away from customer properties to SRs. Customer property taps are likely to flush more often than SR taps that are sampled weekly and infrequent flushing intensifies leaching effects from SR sample taps containing Nickel.

In **Line** **B10.3** there were 16 coliform failures at WTWs during 2021, which provided a compliance of 99.936% of all coliform tests performed. This was a marginal improvement from 2020 where 18 coliform failures were reported and provided a compliance of 99.930% of all coliform tests analysed.

In **Line** **B10.3** there were 44 coliform failures at SRs during 2021, which provided a compliance of 99.907% of all coliform tests performed. This was an improvement from 2020 where 54 coliform failures were reported and provided a compliance of 99.890% of all coliform tests analysed. Although our programme of service reservoir inspection and remedial works has contributed to this improvement, the dry weather conditions during 2021 have also been a factor in minimising surface water ingress – one of the major causes of failures.

The tables may contain small differences in test numbers compared with DWQR’s annual water quality report, which is currently being drafted. Percentage compliance figures and regulatory failure numbers match.

As laboratory procedures, analysis and recording of sample result data is strictly audited by UKAS (United Kingdom Accreditation Service) all Parametric Compliance lines have been assigned a confidence grade of A1.

#### Lines B10.15 - Cryptosporidium at Water Treatment Works

UV treatment at Bonnycraig and Turriff WTWs successfully rendered harmless 15 positive Cryptosporidium detections. 10 samples contained detections of viable Cryptosporidium oocysts, 4 more than in 2020. Repeat detections of viable oocysts in 2021 were measured at Hopes, Mannofield and Rosebery WTWs. Investigations into the treatment processes at these works are on-going, to establish root causes and options for improvement works.

As with **Lines B10.1-B10.14** the recorded confidence grade is A1.

#### Lines B10.15a - Total compliance including Cryptosporidium compliance (for OPA)

Total compliance for 2021 is 99.936%. This was calculated from the sum of all failures at WTWs, service reservoirs, consumer taps and detections of viable Cryptosporidium oocysts, at WTWs against the sum of all tests analysed at all these site types. This compares with 99.946% for 2020 and reasons for the reduction are the same as those provided for Parametric Compliance in **Line B10.14**.

The confidence grade for **Line B10.15a** is recorded as A1.

### Lines B10.16-B10.17a – Enforcement

There were 5 Enforcement Notices in place during 2021. 2 were issued during 2021, 1 in relation to the control and maintenance of Afton WTW, and the other is under Network and Information System (NIS) Regulations 2018 as reported in **Line** **B10.16**. 3 Enforcement Notices were issued pre-2021 but remained active during 2021. These related to ongoing work at Turriff WTW, enhanced treatment processes at Bonnycraig WTW and the Contravention of Risk Assessment Requirements, as reported in **Line B10.16a**. See Table 28 below.

Table 28: Sites where Enforcement Notices were in place during 2021

|  |  |  |
| --- | --- | --- |
| **Site** | **Reason** | **Status** |
| Turriff WTW | Cryptosporidium | Issued Pre-2021 active |
| Bonnycraig WTW | Cryptosporidium | Issued Pre-2021 active |
| Scottish Water | Contravention of Risk Assessment Requirements | Issued Pre-2021 active |
| Scottish Water | Network and Information Systems (NIS) Regulation 2018 | Issued & Active 2021 |
| Afton WTW | Water quality management improvements | Issued & Active 2021 |

There were 7 Letters of Commitment active during 2021 of which 6 were issued in 2021 and are reported in **Line B10.17** and **Line B10.17a** and relate to the sites shown in Table 29 below.

Table 29: Sites where Letters of Commitment were active during 2021

| **Site** | **Reason** | **Status** |
| --- | --- | --- |
| Herricks WTW | Cryptosporidium | Issued Pre-2021 Active |
| Turriff WTW | pH Adjustment | Issued & Active 2021 |
| Glenfarg WTW | Taste & Odour | Issued & Active 2021 |
| Daer WTW | Manganese | Issued & Active 2021 |
| Pan-Scottish Water | Manganese strategy | Issued & Active 2021 |
| Carron Valley WTW | THM/Organics | Issued & Active 2021 |
| Black Esk WTW | Manganese | Issued & Active 2021 |

The confidence grade reported for **Lines B10.16 to B10.17a** is A1.

#### B10.18 No. of Water Quality Incidents

There were 31 DWQR declared Incidents reported for 2021, two more than 2020.

The confidence grade reported for 2021 is A1.

### Lines B10.19-B10.22 - Consumer Contacts to Scottish Water

The number of consumer contacts received by Scottish Water is categorised as recorded by telephone, social media or by other means. These numbers are submitted to DWQR on a quarterly basis and are split over various Water Quality issues.

WQ Discoloured contacts increased from 12,989 in 2020 to 19,645 in 2021. Increased contacts are related to the increased manganese figures noted in earlier sections. Low rainfall saw many reservoirs in the south and west draw down to exceptionally low levels, resulting in high dissolved manganese in the raw water, which passed through our traditional treatment processes and into the supply network causing discoloured water.

In 2021, 23,770 (91%) contacts were assigned to a regulatory supply zone (RSZ). Of the 2,313 contacts without an RSZ reference, the majority were email enquiries with no address provided.

For 2021 the total number of contacts for each Water Quality issue are set out in Table 30 below.

Table 30: Number of contacts for each Water Quality Issue

|  |  |
| --- | --- |
| **Water Quality Issue** | **Number of Contacts** |
| WQ Chlorine Taste/Smell | 815 |
| WQ Colour Other | 9 |
| WQ Discoloured Water | 19,645 |
| WQ Illness due to Water | 786 |
| WQ Metallic Taste | 649 |
| WQ Milky Cloudy Water | 1,827 |
| WQ Musty/Earthy Taste/Smell | 1,163 |
| WQ Organisms in Water | 34 |
| WQ Particles in Water | 596 |
| WQ Solvent/Fuel Taste/Smell | 16 |
| WQ Taste/Smell Other | 0 |
| WQ TCP/Chemical Taste/Smell | 543 |

### Line B10.23 - Complaints to DWQR

The number of 2nd tier complaints about Water Quality received/upheld by DWQR is 0. DWQR did not carry out any formal investigation (DWQR’s 2021 Annual Water Quality Report section 2.4.2 Customer Contacts to DWQR, paragraph 4.

# Table B11a - Pollution Incidents

## Introduction

Table B11a contains data for calendar year to end December 2021 and Financial Year 2021/22. The explanatory text below is in relation to the Financial Year.

The increase in the number of cat 1-3 incidents was due to an increase in SEPA and customer reporting. There were a substantial number of events which were agreed as third party/private/compliant with license and were therefore discounted from our numbers. As we move through SR21 our focus will be on reducing the sizable proportion of incidents which occur on our wastewater network through increased intelligence and targeted planned maintenance.

The confidence grade for all lines on Table 11a is A1.

In 2021/22 there were a total of 282 environmental pollution incidents (EPIs), 79 more than reported in the 2020/21 period with 10 of these being more serious Category 1&2 events.

## Commentary

### Lines B11a.1-B11a.8 Sewage Related Premises

During the 2021/22 reporting year 273 EPIs were recorded at sewage related premises, where 63% of these incidents were reported on the foul sewer network. 8 of the reported EPIs fell into Category 1 and 2 and are listed in Table 31 below.

Table 31: Location of Sewage related EPIs

|  |  |  |
| --- | --- | --- |
| **Sewer Related Premises** | **Site or Area** | **Total EPI** |
| Foul Sewer | Shotts DOA | 1 |
| Foul Sewer | Stirling DOA | 1 |
| Foul Sewer | Alloa DOA | 2 |
| Foul Sewer | Dalmuir DOA | 1 |
| Foul Sewer | Bonnybridge DOA | 1 |
| Pumping Station | Beuchburn SPS | 1 |
| Pumping Station | Hallside SPS | 1 |

For AR22 there were 13 EPIs compliant with the discharge consent for the related site.

### Lines B11a.9-B11a.12 Water and Surface Water Related Premises

During the 2021/22 reporting year there were 9 EPIs recorded at water and surface water related premises, 2 of which were reported as Category 1 and 2 and are listed in Table 32 below.

Table 32: Site of Water related EPIs

|  |  |  |
| --- | --- | --- |
| **Water and Surface Water Related Premises** | **Site or Area** | **Total EPI** |
| Water Treatment Works | Badentinan CWT | 1 |
| Water Distribution System | Munnoch DIR | 1 |

For AR22 there was 1 EPI that was compliant with the discharge consent for the related site.

### B11a.17 Total Number of Water Company self-reported incidents

During the 2021/22 period the Total number of self-reported incidents made by Scottish Water was 56.

# Table B11b – Compliance

## Introduction

This information was previously submitted by SEPA as an Annual Return to WICS. It reports wastewater compliance against CAR (Controlled Activity Regulations), UWWTD (Urban Wastewater Treatment Directive) and OPA for both calendar and financial years.

Scottish Water has taken over reporting of the data for the 2021-22 Annual Return. This data was previously sourced from SEPA's Corporate Licencing database (CLAS). SEPA has advised that this number remained fairly static over the years. Since the cyber-attack on the SEPA Systems, this database is no longer available.

There are some lines that Scottish Water cannot report on, as detailed in the lines affected. A review to understand this and the metric definitions will be undertaken in 2022-23.

The data and commentary have been reviewed by SEPA.

Where appropriate, confidence grades have been added to this table.

## Commentary

### Lines B11b.1-B11b.4 - (A) Sewage Treatment Works: Total number

#### B11b.1 No. of discharges on register during calendar and financial years (in force)

For AR22 a consistent calculation is unavailable but is most likely to be very similar to last year’s value of 1,202.

#### B11b.2 No. of discharges assessed for compliance

For AR22 there were 596 reported which corresponds with the number of assets listed on the Operator Self-Monitoring (OSM) Annual Monitoring Plan (AMP).

#### B11b.3 No. of discharges confirmed failing in calendar and financial years

For the 2021 calendar year there were 14 STWs and, for the AR22 reporting year, 15 STWs Discharges Confirmed Failing under CAR compliance.

#### B11b.4 Percentage of discharges compliant with consent in the calendar and financial years

For the 2021 calendar year the percentage of CAR Discharges Compliant With Consent was 98.84%, and for AR22 98.75% was reported.

### Lines B11b.5-B11b.8 - (B) Look-up Table Lower Tier Consents

#### B11b.5 No. of discharges on register during calendar and financial years (in force)

This is referenced under commentary **Line B11b.1**.

#### B11b.6 No. of discharges assessed for compliance

This is referenced under commentary **Line B11b.2**.

#### B11b.7 No. of discharges confirmed failing in calendar and financial years

For the 2021 calendar year there were 7 STWs, and for the AR22 reporting year there were 5 STWs confirmed as failing under the CAR compliance Discharge Look-up Table Lower Tier Consents criteria.

#### B11b.8 Percentage of discharges compliant with consent in the calendar and financial years

For the 2021 calendar year the percentage CAR Discharge Compliance With Consent was 99.42%, and for AR22 there was 99.58% reported.

### Lines B11b.9-B11b.12 - (C) Upper Tier Consents

#### B11b.9 No. of discharges on register during calendar and financial years (in force)

This is referenced under commentary **Line B11b.1**.

#### B11b.10 No. of discharges assessed for compliance

This is referenced under commentary **Line B11b.2**.

#### B11b.11 No. of discharges confirmed failing in calendar and financial years

For the 2021 calendar year there were 8 STWs, and for the AR22 reporting year there were 12 STWs confirmed as failing under CAR compliance Discharge Upper Tier criteria.

#### B11b.12 Percentage of discharges compliant with consent in the calendar and financial years

For the 2021 calendar year the percentage CAR Discharge Compliance with Consent was 99.33%, and for AR22 there was 99.00% reported.

### Lines B11b.13-B11b.16 - (D) Single Tier Consents

For AR22 **Lines B11b.13-B11b.14** and **Line B11b.16** cannot be populated because of the inaccessibility of source data. For previous years this was sourced from SEPA’s CLAS system which, due to a cyber-attack, cannot be accessed for this reporting year.

#### B11b.15 No. of discharges confirmed failing in calendar year

For the 2021 calendar year there was one STW, and for the AR22 reporting year there was 1 STW confirmed as failing under the metric CAR compliance Discharge Single Tier criteria.

### Lines B11b.17-B11b.20 - (E) Absolute non-Sanitary Consents

SEPA has advised that these lines have never been completed as they do not categorise or separate licences in this way, hence these lines are not populated.

### Lines B11b.21-B11b.24 - (F) Discharges confirmed as failing (CAR)

#### B11b.21 Number of discharges confirmed as failing (CAR)

For the 2021 calendar year there were 14 STWs, and for the AR22 reporting year there were 16 STWs confirmed as failing under CAR compliance Discharge As Failing criteria.

#### B11b.22 Total population equivalent confirmed as failing

For the failing STWs reported in **Line B11b.21** the Total Population Equivalent affected for the 2021 calendar year there was 793,238, whereas for AR22 reporting year was 818,145.

#### B11b.23 Total population equivalent served by STWs (resident) (numeric consents)

The Total Population Equivalent served by STWs listed on the AMP is 6,608,294.

#### B11b.24 Percentage population equivalent confirmed as failing

For the 2021 calendar year the percentage Population Equivalent confirmed as failing under CAR was 12.00%, and for AR22 there was 12.38% reported.

### Lines B11b.25-B11b.28 - (G) UWWTD

The numbers reported in these lines are based on the 2021 calendar year only.

#### B11b.25 No. of discharges on register during calendar year (in force)

For the 2021 period there were 197 discharges reported.

#### B11b.26 No. of discharges assessed for compliance

For the 2021 period there were 197 discharges Assessed For Compliance.

#### B11b.27 No. of discharges confirmed failing in calendar year

For the 2021 period there were 5 STWs were confirmed as failing UWWTD.

#### B11b.28 Percentage population equivalent confirmed as compliant

97.46% percentage Population Equivalent were Compliant With Consent during the year.

### Lines B11b.29-B11b.32 - (H) Discharges confirmed as failing (OPA criteria only)

OPA is a financial year measure, although calendar year is also reported for information.

The OPA performance measure for failing treatment works changed from 1 April 2021, moving to Total Compliance which assesses compliance against all quality parameters contained within a SEPA licence. Prior to this only a proportion of final effluent parameters impacted on OPA compliance.

#### B11b.29 Number of discharges confirmed as failing (OPA)

For the 2021 calendar year there were 19 STWs, and for the AR22 reporting year there were 20 STWs confirmed as failing under OPA criteria.

#### B11b.30 Total population equivalent confirmed as failing

For the failing STWs reported in B11b.29 the Total Population Equivalent affected for the 2021 calendar year there was 1,166,738, whereas for AR22 reporting year was 1,181,611.

#### B11b.31 Total population equivalent served by STWs (resident) (numeric consents)

The Total Population Equivalent served by STWs listed on the AMP is 6,608,294.

#### B11b.32 Percentage population equivalent confirmed as failing

For the 2021 calendar year the percentage Population Equivalent confirmed as failing under OPA criteria was 17.66%, and for AR22 there was 17.88% reported.

#### Line B11b.33 - Wastewater Treatment Works Confirmed as Failing

For the 2021 calendar year there were 19 non-compliant STWs failing to comply with any of the specified parameters in the licence, and for the AR22 reporting year there were 20 STWs.

### Lines B11b.34-B11b.37 - (I) Non-numeric Consent

SEPA has advised that this has never been completed as they do not categorise or separate licences in this way, hence these lines are not populated.

# Table B11c - SEPA Annual Report to the Water Industry Commission for Scotland

## Introduction

This information was previously submitted by SEPA as an Annual Return to WICS. Some asset data was provided to SEPA by Scottish Water to support this submission.

Scottish Water has taken over reporting of this data for the 2021-22 Annual Return and beyond.

**Table 11c** lists assets that have been classed as failing under CAR, UWWTD and/or OPA for both calendar and financial years. Detail also includes the failing parameters and the population equivalent each asset serves.

A Confidence Grade of A1 has been given to the data contained in each line in this table..

Section C - Carbon emissions and net zero

# Table C0 – Summary

## Introduction

This is the first year that Scottish Water has compiled the new Carbon Emissions and Net Zero Tables. The information in the tables provides a more detailed breakdown of our operational carbon emission data, renewable generation and revenue than previously reported in Annual Returns.

Scottish Water has reported and published operational emissions from its regulated business (including PFI) since 2006-07. From 2014 Scottish Water has also reported detailed breakdowns of operational emissions as part of the Scottish Government’s public bodies reporting duty. These are available online via the Sustainable Scotland Network website.

Emissions Embodied in the Asset Base is a relatively new area of carbon assessment and the first time this has been reported within the Annual Return.

This is the first time Scottish Water has undertaken a carbon assessment of its landholdings.

### Data sources and confidence grades

Data sources, methodology, assumptions, and confidence grades are covered in the commentary for Tables C1 to C4.

### Data improvement programmes

See the corresponding table commentary for details of data improvement programmes.

### Assumptions used for forecast data

The C0 Table does not include forecasts.

## Commentary

### C0.1 Net operational emissions in previous year (opening)

Reported as 248,567 tCO2e. In the previous Annual Return and in other external reports we reported this value to the nearest kt, i.e. – 249,000 tCO2e.

### C0.2 Change in Scope 1 to 3 emissions in the report year

Reported as –18,564 tCO2e. All elements associated with operational emissions are detailed in **Lines C1.1-C1.29**. Changes for each scope are detailed in the memo **Lines C1.37-C1.39**.

### C0.3 Change in renewable electricity generated and exported in the year

Reported as –899 tCO2e, as detailed in in **Lines C1.41-C1.43**.

#### C0.4 Net operational emissions in reporting year (closing)

Reported as 230,901 in the C tables but reported to the nearest kt as 231,000 tCO2e elsewhere due to the inherent uncertainty in reporting these figures. This is presented in **Line C1.29**.

### Lines C0.5-C0.7 Total CO2 emissions from landholdings

Scottish Water does not presently report on these emissions and is completing work as part of its first assessment of landholdings. As data on emissions from landholdings are presently reported, the calculated cell **Line C0.6** Change in CO2e Emissions in Year returns ‘#Value!’. Due to a quirk in Excel which results in a value of zero being pulled through from **Line C4.10** to **Line C0.7** Total CO2e Emissions from Landholdings in Year. In reality this line should be blank.

### C0.8-C0.9 Net operational emissions net of insetting and offsetting (opening & closing)

These lines are calculated from other data within the table. As Scottish Water does not presently report emissions associated with landholdings, both lines should be blank. However as a value of zero is pulled through to **Line C0.7**, **Line C0.9** simply reports the same figures as reported in **Line C0.1** Net Operational Emissions in Previous Year (opening) or **Line C0.2** Net Operational Emissions in Report Year (closing).

### C0.10-C0.13 Emissions embodied in the asset base

Scottish Water has a significant asset base that represents decades of investment and associated emissions. Historical embodied emissions are likely to be higher than they would be if the same investment had been carried out today, owing to the greater carbon intensity of production and the reliance on coal and other fossil fuels in the power sector.

Embodied carbon in the overall asset base is expressed as a range reflecting the relatively early maturity of work to establish the emissions intensity of investment and is presented as expected lower and upper figures. It is intended to show the total carbon produced by Scottish Water and its predecessors in the creation of the whole asset base i.e. the historical emissions impact of its creation. This is a relatively new area of carbon assessment, and the strategic implications of the different measures needs to be understood. For example, good practice circular economy principles would see us retain the benefit of previous investment wherever we can (e.g. retain concrete tanks, pipes, and infrastructure where it is serviceable) whilst reducing the carbon intensity of new assets.

It may be desirable to formally consider this as a “carbon MEAV” to assess the carbon efficiency of asset replacement, which would seek to apply the latest investment carbon intensity factors across the asset base. We would welcome WICS’ involvement in a wider discussion on how it sees this measure being used in the future.

#### C0.10 Embodied carbon in overall asset base (previous year)

Detailed in **Lines C2.12** and **C2.13**.

#### C0.11 Increase in embodied carbon in the year (e.g. due to capital investment)

Detailed in **Line C2.4 and C2.5**. The formula in the table has been amended to link to **Lines C2.4 and C2.5** in accordance with the definition.

#### C0.12 Other changes in the year

No changes. It is assumed that this line will be used in future to report new assets being added to the asset stock that are not covered by the investment programme.

#### C0.13 Embodied carbon in overall asset base (closing)

Detailed in **Lines C2.10** and **C2.11**.

# Table C1 - Operational Emissions

## Introduction

All figures within this table refer to the measurement of the annual operational Greenhouse Gas (GHG) emissions of the regulated business (Scottish Water operated sites, PFIs including Scottish Water Grampian). Unless otherwise stated it does not include emissions from the wider Scottish Water Group.

Emissions are reported in line with Global, UK and Scottish reporting protocols and guidance and calculated using UK Water Industry Research’s Carbon Accounting Workbook, used by all UK water companies. This is updated annually to reflect the latest UK government's Department for Business, Energy & Industrial Strategy (BEIS) carbon conversion factors, boundaries, guidance, and methods. The calculated emissions reported here are consistent with the UK Water Industry Research Carbon Accounting Workbook (CAW v16). Scottish Water’s operational carbon footprint is audited externally by Achilles carbon specialists in line with ISO 14064-1 prior to publication.

Emissions are recorded in tonnes of carbon dioxide equivalent (tCO2e) to take into account the different potential each GHG has for global warming. Line C1.5 to C1.8 split out the tCO2e into each of the main GHGs: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O).

The table is split according to “emissions scopes” in line with Global GHG reporting protocols.

### Data sources and confidence grades

There are two main types of data involved in calculating the operational carbon footprint – consumption data from Scottish Water and emission conversion factors from the CAW. There are inherent uncertainties in both, that must be considered in assigning confidence grades.

Consumption data is gathered from teams across the business from a variety of sources including meter readings, invoices, internal and regulatory reporting. Much of this is held in corporate systems and input follows an auditable process that is set out within Scottish Water’s management system so can be assigned a high confidence grade. For example, electricity consumption (which is the largest single contributor to our footprint – 56%) is taken from verified meter readings, and fleet fuel usage is based on purchase information from vehicle fuel cards.

Some consumption data is not available in the correct units to allow a direct conversion into associated emissions and so some estimation is involved. For example, on site fuel consumption and travel on public transport are gathered in £ sterling. However, in order to be entered into the CAW, these need to be converted into litres of fuel and kilometres travelled respectively based on Scottish Water reference sites (on site fuel use), Department for Transport, etc. Such entries will therefore be assigned a lower confidence grade.

Emission factors in the CAW are updated annually in line with latest UK government's BEIS carbon conversion factors, boundaries, guidance and methods. The main uncertainty recognised by the water industry is with regards to process emissions from wastewater and sludge treatment. Emissions are based on fixed factors applied to the population equivalent served and tonnes sludge treated. This does not take into account the varying nitrogen load of sewage entering the works, or the method of treatment or operation of the works. The water industry in the UK is collectively reviewing its methods around this and we expect the methodology to change in the next few years. This is reflected in the assigned confidence grade – i.e. we are confident in the figure we are reporting but expect this will change when the methodology changes.

Going forward, due to the greening of the grid, we expect electricity to make up a smaller proportion of our carbon footprint. As other components become more or less significant the confidence grade of our overall footprint may change.

### Data improvement programmes

Annually, the operational carbon footprint of the regulated business is verified externally in line with ISO 14064-1 and informs continual improvement actions.

We are working with the wider water sector and through on-site monitoring programmes to better understand our process emissions and how they may be accounted for in the future.

The water industry in the UK works collaboratively each year to review and improve the CAW, including footprint boundaries, emissions factors and methods of calculation.

### Assumptions used for forecast data

The C1 Table does not include forecasts.

## Commentary

### Lines C1.1-C1.8 Scope 1 Emissions

Scope 1 refers to emissions arising directly from the burning of fossil fuels or other direct release of GHGs such as CH4 or N2O.

#### C1.1 Direct emissions from burning fossil fuels (including CHP generated on site)

Reported as 3,734 tCO2e for 2021-22, increasing from 2,364 in 2020-21. This covers all activities that release emissions from fossil fuels in the course of delivering water and wastewater services, including natural gas used in heating and diesel used in generators on site. The increase from the previous year is due to overall increase in fuel consumption and is within expected year to year variation.

#### C1.2 Process and fugitive emissions

Reported as 21,610 tCO2e for 2021-22, decreasing from 25,243 in 2020-21. This consists of direct release of GHGs such as CH4 and N2O from the natural processes of wastewater and sludge management. It also includes fugitive emissions (unintended release of) refrigerant gases from air conditioning units.

The change from the previous year is due to reduced amounts of sludge being processed and is within expected year to year variation.

#### C1.3 **Transport: company owned and leased vehicles**

Reported as 11,244 tCO2e for 2021-22, decreasing from 11,546 in 2020-21. This includes emissions from Scottish Water-owned fleet and long-term leased vehicles. It does not include emissions from business travel in private vehicles, which is included under scope 3. There is little change from the previous year as Scottish Water continues to transition to a hybrid work model.

#### C1.4 Total scope 1 emissions

Reported as 36,589 tCO2e, decreasing from 39,142 tCO2e in 2020-21. This presents the total Scope 1 emissions (a sum of **Lines C1.1, C1.2 and C1.3**), which comprises all emissions released directly from Scottish Water assets (including vehicles).

**Lines C1.5-C1.8** break down Scope 1 emissions into their constituent GHGs – carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and other GHGs – generally trace refrigerant gases. Nitrous oxide (N2O) from sludge processing is the largest contributor to scope 1 emissions.

#### C 1.5 Scope 1 emissions – CO2

Reported as 14,782 tCO2e for 2021-22. This is the first year we have reported this number.

#### C1.6 Scope 1 emissions – CH4

Reported as 2,353 tCO2e for 2021-22. This is the first year we have reported this number in terms of the breakdown specifically for CH4.

#### C1.7 Scope 1 emissions – N2O

Reported as 19,432 tCO2e for 2021-22. This is the first year we have reported this number in terms of the breakdown specifically for N2O.

#### C1.8 Scope 1 emissions - other GHGs

Reported as 22 tCO2e. This is the first year we have reported this number in terms of the breakdown specifically for other GHGs.

### Lines C1.9-C1.16 Scope 2 emissions

Scope 2 refers to emissions associated with the use of grid electricity and specifically the generation of electricity within the national grid. It is important to note that this does not include the carbon impact from transmission and distribution of electricity across the grid – which is accounted for as a Scope 3 emission.

Note that in line with guidance from the Scottish Government, Scottish Water uses the location-based method for accounting, where emissions are associated with where the electricity is generated and consumed. Some water companies in the rest of the UK may report their emissions using the market-based method, which allows grid electricity consumption to be reported as zero emissions when green tariffs are purchased.

#### C1.9 Purchased Electricity

Reported as 94,663 tCO2e for 2021-22, decreasing from 106,520 tCO2e in 2020-21.

These emissions are associated with purchased electricity from the national grid and are calculated from the annual electricity purchased and the BEIS grid emissions factor. At present grid electricity use comprises the major element (56%) of Scottish Water’s carbon footprint. The decrease from last year is as a result of lower consumption of grid electricity and lower emissions associated with each kWh (i.e. the grid emissions factor), as a larger portion of grid electricity is generated from renewable sources.

### Lines C1.10-C1.11 Electric vehicles and removal of electricity to charge electric vehicles at site

These lines refer to total grid electricity consumption by electric vehicles, and the proportion of this that is obtained through chargers on Scottish Water sites. At present this data is not collected, but in future (once the charging and IT infrastructure are improved) we anticipate we will be able to deduct emissions associated with electric vehicle charging from Scope 2 and include it within transport emissions as Scope 1 or 3.

#### C1.12 Total Scope 2 emissions

Reported as 94,663 tCO2e for 2021-22, decreasing from 106,520 tCO2e in 2020-21.

The total emissions associated with Scope 2 electricity use fell, but electricity remains the major element of the operational footprint. The fall was attributed to a reduction in consumption of grid electricity and the reduction in the carbon intensity of grid electricity (which was the biggest contributor to the fall).

### Lines C1.13-C1.16 break down Scope 2 emissions into their constituent GHGs

#### C1.13 Scope 2 emissions – CO2

Reported as 93,183 tCO2e. This is the first year we have reported this number. CO2 is the main constituent of scope 2 emissions.

#### C1.14 Scope 2 emissions – CH4

Reported as 355 tCO2e. This is the first year we have reported this number.

#### C1.15 Scope 2 emissions – N2O

Reported as 607 tCO2e. This is the first year we have reported this number.

#### C1.16 Scope 2 emissions - other GHGs

Reported as 518 tCO2e. This is the first year we have reported this number.

### Lines C1.17-C1.26 Scope 3

Scope 3 emissions refer to our indirect emissions from activities that do not fit with Scope 1 or 2 or are emitted by others on our behalf (e.g. public transport, outsourced activities).

#### C1.17 Business travel by public transport and private vehicles used for company business

Reported as 264 tCO2e for 2021-22, increasing from 190 tCO2e in 2020-21. This increased from last year as the business moved to a hybrid working pattern, with a partial return to office working and face-to-face meetings.

### Lines C1.18-C1.18a Outsourced activities – PFI within and without Scottish Water group

Reported as 92,716 tCO2e. This is the first year we have reported the breakdown of activities within scope 3. This is largely composed of operational sites run by PFI companies on our behalf. These have all been reported under C1.18a as we are not currently able to split this between PFIs within the Scottish Water Group (Scottish Water Grampian) and those out with it.

#### C1.19 Other outsourced activities

Reported as 1,237 tCO2e for 2021-22. This is the first year this has been reported. This includes sludge tankering carried out by third parties on our behalf.

#### C1.19 Purchased electricity transmission and distribution

Reported as 8,331 tCO2e for 2021-22, decreasing from 9,041 tCO2e in 2020-21. These are emissions associated with electricity lost in the electrical transmission and distribution system, based on the methodology in the CAW.

#### C1.21 Disposal of water and wastewater treatment waste to landfill.

Reported as 1,123 tCO2e in 2021-22, a slight decrease from 1,214 in 2020-21. Note that this is not a required part of Ofwat reporting by water companies in England & Wales but has been included in Scottish Water’s operational carbon footprint for more than a decade.

#### C1.22 Total scope 3 emissions

Reported as 103,672 tCO2e in 2021-22, decreasing from 107,817 tCO2e in 2020-21. This is the total of scope 3 emissions (sum of **Lines C1.17-C1.21**). Scope 3 emissions reported by Scottish Water include PFI operators acting on Scottish Water’s behalf and therefore appear large when compared with scope 3 breakdowns of other water companies.

### Lines C1.23-C1.26 break down Scope 3 emissions into their constituent GHGs

#### C1.23 Scope 3 emissions – CO2

Reported as 65,520 tCO2e. This is the first year we have reported this number.

#### C1.24 Scope 3 emissions – CH4

Reported as 13,744 tCO2e. This is the first year we have reported this number.

#### C1.25 Scope 3 emissions – N2O

Reported as 24,410 tCO2e. This is the first year we have reported this number.

#### C1.26 Scope 3 emissions - other GHGs

Reported as 0 tCO2e. This is the first year we have reported this number. All GHG emissions are in the form of CO2, CH4 or N20, as reported in **Lines C1.23-1.25**.

#### C1.27 Gross operational emissions

Reported as 234,924tCO2e for 2021-22, decreasing from 253,000tCO2 in 2020-21. 2021-22 saw a reduction of 18,000 tCO2e from the previous year. Of this around 12,000 tCO2e is a result of emission reductions associated with grid electricity consumption.

Gross operational emissions are the total of scopes 1, 2 and 3 and are reported to the nearest kiloton elsewhere – due to the inherent uncertainty in reporting these figures. The rounding formula is not included in the revised WICS template and therefore the figures held within the table will not exactly match the figures quoted in other publications containing this data.

#### C1.28 Renewable Electricity Generated and Exported

Reported as –4,023tCO2e in 2021-22, a slight decrease from -4,921 tCO2e in 2020-21. Each year, electricity that is generated on site but not used on site is exported to the grid where suitable connections are available. Where the generation meets the Renewable Energy Guarantee of Origin (REGO) criteria, this is converted to carbon credit and netted off against the overall operational carbon footprint. In 2021-22 the credit associated with renewable exports was –4,022tCO2e, 899 tonnes lower than the previous year. As the grid factor falls, the credit associated with each kWh of renewable electricity exported also decreases.

#### C1.29 Net operational emissions

Reported as 230,901tCO2e in 2021-22, decreasing from 249,000tCO2e in 2020-21.

Net operational emissions are the total of Scopes 1, 2 and 3 (C1.27 gross operational emissions) minus the carbon credit associated with exported renewable electricity (C1.28).

Note that there is a discrepancy with the net operational emissions reported in the Performance and Prospects report, which over-reports the net carbon footprint by 2,000 tCO2e. This was due to an underestimate of the benefit from renewables, which has been corrected in these Annual Return figures. No other carbon footprint figures in the Performance and Prospects report were affected, so this figure is the only discrepancy.

Net operational emissions are reported to the nearest kiloton elsewhere – due to the inherent uncertainty in reporting these figures. The rounding formula is not included in the revised WICS template and therefore the figures held within the table will not exactly match the figures quoted in other publications containing this data.

### Lines C1.30-C1.31 Ratio values

The carbon intensity of water and wastewater services are figures we have calculated and published since 2006-07 to provide information to customers on the carbon intensity of their service, and to enable interested organisations to calculate emissions embodied in the water they use. Intensity is expressed in tC02e per megalitre of water or wastewater service provided.

#### C1.30 Carbon Intensity, water (operational emissions)

Reported as 0.09 tCO2e/Ml of treated drinking water, a slight increase from 0.08 tCO2e/Ml in the previous year.

The number formatting of the table template shows the figure to the nearest whole number and therefore this appears as a zero.

#### C1.31 Carbon Intensity, wastewater (operational emissions)

Reported as 0.20 tCO2e/Ml of wastewater, a slight increase from 0.19 tCO2e/Ml in the previous year.

The number formatting of the table template shows the figure to the nearest whole number and therefore appears as a zero.

### Lines C1.32-C1.35 Comparison with 2006-07 baseline

2021-22 saw our net operational carbon footprint reduce by 50% to 231,000 tCO2e (reported as 230,901 in **Line C1.29**) from our 2006-07 baseline of 462,000 tCO2e.

### Lines C1.36-C1.43 Memo lines

These are for comparison with the previous year and commentary on key differences is contained in relevant lines above.

Due to a correction of the formula in cell C1.43 Renewable Electricity Generated and Exported in the Report Year, the value reported in C1.42 Change in Renewable Electricity Generated and Exported in the Year was changed from a negative to a positive value, so that the reported value in line C1.43 matches C1.28 (subject to rounding).

### Lines C1.44-C1.47 Scottish Water Group

These tables refer to emissions from Scottish Water Group subsidiaries that are not included in the regulated operational footprint above. This is the first time we have reported such emissions, so comparisons with previous years are not possible.

#### C1.44 Scottish Water Horizons net operational emissions in report year

Reported as 1,435 tCO2e. This is the first year we have reported this figure.

#### C1.45 Scottish Water Business Stream operational emissions in report year

Reported as 417 tCO2e. This is the first year we have reported this figure.

**C1.46 and C1.47 Scottish Water group**

Data for these lines is not available.

# Table C2 - Investment emissions

## Introduction

Emissions embodied in the asset base is a relatively new area of carbon assessment.

Scottish Water created a Capital Carbon Accounting Tool (CCAT) to begin assessing the carbon embodied in capital projects – the concrete, steel, other materials etc used by delivery partners to build and maintain assets. It was used on larger projects in the later stages of SR15 and is now deployed across all projects, but we are still relatively early in the maturity journey.

Scottish Water has developed a measure of capital carbon centred on the emissions intensity of investment, expressed as tCO2e per £m invested. This allows an overall view of the carbon intensity of investment across a diverse programme and can be used at a project and program level.

### Data sources and confidence grades

**Lines C2.1-C2.9 Carbon intensity of investment** - embodied carbon is calculated from CCAT assessments of actual projects to produce a weighted average using a method set out in the “Definitions Document - Net Zero Emissions Measure (NZE)”. This calculation and process is in the early stages of maturity and was calculated for the first time in 2020-21.

The embodied carbon in the overall asset base is expressed as a range reflecting the early maturity of work to establish the emissions intensity of investment, the relatively small data set, and the complex data interactions.

### Data improvement programmes

**Lines C2.1-C2.2** **Carbon intensity of investment** - during 2022-23 Scottish Water will transition from using the CCAT to the Benchmark Estimating System (BES), our new cost estimating system. Carbon data has been integrated into BES to enable financial and carbon assessment within a single tool. It is expected that this move will improve the scope, quality and accuracy of carbon data linked to investment and may see a change in the intensity figures due to enhanced coverage of asset stock.

Once BES is fully deployed Scottish Water anticipates carbon data will increase significantly which will support increased confidence in the estimates of carbon intensity enabling the ranges reported to be narrowed.

### Assumptions used for forecast data

The C2 Table does not include forecasts.

## Commentary

### Lines C2.1-C2.2 Carbon intensity of investment

Due to the relatively small data set, immaturity of the process and complex data interactions, there is a degree of uncertainty that means we express the intensity as a range. A review of projects and a top-down assessment across different programme areas suggests an initial carbon intensity of investment for Scottish Water to be in the range 200-300 tCO2e per £m. The point figures as calculated using the process are both within this range, estimated at 209 and 216 tonnes CO2e per £m for 2020-21 and 2021-22 respectively.

#### C2.3 Capital expenditure (figure brought forwards from capital tables)

Total figure provided is taken from **Line G1.82**. The water/waste split is based on the water/waste split described in **Lines G1.67-G1.69** and **Lines G1.80-G1.81** of Section G. General expenditure is pro-rata on the water/waste split. It should be noted that the allocation does not make a difference to the tables this year as the Scottish Water range 200-300 is used for both water and waste.

### Lines C2.4-C2.5 Carbon emissions from the capital investment programme

This is the estimated range for the total carbon footprint resulting from capital activities. It is an increase on the 2020-21 figure due to expenditure being higher than last year. Over time, Scottish Water expects the intensity figure to reduce as the measures to reduce capital carbon start to take effect.

### Lines C2.6-C2.9 Quadrant intensity figures

Point figure calculated using the methodology set out in the document “Definitions Document -Net Zero Emissions Measure (NZE)”, rounded to the nearest 10 tonnes per £m. At this time, this figure is used within Scottish Water as a benchmark figure to identify the carbon efficiency of projects developed within the sector. It is also used to provide early high-level carbon estimates before there is a full understanding of assets required to develop a project. Once the carbon data has moved to BES the quality of the data in this section will improve and more detailed analysis will be developed.

Confidence in data reliability is low, due to the complex calculation based across multiple data sources. The accuracy is low due to the differing data sets not being fully aligned or designed for this calculation. Over the next year Scottish Water will start reporting from their corporate system (P3M) which will hold the data in a format that allows segmented reporting. This will improve the accuracy and reliability of the data.

#### C2.10 Embodied carbon in overall asset base - low estimate

The figure is the carbon MEAV from 2020-21 plus the low carbon emissions from the capital investment programme for 2021-22. It could be considered that if Scottish Water were to rebuild the full asset stock today, the resultant carbon would be approximately this value.

The carbon MEAV is calculated using the MEAV in 2020-21 and applying the quadrant intensity figures described in **Lines C2.6-C2.9**. The full methodology is set out in the document “Finding carbon emission values using the MEAV”.

#### C2.11 Embodied carbon in overall asset base - high estimate

This is an estimate of the total carbon produced by Scottish Water to build its asset stock. There is an implicit assumption that the carbon intensity figure will have been high in historic years, and this has been applied to the MEAV. Each year the high carbon emissions from the capital investment programme are added to this figure.

#### C2.12 Embodied carbon in overall asset base - low estimate in previous year

We have estimated the carbon in the asset base for last year using the same approach **Line C2.10**.

#### C2.13 Embodied carbon in overall asset base - high estimate in previous year

We have estimated the carbon in the asset base for last year using the same approach **Line C2.11**.

# Table C3 - Energy

## Introduction

Table C3 provides information on energy emissions**.** Scottish Water’s operational electricity consumption is from different sources. The predominant source is the grid, but we also use electricity generated by our own schemes and a small proportion comes from a CHP in a farm adjacent to one of our treatment works via a private wire.

### Data sources and confidence grades

PFI consumption and generation data is gathered directly from each PFI company.

The data for electricity consumption, generation and export comes from meter recordings and invoices from our electricity supplier.

The vast majority of our electricity import supplies and renewable assets are fitted with smart meters that record and transmit data automatically. We have access to this data via a portal run by Scottish Power Dataserve (our meter operator).

The consumption and export data are also sent directly by Dataserve to our electricity supplier nPower for billing purposes and is subject to industry standard validation processes.

A small proportion of our import supplies are billed on estimated data when actuals are not available due to comms issues or lack of a manual meter reading and the estimation is done by our supplier following industry rules.

The meter data and the supplier’s invoices feed our energy management system Optima from where we can obtain reports. Hence the degree of confidence in this data, as per WICS definitions, would be A2 (to allow for estimates).

The data relating to the “installed capacity at the end of year” comes from a mix of sources: historical records, internal documents and spreadsheets and information received from 3rd parties; therefore, it has been graded B3.

In respect of the GWh data within this table, the source data were presented to Binnies during an audit however the split between Scottish Water regulated, PFI, Scottish Water Grampian and Scottish Water Horizons was not audited.

Electricity costs, recharges and hosting and export income have been extracted from our general ledger which captures costs at an account level. This data for PFIs is not available to us due to its commercially sensitive nature.

### Data improvement programmes

We continue to identify electricity supplies with analogue meters so that these can be replaced with smart meters capable of transmitting data automatically avoiding reliance on manual readings or estimates.

### Assumptions used for forecast data

The C3 Table does not include forecasts.

## Commentary

### Lines C3.1a-C3.1c Electricity consumption

These lines reflect our operational electricity consumption from different sources. The predominant source is the grid, but we also use electricity generated by our own schemes and a small proportion comes from a CHP in a farm adjacent to one of our treatment works via a private wire.

The total operational consumption for Scottish Water Regulated business (465GWh) changed little year on year (-2%) mainly due to less sewage pumping in FY 2021-22 compared to the prior year.

The electricity we self-supply is mainly renewable with the exception of Stirling CHP (included in **Line C3.1c**).

### Lines C3.2a-C3.2c On-site renewable electricity generated, used and exported

The volume of renewable electricity generated (**Line C3.2a**) is presented disaggregated by the owners of the schemes: Scottish Water Regulated, PFIs, Scottish Water Grampian and Scottish Water Horizons. The PFI and Grampian schemes benefit only their own assets whereas the Horizons schemes are mostly embedded in Scottish Water Regulated assets contributing to displace grid consumption. Hence, **Line C3.2b** - On-site Renewable Electricity Used reflects the usage of renewable power by the Scottish Water Regulated assets regardless of ownership of the renewable scheme.

The combined amount generated in FY 2021-22 by Scottish Water Regulated, Grampian and Horizons was 55GWh, up 2% from the previous year. Whereas the dry weather in 2021-22 affected the generation of hydro schemes (owned by Scottish Water Regulated), this was compensated by new PV schemes commissioned by Horizons and better performance at the Deerdykes and Nigg CHPs.

#### C3.3 Renewable Electricity Capacity at the End of Year

This line represents how much the existing renewable schemes could generate in a year as per the design output. It is not intended to express the capacity (MW) or the actual output in a given year, but rather how much the scheme is expected to generate based on its design and assumptions on operational conditions.

The source of this information varies. For older schemes it is based on historical output. For newer schemes it is based on the Acceptance Certificate (an internal document that shows the expected benefits of the project when delivered). For schemes owned by PFIs or 3rd Party hosted on Scottish Water land, we rely on the information provided by these companies.

#### C3.4 Percentage of 2030 renewable target reached (1320GWh generated and hosted)

This is a calculated figure that tracks progress against our 1320GWh target. It compares line 3.3 in GWh to the 1320 objective.

### Lines C3.5-C3.9 Renewable technologies

This section shows the volume of renewable electricity generated, split by technology and ownership.

The largest contribution comes from hydro turbines; although the output in FY 2021-22 fell 7% compared to the year before given the restriction in hydro resources. Conversely, PV generation increased by 24% given that new schemes were commissioned. In addition whilst wind generation remained unchanged, generation from bioresources went up 13% thanks to better performances at Deerdykes and Nigg.

#### C3.10 Diesel consumption by Scottish Water fleet (transport by Scottish Water owned and leased fleet i.e. Scope 1)

This is the equivalent of C1.3 but expressed in litres of diesel rather than tCO2e. Note that we do not include PFI transport in scope 3 of our operational footprint and so we do not have this data to report.

#### C3.11 Other fuels (non-transport)

This includes fuels not used for transport, including natural gas for heating and on-site fuel use in generators. This is the equivalent of C1.1 but expressed in GWh rather than tCO2e.

### Lines C3.12-C3.14 Income received from energy exports and decarbonisation payments

All values presented have been extracted from our general ledger which captures costs at an account level. With the exception of Scottish Water Horizons, Line 3.12 is derived from amounts recorded as exported to grid. **Line 3.13** is derived from amounts recorded as Renewable Obligation Certificates (ROC) and Feed in Tariffs (FIT) income.

Scottish Water Horizons, **Line 3.12**, has been populated using income recorded as sale of electricity and does not include the sale of electricity to the core business.

#### C3.15 Other income associated with renewables

All values presented have been extracted from our general ledger which captures costs at an account level. **Line 3.15** represents income received from hosting renewables on Scottish Water sites.

### Lines C3.16-C3.20 Electricity Expenditure

All values presented have been extracted from our general ledger which captures costs at an account level. **Line 3.16** is derived from charges from Optima and also includes Power Purchase Agreements charges and other non-optima charges. The value reported for gross expenditure is net of offset benefits.

Recharges of electricity expenditure represents the sale of renewable electricity from Scottish Water Horizons to the core business. This is also reported within the N Tables.

### Lines C3.21-C3.23 Memo (renewable electricity generated and exported)

The most significant factor behind the reduction in the volume of self-generated electricity exported to the grid is a reduction in hydro-generation; this was due to the reduction in water resources available at these sites in the report year when compared with the previous year.

# Table C4 - Land and carbon inventory

## Introduction

This is the first time Scottish Water has undertaken carbon assessment of its landholdings (Table C4). Consequently, only those lines in which we have a reasonable level of confidence have been included this year and we will review the approach to data and reporting in future years.

Land is considered a key part of the Scottish Water asset base and our potential for delivering Net Zero. We therefore need to understand, manage and enhance our landholdings as an operational asset for carbon sequestration and greenhouse gas emissions reductions; and to report credible data on our landholdings’ carbon balance.

We have been working with James Hutton Institute (JHI) to develop an ’inventory approach’ to quantifying a baseline of the carbon stocks and flux of our landholdings, such that they can be quantified in the balance of net zero emissions. The Scottish Water greenhouse gas baseline inventory is transparent in its calculation, based on the best spatially explicit nationally available data, robust and referenceable modelling approaches and published emission factors. The methodologies used are strengthened further through the co-construction of principles and approaches with external stakeholders, including Scottish Government and NatureScot. The method of calculation considers land cover, soil type, peatland condition, climate, topography and land management. The report on this piece of work will be published in due course and will inform future AR submissions.

### Data sources and confidence grades

JHI compiled nationally available data sets on a 50x50 m grid to create an inventory for each of Scottish Water’s land holdings, based on eight land cover classes: Peatland, Forestry-Broadleaved, Forestry-Coniferous, Arable land, Improved grassland, Rough grassland, Moorland, Montane habitats.

The base land cover map was the freely available Land Cover of Scotland 1988, which represents upland landcover well. Forestry planting is the biggest land cover change since this data was derived. The cover map was corrected for forestry planting using both Scottish Water forestry data and the Forestry Commission’s Forest Inventory (2019).

This analysis was conducted on our major landholdings, mostly those under agricultural tenancies or grazing lets, and excludes those small areas of land associated with, for example, operational sites and assets, which were not part of this initial carbon assessment. Therefore, in future years, land cover numbers will change as future iterations of the carbon baseline, to be carried out on a three-yearly basis, are able to take account of more of our landholdings.

Data for C4.1-C4.5 are taken from the Scottish Water greenhouse gas baseline inventory described above. Consisting of the extent of landholdings covered by Scottish Water’s GIS system used to assess carbon status. This excludes those small areas of land associated with, for example, operational sites and assets, which were not part of this initial carbon assessment. The division of landholdings between the land types is based on national data sets and will be updated over time with Scottish Water site data.

### Data improvement programmes

The requirement to consider uncertainty in the Scottish Water baseline emissions, informs Scottish Water priorities for acquiring new input data for improving the baseline estimates. The largest improvements can be made by verifying the condition of peatland and the age of woodlands on our landholdings. We anticipate having sufficient confidence in carbon flux numbers to report them in 2023-24, as part of the baseline update, although further data improvement will continue beyond that date.

### Assumptions used for forecast data

The C4 Table does not include forecasts.

## Commentary

### Lines C4.1-C4.10 Carbon sequestration – Baseline

#### C4.1 Total area of peatland

The reported value of 4,614 ha is based on our major landholdings, mostly those under agricultural tenancies or grazing lets, and excludes those small areas of land associated with, for example, operational sites and assets, which were not part of this initial carbon assessment.

#### C4.2 Total area of woodland

The reported value of 3,807 ha is based on our major landholdings, mostly those under agricultural tenancies or grazing lets, and excludes those small areas of land associated with, for example, operational sites and assets, which were not part of this initial carbon assessment.

#### C4.3 Total area of grassland

The reported value of 5,897 ha is based on our major landholdings, mostly those under agricultural tenancies or grazing lets, and excludes those small areas of land associated with, for example, operational sites and assets, which were not part of this initial carbon assessment.

#### C4.4 Total area of other land cover types

The reported value of 8,899 ha is based on our major landholdings, mostly those under agricultural tenancies or grazing lets, and excludes those small areas of land associated with, for example, operational sites and assets, which were not part of this initial carbon assessment.

#### C4.5 Total area of landholdings

The reported value of 23,217 ha is the sum of **Lines C4.1-C4.4.**

#### C4.6 CO2e emissions from peatland in year

Not reported this year. The condition of peatland is the is the most important factor in determining associated emissions. As the condition was assumed for each 50m grid square, the range of potential emissions is very wide.

We are undertaking a programme of inspections to verify the conditions of our peatlands. We anticipate having sufficient confidence in carbon flux numbers to report them in 2023-24, as part of the baseline update, although further data improvement will continue beyond that date.

#### C4.7 CO2e emissions from woodland in year

Not reported this year. The age of trees is one of the most important factors in determining associated sequestration rates. The age of all our woodland was assumed to be 30 years, plus or minus 20 years, therefore the range of potential sequestration is large.

We will begin a programme of assessment of our woodlands to determine a smaller and more accurate age range for each one. As these are done, the data for each woodland will be added to the land inventory, replacing the current assumption. In addition, representative species were used for calculating sequestration rates – Sitka for coniferous, and birch for broadleaved woodland – whereas we know there will be a wide range of species within our woodlands. We anticipate having sufficient confidence in carbon flux numbers to report them in 2023-24, as part of the baseline update, although further data improvement will continue beyond that date as more woodlands are assessed.

#### C4.8 CO2e emissions from grassland in year

Not reported this year. Land management emissions (such as those associated with stock animals) are inextricable from emissions associated with the soil and vegetation of the land. Scottish Water has very limited control over management emissions as this is within the gift of the tenant farmer of grazier.

#### C4.9 CO2e emissions from other land cover types in year

Not reported this year.

#### C4.10 Total CO2e emissions from landholdings in year

Not reported this year. Due to a quirk within Excel, the summation formula returns a zero here whereas the cell should be blank. This has a knock-on effect on data brought forward to **Line C0.7** and the calculation in **Line C0.9** Net operational Emissions Net of Insetting and Offsetting (Closing).

### Lines C4.11-C4.19 Carbon sequestration – progress

#### C4.11 Peatland restored in year

The figure of 7.01 hectares was agreed with NatureScot in June 2022. During 2021-22 we did not manage to restore as much peatland as targeted owing to the challenges of operating on third party land. We are adjusting our approach to focus on Scottish Water owned peatland in future.

#### C4.12 Woodland created in year

The reported value of 74 ha consists of planting completed within the reporting year at four sites. At the largest of these sites, existing commercial timber that was due to be harvested, was removed prior to being replanted as part of the woodland project. This is not included in the numbers reported here for new woodland creation.

In terms of felling, 26 hectares of mature trees were felled as part of normal management procedures. This will be replanted in the coming winter period with a more biodiverse mix of trees, and the area will continue to be managed as woodland (i.e. no net land use change).

C4.13 Grassland restored and created in year

No grassland projects took place within the reporting year.

#### C4.14 Other land cover changes in year

No other land cover change projects took place within the reporting year.

#### C4.15 Total land area changed in year

During 2021-22 81 ha of land use change occurred (sum of **Lines C4.11-C4.14**). Note that the formula has been amended to include **Line C4.14**.

#### C4.16 Peatland restored in year (forecast benefit in future years)

Not reported this year.

#### C4.17 Woodland created in year (forecast benefit in future years)

Not reported this year.

#### C4.18 Grassland restored and created in year (forecast benefit in future years)

Not reported this year.

#### C4.19 Other land cover (forecast benefit in future years)

Not reported this year.

### Lines C4.20-C4.24 Expenditure

#### C4.20 Expenditure on peatland restoration in year

The expenditure figure of £8.5k consists only of contractor costs for physical restoration. It excludes all overheads, surveys etc. It was not possible to extract these for 2021-22, but a change in delivery model will enable them to be included in future years.

#### C4.21 Expenditure on forestry creation in year

Expenditure of almost £420k consists of all costs associated with site preparation, including road construction, fencing, ground preparation and planting. This excludes Middle Coul archaeological survey (done in 2020-21) and overhead costs and income, grants, and third-party funding for all sites. All overheads will be included in future years but were not able to be extracted from a higher-level cost code for Middle Coul in 2021-22.

#### C4.22 Expenditure on grassland restoration and creation in year

No grassland projects took place within the reporting year.

#### C4.23 Other land cover

No other land cover change projects took place within the reporting year.

#### C4.24 Expenditure on land managed for sequestration in year

Estimated expenditure on land management for sequestration (including peatland restoration) was £428k (sum of C4.20-4.23). Note that the formula has been amended to include line C4.23.

### Lines C4.25-C4.27 Memo Lines

#### C4.25 Total area of landholdings in previous year

The total area of landholdings of 23,217 ha is the same as that given for 2021-22 and has been included because the JHI inventory was conducted using 2020-21 data. This number will change as data improves and as more of our operational sites can be included in the assessment. Changes will be reported on a three-yearly basis when the baseline work is repeated.

#### C4.26 Total CO2e emissions from landholdings in previous year

Not applicable. Not reported this year.

#### C4.27 Expenditure on land managed for sequestration in previous year

This is the first year of reporting these lines and data is not available.

Section D – Asset Information

# Table D5 - Activities – Water Service

## Introduction

The D Tables provide information on activities relating to water mains and critical/non-critical sewers during the report year. Table D5 covers the water mains activities. The overall increase in activity across the reported lines when compared to AR21 can be largely attributed to a return to pre COVID-19 levels following the easing of restrictions.

### Data sources and confidence grades

The lengths reported in Table D5 are taken, unless otherwise stated, directly from digitised infrastructure in Scottish Water’s GIS system.

Mains Renewed and Mains Relined are reported from interventions carried out during reactive operations, capital maintenance and capital project interventions; Mains Cleaned is reported from work done as part of the capital programme.

The number of Pipes Replaced is taken from Scottish Water’s lead replacement programme records. These include descriptions of the location address, work carried out and date completed. This level of detail provides assurance that the numbers and reasons for pipe replacement are categorised correctly and quantified within 5% accuracy.

All confidence grades remain as per last year.

Further detailed information on how individual cells are calculated, including the components of the calculation, is contained in the assurance report for the D tables.

### Data improvement programmes

There were no data improvement programmes during AR22.

### Assumptions used for forecast data

There is no forecast data for the D5 table.

## Commentary

### Lines D5.1-D5.11 Mains – Asset Balance

#### D5.1 Total length of mains (opening balance)

These lines report the water mains asset balance at March 2022 and the number of communication pipes replaced in this Reporting Year.

The closing balance for water mains on **Line D5.8** is 48,945.39km, 0.23% higher than the opening value reported on line D5.1 (which is consistent with the 48,831.93km reported in **Line H3.4** in AR21).

The confidence grade of A1 remains the same as last year.

#### D5.2 Mains renewed

This has increased by 23%, from 30.21km in AR21 to 37.29km in AR22. This is mainly due to the reduction in work due to COVID-19 reported last year.

The confidence grade of B3 remains the same.

#### D5.3 Mains relined

This has more than doubled from 6.89km in AR21 to 14.33km in AR22. This is mainly due to the reduction in work due to COVID-19 which was reported last year.

The confidence grade of B3 remains the same.

#### D5.4 Mains cleaned (Total)

The total length of mains cleaned has decreased by 28%, from 1,826.81km in AR21 to 1,310.43km in AR22. The reduction in Total length (L**ine D5.4**) and in Length of Distribution mains cleaned for quality (L**ine D5.5**) from the level reported at AR21 is due to a change in approach from SR15.

Scottish Water has built on the learning gained in delivering the SR15 OMG06 Mains Cleaning programme, which adopted a one-off “source to tap” zonal cleaning approach and have enhanced this by improving our understanding of how biofilms and metals accumulate and are then mobilised within water networks. A range of field investigations applying the learning gained from the University of Sheffield PODDS (Prevention of Discolouration in Distribution Systems) project are undertaken to build this understanding.

These activities are recorded as “Investigations” rather than “cleaning” even where mains flushing activities are carried out as part of the investigative work. This ensures that Scottish Water targets our interventions at locations and at a frequency to manage the rate of material regeneration within the water network. To support this new approach, Scottish Water suggests that a different set of metrics is discussed with the Commission for consideration for application to future ARs.

The confidence grade of B3 remains the same as last year.

#### D5.5 Distribution mains cleaned for quality

As with **Line D5.4** this has decreased by 49%, from 1,814.77km in AR21 to 916.09km in AR22. The reason for the reported decrease is detailed in the commentary for **Line D5.4.**

The confidence grade of B3 remains the same as last year.

#### D5.6 New mains

**Line D5.6** is a combination of the length adopted for new developments and lengths delivered as part of our capital programme. The length reported in AR21 was 106.91km. In AR22 we reported 103.99km a marginal decrease from last year.

The confidence grade of B2 remains the same as last year.

#### D5.7 Mains abandoned

This has slightly decreased from 86.1km to 84km in AR22.

The confidence grade of B2 remains the same as last year.

#### D5.7a Other Changes

The length reported is the balancing value to bring the total changes in the year in line with the closing balance reported in **Line D5.8**. The length in this reporting year is -56.18km compared with -37.14km in AR21.

The confidence grade of B3 remains the same as last year.

#### D5.8 Total length of mains (closing balance)

The total length reported for AR22 is 48,945.39 km, compared with 48,831.93km in AR21, and is consistent with **Line H3.4**.

The confidence grade of A1 remains the same as last year.

#### D5.9 Lead communication pipes replaced - quality

The total number in AR22 is 682. This has decreased by 39% this year from 1,131 in AR21. The source of the information used to populate this line is to be reviewed to ensure consistent reporting in future.

The confidence grade of B2 remains the same as last year.

#### D5.10 Lead communication pipes replaced – maintenance or other

The total number in AR22 is 6. This is an increase from zero in AR21.

The confidence grade of B2 remains the same as last year.

#### D5.11 Communication pipes replaced - other

The total number replaced in AR22 is 159. This is an 184% increase from the number reported in AR21, which was 56. It is unclear whether this is due to a change in methodology or an upturn due to easing of COVID restrictions. Scottish Water will endeavour to investigate the root cause.

The confidence grade of B2 remains the same as last year.

# Table D6 - Activities – Wastewater Service

## Introduction

The D Tables provide information on activities relating to water mains and critical/non-critical sewers during the report year. Table D6 covers the activities on critical/non-critical sewers. Some changes in figures are due to an improvement in the methodology used to analyse the GIS digitised sewer laterals.

### Data sources and confidence grades

The lengths reported in Table D6 are taken directly from digitised infrastructure in Scottish Water’s GIS system unless otherwise stated.

The length reported in ‘Other Changes to Sewers’ is the balancing value to bring the total changes in the year to the current total length of sewers as reported in **Line H4.1**.

All confidence grades remain as per last year.

### Data improvement programmes

Data is constantly updated in GIS by digitising new development plans and the opportunistic recording of information gathered during operational activities.

A new method was used to identify sewer laterals that had been digitised using more than one line but were part of the same pipe. Previously, each line had been taken as being a complete lateral pipe and one property counted for each line.

### Assumptions used for forecast data

There is no forecast data for the D6 Table.

## Commentary

### Lines D6.1-D6.8 - Sewers

These lines report the sewer asset balance at March 2022. A 19% (54km) increase in new sewers is reported in AR22 and a 21% (3km) increase in abandoned sewers compared to AR21.

The balancing **Line D6.7a** has reduced from -394km in AR21 to 182km in AR22.

The improvement in the methodology used to analyse the GIS digitised sewer laterals (around 16% of the total calculated length of laterals) resulted in a similar digitised length as AR21, but a smaller number of properties were identified as being connected to a digitised lateral.

The adjustment meant a change in the digitised property count went into the calculation used to estimate the total length of sewer laterals and resulted in a reduction of approximately 200km of sewer laterals contributing to the change in the total sewer length being reported.

**D6.3 New sewers added during the year**

The length reported has increased by 19%, from 279.93km in AR21 to 333.91km in AR22.

The confidence grade of B2 remains the same as last year.

#### D6.4 Sewers inspected by CCTV or man entry during the year

In AR22 there was 76.23km of sewers inspected; an increase of 214% from AR21. The increase is due primarily to 2 large projects - Paisley and Glasgow (27.7km) and Edinburgh (24.2km) CCTV phases of the Wastewater Infrastructure Capital Maintenance programme being reported this year.

The confidence grade of B3 remains the same as last year.

#### D6.5 Sewers – renovated

In AR22 0.57km of sewers were renovated as part of the sewer rehabilitation programme, compared with 0.12km in AR21.

The confidence grade of B2 remains the same as last year.

#### D6.6 Sewers - replaced

In AR21 we reported 0.66km of sewers were replaced; and in AR22 0.09km were replaced as part of the infrastructure programme in this reporting year.

The confidence grade of B2 remains the same as last year.

#### D6.7 Abandoned sewers

In AR22 we reported 18.2km of sewers as abandoned. This represents a 21% increase from the 15.08km reported in AR21.

The confidence grade of B2 remains the same as last year.

#### D6.7a Other changes to sewers

The length reported is the balancing value to bring the total changes in the year in line with the closing balance reported in **Line D6.8**. For AR22 the balancing has reduced considerably from -394km to 182.22km. As explained above this was due to an improvement in the methodology used to analyse the GIS digitised sewer laterals.

The confidence grade of B2 remains the same as last year.

#### D6.8 Total length of sewer - closing balance

The closing balance for sewers on **Line D6.8** is 53,601.91km, compared to 53,468.42km reported in AR21 and is consistent with **Line H4.1**.

The confidence grade of B2 remains the same as last year.

Section E - Operating Costs and Efficiency

The E tables report the numbers of Infrastructure and non-infrastructure assets. These are held in Scottish Water’s corporate GIS and Ellipse inventory, respectively, and were operational during 2021/22. In comparison with Section H, which reports the number of infrastructure and non-infrastructure assets in the corporate inventory systems that were operational as of 31 March 2022.

#### Activity Based Management

The cost analysis in E Tables (E4, E6, E7, E8, E9 and E10) were prepared using reports from Scottish Water’s Activity Based Management (ABM) model on a historic cost basis, excluding IFRS adjustments. The ABM model provides analysis of the costs of key activities and processes and links these to the factors that cause or drive the level of cost. This allows us to develop an understanding of the full cost of providing services, both within Scottish Water and to our customers.

As with previous Annual Returns costs are captured or allocated in line with Regulatory Accounting Rules.

A more detailed commentary on ABM methodology and cost allocation is provided in support of Regulatory Accounts Tables M18 and is not repeated in this document. ABM data (financial and non-financial) is captured in various corporate systems which are also described in the M18 methodology document.

Direct costs are predominantly captured in the core corporate financial system, with labour costing feeds from the core corporate works management system. A high proportion of direct costs are captured by asset or zone, hence the A2 confidence grade (as per AR21). A smaller proportion of costs – mainly general and support costs – remains to be allocated to asset/zone by means other than direct capture.

Confidence grades of the operating cost lines on the E Tables remain consistent with 2020/21.

# Table E3 – Public-Private Partnership Project Analysis

## Introduction

Table E3 and E3a provide details of the 21 Public-Private Partnership (PPP) wastewater treatment works that are managed under 9 separate PPP concession agreements.

The assets that form part of each scheme are detailed in Table 33 below.

Table 33: PPP schemes

|  |  |
| --- | --- |
| **PPP Scheme** | **Wastewater Treatment Works\*** |
| Highland | Fort William, Inverness |
| Tay | Hatton |
| Aberdeen\* | Nigg, Persley, Peterhead, Fraserburgh |
| Moray Coast | Lossiemouth, Buckie, Banff/Macduff |
| AVSE | Seafield, Newbridge, East Calder, Blackburn, Whitburn |
| Levenmouth | Levenmouth |
| Dalmuir | Dalmuir |
| Daldowie\*\* | Daldowie sludge treatment centre |
| MSI (Ayrshire) | Meadowhead, Stevenston, Inverclyde |

\* Aberdeen PFI within the ownership of Scottish Water Horizons Holdings Ltd from December 2018. Existing contract, operational and reporting protocols remain in place despite the change in ownership.

\*\* Daldowie is a sludge treatment centre only.

### Data sources and confidence grades

Data sources and confidence grades for Table E3 remain the same as AR21. Further detailed information on how individual cells are calculated, including the components of the calculation, is contained in the assurance report for the E Tables.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used for forecast data

There is no forecast data for the E3 Table.

## Commentary

### E3.0-E3.3 Project Data

#### E3.1 Annual average resident connected population

This increased by 10,900 (0.49%) to 2,242,700. There is no significant movement within individual WwTW catchments.

Properties connected to the wastewater network are identified in GIS and associated to their catchments. Population figures are then calculated from census data. This method is unchanged from last year.

#### E3.2 Annual average non-resident connected population

**Line E3.2** is calculated from tourist property occupation statistics published by Visit Scotland as reported in **Lines A2.1 and A2.2**.

This is reflected in the total annual average non-resident connected population being 57.7% lower than AR21, decreasing by approximately 16,000 to 11,470 in AR22, as explained in Section A.

#### E3.3 Population equivalent of total load received

The lower Non-resident Connected Population has been offset by increases in other elements that contribute to the population equivalent (PE) in **Line E3.3**. These elements (non-household, trade effluent etc) cover the Annual Return period 2021-2022 and have increased following the unusually low figures reported in AR21 linked to COVID-19 measures. As a result, there is a 2.9% increase reported in the PE of total load received figure, increasing by approximately 80,000 to 2,880,300.

### E3.4-E3.8 Scope of Works

A breakdown of the scope of the PPP works is detailed in Table 34 below.

Table 34: Sewerage Information (E3.4)

| **PPP Works** | **Scope of works** |
| --- | --- |
| Fort William | Includes 4 pumping stations and associated pumping mains. |
| Inverness | Includes 14 pumping stations and associated pumping mains/gravity sewers. |
| Hatton | Includes 16 pumping stations and associated pumping mains/gravity sewers. |
| Nigg | Includes 14 pumping stations and associated pumping mains/gravity sewers. |
| Persley | Includes a short section of gravity sewer. |
| Peterhead | Includes a short section of gravity sewer. |
| Fraserburgh | Includes 1 pumping station and a section of gravity sewer. |
| Lossiemouth | Includes 7 pumping stations and extensive pumping mains. |
| Buckie | Includes 12 pumping stations and extensive pumping mains. |
| Banff/Macduff | Includes 10 pumping stations and extensive pumping mains. |
| Seafield | Includes 7 pumping stations, the Esk Vtrunk sewerage network with associated pumping and a number of storm water works with overflows. |
| Newbridge | Includes 2 pumping stations, a section of gravity sewer and a storm water works with overflow. |
| Whitburn | Includes 1 pumping station located within the site boundary. |
| Levenmouth | Includes 8 pumping stations and associated pumping mains and gravity sewers. |
| Daldowie | Includes 1 pumping station and a pumping main. |
| Inverclyde | Includes a short section of gravity sewer. |

#### E3.5 - Sewage Treatment

Daldowie does not include sewage treatment as it is exclusively a sludge treatment centre. Permanent sludge treatment facilities are detailed in Table 35 below.

Table 35: Permanent sludge treatment facilities (E3.6)

| **PPP Permanent Sludge treatment facilities** | **Details** |
| --- | --- |
| Inverness | Indigenous sludge, imports from Fort William, plus Scottish Water imports. |
| Hatton | Indigenous sludge plus Scottish Water imports. |
| Nigg | Indigenous sludge, imports from Persley, Peterhead and Fraserburgh plus Scottish Water imports. |
| Lossiemouth | Indigenous sludge, imports from Buckie and Banff/Macduff plus Scottish Water imports. |
| Seafield | Indigenous sludge, imports from Newbridge, East Calder, Blackburn and Whitburn, plus Scottish Water imports. |
| Newbridge | Occasional treatment of indigenous sludge, occasional imports from East Calder, Blackburn and Whitburn. |
| Levenmouth | Indigenous sludge plus Scottish Water imports. |
| Dalmuir | A new permanent sludge treatment facility has been commissioned, which centrifuges some of the indigenous sludge in order to limit the pass forward of Dalmuir sludge to Daldowie STC to a maximum ferric content of 2 tonnes/day. |
| Daldowie | Receives sludge from Dalmuir and Scottish Water wastewater treatment works (Daldowie, Shieldhall, Paisley, Dalmarnock and Erskine) by sludge pipeline and from Scottish Water tankered imports. |
| Meadowhead | Indigenous sludge plus imports from Stevenston and Inverclyde. |

Persley, Peterhead and Fraserburgh are not classed as sludge treatment centres as any indigenous or processed sludge is normally taken to Nigg for treatment. However, due to maintenance works during April 2021 and March 2022 these three sites produced some thickened raw cake for onward disposal.

#### E3.7 - Terminal Pumping Station

This means a pumping station that is the final point on the forward flow path from a sewerage network into a wastewater treatment works and may include both pumping of all/partial Flow to Full Treatment (FFT) flows or stormwater flows to storm tanks and/or storm outfalls. The Terminal Pumping Station may form part of the sewerage network (i.e. be remote from the WWTW) or may be associated with a wastewater treatment works depending on actual location and power supply source. It is not a Combined Pumping Station or a Stormwater Pumping Station.

The works detailed in Table 36 below include incoming terminal pumping stations as part of the PPP scheme. Maximum capacity (l/s) of these terminal pumping stations, excluding standby capacity, is given in brackets.

Table 36: Works with terminal pumping stations (E3.7)

| **PPP Works** | **Details** |
| --- | --- |
| Fort William | Caol Transfer (118 l/s), Fort William WWTW (590 l/s). |
| Inverness | Allanfearn WWTW (50 l/s) This pumping station receives flows from a small part of the catchment. |
| Hatton | South Balmossie (1,563 l/s), West Haven (110 l/s), Inchcape Park (241 l/s). |
| Fraserburgh | Fraserburgh Inlet (195 l/s). |
| Lossiemouth | Duffus Junction (33 l/s), Moycroft (300 l/s). |
| Buckie | Nook (84 l/s), Shipyard (70l/s), Buckie WWTW (13 l/s). |
| Banff/Macduff | Craigfauld (552l/s), Banff/Macduff WWTW (222 l/s). |
| Seafield | A proportion of total flow is delivered via Marine Esplanade Terminal PS (1420 l/s). |
| Newbridge | A proportion of total flow is delivered via the Ratho Sewer Terminal PS (196 l/s). |
| Whitburn | A proportion of total flow is delivered via the Harrison Sewer Terminal PS (45 l/s). |
| Levenmouth | All flow delivered via terminal pumping stations; Methil M2 (125 l/s), Leven (212 l/s), Buckhaven (133 l/s), Levenmouth WWTW inlet FFT flows (1,650 l/s), Levenmouth WWTW inlet storm flows (2,347 l/s). |

There are no works in the category ‘Other’ (**Line E3.8**).

### E3.9–E3.14 - Effluent consent standards

Where an effluent consent standard (**Lines E3.9-3.13**) includes both Controlled Activities Regulations (CAR) and Urban Wastewater Treatment Directive (UWWTD) elements the stricter standard is given in the Annual Return. The effluent consent standards, based on data from the current SEPA licences, are summarised as:

* Suspended solids consent (**E3.9**) – All CAR
* BOD consent (**E3.10**) – All UWWTD, except Newbridge, East Calder, Blackburn and Whitburn which are CAR parameters
* COD consent (**E3.11**) – All UWWTD
* Ammonia consent (**E3.12**) – All CAR
* Phosphate consent (**E3.13**) – All CAR

At Newbridge, East Calder, Blackburn and Whitburn the consent is expressed as 'Mean concentration of total phosphorus of any series of composite samples taken at regular but randomised intervals in any period of 12 months’.

#### Line E3.14 - Compliance with effluent consent standards

BOD, COD, SS, ammonia, and phosphate are reported for each works, based on the total number of sample results and exceedances (upper and lower tier) for sanitary determinands (to the exclusion of other parameters that may be included in the SEPA consent). Where an effluent consent standard includes both CAR and UWWTD standards both sets of samples are used for the calculation of compliance.

Percentage compliance is calculated as:

*(1-(total number of failures/total number of samples)) x 100*

The Operator Self-Monitoring (OSM) results for the period ending 31 December 2021, downloaded from Power BI, have been taken as the definitive data source and, as such, it has been assigned a confidence grade of A1.

Failures and exceedances at Scottish Water PPP sites are listed in Table 37 below. A comparison of these is shown in the following two tables (Table 38 and Table 39 ) which show an increase in the number of exceedances from 3 to 4 and no failures in either year.

Table 37 Exceedances and Failures 2021

| **Site** | **CAR/UWWTD standards** | **Parameter** | **Exceedance (E) /**  **Failure (F)** | |
| --- | --- | --- | --- | --- |
| Nigg | UWWTD | COD | E | 16/08/2021 |
| Lossiemouth | UWWT | BOD | E | 07/05/2021 |
| Lossiemouth | UWWT | COD | E | 07/05/2021 |

Table 38: Exceedances 2021 vs 2020

| **Site** | **CAR/UWWTD standards** | **Parameter** | **2021** | **2020** |
| --- | --- | --- | --- | --- |
| Nigg | UWWTD | COD | 1 |  |
| Lossiemouth | UWWTD | BOD | 1 | 1 |
| Lossiemouth | UWWTD | COD | 1 | 1 |
| Lossiemouth | UWWTD | COD |  | 1 |

Table 39: Failures 2021 vs 2020

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Site** | **CAR/UWWTD standards** | **Parameter** | **2021** | **2020** |
|  |  |  | - | - |

#### Nigg WwTW

On 13 August 2021, a controller system failed within the biological treatment process. The consequence of this failure was a lack of filter backwashing and subsequent retention of process solids, resulting in a deterioration in final effluent quality and exceedance of the COD standard on 16August 2021.

#### Lossiemouth WwTW

The Lossiemouth exceedances (BOD and COD) on 7 May 2021 were linked to the failure of a mechanical asset (decant arm) within the biological treatment process. No influent BOD result was available following an error in the laboratory. On this basis, no percentage reduction calculation for BOD and COD was possible (which is the normal protocol for a numeric exceedance).

There are a number of variances in sludge treatment and disposal, with incineration and land reclamation reducing and the volume going to Farmland Advanced increasing. The sludge disposal variances are subject to factors outwith Scottish Water’s control and weather, population movement, operational issues, Scottish Water imports (we may elect to use different sites), trade effluent changes and process optimisation can all have a consequence on tonnages. The tonnages supplied are a theoretical calculation and therefore have inherent variances that cannot be pinpointed.

### E3.15-E3.21 Treatment works category

Information contained in the lines on treatment works category(**Lines E3.15-E3.21**) is extracted from the project agreements and is given a confidence grade of A1.

* Primary (**E3.15**) – all plants
* Secondary activated sludge (**E3.16**) - includes all plants except Blackburn
* Secondary biological (**E3.17**) - Blackburn
* Tertiary A1 (**E3.18**) – summarised in Table 40
* Tertiary A2 (**E3.19**) – summarised in Table 41
* Tertiary B1 (**E3.20**) -no plants sit in this category
* Tertiary B2 (**E3.21**) – summarised in the Table 42

Table 40: Tertiary A1 – Activated sludge process (E3.18)

|  |  |
| --- | --- |
| **Site** | **Treatment Process Details** |
| East Calder | Nitrifying filters |
| Whitburn | Nitrifying filters |
| Dalmuir | Nitrifying filters |

Table 41: Tertiary A2 – Activated sludge process (E3.19)

| **Site** | **Treatment Process Details** |
| --- | --- |
| Persley | UV disinfection |
| Fraserburgh | UV disinfection |
| Levenmouth | Densadeg lamella settlement tanks |
| Newbridge | Low head loss sand filters |
| East Calder | Disc filters |
| Whitburn | Low head loss sand filters. |
| Meadowhead | Biofors tertiary filter. |

Table 42: Tertiary B2 - biological sludge process (E3.21)

|  |  |
| --- | --- |
| **Site** | **Treatment Process Details** |
| Blackburn | Disc filters. |

### E3.22 to E3.32 - Sewerage data

The sewerage data (**Lines E3.22 to E3.32)** includes all sewerage (sewers, pumping stations, rising mains, outfalls and long sea outfalls).

Data sources include: Concession Agreements, Operator O&M manuals, Operator asset inventories, Scottish Water GIS system, as built drawings and SEPA consents. Pump capacity (kW) has been obtained from motor drive rating, not the pump duty point.

#### E3.22 Total length of sewer

Length of outfalls included in data unless noted otherwise in commentary. Where terminal pumping stations are located remote from a wastewater treatment works, the length of rising main connecting the terminal pumping station and wastewater treatment works is included.

#### E3.23 Total length of critical sewer

All PPP sewers (including relief sewers, rising mains and CSO outfalls) are deemed to be critical.

#### E3.24 Number of pumping stations

Includes stormwater, combined and terminal pumping stations. Interstage and final effluent pumping stations forming part of a wastewater treatment plant are not included.

#### E3.25 Capacity of pumping stations (m3/d)

Includes stormwater, combined and terminal pumping stations. Maximum flow pumped forward per day. This excludes capacity of standby pumps.

#### E3.26 Capacity of pumping stations (kw)

Includes stormwater and combined pumping stations, but not terminal pumping stations. Includes capacity of standby pumps.

#### E3.27 Number of combined pumping stations

Combined pumping station means a network wastewater pumping station containing a pump or pumps transferring wastewater and surface drainage within the downstream sewerage network. The transferred wastewater flow rate from the combined pumping station is known as the FFT rate, the generally accepted term used in design and SEPA consents. For the sake of clarity, where storm water storage tank returns are pumped back into the sewerage system for onward flow, this shall be classed as a combined pumping station (as such flows become part of FFT). Terminal pumping stations are not included.

The combined pumping stations listed in Table 43 below are included.

Table 43: Combined pumping stations (E3.27)

| **Site** | **Description** |
| --- | --- |
| Fort William | Blar Mhor, Caol No1 |
| Inverness | Longman |
| Hatton | Riverside, KGV, Stannergate, West Ferry, Broughty Castle, Fort Street, Gray Street |
| Nigg | Downies, Portlethen Village, Newtonhill Clifftop, Portlethen South, Backies, Cowie (3), Slughead, Bridge of Muchalls, Cammachmore, Portlethen North |
| Lossiemouth | Burghead, Cummingston, Hopeman, Moycroft |
| Buckie | Portgordon West, Portgordon East, Seatown, Cluny, Cullen East, Portknockie, Findochty, Portessie |
| Banff/Macduff | Whitehills, Whitehills Harbour, Inverboyndie, Scotstown, Castlehill Park, Union Road, Bankhead |
| Seafield | Wallyford Transfer, Wallyford SWW, Portobello SWW, Harelaw SWW, Dalkeith SWW, Mayshade SWW\* |
| Newbridge | Broxburn SWW |
| Levenmouth | Methil M1 |

\*Mayshade SWW: pumping station comprises a separate duty/standby pump set in two separate storm tanks. As only one duty pump operates at any one time (i.e. storm tank 1 emptied before commencing emptying of storm tank 2) these four pumps have been entered as a single combined pumping station on a 1 duty/3 standby basis.

#### E3.28 Capacity of combined pumping stations (m3/d)

Maximum flow pumped forward per day. This excludes capacity of standby pumps.

#### E3.29 Number of storm water pumping stations

Stormwater pumping station means a network wastewater pumping station containing a pump or pumps transferring wastewater, containing stormwater, to a stormwater storage tank or storm overflow. The stormwater pumping station transfers wastewater in excess of FFT, the generally accepted term used in design and SEPA consents. For the sake of clarity, the function of the stormwater pumping station is to prevent and/or limit surcharging of the upstream sewerage system.

The stormwater pumping stations in

Table 44 below are included.

Table 44: Stormwater pumping stations (E3.29)

|  |  |
| --- | --- |
| **Site** | **Description** |
| Inverness | Longman (2) |
| Hatton | Riverside, KGV, Stannergate, Westhaven, Broughty Castle, Inchcape Park |
| Nigg | Backies (2) |
| Lossiemouth | Moycroft |
| Buckie | Portessie |
| Banff/Macduff | Bankhead |
| Levenmouth | Leven, Roundall |

#### E3.30 Capacity of stormwater pumping stations (m3/d)

Maximum flow pumped forward per day. This excludes capacity of standby pumps.

#### E3.31 Number of combined sewer overflows & E3.32 Number of combined sewer overflows (CSO) (screened)

CSOs that overflow within the sewerage system rather than to an outfall discharging direct to the environment are not included.

The CSOs in Table 45 are included.

Table 45: List of CSOs (E3.31)

| **Site** | **Description** |
| --- | --- |
| Fort William | Caol No1, Caol Transfer |
| Inverness | Longman |
| Hatton | Riverside, KGV, Stannergate, South Balmossie, Westhaven, Broughty Castle, Inchcape Park, Panmurefield/Balmossie Mill (2) |
| Nigg | Downies, Portlethen Village, Newtonhill Clifftop, Backies (2), Cowie, Portlethen North, Nigg |
| Fraserburgh | Fraserburgh Inlet (Watermill) |
| Lossiemouth | Burghead, Cummingston, Hopeman, Moycroft |
| Buckie | Portgordon West, Portgordon East, Seatown, Cluny, Nook, Cullen East, Portknockie, Findochty, Portessie, Shipyard |
| Banff/Macduff | Whitehills, Whitehills Harbour, Inverboyndie, Scotstown, Castlehill Park, Union Road, Bankhead, Craigfauld |
| Seafield | Wallyford, Dalkeith\*, Hardengreen, Harelaw, Haveral Wood, Middlemills, Newbattle, Newtongrange, Suttieslea\* |
| Newbridge | Broxburn |
| Levenmouth | Buckhaven, Methil M2 CSO2\*\*, Methil CSO1\*\*, Leven, Roundall |

\*Seafield - Dalkeith SWW consists of two separate screen overflows on two separate legs of the sewer which combine at the SWW. As each screened overflow is located on the same site and feeds one common storm water tank and outfall, this overflow has been recorded as a single CSO. Suttieslea: ‘Copa Sac’, (equivalent to 6 mm screen), provided on outfall from storm tank.

\*\*Levenmouth - Methil CSO1 and Methil M2 CSO2 discharge into a common outfall.

### E3.33-E3.40 Sludge Treatment and Disposal Data

The quantities reported are the total sludge tonnages prior to the sludge treatment process. This is in accordance with the methodology used in England & Wales. The information is based on PPP Company records of sludge disposed to the appropriate route.

To be consistent with other PPP works, Allanfearn sludge quantities disposed of by Scottish Water are included in Table E3 and the corresponding costs are included in Table E3a.

# Table E3a - PPP Cost Analysis

## Introduction

Table E3a provides operating costs for each scheme. As actual data is not available, all costs have been extracted from the relevant contractual financial models. Where the financial models do not split costs into specific categories the following has been assumed:

Works with a Sludge Centre: 72% Wastewater Treatment Costs, 28% Sludge Costs.

All other works: 80% Wastewater Treatment Costs, 20% Sludge Costs. These sludge costs have been allocated to the sludge treatment centre where the sludge is treated, e.g. Fort William sludge costs appear against Inverness sludge centre.

The cost split was reviewed in detail and agreed with WICS’ auditor in May 2007 and has not been subject to further discussion since that date.

### Data sources and confidence grades

#### E3a.1, E3a.8 and E3a.16 Estimated annual direct operating costs

Theseare based on the Concessionaire’s financial model adjusted for actual inflation.

Where the model specifically identified sums for rates and SEPA charges these have been deducted from that figure, otherwise the actual amount charged was deducted.

No adjustments were made at AVSE (for Rates), Daldowie (for Rates), and MSI (SEPA and Rates) as charges are paid by Scottish Water and are not included in the financial model. At Dalmuir, Scottish Water pays these charges, but amounts are also included in the financial model therefore an adjustment to the model costs is made (Rates and SEPA charges included in the model are refunded to Scottish Water).

An adjustment has been made to include the direct operational expenditure of the Dalmuir NTF and sludge treatment costs. 76% of the total fee is considered direct operational expenditure. This is further broken down to account for the ammonia treatment which is 84% of the ammonia fee and is allocated to wastewater treatment (**Line E3a.8**). The remainder is allocated to sludge treatment (**Line E3a.16**).

Additional cost for the operation of the Seafield Odour Project is also included, from 2017/18, with wastewater treatment (**Line E3a.8**).

During 2019/20 one of the traders discharging trade effluent through Scottish Water’s inlet reached agreement with the Meadowhead PPP operator to discharge directly into the WWTW which resulted in reduced costs to Scottish Water. This reduction of cost for the operation of the Meadowhead WwTW is included, from 2020/21 onwards, with wastewater treatment (**Line E3a.8**) and sludge treatment (**Line E3a.16**).

Actual costs are not known and could vary considerably from the contractual financial model. A confidence grade of D6 has therefore been used. A confidence grade of A3 was allocated to the Dalmuir sludge treatment costs as there is some visibility of these costs.

#### E3a.2, E3a.9 and E3a.17 Rates paid by the PPP Contractor

These are based on the rateable value and poundage published on the government website ([www.saa.gov.uk](http://www.saa.gov.uk)). Rates paid by Scottish Water are also included and are based on actual charges for the year (Dalmuir, Daldowie, MSI, AVSE).

Confidence grade for total rates paid for each site is A2, but because rates must be split to take account of the sewerage, treatment and sludge elements, a lower confidence grade has been applied (see Table *46*).

Table *46*: Confidence grades for total rates paid

|  | **E3a.2** | **E3a.9** | **E3a.17** |  |
| --- | --- | --- | --- | --- |
| Site | Sewerage | Sewage Treatment | Sludge Treatment | Comment on confidence grade |
| Fort William | N | B3 | N | No sludge centre at works, sludge cost moved to Inverness |
| Inverness | N | B3 | B3 | Cost distribution is estimated |
| Hatton | N | B3 | B3 | Cost distribution is estimated, based on the Financial Model |
| Nigg | N | B3 | B3 | Cost distribution is estimated, based on the Financial Model |
| Persley | N | B3 | N | No sludge centre at works, sludge cost moved to Nigg |
| Peterhead | N | B3 | N | No sludge centre at works, sludge cost moved to Nigg |
| Fraserburgh | N | B3 | N | No sludge centre at works, sludge cost moved to Nigg |
| Lossiemouth | N | B3 | B3 | Cost distribution is estimated, based on the Financial Model |
| Buckie | N | B3 | N | No sludge centre at works, sludge cost moved to Lossiemouth |
| Banff/Macduff | N | B3 | N | No sludge centre at works, sludge cost moved to Lossiemouth |
| Seafield | N | B3 | B3 | Cost distribution is estimated, based on the Financial Model |
| Newbridge | N | B3 | B3 | Cost distribution is estimated, based on the Financial Model |
| East Calder | N | B3 | N | No sewerage and no sludge centre at works, sludge cost moved to Newbridge |
| Blackburn | N | B3 | N | No sewerage and no sludge centre at works, sludge cost moved to Newbridge |
| Whitburn | N | B3 | N | No sludge centre at works, sludge cost moved to Newbridge |
| Levenmouth | N | B3 | B3 | Cost distribution is estimated |
| Dalmuir | N | B3 | N | No sludge treatment centre in the conventional sense – intermittent sludge thickening as operational need, no imports |
| Daldowie | N | N | A2 | No sewage treatment at works |
| Meadowhead | N | B3 | B3 | Cost distribution is estimated |
| Stevenston | N | B3 | N | No sewerage and no sludge centre at works, sludge cost moved to Meadowhead |
| Inverclyde | N | B3 | N | No sludge centre at works, sludge cost moved to Meadowhead |

#### **E3a.3, E3a.10 and E3a.18 SEPA charges paid by the PPP Contractor**

Cost allocation is as per the relevant SEPA invoices for 2021/22.

The confidence grades have been assigned as per Table 47 below.

Table 47: Confidence grades for PPP Contractor SEPA charges

|  | **E3a.3** | **E3a.10** | **E3a.18** |  |
| --- | --- | --- | --- | --- |
| **Site** | **Sewerage** | **Sewage Treatment** | **Sludge Treatment** | **Comment on confidence grade** |
| Fort William | A2 | A2 | N | No sludge centre at works |
| Inverness | N | A2 | A2 | No separate cost for sewerage |
| Hatton | A2 | A2 | A2 |  |
| Nigg | N | A2 | A2 | No separate cost for sewerage |
| Persley | N | A2 | N | No separate cost for sewerage, no sludge centre at works |
| Peterhead | N | A2 | N | No separate cost for sewerage, no sludge centre at works |
| Fraserburgh | N | A2 | N | No separate cost for sewerage, no sludge centre at works |
| Lossiemouth | A2 | A2 | N | No subsistence charge included in invoices |
| Buckie | A2 | A2 | N | No sludge centre at works |
| Banff/Macduff | A2 | A2 | N | No sludge centre at works |
| Seafield | A2 | A2 | A2 |  |
| Newbridge | A2 | A2 | N | No WML charge included in invoice |
| East Calder | N | A2 | N | No sewerage and no sludge centre at works |
| Blackburn | N | A2 | N | No sewerage and no sludge centre at works |
| Whitburn | N | A2 | N | No sewerage and no sludge centre at works |
| Levenmouth | A2 | A2 | A2 |  |
| Dalmuir | N | N | A2 | Only WML fees paid by the PFI Co |
| Daldowie | N | N | A2 | Sludge treatment only |
| Meadowhead | N | N | A2 | Only WML fees paid by the PFI Co |

Stevenston and Inverclyde have been removed from the above table as the SEPA fees for these sites are paid by Scottish Water and not the PFI Company.

#### E3a.4, E3a.11, E3a.19 and E3.23 Total Direct Costs - Total of E3a.1-E3a.3, E3a.8-E3a.11 and E3a.16-E3a.18.

Confidence grade for Total direct cost is D6 as per **E3a.1, E3a.8 and E3a.16** (Estimated direct operating cost) as this is the most significant element of Total Direct Cost. A confidence grade of A3 was allocated to the Dalmuir sludge treatment costs as there is some visibility of these costs.

#### E3a.5, E3a.12 and E3a.20 Scottish Water general and support expenditure

This includes:

* Costs such as advisors and legal costs, power, rent and insurance and the cost of the Scottish Water PPP department which administers PPP projects. Costs have been allocated to projects, relative to the operational costs at each site. Costs are as per the Profit & Loss (P&L).
* Scottish Water’s costs of sludge disposal from Inverness, inter-site sludge tankering and terminal pumping costs(where tankering or pumping has taken place between a Scottish Water works and a PFI site)and additional support costs.

The confidence grade for total charges is A1, but because Scottish Water PPP department costs must be split across all sites, and all charges have to be split to take account of the sewerage, treatment and sludge elements, the following confidence grades have been assigned (see Table 48 below).

Table 48: Confidence grades for total charges

|  | **E3a.5** | **E3a.12** | **E3a.20** | **Comment** |
| --- | --- | --- | --- | --- |
| **Site** | **Sewerage** | **Sewage Treatment** | **Sludge Treatment** | **Comment on confidence grade** |
| Fort William | CX | C4 | N | Network cost very small, no sludge centre at works |
| Inverness | C4 | C4 | C4 |  |
| Hatton | C4 | C4 | C4 |  |
| Nigg | C4 | C4 | C4 |  |
| Persley | CX | C4 | N | Network cost very small, no sludge centre at works |
| Peterhead | CX | C4 | N | Network cost very small, no sludge centre at works |
| Fraserburgh | CX | C4 | N | Network cost very small, no sludge centre at works |
| Lossiemouth | C4 | C4 | C4 |  |
| Buckie | C4 | C4 | N | No sludge centre at works |
| Banff/Macduff | C4 | C4 | N | No sludge centre at works |
| Seafield | C4 | C4 | C4 |  |
| Newbridge | CX | C4 | C4 | Network cost very small |
| East Calder | N | C4 | N | No sewerage and no sludge centre at works |
| Blackburn | N | C4 | N | No sewerage and no sludge centre at works |
| Whitburn | CX | C4 | N | Network cost very small, no sludge centre at works |
| Levenmouth | C4 | C4 | C4 |  |
| Dalmuir | N | C4 | A3 | No sewerage |
| Daldowie | C4 | N | C4 | No sewage treatment at works |
| Meadowhead | N | C4 | C4 | No sewerage |
| Stevenston | N | C4 | N | No sewerage and no sludge centre at works |
| Inverclyde | CX | C4 | N | Network cost very small, no sludge centre at works |

A confidence grade of A3 was allocated to the Dalmuir sludge treatment costs as there is some visibility of these costs.

#### E3a.6, E3a.13 and E3a.21 Scottish Water SEPA Charges

With the exception of Dalmuir and MSI, all CAR License SEPA charges are paid for by the PPP Company and are included in the tariff rates (see Table 49 below). Costs are as per the P&L and reflect charges as invoiced by SEPA.

Table 49: Confidence grades for Scottish Water SEPA charges

|  | **E3a.6** | **E3a.13** | **E3a.21** | **Comment** |
| --- | --- | --- | --- | --- |
| **Site** | **Sewerage** | **Sewage Treatment** | **Sludge Treatment** | **Comment on confidence grade** |
| Dalmuir | N | A2 | N | Treatment cost only, sludge (WML) costs are paid by the PFI Co |
| Meadowhead | N | A2 | N | Treatment cost only, sludge (WML) costs are paid by the PFI Co |
| Stevenston | N | A2 | N | No sewerage and no sludge centre at works |
| Inverclyde | BX | A2 | N | No sludge centre at works |

The above table only includes sites where SEPA fees are paid by Scottish Water. All sites where SEPA fees are paid by the PFI Company have been removed from the table.

#### E3a.7, E3a.14 and E3a.22 Total sewerage cost, total sewage treatment cost, total sludge treatment costs and disposal costs

* Confidence grade is D6 as per **Lines E3a.1, E3a.8 and E3a.16** (estimated direct operating cost) as this is the most significant element of the cost.
* A confidence grade of A3 was allocated to the Dalmuir sludge treatment and disposal costs as there is some visibility of these costs.

#### E3a.15 Estimated terminal pumping cost

* Reported costs are as per the costs incurred for the Scottish Water operated terminal pumping stations.
* Where the terminal pumping station is part of the PPP scheme the costs are met by the Concessionaire and are included in the tariff rates and not reported as part of **Line E3a.15**.

#### E3a.25 Total operating cost

Confidence grade for total operating cost is D6 as per **Line E3a.23** Total direct cost, as this is the most significant element of total operating cost.

#### E3a.27 Public sector capital equivalent values

Values were derived from the base model incorporated in a report to the Transport and Environment Committee on 21 June 2001, adjusted for inflation. At Daldowie the PPP cost was used in the absence of a Public Sector Capital Equivalent (PSCE) value; similarly, for Levenmouth and AVSE the values have been taken from the 01/02 WIC return.

#### E3a.28Contract period

The period quoted is the contract period as defined in the Contract.

#### E3a.29Contract end date

The Contract end date is as defined in the Contract.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used in forecast data

There is no forecast data for Table E3a.

## Commentary

The changes between 2021/22 and 2020/21 for Scottish Water cost and for annual charges are summarised below.

Total Scottish Water cost (**Line E3a.24):**

* The sum of Scottish Water general and support expenditure, and Scottish Water SEPA Charges (**Lines E3a.5-E3a.6, E3a.12-E3a.13, and E3a.20-E3a.21**)
* Confidence grade for total charges is A1 (see Table 50 below), but because Scottish Water PPP department costs and internal recharges must be split across all sites a confidence grade of C4 has been allocated.

Table 50: Summary of changes in Scottish Water cost from 2020/21 to 2021/22

| **Site** | **2021/22 £m** | **2020/21 £m** | **Variance**  **£m** | **Costs lower than previous year** | **Costs higher than previous year** |
| --- | --- | --- | --- | --- | --- |
| Ft William | 0.008 | 0.008 | - |  |  |
| Inverness | 0.984 | 0.728 | 0.256 | 21/22 includes lower terminal pumping costs £0.001m, | 21/22 includes higher legal/consultants costs £0.109m, higher other Scottish Water operating costs £0.009m, higher sludge tankering and disposal costs £0.114m, and higher ABM support costs £0.025m, |
| Hatton | 0.399 | 0.277 | 0.122 |  | 21/22 higher legal/consultants fees £0.008m, higher other Scottish Water operating costs £0.009m, higher sludge tankering costs £0.090m, higher terminal pumping costs £0.007m, and higher ABM support costs £0.008m, |
| Nigg | 1.414 | 1.192 | 0.222 | 21/22 includes lower legal/consultants fees £0.002m, lower other Scottish Water operating costs £0.067m, | 21/22 includes higher sludge tankering costs £0.277m and higher ABM support costs £0.014m, |
| Persley | 0.011 | 0.010 | 0.001 |  |  |
| Peterhead | 0.009 | 0.021 | -0.012 | 21/22 includes lower terminal pumping costs £0.012m; |  |
| Fraserburgh | 0.009 | 0.007 | 0.002 |  |  |
| Lossiemouth | 0.259 | 0.174 | 0.085 |  | 21/22 includes higher legal/consultants fees £0.018m, higher other Scottish Water operating costs £0.017m, higher sludge tankering costs £0.044m, higher terminal pumping costs £0.001m, and higher ABM support costs £0.005m, |
| Buckie | 0.016 | 0.010 | 0.006 |  | 20/21 includes higher other Scottish Water operating costs £0.005m, and higher ABM support costs £0.001m, |
| Banff/Macduff | 0.021 | 0.015 | 0.006 |  | 21/22 includes higher other Scottish Water operating costs £0.004m, and higher ABM support costs £0.002m, |
| Seafield | 0.187 | 0.137 | 0.050 | 21/22 includes lower legal/consultants fees £0.005m, | 21/22 includes higher other Scottish Water operating costs £0.045m, and higher ABM support costs £0.010m, |
| Newbridge | 0.024 | 0.020 | 0.004 |  | 21/22 includes higher other Scottish Water operating costs £0.003m, and higher ABM support costs £0.001m, |
| East Calder | 0.010 | 0.007 | 0.003 |  | 21/22 includes higher other Scottish Water operating costs £0.002m, higher ABM support costs £0.001m, |
| Blackburn | 0.005 | 0.004 | 0.001 |  | 21/22 includes higher other Scottish Water operating costs £0.001m, |
| Whitburn | 0.007 | 0.004 | 0.003 |  | 21/22 includes higher other Scottish Water operating costs £0.002m, and higher ABM support costs £0.001m, |
| Levenmouth | 0.360 | 0.251 | 0.109 | 21/22 includes lower legal/consultants fees £0.005m, and lower sludge tankering costs £0.002m, | 21/22 includes higher other Scottish Water operating costs £0.097m, and higher ABM support costs £0.019m, |
| Dalmuir | 2.074 | 2.006 | 0.068 | 21/22 includes lower legal/consultants fees £0.165m, | 21/22 includes higher other Scottish Water operating costs £0.015m, higher Scottish Water sludge disposal costs £0.142m, and higher ABM support costs £0.076m, |
| Daldowie | 3.500 | 3.884 | -0.384 | 21/22 includes lower legal/consultants fees £0.071m, lower Shieldhall centrifuging costs £0.574m, lower other Scottish Water operating costs £0.232m, and lower ABM support costs £0.024m, | 21/22 includes higher sludge tankering costs £0.518m, |
| Meadowhead | 0.788 | 0.978 | -0.190 | 21/22 includes lower legal/consultants fees £0.033m, and lower terminal pumping and inlet headworks costs £0.161m, | 21/22 includes higher other Scottish Water operating costs £0.004m, |
| Stevenston | 0.361 | 0.336 | 0.025 |  | 21/22 includes higher other Scottish Water operating costs £0.001m, higher inlet headworks costs £0.024m, |
| Inverclyde | 0.466 | 0.457 | 0.009 | 21/22 includes lower terminal pumping and inlet headworks costs £0.004m, | 21/22 includes higher other Scottish Water operating costs £0.012m, and higher ABM support costs £0.001m, |
| TOTAL | 10.912 | 10.526 | 0.386 | 21/22 includes lower other Scottish Water operating costs £0.001, | 21/22 higher ABM support costs £0.001m, |

**The Annual charge (Line E3a.26)** is based on the service fees for the year, provisions and business rates (including rebates). Expenditure is taken from the P&L.

Confidence grades for each of the schemes is A1, other than the AVSE scheme, which is B3, as the charges are based on the total AVSE flows given that there is no separate tariff for each scheme. The changes in Annual Charge from 2020/21 to 2021/22 are summarised in Table 51 below

Table 51: Summary of changes in Annual Charge from 2020/21 to 2021/22

| **Site** | **2021/22**  **£m** | **2020/21**  **£m** | **Variance**  **£m** | **Costs lower than previous year** | **Costs higher than previous year** |
| --- | --- | --- | --- | --- | --- |
| Ft William | 3.613 | 3.783 | -0.170 | 21/22 lower flows/loads £0.242m, higher penalties £0.012m, lower OSM £0.013m, additional works £0.005m, higher release of accruals £0.017m, | 21/22 inflation £0.119m, |
| Inverness | 8.205 | 7.832 | 0.373 | 21/22 higher penalties £0.068m, lower OSM £0.013m, higher release of accruals £0.027m, | 21/22 higher flows/loads £0.216m, inflation £0.265m, |
| Hatton | 24.070 | 23.501 | 0.569 | 21/22 lower flows £0.061m, lower OSM £0.013, lower additional works £.059m, | 21/22 inflation £0.431m, lower release of accruals £0.271m, |
| Nigg | 15.275 | 15.956 | -0.681 | 21/22 higher penalties £0.034m, higher business rates rebate £0.828m, lower SEPA recharge from SWSG £0.114m, lower electricity recharge from SWSG £0.011m, higher release of accruals £0.020m | 21/22 higher flows/loads £0.098m, inflation £0.228m, |
| Persley | 2.924 | 3.306 | -0.382 | 21/22 lower flows/loads £0.398m, higher business rates rebate £0.026m, | 21/22 lower penalties £0.002m, inflation £0.040m, |
| Peterhead | 2.632 | 2.507 | 0.125 |  | 21/22 higher flows/loads £0.035m, inflation £0.036m, lower business rates rebate £0.014m, lower release of accruals £0.040m |
| Fraserburgh | 2.000 | 1.916 | 0.084 | 21/22 higher penalties £0.008m, | 21/22 higher flows/loads £0.027m, inflation £0.028m, lower business rates rebate £0.009m, lower release of accruals £0.028m |
| Lossiemouth | 4.905 | 4.867 | 0.038 | 21/22 higher penalties £0.010m, lower OSM £0.013m, higher release of accruals £0.011m | 21/22 higher sludge imports £0.023m, inflation £0.049m, |
| Buckie | 2.964 | 2.954 | 0.010 | 21/22 higher penalties £0.007m, lower OSM £0.013m, | 21/22 inflation £0.030m, |
| Banff/Macduff | 3.300 | 3.283 | 0.017 | 21/22 lower OSM £0.013m, | 21/22 inflation £0.030m, |
| Seafield | 23.822 | 23.732 | 0.090 | 21/22 lower Operator Self-Monitoring £0.032m, lower additional works £0.074m, higher release of accruals £0.185m | 21/22 based on 100% compliance with the contract plus inflation £0.356m, higher Seafield Odour Improvement project costs £0.040m, |
| Newbridge | 3.199 | 3.192 | 0.007 |
| East Calder | 1.745 | 1.741 | 0.004 |
| Blackburn | 0.873 | 0.871 | 0.002 |
| Whitburn | 1.163 | 1.161 | 0.002 |
| Levenmouth | 20.274 | 12.135 | 8.139 | 21/22 lower flows £0.329m, lower Operator Self-Monitoring £0.005m, lower Odour Project costs £0.052m, lower NC Catchment Boundary Extension £0.002m, lower additional works £0.006m, | 21/22 inflation, driven by UK Natural Gas Index, £8.387m\*;  higher Uninsurability Cost £0.024m;  lower release of accruals £0.122m |
| Dalmuir | 11.554 | 13.806 | -2.252 | 21/22 lower flows £0.193m, lower business rates £0.075m, lower New Capital Investment costs £0.039m, higher release of accruals £3.793m | 21/22 base tariff change and inflation £0.185m, Fine Screen Renewal Sum £0.445m, higher insurance £0.065m, higher Annual Operations Compensation £1.014m, higher Capital Project opex £0.118m, higher additional works £0.019m, |
| Daldowie | 21.526 | 20.838 | 0.688 | 21/22 lower additional works £0.039m, | 21/22 higher sludge volumes £0.133m, inflation £0.532m, higher necessary change costs £0.011m, lower release of accruals £0.051m |
| Meadowhead | 4.879 | 6.940 | -2.061 | 21/22 higher release of accruals £2.276m | 21/22 inflation £0.090m, lower UPM change rebate |
| Stevenston | 3.497 | 3.184 | 0.313 | 21/22 lower flows/fees £0.280m | 21/22 inflation £0.040m, lower release of accruals £0.553m |
| Inverclyde | 3.638 | 4.402 | -0.764 | 21/22 lower flows/fees £0.076m, higher release of accruals £0.735m | 21/22 inflation £0.047m, |
| TOTAL | 166.058 | 161.907 | 4.151 |  |  |

\* The Levenmouth PFI project tariff is subject to an annual increment linked to a basket of indices comprising the Average Earnings Index, UK Natural Gas Index and the Retail Price Index (all items).

# Table E4 - Water Resources and Treatment

## Introduction

Table E4 is used in water service operating efficiency studies. It covers:

* Source types
* Peak demand and pumping head
* Resources and treatment costs
* Water treatment works by process type
* Water treatment works by size band

There is a difference in the sites reported in the E and H tables. The sources in E4 are only included if they are direct sources, as per the definition document, as the lines report the distribution input from each source in columns 110-140. Table E only reports assets that are operational (including emergency) during the year.

Table H3 reports all assets that are operational, emergency, out of service or work in progress (as classified in Ellipse), at the end of the year. Line H3.3 raw water aqueducts are infrastructure assets that are sourced from Scottish Water’s GIS and have no equivalent asset in the E4 table

### Data sources and confidence grades

Data sources and confidence grades are detailed in the commentary section where relevant.

### Data improvement programmes

Work was carried out in Feb-Mar 2022 to improve Ellipse classification and identification of source assets (DIR, GWS RWI), e.g. to allow clear identification of which assets are classed as sources (for public water supply) and those which are not (e.g. duplicate assets on the same source, assets used for raw water supply or other uses). Further detail is available on request.

For Average Daily Output: Refer to Table A2 commentary.

### Assumptions used for forecast data

There are no forecast data in Table E4.

## Commentary

### Lines E4.1-E4.7 - Source Types

Source Type and Operational Status are derived from Ellipse, with additional alignment to determine which sources feed direct to WTWs as well as to check status of a small number of emergency sources each year.

Average Daily Output data is exported from the corporate Distribution Input (DI) reporting system (Z-One) - refer to Table A2 commentary for more detail as required.

As in previous years, we have completed columns 110–140 by assuming that, where multiple sources feed a Water Treatment Works (WTW), the total average daily output comes only from the primary source. The primary source is therefore allocated 100% of the DI and all other sources are allocated 0%.

There are six WTWs where the primary source is already assigned as the primary source to another WTW (conjunctive use sources). In order to ensure all WTW DI totals are included, the DI volume for these WTWs is manually reassigned to the appropriate ‘duplicate’ conjunctive source entry for the WTW. For example, Megget Reservoir primarily feeds Glencorse WTW but is also assigned as the primary source for Marchbank and Bonnycraig WTWs.

Generally, raw water supply sources catchments and the WTWs they supply are located within the same region. However, the following four WTWs are supplied from outside their region:

* Daer WTW: Source and WTW are in South Region, but a small proportion of the Daer WOA crosses over into West Region.
* Balmore WTW: Sources and WTW are in West Region, but there are 4 different WOAs supplied from Balmore; 3 of which are in the South Region (Balmore & Carron Valley WOA, Balmore South Region Nith WOA, Balmore South Region Tweed WOA).
* Afton WTW: Source and WTW are in West Region, but it supplies a small area in South Region (Afton South Region WOA).
* Turret WTW: Source and WTW are in East Region, but it also supplies areas in West Region (Turret West Region WOA).

Since Average Daily Outputs are derived from WTW DIs, the cross-boundary flow is accounted for and assigned to the region within its treatment rather than abstraction. This is consistent with the historic methodology.

The confidence grade for the number of sources (columns 10-40) is assessed as B1:

* Reliability band is B; changes to source and WTW status are based on data from corporate data system (Ellipse) but requires some additional alignment as described above to arrive at final data, e.g. classification of Direct vs Indirect status.
* Accuracy band for number of sources is 1 (accuracy range less than +/- 1%)

The confidence grade for the average daily output of these sources (columns 110-140) is assessed as B2 (in line with reported confidence grade for Table A2, unchanged from previous year).

The overall confidence grade assigned for **Lines E4.1-E4.5** is therefore B2 as this is the lower of the 2 confidence grades described above.

The confidence grade for **Lines E4.6-E4.7** (Bulk water exports and imports) is A1 as Scottish Water does not have any raw water exports or imports to other water companies.

The overall number of direct sources has reduced by 3, from 272 to 269. As shown below (Table 52), the reduction in source count is due to WTW closures only.

Table 52: Closed Sources

|  |  |  |
| --- | --- | --- |
|  | **2020/21 No. of sources** | **272** |
| Additions | N/A | 0 |
| Reductions | Closed sources | 3 |
|  | 2021/22 No. of sources | 269 |

These closed sources were hydraulically linked to the abandoned WTWs as shown in Table 53 below.

Table 53: Closed Sources and linked WTWs

| **Source ID** | **Source** | **WTW ID** | **WTW** | **WTW Closed** | **Ellipse Updated** |
| --- | --- | --- | --- | --- | --- |
| DIR000089 | HARELAW DIR 1937 NS310732 | WTW000090 | DOUGLIEHILL WTW 1998 NS307735 | 03/06/2020 | Dec-20 |
| DIR000111 | KNOCKNAIRSHILL DIR 1911 NS307733 | WTW000090 | DOUGLIEHILL WTW 1998 NS307735 | 03/06/2020 | Dec-20 |
| GWS000451 | HUSHINISH GWS 2000 NA993121 | WTW000743 | HUSHINISH WTW 2005 NA993121 | 11/09/2020 | Sep-20 |

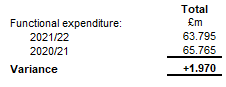
### E4.13-E4.14 Peak Demand and Pumping Head

The Peak Demand in E4.13 for the 2021/22 period was 1980.55Ml/d with a Peak to Average ratio of 1.078, which is marginally lower than AR21 (1.079). The confidence grade of C3 remains the same as last year.

The Average Pumping head reported in **Line E4.14** is correspondingly marginally lower this year at 27.5m (compared to 27.7m in AR21). The confidence grade of C4 remains the same as last year.

### E4.15-E4.39 Functional costs by operational area, process and size band

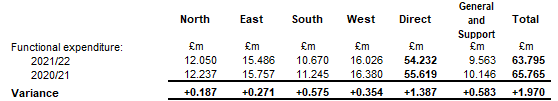
#### E4.19 Water Resources & Treatment



Water resources and treatment costs decreased by £2.0m (3%) from 2020/21 analysed as follows:

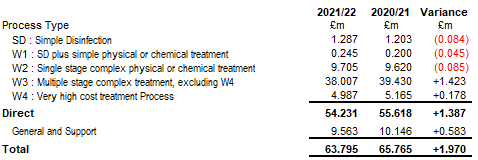
* £1.4m (2%) decrease in total direct costs due to (i) lower employment costs (£1.1m) primarily driven by lower pension costs, partially offset by pay progression, (ii) a decrease in hired and contracted services costs (£1.2m) due to a lesser cost impact of maintaining service under COVID-19 restrictions and a lower cost of responding to weather related disruption, partially offset by (iii) an increase in materials and consumables costs (£1.1m) due primarily to higher chemical costs driven by unit price increases and higher usage to maintain compliance.
* £0.6m (6%) reduction across general and support costs due primarily to lower digital costs linked to decommissioning of contracts and lower mobile phone usage, lower pension costs in support departments and lower property rental costs.

Analysis of water resources and treatment costs by region:

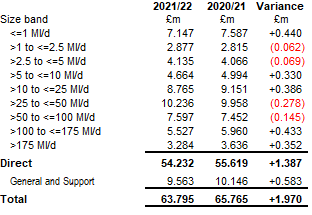


Minor changes to the numbers of WTW by process type and size band have arisen as a result of operational changes and process re-classifications in WTW during 2021/22. Re-stating 2020/21 figures on like-for-like basis shows the following variations:

Analysis of water resources and treatment costs by process type:



Analysis of water resources and treatment costs by size band:



The allocation of costs by size band has remained broadly consistent with 2020/21.

Costs which are directly attributable to abstraction and treatment are charged to the specific asset cost code in the General Ledger, either via direct charging, Ellipse timesheets or work orders. Of the £54.2m total direct resource and treatment costs, £44.0m of costs or 81.1% have been directly charged to assets in our corporate costing system.

Other costs have been allocated to Water Resources and Treatment through ABM support activity allocation, e.g. stores based on number of issues, IT applications based on number of users, etc. Therefore, support costs are allocated on a resource consumed basis. However, many of these costs are not specific to an asset; they are generally attributable to an employee. Consequently, the majority of these support costs have been allocated to the activities the employees have been completing.

**Confidence Grades** – confidence grades on Table E4 are consistent with grades in the general E table commentary and remain consistent with 2020/21.

### E4.20-27 Water Treatment Works by Process Type

There are 231 Water Treatment Works reported for AR22 which is a net reduction of six from AR21. One site was added, and seven removed as shown in Table 54 below.

Table 54: Water Treatment Works Additions and Removals from AR21

| **Plant No** | **Site Description** | **Added/Removed** | **Process Type** |
| --- | --- | --- | --- |
| WTW000813 | TOMATIN WTW 2016 NH803277 | Added | W4 |
| WTW000075 | CRAIGNURE WTW 1990 NM696372 | Removed | W3 |
| WTW000121 | KAIM WTW 1997 NS347624 | Removed | W3 |
| WTW000263 | GOVIG WTW 1991 NB009093 | Removed | W3 |
| WTW000090 | DOUGLIEHILL WTW 1998 NS307735 | Removed | W3 |
| WTW000743 | HUSHINISH WTW 2005 NA993121 | Removed | W4 |
| WTW000622 | STRONSAY WTW 1972 HY653280 | Removed | SD |
| WTW000306 | SAVALBEG WTW 1991 NC598079 | Removed | W2 |

Three Water Treatment Works had significant changes to treatment processes during the AR22 reporting period. Both Dalwhinnie and Hopes WTWs are receiving ultra-violet treatment for Cryptosporidium deactivation, and the grading for Fair Isle WTW was corrected to reflect that the filtration process is pressure filters rather than membrane filters.

The corresponding categories of process type were amended to reflect these changes in treatment process this year. These changes are detailed in Table 55 below

Table 55: Changes in treatment process from AR21

|  |  |  |  |
| --- | --- | --- | --- |
| **Plant No** | **Site Description** | **AR21 Process Type** | **AR22 Process Type** |
| WTW000552 | DALWHINNIE WTW 1970 NN637848 | SD | W4 |
| WTW000625 | FAIR ISLE WTW 1975 HZ210718 | W3 | W2 |
| WTW000668 | HOPES WTW 1926 NT558634 | W2 | W4 |

From the above status and process changes the subsequent changes to each process type are as presented in Table 56 below. The confidence grade of A2 remains the same as last year.

Table 56: Changes in process type from AR21

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Line Ref** | **Process Type** | **AR21 WTWs** | **AR22 WTWs** | **Change** |
| E4.20 | SD | 23 | 21 | -2 |
| E4.21 | W1 | 6 | 6 | 0 |
| E4.22 | W2 | 25 | 24 | -1 |
| E4.23 | W3 | 161 | 156 | -5 |
| E4.24 | W4 | 22 | 24 | 2 |
| E4.25 | Total | 237 | 231 | **-6** |

The Total distribution input (1836.939Ml/d) reported in **Line E4.26** is slightly less than that reported in **Line E4.5** (1836.954Ml/d). This is due to a difference in methodology applied to allocation of DI to each WTW from that applied to the Raw Water Sources, which has been constantly applied historically. Each WTW allocated DI is based on a monthly average which is further calculated to provide a daily average value, which on rounding has accounted for the slight difference between the two values for AR22.

The confidence grade for this line E4.26 is B2.

### E4.28-E4.39 Water Treatment Works by Size Band

Of the 231 Water Treatment Works reported in **Line E4.25** the changes in size bands between AR21 and AR22 are shown in Table 57 below.

Table 57: Changes in size band and DI from AR21

| **Line Ref** | **Size Band** | **2020/21** | | **2021/22** | | **Net Change** | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***No.*** | ***%*** DI | ***No.*** | ***%*** DI | ***No.*** | ***%*** DI |
| E4.28 | <= 1 Ml/d | 131 | 1.2 | 127 | 1.2 | -4 | 0 |
| E4.29 | >1, <= 2.5 Ml/d | 22 | 1.2 | 22 | 1.3 | 0 | 0.1 |
| E4.30 | >2.5, <= 5 Ml/d | 22 | 2.8 | 22 | 2.8 | 0 | 0 |
| E4.31 | >5, <= 10 Ml/d | 17 | 4.3 | 15 | 4.3 | -2 | 0 |
| E4.32 | >10, <= 25 Ml/d | 18 | 10.5 | 18 | 10.8 | 0 | 0.3 |
| E4.33 | >25, <= 50 Ml/d | 12 | 15.7 | 12 | 15.8 | 0 | 0.1 |
| E4.34 | >50, <= 100 Ml/d | 9 | 22.8 | 9 | 22.5 | 0 | -0.3 |
| E4.35 | >100, <= 175 Ml/d | 4 | 20.9 | 4 | 20.3 | 0 | -0.6 |
| E4.36 | >175 Ml/d | 2 | 20.6 | 2 | 21.0 | 0 | 0.4 |
| E4.37 & E4.38 | **Total** | 237 | 100 | 231 | 100 | -6 | 0 |

The confidence grade of A2 remains the same as last year for **Line E4.28-E4.37**, as does the confidence grade of B3 for **Line E4.38**.

# Table E6 - Water Distribution

## Introduction

Table E6 is used in water service operating efficiency studies. It covers:

* Area data
* Distribution costs
* Water mains data
* Pumping stations
* Service reservoirs
* Water towers

### Data sources and confidence grades

Data sources and confidence grades are detailed in the commentary section where relevant.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used for forecast data

There is no forecast data for the E6 Table.

## Commentary

### E6.0-E6.6 Area Data

The methodology used to allocate properties and population to the four operational regions remains unchanged from the previous year throughout this table.

The figure reported in **Line E6.1** reports the annual average resident connected population (5,208,010) and is consistent with the figure reported in A2.5. The confidence grade for AR22 is B2.

The total number of connected properties reported in **Line E6.2** (2,762,610) is consistent with the figure reported in **Line A1.10**. The confidence grade of B4 remains the same as last year.

Volumes delivered to households and non-households (**Lines E6.3 and E6.4**) are allocated to water operational areas and summed to regional level; the method remains unchanged from last year. Values used to calculate this section of the E Table reflect those in the A1 and A2 Tables. The confidence grade of B2 and B4 respectively remains the same as last year.

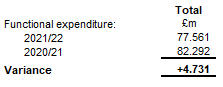
There has been a slight change to the operational regions in the last year and the area reported in **Line E6.5** has decreased slightly by 22km2 to 79,816km2. This was due to improvement in boundary geometries in GIS. The confidence grade at A1 reflects the fact that the operational region boundaries are taken directly from the corporate GIS.

The number of supply zones reported in **Line E6.6** has increased by one to 279. The zone for Milngavie Renfrew M5 was removed in 2021/22 as it was amalgamated into the Milngavie M5 Drumchapel North zone. Both Katrine Pier and Stronachlachar zones were created for the 2021/22 period to provide linkage to both corresponding WTWs that changed to Scottish Water ownership.

The number of supply zones were calculated using the same methodology as last year, and matches the number reported to the Drinking Water Quality Regulator.  Changes in zone topology are tracked and recorded by the Water Quality Regulation Zone procedure and a full audit trail is available.

### E6.7-E6.11 Distribution Costs

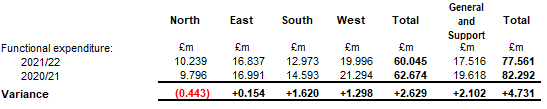
#### E6.11 Functional Expenditure



Water distribution costs have decreased by £4.7m (6%) from 2020/21 analysed as follows:

* £1.8m (14%) decrease in power costs primarily due to lower unit prices secured through advance purchase contracts
* £0.8m (2%) decrease in other direct costs due to a lesser cost impact of maintaining service under COVID-19 restrictions and a lower level of disruption on the water network from bursts (2020/21 had an extended period of freezing temperatures with particularly high levels of winter weather related incidents) partially offset by an increase in materials and consumables costs allocated to operational activities
* £2.1m (11%) reduction in general and support costs due to lower digital costs linked to decommissioning of contracts and lower mobile phone usage, lower pension costs in support departments and lower property rental costs

Analysis of water distribution costs by region:



**Confidence Grades** – confidence grades on Table E6 are consistent with grades in the general E Table commentary and remain consistent with 2020/21.

Scottish Water has slightly lower confidence levels on Network Cost Analysis than Treatment Cost Analysis. This is due to lower levels of direct labour capture on Networks.

### E6.12-E6.21 Water Mains Data

#### E6.12 - E6.16 Potable Mains

There was an increase in total length of mains (**Lines E6.16**) for AR22; with a total increase in length of 113km (0.23%) to 48,945.39km. Most of this increase is within Band 1, with 0.19% increase in length in Band 1 (69km).

Potable mains are recorded in Scottish Water’s GIS. It is necessary to infill the diameter to determine the correct E6 line for a small number of pipes (see Table 58 below).

Table 58: Water Mains Infill

|  |  |  |
| --- | --- | --- |
| **Actual/Infill Method** | **Length (m)** | **% Actual/Infill** |
| Actual GIS Values | 48,804,973 | 99.71 |
| Default Infill Values | 101,989 | 0.21 |
| Material based Infill Values | 38,427 | 0.08 |

Material based infill is the median diameter for the pipe’s material type, where the infill value is ascertained after assessment of the total length and actual diameter, of all pipes based on material type. Where there are pipes that have no material type or diameter assigned, a default value is populated as per the current methodology.

The confidence grades remain as A2 for the lines for specific pipe diameters. The confidence grade for the total **Line E6.16** remains A1, as no infilling is required.

#### E6.17 Total length of unlined iron mains

The total length of unlined iron mains as held in our corporate GIS has decreased by 35km (0.24%) to 14,422.7km, in this reporting year.

The confidence grade of A2 remains the same as last year.

#### E6.18 Total length of mains >320mm diameter

The total length of mains greater than 320mm diameter has increased by 2.58km to 3,992.39km, in this reporting year, which is a 0.06% increase on AR21.

The confidence grade of A2 remains the same as last year.

#### E6.19 Mains Bursts

The reported number of water mains bursts on **Line E6.19** is derived from both the number of customer and non-customer reported bursts for the reporting year. For 2021/22 the total number of mains bursts reduced by 1,884 to 6,695, a 22% reduction from AR21. This decrease was due to an improvement in reporting methodology that combined multiple work orders relating to a single burst; and a reduction in bursts due to milder weather in January and February on comparison with AR21.

To reflect the improvement in methodology the confidence grade has changed from B3 to B2 for this year.

#### E6.20 Leakage Level

The reported top-down leakage level shown on **Line E6.20** is aligned with the figures on Tables A2 and B8, where we report leakage in terms of Maximum Likelihood Estimation (MLE) leakage. Top-down leakage has increased from 425 Ml/d in 2020/21 to 431 Ml/d in 2021/22.

The confidence grade of B3 remains the same as last year.

#### E6.21 Low Pressure

The overall number of low-pressure properties has increased from 211 to 222 for 2021/22, of which 47 properties were added due to better information and asset deterioration. Whilst targeted investigation and improved network operations have improved pressure to 36 properties.

The confidence grade of B3 remains the same as last year.

### E6.22-E6.25 Pumping Stations

#### E6.22 Total number of pumping stations

The number of Pumping stations reported in **Line E6.22** is 623 for AR22. An overall increase of 10 sites as compared with 2020/21.

The confidence grade of A2 remains the same as last year.

#### E6.23 Total capacity of pumping stations

The total capacity of pumping stations reported in **Line E6.23** is 2,430,056m3/d. An overall increase of 61,278m3/d as compared with 2020/21.

As the methodology is unchanged the confidence grade of C4 remains the same as last year.

#### E6.24 Total capacity of booster pumping stations

The total capacity of booster pumping stations reported in **Line E6.24** is 42,986kW. An overall increase of 1,091kW as compared with 2020/21, due to changes in pumping stations (see table below). The confidence grade of A3 remains the same as last year.

Details of the removals and additions with the corresponding capacities (**Line E6.23** - m3/day and **Line E6.24** – Kw) are tabulated in Table 59).

Table 59: Changes in size band and DI from AR21

| **Plant No** | **Site** | **Add/Remove** | **Region** | **E6.23 (m3/d)** | **E6.24 (kW)** |
| --- | --- | --- | --- | --- | --- |
| TWP000117 | HIGHMAINS ESTATE TWP 1974 NS415752 | Removed | WEST | 61.7 | 1.1 |
| TWP000160 | MARGARET DRIVE TWP NS387802 | Removed | WEST | 126.3 | 2.3 |
| TWP000196 | RAITHHILL TWP NS477458 | Removed | WEST | 42.1 | 0.8 |
| TWP000665 | WHITEHILLS 3 TWP NT233995 | Removed | EAST | 16,273.6 | 290.0 |
| TWP001200 | FAIR ISLE WTW BOOSTER TWP HZ209717 | Added | EAST | 84.2 | 1.5 |
| TWP001236 | TARBERT W ISLES NEW TWP 2009 NG196986 | Added | NORTH | 1,683.5 | 30.0 |
| TWP001274 | KILLEARN IBERT RD TWP 2011 NS526858 | Added | WEST | 56.1 | 1.0 |
| TWP001350 | BURNBRAE TWP 2017 NS356653 | Added | WEST | 561.2 | 10.0 |
| TWP001351 | WEELS FARM TWP 2017 NS347623 | Added | WEST | 561.2 | 10.0 |
| TWP001352 | WHINHILL TWP 2 2017 NS282746 | Added | WEST | 561.2 | 10.0 |
| TWP001353 | CAIRNHALL NEW TWP 2018 NO276535 | Added | EAST | 448.9 | 8.0 |
| TWP001358 | EAGLESHAM POLNOON TWP 2018 NS565515 | Added | WEST | 78.6 | 1.4 |
| TWP001365 | TOMATIN TWP 2019 NH803277 | Added | NORTH | 897.9 | 16.0 |
| TWP001375 | DENNY BUCKIEBURN TWP 2019 NS752851 | Added | WEST | 84.2 | 1.5 |
| TWP001378 | BALLANTRAE BENNANE TWP 2019 NX092858 | Added | WEST | 897.9 | 16.0 |
| TWP001388 | HOLLAND TWP 2020 HY754532 | Added | EAST | 190.8 | 3.4 |
| TWP001405 | KILWHIRN TWP NX475599 | Added | SOUTH | 56.1 | 1.0 |
| TWP001407 | ROSEWELL GAMEKEEPER COTTAGE TWP NT272597 | Added | SOUTH | 4,769.9 | 85.0 |

In addition, capacity values in **Line E6.23** at four pumping stations were updated for AR22 due to inclusion of more accurate kW capacity values in **Line E6.24** (see Table 60 and Table 61 below)

Table 60: Changes in capacity between AR21 and AR22 (m3/d)

For **Line E6.23**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Plant No** | **Site** | **Region** | **AR21 m3/d** | **AR22 m3/d** |
| TWP000673 | GLENDEVON SERVICE WATER TWP NN998024 | EAST | 2,076.29 | 39,337.3 |
| TWP001169 | BALMORE TWP 1971 NS603739 | WEST | 331,870 | 361,163 |
| TWP000722 | GREYRIGG TWP NS907746 | WEST | 56.1 | 269.4 |
| TWP001385 | CRAIGHEAD TWP NJ497404 | EAST | 56.1 | 84.2 |

Table 61: Changes in capacity between AR21 and AR22 (kW)

For **Line E6.24**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Plant No** | **Site** | **Region** | **AR21 kW** | **AR22 kW** |
| TWP000673 | GLENDEVON SERVICE WATER TWP NN998024 | EAST | 37 | 701 |
| TWP001169 | BALMORE TWP 1971 NS603739 | WEST | 5,914 | 6,436 |
| TWP000722 | GREYRIGG TWP NS907746 | WEST | 1 | 4.8 |
| TWP001385 | CRAIGHEAD TWP NJ497404 | EAST | 1 | 1.5 |

#### E6.25 Average Pumping Head

The total average pumping head for distribution pumping stations has decreased in this reporting year from 29.87m to 29.65m. As the methodology has remained the same from last year the confidence grade remains as C4.

### E6.26-29 Service Reservoirs & Water Towers

The number of service reservoirs reported in **Line E6.26** is 1,293 for AR22, an overall decrease of 8 sites as compared with 2020/21. The total capacity of the service reservoirs reported in **Line E6.27** is 3,948.88Ml, which is a decrease of 16.8Ml as compared with 2020/21.

The number of water towers reported in **Line E6.28** remains unchanged at 18 for AR22. The total capacity of the water towers reported in **Line E6.29** remains unchanged at 29.27Ml for AR22.

The confidence grade of A2 remains the same as last year for **Lines E6.26 to E6.29**.

Details of changes to Service Reservoir numbers with corresponding capacities are tabulated below (Table 62):

Table 62: Service Reservoir Additions and Removals from AR21

| **Plant No** | **Site** | **Add/Remove** | **Region** | **Capacity** |
| --- | --- | --- | --- | --- |
| TWS001324 | CRAIGHEAD CWT EAST 1975 TWS NJ497405 | Added | EAST | 1.100 |
| TWS003728 | DOUGLIEHILL DSR 2018 NS322728 | Added | WEST | 5.684 |
| TWS003743 | WESTHILL HILL OF KEIR TWS2 2020 NJ818083 | Added | EAST | 0.500 |
|  | **Total Added** | **3** |  | **7.284** |
| TWS000026 | AROS SALEN BPT NM554460 | Removed | NORTH | 0.022 |
| TWS000259 | DOUGLIEHILL DSR 1930 NS322727 | Removed | WEST | 5.683 |
| TWS000260 | DOUGLIEHILL CWT 1940 NS318739 | Removed | WEST | 7.956 |
| TWS000474 | KNOCKJARDER DSR NS355151 | Removed | WEST | 3.427 |
| TWS000757 | WILLIAMSHAW DSR 2 NS439478 | Removed | WEST | 0.273 |
| TWS000789 | BRUE DSR 1970 NB333484 | Removed | NORTH | 0.005 |
| TWS001595 | CASTLEBAY DSR 1960 NL662987 | Removed | NORTH | 0.300 |
| TWS002036 | HUMBIE DSR NT109759 | Removed | SOUTH | 7.945 |
| TWS003559 | HUSHINISH CWT 2004 NA988121 | Removed | NORTH | 0.010 |
| TWS003560 | GOVIG CWT 1960 NB009093 | Removed | NORTH | 0.006 |
| TWS003750 | CRAIGHEAD CWT 1975 TWS NJ497405 | Removed | EAST | 0.400 |
|  | **Total Removed** | **-8** |  | **-26.027** |

The capacity of one Service Reservoir has been amended for AR22 after data improvement (Table 63).

Table 63: Changes in capacity between AR21 and AR22 (Ml)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Plant No** | **Site** | **Region** | **AR21** | **AR22** | **Change** |
| TWS001325 | CRAIGHEAD CWT WEST 1996 TWS NJ497405 | EAST | 0.055 | 2 | 1.945 |

# Table E7 - Wastewater Explanatory Factors - Sewerage & Sewage treatment

## Introduction

Table E7 is used in wastewater service operating efficiency studies. It covers:

* Area data
* Sewerage data
* Sewerage costs
* Pumping stations
* Sewage treatment works
* Sewage treatment costs

### Data sources and confidence grades

Data sources and confidence grades are detailed in the commentary section where relevant.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used for forecast data

There is no forecast data for the E7 Table.

## Commentary

### E7.1-E7.7 Area Data

#### E7.1 Annual average resident connected population

The total figure used for Scotland was correlated to the Scottish Water Region split obtained using GIS properties to ensure there was a consistent figure reported across the Annual Return tables. For AR22 the Annual average resident connected population is 5,000,648. This is marginally different from the number reported in A3.3 (5,000,649) due to rounding of figures when splitting across Scottish Water regions.

The confidence grade of B2 remains the same as last year.

#### E7.2     Annual average non-resident connected population

As with previous years, tourist population has been determined based on the average bed spaces multiplied by an average occupancy factor. Average occupancy rates are taken from Visit Scotland latest data for the year Jan-Dec 2020 available in the Tourism in Scotland report. For AR22 the Annual average non-resident connected population is 38,500. This is a significant reduction from 2020/21 which is reflected above in **Line E3.2**.

The confidence grade of B3 remains the same as last year.

#### E7.3 Volume of sewage collected (daily average)

The daily average volume of sewage collected for the 2021/22 period is 3,046.7Ml/d, a reduction of 280 Ml/d compared to AR21.

The method used to calculate the volume of sewage data is based on the dry weather flows plus the storm flows within each catchment being summarized at Scottish Water Region level.

The average daily volume collected has been calculated as the flow which arrives in a public sewer (of any type) from any source e.g. rainfall, infiltration, domestic use, industrial use, tidal flows and connected watercourses. The approach used is the same as that in previous years and has been applied consistently across the country. It uses data sets for rainfall, connected properties and sewered areas consistent with the wastewater elements of the Annual Return. The flow has been calculated in two parts: dry weather flow and storm flow.

*Dry Weather Flow*:  A factor has been established that relates the number of connected properties to the amount of sewer flow in periods without rainfall. To establish this figure a number of recordings of flows with a known connected population were analysed to establish a range of flow per connected population. These factors were averaged and applied to all sewered areas to establish a total dry weather flow contribution per sewered area.

*Storm Flow*:  The storm flow element was calculated by using existing sewer models to establish a relationship between rainfall depth, area of the sewered area and the amount of run-off generated. A selection of models was used and an average value of run-off per millimetre rainfall per hectare of sewered area was established. This was then applied to each sewered area to establish a total storm flow contribution per sewered area.

The total sewage collected was calculated (dry weather plus storm flows) for each sewered area and a total for each operational region calculated.

The confidence grade of C3 remains the same as last year.

#### E7.4 Total connected properties

This total is 2,630,114 and is based on the same data used for **Line A1.20** (2,630,114). The total property figure used for Scotland was correlated to the Scottish Water Region split obtained using GIS properties to ensure there was a consistent figure reported across the Annual Return tables.

The confidence grade of B3 remains the same as last year.

#### E7.5 Area of sewerage district

The area has slightly decreased to 79,816km2 which is explained in **Line E6.5** above.

The confidence grade of A1 remains the same as last year.

#### E7.6 Drained area

The reported value of the drained area is 1,975km2 and is a slight increase of 8.7km2 from AR21. This is a result of on-going verification of the sewered areas in our corporate GIS.

The confidence grade of A1 remains the same as last year.

#### E7.7 Annual precipitation

This measurement was obtained from Met Office radar rainfall data. This data is provided at a regional level which allows Scottish Water to match it to wastewater catchments and use it to calculate the storm flow element of sewage volume reported in **Line E7.3**. Precipitation across Scotland (1,133mm) is 18.6% lower than in the previous period. The individual Scottish Water regions broadly reflect the national reduction.

The confidence grade for this has changed from C3 to A2 for AR22 to reflect the change to Met Office data from the extrapolation of external web-based rainfall data.

### E7.8-E7.14 Sewerage Data

#### E7.8 Total length of sewer

This reflects values held in our corporate GIS and a statistical calculation of lateral sewer length using unit length connections by dwelling type. For AR22 the total length of sewer reported is 53,602km which is an increase of 0.25% from AR21.

The confidence grade of B2 remains the same as last year.

#### E7.9 Total length of lateral sewer

The statistical calculation of the length of lateral sewers is then used to populate **Line E7.9**. The calculation also uses the number of properties connected to the wastewater network (connected properties). This is the same methodology as used in previous returns. The reported length of lateral sewer is 19,558km, a 1% reduction compared to AR21.

The confidence grade of B2 remains the same as last year.

#### E7.10 Length of combined sewer

The length of combined sewer held in our corporate GIS is reported as 17,596km for AR22, which is a minor increase from 2020/21 (17,563km).

The confidence grade of B2 remains the same as last year.

#### E7.11 Length of separate storm sewer

The length of separate storm sewer reported is 8,709km, as held in our corporate GIS for AR22. This represents an increase of 213km from 2020/21, reflecting the adoption of separate storm sewers for new build developments.

The confidence grade of B2 remains the same as last year.

#### E7.12 Length of sewer >1000mm diameter

The length of sewer greater than 1000mm diameter held in our corporate GIS is 861km. The marginal increase reported (0.6%) is attributable to a more complete diameter infill approach.

The confidence grade of B2 remains the same as last year.

#### E7.13 Length of critical sewer

Critical sewers were not categorized separately in 2021/22, as agreed with WICS. Consequently, **Line E7.13** remains blank.

#### E7.14 Sewer collapses

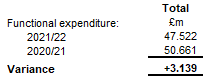
Scottish Water reports a Sewer Collapse as all cases where a sewer was damaged, and a repair was necessary. The methodology is reported in **Line B8.2**. Collapses on laterals and rising mains are included in the reported numbers.

The number of sewer collapses over the report year is reported as 1,434 (1,430 gravity sewer failures and 4 rising main failures) which is an increase of 79 in comparison with 2020/21.

The confidence grade of B4 remains the same as last year.

### E7.15-E7.19 Sewerage Costs

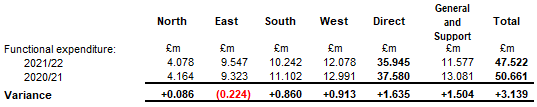
#### E7.19 - Sewerage



Sewerage costs have decreased by £3.1m (6%) from 2020/21. This decrease is analysed as follows:

* £2.5m (23%) decrease in power costs due to lower unit prices secured through advance purchase contracts and lower consumption due to a relatively low average rainfall
* £0.8m (3%) increase in other direct costs driven by higher contractor resources needed for sewer repairs and to unblock choked sewer pipes offset by a decrease in employment costs including lower pension costs and lower materials and consumables costs
* £1.5m (11%) decrease in general and support costs due to lower digital costs linked to decommissioning of contracts and lower mobile phone usage, lower pension costs in support departments and lower property rental costs.

#### Analysis of sewerage costs by region:



### E7.20-E7.25 - Sustainable Urban Drainage Systems (SUDS)

The number of Sustainable Urban Drainage (SUDS) assets as held corporately in Ellipse, have been categorised and reported as shown in the sections below. As these are new lines for AR22 there are no comparable numbers from last year.

Scottish Water would welcome further discussions with WICS during 2022-23 to determine further information requirements and potential options for SUDS, in order to improve the information for next year.

#### E7.20 SUDS Ponds

The total number of SUDS Ponds reported for AR22 was 33.

The Confidence Grade for this new line has been allocated as A3.

#### E7.21 SUDS basins

The total number of SUDS Basins reported for AR22 was 130.

The Confidence Grade for this new line has been allocated as A3.

#### E7.22 Filter trenches

The total number of Filter Trenches reported for AR22 was 90.

The Confidence Grade for this new line has been allocated as A3.

#### E7.23 Swales

The total number of Swales reported for AR22 was 13.

The Confidence Grade for this new line has been allocated as A3.

#### E7.24 Other (e.g. wetland)

The total number of Other SUDS types reported for AR22 was 3.

The Confidence Grade for this new line has been allocated as A3.

#### E7.25 Total SUDS

The total number of SUDS reportable for AR22 was 269.

The Confidence Grade for this new line has been allocated as A3.

### - E7.26-E7.30 SUDS Costs

Costing data is not available for AR22 as costs are not currently gathered specifically against these categories.

### - E7.31-E7.40 Pumping Stations

A pumping station is defined as an individual site (i.e. not an individual pump). It includes foul, combined and stormwater pumping stations situated at treatment works but excludes interstage pumping. Changes since the last submission are reflective of asset data improvement, changes to pump units, and additions and removals of asset locations to reflect operational revisions.

As with previous years the data that supports the population of lines relating to pumping station capacity (m3/d) and pumping head is very limited. These values are extrapolations based on Table H5 size-banded kW ratings to infill any missing values per pumping station. Efforts continue to reduce the number of infilled capacities and this year the number of infilled values has reduced from 1.2% to 0.5%.

In comparison with 2020/21 the pumping station capacity (m3/d)infill values for AR22 are presented in Table 64.

Table 64: AR21-22 SPS Capacity Infill Comparison (m3/d)

|  |  |  |  |
| --- | --- | --- | --- |
| **H5 Size band** | **kW Range** | **AR21 Infill (m3/d)** | **AR22 Infill (m3/d)** |
| Band 1 | <=5kW | 292 | 318 |
| Band 2 | >5-20kW | 2,194 | 2,294 |
| Band 3 | >20-100kW | 7,574 | 7,574 |
| Band 4 | >100-500kW | 33,513 | 32,541 |
| Band 5 | >500kW | 143,957 | 134,153 |

#### E7.31 Total number of pumping stations

There was a net decrease of 18 Pumping Stations in AR22, to 2,259. Removals and Additions are detailed in Table 65 below.

Table 65: Pumping Station Additions and Removals from AR21

| **Plant No** | **Site** | **Add/Remove** | **Region** | **Sewer Use** |
| --- | --- | --- | --- | --- |
| SPS000352 | NEWFORD GROVE WWPS NS577562 | Added | WEST | Foul |
| SPS000361 | PACIFIC QUAY WWPS NS567651 | Added | WEST | Foul |
| SPS003812 | BISHOPBRIGGS ANGUS AVE WWPS NS626700 | Added | WEST | Foul |
| SPS003851 | SOVEREIGN COURT WWPS NS949678 | Added | SOUTH | Foul |
| SPS004046 | BUSBY PICKETLAW SPS NS594572 | Added | WEST | Foul |
| SPS004119 | DORNOCH SUTHERLAND RD WWPS NH792895 | Added | NORTH | Foul |
| SPS004185 | UPLAWMOOR WWPS 2015 NS438552 | Added | WEST | Foul |
| SPS004644 | KIRKHILL NEWTON PARK WWPS NH560458 | Added | NORTH | Foul |
| SPS004663 | PHILIPSHILL WESTERFIELD RD WWPS NS600560 | Added | SOUTH | Combined |
| SPS000556 | PORTREE VIEWFIELD RD WWPS NG479434 | Removed | NORTH | Foul |
| SPS000694 | INVERGORDON 63 SALTBURN SPS '80 NH727700 | Removed | NORTH | Combined |
| SPS000804 | ELGIN DOVECOTE WWPS 1970 NJ221618 | Removed | EAST | Stormwater |
| SPS001413 | PIER WWPS 1986 HY253083 | Removed | EAST | Combined |
| SPS002102 | WALLACEPARK WWPS NS808916 | Removed | WEST | Combined |
| SPS003050 | ECCLEFECHAN TRANSFER PUMPING STATION | Removed | SOUTH | Combined |
| SPS003053 | SMITHSTONE WWPS NS723750 | Removed | SOUTH | Foul |
| SPS003665 | 1209-1213 GOVAN ROAD WWPS NS54166 | Removed | WEST | Combined |
| SPS003666 | 688 DUMBARTON ROAD WWPS NS483713 | Removed | WEST | Combined |
| SPS003679 | TROQUEER STORM WWPS 1975 NX971745 | Removed | SOUTH | Stormwater |
| SPS003680 | TROQUEER FINAL WWPS 1975 NX971745 | Removed | SOUTH | Treated Effluent |
| SPS003732 | ABERLOUR 32 HIGH STREET SPS NJ269432 | Removed | EAST | Combined |
| SPS003733 | ABERLOUR 34A HIGH STREET SPS NJ269431 | Removed | EAST | Combined |
| SPS003734 | PORT ELPHINSTONE CANAL ST WWPS NJ778202 | Removed | EAST | Stormwater |
| SPS003805 | PORTLETHEN LEATHAN FIELDS SPS NO918974 | Removed | EAST | Foul |
| SPS003847 | KIRKINTILLOCH LOCH RD WWPS NS659729 | Removed | WEST | Foul |
| SPS003922 | ABERDEEN GATEWAY WWPS NO937998 | Removed | EAST | Foul |
| SPS003931 | COATBRIDGE REDWING WWPS NS752630 | Removed | SOUTH | Foul |
| SPS003961 | ELLON CASTLE MEADOWS WWPS NJ957309 | Removed | EAST | Foul |
| SPS003991 | CLEDDENS COURT WWPS NS614705 | Removed | WEST | Foul |
| SPS004003 | INVERURIE HARLAW ROAD WWPS 2012 NJ773221 | Removed | EAST | Foul |
| SPS004012 | ABERDEEN BALMORAL BUS PARK SPS NJ942015 | Removed | EAST | Foul |
| SPS004027 | NEWTONHILL WMD WWPS 2012 NO903928 | Removed | EAST | Foul |
| SPS004107 | BRIDGE STREET WWPS 2013 NS443644 | Removed | WEST | Foul |
| SPS004111 | STORNOWAY MACKENZIE PARK WWPS NB452324 | Removed | NORTH | Foul |
| SPS004142 | RICHMONDHILL FARM WWPS 2014 NK106461 | Removed | EAST | Foul |
| SPS004342 | ABERDEEN RIVERSIDE QT WWPS 2017 | Removed | EAST | Foul |

The confidence grade of A3 remains the same as last year.

#### E7.32 Total capacity of pumping stations (m3/d)

For AR22 this is reported as 15,990,622m3/d. This is a 2.2% decrease on the value reported for 2020/21. An improvement in kW values recorded in corporate systems, and the net reduction of pumping station numbers, has caused movement between size banding for gap-filling, and thus reduced the overall total capacity.

The confidence grade of C4 remains the same as last year.

#### E7.33 Total capacity of pumping stations (kW)

For AR22 this is reported as 99,458kW, which is a marginal increase of 3,394kW from 2020/21.

The confidence grade of A3 remains the same as last year.

#### E7.34 Average pumping head

This is reported as 32.0m for AR22. This represents an increase of 2.2m from 2020/21, which is due to changes to extrapolated infill capacity values.

The confidence grade of C5 remains the same as last year.

#### E7.35 Total number of combined pumping stations

From the total number of pumping stations reported in **Line E7.31**, the total number of combined pumping stations has reduced by 7 to 1,322 for AR22.

The confidence grade of A3 remains the same as last year.

#### E7.36 Total capacity of combined pumping stations

From the calculation used to populate **Line E7.32**, the Total Capacity of Combined Pumping Stations has reduced by 2.6%. This is due to an improvement in kW values recorded in corporate systems and the net reduction of pumping station numbers has caused movement between size banding for gap-filling, resulting in a reduced the overall total capacity to 11,825,937m3/d.

The confidence grade of C4 remains the same as last year.

#### E7.37 Total number of stormwater pumping stations

From the total number of pumping stations reported in **Line E7.31**, the Total Number of Stormwater Pumping Stations has reduced by 3 to 46, for AR22.

The confidence grade of A3 remains the same as last year.

#### E7.38 Total capacity of stormwater pumping stations

From the calculation used to populate **Line E7.32**, the total capacity of stormwater pumping stations has increased by 2.7% to 692,372m3/d. This is due to an improvement in kW values recorded in corporate systems and the net reduction of pumping station numbers has caused movement between size banding for gap-filling, and thus reduced the overall total capacity.

The confidence grade of C4 remains the same as last year.

#### E7.39 Number of combined sewer overflows

This is reported as 3,176 for AR22, which is an increase of 93 since AR21. This is mainly due to an improved methodology for identifying previously excluded CSOs that are associated with sewage treatment works or foul sewer pumping stations. This improved methodology identified some areas requiring data improvement in Scottish Water’s Ellipse asset database. These areas will be fully explored, and improvements made before next year’s Annual Return. This should lead to improved confidence grades in future.

The confidence grade of A3 remains the same as last year.

Data reported in these lines reflects the year-end position, rather than numbers in operation during the year. This introduces a small error due to UIDs abandoned in the report year. The Ellipse extract used for the analysis shows all CSOs including those abandoned, shown never to have existed, and information on bifurcations. Reported numbers exclude CSOs at Waste Water Treatment Works (WwTW), dual manholes and emergency overflows operating less frequently than once in five years, although few of the latter have been modelled. Reported numbers include network CSOs and overflows at combined pumping stations which operate due to hydraulic overload, but not those which operate due to equipment failure.

#### E7.40 Number of combined sewer overflows (screened)

This is reported as 1,412 for AR22, which is an increase of 227 since AR21. Using the improved methodology from **Line E7.39,** this also enables screens that serve the CSOs to be identified even if they are not recorded under the CSO asset.

The confidence grade of A3 remains the same as last year.

### - E7.41-E7.42 Sewage Treatment Works

#### E7.41 Number of sewage treatment works

This has reduced by 3 to 1,834 for AR22. Full details of the changes and size bands are included in the commentary for Table E8.

The confidence grade of A2 remains the same as last year.

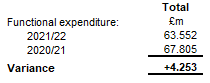
#### E7.42 Total load

This has marginally increased (0.6%) to 216,048kgBOD/day. Full details of the changes to load values are included in the commentary for Table E8.

The confidence grade of B3 remains the same as last year.

### - E7.43-E7.47 Sewage Treatment Costs

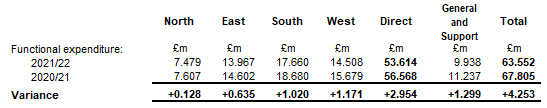
#### E7.47 Functional Expenditure



Sewage treatment costs have decreased by £4.3m (6%) from 2020/21. The main movement is as follows:

* £2.7m (13%) decrease in power costs due to lower unit prices secured through advance purchase contracts and lower consumption due to relatively low average rainfall
* £0.3m (1%) decrease in other direct costs
* £1.3m (12%) decrease in general and support costs due to lower digital costs linked to decommissioning of contracts and lower mobile phone usage, lower pension costs in support departments and lower property rental costs

Analysis of sewage treatment costs by region:

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Confidence grades in Table E7 are consistent with grades in the general Section E commentary and remain consistent with 2021/22.

Scottish Water has slightly lower confidence levels on Network cost analysis than treatment cost analysis. This is due to lower levels of direct labour capture on Networks.

# Table E8 - Wastewater Explanatory Factors - Sewage Treatment Works

## Introduction

The works reported in Table E8 are those in operation, excluding PFI works, at the end of the report year. The table includes unscreened sea outfalls which have no treatment assets.

### Data sources and confidence grades

Data sources and confidence grades are detailed in the commentary section where relevant.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used for forecast data

There is no forecast data for the E8 Table.

## Commentary

### E8.1-E8.10 Numbers

The numbers for small Sewage Treatment Works (STWs) with specific ammonia consents are sourced from Scottish Water’s compliance database and are aligned with **Lines E8.9 and E8.10**, as per previous years.

The percentage compliance was calculated based on Operator Self-Monitoring Programme which are reported to SEPA. Scottish Water’s methodology for calculating compliance is the same as last year and, in the case of two-tier consents, all failures were counted, not just upper-tier failures. STWs that are not sampled are not included in the averaging process for individual treatment categories and size bands.

#### E8.1-E8.8 Sewage treatment works size bands

As reported in Table E7 the total number of STWs reported for AR22 is 1,834. The changes from 2020/21 with respect to size band and treatment category both fall into the size band 0 and Septic Tanks categories. The details are shown in Table 66 below.

Table 66: Changes in sewage treatment works

| **Plant No** | **Site** | **Region** | **Size Band** | **Treatment Category** | **Added/**  **Removed** |
| --- | --- | --- | --- | --- | --- |
| STW003820 | LOCHBOISDALE SEP WWTW 2017 | NORTH | Size Band 0 | Septic Tank | Added |
| STW003832 | RAASAY SCHOOL PARK SEP WWTW NG551359 | NORTH | Size Band 0 | Septic Tank | Added |
| STW003833 | ARMADALE PIER ROAD SEP WWTW NG637038 | NORTH | Size Band 0 | Septic Tank | Added |
| STW000842 | ACHMELVICH PUBLIC TOILET SEP'70 NC058248 | NORTH | Size Band 0 | Septic Tank | Removed |
| STW000996 | IOCHDAR SEP 1980 NF791461 | NORTH | Size Band 0 | Septic Tank | Removed |
| STW001232 | DRUMMOSSIE LDGE SEP 1930 NH757457 | NORTH | Size Band 0 | Septic Tank | Removed |
| STW003723 | BURRAY VILLAGE SEPTIC TANK ND472955 | EAST | Size Band 0 | Septic Tank | Removed |
| STW003787 | TOXSIDE SEP WWTW NT289538 | SOUTH | Size Band 0 | Septic Tank | Removed |
| STW003793 | AUCHENDINNY SEP WWTW 1974 NT254621 | SOUTH | Size Band 0 | Septic Tank | Removed |

A comparison of the AR21 and AR22 total number of STWs reported by Size Band are shown below (Table 67).

Table 67: Changes in sewage treatment works by Size Band from AR21

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Line Ref** | **Size Band** | **AR21 Reported** | **AR22 Reported** | **Change** |
| E8.1 | Size Band 0 | 1,123 | 1,114 | -9 |
| E8.2 | Size Band 1 | 202 | 197 | -5 |
| E8.3 | Size Band 2 | 147 | 154 | 7 |
| E8.4 | Size Band 3 | 183 | 187 | 4 |
| E8.5 | Size Band 4 | 122 | 122 | 0 |
| E8.6 | Size Band 5 | 39 | 39 | 0 |
| E8.7 | Size Band 6 (Large Works) | 21 | 21 | 0 |
| E8.8 | Total Sewage Treatment Works | **1,837** | **1,834** | **-3** |

The changes in the reported total size band numbers between AR21 and AR22 reflect the additions and removals in the reporting year and highlight the movement of sites between the size bands for each treatment category.

The confidence grade of B3 remains the same as last year.

#### E8.9-E8.10 Small sewage treatment works with ammonia consent

The number of small sewage treatment works with ammonia consent 5-10 mg/l has decreased by 1, to 47.

The number of small sewage treatment works with ammonia consent <= 5 mg/l has decreased by 2, to 70.

The confidence grade of A1 remains the same as last year.

### E8.11-E8.18 Average Daily Load

The total load received at each reported STW for AR22 was 210,706kg BOD/day. This is a slight increase of 0.8% from 2020/21, which was due to the net change in STW numbers and the movement of STWs between size bands between the reporting year. This is detailed in Table 68 below.

Table 68: Changes in STW Average Daily Loads from AR21

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Line Ref** | **Size Band** | **AR21 Load (kgBOD/day)** | **AR22 Load (kgBOD/day)** | **Change** |
| E8.11 | Size Band 0 | 421 | 401 | -20 |
| E8.12 | Size Band 1 | 998 | 945 | -53 |
| E8.13 | Size Band 2 | 2,141 | 2,000 | -141 |
| E8.14 | Size Band 3 | 10,501 | 10,241 | -260 |
| E8.15 | Size Band 4 | 34,998 | 34,353 | -645 |
| E8.16 | Size Band 5 | 34,089 | 34,318 | 229 |
| E8.17 | Size Band 6 (Large Works) | 125,897 | 128,448 | 2,551 |
| E8.18 | Total Load Received | **209,045** | **210,706** | **1,661** |

Loads are based on 300g.BOD/cubic metre and PE is based on 60g.BOD/head/day, as specified by WICS. Imported sludge liquor loads are calculated from the volume to each works and an average strength of 300g.BOD/cubic metre.

The confidence grade of B3 remains the same as last year.

### E8.19 & E8.20 Small sewage treatment works with ammonia consent 5-10 mg/l and <= 5 mg/l

These lines report on the loads received at our small sewage treatment works with specific ammonia consents.  The numbers are sourced from our compliance database and are aligned with **Lines E8.9 and E8.10**.

The total average daily load at small sewage treatment works with ammonia consent 5-10 mg/l marginally decreased by 53kgBOD/day, to 7,132kgBOD/day.

The total average daily load at small sewage treatment works with ammonia consent <= 5 mg/l decreased by 660kgBOD/day, to 48,435kgBOD/day.

The confidence grade of A1 remains the same as last year.

### E8.21-30 Compliance

The percentage compliance was calculated based on SEPA results. Our methodology for calculating compliance is the same as last year and, in the case of two-tier consents, all failures have been counted, not only upper-tier failures. STWs that are not sampled are not included in the averaging process for individual treatment categories and size bands. The sampling period is the financial year 2021/22.

Compliance figures, which are reported in **Lines E8.21-E8.30**, show a decrease from the previous year, with 20 works reported as failing this year. These failing STWs are listed in Table 69 below.

Table 69 AR22 STWs Compliance Failing Sites

| **Plant No** | **Site** | **WIC E Treatment** |
| --- | --- | --- |
| STW000012 | AMISFIELD WWTW NY003828 | Sec biological |
| STW000085 | BOTHWELLBANK WWTW 1947 NS698580 | Sec Activated Sludge |
| STW000218 | DALDOWIE WWTW 1974 NS672622 | Tertiary A1 |
| STW000355 | HAMILTON WWTW NS712575 | Sec Activated Sludge |
| STW000361 | HARTHILL WWTW 1989 NS908648 | Tertiary A1 |
| STW000435 | KIRKCONNEL WWTW 1953 NS749116 | Sec biological |
| STW000576 | PHILIPSHILL WWTW 1948 NS603560 | Sec Activated Sludge |
| STW000619 | ROCKCLIFFE WWTW NX853532 | Tertiary A2 |
| STW000627 | SALSBURGH WWTW 1950 NS824631 | Tertiary B2 |
| STW000642 | SHIELDHALL WWTW NS533659 | Sec Activated Sludge |
| STW000671 | STEWARTON WWTW NS408449 | Sec biological |
| STW000675 | STONEHOUSE WWTW 1928 NS764471 | Sec Activated Sludge |
| STW000714 | TORTHORWALD WWTW NY030787 | Tertiary B1 |
| STW001833 | MONTROSE WWTW 2002 NO724603 | Tertiary A1 |
| STW001842 | DURRIS WWTW 1991 NO792958 | Sec Activated Sludge |
| STW001935 | ORPHIR VILLAGE WWTW 1999 HY344058 | Tertiary B1 |
| STW001979 | ALLOA WWTW NS887918 | Sec Activated Sludge |
| STW001990 | HAWICK WWTW 1930 NT512155 | Sec Activated Sludge |
| STW002014 | BATHGATE WWTW 1962 NS961703 | Tertiary B1 |
| STW002266 | RITCHIE CAMPS WWTW 1997 NT115656 | Sec biological |

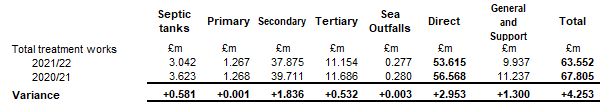
Where the cells in this section are listed as 0 and the Confidence Grade as AX, this means that there was no STW in that treatment category and size band thus there was no sampling. Otherwise, the Confidence Grade of B2 remains the same as last year. 

### E8.31-E8.42 Costs

Overall movements are explained in **Line E7.36** earlier in this commentary. The costs of treating and disposing of sludge are contained within Table E10 Sludge Treatment and Disposal.

Analysis of sewage treatment costs by process type:

Changes to the numbers of STW by process type have arisen as a result of operational changes and process re-classifications in STW during 2021/22. Re-stating 2020/21 figures on a like-for-like basis shows the following variations:



Costs which are directly attributable to treatment are charged to the specific asset cost code in the General Ledger, either via direct charging, Ellipse timesheets, or work orders. Of the £53.6m total direct wastewater treatment costs, £37.5m of costs (70.0%) have been directly charged to assets in our corporate costing system.

Other costs have been allocated to Wastewater Treatment through ABM support activity allocation, e.g. stores based on number of issues and IT applications based on number of users. Therefore, support costs are allocated on a resource consumed basis. However, many of these costs are not specific to an asset but are generally attributable to an employee. Consequently, the majority of these support costs have been allocated to activities carried out by employees.

Confidence grades in Table E8 are consistent with others in the Section E commentary and remain consistent with 2020/21.

# Table E9 - Large Sewage Treatment Works Information Database

## Introduction

This table is used in wastewater service operating efficiency studies.

Large works are defined as those which receive an average loading in excess of 1500kg BOD5/day (including effluent from both domestic and trade sources but excluding any allowance for non-resident population). This is roughly equivalent to a population of 25,000.

This table excludes all sewage treatment works operated under PPP that meet the above load criteria.

### Data sources and confidence grades

Confidence grades in Table E9 are consistent with othergrades in the Section E commentary and remain consistent with 2020/21. More detail is provided in the individual lines’ descriptions.

### Data improvement programmes

There were no notable data improvement programmes in 2021/22.

### Assumptions used in forecast data

There are no forecast data for the Table E9.

## Commentary

#### E9.0 & E9.0a Name and Operational Area

These lines report the specific large non-PPP sewage treatment works for this reporting year with their operational area noted. Changes in the reported list of assets reflect the variation in both domestic, tanker, and trade effluent loads received at these works. The listed assets reported in **Line E9.0** are aligned with those reported in **Line E8.7**.

The number and list of large non-PPP sewage treatment works remains the same as last year at 21 sites.

Large sewage treatment works are defined as those that receive an average loading in excess of 1,500 kg BOD/day which is approximately equivalent to a population of 25,000.

### E9.1 & E9.2 Annual average resident connected population

**Lines E9.1-E9.2** have been sourced from the same data that contributes to the measured household, unmeasured household and tourist population in Table A. The Confidence Grades for these lines are allocated as B2 and B3 respectively.

### E9.3 & E9.4 Trade effluent and Tanker loads received by works

Trade effluent load figures are shown solely in **Line E9.3**, therefore there is no overlap with **Line E9.4**. The Confidence Grades for these lines are allocated as B4 and B3 respectively.

#### E9.5 Population equivalent of total load received

The overall population equivalent of the total load received increased by 5,962 to 2,104,962 from 2020/21.

Changes to the population equivalent of each large STW are detailed in the Table 70 below.

Table 70 Change in Population Equivalent from AR21

| **Plant No** | **Site** | **AR21** | **AR22** | **Change** |
| --- | --- | --- | --- | --- |
| STW000011 | ALLERS WWTW 1964 NS662561 | 32,000 | 35,843 | 3,843 |
| STW001979 | ALLOA WWTW NS887918 | 43,000 | 44,586 | 1,586 |
| STW000033 | ARDOCH WWTW 2002 NS374758 | 62,000 | 58,459 | -3,541 |
| STW000125 | CARBARNS WWTW 1973 NS773539 | 49,000 | 49,925 | 925 |
| STW001975 | DALDERSE WWTW 1966 NS903822 | 89,000 | 95,584 | 6,584 |
| STW000218 | DALDOWIE WWTW 1974 NS672622 | 293,000 | 288,767 | -4,233 |
| STW000222 | DALMARNOCK WWTW NS611627 | 164,000 | 161,029 | -2,971 |
| STW001984 | DUNFERMLINE WWTW 1973 NT121817 | 81,000 | 83,123 | 2,123 |
| STW000265 | DUNNSWOOD WWTW NS782771 | 30,000 | 30,118 | 118 |
| STW000281 | ERSKINE WWTW NS494691 | 82,000 | 83,580 | 1,580 |
| STW001989 | GALASHIELS WWTW NT513351 | 26,000 | 33,861 | 7,861 |
| STW000355 | HAMILTON WWTW NS712575 | 64,000 | 65,824 | 1,824 |
| STW001491 | INVERURIE WWTW 2001 NJ781203 | 25,000 | 25,245 | 245 |
| STW001977 | KINNEIL KERSE WWTW 2001 NS960811 | 50,000 | 48,738 | -1,262 |
| STW001982 | KIRKCALDY WWTW 1987 NT287923 | 60,000 | 59,386 | -614 |
| STW000455 | LAIGHPARK PAISLEY WWTW NS485655 | 99,000 | 96,085 | -2,915 |
| STW001712 | PERTH CITY WWTW 1971 NO147221 | 104,000 | 107,252 | 3,252 |
| STW000576 | PHILIPSHILL WWTW 1948 NS603560 | 64,000 | 68,128 | 4,128 |
| STW000642 | SHIELDHALL WWTW NS533659 | 575,000 | 594,006 | 19,006 |
| STW002268 | STIRLING WWTW 1968 NS808935 | 64,000 | 69,202 | 5,202 |
| STW000719 | TROQUEER WWTW 1950 NX971745 | 43,000 | 42,064 | -936 |
|  | **Total** | **2,099,000** | **2,104,962** | **5,962** |

The confidence grade of B3 remains the same as last year.

### E9.6-E9.10Compliance

These lines report on regulatory compliance using consent data as taken from our corporate consents database. The most onerous of CAR or UWWT parameters was used to report.

The suspended solids consent is 100, with no change from previous years.

The BOD consent value for all sites is 75mg/l, except Perth which is 30mg/l.

Confidence grades remain at A1, reflecting the fact that the data is obtained directly from our corporate consents database.

#### E9.11 Compliance with effluent consent standard

The compliance with consent percentage for **Line E9.11** based on OSM regulatory samples from the SEPA system showed that 7 works achieved 100% compliance. The lowest compliance rate was found at Hamilton STW which achieved 89.4% compliance.

The confidence grade of A1 remains the same as last year.

### E9.12-E9.18 Treatment Works Category

These lines report the information held in the corporate asset inventory in relation to treatment type. We report 21 large sewage treatment works in Table E9; this corresponds with **Line E8.7**.

The Treatment Works Category identification remains unchanged except for STW000455 Laighpark (Paisley) STW which was corrected to Secondary Activated Sludge instead of Secondary Biological.

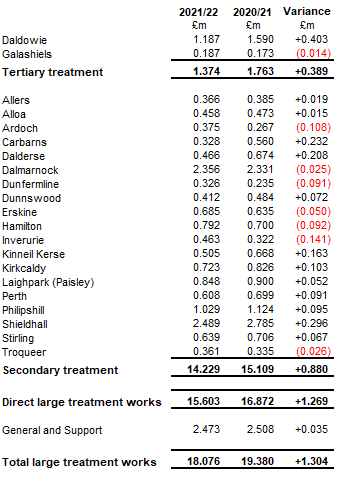
The confidence grade of A1 remains the same as last year.

### E9.18-E9.22 Sludge

Data on Sludge is not available for AR22.

### E9.23-E9.28 - Works cost

Analysis of functional costs for large sewage treatment works:



**The larger increases (>£0.1m) are explained as follows:**

* Increased costs at Inverurie WWTW as the works has been upgraded to Nereda technology
* Additional tank cleaning has been completed at Ardoch WWTW

**The larger decreases (>£0.2m) are explained as follows:**

* Optimisation of chemical dosing at Daldowie WWTW and Dalderse WWTW
* In 20/21 one off additional contractor costs were incurred at Carbarns WWTW and Dalderse WWTW
* Lower energy costs due to lower unit prices at Daldowie WWTW and Shieldhall WWTW

# Table E10 - Wastewater Explanatory Factors - Sludge Treatment and Disposal

## Introduction

The allocation of sludge treatment and disposal costs by disposal route relies on sludge movement data linked to financial data. The sludge movement data from the Gemini waste management system is linked to ABM costs to produce E10 cost analysis. Financial costs for this table are completed on the basis of a combination of ABM analysis, direct cost capture by asset, and Scottish Water’s sludge model analysis.

Sludge treatment and disposal is reported only for sludge treated and recycled or disposed of from Scottish Water’s operational sites. Sludge disposal by PPP concessions is not reported in this table. Sludge (biosolids) from Scottish Water operational sites accounts for approximately 11% of the total sewage sludge for disposal.

### Data sources and confidence grades

The resident population reported is the total resident population served by Scottish Water’s treatment works, and excludes resident population served by PPP works. However, much of the sludge from the population served by Scottish Water treatment works is treated and disposed of through PPP concessions.

The quantity of sludge is taken from Scottish Water’s Gemini tanker movement system (except one discharge to one PPP works via a metered pipeline) which records and tracks sludge from point of production to point of disposal. Sludge is moved by Scottish Water’s contractors, and all tanker loading is metered. Sludge is moved by specialist transport for which weigh-bridging or tanker-metering is recorded.

Confidence grades are detailed in the Comments section where relevant.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used in forecast data

There is no forecast data for Table E10.

## Commentary

#### E10.1 Resident population served

The resident population served by each sludge disposal route is reported on line **E10.1**. This change is consistent with the rise in population reported elsewhere in this submission.

The total resident population served is reported as 2,492,029 for AR22. This is a marginal 0.06% increase from 2020/21.

The confidence grade of C3 remains the same as last year.

#### E10.2 Amount of sewage sludge

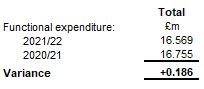
This line reports the mass of sewage sludge across the noted disposal routes. The reported volume of 13.60ttds was derived from various internal data sources including our Gemini system. This is a decrease of 17.2% from 2020/21.

* A decrease of 2.42ttds in the volume of enhanced treated sludge produced due to commissioning issues of new equipment by a new supplier at Kinneil Kerse, and Perth
* A small increase of 0.57ttds of conventionally treated sludge due to Cumnock STC experiencing fewer process compliance issues
* A small decrease of 0.98ttds diverted to land reclamation due to operational options to increase cake imports to Nigg PFI
* 0.42ttds of untreated/raw sewage sludge cake continues to be landfilled in the Shetland Islands

The confidence grade of B4 remains the same as last year.

### E10.3-E10.9 Sludge Treatment and Disposal Costs

#### E10.9 - Sludge Treatment and disposal: Functional Expenditure



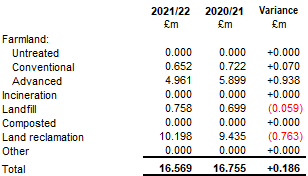
Sludge treatment costs have decreased by £0.2m (6%) from 2020/21. This is analysed as follows:

* £0.3m (12%) decrease in power costs primarily reflecting lower tariffs
* £0.2m (2%) increase in other direct costs comprising higher cost of inter site sludge transfers using contractors offset by lower employment costs
* £0.1m (3%) decrease in general and support costs

Scottish Water incurs costs associated with the transportation of sludge from its own sewage treatment works to PPP sludge treatment centres. These costs have been reported within **Line** **E3a.20**, with the corresponding sludge loads reported in Table E3.

The allocation of sludge treatment and disposal costs by disposal route relies on sludge movement data linked to financial data. Scottish Water links sludge movement data from the Gemini waste management system to ABM costs to produce the Table E10 cost analysis.

Analysis of sludge treatment costs by disposal route:



A reduction in costs for disposals via Farmland advanced due to lower volumes through this route primarily at Kinneil Kerse, partially offset by an increase in costs for disposal via Land reclamation due to higher volumes via this route at Kinneil Kerse and Perth.

Confidence grades in Table E10 are consistent with grades in the Section E Commentary and remain consistent with 2020/21.

Sludge cost analysis by ultimate disposal route requires analysis of all sludge treatment, tankering and disposal costs by works, linked to intermediate works (where applicable) and ultimate disposal route. Certain costs are clearly captured by works with identified disposal route. However, certain costs are not fully captured directly against sludge. The main areas of difficulty are inter-site sludge tankering and sludge treatment / conditioning at dual function works (sludge / wastewater treatment). Table E10 is completed on the basis of a combination of: ABM analysis, direct cost capture by asset, and Scottish Water sludge model analysis.

Confidence grades on Table E10 are lower (B2) than other Section E tables cost for that reason.

# Table E11 – Employee numbers – Full-time equivalents

## Introduction

This table contains the number of full time equivalent employees as of the end of March 2022; the split of data is explained in each line as necessary.

Scottish Water would welcome discussion on the data in this table to gain better clarity of WICS requirements, in order that the split of data is provided appropriately.

### Data sources and confidence grades

All data has been sourced from Scottish Water ‘s HR corporate system (Workday) and has therefore been given a confidence grade of A1

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used in forecast data

There is no forecast data for Table E11.

## Commentary

### E11.1-E11.6 Delivery of water and wastewater services

#### E11.1 – Operations

The FTE figures contained with Section 11.1 are for the main Water and Waste Water Operations function of Scottish Water. This excludes the focused Customer Service teams such as Contact Centre & Customer Experience and; Field, Water and Sewer Response Teams which are captured in Section 11.4. These figures exclude Directors and Managers which are contained within Section 11.5 and include Grampian FTEs. The number of employees (FTE) in this category is 1704.

#### E11.2 - Capital Planning and Delivery

This section contains the FTE for Scottish Water’s Capital Investment Planning and delivery Teams. The focus areas include Capital Investment (Planning and Portfolio Management), Delivery, Commercial, Procurement and Specialist Services. These figures exclude Directors and Managers which are contained within Section 11.5. The number of employees (FTE) in this category is 392.

#### E11.3 laboratory Services

Section 11.3 captures the FTE for Scottish Water’s Scientific Services Function. Withing this Business area the focus is on Water and Waste Water Sampling and Quality Assessment (Laboratory Services). Research & Development and Lean Management Services are also part of this Business Area. These figures exclude Directors and Managers which are contained within Section 11.5. The number of employees (FTE) in this category is 317.

#### E11.4 Customer service and billing

This includes the FTE associated with the focused Customer Service teams such as Contact Centre & Customer Experience and; Field, Water and Sewer Response Teams. The FTE captured under the category of Billing consist of Wholesale Services (Billing and Management). These figures exclude Directors and Managers which are contained within Section 11.5. The number of employees (FTE) in this category is 595.

#### E11.5- Directors, management and support including regulation and strategy

Under section 11.5 the FTE associated with Scottish Water’s CEO, Executive Directors and Directors, General Managers and Business Managers (including Grampian) is recorded. Further to this support functions including Finance, People, Corporate Affairs Digital, Transformation, Strategic Customer Service Planning and Strategy & Commercial are also captured. Scottish Water Horizons (Non-core service) is excluded from these FTE figures. The number of employees (FTE) in this category is 946.

#### E11.6 – Total employee number (core services)

The total FTE of employees working in water and wastewater services delivery, as contained within Sections 11.1 to 11.3 is 2413. E11.7 Commercial and non-core services

#### E11.7 – Total employee numbers (commercial and non-core services)

The total FTE including non-core service, Scottish Water Horizons (and Horizon Managers) is 120.

**PLEASE NOTE**: The above represents Scottish Waters FTE for Employees only and does not capture the FTE associated with Contingent Workers consisting of Agency and Consultants/Contractors. These are deployed across Scottish Water and total 331 FTE as of 31 March 2022.

Section G – Investment; Indicator of Progress of the Development List (IPOD)

# Table G1 – Summary: Investment

## Introduction

Table G1 summarises actual and forecast investment over the 6-year AR21 period. The table breaks down the investment into Repair & Refurbishment, Asset Replacement, Growth, Enhancement, Support and Completion.

It also provides actuals and forecasts for Grants and Contributions, Infrastructure Charge Contributions, Unallocated Investment and Annual OPEX impact.

Additional sections on the table break investment down by Risk/Overhead/Direct Costs, Primary Purpose, Repair and Refurbishment Summary, and Tier.

### Data sources and confidence grades

Most of the data in Table G1 is sourced from the Table G6 list using the Projected Expenditure profile in columns 79 to 84. This is multiplied by the appropriate columns in the Table G1 Percentages Section (columns 113 to 161).

Calculations have been left in Table G1 to allow easier reference back to Table G6.

#### Line G1.42 Additional Operating Expenditure from Investment

This line is sourced from *Unifier* for the latest OPEX Impact for each project and the year(s) the operational expenditure impacts is calculated based on the G100 date.

Grants and Contributions actual data is sourced from the *Finance and Billing* System (*FAB*).

The live project data is based on project level forecasts and data from Scottish Water’s systems and are accorded a Confidence Grade of A1. Non-live data is significantly less certain and has a Confidence Grade of B1. Estimates for future contributions have also been allocated a Confidence Grade of B1 as it is estimated based on run-rates.

### Data Improvement Programmes

Scottish Water continues to look to improve cost forecasting within the *Unifier* system through system improvements with point of entry data validation and through enhanced reporting made available to the Project Managers, Quantity Surveyors, P6 Planners and Programme Managers.

Recent changes to *Unifier* include an improved monthly update process which was brought in during May 22.

Categorisation of projects continues to improve, and data anomalies encountered during the production of the Section G Tables will be fed back into either system or process improvements.

### Assumptions used for forecast data

The forecast and actual profiles are based on project forecasts and assumes that these are the best estimates of the forecast cost of the programme for projects that are live.

Non-Live investment identified on G6 – Column 18 as Non Live reflects the best estimate of demand for each Primary Need (split into Tier1 and Tier2).

While the actual Grants and Contributions are taken from the *FAB* system, the forecasts are based on the run-rate of the previous 5 years and extended for the remainder of the investment period.

## Commentary

**Lines G1.01-G1.12** break down Repair and Refurbishment investment into: Water, Wastewater and General and then further into Inspections and Testing, Repair and Refurbishment. The total in the report year in this category is £246.3m. The total for the SR21 period is £952.5m. Additional investment is expected in this category which is identified on G6 – Column 18 as Non Live.

**Lines G1.13-G1.16** break down Asset Replacement into Water, Wastewater and Business services. The total in the report year in this category is £217.5m. The total for the SR21 period is £1,070.2m. Additional investment is expected in this category which is identified on G6 – Column 18 as Non Live.

**Lines G1.17-G1.21** break down Growth into Water and Wastewater growth and Service Relocations Water and Wastewater. The total in the report year in this category is £57.0m. The total for the SR21 period is £495.0m. Additional investment is expected in this category which is identified on G6 – Column 18 as Non Live.

**Lines G1.22-G1.32** break down Enhancement into the Ministerial Objective categories. The total in the report year in this category is £113.4m. The total for the SR21 period is £828.0m. Additional investment is expected in this category which is identified on G6 – Column 18 as Non Live.

**Lines G1.33-G1.36** break down Support into the Direct, Indirect and Non-asset Support. The total in the report year in this category is £22.3m. The total for the SR21 period is £80.4m. Additional investment is expected in this category which is identified on G6 – Column 18 as Non Live.

**Line G1.33-G1.36** break down Completion into SR10 Completion, SR15 Completion Enhancement, SR15 Completion Growth and SR15 Completion Exceptional Asset Maintenance. The total in the report year in this category is £118.0m. The total for the SR21 period is £244.2m. It does not include the £13m reduction for investment planned after 20-21 in the SR15 Table K. If this is included this would total £231.2m. The compares with the baseline for Completion of £290.7m.

**Line G1.42** gives the forecast and actual OPEX impact for the 6-year period. The OPEX impact for the report year was £0.9m and the total over the SR21 period is £3.6m. The negative values in 2022-23 and 2023-24 are primarily due to forecast savings generated by the Cost Investment Intelligence Project -£1.1m, Oracle ULA Exit project -£1.1m and the Energy Efficiency Wastewater Project -£0.7m. The OPEX savings are partly offset by increases in OPEX elsewhere.

**Line G1.48** shows Grants and Contributions. All income in this category is Contributions to Infrastructure assets and totals £10.2m in they report year and is forecast at £54.6m over the SR21 period. Future years are estimated based on the run-rate over the previous 5 years.

**Line G1.49** shows the difference between the allowed for investment from the Final Determination and the investment already allocated to projects or programmes over the 2021-27 regulatory control period.

**Lines G1.50-G1.62** are calculated cells and summarise in the rows above. The total gross investment in the year is £774.4m and is £3,670.3m over the SR21 period. This excludes RCC and Non-live investment.

**Line G1.63-G1.66** breaks down the total gross investment into Direct Costs, Project Overheads and Risk Allowance. This is not profiled and is in the table as a total.

Project overheads are applied to projects at governance gates at a rate of 7%. This is either actualised when projects proceed through gates or is forecast within the project’s LBE.

Risk allowance is the amount of risk within a project’s LBE. It is identified during the project lifecycle and is assessed by the project teams in line with Scottish Water’s risk processes.

**Lines G1.67-G1.70** splits the investment into Primary Purpose: Water, Wastewater and General. 57% of investment in the year was Water, 40% Wastewater and 3% General.

**Lines G1.71-G1.73** splits the Repair and Refurbishment investment into: Responsive repair and refurbishment investment previously expensed as operating expenditure ('Tier 1'), Remaining responsive repair and refurbishment investment ('Tier 1') and Planned repair and refurbishment investment ('Tier 2'). This totals the same as **Lines G1.04, G1.08 and G1.12**, £246.3 m (rounded) in the report year and £952.5m in the SR21 period.

**Lines G1.75-G1.78** split the total investment into Tier1a and Tier 2. They further split the Tier 2 investment into Committed List projects (Named and Programmes) and Pre-committed List.

**Line G1.79** is a calculation of net Tier 2 investment excluding Asset Replacement and Support. This has been left at the original calculation in the template.

**Lines G1.80 and G1.81** provide the profiles of Water and Wastewater RCC investment. The increase in 2024-25 is due to 1 project, NGIWMS Agreement with Glasgow Council, which is forecast at £5.1m and is funded from RCC.

**Line G1.82** provides the total gross investment including RCC as a historical comparison with previous returns. This aligns with the £799m 2021-22 investment reported internally.

**Line G1.83** reflects the Infrastructure Charge contributions for infrastructure assets. The actual for the current year is £11.4m and future forecasts of £16.9m for remaining years is estimated based on the previous 5-year run-rate.

**Lines G1.84 and G1.85** are calculations. **Line G1.84** is the Total Contributions excluding Infrastructure Charge and **Line G1.85** is calculated to provide the total Net Capital Investment.

# Table G2a – Summary: Outputs by Ministerial Objective

## Introduction

Table G2a tabulates the outputs contained in Table G6 giving detail of the cumulative number each quarter.

### Data sources and confidence grades

This data is sourced from Table G6. It totals the number of outputs (or output value) in column 15 of Table G6 using the Forecast Gate 100 Date in column 58. This is summarised on the report using columns 13 - Ministerial objective (primary purpose) - and 17 - Output code.

Outputs reported in this table are either for projects achieving G100 or where the project is on the Named Committed List. SR15 Completion outputs that previously formed part of the DAGWG Graphs for SR15 reporting are excluded from this table and are included in Table G2b.

Calculations have been left in Table G2a to allow easier reference back to Table G6.

There are no confidence grades associated with Table G2a.

### Data improvement programmes

Work is ongoing to improve the population of output data. The data for this is partially held offline and over the coming months Scottish Water’s *Unifier* system will be updated to allow collection and storage of the appropriate output information. It is planned to have full population of output information by the turn of the year.

### Assumptions used for forecast data

Outputs are actualised or forecast to be achieved based on the G100 date.

## Commentary

### Lines G2a.001-G2a.117

These sections show outputs split by Ministerial Objective. Where no outputs have been identified for Ministerial Objectives a blank output line has been added. This applies to: Asset Maintenance, Circular Economy, Flooding and Surface Water Management and Private Finance Initiative Funded Projects.

# Table G2b – Summary: Completion Investment

## Introduction

Table G2b shows the forecast for the Planned and Delayed SR15 Completion programme broken down into the output descriptions used in SR15. The population of projects and outputs is based on the position reported at the end of March 2021.

The baseline is reported in Table 4: SR10 and SR15 Outputs within the information request document.

### Data sources and confidence grades

The table is generated using data from Table G6 using columns: 63 – Planned or Delayed Completion Projects; 64 - SR15 Output Name; and 76 – Forecast MS4 date.

The data source for the above columns is the OMD Calculations file from the end of March 2021 combined with the latest actual and forecast MS4 (Gate100) date for the output.

Calculations have been left in Table G2b to allow easier reference back to Table G6.

There are no confidence grades associated with Table G2b.

### Data improvement programmes

There are no Data Improvement Programmes. SR15 Completion Projects continue to be heavily monitored internally.

### Assumptions used for forecast data

Forecast dates are provided by project teams.

## Commentary

### Lines G2b.1-G2b.18 2015-21 outputs remaining that were planned to complete in the 2021-27 period – Planned

These lines show the cumulative outputs forecast for Acceptance (MS4 or G100) for all projects in the Planned Completion programme. Projects achieving RSO (MS5) before 1st April 2021 are excluded from this table.

As the criteria for inclusion in the baseline was the RSO (MS5) milestone being outstanding, 8 outputs already have Acceptance as shown in the Pre-2021-22 column.

### Lines G2b.19-G2b.36 2015-21 Completion outputs remaining – Delayed

These lines show the cumulative outputs forecast for Acceptance (MS4 or G100) for all projects in the Delayed Completion programme. Projects achieving RSO (MS5) before 1st April 2021 are excluded from this table.

As the criteria for inclusion in the baseline was the RSO (MS5) milestone being outstanding, 67 outputs already have Acceptance as shown in the Pre-2021-22 column.

### Lines G2b.37-G2b.40 SR15 Completion projects

#### Line G2b.37 shows the SR10 Completion projects remaining

Line G2b.37 counts projects rather than outputs and the calculations exclude the additional completion outputs. The starting point is shown in Pre-2021-22 and shows the SR10 projects within the 143 Completion projects in the programme.

#### Line G2b.38 shows the total number of projects remaining at the end of each quarter

Line G2b.38 counts projects rather than outputs and the calculations exclude the additional completion outputs. The starting point is shown in Pre-2021-22 and shows the SR15 and IR18 projects within the 143 Completion projects in the programme.

#### Line G2b.39 counts the number of projects remaining at the end of each quarter in the Planned Completion programme

Line G2b.39 counts projects rather than outputs and the calculations exclude the additional completion outputs. The starting point is shown in Pre-2021-22 and shows the 57 total projects in the programme.

#### Line G2b.40 counts the number of projects remaining at the end of each quarter in the Delayed Completion programme

Line G2b.40 counts projects rather than outputs and the calculations exclude the additional completion outputs. The starting point is shown in Pre-2021-22 and shows the 86 total projects in the programme.

# Table G2c – Summary: Outputs by Milestone

## Introduction

Table G2c tabulates the outputs contained in Table G6 giving detail of the cumulative number each quarter for milestones G90, SOS, G100 and G110. It compares the baseline where available against the latest forecast.

Table G2c also shows the SR15 Completion programme split into Planned and Delayed, forecast and baseline with the SR15 Milestones MS1 to MS5.

### Data sources and confidence grades

Data is sourced from Table G6 using the baseline dates from the Committed List Named and Programmes and the forecast dates.

It totals the number of outputs (or output value) in column 15 of Table G6 using the Baseline and Forecast Dates in columns 32-34 and 56-60. This is summarised in the report using columns 13 - Ministerial objective (primary purpose) and column 17 Output code.

Calculations have been left in Table G2c to allow easier reference back to Table G6.

There are no confidence grades associated with Table G2c.

### Data improvement programmes

We are currently working to improve the population of output data within our systems. The data for this is partially held offline and over the coming months, Scottish Water’s *Unifier* system will be updated to allow collection and storage of the appropriate output information. We are planning to have full population of output information by the turn of the year.

### Assumptions used for forecast data

There is no G90 baseline date. For the table this field has been aligned with the forecast. Only projects that are on the Committed List (Named and Programmes) have baseline dates. If projects are not on either Committed List (for example Tier 1a projects) then they will not have a baseline date but the actuals are reported when they achieved each milestone.

## Commentary

### Lines G2c.001-G2c.936

These sections show outputs split by Ministerial Objective. Where no outputs have been identified for Ministerial Objectives a blank output line has been added. This applies to: Asset Maintenance, Circular Economy, Flooding and Surface Water Management and Private Finance Initiative Funded Projects.

### Lines G2c.937-G2c.1656

These sections show SR15 outputs as summarised on G2b and profiled by the SR15 milestones, MS1-MS5. Outputs are split into SR10/SR15 and Planned/Delayed.

# Table G3 – Number of Needs or Projects by Milestone

## Introduction

Table G3 shows the number of milestones forecasting to be achieved in each quarter for Gates 30 to 110, baseline and forecast for projects confirmed on the Named Committed List, Non-named Committed List, and Pre-committed List.

It also shows the number of projects remaining in the SR15 Completion Programme for each milestone.

### Data sources and confidence grades

Data is sourced from Table G6 using the Baseline and Forecast Dates in columns 32-34 and 51-60. This is summarised on the report using columns 13 - Ministerial objective (primary purpose) and column 18 Committed List/Pre-committed List.

Calculations have been left in G3 to allow easier reference back to Table G6.

There are no confidence grades associated with Table G3.

### Data improvement programmes

We continue to seek to improve milestone forecasting within our *Unifier* system through reporting metrics and data assurance reports.

### Assumptions used for forecast data

Forecast milestones are based on the latest best estimate from the project teams.

## Commentary

There are no projects that are either Needs from Gate 30 onwards put on hold or Needs from Gate 30 onwards that do not require an intervention.

For the Confirmed on the Committed List section, only projects that are on the Named Committed list are included. The Gate 90 baseline is the same as the Gate 90 forecast as all projects currently on the Committed List Named have been added after Gate 90. The table is cumulative and only includes milestones achieved in the period.

For the Non-named (Programme and projects within programmes), the baseline dates pre- Start On-site are the same as the forecast. There is currently no baseline for Non-named Committed projects before they are added to the Committed List. Due to the Governance Runways used, almost all projects in the Non-named list do not go through Gate 30 to 80 and start at G90. There are generally over 1000 projects created through this runway every quarter

For Pre-committed List Named, the baseline dates Pre-start on Site have been aligned with the forecast dates, we do not have baseline dates for these projects until they are confirmed additions to the Committed List.

# Table G4a – Summary IPOD by Ministerial Objective

## Introduction

Table G4a shows the IPOD points broken down by Ministerial Objective, forecast and actual, cumulatively by quarter.

### Data sources and confidence grades

Data is sourced from Table G6. It uses column 18 Committed List/Pre-committed List to determine if a project is on the Named Committed List, columns 32-24 for the baseline dates and columns 57 to 60 for the forecast dates. Column 13 Ministerial objective (primary purpose) is used to establish the Ministerial Objective category.

Calculations have been left in Table G3 to allow easier reference back to Table G6.

There are no confidence grades associated with Table G4a.

### Data improvement programmes

There have been no data improvement programmes during 2021/2022.

### Assumptions used for forecast data

Forecast milestones are based on the latest best estimate from the project teams.

## Commentary

An additional sections have been added for Long Term Water Sector Vision to reflect the total number of IPOD points forecast and baseline.

# Table G4b – Summary IPOD by Portfolio

## Introduction

Table G4b shows the IPOD points broken down by Portfolio, forecast and actual, cumulatively by quarter. This aligns with the reported IPOD position as detailed in the DAGWG report for 2021-22 Q4.

### Data sources and confidence grades

Data is sourced from Table G6. It uses column 18 Committed List/Pre-committed List to determine if a project is on the Named Committed List, columns 32-24 for the baseline dates and columns 57 to 60 for the forecast dates. Column 20 Portfolio is used to establish the Portfolio category.

Calculations have been left in Table G3 to allow easier reference back to Table G6.

There are no confidence grades associated with Table G4b.

### Data improvement programmes

There have been no data improvement programmes during 2021/2022.

### Assumptions used for forecast data

Forecast milestones are based on the latest best estimate from the project teams.

## Commentary

At the end of 2021-22 Scottish Water had achieved an IPOD score of 332 points against a baseline of 314 points.

# Table G4c – Detail IPOD

The table shows the IPOD data aligning with G6, G4a and G4b. It shows one line per IPOD milestone and can be used for calculating IPOD.

# Table G5 – Growth

## Introduction

Table G5 shows the expenditure Scottish Water has incurred or is forecast to incur on growth for the SR21 programme.

### Data sources and confidence grades

All data has been sourced from the *FAB* financial system including the general ledger, projects, ledger, Accounts Payable records (payments to vendors) and the Water Utility Billing customer billing & management system.

The report has been produced using the same methodology as G1 with the projects actual expenditure taken from the financial systems and the forecast expenditure taken from Primavera. The percentage allocation assigned to each project has been taken from the systems which hold Scottish Water’s CAPEX gateway approval forms. Most projects are assigned 100% to growth but there may be significant growth investment delivered as part of large quality schemes.

The above data from the multiple corporate systems, which feeds into Table G5, has a Confidence Grade of A1. The estimated Confidence Grade for the Contributions is B1 – future Contributions forecasts are based on run rate from the previous 5 years.

The Confidence Grade for the outputs in **Lines G5.45 and G5.46** are also allocated as B1. Outputs data is being developed and will require future improvement to data quality and process.

### Data improvement programmes

After the launch in April 2020 of the new *Astro* system to manage new connections, asset relocations and strategic growth funding requirements we expect the new application, combined with the existing financial data sources, will enhance the data for connections and RCC in future years.

### Assumptions used for forecast data

Forecast connection numbers in **Lines G5.27-G5.32** are based on a baseline of 22,000 connections in 21/22 with a growth rate of 0.09% in future years. These figures are also used **Lines G5.39-G5.44**.

The forecasted connection numbers are the basis for the total Infrastructure receipts in **Lines G5.20-G5.24** at a rate of £420 per Connection which is the 21/22 standard connection charge.

Forecast number of properties receiving RCC in section **Lines G5.33-G5.39** are based on the forecast RCC spend in **Lines G5.1-G5.7** divided by the average cost per plot for RCC in 21/22 which were Water £347.41 and Waste £1,007.42.

## Commentary

At the start of SR21 new master projects were created to track all new Connections and RCC activity. There are currently 16 SR21 Master codes made up of 1 Domestic Water, 1 Domestic Waste, 1 Non-domestic Water and 1 Non-domestic Waste for each of the 4 regions North, South East & West.

The total Growth expenditure shown in Table G5 aligns with the total Growth on Table G1.

In Table G5, the total for **Line G5.14** Total Gross Expenditure on Growth and **Line G5.15** Service Relocations Water and **Line G5.16** Service Relocations Wastewater totals £615.4m for the SR21 period and £81.6m for the current year. This aligns with Table G1 when combining expenditure in **Line G1.21** Total Growth and the Total Expenditure for the RCC **Lines G1.80 and G1.81**.

Due to availability of output data, there are no Water Part 4 growth outputs forecast.

# Table G6 – Project Level Detail

## Introduction

Table G6 contains the full dataset of all projects that are either currently forecasting to spend in the SR21 period, deliver outputs or form part of the baselines for IPOD and SR15 Completion.

It is used as the primary data source for the calculations in tables 3,4,5,6,10,11,12 and 13.

### Data sources and confidence grades

The data source for Table G6 is primarily Scottish Water’s *Unifier* system. Actual costs are sourced from Scottish Water’s *FAB* system. In some cases, data is not held in *Unifier* and has been sourced from other areas. The intention is to carry out system updates to allow relevant data to be held within *Unifier* in future.

Table G6 aligns with Table 2 and includes additional columns requested as part of the G tables review. The additional columns either provide more information or provide the backup data to the summary tables.

There are no confidence grades associated with Table G6.

### Data improvement programmes

There have been no data improvement programmes during 2021/2022.

### Assumptions used for forecast data

There is no forecast data for Table G6.

## Commentary

Column 1 Project Autocode. This gives the unique ID that is used by Scottish Water to track projects through our systems. As well as the standard project IDs, new IDs have been created for:

Completion outputs where projects have more than one output, suffixed with a C.

Additional SR21 outputs where there is more than one output in a project are suffixed with a D and the Output code.

Non live investment, prefixed NL then the Need code and T1 for Tier1a or T2 for Tier 2 component of the need

Column 2 Project Title. This is the name of the project in our systems.

Column 3 Water, Wastewater or Support Services (primary purpose). This indicates whether the project is primarily Water, Wastewater or General. General projects either span water and wastewater assets or are for support services element of the programme such as Digital and Transformation.

Column 4 Primary Investment Category (Enhancement, Growth, Replacement, Repair and Refurbishment Project Classification). This is a calculated field that shows the main component of the project. Categories used are:

* Completion - primarily SR10 and SR15 Completion
* Enhanced – primarily SR21 Enhancement
* Growth – primarily Growth
* RCC – primarily Reasonable Cost Contributions (RCC)
* Repair and Refurbishment – primarily repair and refurbishment maintenance
* Replacement – primarily replacement maintenance.
* Support – primarily support services

Column 5 Project location - Local Authority The local authority where the project is located. In some cases, the project will span multiple areas and be regional (East, West, North, South) or may be Scottish Water Wide. For operational reasons some Unitary Authorities are split further depending on where the asset is managed from.

Column 6 Legislation / Directive / Enforcement / Letter of commitment This shows where a project has either a Letter of Commitment, Enforcement Notice or Management Interests of Safety (MIOS). There are 24 projects that fit into one of these categories.

Column 7 L/D/E/LOC Detail. This provides a short amount of detail on what the scope of work is for each project with a Letter of Commitment, Enforcement Notice or Management Interests of Safety (MIOS).

Column 8 Compliance date. This provides the Compliance Date for each project with a Letter of Commitment, Enforcement Notice or Management Interests of Safety (MIOS).

Column 9 Regulator responsible. Although DWQR and SEPA do not generally sign off projects, we have used this column to identify where the projects are appropriate to each quality regulator. Projects that are Completion and not signed off by SEPA or DWQR are flagged as “SW” if they are signed off internally.

Column 10 Asset Name. This shows the name of the asset where a project has either a Letter of Commitment, Enforcement Notice or Management Interests of Safety (MIOS).

Column 11 Water Resource Zone. This shows the name of the water resource zone where a project has either a Letter of Commitment, Enforcement Notice or Management Interests of Safety (MIOS).

Column 12 Water body affected. This shows the name of the water body affected where a project has either a Letter of Commitment, Enforcement Notice or Management Interests of Safety (MIOS).

Column 13 Ministerial objective (primary purpose). This provides the Ministerial Objective that the project is contributing towards. It is derived from the Need Ref. Projects without a ministerial objective are either Completion or RCC.

Column 14 Output Description. This gives the description of the output that the project delivers. We are currently working to improve the population of output data within our systems. The column currently only shows either outputs for projects completed in the year or forecast and actual outputs for projects on the Named Committed List. This does not include SR15 outputs that were previously tracked by the DAG Working Group through the SR15 graphs. SR15 outputs are shown in column 64 SR15 Output Name.

The data for this is partially held offline and over the coming months, Scottish Water’s *Unifier* system will be updated to allow collection and storage of the appropriate output information.

Where projects deliver more than 1 output, additional rows are added to G6.

Column 15 Number of outputs (or output value). This provides the quantity or number of outputs where project outputs have been identified.

Column 16 Output units. This provides the unit where project outputs have been identified. This is generally ‘Nr.’ for number but also includes population equivalent (PE) and meters.

Column 17 Output code. This provides the code where project outputs have been identified. This links to the drivers for the project and will be used within Scottish Water’s systems.

Column 18 Committed List / Pre-committed List. This column indicates whether a project is on the Committed List Named or Programmes however it also gives some additional information for the project status. The categories are:

* Committed Exclusions - This flag is for projects that are not on the Committed List Project/Programmes either because they are excluded due to being Tier1a/RCC or have no budget on the Committed List Programmes
* Committed List Named – This identifies projects that are on the Named Committed List due to meeting the Committed List Criteria. Projects on the Named Committed list are used to generate the IPOD metrics. The information provided is from the Committed List 2021-22 Q4
* Committed List Programmes – This identifies projects that form part of the Committed List Programmes sheet within the Committed List from 2021-22 Q4. Projects are entered onto the list when they achieve G90, are Tier 2 and have a G90 budget. It is primarily used to track the volume of committed investment for projects not fully meeting the criteria for being on the Named Committed list
* Completion Output Only – This flag is for projects that are on the Itemised List table with more than one SR15 Completion output. This allows the relevant output to be counted in Table 4. Lines in this category have dates and OMD points. To avoid duplication, there are no costs associated
* Non-live – This identifies the lines in G6 that summarise non live investment. This is calculated at Need and Investment Tier level
* Pre-committed – This identifies projects that are pre gate 90
* Pre-committed Named – This identifies projects that are expected to form part of the Named Committed List based on LBE being greater than £1m. Projects in this category will need to be further assessed at G90 to determine whether they fit other criteria.
* SR21 Additional Outputs Only – This identifies where a project has more than 1 type of output. This allows the relevant output to be counted in Tables 3 and 5. Lines in this category have dates but to avoid duplication, there are no costs associated. This excludes outputs that are on the Committed List.
* SR21 Additional Outputs Only CL - Like SR21 Additional Outputs Only, this identifies multiple outputs in the G6 data structure. This is only for projects that are on the Committed List and allows for calculations on Tables 3 and 5.

Column 19 Committed List project reference When the project is on the Named Committed list, this gives the project ID. This is the same as the project Autocode except when suffixed for additional outputs.

Column 20 Portfolio. This identifies the Portfolio a project is in and is based on the Need Reference.

Column 21 Sub Portfolio. This identifies the Sub Portfolio a project is in and is based on the Need Reference.

Column 22 Programme. This identifies the Programme a project is in and is based on the Need Reference.

Column 23 Sub Programme This identifies the Sub Programme a project is in and is based on the Need Reference.

Column 24 Management Approach Ref. This identifies the Management Approach a project is in and is based on the Need Reference.

Column 25 Management Approach Description. This gives the description associated with the Management Approach Ref.

Column 26 Primary Need Ref. The Primary Need Ref is the lowest level coding for a project and is used to determine the Management Approach, Sub Programme, Programme, Sub Portfolio, Portfolio and Ministerial Objective. This is identified on project setup and is monitored for accuracy. Where projects were created prior to SR21, a review has been undertaken to establish the correct coding.

Column 27 Primary Need Description. This gives the description of the Primary Need Ref.

Column 28 Project Appraisal Document Reference Where available this gives the hyperlink to the Appraisal Document. Further work is required to establish the mechanism for sharing the appraisal documents. An external SharePoint site is already established to share project investment appraisals with stakeholders: [Project Investment Appraisal - Stakeholder site (sharepoint.com)](https://scottishwater365.sharepoint.com/sites/AMMIP/Asset%20Management%20Improvement%20Team/SitePages/Investment-Appraisals-External-Review.aspx).

Project Investment Appraisals are shared at Gate 50 (Stage 3a) and Gate 80/90 (Project Appraisal for Commitment).

Column 29 Level of project Investment appraisal This gives the proportionate approach applied for appraising project investment. The Levels of project investment appraisal are:

* Level 1 relates to projects with the potential for early identification of placemaking and external partnership involvement. It is anticipated that Level 1 projects will have the highest degree of customer / community / stakeholder engagement
* Level 2 relates to substantive system and project investments which are greater than £3m, or novel/contentious
* Level 3 relates to less substantive system and project investments between £500k and £3m
* Level 4 will be guided by the Management Approach which lays out the investment trigger policies and rulesets.

Column 30 IPOD Value This indicates how many IPOD points a project is due to achieve. For projects added to the Committed List after March 2021, this should be 3:1 for Start On Site, 1 for G100 and 1 for G110.

When projects were added to the Committed List as part of the initial setup, only the future milestones were counted. This was done to avoid diluting the IPOD score with the previous investment period’s milestones and to start IPOD at 0 for SR21.

Column 31 G80 Date This is the gate 80 date established when the project was added to the Committed List.

Project are usually added to the Committed List at G90, however not always. A project is added to the Committed List once it is suitably mature in terms of scope, cost, risk and delivery timescale. There is flexibility as to which governance gateway this can occur at (i.e. between Gate 70 and Gate 90) and is dependent on the complexity and value of the project being committed to.

Column 32 Start On Site Date This is the start on site baseline date established when the project is added to the Committed List. It is used as part of the IPOD measure, will stay fixed and used for the IPOD baseline.

Column 33 Gate 100 Date This is the gate 100 baseline date established when the project is added to the Committed List. It is used as part of the IPOD measure, will stay fixed and used for the IPOD baseline.

Column 34 Gate 110 Date This is the gate 110 baseline date established when the project is added to the Committed List. It is used as part of the IPOD measure, will stay fixed and used for the IPOD baseline.

Column 35 RSO Date This is the currently blank for SR21 projects as we do not have a Regulatory Signoff Date associated with projects on the Committed List. Completion projects have an RSO date where appropriate.

Column 36 Date project removed from Committed List This is the currently blank as we have not removed any projects from the Committed List Post G110. This requires further discussion.

Column 37 Total Project Value £m This is the total budget for projects on the Committed List Named and comparable to the Total Project Value field. It is fixed when the project is added to the list.

For the Committed List Programmes this only includes spend after March 21 and aligns with the Project Value Post March 21 £m column.

Column 38 Project Value Post March 21 £m This is the budget for projects and excludes any spend incurred prior to April 21.

Columns 39-45 Budget. These columns give the profile of the Committed List Budgets Post March 21. Like the dates and the total, this is fixed when the project is added to the Committed List.

Column 46 Direct Costs. This gives the Committed List Budget without risks or overhead.

Column 47 Risk Site Specific. This gives the value of risk within the LBE when the project was added to the Committed List. Risk forms part of the project’s cost breakdown structure within *Unifier*.

Column 48 Risk Programme/General. This gives the value of risk not within the LBE when the project was added to the Committed List. For new projects this is 12% based on previous experience of LBE increases post G90. For projects added when the Committed List was initiated, the risk added varied based on a line-by-line assessment through Scottish Water’s Commercial Team.

Column 49 Overhead. This gives the value of Scottish Water’s overhead when the project was added to the Committed List. It is applied to a project at its various governance stages and is actualised. If it has not been actualised, it will be forecast and forms part of the project’s cost breakdown structure in *Unifier*.

Column 50 Runway. This is the Governance Runway used within *Unifier* and determines which gates a project should go through. These Runways are:

* Digital – Appropriate for Digital projects where G40 and G50 are not required
* Financial Management – Projects within this runway do not require design and start at G90
* OPD – Original Project Delivery – Projects start at G70, and this runway mainly covers legacy projects
* PPD – Plan Prepare Deliver – Projects go through all Governance gates listed on the table
* SVCD Planned – Small Value Capital Delivery Planned. Projects that are non-complex and have a combined plan and design stage. Start at G30 but skip G40, G50, G70, G80
* SVCD Responsive – Small Value Capital Delivery Responsive. Projects within this runway go straight to G90 are Non-Complex and have a low LBE. Most of the projects in this category have been created through the Non-complex Service Delivery App. Due to volume, projects in this runway are substantially automated with *Unifier*. The Start on Site date is aligned with the Gate 90 date and the G110 date is aligned with the G110 date.

Columns 51 to 60b Forecast Dates This show the forecast or actual dates associated with a project. If a date is pre-April 2022, then it is an actual otherwise it is a forecast date. The RSO date is blank except for the SR15 Completion Enhancement projects.

Column 61 Completion Investment. This shows the forecast cost of the SR15 Completion Programme post-March 21 and can be compared with column 67a Total Budgeted Expenditure for Completion Projects.

Column 62 Investment Period (SR15) This shows the investment period the Completion Project with which it is associated.

Column 63 Planned or Delayed Completion Projects This shows whether the project forms part of the SR15 Completion programme for remaining outputs as either ‘Planned’ (projects due to be delivered after the 31March 21) and the ‘Delayed’ (projects due to be delivered before 1 April 21) completion projects. In some cases, projects are delivering more than 1 output, the additional output is flagged as ‘Duplicate Delayed’ or ‘Duplicate Planned’. This associates the dates, outputs and OMD points with the project.

Column 64 SR15 Output Name This gives the output name used in the SR15 period and aligns with the OMD extract and DAGWG graphs from the end of 20-21 reporting. It is only populated for projects that were outstanding at the end of SR15.

Column 65 SR15 Output Quantity This gives the output quantity used in the SR15 period and aligns with the OMD extract and DAGWG graphs from the end of 20-21 reporting. It is only populated for projects that were outstanding at the end of SR15.

Column 66 Technical Expression Autocodes This gives the output reference code used in the SR15 period and aligns with the OMD extract and DAGWG graphs from the end of 20-21 reporting. It is only populated for projects that were outstanding at the end of SR15. [Needs populated]

Column 67 OMD Points This gives a breakdown of the remaining OMD points that were not delivered in the SR15 period.

Column 67a Total Budgeted Expenditure for Completion Projects This gives the baseline budget for the SR15 Programme. This aligns with the values provided in last year’s return and outperformance assessment. It does not include the £13m reduction for investment planned after 20-21 in the SR15 Table K. If this is included the column would total £290.7m.

Columns 68 to 72. This gives the baseline for MS1 to MS5 dates for the SR15 Completion Programme. This was fixed and aligns with the OMD extract reported at the end of 20-21 reporting. Dates here may differ from the Committed List as when projects were added to the list, the forecast dates were re-assessed taking into account known delivery risks to provide a more robust view.

Columns 73 to 77. This gives the latest forecast and actual milestones for the SR15 Completion Programme.

Columns 78 to 86b. These give a forecast or actual profile of investment of the 6-year period with totals pre 2021 and 2022, and totals post 26-27. Actual costs are extracted from Scottish Water’s *FAB* system and the forecast profile is extracted from *Unifier* for all live projects.

The Pre-2021-22 column is completed to allow the Total Project value to be calculated.

Projects are included on the table based on having a financial transaction in the SR21 period or from having outputs. For more information and a complete view for Scottish Water’s spend Pre-2021-22, previous Annual Returns would need to be reviewed.

Column 87 Direct Costs. This gives the Total Project Value over 2021-27 over 21-27 without risks or overhead. Non-live Investment is fully allocated to this category.

Column 88 Risk Site Specific. This gives the value of risk within the Total Project Value over 2021-27. Risk forms part of the project’s cost breakdown structure within *Unifier*.

Column 89 Risk Programme/General. This gives the value of risk not within the LBE and held within Scottish Water’s risk registers at either a project, programme or delivery vehicle level.

Column 90 Overhead. This gives the value of Scottish Water’s overhead within the Total Project Value over 2021-27. It has been assumed that the overhead has been applied at a constant rate over the 6-year period. Overhead is applied at governance gateways and while this may change how much overhead is in the project during the any period, over 6 years this should average out.

Column 91 Grants and Contributions (excluding Infrastructure Charge contributions). As in previous year’s returns the Grants and contributions are allocated to 1 line. [need to populate]

Column 92 Infrastructure Charge contributions for infrastructure assets. As in previous year’s returns, the Infrastructure Charge contributions are allocated to 1 line. [need to populate]

Column 93 Project expenditure funded from Grants & Contributions (£m) This is the total of Infrastructure Charge Contributions and Grants and Contributions and is the sum of columns 91 and 92.

Column 94 Net project expenditure funded through customer revenue & financed through Borrowing (£m) This is a calculation of the Total Project Value over 2021-27 £m - Project expenditure funded from Grants & Contributions (£m).

Column 95 to 102 Carbon Impacts

The Carbon Impact data that Scottish Water collects is held in columns 95 and 96. Scottish Water do not currently collect data in the format to allow the population of columns 97 to 102.

Columns 103 to 112 Drivers These columns show the Driver and the allocation of the project’s total investment to each driver. In some cases, the number of drivers exceed 5 and when this occurs the 1st 5 will be shown.

Drivers for the project are entered at project setup and reviewed at each approval gate. While new projects have been setup with the new SR21 codes, Completion Projects retain the SR15 drivers and Maintenance/Growth project that were initiated in the SR15 period will be changed to SR21 driver codes when the appropriate data is collected.

The driver codes are used in combination with the Tier categorisation and the Investment programme to establish the percentage allocations to columns 113 to 161.

Columns 113 to 161 G1 Percentages. These columns are added to the G tables and allow calculations of the investment split into the appropriate categories. The categorisation of investment for G1 is detailed in the G tables commentary.

Columns 162 to 71 G5 Percentages. These columns are added to the G tables to allow calculation of the growth investment split into the appropriate categories.

# Table G7 – Repair, Refurbishment and Asset Replacement – Disaggregation by Management Approach

## Introduction

Table G7 breaks down the Repair, Refurbishment and Asset Replacement into Management Approach groups. It gives the best estimate for investment in year for each management approach broken down into Tier 1 responsive, Tier2 planned repair and refurbishment and Tier 2 Replacement. By definition, there is no Tier 1 replacement.

For each management approach group, there is a Tier1 and Tier 2 projected expenditure which is based on the AMS (Asset Managers Scenario). Tier 2 cannot be split into Replacement and Repair/Refurbishment. The total in 17/18 prices has been profiled using the inflation index.

### Data sources and confidence grades

Data within G7 is a combination of projected and forecast expenditure from live projects, non-live projects and the Asset Managers Scenario (AMS).

For each Management Approach group, the projected expenditure is derived from the Asset Managers Scenario (AMS). The forecast expenditure comes from project forecasts held in the live corporate systems and the current view of non-live investment.

### Data improvement programmes

We are currently working to improve the project forecast data within the corporate systems.

### Assumptions used for forecast data

There is no section for Support in this tables which is identified on G1 and totals £80.4m.

## Commentary

### Lines G7.001 & G7.002 - CPI inflation assumption.

The inflation profile for Cost inflation is aligned with G8.1.

### Lines G7.003 to G7.128

These lines show the Repair, Refurbishment and Asset Replacement forecast and actual expenditure broken down into Management Approach group. The Management Approach groups have been introduced to aggregate Management Approaches.

Further discussion of the methodology used to calculate the inflation profile is detailed in the commentary for **Line G8.1**.

# Table G8 – Investment and Capital Price Inflation

## Introduction

Table G8 shows the forecast and actual CPI and Capital Price Inflation used in the return. It also summarises the live investment.

### Data sources and confidence grades

Data sources for inflation are detailed below. Investment summary data is taken from Table G1.

### Data improvement programmes

There have been no data improvement programmes during 2021/2022.

### Assumptions used for forecast data

Where CPI has been used in any calculations it is based on the following:

* + FY 21/22 taken from ONS published data
  + FY 22/23 to 24/25 taken from the yearly averages determined from the May MPC ‘Current Fan Chart Data’
  + FY 25/26 and beyond set to 2.0% BoE target

This in turn generated the CPI profile show in Table 71 below.

Table 71: Annual CPI Profile 2021/22 to 2026/27

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **2021/22** | **2022/23** | **2023/24** | **2024/25** | **2025/26** | **2026/27** |
| Average CPI | 4.0% | 9.5% | 5.0% | 2.0% | 2.0% | 2.0% |

* Forecasts are based on the current macroeconomic situation
* It assumes no further significant events (e.g. any new pandemics or Scottish Independence)

### Methodologies Employed

#### Top-Down Approach

* Takes a high-level view of the capital programme and the main cost buckets of spend
* Utilises actual cost increases where appropriate
* Takes a wider industry view of future cost risks, building on our own experience, that of our supply chain and partners and also feedback from CECA Scotland
* Assumes non-construction elements of the Capital Programme inflate in line with CPI forecasts

#### Bottom-Up Approach

* Looks at individual frameworks
* Builds in actual cost increases to date during SR21
* Takes into account contractual arrangements regarding inflation. For example, no increases during fixed price periods
* Utilises a framework level view of future cost risks based on feedback from our Framework Managers
* Only Tier 2 costs are included in the overall Capital Inflation forecast

#### Outcome

* It was agreed to use the average of the two above approaches
* To allow for future changes to CPI the profile was also provided as a percentage above CPI

The average profile is show in Table 72 below.

Table 72: Average Inflation Forecast 2021/22 to 2026/27

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **2021/22** | **2022/23** | **2023/24** | **2024/25** | **2025/26** | **2026/27** |
| Average Inflation Forecast | 6.0% | 11.8% | 6.7% | 2.3% | 2.0% | 2.0% |

## Commentary

**Line G8.5** shows the total investment excluding SR15 Completion in 17/18 prices. This is calculated from Table G1: **Line G1.58** Gross Investment – **Line G1.41** Total Completion Programme and deflated using the index in **Line G8.2**.

**Line G8.6** is inflated to outturn prices using the index in Table G8.2.

In **Line G8.7**, there is no Efficiency applied to the programme.

**Line G8.8** is identical to **Line G8.6** as no Efficiency has been applied.

**Line G8.9** is calculated based on CPI rather than Capital Price Inflation.

**Line G8.10** gives the forecast cost of the SR15 Completion programme and aligns with **Line G1.41** Total Completion Programme.

**Line G8.11** is calculated and deflates the programme to 17/18 prices using CPI.

**Line G8.12** gives the cost of the live programme totalling £774m in the current year and £3,670m across the SR21 Period.

**Line G8.13** deflates the cost of the live programme to 17/18 prices. This totals £2,951m in 17/18 prices for the SR21 Period.

Section H – Asset Inventory

The H Tables report the number of infrastructure and non-infrastructure assets in Scottish Water’s GIS and Ellipse inventories that were operational as of 22 March 2022 as compared to the E tables which report the number of non-infrastructure assets that were operational during the reporting period (2021/22).

# Table H1 – Summary

## Introduction

Table H1 is a summary table of Tables H2 to H6. The gross valuation is dominated by the infrastructure valuation of £68.66 billion, comprising 84.32% of the total. The non-infrastructure total valuation is £12.59 billion, which is 15.46% of the total valuation.

### Data sources and confidence grades

The data for the non-infrastructure asset inventory is extracted from Ellipse whereas the infrastructure inventory is extracted from GIS. The cost models are provided by Scottish Water’s internal costing team. Version 13 cost models (as applied for AR17) have been used for consistency and costs inflated using RPI, which equated to a 5.7% increase on AR21.

The method used to estimate the life expectancy of the assets remains the same as previous years and therefore there are no significant changes in the Gross or Net Value of element categories.

The confidence grades for the H1 Table are assessed individually considering the proportion of each asset as opposed to defaulting to the lowest value in the H2-H6 Tables. There are no changes to the confidence grades associated with this table.

Some figures within the commentary may be subject to rounding; this will account for minor variances. The reason for the variances is the level below the summary tables uses calculations to provide more detailed information.

Further detailed information on how individual cells are calculated, including the components of the calculation, is contained in the assurance report for the H Tables.

### Data improvement programmes

In previous years, Ellipse had chlorine dosing units as Secondary Disinfection functions. These were found within our network. We have removed these functions from Ellipse and reparented the chlorine dosing units to Treated Water Storage, equating to an addition of over 280 units.

​Improved data was sourced from hydraulic model information for combined sewer overflows reported in **Line H4.4**. This information provided values for the yardsticks Chamber Volume and Pass Forward Flow which are used to value CSO by the cost models. Although not all values were able to be sourced, it enabled replacement of default values of around 1200 assets.

### Assumptions used for forecast data

There is no forecast data for the H Tables.

## Commentary

### Lines H1.1-H1.13 Asset Inventory

Scottish Water’s reported Annual Return 2021/22 gross asset inventory valuation is £81.44 billion. The breakdown by asset type is provided in Table 73 below. The gross valuation is dominated by the infrastructure valuation of £68.66 billion, comprising 84.32% of the total. The non-infrastructure total valuation is £12.59 billion, which is 15.46% of the total valuation. Support services valuation is approximately £178.25 million representing 0.22% of the gross asset inventory valuation.

Table 73: Gross asset inventory valuation by asset type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Asset Type** | **AR21 Gross MEAV (£m)** | **% of Total** | **AR22 Gross MEAV (£m)** | **% of Total** |
| Water Infrastructure | 18,749.1 | 24.40 | 19,800.5 | 24.31 |
| Water Non-Infrastructure | 5,547.9 | 7.22 | 5,918.7 | 7.27 |
| Wastewater Infrastructure | 46,044.9 | 59.92 | 48,864.0 | 60.00 |
| Wastewater Non-Infrastructure | 6,321.6 | 8.23 | 6,675.2 | 8.20 |
| Support Services | 180.3 | 0.23 | 178.3 | 0.22 |
| Total | 76,843.7 | 100 | 81,436.7 | 100 |

Table 74 below shows the change in the total gross asset valuation of Scottish Water’s assets from 2020/21 to 2021/22 by asset category.

Table 74: Change in the total gross asset valuation of Scottish Water’s assets from 2020/21 to 2021/22 by asset category.

| **Line Ref** | **Asset Category** | **AR21 Gross MEAV (£m)** | **% of Total** | **AR22 Gross MEAV (£m)** | **% of Total** | **Change (£m)** | **%**  **Change** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| H1.1 | Water treatment works | 3,176.3 | 24.30 | 3,282.9 | 4.03 | 106.56 | 3.35 |
| H1.2 | Water storage | 2,012.8 | 2.62 | 2,258.1 | 2.77 | 245.38 | 12.19 |
| H1.3 | Water pumping stations | 358.8 | 0.47 | 377.7 | 0.46 | 18.85 | 5.25 |
| H1.4 | Water resources | 3,641.5 | 4.74 | 3,811.2 | 4.68 | 169.71 | 4.66 |
| H1.5 | Water mains | 15,107.6 | 19.66 | 15,989.3 | 19.63 | 881.71 | 5.84 |
| H1.6 | Sewers | 44,763.1 | 58.25 | 47,532.1 | 58.37 | 2,769.02 | 6.19 |
| H1.7 | Sewer structures | 679.0 | 0.88 | 641.1 | 0.79 | -37.84 | -5.57 |
| H1.8 | Sea outfalls | 602.8 | 0.78 | 690.8 | 0.85 | 88.00 | 14.60 |
| H1.09 | Sustainable Urban Drainage Systems | n/a | n/a | n/a | n/a | n/a | n/a |
| H1.10 | Sewage pumping stations | 1,230.3 | 1.60 | 1,326.9 | 1.63 | 96.70 | 7.86 |
| H1.101 | Sewage treatment works | 4,863.9 | 6.33 | 5,108.1 | 6.27 | 244.17 | 5.02 |
| H1.12 | Sludge treatment facilities by disposal type | 227.4 | 0.30 | 240.1 | 0.29 | 12.73 | 5.60 |
| H1.13 | Support services | 180.3 | 0.23 | 178.3 | 0.22 | -2.03 | -1.13 |
|  | **Total** | **76,843.7** | **100** | **81,436.7** | **100** | **4,592.95** |  |

A summary of the asset categories that had a variance greater than +/- £200m or +/ 30% in any one asset category is contained in Table 75 below.

Table 75: Summary of the changes incorporating a variance greater than +/- £200m or +/ 30% in any one asset category

|  |  |  |
| --- | --- | --- |
| **Asset Category** | **Change (£m)** | **% Change** |
| Water storage | 245.38 | 12.19 |
| Water mains | 881.71 | 5.84 |
| Sewers | 2,769.02 | 6.19 |
| Sewage treatment works | 244.17 | 5.02 |
| Total | 4,140.28 |  |

The total net depreciated value of Scottish Water's non-infrastructure asset inventory (including support services depreciable assets) is £3.598 billion. The changes to the net valuation by asset category between AR21 and AR22 are outlined in Table 76 below.

Table 76: Changes in net valuation by asset category

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Line Ref** | **Asset Category** | **AR21 Net MEAV (£m)** | **% of Total** | **AR22 Net MEAV (£m)** | **% of Total** | **Change (£m)** | **% Change** |
| H1.1 | Water treatment works | 981.9 | 24.30 | 897.2 | 24.93 | -84.76 | -8.63 |
| H1.2 | Water storage | 751.9 | 21.12 | 779.8 | 21.67 | 27.93 | 3.71 |
| H1.3 | Water pumping stations | 122.1 | 3.31 | 122.2 | 3.40 | 0.13 | 0.10 |
| H1.10 | Sewage pumping stations | 414.7 | 11.66 | 430.6 | 11.97 | 15.96 | 3.85 |
| H1.11 | Sewage treatment works | 1,279.2 | 33.35 | 1,231.3 | 34.22 | -47.99 | -3.75 |
| H1.12 | Sludge treatment facilities by disposal type | 57.7 | 1.37 | 50.7 | 1.41 | -6.93 | -12.03 |
| H1.13 | Support services | 84.6 | 2.34 | 86.6 | 2.41 | 2.00 | 2.36 |
|  | Total | 3,692.1 | 100 | 3,598.4 | 100 | -93.70 |  |

# Table H2 - Water Non-Infrastructure

## Introduction

Table H2 provides information on the water non-infrastructure asset inventory. The asset valuation aligned to water storage for AR22 increased from £2.01billion to £2.26 billion. The valuation has increased mainly due to the addition of over 280 chemical dosing units which were identified as a result of data quality improvements.

### Data sources and confidence grades

Data sources and confidence grades are detailed in the commentary section where relevant.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used for forecast data

There is no forecast data for the H2 table.

## Commentary

### Lines H2.1-H2.8 Water Treatment Works

The number of Water Treatment Works reported for AR22 is 228. This is a net decrease of 2 from 2020/21. The details of the changes in Water Treatment Works due to sites being added or removed in 2021/22 are shown in Table 77 below.

Table 77: Changes in reported Water Treatment Works due to removals or additions

|  |  |  |  |
| --- | --- | --- | --- |
| Plant No | Site | AR22 Status | WIC H Grade |
| WTW000813 | TOMATIN WTW 2016 NH803277 | Added | 08 |
| WTW000457 | TOMATIN WTW 1987 NH803276 | Removed | 05 |
| WTW000501 | GALLOWHILL WTW 1993 NJ678637 | Removed | 08 |
| WTW000020 | BARCLYE WTW 1972 NX395696 | Removed | 01 |

Four Water Treatment Works also changed WIC H Grade due to either process enhancement or correction of treatment process since 2020/21 (Table 78).

Table 78: Changes in WIC H grade due to process enhancement or correction of treatment process

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Plant No** | **Site** | **AR21 WIC H** | **AR22 WIC H** | **Reason** |
| WTW000668 | HOPES WTW 1926 NT558634 | 03 | 04 | Addition of Ultra Violet for Cryptosporidium Deactivation |
| WTW000552 | DALWHINNIE WTW  1970 NN637848 | 05 | 08 | Addition of Ultra Violet for Cryptosporidium Deactivation |
| WTW000748 | LAGGAN BRIDGE WTW 2006 NN611943 | 06 | 08 | Addition of Ultra Violet for Cryptosporidium Deactivation |
| WTW000625 | FAIR ISLE WTW 1975 HZ210718 | 08 | 07 | TTU Units are Pressure Filters, not a Membrane Plant |

The confidence grade for the Asset stock remains the same as last year, A2.

The asset valuation aligned to Water Treatment Works for AR22 has increased from £3.18 billion to £3.28 billion. The valuation has increased due to the RPI increase. However, this was partially offset by improved asset information.

The confidence grade for the asset valuation remains the same as last year, C4.

### Lines H2.9-H2.10 Water Storage

The number of Water Storage Assets reported for AR22 is 1,301. This is a net decrease of 8 assets from 2020/21 when there was a net decrease of 7 sites (3 added, 10 removed) for Service Reservoirs and one Water Tower removed. These are listed in Table 79 below.

Table 79: Changes to reported Water Storage Assets due additions and removals

|  |  |  |  |
| --- | --- | --- | --- |
| **Plant No** | **Site** | **AR22 Status** | **WIC H Grade** |
| TWS001324 | CRAIGHEAD CWT EAST 1975 TWS NJ497405 | Added | 09 |
| TWS003728 | DOUGLIEHILL DSR 2018 NS322728 | Added | 09 |
| TWS003743 | WESTHILL HILL OF KEIR TWS2 2020 NJ818083 | Added | 09 |
| TWS000003 | ACHNAGOUL DSR NN059055 | Removed | 09 |
| TWS001465 | PENNAN DSR 1960 NJ820646 | Removed | 09 |
| TWS001466 | PENNAN DSR 1972 NJ832654 | Removed | 09 |
| TWS001790 | FOREBANK DSR 1962 NO698650 | Removed | 09 |
| TWS003750 | CRAIGHEAD CWT 1975 TWS NJ497405 | Removed | 09 |
| TWS000776 | BREACLETE DSR NB154374 | Removed | 09 |
| TWS001694 | CAIRNHALL DSR 1952 NO276536 | Removed | 09 |
| TWS000865 | EAST LANGWELL DSR 01/01/50 NC720072 | Removed | 09 |
| TWS000970 | BORVE SKYE DSR 1950 NG456478 | Removed | 09 |
| TWS001302 | BRAEMORLICH DSR 1951 NJ434141 | Removed | 09 |
| TWS000264 | DRUMCHAPEL DSR 1955 NS511718 | Removed | 10 |

The confidence grade for the Asset stock remains the same as last year, A2.

The asset valuation aligned to Water Storage for AR22 increased from £2.01billion to £2.26 billion. The valuation has increased mainly due to the addition of over 280 chemical dosing units which were identified as a result of data quality improvements.

The confidence grade for the Asset valuation remains the same as last year, C4.

### Lines H2.11-H2.13 Water Pumping Station

The number of Water Pumping Station assets reported for AR22 is 788. This is a net increase of 9 assets from 2020/21. These are made up of:

* one added Intake site
* a net decrease of 2 Source sites
* a net increase of 10 Booster pumping station sites

The affected sites are listed below in Table 80.

Table 80: Changes to reported Water Pumping Stations due additions and removals

| **Plant No** | **Site** | **AR22 Status** | **WIC H Grade** |
| --- | --- | --- | --- |
| RWP000263 | DYE WATER DROUGHT RWP NT645578 | Added | 11 |
| GWS000099 | MOSS WELL GWS NJ209144 | Added | 11 |
| GWS000449 | OYKEL BRIDGE GWS 1 2004 NC387003 | Removed | 12 |
| GWS000450 | OYKEL BRIDGE GWS 2 2004 NC387003 | Removed | 12 |
| GWS000478 | INVERURIE GWS 2018 NJ779204 | Removed | 12 |
| TWP001353 | CAIRNHALL NEW TWP 2018 NO276535 | Added | 13 |
| TWP001388 | HOLLAND TWP 2020 HY754532 | Added | 13 |
| TWP001350 | BURNBRAE TWP 2017 NS356653 | Added | 13 |
| TWP001351 | WEELS FARM TWP 2017 NS347623 | Added | 13 |
| TWP001352 | WHINHILL TWP 2 2017 NS282746 | Added | 13 |
| TWP001365 | TOMATIN TWP 2019 NH803277 | Added | 13 |
| TWP001274 | KILLEARN IBERT RD TWP 2011 NS526858 | Added | 13 |
| TWP001375 | DENNY BUCKIEBURN TWP 2019 NS752851 | Added | 13 |
| TWP001378 | BALLANTRAE BENNANE TWP 2019 NX092858 | Added | 13 |
| TWP001405 | KILWHIRN TWP NX475599 | Added | 13 |
| TWP001200 | FAIR ISLE WTW BOOSTER TWP HZ209717 | Added | 13 |
| TWP001236 | TARBERT W ISLES NEW TWP 2009 NG196986 | Added | 13 |
| TWP001358 | EAGLESHAM POLNOON TWP 2018 NS565515 | Added | 13 |
| TWP001407 | ROSEWELL GAMEKEEPER COTTAGE TWP NT272597 | Added | 13 |
| TWP001186 | GALLHILLS TWP NY275756 | Removed | 13 |
| TWP000708 | KINLOCHBERVIE TWP | Removed | 13 |
| TWP000019 | BENNANE TWP 1986 NX093858 | Removed | 13 |
| TWP001102 | BUCKIEBURN TWP NS752851 | Removed | 13 |

The confidence grade for the Asset stock remains the same as last year, A3.

The asset valuation aligned to Water Pumping Stations for AR22 increased from £358.82 million to £377.67 million. The valuation increased due to improved asset information and the RPI increase.

The confidence grade for the Asset valuation remains the same as last year, C4.

# Table H3 - Water Infrastructure

## Introduction

For infrastructure MEAV reported in H3 most values have changed by less than 1%, except for raw water intakes (**Line H3.2**), which have reduced by 26 and show a corresponding value decrease of 1.03%, after adjusting for RPI.

There is a difference in which sites are reported between H and E tables. The sources in Table E4 are only included if they are direct sources, as per the definitions document, as the lines report the distribution input from each source in columns 110-140, therefore indirect sources are omitted. Table E also only reports assets that are operational (including emergency) during the year. Table H3 reports all assets that are operational, emergency, out of service or work in progress (as classified in Ellipse), at the end of the year. Note that Line H3.3 raw water aqueducts are infrastructure assets that are sourced from Scottish Water’s GIS and have no equivalent asset in the E4 table.

### Data sources and confidence grades

Data sources and confidence grades are detailed in the commentary section where relevant.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used for forecast data

There is no forecast data for the H3 Table.

## Commentary

#### H3.1 Water Resources – Dams & Impounding Reservoirs

The number of Dams & Impounding Reservoirs reported for AR22 is 201. This is a net decrease of 3 assets from 2020/21. The affected sites are listed in Table 81 below.

Table 81: Changes to reported Dams & impounding Reservoirs due additions and removals

|  |  |  |  |
| --- | --- | --- | --- |
| **Plant No** | **Site** | **AR22 Status** | **WIC H Grade** |
| DIR000162 | LOGAN DIR NS745361 | Added | 14 |
| DIR000037 | COMPENSATION DIR NS251723 | Added | 14 |
| DIR000149 | LOCH SPALLANDER DIR 1971 NS386082 | Added | 14 |
| DIR000456 | BALGILLIE DIR NO239036 | Added | 14 |
| DIR000471 | CROSSWOOD DIR 1868 NT059575 | Added | 14 |
| DIR000760 | BLAIRLINNANS RWT DIR | Removed | 14 |
| DIR000773 | KILLIECRANKIE DIR NN923628 | Removed | 14 |
| DIR000728 | FINLAS BPT NS344877 | Removed | 14 |
| DIR000733 | FEDDERATE DIR 1912 NJ865523 | Removed | 14 |
| DIR000753 | MARTYRS CROSS BPT DIR NT229623 | Removed | 14 |
| DIR000772 | LINTRATHEN RAW BPT DIR NO273537 | Removed | 14 |
| DIR000089 | HARELAW DIR 1937 NS310732 | Removed | 14 |
| DIR000039 | CORSEHOUSE DIR NS475499 | Removed | 14 |

The confidence grade for the Asset stock remains the same as last year, C4.

The asset valuation aligned to Dams & Impounding Reservoirs for AR22 increased from £1611.82 million to £1695.74 million. The valuation increased due to better asset information and the RPI increase.

The confidence grade for the Asset valuation remains the same as last year, C4.

#### H3.2 Water Resources – Raw Water Intakes

The number of Raw Water Intakes reported for AR22 is 269. This is a net decrease of 26 assets from 2020/21. These are mainly raw water sources related to now redundant Water Treatment Works. These affected sites are listed in Table 82 below.

Table 82: Changes to reported Raw Water Intakes due additions and removals

|  |  |  |  |
| --- | --- | --- | --- |
| **Plant No** | **Site** | **AR22 Status** | **WIC H Grade** |
| RWI000861 | LOCH NAN GEADH RWI 1996 NF891706 | Removed | 15 |
| RWI000035 | CALDER RIVER RWI NS310642 | Removed | 15 |
| RWI000062 | CORDORCAN RWI NX399724 | Removed | 15 |
| RWI000076 | DONKS WELL RWI NY376850 | Removed | 15 |
| RWI000085 | NODDSDALE RWI NS248663 | Removed | 15 |
| RWI000086 | FOOTSBURN RWI NY377869 | Removed | 15 |
| RWI000088 | NODDSDALE RWI NS250670 | Removed | 15 |
| RWI000105 | GREENFIELD BURN RWI NS529488 | Removed | 15 |
| RWI000155 | MILLBURN INTAKE RWI NX474664 | Removed | 15 |
| RWI000168 | NORTH BLACK RWI NS247659 | Removed | 15 |
| RWI000185 | NODDSDALE RWI NS249665 | Removed | 15 |
| RWI000190 | SOUTH BLACK RWI NS243656 | Removed | 15 |
| RWI000207 | TERRONA SPRING RWI NY387884 | Removed | 15 |
| RWI000208 | NODDSDALE RWI NS249667 | Removed | 15 |
| RWI000214 | WHITA WELL RWI NY373847 | Removed | 15 |
| RWI000219 | WHITSHIELS WELL RWI NY377854 | Removed | 15 |
| RWI000293 | LOCH MHIC GILLE RWI 1958 NF770698 | Removed | 15 |
| RWI000507 | AUCHENDRYNE RWI 1936 NO127901 | Removed | 15 |
| RWI000587 | CRAWLEY RWI NT237635 | Removed | 15 |
| RWI000588 | CROM ALLT RWI NN332319 | Removed | 15 |
| RWI000793 | ALLT NAM PROP RWI 1970 NG819513 | Removed | 15 |
| RWI000831 | LOCH UISGE MHATH RWI 1950 NB395124 | Removed | 15 |
| RWI000867 | BURN OF HOGLINNS RWI 1983 ND238917 | Removed | 15 |
| RWI001018 | KNOCKENDON RWI 1 NS250515 | Removed | 15 |
| RWI001019 | KNOCKENDON RWI   NS248516 | Removed | 15 |
| RWI001020 | KNOCKENDON RWI 2 NS250515 | Removed | 15 |

The confidence grade for the Asset stock remains the same as last year, C5.

The asset valuation aligned to Raw Water Intakes for AR22 decreased from £28.04 million to £27.75 million. The valuation decreased due to Asset stock reduction which has been slightly offset by the increase in RPI.

The confidence grade for the Asset valuation remains the same as last year, C5.

#### H3.3 Water Resources – Raw Water Aqueducts

The total length of Raw Water Aqueducts in this reporting year is 1,710.3km.  This is a decrease of 8.9 km from 2020/21.

The confidence grade for the Asset stock remains the same as last year, B2.

The asset valuation aligned to Raw Water Aqueducts for AR22 has increased from £2001.62 million to £2087.71 million. The valuation has mainly increased due the RPI increase as confirmed in H1.

The confidence grade for the Asset valuation remains the same as last year, B2.

#### H3.4 Water Mains – Mains Potable

The total length of Potable Mains in this reporting year is 48,945.4km. This is an increase of 113.5km from 2020/21. Diameters are infilled based on connected pipes’ values where available or based on an average diameter for the pipe based on its material.

The confidence grade for the Asset stock remains the same as last year, A2.

The asset valuation for this reporting year has increased from £13.94 billion to £14.75 billion. The valuation has increased due to the length of new mains commissioned and the increase in the RPI.

The confidence grade for the Asset valuation remains the same as last year, B4.

#### H3.5 Mains Other

The total length of Mains Other in this reporting year is 144.6km. This is an increase of 0.4km from 2020/21.

The confidence grade for the Asset stock remains the same as last year, A3.

The asset valuation for this reporting year has increased from £53.3 million to £56.9 million. This is mainly due to the increase in RPI.

The confidence grade for the Asset valuation remains the same as last year, B4.

#### H3.6 Communication Pipes (Lead)

The total number of Communication Pipes (Lead) in this reporting year is 54,721. This is a decrease of 688 from 2020/21.

The confidence grade for the Asset stock remains the same as last year, B4.

The asset valuation for this reporting year has increased from £32.22 million to £33.61 million. This is mainly due to the increase in RPI.

The confidence grade for the Asset valuation remains the same as last year, C4.

#### H3.7 Communication Pipes (Other)

The total number of Communication Pipes (Other) in this reporting year is 1,767,463.  This is an increase of 20,315 from 2020/2021.

The confidence grade for the Asset stock remains the same as last year, B4.

The asset valuation for this reporting year has increased from £1.02 billion to £1.09 billion. The valuation has increased due to the increase in the number of pipes reported and the increase in RPI.

The confidence grade for the Asset valuation remains the same as last year, C4.

#### H3.8 Water Meters

The total number of Water Meters in this reporting year is 134,316.  This is an increase of 1,144 from 2020/21.

The confidence grade for the Asset stock remains the same as last year, A3.

The asset valuation for this reporting year has increased from £62.3 million to £66.2 million. The valuation has increased due to the increase in the number of meters reported and the increase in RPI.

The confidence grade for the Asset valuation remains the same as last year, B4.

# Table H4 - Wastewater Infrastructure

## Introduction

Table H4 provides information on the wastewater infrastructure asset inventory. Changes in RPI have seen an increase in values in a number of the lines.

### Data sources and confidence grades

Data sources and confidence grades are detailed in the commentary section where relevant.

### Data improvement programmes

In H4, the improved data used to calculate MEAV for CSOs resulted in a reduction of around 13%. This was due to actual values being lower than the infill values that they replaced.

Sea outfalls increased this year due to the inclusion of pumped outfalls, rather than gravity, that had previously not been included in **Lines** **H4.6** and **H4.7**. The increase can be seen more significantly in **Line H4.7** due to many of the additional outfalls being over 500m in length.

### Assumptions used for forecast data

There is no forecast data for the H4 Table.

## Commentary

#### H4.1 Sewers

The total length of Sewers in this reporting year is 53,601.9km. This is an increase of 133.5km from 2020/21.

The confidence grade for the Asset stock remains the same as last year, B2.

The asset valuation for this reporting year has increased from £44.2 billion to £47 billion. The valuation has increased due to the length of new sewers commissioned and the increase in the RPI.

The confidence grade for the Asset valuation remains the same as last year, C4.

#### H4.2 Sewers – Sewage and Sludge Pumping Mains

The total length of Sewage and Sludge Pumping Mains in this reporting year is 1,372km. This is a decrease of 10km from 2020/21.

The confidence grade for the Asset stock remains the same as last year, A4.

The asset valuation for this reporting year has increased from £546.71 to £571.42 million. The valuation has increased due to the change in RPI.

The confidence grade for the Asset valuation remains the same as last year, B4.

#### H4.3 Combined sewer and emergency overflows

The number of combined sewer and emergency overflows in the report year is 3,650, an increase of two from the Annual Return 2020/21.

The confidence grade for the Asset stock for CSOs remains the same as last year, A4.

Improved data was sourced from hydraulic model information for combined sewer overflows reported in **Line H4.4**. This information provided values for the yardsticks chamber volume and pass forward flow used to value CSO by the cost models. Although not all values were able to be sourced, it enabled replacement of default values of around 1200 assets. This improved data used to calculate MEAV for CSOs resulted in a reduction of around 18%.

The asset valuation for this reporting year decreased from £407.45million to £354.41million.

The confidence grade for the Asset valuation remains the same as last year, C4.

#### H4.4 Other Sewer Structures

The number of Other Sewer Structures is 312, the same as reported in 2020/21.

The confidence grade for the Asset stock remains the same as last year, D5.

The asset valuation for this reporting year increased from £271.52 million to £286.73 million. The valuation increased due to the change in RPI.

The confidence grade for the Asset valuation remains the same as last year, D5.

### Lines H4.5 and H4.6 Sea Outfalls: Short and Long Sea Outfalls

Sea outfalls increased this year due to the inclusion of pumped outfalls, rather than gravity, that had previously not been included in **Lines H4.5** and **H4.6.** The increase can be seen more significantly in **Line H4.6** due to many of the additional outfalls being over 500m in length.

The total number of Sea Outfalls in this reporting year is 1,806. There were 17 new, short sea outfalls built from 2020/21. The number of long sea outfalls increased by 6 to 61.

The confidence grade for the Asset stock for AR22 is B4.

The asset valuation for this reporting year has increased from £602.83 million to £690.83 million. The valuation has increased due to the addition of pumped outfalls and a change in the RPI.

The confidence grade for the Asset valuation remains the same as last year, B4.

### H4.7-H4.11 Sustainable Drainage Systems (SUDS)

Details of these lines can be found in Section E **Lines E7.20 to E.7.25**. There is no methodology for categorising SUDS assets by band at present. Consequently, all assets have been grouped as Band 0. We do not currently calculate the MEAV for SUDS .

# Table H5 - Wastewater Non-Infrastructure

## Introduction

Table H5 provides information on the wastewater non-infrastructure asset inventory. Changes in RPI have seen an increase in values in a number of the lines.

### Data sources and confidence grades

Data sources and confidence grades are detailed in the commentary section where relevant.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used for forecast data

There is no forecast data for the H5 Table.

## Commentary

### Lines H5.1 and H5.2 Sewage Pumping Stations

The total number of Sewage Pumping Stations in this reporting year is 2,257. This is a net decrease of 16 assets from 2020/21. Table 83 below lists the affected sites.

Table 83: Changes to reported Sewage pumping stations due additions and removals

| **Plant No** | **Site** | **AR22 Status** | **WIC H Grade** |
| --- | --- | --- | --- |
| SPS003812 | BISHOPBRIGGS ANGUS AVE WWPS NS626700 | Added | 29 |
| SPS004644 | KIRKHILL NEWTON PARK WWPS NH560458 | Added | 29 |
| SPS000361 | PACIFIC QUAY WWPS NS567651 | Added | 29 |
| SPS003851 | SOVEREIGN COURT WWPS NS949678 | Added | 29 |
| SPS000352 | NEWFORD GROVE WWPS NS577562 | Added | 29 |
| SPS004046 | BUSBY PICKETLAW SPS NS594572 | Added | 29 |
| SPS004119 | DORNOCH SUTHERLAND RD WWPS NH792895 | Added | 29 |
| SPS004185 | UPLAWMOOR WWPS 2015 NS438552 | Added | 29 |
| SPS004663 | PHILIPSHILL WESTERFIELD RD WWPS NS600560 | Added | 29 |
| SPS000802 | ELGIN, COVESEA ROAD SPS 1996 NJ214645 | Removed | 29 |
| SPS002102 | WALLACEPARK WWPS NS808916 | Removed | 29 |
| SPS003050 | ECCLEFECHAN TRANSFER PUMPING STATION | Removed | 30 |
| SPS003053 | SMITHSTONE WWPS NS723750 – PRIVATE | Removed | 29 |
| SPS003805 | PORTLETHEN LEATHAN FIELDS SPS – PRIVATE | Removed | 29 |
| SPS003922 | ABERDEEN GATEWAY WWPS NO937998-PRIVATE | Removed | 30 |
| SPS003931 | COATBRIDGE REDWING WWPS NS752630-PRIVATE | Removed | 29 |
| SPS003961 | ELLON CASTLE MEADOWS WWPS - PRIVATE | Removed | 29 |
| SPS003991 | CLEDDENS COURT WWPS NS614705 - PRIVATE | Removed | 29 |
| SPS004003 | INVERURIE HARLAW ROAD WWPS 2012- PRIVATE | Removed | 29 |
| SPS004012 | ABERDEEN BALMORAL BUS PARK SPS - PRIVATE | Removed | 29 |
| SPS004027 | NEWTONHILL WMD SPS 2012 NO903928-PRIVATE | Removed | 29 |
| SPS004107 | BRIDGE STREET WWPS 2013 NS443644 | Removed | 29 |
| SPS004142 | RICHMONDHILL FARM WWPS 2014 - PRIVATE | Removed | 29 |
| SPS004342 | ABERDEEN RIVERSIDE QT WWPS 2017 -PRIVATE | Removed | 29 |
| SPS000430 | STRAN LARG ROAD WWPS NX048623 | Removed | 29 |
| SPS003847 | KIRKINTILLOCH LOCH RD WWPS - PRIVATE | Removed | 29 |
| SPS003665 | GLASGOW GOVAN RD 1209 APNRV | Removed | 29 |
| SPS003666 | CLYDEBANK D'BARTON RD HORSE& BARGE APNRV | Removed | 29 |
| SPS003732 | ABERLOUR 32 HIGH STREET APNRV NJ269432 | Removed | 29 |
| SPS003733 | ABERLOUR 34A HIGH STREET APNRV NJ269431 | Removed | 29 |
| SPS003734 | INVERURIE CANAL RD 8 FOUL APNRV | Removed | 29 |
| SPS003679 | TROQUEER STORM WWPS 1975 NX971745 | Removed | 30 |
| SPS003680 | TROQUEER FINAL WWPS 1975 NX971745 | Removed | 30 |
| SPS001413 | PIER WWPS 1986 HY253083 | Removed | 29 |

The confidence grade for the Asset stock remains the same as last year, A3.

The asset valuation for this reporting year has increased from £1.23 billion to £1.33 billion. The valuation has increased due to the change in RPI.

The confidence grade for the Asset valuation remains the same as last year, C4.

### Lines H5.3 to H5.7 Sewage Treatment Works

The total number of Sewage Treatment Works in this reporting year is 1,836. This is a net decrease of 4 from the 1,840 reported in the Annual Return 2020/21. These affected sites are all Septic Tanks and are listed in Table 84 below.

Table 84: Changes to reported Sewage Treatment Works due additions and removals

|  |  |  |  |
| --- | --- | --- | --- |
| **Plant No** | **Site** | **AR22 Status** | **WIC H Grade** |
| STW003832 | RAASAY SCHOOL PARK SEP WWTW NG551359 | Added | 31 |
| STW003833 | ARMADALE PIER ROAD SEP WWTW NG637038 | Added | 31 |
| STW003820 | LOCHBOISDALE SEP WWTW 2017 | Added | 31 |
| STW000996 | IOCHDAR SEP 1980 NF791461 | Removed | 31 |
| STW001232 | DRUMMOSSIE LDGE SEP '30 NH757457-PRIVATE | Removed | 31 |
| STW000842 | ACHMELVICH PUBLIC TOILET SEP'70-PRIVATE | Removed | 31 |
| STW003787 | TOXSIDE SEP WWTW NT289538 - PRIVATE | Removed | 31 |
| STW003793 | AUCHENDINNY SEP WWTW 1974 NT254621 | Removed | 31 |
| STW003723 | BURRAY VILLAGE SEPTIC TANK ND472955 | Removed | 31 |
| STW003825 | STORNOWAY MACKENZIE PK SEP 2015 NB452322 | Removed | 31 |

The confidence grade for the Asset stock remains the same as last year, A2.

The asset valuation for the reporting year has increased from £4.86 billion to £5.11 billion. The valuation has increased mainly due to an increase in the RPI.

The confidence grade for the Asset valuation remains the same as last year, C4.

### Lines H5.8 and H5.9 Sludge Treatment Facilities

The total number of sludge treatment facilities in this reporting year is 19. This is the same as reported in the Annual Return 2020/21.

The confidence grade for the Asset stock remains the same as last year, A2.

The asset valuation for the reporting year has increased from £227.42 million to £240.15 million. The valuation has increased due to the change in RPI.

The confidence grade for the Asset valuation remains the same as last year, C4.

# Table H6 - Support Services

## Introduction

Table H6 provides information on the asset inventory for support services.

### Data sources and confidence grades

Data sources and confidence grades are detailed in the commentary section where relevant.

### Data improvement programmes

There have been no notable data improvement programmes in 2021/22.

### Assumptions used for forecast data

There is no forecast data for the H6 Table.

## Commentary

### Lines H6.1 and H6.2 Offices & laboratories, Depots & Workshops

There was no change to the number of any of these building types for this reporting year.

The confidence grade for the Asset stock remains the same as last year, B2.

The asset valuation for the reporting year remains unchanged as £49.14 million for Offices & Laboratories, and £11.25 million for Depots & Workshops.

The confidence grade for the Asset valuation remains the same as last year, C4.

#### H6.4 Vehicle & Plant

The value of Vehicle and Plant assets decreased slightly from £75.9m in AR21 to £74.0m in AR22 due to changes in the stock of vehicles owned.

The confidence grade remains the same as late year, B3.

#### H6.5 Telemetry Systems

The number of Telemetry sites in this reporting year is 5,122, an increase of 111 from 5,011 reported in 2020/21. The increase is due to the rise in telemetry units only as RPI is not applied to this category.

The confidence grade for the Asset stock remains the same as last year, A2.

The asset valuation for this reporting year has increased from £23 million to £23.5 million.

The confidence grade for the Asset valuation remains the same as last year, B3.

#### H6.6 Information Systems

Laptops have decreased to 3,932 from 4,257, desktops have decreased from 362 to 152 and servers have decreased from 299 to 249.

The confidence grade for the Asset stock remains the same as last year of A2.

The asset valuation for this reporting year has decreased from £5.16 million to £4.48 million.

The confidence grade for the Asset valuation remains the same as last year of B2.

#### H6.7 Other Non-Operational Assets

There are 30 properties/land reported as owned by Scottish Water in this reporting year which is the same as 2020/21.

The confidence grade for the Asset stock remains the same as last year, C4.

Properties and land are unchanged from AR21; therefore, the asset valuation remains at £15.83m.

The confidence grade for the Asset valuation remains the same as last year, C4.

APPENDIX 1: Copy of Annual Return Governance Statement

**Annual Return 2021/22**

**ASSURANCE STATEMENT**

**Background**

The Board has charged the Chief Executive, with the responsibility to establish and maintain sound systems of internal control that support the completion of the Annual Return submission to the Water Industry Commission.

The systems of internal control that support completion of the Annual Return are designed to ensure:

* the accuracy and consistency of reporting;
* that soundly based assumptions and judgements are used;
* audit trails are maintained for origination and approval of all data in the Annual Return;
* the identification, understanding and reporting on material data exceptions;
* the reliability of information for decision making and for performance assessment; and
* compliance with applicable regulatory and legislative reporting requirements.

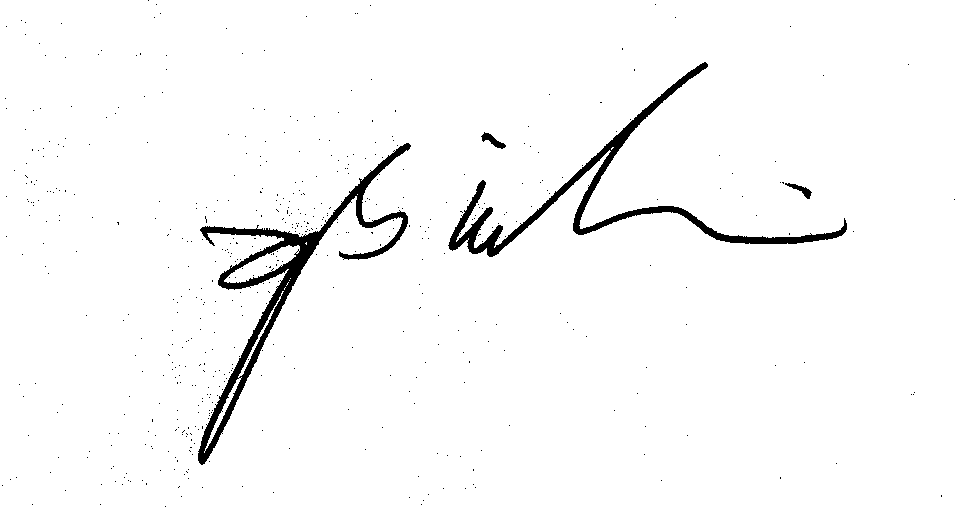
The systems of control are designed to reduce the risk of material error and to provide effective assurance on the completion of the Annual Return.

**Process**

The Board gains assurance as to the effectiveness of internal control through:

* the controls and assurance process put in place by the Executive Directors to ensure that the Annual Return is consistent with the requirements of regulatory reporting;
* a signed assurance statement from the Chief Executive concerning the operation of the systems of internal control;
* reporting from Executive Directors on associated matters;
* the results of both internal and external audit, and other internal and external review agencies;
* the adequacy of management response to issues identified by audit and review activity; assurances relating to the corporate governance requirements for the organisation; and
* the operation of anti-fraud policies, whistle-blowing processes, and arrangements for special investigations.

**Outcomes**

The Board has been assured that the assumptions, judgements and confidence grades used are appropriate, reasonable and consistent with the requirements of regulatory reporting.

**SIGNED :       DOUGLAS MILLICAN, CHIEF EXECUTIVE OFFICER**

(on behalf of the Board of Scottish Water)

**Date:** **31 August 2022**

APPENDIX 2: A Tables Comparison

B0 2020-2021 vs B1 2020-2021

**Available in PDF document:**

**APPENDIX 2: – A Tables Comparison B0 2020-2021 vs B1 2020-2021**

APPENDIX 3: Rezoning Changes

As mentioned in the Overview, a rezoning exercise has resulted in fundamental changes to the configuration of WRZs used to assess the Supply Demand Balance (SDB) and Security of Supply Index (SoSI). These changes have resulted in 8 WRZs being abandoned, replaced by 14 new Water Resource Zones (WRZ). These changes reallocate 27 Water Operational Areas (WOA) and 19 Water Treatment Works (WTW) to the new hydraulic structure.

In all these cases, the prior configuration of WRZs was based on older assumptions of infrastructure interconnectivity that should, in theory, have enabled customers of each zone to experience the same level of service, i.e. the same risk of drought-related supply interruption.

The standard definition of a Water Resource Zone is: *the largest possible zone in which all resources, including external transfers, can be shared and, hence, the zone in which all customers will experience the same risk of supply failure from a resource shortfall.*

In some WRZs, such as Glasgow, large water systems supply multiple WTWs and WOAs, thus the very nature of receiving a supply from a common water system guarantees the same risk of failure, largely irrespective of the downstream infrastructure configuration of WTWs and WOAs. In the cases where changes have been made this year, there was an assumed level of infrastructure connectivity which would allow a similar service level and degree of zonal integrity, without having shared reliance on a single supply system.

As our knowledge of WOA boundary level measured transfers of water has evolved and improved, it has become apparent that the necessary degree of boundary transfer capability does not exist, therefore most of the rezoning cases described are a splitting of individual zones into multiple new zones with independent supply systems.

These changes will invariably lead to an improved understanding of individual supply system risk, and hence our ability to plan for mitigations to supply interruption risks for our customers is improved. As a direct consequence of fully exposing these risks there has been a negative impact to SoSI.

#### Abandoned Zones

AFTON AND BRADAN WRZ

This complex WRZ supplying large areas of Ayrshire previously composed of 6 WOAs fed by 4 WTWs: Afton WTW, Bradan WTW, Camphill WTW, and Penwhapple WTW.

These WTWs and their WOAs have been split into 4 new WRZs respectively, with only the added complexity that the previously independent WRZ of Muirdykes has been combined with Camphill due to the fixed asset raw water transfer capability of the supply system.

TURRIFF AND FOREHILL WRZ

This WRZ composed of two WTWs, each with its own WOAs, historically used to have an infrastructure transfer capability via mixing at a shared Service Reservoir. This is no longer operationally possible due to one site being chloraminated and the other chlorinated, hence the need to split the zone into independent WRZs.

BADENTINAN AND GLENLATTERACH WRZ

Badentinan and Glenlatterach WRZ has not been split up into components, but rather it has been replaced by a new zone – Spey Deveron WRZ – with includes the addition of Turriff WTW and WOA.

ASSYNT AND NEWMORE WRZ

Assynt and Newmore WRZs were previously assumed to operate as a single integrated WRZ because of the similarity of the supply side water systems. Newmore water is abstracted downstream of Loch Glass, which serves as the source for Assynt. A better understanding of the complexity of this system now means that separating them into two independent zones is a better reflection of their distinct supply risks.

BOARDHOUSE AND KIRBISTER WRZs

These two supply systems are the only two on the Isle of Orkney. It is now not believed that infrastructure assets can transfer enough water between these systems for them to be considered as a single WRZ.

LANARKSHIRE WRZ

Lanarkshire WRZ has perhaps been the least altered in composition, as the replacement WRZ contains four of the five original WOAs that comprised the zone. It has been established that Coulter WTW and WOA were effectively isolated from the rest of the zonal infrastructure, therefor Coulter has also been reallocated to a new WRZ of its own.

MUIRDYKES WRZ

The Muirdykes system has been combined with Camphill into a new zone, with Camphill having previously been a component of the Afton and Bradan WRZ. An ability to transfer raw water between supplies connects these systems sufficiently to consider them as a single WRZ.

FORTH VALLEY WRZ

The two large supply systems of Carron Valley and Turret have been separated into two new resource zones. There is a lot of complex interconnectivity between these systems (and additionally from Glasgow WRZ), and it was previously believed that infrastructure would allow Carron Valley (with significant assistance from Glasgow WRZ) to support the supply requirements of the Turret WOAs. In practice the infrastructure cannot be operated in a way that delivers this support.

APPENDIX 3: Tables

Table 1: WOA Composition of abandoned WRZs

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **WRZ ID** | **WRZ Name** | **WOA 1** | **WOA 2** | **WOA 3** | **WOA 4** | **WOA 5** | **WOA 6** |
| WRZ000004 | Afton & Bradan WRZ | WOA000008 | WOA000009 | WOA000066 | WOA000078 | WOA000291 | WOA000429 |
| WRZ000021 | Turriff & Forehill WRZ | WOA000152 | WOA000375 |  |  |  |  |
| WRZ000022 | Badentinan & Glenlatterach WRZ | WOA000033 | WOA000179 | WOA000180 |  |  |  |
| WRZ000038 | Assynt & Newmore WRZ | WOA000026 | WOA000279 | WOA000396 |  |  |  |
| WRZ000162 | Boardhouse & Kirbister WRZ | WOA000059 | WOA000224 |  |  |  |  |
| WRZ000315 | Lanarkshire WRZ | WOA000079 | WOA000101 | WOA000114 | WOA000256 | WOA000412 |  |
| WRZ000316 | Muirdykes WRZ | WOA000269 |  |  |  |  |  |
| WRZ000322 | Forth Valley WRZ | WOA000076 | WOA000085 | WOA000087 | WOA000373 | WOA000374 |  |

**Table 2: WOA Composition of newly created WRZs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **WRZ ID** | **WRZ Name** | **WOA 1** | **WOA 2** | **WOA 3** | **WOA 4** |
| WRZ000326 | Afton WRZ | WOA000008 | WOA000009 |  |  |
| WRZ000327 | Bradan WRZ | WOA000066 | WOA000429 |  |  |
| WRZ000328 | Penwhapple WRZ | WOA000291 |  |  |  |
| WRZ000329 | Camphill & Muirdykes WRZ | WOA000078 | WOA000269 |  |  |
| WRZ000330 | Spey Deveron WRZ | WOA000033 | WOA000179 | WOA000180 | WOA000375 |
| WRZ000331 | Forehill WRZ | WOA000152 |  |  |  |
| WRZ000332 | Assynt WRZ | WOA000026 |  |  |  |
| WRZ000333 | Newmore WRZ | WOA000279 | WOA000396 |  |  |
| WRZ000334 | Boardhouse WRZ | WOA000059 |  |  |  |
| WRZ000335 | Kirbister WRZ | WOA000224 |  |  |  |
| WRZ000336 | Carron Valley WRZ | WOA000076 | WOA000085 | WOA000087 |  |
| WRZ000337 | Turret WRZ | WOA000373 | WOA000374 |  |  |
| WRZ000338 | Daer and Camps WRZ | WOA000079 | WOA000114 | WOA000256 | WOA000412 |
| WRZ000339 | Coulter WRZ | WOA000101 |  |  |  |

Table 3: List of 27 impacted Water Operational Areas

| **WOA ID** | **WOA Name** |
| --- | --- |
| WOA000008 | Afton South Region WOA |
| WOA000009 | Afton West Region WOA |
| WOA000026 | Assynt WOA |
| WOA000033 | Spey Badentinan WOA |
| WOA000059 | Boardhouse WOA |
| WOA000066 | Bradan WOA |
| WOA000076 | C V & Turret & Balmore WOA |
| WOA000078 | Camphill WOA |
| WOA000079 | Camps & Daer WOA |
| WOA000085 | Carron Valley & Turret WOA |
| WOA000087 | Carron Valley WOA |
| WOA000101 | Coulter WOA |
| WOA000114 | Daer WOA |
| WOA000152 | Forehill WOA |
| WOA000179 | Glenlatterach & Badentinan WOA |
| WOA000180 | Glenlatterach WOA |
| WOA000224 | Kirbister & Boardhouse WOA |
| WOA000256 | March Cottage WOA |
| WOA000269 | Muirdykes WOA |
| WOA000279 | Newmore WOA |
| WOA000291 | Penwhapple WOA |
| WOA000373 | Turret West Region WOA |
| WOA000374 | Turret East Region WOA |
| WOA000375 | Turriff WOA |
| WOA000396 | Assynt & Newmore WOA |
| WOA000412 | Camps WOA |
| WOA000429 | Bradan Milngavie Gorbals WOA |

Table 4: WTW Composition of abandoned WRZs

| **WRZ ID** | **WRZ Name** | **WTW 1** | **WTW 2** | **WTW 3** | **WTW 4** |
| --- | --- | --- | --- | --- | --- |
| WRZ000004 | Afton & Bradan WRZ | WTW000002 | WTW000028 | WTW000037 | WTW000206 |
| WRZ000021 | Turriff & Forehill WRZ | WTW000505 | WTW000515 |  |  |
| WRZ000022 | Badentinan & Glenlatterach WRZ | WTW000471 | WTW000476 |  |  |
| WRZ000038 | Assynt & Newmore WRZ | WTW000447 | WTW000780 |  |  |
| WRZ000162 | Boardhouse & Kirbister WRZ | WTW000615 | WTW000616 |  |  |
| WRZ000315 | Lanarkshire WRZ | WTW000039 | WTW000067 | WTW000078 | WTW000178 |
| WRZ000316 | Muirdykes WRZ | WTW000187 |  |  |  |
| WRZ000322 | Forth Valley WRZ | WTW000634 | WTW000635 |  |  |

Table 5: WTW Composition of newly created WRZs

| **WRZ ID** | **WRZ Name** | **WTW 1** | **WTW 2** | **WTW 3** |
| --- | --- | --- | --- | --- |
| WRZ000326 | Afton WRZ | WTW000002 |  |  |
| WRZ000327 | Bradan WRZ | WTW000028 |  |  |
| WRZ000328 | Penwhapple WRZ | WTW000206 |  |  |
| WRZ000329 | Camphill & Muirdykes WRZ | WTW000037 | WTW000187 |  |
| WRZ000330 | Spey Deveron WRZ | WTW000471 | WTW000476 | WTW000505 |
| WRZ000331 | Forehill WRZ | WTW000515 |  |  |
| WRZ000332 | Assynt WRZ | WTW000780 |  |  |
| WRZ000333 | Newmore WRZ | WTW000447 |  |  |
| WRZ000334 | Boardhouse WRZ | WTW000615 |  |  |
| WRZ000335 | Kirbister WRZ | WTW000616 |  |  |
| WRZ000336 | Carron Valley WRZ | WTW000635 |  |  |
| WRZ000337 | Turret WRZ | WTW000634 |  |  |
| WRZ000338 | Daer and Camps WRZ | WTW000039 | WTW000078 | WTW000178 |
| WRZ000339 | Coulter WRZ | WTW000067 |  |  |

Table 6: List of 19 impacted Water Treatment Works

| **WTW ID** | **WTW Name** |
| --- | --- |
| WTW000002 | Afton WTW |
| WTW000028 | Bradan WTW |
| WTW000037 | Camphill WTW |
| WTW000039 | Camps WTW |
| WTW000067 | Coulter WTW |
| WTW000078 | Daer WTW |
| WTW000178 | March Cottage WTW |
| WTW000187 | Muirdykes WTW |
| WTW000206 | Penwhapple WTW |
| WTW000447 | Newmore WTW |
| WTW000471 | Glenlatterach WTW |
| WTW000476 | Badentinan WTW |
| WTW000505 | Turriff WTW |
| WTW000515 | Forehill WTW |
| WTW000615 | Boardhouse WTW |
| WTW000616 | Kirbister WTW |
| WTW000634 | Turret WTW |
| WTW000635 | Carron Valley WTW |
| WTW000780 | Assynt WTW |

APPENDIX 4: SOSI Charts

Chart 1: Top 10 Dry Year Annual Average (DYAA) Zones

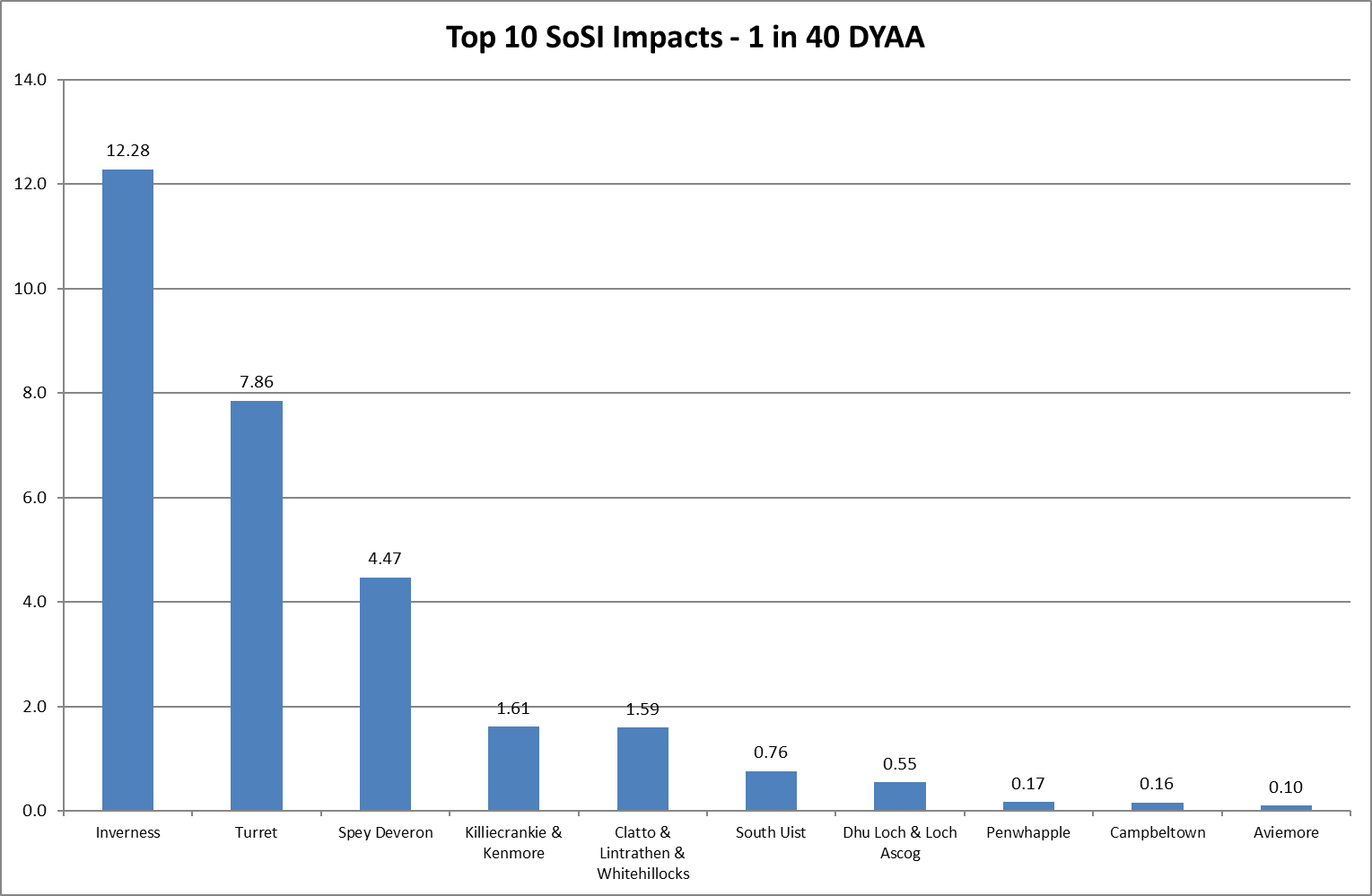
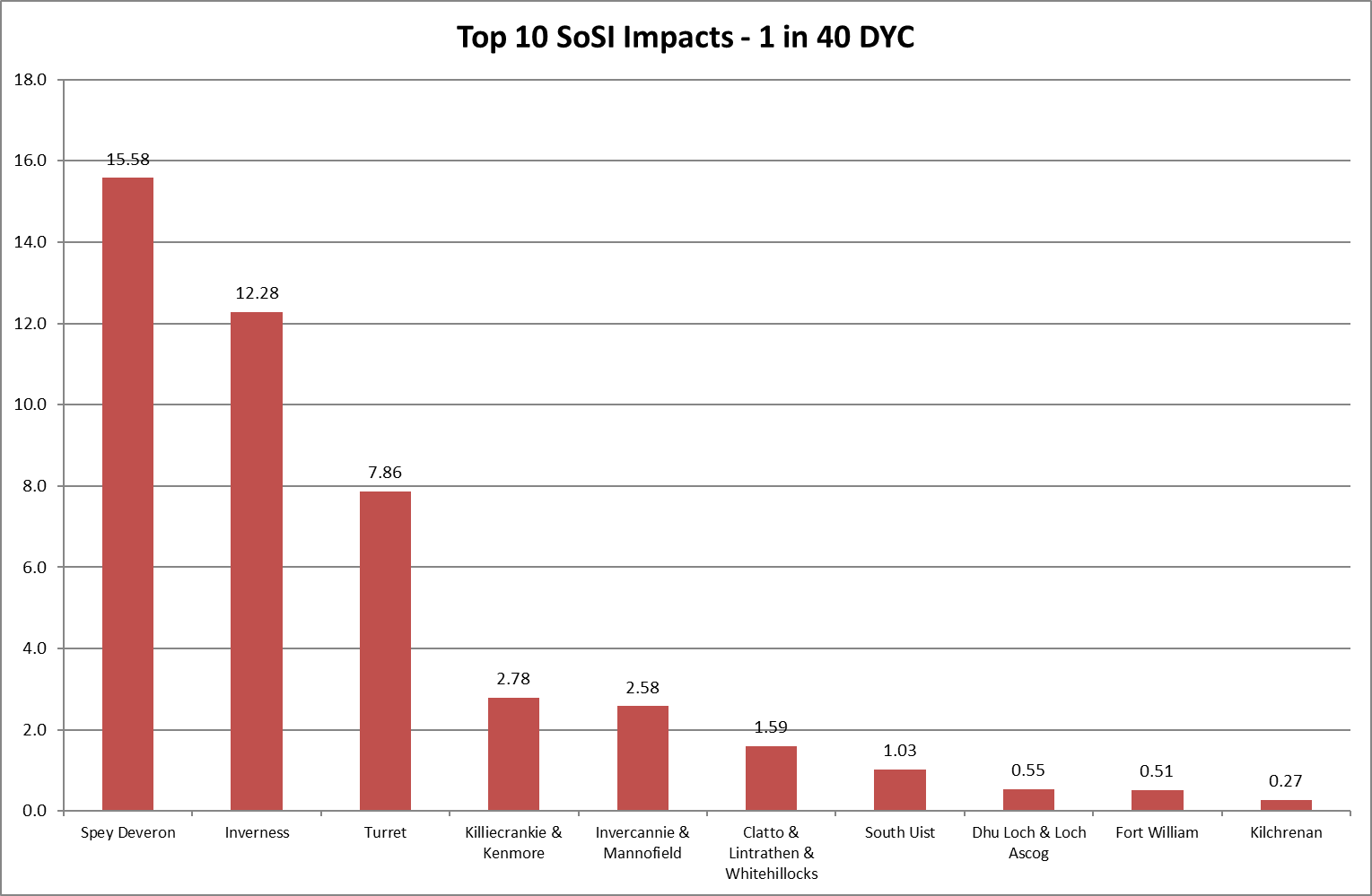


Chart 2: Top 10 Dry Year Critical (DYC) Zones



APPENDIX 5: Corrections to table templates

During the process of transposing the existing data to the templates we have identified a handful of errors/formatting issues. The table below provides the detail and indicates how we corrected the issues.

Table 1: List of 19 impacted Water Treatment Works

|  |  |  |
| --- | --- | --- |
| **Table/Line** | **Issue** | **Update for WICS** |
| A2.19 | Formula missing | Formula corrected in calculation cells to match definition document |
| A2.20 | Formula missing | Formula corrected in calculation cells to match definition document |
| B6A.1 | cell has not been formatted in the template to reflect the rounding required to ensure consistency of reporting | Format changed to match decimal point rounding in B6A.12 |
| B6A.8 | Cells not formatted to give % number | Format changed |
| B10.1- B10.13 | All calculated compliance should be formatted as % | Format changed |
| B11c cell X166 | formula did not include first cells which then impacted on %PE | Formula corrected to include correct range of cells |
| E9.0 & E9.0a. | The list of sites in the template is not the list of sites that are currently classified as large STWs. | Template updated in each column to reflect the actual list of large STWs. |
| E3.24-32 | Calculations for “totals” column is missing | “Total” column has been updated with the calculation |

1. At the time of inclusion in the Committed List [↑](#footnote-ref-2)
2. These are start on site, gate 100 (acceptance) and gate 110 (financial close) [↑](#footnote-ref-3)
3. Data contained in Assurance report [↑](#footnote-ref-4)
4. Data contained in the Assurance Report with the exceptions of Lines B2.10 and B2.11 previously reported in table G3 (Line G3.17a and G3.17 respectively) [↑](#footnote-ref-5)
5. Data contained in the Assurance Report [↑](#footnote-ref-6)
6. Data contained in Assurance Report [↑](#footnote-ref-7)
7. Data contained in OPA Reporter’s Report [↑](#footnote-ref-8)
8. Reported in Table G line 3.22 in AR21 [↑](#footnote-ref-9)
9. This is a new category for AR22. [↑](#footnote-ref-10)
10. Reported in Table G line G3.20 [↑](#footnote-ref-11)
11. AR22 Tables G Line G3.26 [↑](#footnote-ref-12)