United Utilities Water

# Annual Performance Report 2021/22

## Additional regulatory information commentaries for tables 3 to 11

July 2022

United Utilities

Water for the North West

# Executive Summary

This document is designed to support and provide commentary on tables 3A to 11A within UUW's 2021/22 Annual Performance Report (APR).

Tables 3A to 11A of the APR contain information on performance and the allocation of expenditure to different investment categories. They also contains information on the drivers of expenditure, such as population served or asset capacities.

## Assurance

As set out in the Final Assurance Plan that is published at:

www.unitedutilities.com/globalassets/documents/pdf/final-assurance-plan-2021-22.pdf/download

We have applied a three lines of assurance review and governance approach.

Data has been subject to data owner, responsible, accountable and executive manager sign-off as appropriately identified through risk assessment. In addition to this independent audit / peer review of supporting information and audit trails has also taken place.

The regulatory reporting process, including the cost assessment data, was reviewed by United Utilities Corporate Audit. The audit covered the following areas, with no issues being noted:

- The validity consistency of the data reported in Sections 3 and 4 of the Annual Performance Report. This included sample testing to agree data back to underlying UU records and systems;
- Consistency of the commentary with the underlying data within the APR;
- Compliance of the reported data in the APR with key aspects of Regulatory Guideline 3.13 "Guideline for the format and disclosures for the annual performance report";
- Overall governance arrangements in place to ensure the regulatory data is complete and accurate and reported in line with the required timescales;
- Confirmation that assurance activities detailed in UU's published Final Assurance Plan have been completed in line with the plan; and
- Review the proposed Assurance Report (to be published along with the Annual Performance Report 2021/22) to ensure it is a fair reflection of the associated assurance activities and results thereof.

The data within this submission was also added to the scope of the assurance review undertaken by our technical auditor Glen Hawken from Jacobs Limited. Jacobs undertook an agreed upon procedures review and concluded that *"*On the basis of our audit work and with exceptions as noted in Appendix A, we are satisfied that the information within and which supports RR22 has been assembled using appropriate data and methodologies and provides a reliable representation of Company performance. There is also good evidence of senior management engagement, governance and programme management*".*

The results and findings from the review and assurance processes were presented to and discussed with the UUW Board, as part of its review and approval of the Annual Performance Report in June 2022.

The findings of the Jacobs review and the findings of the second line review undertaken by UU Corporate Audit are included within Appendix 1 of our APR, which is published on our website.

unitedutilities.com/globalassets/documents/pdf/united-utilities-annual-performance-report-2021-22

# Contents

# Table 3A Outcome Performance – Water Performance Commitments (financial)

Section 1.1 of the main APR document contains further details on our Water performance commitments with financial incentives. This section outlines how we have performed this year and the number of performance commitments that have been achieved.

unitedutilities.com/globalassets/documents/pdf/united-utilities-annual-performance-report-2021-22

Appendix 3 of our APR also outlines which Performance Commitments require a non-standard calculation. Two of the measures are included in Table 3A. These are 'Thirlmere transfer into West Cumbria (AMP7)' and 'Abstraction Incentive Mechanism (AIM)'.

# Table 3B Outcome Performance – Wastewater Performance Commitments (financial)

Section 1.1 of the main APR document contains further details on our Wastewater performance commitments with financial incentives. This section outlines how we have performed this year and the number of performance commitments that have been achieved.

unitedutilities.com/globalassets/documents/pdf/united-utilities-annual-performance-report-2021-22

Appendix 3 of our APR also outlines which Performance Commitments require a non-standard calculation. Two of the measures are included in Table 3B. These are 'Enhancing Natural Capital value for Customers' and 'Better Air Quality'.

# Table 3C Customer Measure of Experience (C-MeX) table

Section 1.1 of the main APR document contains further details on our Customer Measure of Experience (C-MeX) performance commitment. This section outlines how we have performed this year and contains details on our customer satisfaction surveys and results.

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# Table 3D Developer Measure of Experience (D-MeX) table

## Table 3D

**Line 3D.1 – Qualitative Component Annual Results, Line 3D.2 – Quantitative Component Annual Results, Line 3D.3 – D-MeX Score, Line 3D.4 – Developer Services Revenue (Water) and Line 3D.5 – Developer Services (Wastewater)**

We have no comments for these lines.

## Table 3D

**Line 3D.W1 – W1.1 – Pre-development enquiry – reports issued within target – 21 days (Non-statutory), Line 3D.W2 – S3.1 Sewer requisition design – offers issued within target, Line 3D.W3 – S4.1 Sewer requisition – constructed and commissioned within agreed extension, Line 3D.W4 – S7.1 Adoption legal agreement – draft agreements issued within target, Line 3D.W5 – SAM - 3/1 Execute Adoption Agreement (Stage 3) – Sewerage Company – SAM – 3/1 – Update draft Agreement, Line 3D.W6 – SAM - 4/1 Customer notifies of construction start date and requests inspections (Stage 4) – Sewerage Company – SAM – 4/1 Inspections & construction period, Line 3D.W7 – SLPM - 2/2b Design Self-Laid Main (Stage 2) – Water Company – SLPM - S2/2b – Water Company to Provide design acceptance and Line 3D.W8 – SLPM – S1/2 POC (Stage 1C) – Water Company – SLPM – S1/2 – Review PoC proposal.**

We have no comments for these lines.

**Line 3D.W9 – SLPM - S2/2a Design Self-Laid Main (Stage 2) – Water Company – SLPM - S2/2a – Provide design**

We did not have any transactions for this measure in the reporting period.

**Line 3D.W10 - SLPM – S3 Execute Water Adoption Agreement (Stage 3) – Water Company – SLPM – S3 – Review / revise Water Adoption Agreement, Line 3D.W11 - SLPM – S4/1 Delivery Date (Stage 3 / 4) – Water Company – SLPM – S4/1 – Source of Water Delivery Date, Line 3D.W12 - SLPM – S5/1a Connect Self-Laid Main – (Stage 5) – Water Company – SLPM – S5/1a – Review request and carry out Final Connection, Line 3D.W13 - SLPM – S7/1 Make Service Connections (Stage 7 – Part 2) – Water Company – SLPM – S7/1 – Validate notification and provide consent to progress with connection**

We have no comments for these lines.

**Line 3D.W14 - SN2.2 % Bulk discharge offer letters issued to the applicant within target period, Line 3D.W15 - SN4.1 % of main laying schemes constructed and commissioned within the target period**

We did not have any transactions for this measure in the reporting period.

**Line 3D.W16 - W1.1 Pre-development enquiry – reports issued within target, Line 3D.W17 - W17.1 Mains diversions (without constraints) - quotations within target, Line 3D.W18 - W17.2 Mains diversions (with constraints) - quotations within target, Line 3D.W19 - W18.1 Mains diversions - construction/commissioning within target, Line 3D.W20 - W20.1 Self-lay Point of Connection report < 500 plots etc - reports issued within target, Line 3D.W21 - W21.1 Self-lay Point of Connection reports >500 plots etc - reports issued within target, Line 3D.W22 - W23.1 Sel-lay design and terms request <500 plots etc - quotations within target, Line 3D.W23 - W24.1 Self-lay design and terms request >500 plots etc - quotations within target, Line 3D.W24 - W26.1 Self-lay water for pressure/bacteriological testing - provided within target, Line 3D.W25 - W27.1 Self-lay permanent water supply - provided within target, Line 3D.W26 - W3.1 s45 quotations - within target, Line 3D.W27 - W30.1 Self-lay plot references and costing details - issued within target, Line 3D.W28 - W4.1 s45 service pipe connections - within target, Line 3D.W29 - W6.1 Mains design <500 plots - quotations within target, Line 3D.W30 - W7.1 Mains design >500 plots - quotations within target, Line 3D.W31 - W8.1 Mains construction within target, Line 3D.W32 - WN1.1 % of confirmations issued to the applicant within target period, Line 3D.W33 - WN2.2 % Bulk supply offer letters issued to the applicant within target period**

We have no comments for these lines.

**Line 3D.W34 - WN4.1 % of main laying schemes constructed and commissioned within the target period**

UUW did not have any transactions for this measure in the reporting period.

**Line 3D.W35 - WN4.2 % of testing supplies provided within target period**

We have no comment for this line.

**Line 3D.W36 - WN4.3 % of permanent supplies made available within the target period**

We did not have any transactions for this measure in the reporting period.

# Table 3E Outcome Performance – Non-Financial Performance Commitments

Section 1.1 of the main APR document contains further details on our non-financial performance commitments and our overall performance in terms of the number that have been achieved this year.

unitedutilities.com/globalassets/documents/pdf/united-utilities-annual-performance-report-2021-22

# Table 3F Underlying Calculations for Common Performance Commitments – Water and Retail

See section 1.1 of the main APR document for further details on outcome performance:

unitedutilities.com/globalassets/documents/pdf/united-utilities-annual-performance-report-2020-21

## Performance Commitments set in Standardised Units - Water

**Line 3F.1 – Mains Repairs – Reactive, Line 3F.2 – Mains Repairs – Proactive and Line 3F.3 – Mains Repairs**

We have updated our methodology following the 2020/21 in period determination.

**Line 3F.4 – Per Capita Consumption (PCC)**

We have no comment for this line.

## Performance Commitments Measured against a Calculated Baseline

**Line 3F.5 – Leakage**

Our baseline performance can be found in United Utilities' 2019-20 APR.

**Line 3F.6 – Per Capita Consumption (PCC)**

Our baseline performance can be found in United Utilities' 2019-20 APR.

## Water Supply Interruptions

**Line 3F.7 – Water Supply Interruptions**

Following a query we received last year we have normalised our performance in the reporting year with the number of connected properties reported in line 4R.27.

## Unplanned Outage

**Line 3F.8 – Unplanned Outage**

We have no comment for this line.

### Priority Services for Customers in Vulnerable Circumstances

**Line 3F.9 – Priority Services for Customers in Vulnerable Circumstances**

Data in Column 23 from Table 4R.19 plus properties using only wastewater services (81,395).

# Table 3G Underlying Calculations for Common Performance Commitments – Wastewater

**Line 3G.1 – Internal Sewer Flooding – Customer Proactively Reported, Line 3G.2 – Internal Sewer Flooding – Company Reactively Identified (i.e. neighbouring properties) and Line 3G.3 – Internal Sewer Flooding**

This year, 22.39% of all internal sewer flooding incidents were found through company reactive identification. This is a reduction compared to the previous year and is a result of there being fewer severe weather events, which are more likely to lead to the flooding of multiple neighbouring properties. The overall weather conditions have also been drier this year.

**Line 3G.4 – Pollution Incidents**

Data in Column 4 is sewer length reported in Water & Sewerage Company Environmental Performance Assessment (EPA) Methodology (version 9), Table 2.

**Line 3G.5 – Sewer Collapses**

We have no comments for this line.

# Table 3H Summary information on Outcome Delivery Incentive Payments

### Initial Calculation of in-period Revenue Adjustment by Price Control

This is a calculated table.

# Table 3I Supplementary Outcomes Information

### Unplanned or planned Outage

**Line 3I.1 – Planned Outage**

The number is consistent with last year.

### Risk of Severe Restrictions in Drought

**Line 3I.2 – Risk of Severe Restrictions in Drought**

In column 8 for ‘total population supplied’, the value is 7,338,219.

### Risk of Sewer Flooding in a Storm

**Line 3I.3 – Risk of Sewer Flooding in a Storm**

In column 15 for ‘total pe option 1b’, the value is 7,566,573.

### Sewer collapses

**Line 3I.4 – Number of patch repairs or relining undertaken on sewer and not included in reported sewer collapses**

As we describe in Section 1.1 of the main APR document, we continue to develop and implement a wide variety of schemes and initiatives to improve our sewer collapse performance. These include the promotion of less

disruptive 'no-dig' techniques for repairing sewers. This is currently a significant area of innovation for us and is expected to reduce the number of reportable collapses in future years.

# Table 4A Water bulk supply information

## Bulk supply exports

**Line 4A.1 – 4A.26 Bulk supply export volumes**

The volume of raw water exported from Heronbridge has decreased in the reporting year reflecting lower demand from Dwr Cymru. There is an additional treated water export to Liverpool John Lennon Airport that has been added in the reporting year.

## Bulk supply imports

**Line 4A.27 – 4A.52 Bulk supply import volumes**

Import volumes are consistent with the previous reporting year.
Note that there are supplies that have been recorded on the Bulk Supply Register for which no services have yet been provided in this year or in the prior year. For supplies where no operating costs have been incurred, they have been excluded from table 4A.

# Table 4F Major project expenditure for wholesale water by purpose for the 12 months ended 31 March 2022

## Major project capital expenditure by purpose

**Line 4F.1 – Manchester & Pennine Resilience DPC**

This line is reporting £16.6m less expenditure in 2021/22 compared to 2020/21, this is an expected reduction as the project progresses.

**Line 4F.2 – Water Trading - Joint Transfer**

This line is reporting £0.369m higher expenditure in 2021/22 compared to 2020/21 reflecting the progression of the project.

**Line 4F.3 – Water Trading - UU Sources**

This line is reporting £0.175m higher expenditure in 2021/22 compared to 2020/21 reflecting the progression of the project.

**Line 4F.4 – Water Trading - Vyrnwy Aqueduct**

This line is reporting £0.346 higher expenditure in 2021/22 compared to 2020/21 reflecting the progression of the project.

**Line 4F.11 – Total major project capital expenditure**

Total major project capital expenditure for Wholesale Water is £15.729m lower in 2021/22 compared to 2020/21. Water Resources has seen an increased level of expenditure of £0.890m which is offset by a lower level of expenditure within Treated Water Distribution of £16.619m

### Major project operating expenditure by purpose

There is no operational expenditure purpose costs to be reported for Wholesale Water in 2021/22.

# Table 4G Major project expenditure for wholesale wastewater by purpose for the 12 months ended 31 March 2022

### Major project capital expenditure by purpose – Capital and Operational expenditure

There is no capital or operational expenditure purpose costs to be reported for Wholesale Wastewater in 2021/22.

# Table 4L Enhancement expenditure for the 12 months ended 31 March 2022 - water resources and water network+

The operating costs within this table reflect the spend profile associated with each enhancement scheme or water efficiency programme. For meeting lead standards, operating expenditure is in line with grants to customers for the replacements of their own private side lead pipes, whilst innovation competition operating expenditure relates to spend incurred on projects funded through Ofwat's Innovation Competition ring-fenced pot.

All totex lines contained within this table are calculated values.

## EA/NRW environmental programme (WINEP/NEP)

**Line 4L.1 Ecological improvements at abstractions (capex)**

This line has been populated with capital expenditure linked to programmes that are driven by statutory obligations agreed with the Environment Agency and included in the National Environment Programme.

The reduced levels of expenditure in the period 2021/22 reflect the completion of the AMP6 projects in the previous year.

**Line 4L.4 Eels Regulations (measures at intakes) (capex)**

The expenditure on this line is primarily associated with the Eels and Elvers – Windermere project.

**Line 4L.7 Invasive Non Native Species (capex)**

There is a small amount of expenditure in this line relating to an Invasive Non Native species investigation project.

**Line 4L.10 Drinking Water Protected Areas (schemes) (capex)**

There is no expenditure associated with Drinking Water Protected Areas.

**Line 4L.13 Water Framework Directive measure (capex)**

There is no expenditure associated with Water Framework Directive.

**Line 4L.16 Investigations (capex)**

There is no expenditure associated with Investigations.

## Supply-demand balance

**Line 4L.20 Supply-side improvements delivering benefits in 2020-2025 (capex)**

A lower level of expenditure has been reported in the period reflection the completion of a number of high value AMP6 projects including South Egremont groundwater S&D 6.4Ml and Southport DMZ WTW (Royal Oak WTW & PS).

**Line 4L.23 Demand-side improvements delivering benefits in 2020-2025 (excl leakage and metering) (capex)**

The increased level of spend in the period is attributable to the West Cumbria Future Strategy and the Alston Spade Mill Transfer Pipeline projects.

**Line 4L.26 Leakage improvements delivering benefits in 2020-2025 (capex)**

Although the company was not allocated any leakage enhancement expenditure in the PR19 final determination expenditure has been incurred on leakage loggers.

**Line 4L.29 Internal interconnectors delivering benefits in 2020-2025 (capex)**

There is a small amount of expenditure in this line relating to internal interconnectors.

**Line 4L.32 Supply demand balance improvements delivering benefits starting from 2026 (capex)**

There is no expenditure associated with supply demand balance improvements starting from 2026.

**Line 4L.35 Strategic regional water resources (capex)**

The expenditure in this line relates to the three regional water resource projects:

- Joint transfer
- UU sources
- Vyrnwy Aqueduct

The strategic project expenditure on these three named Water Resources schemes has been reported line 4L.35 and listed individually in Table 4F. The expenditure on each of these schemes reflects the activity in the last financial year.

**Line 4L.38 Total supply demand expenditure**

This is a calculated line.

## Metering

**Line 4L.39 New meters requested by existing customers (optants) (capex)**

Free Meter Options reported activity in the year is higher than the previous years reported expenditure as a consequence of the increased level of activity post the COVID-19 crisis.

**Line 4L.42 New meters introduced by companies for existing customers (capex)**

There is no expenditure associated with new meters introduced by companies for existing customers.

**Line 4L.45 New meters for existing customers – business (capex)**

There is no expenditure associated with new meters existing customers – business.

**Line 4L.48 Replacement of existing basic meters with smart meters (capex)**

There is no expenditure associated with the replacement of existing basic meters with smart meters.

**Line 4L.51 Smart meter infrastructure (capex)**

There is no expenditure associated with Smart meter infrastructure.

## Other enhancement

**Line 4L.55 Improvements to taste, odour and colour (capex)**

The expenditure allocated to this line is primarily focussed on mains and large diameter trunk main (LDTM) cleaning to reduce customer contacts for discolouration. The increased spend levels reflect continuing expenditure on the Vyrnwy LDTM AMP7 Lining and Cleaning and the AMP7 Cast Iron Mains Replacement projects together with increased activity on the Granular activated carbon (GAC) programme.

**Line 4L.58 Meeting lead standards (capex)**

The expenditure allocated to this line is to improve lead and common supply pipe (LCSP) connections and associated mains.

**Line 4L.61 Addressing raw water deterioration (capex)**

This line includes expenditure for projects at treatment works for pesticides, nickel, taste and odour and manganese removal. The underspend in the year compared to 2020/21 is due to the Oswestry WTW AMP6 WQ Improvements project.

**Line 4L.64 Improvements to river flow (capex)**

There is no expenditure associated with Improvements to river flows.

**Line 4L.67 Enhancing resilience to low probability high consequence events (capex)**

The majority of expenditure on this line relates to two projects, one to make improvements to a section of the Haweswater Aqueduct, the second is the expenditure incurred in preparing the Manchester and Pennine DPC. The lower levels of expenditure in the year reflect the status of these project.

**Line 4L.70 Security – SEMD (capex)**

This line includes expenditure required to comply with security enhancement obligations under the Security and Emergency Measures Direction (SEMD). The lower levels of spend in the year reflects the completion of the AMP6 programme of works.

**Line 4L.73 Security - Non-SEMD (capex)**

There is no expenditure associated with Security – Non – SEMD.

**Line 4L.76 Innovation Competition (capex)**

There is no expenditure associated with Innovation Competition.

**Line 4L.77 Innovation Competition (opex)**

Innovation fund cost accrual (allocated to price control in line with allowed revenues from customers).

**Line 4L.78 Concessionary Supplies (capex)**

We have included this additional line to capture expenditure relating to concessionary supplies.

# Table 4M Enhancement expenditure for the 12 months ended 31st March 2022 - wastewater network+ and Bioresources

The incremental operating costs from the capital schemes, whether positive or negative, have been included against the relevant programme.

All totex lines contained within this table are calculated values.

## EA/NRW environmental programme (WINEP/NEP)

**Line 4M.1 Conservation drivers (capex)**

There is a small amount of expenditure on this line which is primarily associated with the Leigh WwTW AMP7 Biodiversity and Lancaster WwTW sludge projects.

**Line 4M.4 Event Duration Monitoring at intermittent discharges (capex)**

The expenditure allocated to this line is primarily associated with the completion of the AMP6 Event Duration Monitoring 2 Ph 1 and 2 project. The remaining spend is wholly attributable to the Flow Programme - MON1 and MON3 - AMP7 programme.

**Line 4M.7 Flow monitoring at sewage treatment works (capex)**

The expenditure allocated to this line is primarily attributable to the Flow Programme – MON4 schemes.

**Line 4M.10 Schemes to increase flow to full treatment (capex)**

The expenditure allocated to this line is wholly attributable to the Burnley WwTW - WFD - AMP7 project.

**Line 4M.13 Schemes to increase storm tank capacity (capex)**

Expenditure in this line is higher than in the 2020/21 period reflecting the mobilisation of a number of high value AMP7 schemes including Burnley WwTW and Rossendale WwTW.

**Line 4M.16 Storage schemes to reduce spill frequency at CSOs, storm tanks, etc (capex)**

Expenditure in this line is higher than in the 2020/21 period primarily due to increased levels of activity on the CRH0021 Harrisons Farm Storm Spill project.

**Line 4M.19 Chemical removals schemes (capex)**

There is no expenditure associated with Chemical removals schemes.

**Line 4M.22 Chemicals monitoring/ investigations/ options appraisals (capex)**

The expenditure allocated to this line is primarily attributable to the mobilisation of the CIP3-Quality Investigations-AMP7 scheme.

**Line 4M.25 Nitrogen removal (capex)**

There is no expenditure associated with Nitrogen removal schemes.

**Line 4M.28 Phosphorus removal (capex)**

Expenditure in this line is now reported as the consolidation of historic lines NEP - Nutrients (P removal at activated sludge STWs) and NEP - Nutrients (P removal at filter bed STWs). There has been a significant increase in expenditure above the 20/21 period primarily due to higher levels of activity associated with number of high value AMP7 enhancement schemes particularly Burnley, Alderley Edge, Great Warford, Horwich, Bury and Chorley, Worsley, Audlem, Southwaite, Barnoldswick and Wilpshire, Rossendale, Bulkeley, Cotebrook, Little Budworth South, Glazebury, Leigh and Tyldesley. The increased level of expenditure on these AMP7 schemes has been partly offset by the completion of a number of previously high value AMP6 carry over projects including Hayfield and West Newton P reduction. The increased level of expenditure reflects the management of the programme to achieve the agreed regulatory dates.

**Line 4M.31 Reduction of sanitary parameters (capex)**

Expenditure in this line is less than in the 2020/21 period reflecting the lower level of expenditure associated with the completion of a number of AMP6 carry over project, including the Crewe and Colne schemes.

**Line 4M.34 UV disinfection (or similar) (capex)**

Expenditure in this line is above the 2020/21 period primarily due to the mobilisation of the Carlisle WwTW - Shellfish Waters - AMP7 scheme.

**Line 4M.37 Investigations (capex)**

Expenditure in this line is above the 2020/21 period reflecting the mobilisation of and increased levels of activity on AMP7 schemes.

## Other enhancement

**Line 4M.41 Growth at sewage treatment works (excluding sludge treatment) (capex)**

Expenditure in this line is less than in the 2020/21 period reflecting the lower level of expenditure associated with the completion of and lower levels of activity on a number of previously high value AMP6 projects, including the Blackburn and Darwen scheme.

**Line 4M.44 Reduce flooding risk for properties (capex)**

This line includes all expenditure incurred by the company to minimise the risk of flooding within the region.

**Line 4M.47 First time sewerage (capex)**

Expenditure in this line is above the 2020/21 period primarily due to the AMP6 Mains Lane project.

**Line 4M.50 Sludge enhancement (quality) (capex)**

Expenditure in this line is below the 2020/21 period reflecting the completion of previously high value schemes in earlier years consistent with their regulatory output requirements.

**Line 4M.53 Sludge enhancement (growth) (capex)**

There is no expenditure associated with Sludge enhancement (growth) schemes.

**Line 4M.56 Odour (capex)**

There is no expenditure associated with Odour schemes.

**Line 4M.59 Enhancing resilience to low probability high consequence events (capex)**

There is no expenditure associated with enhancing resilience to low probability high consequence events.

**Line 4M.62 Security – SEMD (capex)**

There is no expenditure associated with Security – SEMD schemes.

**Line 4M.65 Security - Non-SEMD (capex)**

There is no expenditure associated with Security - Non-SEMD schemes.

**Line 4M.68 NEP phase 5 WFD schemes - treatment increased storage or investigations (capex)**

Expenditure in this line is below the 2020/21 period.

**Line 4M.70 NEP requirement for bathing water shellfish driver delivered through long sea outfall or increased FTFT (capex)**

Expenditure in this line is below the 2020/21 period reflecting the completion of previously high value schemes, primarily Blackburn and Darwen.

**Line 4M.72 Innovation Competition (capex)**

Expenditure in this line is wholly attributable to the Project AI & Sewer Defect Analysis scheme.

Innovation fund cost accrual (allocated to price control in line with allowed revenues from customers).

**Line 4M.74 Discharge Relocation (capex)**

There is a small amount of expenditure on this line associated with Discharge Relocation.

**Line 4M.76 WINEP / NEP - Eels Regulations (measures at outfalls) (capex)**

There is no expenditure associated with WINEP / NEP - Eels Regulations (measures at outfalls) schemes.

# Table 4Q Developer services - New connections, properties and mains

## Connections volume data

**Line 4Q.1 New connections (residential – excluding NAVs), Line 4Q.2 New connections (business – excluding NAVs)**

The number of new residential connections is c18,000 which is c7,000 lower than business plan anticipated volumes. Housing developments were hit by enforced closures due to COVID-19 during 2020/21. We believe there has been a slow recovery during 2021/22 but xpect more normal levels for 2022/23.

For wastewater connections we do not explicitly track or record new connections to the sewer network. All new connections are carried out by developer or their agents, not us, and we are not notified of all new connections to sewers. Connection can be made direct to the sewer, an existing drain or adoptable network. On the basis that each new property with a water connection will usually need separate drainage for foul and surface water, we have allowed two connections per property. We have then applied a small reduction factor for water only connections e.g. (existing properties) and foul only connections (e.g. water to soakaway).

**Line 4Q.3 Total new connections served by incumbent**

This is a calculated line.

**Line 4Q.4 New connections – SLPs**

The majority of new connections are undertaken by SLP's

## Properties volume data

**Line 4Q.5 New properties (residential - excluding NAVs), Line 4Q.6 New properties (business - excluding NAVs)**

The number of new properties at c27,000 is marginally lower than the previous year.

**Line 4Q.7 Total new properties served by incumbent**

This is a calculated line.

**Line 4Q.8 9 New residential properties served by NAVs, Line 4Q.9, New business properties served by NAVs, Line 4Q.10 Total new properties served by NAVs**

These are new lines for AMP7. We have reported the numbers available to us but recognise that as we are reporting on customers connected to another company's network we are reliant on NAV's providing accurate

information. As more NAV sites are granted the assumptions being made will potentially reduce confidence in the data being reported.

**Line 4Q.11 Total new properties**

This is a calculated line.

**Line 4Q.12 New properties – SLP connections**
We have no comments for this line.

### New water mains data
**Line 4Q.13 Length of new mains (km) – requisitions**
**Line 4Q.14 Length of new mains (km) – SLPs**

We have over 144km of new mains – the majority, 121km, are laid by SLP's.

# Table 4R Connected properties, customers and population

### Customer numbers - average during the year
**Line 4R.1 Residential water only customers, Line 4R.2 Residential wastewater only customers, Line 4R.3 Residential water and wastewater customers**

There has been an overall increase of c78,000 customers. This is largely attributable to the number of new connections and the ongoing work as part of the Voids performance commitment. See section 1.1 of the main APR for further details:

unitedutilities.com/globalassets/documents/pdf/united-utilities-annual-performance-report-2020-21

**Line 4R.4 Total residential customers**

This is a calculated line.

**Line 4R.5 Business water only customers, Line 4R.6 Business wastewater only customers, Line 4R.7 Business water & wastewater customers, Line 4R.8 Total business customers**

There has been an overall increase of c19,000 business customers.

**Line 4R.9 Total customers**

This is a calculated line.

### Property numbers - average during the year
**Residential properties**

**Line 4R.10 – Residential properties billed**
The average number of households billed for water has increased by c75,000 which is mainly due to significantly more vacant properties now being billed due to the targeted work towards the voids performance commitment. See section 1.1 of the main APR for further details.

**Line 4R.11 - Residential void properties**

The average number of void properties has decreased by c47,000. Which is mainly due to significantly more vacant properties now being billed due to the targeted work towards the voids performance commitment. See section 1.1 of the main APR for further details.

**Line 4R.12 Total connected residential properties**

This is a calculated line.

**Business Properties**
**Line 4R.13 Business properties billed**

The average number of business properties billed for water has increased by c16,000 due to the high number of vacant service points for several months of the prior year due to the COVID-19 pandemic. In addition to this, there has been a concerted effort to reduce vacancies through the vacancy incentive scheme.

**Line 4R.14 Business void properties**

The average number of void business properties billed for water has decreased by c17,000.

**Line 4R.15 Total connected business properties**

This is a calculated line

**Line 4R.16 Total connected properties**

This is a calculated line

## Property and meter numbers - at end of year (31st March)

**Line 4R.17 Total new residential properties connected in year, Line 4R.18 Total new business properties connected in year**

There are no new unmeasured properties – all new properties will be measured. However, there are a number of new properties that have been connected but are being reported at as having no meter. These will have a meter fitted in 2022/23.

**Line 4R.19 Residential properties billed at year end**

We have reported the number properties billed for water. This includes properties billed for water and wastewater and properties billed for water only.

**Line 4R.20 Residential properties unbilled at year end**

We do not have any unbilled accounts at year end. All active accounts in our billing system are liable to be charged and a bill issued to the customer.

**Line 4R.21 Residential void properties at year end**

We have seen a significant reduction on void property numbers which is largely due to the performance within the voids performance commitment.

**Line 4R.22 Total connected residential properties at year end**

This is a calculated line.

**Line 4R.23 Business properties billed at year end**

The number has increased by c5,000 properties reflecting the reduction in void business properties.

**Line 4R.24 Business properties unbilled at year end**

We identify eligible business premises in line with the Ofwat eligibility guidance. All premises deemed eligible will be registered in the non-household market and wholesale charges will be raised accordingly. If the criteria is not met, a premises would not be registered in the market and therefore we do not have any unbilled non household premises. Exceptions to this rule would be gap sites, which by their very nature means we are unaware of them and therefore do not bill.

**Line 4R.25 Business void properties at year end**

The number of void properties at year end has decreased by c7,000 reflecting the work done on business voids and gap sites.

**Line 4R.26 Total connected business properties at year end**

This is a calculated line.

**Line 4R.27 Total connected properties at year end**

This is a calculated line. There has been an overall increase of c25,000 properties.

## Population data

Our population continues to grow steadily year on year. This growth is a combination of expected regional growth and an improvement in data quality as a result of improvements to the accuracy of the area mapping data used to assign population.

**Line 4R.28 Resident population**

The resident population has increased by c45,000 an increase of c0.6% over the previous reporting period.

This growth is higher than the previous year. Estimates are subject to greater uncertainty further away from a census year. A census was taken in 2021 and a new baseline for resident population will become available once the ONS has collated the data. For 2021/22 we have used the latest available data from the 2020 mid-year population estimates (MYE) from the Office for National Statistics (ONS) and 2018-based sub-national population projection (SNPP) from ONS. Last year's population estimate used the ONS Mid-Year Estimates (MYE) 2019 and 2018-based Sub-National Population Projections (SNPP). As a result, the small change is due to a change in the data available at the time of reporting and how that is used to project forward to give us as best an estimate as possible of the reporting year total resident population.

**Line 4R.29 Non-Resident population**

The number of non-residents continues to grow steadily. This data has a lower confidence grade as it is an extrapolation from a small data set.

**Line 4R.30 Household population**
**Line 4R.31 Measured household population**
**Line 4R.32 Unmeasured household population**

Overall household population as increased by 2.5% or c171,000. Measured population has increased by c146,000 and unmeasured by c25,000.

Non-resident population is not used in the calculation and is reported as zero.

# Table 4S Green recovery expenditure for the 12 months ended 31 March 2022 - water resources and water network+

A detailed overview of our Green recovery activity and expenditure for 2021/22 can be found in our Green recovery progress report at:

unitedutilities.com/globalassets/documents/pdf/green-recovery-2022

# Table 4T Green recovery expenditure for the 12 months ended 31 March 2022 - wastewater network+ and bioresources

A detailed overview of our Green recovery activity and expenditure for 2021/22 can be found in our Green Recovery progress report at:

unitedutilities.com/globalassets/documents/pdf/green-recovery-2022

# Table 4U Impact of Green recovery on RCV

**Line 4U.1 Approved bid**

The Green recovery allowance for 2021/22 as issued by Ofwat on 7 June 2022 within document 'UUW_Enh by year (revised)_07.06.22'.

**Line 4U.2 Actual totex**

Calculated as the sum of lines 4S.15 and 4T.15.

**Line 4U.3 – 4U.5 Variance**

In 2021/22, Green recovery spend of £0.5 million is below the planned profile of £4.9 million. The majority of spend incurred to date relates to the 'define phase' to progress the development of solutions and negotiation of new commercial agreements, which has taken longer than originally anticipated. However, we are working towards completing the projects within AMP7, with an equivalent increase in Green recovery spend expected in the later years of this AMP, and therefore the underspend is classified as timing. A detailed overview of our Green recovery activity and expenditure for 2021/22 and future can be found at:
unitedutilities.com/globalassets/documents/pdf/green-recovery-2022

**Line 4U.6 – 4U.6 Customer cost sharing rate**

As per the 'Green economic recovery: Final decisions' document published by Ofwat.

Given the uncertainty over the true costs of the innovative schemes, underspend will be subject to a 90 (customer share):10 (company share) sharing rate, to ensure underspend variances are weighted heavily in customers' favour, while still providing companies with an incentive to act efficiently. Overspend is subject to an equal 50/50 share between customers and the company**.**

**Line 4U.13**

In period funding does not apply to our Green recovery programme.

# Table 5A Water resources asset and volumes data for the 12 months ended 31 March 2022

## Water resources

**Line 5A.1 – Water from impounding reservoirs**

Our Water Resource Asset Volumes methodology has changed this year. We continually look at ways to improve our data. As a result of this improvement work there has been a change in the volumetric data reported in Table 5A.1-8. This data has been aligned to the EA annual abstraction returns data taken from our corporate systems (Netbase, OMS & STS) rather than just OMS, as used in previous years. The annual abstraction returns data provides a complete, robust and audited data set and is also used for the EA Environmental Performance Assessment (EPA).

In addition, the more detailed data has enabled the reported data to be aligned to the raw water price control, which specifies all the individual source types and its final point before it moves into the network plus price control. In 2020/21 the raw water sources were aligned with the WTWs they were feeding and in some cases this meant the source types were aggregated to a single source type. The new methodology allows a more detailed view and reflects more accurately the source type at the boundary of the water resources price control as the water moves into network plus and onto the treatment works. The plans on the page below 'maps of resources reclassified' illustrate the changes we have made in this reporting year. Assets have been classified in line with RAG 4 – appendix 2 (water resources further guidance).

This has impacted the volumes reported in Lines 1 and 3 with a larger total volume reported for Impounding Reservoirs (IR) and a reduced volume for River Abstractions (SLRs) this year, see below table comparing 2020/21 and 2021/22 data. We don't believe that these changes have had a material impact on cost models.

We have reported an increase in the overall volume due to the change in methodology which has moved from reporting at the distribution input location to the abstraction point. Therefore the abstraction point volume does not account for any process losses and hence is greater than last years reported volume.

| | 2020/21 | | 2021/22 | |
|---|---|---|---|---|
| | Volume (Ml/d) | Percentage | Volume (Ml/d) | Percentage |
| IRs | 664.25 | 36.3% | 1,205.33 | 59.8% |
| SLRs | 1,052.06 | 57.5% | 666.87 | 33.08% |
| GW | 113.43 | 6.2% | 143.55 | 7.12% |
| Total | 1,829.74 | | 2,015.75 | |

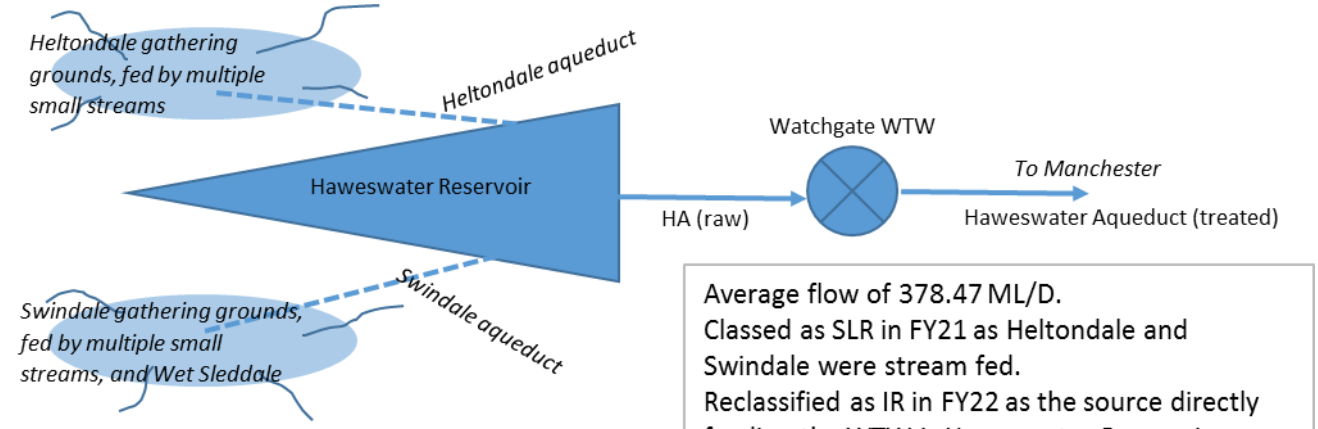
Below is a table outlining which sources have changed source type from 2020/21 to 2021/22 when applying the updated methodology. Note: There have been no IRs re-classified as SLRs in 2021/22.

| Water Resource | WTW | Water Resource Type 2020/21 | Water Resource Type 2021/21 | Abstraction Ml/d |
|---|---|---|---|---|
| Gravity abstraction from Haweswater to Watchgate | Watchgate WTW | River | Impounding Reservoir | 353.28 |
| Shap PS abstraction from Haweswater to Watchgate | Watchgate WTW | River | Impounding Reservoir | 25.19 |
| Transfer Grizedale to Barnacre North | Franklaw WTW | River | Impounding Reservoir | 0.56 |
| Barnacre combined inlet flows | Franklaw WTW | River | Impounding Reservoir | 16.91 |
| Abstraction Dean Clough to Fishmoor | Fishmoor WTW | River | Impounding Reservoir | 0.56 |
| Abstraction from Pick Up Bank IR to Guide IR | Fishmoor WTW | River | Impounding Reservoir | 1.34 |
| Earnsdale IR | Fishmoor WTW | River | Impounding Reservoir | 0 |
| Parsonage | Fishmoor WTW | River | Impounding Reservoir | 2.22 |
| Abstraction from Over Water to Chapel House Reservoir | Quarry Hill WTW | River | Impounding Reservoir | 2.52 |
| New Guage Basin to Damas Gill IR | Lancaster WTW | River | Impounding Reservoir | 2.31 |
| Old Guage Basin to Damas Gill IR | Lancaster WTW | River | Impounding Reservoir | 0.24 |
| Abstraction from Thirlmere to Dunmail Raise | Various WTW | River | Impounding Reservoir | 202.75 |

Below are diagrams of the WTW sources, highlighted as reclassified in the table above, to illustrate why each has been reclassified.

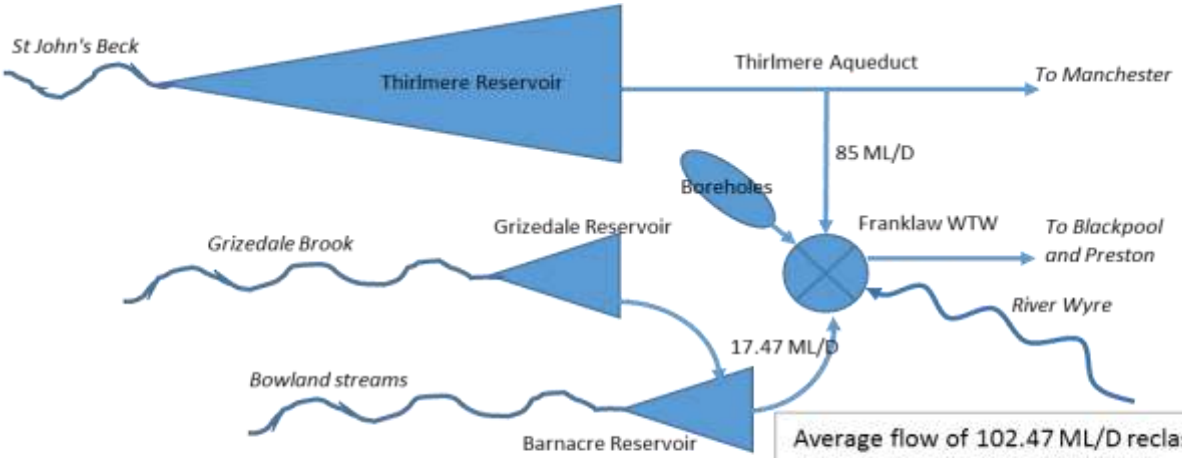
**Diagrams of reclassified sources from river abstraction to impounding reservoir**

**Watchgate sources**



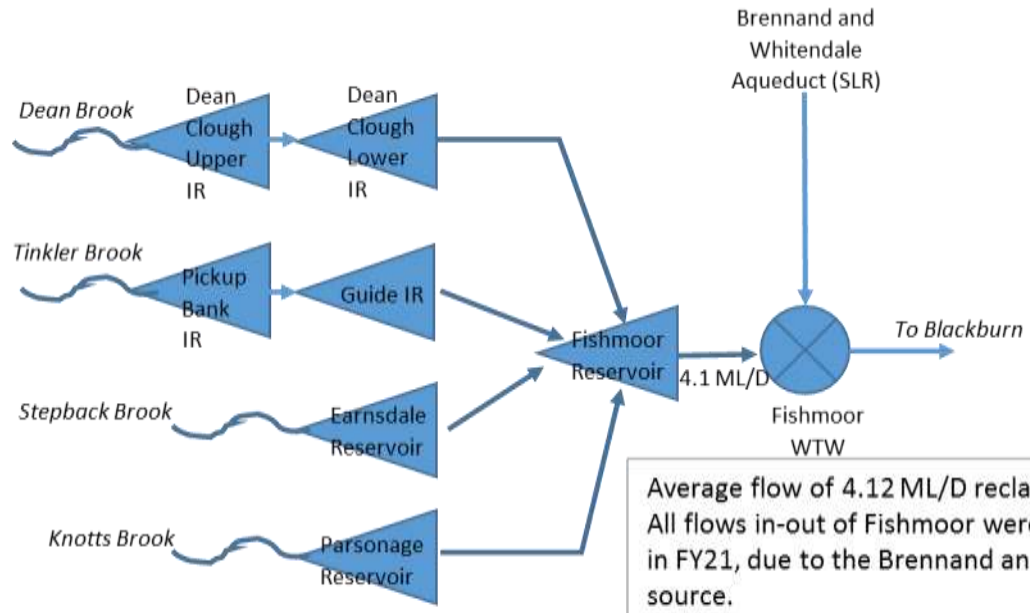

Average flow of 378.47 ML/D.
Classed as SLR in FY21 as Heltondale and Swindale were stream fed.
Reclassified as IR in FY22 as the source directly feeding the WTW is Haweswater Reservoir.

**Franklaw sources**



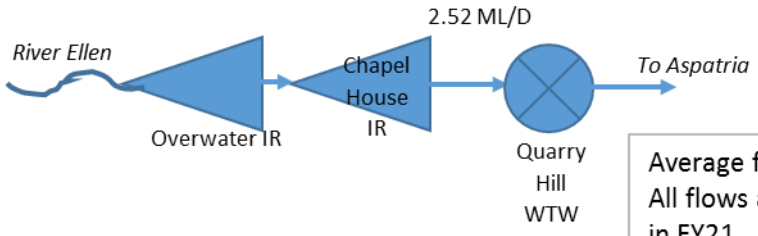

Average flow of 102.47 ML/D reclassified.
All flows in-out of Franklaw were classified as SLR in FY21, due to the River Wyre source.
Flows from the TA and Barnacre reclassified as IR in FY22 as the sources directly feeding the WTW are reservoirs.

**Fishmoor Sources**



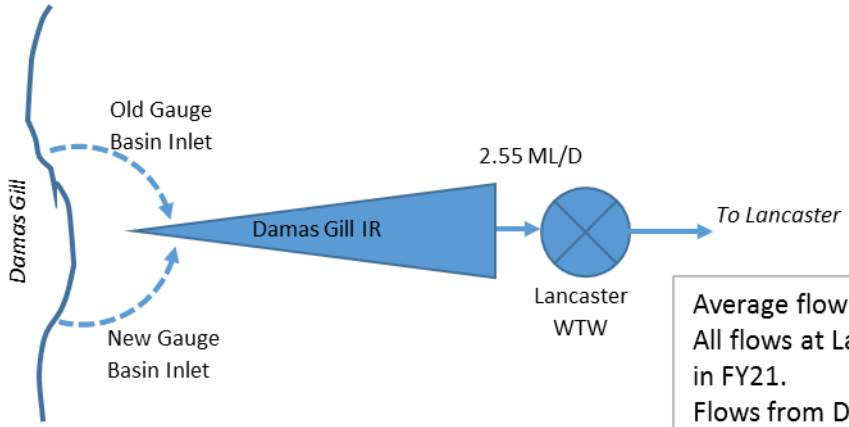

Average flow of 4.12 ML/D reclassified.
All flows in-out of Fishmoor were classified as SLR in FY21, due to the Brennand and Whitendale source.
Flows from Fishmoor IR and upstream sources were classified as IR for FY22 as the source directly feeding the WTW is a reservoir.

**Quarry Hill sources**




Average flow of 2.52 ML/D reclassified.
All flows at Quarry Hill were classified as SLR in FY21.
Flows from Chapel House IR and upstream sources were classified as IR for FY22 as the source directly feeding the WTW is a reservoir.

**Lancaster (Non-TA) sources**




Average flow of 2.55 ML/D reclassified.
All flows at Lancaster were classified as SLR in FY21.
Flows from Damas Gill IR and upstream sources were classified as IR for FY22 as the source directly feeding the WTW is a reservoir.

**Line 5A.2 – Water from pumped storage reservoirs**

We do not have any pumped storage reservoirs.

**Line 5A.3 – Water from river abstractions**

Please see the commentary in 5A.1.

**Line 5A.4 – Water from groundwater works, excluding managed aquifer recharge (MAR) water supply schemes**

Groundwater abstractions have increased since last year. Abstraction from Franklaw increased following a reduction in output in the previous year due to licence conditions.

**Line 5A.5 – Water from artificial recharge (AR) water supply schemes, Line 5A.6 – Water from aquifer storage and recovery (ASR) water supply, Line 5A.7 – Water from saline abstractions and Line 5A.8 – Water from water reuse schemes**

We do not currently have any of these schemes therefore the number is zero.

**Line 5A.9 – Number of impounding reservoirs**

The number of impounding reservoir sources varies from year to year depending on weather, demand and asset outages. The number reported has decreased to 48 this year from 52 in 2020/21. This net decrease in is due to:

- Three sources not being used in the 2021/22 period.
- As part of our ongoing data quality improvements we have reclassified a number of sources, this has meant that Mitchells House no1 and no2 have been combined into a single source as have Swindon no1 and no2
- Barnacre impounding reservoir has been added this year.

As per the Ofwat guidance for 5A.17: -

- A source is defined as an independent raw water supply that directly supplies a treatment works.
- Standby or mothballed sources from which no water has been obtained in the year should not be included.

**Line 5A.10 – Number of pumped stored reservoirs**

We have not currently classed any of our reservoirs as pumped storage reservoirs therefore the number is zero.

**Line 5A.11 – Number of river abstractions**

The number of sources varies from year to year depending on weather, demand and asset outages. We have reported 25 river abstractions in this year compared to 29 in 2020/21. The decrease is due to:

- As part of our ongoing data quality improvements we have reclassified a number of sources. River Gelt Old and New water have been combined and reported as a single abstraction.
- Whittendale and Brennand have been combined and reported as a single abstraction.
- Grizedale Fell and Dukenshaw Fell have been combined and reported as a single abstraction.
- River Calder discharges to Barnacre impounding reservoir and this has been reclassified and reported in Line 5A.9.

**Line 5A.12 – Number of groundwater works excluding managed aquifer recharge (MAR) water supply schemes**

The number of sources varies from year to year depending on weather, demand and asset outages. This year we used 71 sources compared to 67 in the previous year.

- Six boreholes were used this reporting year that were not used last year. (Abrams Farm, Whitegates Farm, Broughton K1, Netherley, Pex Hill and Water Lane)
- Two boreholes used last year have not been used this reporting year. (Footholme BH and Park Road South BH)

**Line 5A.13 – Number of artificial recharge (AR) water supply schemes**
**Line 5A.14 – Number of aquifer storage and recovery (ASR) water supply schemes**
**Line 5A.15 – Number of saline abstraction schemes**
**Line 5A.16 – Number of reuse schemes**

We do not currently have any of these schemes therefore the number is zero.

**Line 5A.17 – Total number of sources**

The number of sources varies from year to year depending on weather, demand and asset outages. The overall number reported is broadly similar to the previous year although the assets operated differ.

**Line 5A.18 –Total number of water reservoirs**

Last year we incorrectly reported 52 water reservoirs rather than the actual number of 165. This year we are reporting no change with a total number of 165 water reservoirs.

**Line 5A.19 – Total volumetric capacity of water reservoirs**

There has been no change in the number compared with last year.

**Line 5A.20 – Total number of intake and source pumping stations**

There has been no net change in the number of pumping station:

- 1 pumping stations added (Primrose Hill).
- 1 pumping stations removed (Greetby Hill).

**Line 5A.21 – Total installed power capacity of intake and source pumping stations**

The slight increase in capacity is due to the changes in the operational pumping stations detailed in 5A.20 and also updates to corporate data.

**Line 5A.22 – Total length of raw water abstraction mains and other conveyors**

There has been a decrease in the length of raw water abstraction mains and other conveyors. This is due to updated GIS information following a data cleanse. There has also been an update to WTW locations in GIS and this has led to additions to T6A.5 Total length of raw water transport mains and other conveyors and a reduction to the length assigned to this line.

**Line 5A.23 – Average pumping head – raw water abstraction**

As requested in the Average Pumping Head (APH) data quality improvement report supporting letter (3 May 2022)
We have followed the existing APH guidance in the regulating accounting guidelines RAG-2.08.pdf (ofwat.gov.uk).
We have also provided commentary covering the following areas for each price control area:

- % of APH derived from measured data;
- % of sites with measured volumes and/or lift;
- estimation methods applied (if any); and

- significant APH changes from the previous reporting year.

For the raw water abstraction price control:

- 0% of raw water abstraction APH is derived from measured data for both volume **and** lift.
- 99% of raw water abstraction APH is derived from measured data for volume.
- 0% of raw water abstraction APH is derived from measured data for lift.

- 0% of sites have measured volume **and** lift data.
- 94% of sites have measured volume **or** lift data.

Where measured data is not available, static ground level measurements and the standard hydraulic formula are used to estimate lift and network demand data is used to estimate volume.

The table below shows the raw water abstraction APH reported in the 2020/21 and 2021/22 reporting years and the forecast from the PR19 final business plan (FBP).

| | 2020/21 APR | 2021/22 APR | 2021/22 FBP |
|---|---|---|---|
| Raw water abstraction (m.hd) | 7.33 | 8.96 | 7.94 |

Water resources pumping is influenced by the hydrological conditions, as more water must be pumped in drier years to protect water resources and the environment.

**Variance between 2020/21 and 2021/22**

The increase in raw water abstraction pumping head in this reporting year can be attributed to the weather and minor changes to pumps in operation. Due to the prolonged period of dry weather, Haweswater reservoir levels dropped so additional pumping from Ullswater was required to increase levels in Haweswater to meet demand.

**Variance between 2021/22 and FBP forecast**

The 2021/22 APH is slightly higher than the business plan forecast. There have been no changes to our methodology since we submitted our business plan forecasts but our water network is a dynamic system and operation of sources and pumps differs depending on a number of variables such as changes in demand, weather, how much we abstract from different sources and operational changes to assets to ensure we meet demand in the most efficient way.

**Line 5A.24 – Energy consumption - raw water abstraction**

In 2020/21 the reporting lines for water were changed, splitting water into abstraction, transport, treatment and distribution. Volumes reported prior to this year cannot be compared.

Water Resource saw an increase in electricity usage this year of 9%. This was largely due to a dry weather event which required increased water resource pumping.

**Line 5A.25 – Total number of raw water abstraction imports,**
**Line 5A.26 – Water imported from 3rd parties' raw water abstraction systems**

We do not currently have any raw water abstraction imports.

**Line 5A.27 – Total number of raw water abstraction exports and**
**Line 5A.28 – Water exported to 3rd parties' from raw water abstraction systems**

Daily volumes have been calculated based on the volume used between two meter reads assuming consistent usage. We have one raw water abstraction export at Heronbridge. Exports from Heronbridge are approximately

14% lower than last year. We have noticed that last year's figure was reported in megalitres and not megalitres per day. The actual value that should have been reported is 11.35 Ml/d.

**Line 5A.29 – Water resources capacity (measured using water resources yield)**

The total capacity company forecast is based on the summation of the individual capacities for each of the UU water resource zones. Following submission of the PR19 business plan we have updated our water resource capacity based on updated deployable output values from the WRMP tables which has been affected by the impact of climate change. There are no immediate planned changes to sources (e.g. abstraction licence revocations) in the zones except for West Cumbria on completion of the Thirlmere transfer into West Cumbria scheme. In West Cumbria a number of sources will no longer be used from 2022/23 onwards, and therefore the capacity will be significantly reduced from that time. We have seen a slight reduction in capacity this year as a result of updates to the model.

# Table 5B Water resources operating cost analysis for the 12 months ended 31 March 2022

**Line 5B.1 – Power**

All energy costs, including the climate change levy and the carbon reduction commitment.

Where possible costs are allocated down to supply point level and therefore the associated asset class within the Water resources price control. In comparison to 2020/21 power costs have increased which is mainly attributable to an increase power price and increased river abstraction and use of boreholes.

**Line 5B.2 – Income treated as negative expenditure**

Income received from Renewable Obligation Certificates, Gas Exports and Electricity Exports. There is minimal value allocated to Water Resources.

**Line 5B.3 – Abstraction charges/ discharge consents**

Total cost of abstraction charges and service charges from the Environment Agency (EA), Canal & River Trust and Severn Trent (service charge for use of Vyrnwy). For EA abstraction charges the costs are individually listed by each licence and therefore the associated Water Resource asset types, using this information, a percentage of total cost for each water resource category is calculated. In 2021/22 there has been an increase in charges from Severn Trent due to 2020/21 COVID-19 reducing rechargeable works at Lake Vyrnwy and EA charges (Dee SUC charge) and Canals & Rivers trust (inflation).

**Line 5B.4 – Bulk supply**

In line with the updated guidance in the RAGs, bulk supply import costs are allocated across upstream services in proportion to total cost of the supplying company (previously all bulk supply costs were reported in Treated Water Distribution). For 2021/22 the cost has been allocated to the asset category of the supplying company which drives the water resource allocation as opposed to the water supply source.

**Line 5B.5 – Renewals expensed in year (Infrastructure)**

Increased cost have been incurred in the Impounding Reservoir IRE programme compared to last year reflecting the project specific construction activity.

**Line 5B.6 – Renewals expensed in year (Non-Infrastructure)**

We have not included any expenditure within this line.

**Line 5B.7 – Other operating expenditure excluding renewals**

Sum of all costs in the Water Resources price control. In RR22 direct and indirect costs are no longer split. In RR22 there has been a slight reduction mainly in work on our catchment and the 2020/21 impact of dry weather.

**Line 5B.8 – Local authority and Cumulo rates**

The cost of local Cumulo rates are allocated based on the total of the Central List (Cumulo) Rates payments which are then allocated to upstream services and water resource asset type on a proportionate basis to GMEAV of all Water Assets (both Infrastructure and Non-Infrastructure). This has been updated in 2021/22, the cost reduction between 2020/21 to 2021/22 is due to the change in proportionate allocation basis on GMEAV.

**Line 5B.9 – Total operating expenditure (excluding 3rd party)**

This is a calculated line.

# Table 6A Raw water transport, raw water storage and water treatment data for the 12 months ended 31st March 2022

**Raw water transport and storage**
**Line 6A.1 - Total number of balancing reservoirs**

There has been no change in the number compared with last year.

**Line 6A.2 - Total volumetric capacity of balancing reservoirs**

There has been no change in the number compared with last year.

**Line 6A.3 Total number of raw water transport stations**

There has been no change in the number compared with last year.

**Line 6A.4 Total installed power capacity of raw water transport pumping stations**

There has been no change in the number compared with last year.

**Line 6A.5 Total length of raw water transport mains and other conveyors**

There has been an increase in the length of raw water transport mains and other conveyors. This is due to ongoing improved GIS information (updated positions of mains and WTW).

**Line 6A.6 Average pumping head - raw water transport**

As requested in the Average Pumping Head (APH) data quality improvement report supporting letter (3 May 2022). We have followed the existing APH guidance in the regulating accounting guidelines RAG-2.08.pdf (ofwat.gov.uk). We have also provided commentary covering the following areas for each price control area:

- % of APH derived from measured data;
- % of sites with measured volumes and/or lift;
- estimation methods applied (if any); and
- significant APH changes from the previous reporting year.

For the raw water transport price control:

- 0% of the raw water transport APH is derived from measured data for both volume **and** lift.
- 100% of the raw water transport APH is derived from measured data for volume.
- 3% of the raw water transport APH is derived from measured data for lift.

- 3% of sites have measured volume **and** lift data.
- 100% of sites have measured volume **or** lift data.

Where measured data is not available, static ground level measurements and the standard hydraulic formula are used to estimate lift and network demand data is used to estimate volume.

The table below shows the raw water transport APH reported in the 2020/21 and 2021/22 reporting years and the forecast from the PR19 final business plan (FBP)

| | 2020/21 APR | 2021/22 APR | 2021/22 FBP |
|---|---|---|---|
| Raw water transport (m.hd) | 19.40 | 18.11 | 14.37 |

**Variance between 2020/21 and 2021/22**

There has been a slight decrease in raw water transport pumping head in the reporting year. The decrease is due to variations in operations (e.g. what sources and water treatment works are used). In the reporting year a prolonged dry weather period led to low levels in Haweswater, in response the use of the Shap raw water transport pumping station to Watchgate WTW was reduced to preserve levels in Haweswater.

**Variance between 2021/22 and FBP forecast**

Actual pumping head was slightly more than estimated in the business plan for 2021/22. In 2017/18 when the business plan forecast was produced there was a significant freeze thaw event in 2020/21. The COVID pandemic has changed demand patterns therefore output from different sources and volumes pumped have varied. There are also a relatively low number of pumps in the raw water transport category compared with other pump categories therefore changes in pump operation can cause more significant variations.

**Line 6A.7 Energy consumption - raw water transport**

In 2020/21 the reporting lines were changed, splitting water into abstraction, transport, treatment and distribution. Reported volumes prior to this year therefore cannot be compared.

This year we have seen that Water Wholesale (which includes abstraction, transport, treatment and distribution) has seen an increase of 0.6% from 2020/21 to 2021/22. Overall consumption in 2020/21 was 347,021 MWh and in 2021/22 it was 349,164 MWh.
The main contributor of this was an increase electricity usage of 5,912 MWh. Water Resource saw an increase in electricity usage year on year by 9% and this was largely due to a dry weather event which required increased water resource pumping. Stationary fuel use declined; in 2020/21 consumption was 10,110 MWh and in 2021/22

consumption was 4,807 MWh. This is due to the allocation of fuels to sites which has been refined this year. The main site which is responsible for most of this volume reduction is Lancaster WwTW. Previously Lancaster was classified as a water site our stationary fuel supply chain and this has now been corrected as a Wastewater site for 2021/22 and will continue to be correctly identified as such going forward.

**Line 6A.8 Total number of raw water transport imports, Line 6A.9 Water imported from 3rd parties' raw water transport systems, Line 6A.10 Total number of raw water transport exports, Line 6A.10 Total number of raw water transport exports and Line 6A.11 Water exported to 3rd parties raw water transport systems**

We do not have any imports/exports to/from 3rd parties' raw water transport systems.

**Line 6A.12 Total length of raw and pre-treated (non-potable) water transport mains for supplying customers.**

There has been a slight increase compared with the previous year.

## Water treatment - treatment type analysis

This reporting period represents a return to standard operating practices, following the previous year; which included a planned outage of the Haweswater Aqueduct. Consequently there is a small degree of variation, as during this period of non-standard operating there was increased demand from some of the groundwater sources and a reduction in distribution input from water treatment works (WTWs) fed from the Haweswater Aqueduct.

We are required to report water treatment works that have not been used in the year but have not been decommissioned. The water treatment works in the table below have not been used in the year because they were not required to meet demand.

| Site | Treatment type | Site | Treatment Type |
|---|---|---|---|
| Bickerstaffe WTW | GW2 | Netherley WTW | GW2 |
| Blundell House WTW | GW2 | Springfield WTW | GW2 |
| Buttermere WTW | SW4 | Tosside WTW | GW1 |
| Daresbury WTW | GSD | Walton WTW | GSD |
| Mill Brow WTW | GW3 | Water Lane WTW | GSD |
| Mow Cop WTW | GSD | Heaton Park WTW | SW1 |

**Line 6A.13 All simple disinfection works**

We have no surface water simple disinfection works. The volume of water treated at ground water simple disinfection works was marginally less than the previous year.

**Line 6A.14 W1 works**

None of our WTWs fall into the ground or surface water W1 category.

**Line 6A.15 W2 works**

There was a decrease in the volume of water treated at both surface water and ground water W2 works. Year on year variation attributable to Haweswater Aqueduct outage in previous year, as discussed earlier.

In the reporting year we have added a ground water W2 works at Pex Hill.

**Line 6A.16 W3 works**

Slight decrease in production volumes at surface water W3 works.

**Line 6A.17 W4 works**

Increase in production volumes at surface water W4 works, slight decrease in ground water W4 works. In the reporting year we have decommissioned a ground water W4 works at Dark Lane.

**Line 6A.18 W5 works**

Decrease in production volumes at surface water W5 works. Slight decrease in production levels from ground water W5 works.

**Line 6A.19 W6 works**

None of our WTWs fall into the ground or surface water W6 works category.

## Water treatment – works size

**Line 6A.20 - 27 WTWs in size band 1 - 8**

Variance within lines 20-27 have been minimal from the previous year. The largest movements are seen within line 6A.27 (size band 8) - increasing by 0.7% and 6A.26 (size band 7), decreasing by 0.5%. This low level of variation is in-line with standard operating procedure to supply water across our integrated zone in response to demand, and operational status of our WTWs.

The total number of WTWs remains unchanged, but there is a variance in size bands due to addition of Pex Hill (size band 2), and decommissioning removal of Dark Lane (size band 4).

**Line 6A.28 Total water treated at more than one type of works**

A significant volume of treated water from Watchgate WTWs is re-treated at three separate aqueduct take off points, Martholme WTWs, Townsend Fold WTW and Woodgate Hill WTWs. The decrease in water treated at more than one site is primarily due to lower production volumes at Woodgate Hill WTWs.

**Line 6A.29 Number of treatment works requiring remedial action because of raw water deterioration**

There were no planned outputs for 2021/22.

**Line 6A.30 Zonal population receiving water treated with orthophosphate**

There has been no real change in the area of coverage with phosphate dose in 2021/22. The increase in reported population receiving orthophosphate is down to a change in the source population figures. Population is aligned with that used in WRMP and is based on ONS data.

**Line 6A.31 Average pumping head – water treatment**

As requested in the Average Pumping Head (APH) data quality improvement report supporting letter (3 May 2022). We have followed the existing APH guidance in the regulating accounting guidelines RAG-2.08.pdf (ofwat.gov.uk). We have also provided commentary covering the following areas for each price control area:

• % of APH derived from measured data;
• % of sites with measured volumes and/or lift;
• estimation methods applied (if any); and
• significant APH changes from the previous reporting year.

For the water treatment price control:

- 0% of the water treatment APH is derived from measured data for both volume **and** lift.
- 23% of the water treatment APH is derived from measured data for volume.
- 0% of the water treatment APH is derived from measured data for lift.

- 0% of sites have measured volume **and** lift data.
- 31% of sites have measured volume **or** lift data.

Where measured data is not available, static ground level measurements and the standard hydraulic formula are used to estimate lift and network demand data is used to estimate volume.

The table below shows the water treatment APH reported in the 2020-21 and 2021-22 reporting years and the forecast from the PR19 final business plan (FBP)

| | 2020/21 APR | 2021/22 APR | 2021/22 FBP |
|---|---|---|---|
| Water treatment (m.hd) | 4.06 | 4.20 | 3.12 |

**Variance between 2020/21 and 2021/22**

There has been a slight increase in water treatment average pumping head compared to the previous year. Water treatment APH tends to be less variable than the other categories as the majority of major supplying works are gravity supply systems, with pumped raw water supplies.

**Variance between 2020/21 and FBP forecast**

The business plan forecast assumed a slight reduction in water treatment pumping head on the assumption we would complete the Thirlmere to West Cumbria project in 2020/21. Completion of the project has been delayed to 2022/23 due to construction delays associated with COVID-19.

**Line 6A.32 Energy consumption - water treatment**

In 2020/21 the reporting lines for water were changed, splitting water into abstraction, transport, treatment and distribution. Volumes reported prior to this year cannot be compared.

The water treatment energy consumption volumes remain consistent with the previous year.

**Line 6A.33 Total number of water treatment imports, Line 6A.34 Water imported from 3rd parties' water treatment works, Line 6A.35 Total number of water treatment exports and Line 6A.36 Water exported to 3rd parties' water treatment works**

We do not currently import from or export to 3rd parties' water treatment works.

# Table 6B Treated water distribution - assets and operations for the 12 months ended 31st March 2022

## Water treatment – Assets and operations

**Line 6B.1 Total installed power capacity of potable water pumping stations**

There has been a slight increase in potable water pumping station capacity. The change in capacity is due to the addition and removal of pumps and updates to corporate data.

- 3 pumping station removed (decommissioned):
    - Crewe Green
    - Green Howarth
    - Westmoor End
- 3 pumping stations added (new assets):
    - Kendal Fell
    - Snape Lane
    - Turton (Bull Hill)

**Line 6B.2 Total volumetric capacity of service reservoirs**

There has been a reduction in the number and capacity of service reservoirs. We have decommissioned three small reservoirs in the reporting year which has resulted in a small reduction in overall capacity.

- Brown Edge 1 and Brown Edge 2 (decommissioned)
- Laneside (decommissioned)

**Line 6B.3 Total volumetric capacity of water towers**

There has been no change to the number or capacity of water towers in 2021/22.

**Line 6B.4 Distribution input**

Despite drier weather in the summer of 2021 there has been a decrease of 4.8 Ml/d in the distribution input, compared with the value reported for 2021/22. This has primarily been the result of the change in water use behaviours as a result of the COVID-19 pandemic and also reduction in leakage.

**Line 6B.5 Water delivered (non-potable)**

There has been a small decrease in the water delivered (non-potable) over the reporting period associated with a reduction in non-household use likely due to changes in demand associated with COVID-19.

**Line 6B.6 Water delivered (potable)**

There has been a slight increase in potable water delivered. This has primarily been the result of the change in water using behaviours as a result of the COVID-19 pandemic.

**Line 6B.7 Water delivered (billed measured residential)**

There has been a slight increase in measured residential water delivered, primarily due to the change in water using behaviours and move to home working as a result of the COVID-19 pandemic.

**Line 6B.8 Water delivered (billed measured business)**

There has been an 11% increase in the value of measured business water delivered, primarily due to business reopening following the COVID-19 pandemic.

**Line 6B.9 Total annual leakage**

We have derived this figure from the same leakage data that is used in both leakage performance reporting (as an input to the three-year average calculation) and annual water resources management plan reporting.

The table below shows total annual leakage reported for the 2020/21 and 2021/22 reporting years and the forecast performance from the PR19 final business plan (FBP).

| | 2020/21 APR | 2021/22 APR | 2021/22 FBP |
|---|---|---|---|
| Total Annual Leakage (Ml/d) | 424.69 | 413.89 | 439.27 |

**Variance between 2020/21 and 2021/22**

Despite the effects of COVID-19 and a dry weather event in the summer increasing burst rate, we have achieved our leakage target for the 16th year running and we are now at the lowest ever level of leakage reported in the North West. We have now installed around 70,000 acoustic loggers and, combined with advanced analytics to help us better target leaks, we are really seeing the benefits from this logger deployment.

**Variance between 2020/21 and FBP forecast**

We continue to outperform our PR19 business plan forecast and are on track to deliver the forecast 15% improvement over AMP7 and are working towards our longer term WRMP target.

**Line 6B.10 Distribution losses**

Distribution losses have reduced as a result of the continued improvement in leakage performance.

**Line 6B.11 Water taken unbilled**

Historically we reported void supply pipe leakage in this line and in total leakage 6B.9 – following data improvements this has been excluded in line with reporting guidance to prevent double counting in the reporting of the water balance. This has reduced the reported number by 3Ml/d. We will be adjusting the reported water taken unbilled in line with this change in methodology for previous years back to FY12 in the additional water balance data request that will be submitted in August.

**Line 6B.12 Proportion of distribution input derived from impounding reservoirs**

We have applied the following guidance from RAG 4.10 when calculating the distribution input proportions. 'If multiple sources feed a works (for example a river and a number of boreholes) and the flow from these sources is combined prior to treatment, then all of the flow entering the works can be categorised as the more difficult to treat water. (In this example, all of the water would be categorised as river water.)'

The number reported is consistent with last year.

**Line 6B.13 Proportion of distribution input derived from pumped storage reservoirs**

We have not currently classed any of our reservoirs as pumped storage reservoirs therefore the number is zero.

**Line 6B.14 Proportion of distribution input derived from river abstractions**

The number reported is consistent with last year.

**Line 6B.15 Proportion of distribution input derived from groundwater works, excluding managed aquifer recharge (MAR) water supply schemes**

The number reported is consistent with last year.

**Line 6B.16 Proportion of distribution input derived from artificial recharge (AR) water supply schemes, Line 6B.17 Proportion of distribution input derived from aquifer storage and recovery (ASR) water supply schemes, Line 6B.18 Proportion of distribution input derived from saline abstractions and Line 6B.19 Proportion of distribution input derived from water reuse schemes**

We do not currently have any of these schemes therefore the number is zero.

**Line 6B.20 Total number of potable water pumping stations that pump into and within the treated water distribution system**

The number of potable water pumping stations has remained the same as last year. Three pumping stations have been decommissioned and there are also three new pumping stations reported this year.

- 3 pumping station removed (decommissioned):
    - Crewe Green
    - Green Howarth
    - Westmoor End
- 3 pumping stations added (new assets):
    - Kendal Fell
    - Snape Lane
    - Turton (Bull Hill)

**Line 6B.21 Number of potable water pumping stations delivering treated groundwater into the treated water distribution system, Line 6B.22 Total number of potable water pumping stations that pump into and within the treated water distribution system**

No change in the reporting year.

**Line 6B.23 Number of potable water pumping stations that re-pump water already within the treated water distribution system**

There is no change in the number of potable water pumping stations that re-pump water already within the treated water system. There has been a change in the pumping stations within this reporting line.

- 3 pumping station removed (decommissioned):
    - Crewe Green
    - Green Howarth
    - Westmoor End
- 3 pumping stations added (new assets):
    - Kendal Fell
    - Snape Lane
    - Turton (Bull Hill)

**Line 6B.24 Number of potable water pumping stations that pump water imported from a 3rd party supply into the treated water distribution system**

No pumping stations fall into this category; no change from previous reporting year.

**Line 6B.25 Total number of service reservoirs**

There has been a slight reduction in the number and capacity of service reservoirs. We have decommissioned three small reservoirs in the reporting year.

- Brown Edge 1 and Brown Edge 2 (decommissioned)
- Laneside (decommissioned)

**Line 6B.26 Number of water towers**

There has been no change to the number or capacity of water towers in 2020/21. We would expect the value to remain reasonably consistent in the coming years.

**Line 6B.27 Energy consumption – treated water distribution**

In 2020/21 the reporting lines were changed, splitting water into abstraction, transport, treatment and distribution. Reported volumes prior to this year therefore cannot be compared.

This year we have seen that Water Wholesale (which includes abstraction, transport, treatment and distribution) has seen an increase of 0.6% from 2020/21 to 2021/22. Overall consumption in 2020/21 was 347,021 MWh and in 2021/22 it was 349,164 MWh.

The main contributor of this was an increase electricity usage of 5,912 MWh. Water Resource saw an increase in electricity usage year on year by 9% and this was largely due to a dry weather event which required increased water resource pumping. Stationary fuel use declined; in 2020/21 consumption was 10,110 MWh and in 2021/22 consumption was 4,807 MWh. This is due to the allocation of fuels to sites which has been refined this year. The main site which is responsible for most of this volume reduction is Lancaster WwTW. Previously Lancaster was classified as a water site our stationary fuel supply chain and this has now been corrected as a Wastewater site for 2021/22 and will continue to be correctly identified as such going forward.

**Line 6B.28 Average pumping head – treated water distribution**
As requested in the Average Pumping Head (APH) data quality improvement report supporting letter (3 May 2022)
We have followed the existing APH guidance in the regulating accounting guidelines RAG-2.08.pdf (ofwat.gov.uk). We have also provided commentary covering the following areas for each price control area:

- % of APH derived from measured data;
- % of sites with measured volumes and/or lift;
- estimation methods applied (if any); and
- significant APH changes from the previous reporting year.

For the treated water distribution price control:

- 1% of the treated water distribution APH is derived from measured data for both volume **and** lift.
- 45% of the treated water distribution APH is derived from measured data for volume.
- 1% of the treated water distribution APH is derived from measured data for lift.

- 3% of sites have measured volume **and** lift data.
- 70% of sites have measured volume **or** lift data.

Where measured data is not available, static ground level measurements and the standard hydraulic formula are used to estimate lift and network demand data is used to estimate volume.

The table below shows the treated water distribution APH reported in the 2020/21 and 2021/22 reporting years and the forecast from the PR19 final business plan (FBP).

| | 2020/21 APR | 2021/22 APR | 2021/22 FBP |
|---|---|---|---|
| Treated water distribution (m.hd) | 50.42 | 53.82 | 57.94 |

**Variance between 2020/21 and 2021/22**

There has been an increase in average pumping head for treated water distribution this year. The increase is due to variations in operations (e.g. what sources and water treatment works are used) from year to year and the addition and removal of treated water distribution pumping stations.

**Variance between 2020/21 and FBP forecast**

The business plan forecast assumed a slight increase in water distribution pumping head on the assumption we would complete the Thirlmere to West Cumbria project in 2020/21, a year early. Completion of the project has been delayed to 2022/23 due to construction delays associated with COVID-19.

**Line 6B.29 Total number of treated water distribution imports**

There has been no change to the total number of treated distribution imports.

**Line 6B.30 Water imported from 3rd parties treated water distribution systems**

We have noticed that last year's figure was reported in megalitres and not megalitres per day. The actual value that should have been reported is 0.61 Ml/d. This is consistent with the current reporting year.

**Line 6B.31 Total number of treated water distribution exports**

This has increased by one in the reporting year with the addition of exports to Liverpool John Lennon Airport.

**Line 6B.32 Water exported to 3rd parties' treated water distribution systems**

We have noticed that last year's figure was reported in megalitres and not megalitres per day. The actual value that should have been reported is 0.37 Ml/d. This has increased to 0.52 Ml/d in the report year as exports commenced to Liverpool John Lennon Airport.

# Table 6C Water network+ - Mains, communication pipes and other data for the 12 months ended 31st March 2022

## Treated water distribution – mains analysis

**Line 6C.1 Total length of potable mains as at 31 March**

There are small movements in the km of mains reported each year as new mains are installed and other mains are abandoned. This year has seen a slight increase (0.47%) overall in the length of main.

**Line 6C.2 Total length of potable mains relined**

We have not relined any of our water mains.

**Line 6C.3 Total length of potable mains renewed**

The reported number is higher than the previous year. This is due to the mobilisation of two projects. The first concerned significant investment to address business drivers around poor condition mains, which influence the taste, smell and appearance of drinking water. This is known as the 'Cast Iron Mains Replacement Programme, comprising of activities including mains replacement in 26 DMAs, mains flushing maintenance, water treatment work optimisation studies, and customer team improvements. As part of this programme of work, a total of 9.3km of slip-lining (mains renewal) outputs were delivered in the report year.
The second was a major project to resolve poor condition mains on the A6 in Stockport. This project began implementation this year and delivered 3.1km of slip-lining activity.

**Line 6C.4 Total length of new potable mains**

Total for the report year is generally in-line with the previous year, with the continuing impacts of COVID-19 restrictions on construction/house-building. The first half of the report year saw some level of recovery to compare with the pre-pandemic figures, however the autumn/winter period again saw this tail off again as COVID-19 cases grew rapidly. February/March 2022 saw a small increase in output, and there is an expectation this will now continue into 2022/23 with all government restrictions now lifted.

**Line 6C.5 Total length of potable water mains (< ≤320mm), Line 6C.6 Total length of potable water mains >320mm and ≤ 450mm, Line 6C.7 Total length of potable water mains >450mm and ≤610mm and Line 6C.8 Total length of potable water mains > 610mm**

There are small movements in length of different sizes of mains reported each year as new mains are installed and other mains are abandoned.

**Communication pipes**
**Line 6C.9 Number of lead communication pipes**

There has been a reduction in the number of lead communications pipes in-line with the number replaced and reported in 6C.21.

**Line 6C.10 Number of galvanised iron communication pipes**

There has been no change in the number of galvanised iron communication pipes.

**Line 6C.11 Number of other communication pipes**

The small increase compared to last year is in-line with anticipated connection growth and movement of lead pipes to the other materials.

**Treated water distribution - mains age profile**
**Line 6C.12 Total length of potable mains laid or structurally refurbished pre-1880**
**Line 6C.13 Total length of potable mains laid or structurally refurbished between 1881 and 1900**
**Line 6C.14 Total length of potable mains laid or structurally refurbished between 1901 and 1920**
**Line 6C.15 Total length of potable mains laid or structurally refurbished between 1921 and 1940**
**Line 6C.16 Total length of potable mains laid or structurally refurbished between 1941 and 1960**
**Line 6C.17 Total length of potable mains laid or structurally refurbished between 1961 and 1980**
**Line 6C.18 Total length of potable mains laid or structurally refurbished between 1981 and 2000**
**Line 6C.19 Total length of potable mains laid or structurally refurbished post 2001**

The mains length in each category is relatively stable with only slight variation. Changes year on year are due to mains replacement and updated GIS data; for example, mains with previously unverified characteristics (i.e. laid date and diameters) have now become verified. The post-2001 category shows a more marked increase as newly laid mains continue to contribute to this category. The data shows the pattern that would be expected with fewer older mains as many of these have now been replaced with newer mains. There are however two noticeable exceptions: -

- Fewer mains were laid between 1941 and 1960, this corresponds with the Second World War and subsequent recovery
- More mains were laid in the 1981 to 2000 period, this corresponds with our significant NW90 programme which replaced cast iron mains.

### Other

**Line 6C.20 Company area**

The company area shows a decrease from last year due to a change in the methodology used to calculate the area. Last year 'Company Area' was interpreted as the area where United Utilities provides a service i.e. a clean water and/or wastewater service. In this reporting year the 'Company Area' methodology has reverted to the previous interpretation as the 'water supply area' of the company. The reported area is now consistent with historic data.

**Line 6C.21 Number of lead communication pipes replaced for water quality**

The number of lead communications pipes replaced for quality purposes has increased this year. This is due to activities slowly beginning to return to normal following the COVID-19 pandemic and the number of replacements we have been able to deliver has increased.

**Line 6C.22 Compliance Risk Index**

The CRI score is forecast to be 3.02 we are waiting for confirmation of the final score from the DWI.

**Line 6C.23 Event Risk Index**

The ERI score reported is a provisional score we are waiting for confirmation of the final score from the DWI. The UU Drinking Water Regulation team estimates the ERI score for each event. The current estimated score for calendar year 2021 is 54 this is lower than the confirmed ERI score of 96 for the last reporting year.

# Table 6D Demand management - Metering and leakage activities for the 12 months ended 31 March 2022

### Smart metering

We currently only fit one type of smart AMR-enabled meter. However, these meters are read in different ways.

- The first is by our meter readers who carry a receiver to pick up the reads. The benefit of this is that we can read internal meters without entering properties and therefore gives us a much higher read success rate.
- The second method is reading via the local authority refuse collection wagons where some local authorities have allowed us to fit receivers. This method offers many more benefits as we get weekly reads for many customers to help identify leaks providing improved customer service and promoting water efficiency.

We ran a small trial at a new housing development in Sandbach, Cheshire. The trial was in partnership with Diehl Metering, Persimmon Homes, Home Builders Federation and Vodafone. The trial used the Narrow Band Internet

of Things technology that is paired with our standard AMR meters. Whilst the trial demonstrated confidence in the technology, the value it delivered was below expectation and was subsequently discontinued.

Building on the initial trial, we are now taking our work with smart metering a step further and have replaced the above trial with a further scheme which will help us understand how smart metering can enable us to achieve:

- halving leakage levels (from 2017) by 2050
- reducing Per Capita Consumption to 110 litres per head per day

The outcome of the trial will be used to shape our thinking ahead of AMP8 and for PR24. Although at an early stage the trial involves c3,000 properties in two areas with almost 100% meter penetration. The meters being used are AMI meters which communicate through a fixed infrastructure returning meter reads every 15 minutes. The meters are also capable of generating continuous flow alarms (indicating possible leakage).

The assessment criteria for the trial is to:

- reduce per capita consumption
    - finding and then working with customers to fix customer side leakage
    - working with customers to understand how to become more water efficient
- identify network leakage
    - use of smart meter data to do a more accurate water balance / leakage calculation

We are working hard to set out our smart meter strategy going in to AMP8. The reason to install smart meters is to reduce the amount of water used and lost in the network. This means that smart metering is about more than the meter, it's about unlocking value from the data that the meters provide and to this end will require the necessary systems and processes; which we are also reviewing.

## Metering activities - Totex expenditure

**Line 6D.1 New optant meter installation**

Expenditure has increased from 2020/21 in line with the increased take up of meters. Due to the COVID-19 pandemic we saw a reduction in applications in 2020/21. As restrictions were lifted for the majority of 2021/22 we have seen demand for meters increase.

**Line 6D.2 New selective meter installation**

We have fitted 70 selective meters as part of a small trial which began in December 2021 but have been doing major construction work in preparation for increases installations in 2022/23. The costs in line 6D.2 reflect this work. We have completed c.7k excavations and installed boxes ready for meters to be screwed in across the Rossendale and Lancaster DMZ's. We aim to complete the remaining excavations and install selective meters to all eligible customers within these areas in 2022/23, which will equate to c.27k selective meters being fitted.

**Line 6D.4 Residential meters renewed and Line 6D.5 Business meters renewed**

Expenditure is broadly consistent with the previous year.

## Metering activities – Explanatory variables

**Line 6D.6 New optant meters installed**

We installed 21,301 meters an increase of c5,000 from 2020/21 but c15,000 lower than FBP and c36,000 lower than the cumulative target at the end of year two of the AMP.

| | 2020/21 APR | 2021/22 APR | 2021/22 FBP |
|---|---|---|---|
| New optant meters | 16,314 | 21,301 | 36,523 |

We aim to fit c50,000 household meters in the coming year, including new optant meters, which will begin to bridge the cumulative shortfall of c36,000 at the end of year two of the AMP. We anticipate meter fit numbers will be recovered in the remaining two years of the AMP.

Our Lowest Bill Guarantee (LBG) introduced in 2020 will mean that customers who have a free meter fitted, will pay on their cheapest tariff for each billing period within the two year reversion timescale. If the customers measured charges are higher than their rateable value charges, we will bill them on their rateable value charges. The offer has been designed to reduce the potential 'loss aversion' that customers tell us is preventing them from moving to a meter, whilst still offering a potential financial saving to reduce water use, along with the use information that a meter provides.

**Line 6D.7 New selective meters installed**

As stated in 6D.2 we have fitted 70 selective meters as part of a small trial but we have been completing preparatory construction work to enable us to accelerate the installation rate in 2022/23.

**Line 6D.8 New business meters installed**

A small number of business meters have been installed.

**Line 6D.9 Residential meters renewed**

Following reduced volumes of renewals in 2020/21 due to COVID-19 there has been an increase of c3,400 to 10,995.

**Line 6D.10 Business meters renewed**

Following proactive project in 2020/21 to investigate and, where necessary, replace meters which have been registering zero consumption, the number of business meters renewed has reduced.

**Line 6D.11 New residential meters installation – supply-demand balance benefit**

We have reported 0.67 Ml/d based on the number of new smart meters installed.

**Line 6D.12 New business meters installation – supply-demand balance benefit, Line 6D.13 Residential meters renewed - supply-demand balance benefit and Line 6D.14 Business meters renewed - supply-demand balance benefit**

We have reported zero in these lines and have no further comments.

**Line 6D.15 Residential properties - meter penetration**

Meter penetration is slightly increased from last year at 47.4%.

## Leakage activities

**Line 6D.16 Total leakage activity – totex expenditure**

Our networks are dynamic systems and multiple leakage activities are often carried out in district metered areas therefore leakage totex and the associated leakage savings are based on a number of assumptions. These assumptions may differ from company to company meaning data is not comparable. The comparison of costs and benefits is further complicated by the delay between incurring the expenditure and delivering the benefit. For example acoustic logger capex costs incurred in 2021/22 will not deliver benefits in 2021/22. However they will deliver benefits in future years for the whole of their useful economic life. Likewise, acoustic logger capex costs incurred in 2020/21 will have delivered benefits in 2021/22.

To identify leakage totex costs we have combined a bottom up and top down approach, in line with prior year. IRE and Capex spend has been split into projects to identify those delivering leakage benefits. Costs incurred in relation to specific projects associated with leakage loggers, active leak control, pressure management and mains replacement have been included. Where the project delivers multiple drivers we have allocated costs to leakage/non leakage dependent on the type of activity. Opex costs have been allocated using the same activity methodology used for capex/IRE.

The following direct costs associated with leakage detection and repair activities have been reported in totex including:

- customer enquiries;
- work scheduling;
- internal resource for investigation;
- external partner costs for the repairs;
- health & safety;
- streetworks (including permit costs;)
- commercial support costs;
- and the costs of compensation for customers in relation to leakage jobs.

Higher level corporate costs have not been included e.g. accommodation costs for internal resources, indirect general and support costs such as HR.

A bottom up review of all leakage costs was then undertaken to allocate totex to one of the following categories;

- 100% maintaining leakage
- 100% reducing leakage
- Costs associated with both maintaining and reducing leakage allocated based on management estimate
- Repair & maintenance contract partner spend driver allocated based on natural rate of rise

It has not been feasible to identify if repair and maintenance contract partner projects contribute to maintaining or reducing leakage from the bottom up due to the high volume of relatively low value work (c31,000 leak repairs carried out in the year). We have used the natural rate of risk to allocate spend. The natural rate of rise equation indicates that our leakage performance has improved by 11Ml/day, the natural rate of rise is 219Mld, therefore 219Ml/d out of the combined 230Ml/d saved is in relation to maintaining leakage (95.3%) and 11Ml/d out of the combined 230Ml/d saved is in relation to reducing leakage (4.7%). These percentages have been used to allocate repair and maintenance contract partner spend.

**Line 6D.17 Leakage improvements delivering benefits in 2020-25**

The incremental leakage enhancement delivered during the reporting year to the supply-demand balance has been calculated by subtracting last year's total annual leakage from this years reported total annual leakage. 424.69 – 413.89 = 10.8 Ml/d benefit.

## Per capita consumption (excluding supply pipe leakage)

**Line 6D.18 Per capita consumption (measured customers)**
**Line 6D.19 Per capita consumption (unmeasured customers)**

Consumption for both measured and unmeasured customers has improved (customers have used less water) from 2020/21 levels. See section 1.1 of the main APR.

# Table 6F WRMP annual reporting on delivery - non-leakage activities

These are projects which are either detailed in our Water Resources Management Plan 2019 (WRMP19), or will provide a benefit to future plans and once delivered will be detailed in our annual Water Resource Management Plan (annual WRMP).

Projects which are already in the baseline of the WRMP, and therefore no extra benefit has been detailed in table 6F are;

- West Cumbria future Strategy project
- Southport Demand Management Zone (DMZ) project

There are several investigations where the intention was to bring in a new source or add a connection, however off the back of the investigation will not be progressed any further;

- Springfield Bickerstaffe AMP7 works
- Scales BH project
- Woodford BH to Hazel Grove Resilience
- Eccleston Hill BH project

The South Egremont groundwater project was enacted in 2019/20 and therefore the benefit is already in place prior to this table.

The Williamsgate WTW – Sludge treatment will not bring any deployable output benefit.

The two schemes which will benefit future plans (not accounted for in the WRMP19 baseline) and have a benefit assigned to them are;

The West East Link Main (WELM) 150 internal interconnector project, which will increase the amount of water which can be transferred across our network from South area sources to Manchester.

The Alston and Spade Mill transfer pipeline which has been connected into an existing WTW to improve resilience.

We have continued with our water efficiency campaign in the West Cumbria area and the derived benefits are 0.14 Ml/d in 2021/22. We reported a benefit of 0.49 Ml/d in table 6C.23 in 2020/21. This has also been included in the cumulative benefit in our water efficiency opex line.

The expenditure and cost allocations relating to these projects are consistent with table 4L for each of the different classifications (appropriate lines are 4L.22, 4L.25 and 4L.31). Forecasted years expenditure represents our current best view of the projects but may vary as the projects deliver.

# Table 7A Wastewater network+ - Functional expenditure for the 12 months ended 31 March 2022

## Costs of STWs in size bands 1 to 5

**Line 7A.1 Direct costs of STWs in size band 1, Line 7A.2 Direct costs of STWs in size band 2, Line 7A.3 Direct costs of STWs in size band 3, Line 7A.4 Direct costs of STWs in size band 4 and Line 7A.5 Direct costs of STWs in size band 5**

This year we have seen increases in power price costs, employment costs and materials.

For all of the works in size bands one to five we have continued to allocate the expenditure based on the numbers of full time equivalent operational staff for each treatment works.

These lines are directly influenced by the movement in size bands of our treatment works, most notably between bands 5 and 6. However, this year the number of size band six works has remained as the same 63 works.

Details of these movements are described in the commentary for lines 7D.9 to 7D.14 below.

**Line 7A.6 General & support costs of STWs in size bands 1 to 5**

This year we have experienced increases in provisions, corporate costs, pensions, insurance, wholesale market services, IT digital services and the inclusion of 'software as a service' (which was previously capital expenditure). These increases have been offset by the inclusion of principle use recharges.

**Line 7A.7 Functional expenditure of STWs in size bands 1 to 5**

This is a calculated line.

## Costs of STWs in size band 6

As described in line 7D.14, the number of size band six work has stayed the same at 63.

**Line 7A.8 Service charges for STWs in size band 6**

The majority of the costs in this line are associated with our Environment Agency Permits. We continue to review our consent charges with the Environment Agency to ensure that we pay the correct amount for our discharges.

**Line 7A.9 Estimated terminal pumping costs size band 6 works**

These are estimated costs, based on power and a proportional allocation of maintenance costs. We routinely review our terminal pumping station assets and these estimated costs are largely in line with those reported in the previous period but taking into account the increases in electricity prices.

**Line 7A.10 Other direct costs of STWs in size band 6**

This line includes power, employment costs, hired and contracted services, materials and consumables and other direct costs. Income from generation is treated as negative expenditure.

We have seen increases in power price costs, employment costs and materials and enhancement operating costs from the capital programme.

**Line 7A.11 Direct costs of STWs in size band 6**

This is a calculated line.

**Line 7A.12 General & support costs of STWs in size band 6**

This year we have experienced increases in pensions, wholesale market services, IT digital services and the inclusion of 'software as a service' (which was previously capital expenditure). These increases have been offset by the inclusion of principle use recharges.

Principal use of assets recharges are now reported within base operating expenditure in accordance with updated RAG 4.10 guidance. In 2020/21, the recharge was recorded within depreciation (outside of totex) in Table 2A.

**Line 7A.13 Functional expenditure of STWs in size band 6**

This is a calculated line.

**Line 7A.14 Total Functional expenditure for Sewage treatment**

This is a calculated line.

# Table 7B Wastewater network+ - Large sewage treatment works for the 12 months ended 31 March 2022

## Sewage treatment works - Explanatory variables

**Line 7B.1 Works name**

This is standard information linking the works to the Environment Agency consent. The number of large sewage works has stayed the same as the previous period, with 63 being reported.

**Line 7B.2 Classification of treatment works**

The treatment works classifications remain consistent with those reported in the previous period.

**Line 7B.3 Population equivalent of total load received**

The table below highlights the significant changes in population equivalent of total load received.

| WwTW name | Annual change | Reason for change |
|---|---|---|
| Burnley WWTW | Increase | 71% increase in load contribution from Trade Effluent |
| Burscough WWTW | Increase | More accurate volume from market for a single trader leading to 6,624% increase in load contribution from Trade Effluent |
| Bury WWTW | Increase | 41% increase in load contribution from Trade Effluent |
| Congleton WWTW | Increase | 36% increase in load contribution from Trade Effluent |
| Fazakerley (Liverpool North) WWTW | Increase | 97% increase in load contribution from Trade Effluent |
| Hillhouse WWTW | Increase | 216.87% increase in load contribution from Trade Effluent |
| Kendal WWTW | Increase | 26% increase in load contribution from Trade Effluent |
| Warrington North WWTW | Increase | 55.9% increase in load contribution from Trade Effluent |
| Whaley Bridge WWTW | Increase | 64.6% increase in load contribution from Trade Effluent |
| Widnes WWTW | Increase | 74.7% increase in load contribution from Trade Effluent |
| Bolton WWTW | Reduction | 37.5% reduction in load contribution from Trade Effluent |
| Colne WWTW | Reduction | 29.2% reduction in load contribution from Trade Effluent |
| Ellesmere Port WWTW | Reduction | 40.2% reduction in load contribution from Trade Effluent |
| Huyton WWTW | Reduction | Correction of an incorrectly drawn drainage area polygon in GIS which lowered the associated domestic population, plus a 43% reduction in load contribution from Trade Effluent |
| Runcorn WWTW | Reduction | 40.6% reduction in load contribution from Trade Effluent |

**Line 7B.4 Suspended solids consent, Line 7B.5 $BOD_5$ consent, Line 7B.6 Ammonia consent, and Line 7B.7 Phosphorus consent**

There are no notable changes to the consent levels in this financial year.

**Line 7B.8 UV Consent**

There have been no changes to the stated UV consents this year.

**Line 7B.9 Load received by STW**

This is a calculated line.

**Line 7B.10 Flow passed to full treatment**

During the last financial year we experienced a general trend of approximately a 2.8% decrease compared to the last financial year. However, this trend is not seen across all sites. This is likely to be attributable to the variable impact on commuting, trade effluent volumes and domestic water usage, as activities slowly begin to return to normal following the COVID-19 pandemic.

## Sewage treatment works – Functional expenditure

**Line 7B.11 Service charges**

The majority of the costs in this line are associated with our Environment Agency Permits. We continue to review our consent charges with the Environment Agency to ensure that we pay the correct charges for our discharges.

**Line 7B.12 Estimated terminal pumping expenditure**

These are estimated costs, based on power and a proportional allocation of maintenance costs. We routinely review our terminal pumping station assets and these estimated costs are largely in line with those reported in the previous period but taking into account the increases in electricity prices.

**Line 7B.13 Other direct expenditure**

This line includes power, employment costs, hired and contracted services, materials and consumables and other direct costs. Income from generation is treated as negative expenditure.

7A.10 above, we have seen increases in power price costs, employment costs and materials and enhancement operating costs from the capital programme.

**Line 7B.14 Total direct expenditure**

This is a calculated line.

**Line 7B.15 General and support expenditure**

This year we have experienced increases in corporate costs, pensions, insurance, wholesale market services, IT digital services and the inclusion of ‘software as a service’ (which was previously capital expenditure). These increases have been offset by the inclusion of principle use recharges.

Principal use of assets recharges are now reported within base operating expenditure in accordance with updated RAG 4.10 guidance. In 2020/21, the recharge was recorded within depreciation (outside of totex) in Table 2A.

**Line 7B.16 Functional expenditure**

This is a calculated line.

# Table 7C Wastewater network+ - Sewer and volume data for the 12 months ended 31 March 2022

**Line 7C.1 Connectable properties served by s101A schemes completed in the report year and Line 7C.2 Number of s101A schemes completed in the report year**

The number of first time sewerage schemes can vary depending on the number of applications that are received from customers. As such, no schemes have been completed this financial year.

The first time sewerage expenditure in line 4M.47 is associated with the AMP6 Mains Lane project.

**Line 7C.3 Total pumping station capacity and Line 7C.4 Number of network pumping stations**

We extract pumping station numbers and capacity from our corporate management system. Pumping station data is checked and verified as part of our data improvement checks by operational and asset management teams.

Increases in the number of pumping stations is predominantly as a result of:

- New stations adopted through the s104 adoption process,
- The continuing identification of private pumping stations that have now transferred in to our ownership through s105A,
- Capital improvement works such as WwTW transfer and flow transfer, and
- Improvements to the quality of our asset data.

However, these increases can be offset by sites being decommissioned (i.e. s105A sites where flows have been altered to gravity. The net position this year is an increase of 18 pumping stations from the number reported in the previous period. The associated pump capacity has also increased by 1,569kW. The increase in capacity is a result of a combination of the increase in pumping station sites, and our continued review process at existing sites to provide the most accurate, up-to-date and reliable data possible.

**Line 7C.5 Total number of sewer blockages**

Our blockages performance of 20,368 incidents is a circa nine percent (%) improvement on our 2020/21 performance. Whilst blockages from our existing assets have reduced over the long term, the proportion of blockages from transferred assets has continued to remain stable. Historically United Utilities pre-existing assets benefited from a programme of maintenance that has kept them in better condition, whilst transferred assets were in varying degrees of asset condition when transferred to us from private ownership in 2011. Transferred assets are typically smaller in diameter than existing assets, meaning that they tend to be more prone to blockages, particularly during times of stress due to increased load or demand. They are also typically subject to a higher percentage of blockage incidents due to customer misuse.

We continue to develop and implement a wide variety of schemes and initiatives to improve our performance. These include increased customer engagement, dedicated blockage teams, the development of a regional blockage plan, an accelerated investment programme (known as ‘flying start’) and direct targeting of fats, oils and grease discharges. We are also seeing benefit for investment in our Dynamic Network Management (DNM)

model, with our in-sewer monitors telling us when blockages are forming, allowing our teams to proactively attend site to resolve the issue before a customer experiences a service interruption and needs to contact us.

Further details on blockage performance can be found in the Outcomes section 1.1 of the main APR document.

**Line 7C.6 Total number of gravity sewer collapses**

The number of 1,020 gravity sewer collapse incidents is lower than last year. It is anticipated that there will future improvements in this reported number as we continue to roll out our dynamic network management (DNM) programme and the use of innovative/less disruptive no-dig techniques.

Over recent years we have also enhanced the use of CCTV surveys and fully utilised our programme to identify structural defects and sewer deformations, this has enabled us to proactively repair sewers, reducing the impact that collapses have on our customers.

**Line 7C.7 Total number of sewer rising main bursts**

The 60 rising main burst incidents in this reporting period are in line with the previous numbers of incidents.

**Line 7C.8 Number of combined sewer overflows**

Our profile of overflows changes over time. Increases in the number of overflows can be as a result of the adoption of previously private assets or the discovery and permitting of previously unknown/unpermitted assets. Decreases occur when assets are closed and also from the discovery that some assets do not exist (the permits for these assets are then surrendered).

The total number of combined sewer overflows (CSOs) has decreased by six in this reporting period from 2,056 to 2,050.

Eight sites have become Permitted CSOs, whilst nine previously permitted sites had their permits surrendered and two have been removed due to data corrections.

Twenty five unpermitted CSOs have been added; whilst eight have become permitted; seven have had permits withdrawn as they are confirmed as ‘no spill; eleven have changed overflow ‘type’; one is with the EA for permit determination; and one has been removed due to data corrections.

| | In | Out | Net difference |
|---|---|---|---|
| Permitted CSO | 8 | 11 | **-3** |
| Unpermitted CSO | 25 | 28 | **-3** |
| | | | **-6** |

**Line 7C.9 Number of emergency overflows**

Our profile of overflows changes over time. Increases in the number of overflows can be as a result of the adoption of previously owned private assets or the discovery and permitting of previously unknown/unpermitted assets. Decreases occur when assets are closed and from the discovery that some assets no longer exist (the permits for these assets are then surrendered).

The total number of Emergency Overflows has increased by 12 in this reporting period.

Fourteen sites were newly identified through investigations and surveys on the sewer network, and six sites were newly identified on our treatment works. Conversely, one emergency overflow was purposely blocked up at Millom WwTW as part of a planned project and seven have been removed due to data corrections where the overflow is now permitted.

**Line 7C.10 Number of settled storm overflows**

Our profile of overflows changes over time. Increases in the number of overflows can be as a result of the adoption of previously private assets or the discovery and permitting of previously unknown/unpermitted assets. Decreases occur when assets are closed and also from the discovery that some assets do not exist (the permits for these assets are then surrendered).

The number of settled storm overflows (SSOs) reported in this financial year is 197 compared to 195 in the previous period. Three sites were removed from the list this year, Bromfield WwTW and Temple Sowery were incorrectly classed as SSOs, when in fact they are just storm overflows, and Davyhulme WwTW was incorrectly reported as having two SSOs, when in fact it only has one. Conversely, five unpermitted SSOs have been identified through our risk escalation process. The net position is therefore an increase of two SSOs from last year.

**Line 7C.11 Sewer age profile (constructed post 2001)**

The length of sewer laid or structurally refurbished post 2001 has increased this year by 651 km. This is due to a combination of sewer growth and more accurate information being available on our GIS system due to Data Maintenance.

**Line 7C.12 Volume of trade effluent**

There has been an overall increase of 4.7 % in the trade effluent flow discharged to the sewerage system recorded this year.

This variance can be attributed to a recovery of trade in the North West after the impact of COVID-19 on the regions industry in the previous year and the change in the way trade effluent volumes have been captured since the Retail market opened in 2017, and the steps that have been taken since then to improve the accuracy of the data in the market.

**Line 7C.13 Volume of wastewater receiving treatment at sewage treatment works**

The total volume reported is the sum of foul, surface water and highway drainage, so is the sum of all flows received at the treatment works, not just domestic flows.

The volume of wastewater received has decreased by 6.43%. Although lower than the last reporting period, the underlying trend remains an increase of flows over recent years.

The quality of the data provided for this table has increased over the past few years as we have continued to install more flow recording devices at our WwTWs. Where a site is not MCERT'd we have estimated the flow based on the information we have available in relation to population equivalent and flow. This estimation is reflected in the confidence grade.

**Line 7C.14 Length of gravity sewers rehabilitated**

The length of gravity sewer rehabilitated can vary across a five year period. This is to be expected as our work prioritisation can flex to accommodate emerging customer priorities. However, the lengths of gravity of sewer rehabilitated for this reporting year is consistent with the previous year.

**Line 7C.15 Length of rising mains replaced or structurally refurbished**

We have only seen a small 0.23km length of rising main refurbished this year. Like last year, this is primarily due to no observed major capital projects (MCP) including this asset type, and a reduction in numbers of reactive bursts captured. However, when reported to 0 decimal places, this length will be displayed as zero.

When a reactive rising main burst occurs, our operations teams input all the reactive incident data into our corporate system. An output report is produced, containing information on the type of repairs made, length and depth of rising main, pipe material and photographs, which is all taken from the corporate system and validated by the local operational teams and thereafter our strategic teams. In this instance we therefore interpret 'structurally refurbished' as any pipeline rehabilitation technique which results in a repair to a burst rising main, that by its action improves the structural integrity of the pipe.

**Line 7C.16 Length of foul (only) public sewers, Line 7C.17 Length of surface water (only) public sewers, Line 7C.18 Length of combined public sewers, Line 7C.19 Length of rising mains, Line 7C.20 Length of other wastewater network pipework, Line 7C.21 Total length of "legacy" public sewers as at 31 March and Line 7C.22 Length of formerly private sewers and lateral drains (s105A sewers)**

We have continued with our sewer length data improvement checks this financial year. These checks have focused on improving the quality of our sewer records, and seen a small growth in the mapped network as a result of replacing records that were previously inferred. This has led to a small increase in our existing asset length, whilst transferred assets have remained the same. However, we have also rectified a small error where linear assets, subject to a S104 Agreement but not yet adopted, were incorrectly included in the previous year's data. The issue has resulted in a small reduction in the reported overall length on line 7C.16, 7C.17 and 7C.21

# Table 7D Wastewater network+ - Sewage treatment works data for the 12 months ended 31 March 2022

## Load received at sewage treatment works

**Line 7D.1 Load received by STWs in size band 1, Line 7D.2 Load received by STWs in size band 2, Line 7D.3 Load received by STWs in size band 3, Line 7D.4 Load received by STWs in size band 4, Line 7D.5 Load received by STWs in size band 5 and Line 7D.6 Load received by STWs above size band 5**

The total number of wastewater treatment works has decreased from 567 to 566 this year, which is a net reduction of one. Details of the site that has been removed and the movements between size bands categories is described in the commentary for line 7D.9 below.

Changes in the size band of treatment works have affected the distribution of loads across treatment works and also the distribution of the numbers of treatment works.

Load distribution has also been influenced by tightening of existing consent limits and introduction of new limits at WwTW. Due to various quality improvement drivers there is a developing trend of tighter phosphorus limits. Numerous Water Framework Directive P limits commenced with effect from April 2021 which have altered the load distribution in the table reported for 2021/22.

**Line 7D.7 Total load received**

This is a calculated line

**Line 7D.8 Load received from trade effluent customers at treatment works**

The overall load received from trade effluent customers at treatment works has increased this year. Some of the key factors influencing this change are detailed in the commentary for lines 7B.3 and line 7C.12 above.

## Number of sewage treatment works

The number of sewage treatment works can be used as a basic indicator of the size of a water company. However, for it to be used as an effective comparator, it must be used in conjunction with consent, load and WwTW classification information.

**Line 7D.9 STWs in size band 1, Line 7D.10 STWs in size band 2, Line 7D.11 STWs in size band 3, Line 7D.12 STWs in size band 4, Line 7D.13 STWs in size band 5 and Line 7D.14 STWs above size band 5**

The total number of works has decreased by one from the previous reporting period, from 567 down to 566. This is due to Betton Crossing being identified as non-UU asset during an asset management review of septic tanks. A summary of the movements between the numbers of works in each size band is shown below.

| | Size bands | | |
|---|---|---|---|
| **Works Name** | **2020/21** | **2021/22** | **Change** |
| Betton Crossing (Betton) | 1 | - | Removal – non UU asset |
| Askham | 2 | 1 | Decrease in banding |
| Bulkeley | 2 | 1 | Decrease in banding |
| Dent | 2 | 1 | Decrease in banding |
| Plumpton North | 2 | 1 | Decrease in banding |
| Glasson | 3 | 2 | Decrease in banding |
| Settle | 5 | 4 | Decrease in banding |
| Gilcrux | 1 | 2 | Increase |
| Mowpen Brow | 1 | 2 | Increase |
| Hawkshead | 2 | 3 | Increase |
| Braystones | 4 | 5 | Increase |

| Size band | In | Out | Net |
|---|---|---|---|
| 1 | 4 | 3 | **1** |
| 2 | 3 | 5 | **-2** |
| 3 | 1 | 1 | **0** |
| 4 | 1 | 1 | **0** |
| 5 | 1 | 1 | **0** |
| 6 | 0 | 0 | **0** |
| | | | **-1** |

| Number of works (2020/21) | Number of works (2021/22) | Net |
|---|---|---|
| 298 | 299 | **1** |
| 67 | 65 | **-2** |
| 60 | 60 | **0** |
| 47 | 47 | **0** |
| 32 | 32 | **0** |
| 63 | 63 | **0** |
| **567** | **566** | **-1** |

The Phosphorus, BOD and Ammonia permit condition bandings associated with these 566 works are also displayed in lines 7D.9 to 7D.14

**Line 7D.15 Total number of works**

This is a calculated line.

## Population equivalent

**Line 7D.16 Current population equivalent served by STWs**

The population equivalent served by STWs has increased by 145,756, which is an increase of 1.64% over the previous reporting period.

This increase is attributable to a modest increase in resident and non-resident population and an increase in trade effluent.

**Line 7D.17 Current population equivalent served by filter bed or activated sludge STWs with tightened/new P consents**

The relevant schemes claimed in the WINEP this year are detailed below, along with the associated tightened P limit. The total population equivalent served by these schemes is 220,224.

The projects were delivered by capex solution. In any instance where this is not the case, the population equivalent benefitting from the primarily opex solutions would be shown.

| WINEP Reference | Works Name | Delivery | Driver | Tightened P Limit | Population equivalent (000s) |
|---|---|---|---|---|---|
| 7UU300130 | Audley WwTW | 31/12/2021 | WFD_ND | 1.2 | 10.1 |
| 7UU200773 | Audley WwTW | 31/12/2021 | WFD_IMPg | 0.3 | 10.1 |
| 7UU100065 | Bulkeley WwTW | 31/12/2021 | WFD_IMPg | 1.5 | 0.3 |
| 7UU100067 | Cotebrook WwTW | 31/12/2021 | WFD_IMPg | 2 | 0.1 |
| 7UU100005 | Elswick WwTW | 31/12/2021 | WFD_IMPg | 1.5 | 1.0 |
| 7UU200720 | Great Warford WwTW | 31/12/2021 | WFD_IMPg | 1 | 2.9 |
| 7UU100007a | Greystoke WwTW | 31/12/2021 | WFD_IMPg | 2 | 0.5 |
| 7UU100008b | Inskip WwTW | 31/12/2021 | WFD_IMPg | 3 | 0.6 |
| 7UU200724 | Mobberley WwTW | 31/12/2021 | WFD_IMPm | 1 | 3.0 |
| 7UU200770 | Rochdale WwTW | 31/03/2022 | WFD_ND | 1 | 188.3 |
| 7UU200449a | Southwaite WwTW | 22/12/2021 | WFD_IMPg | 5 | 0.3 |
| 7UU100066 | Wrenbury WwTW | 31/12/2021 | WFD_IMPg | 1 | 3.0 |
| | | | | | **220.2** |

**Line 7D.18 Current population equivalent served by STWs with tightened/new N consents**

We have no new/tightened N consents in this reporting period, so the population equivalent is reported as zero.

**Line 7D.19 Current population equivalent served by STWs with tightened/new sanitary parameter consents**

The relevant schemes claimed in the WINEP this year are detailed below, along with the associated tightened sanitary parameter. The total population equivalent served by these schemes is 365,006.

The projects were delivered by capex solution. In any instance where this is not the case, the population equivalent benefitting from the primarily opex solutions would be shown.

| WINEP Reference | Works Name | Delivery | Driver | Tightened sanitary parameter | Population equivalent (000s) |
|---|---|---|---|---|---|
| 7UU100062/ 7UU200501 | Audley WwTW | 31/12/2021 | WFD_IMPg | Ammonia, BOD | 10.1 |
| 7UU100008a | Inskip WwTW | 31/12/2021 | WFD_IMPg | Ammonia | 0.6 |
| 6UU0525 | Blackburn WwTW | 18/02/2022 | WFD1g,WFD3g | Ammonia, DO | 325.2 |
| 6UU0526 | Darwen WwTW | 18/02/2022 | WFD1g, WFD3g | Ammonia, DO | 29.1 |
| | | | | | **365.0** |

**Line 7D.20 Current population equivalent served by STWs with tightened/new UV consents**

We have no new/tightened UV consents in this reporting period, so the population equivalent is reported as zero.

**Line 7D.21 Population equivalent treatment capacity enhancement**

This year we have delivered a single enhancement project at Greystoke WwTW, which has an associated population equivalent of 94.

**Line 7D.22 Current population equivalent served by STW with tightened / new consents for chemicals**

We have no new/tightened consents for chemicals in this reporting period, so the population equivalent is reported as zero.

**Line 7D.23 Cumulative shortfall in FFT addressed by WINEP / NEP schemes to increase STW capacity**

We have delivered no WINEP schemes to address FFT shortfall in this reporting period, so the equivalent flow is reported as zero.

**Line 7D.24 Additional storm tank capacity provided at STWs**

A single project has been delivered this year at Gosforth WwTW.

Our Green recovery activities do potentially impact on line 7D.24. However, as detailed below in our commentary for table 10E, there have been no outputs completed under Green recovery this year.

**Line 7D.25 Additional volume of network storage at CSOs etc. to reduce spill frequency**

Two additional storage schemes have been delivered in 2021/22, one at Blackburn and one at Darwen. Both of these schemes are AMP6 carryover.

Our Green recovery activities do potentially impact on line 7D.25. However, as detailed below in our commentary for table 10E, there have been no outputs completed under Green recovery this year.

# Table 7E Wastewater network+ - Energy consumption and other data for the 12 months ended 31 March 2022

## Other

**Line 7E.1 Total sewerage catchment area**

Our number is consistent with last year's.

**Line 7E.2 Designated coastal bathing waters**

We currently have 29 designated bathing waters in our region. 25 of these are coastal bathing waters and four are inland bathing waters at Windermere. As per the reporting guidance, we are now only reporting the 25 coastal bathing waters on this line.

There is the potential for additional designation of bathing waters, particularly where open water swimming becomes more popular in inland waterways and lakes. We will treat newly designated bathing waters in the same manner as existing ones; promoting improvements where appropriate and supported by customers, to ensure our assets are not preventing bathing waters achieving excellent status by 2040.

**Line 7E.3 Number of intermittent discharge sites with event duration monitoring**

This year 140 event duration monitoring (EDM) installations have been completed. There had originally been a programme to complete 89 event duration monitoring (EDM) installations within 2020/21. However, due to the impact of COVID-19 restrictions, all of these installations followed a change control process and were successfully reprofiled for delivery in 2021/22, meaning they are included within this years reported total.

**Line 7E.4 Number of monitors for flow monitoring at STW's**

In 2021/22, 32 schemes were delivered on 30 September 2021, four were delivered on 31 December 2021 and 21 were delivered 31 March 2022, giving a total of 57 for the reporting period. This is an increase from last year as there were no first time flow measurement schemes U_MON5 or U_MON4 drivers with a delivery date in 2020/21.

**Line 7E.5 Number of odour related complaints**

The number of odour related complaints has decreased again this year, down to 1,783 from 1,844 in the previous period, which is our lowest total since 2015/16.

We continue to employ our odour plans at the relevant operational sites and the reduction in overall numbers is in line with our predicted trend. Likewise, as activities slowly begin to return to normal following the COVID-19 pandemic, the increase in load from businesses, travel and tourism re-opening has not correlated into an increase in complaints.

### Energy consumption

**Line 7E.6 Energy consumption – sewage collection, Line 7E.7 Energy consumption – sewage treatment and Line 7E.8 Energy consumption – wastewater network +**

From 2020/21 the wastewater business consumption was split between collection and treatment. This has remained the same for 2021/22 reporting

At a combined level for wastewater collection and treatment, consumption in 2020/21 was 474,040 MWh versus 474,028 MWh in 2021/22. This represents a reduction of circa 0.1%.

In terms of variances, we saw electricity consumption decrease by 12,324 MWh and stationary fuel use increase by 10,755 MWh. This variance is due to increased demand at Ellesmere Port site, which is met utilising diesel generators instead of grid import which is constrained in the area.

# Table 7F Wastewater network+ - WINEP phosphorus removal scheme costs and cost drivers

In column 'Historical consent for phosphorus' where we do not have a consent we have entered n/a.

Table 7F is a new table for 2021/22. The list of phosphorus schemes has been populated from the WINEP (as per position in April 2022). This includes all schemes with a phosphorus driver regardless of delivery status. Any changes to the List of WINEP schemes will be updated as appropriate in future APR submissions.

To date one change has been made in agreement with the EA. Davyhulme WwTW has been swapped for P removal at Oldham WwTW and Eccles WwTW. This provides the same water quality benefit however the population equivalent (PE) will be significantly reduced as Davyhulme has a higher PE than Oldham WwTW and Eccles WwTW combined. The PE has been populated using the current design forecast as required in RAG

4.10. For schemes still in the design phase this forecast may change as the final solution is developed. Where the design population forecast is not available the current PE has been used within the site PE column. PE will be updated as appropriate in future APR submissions.

Where phosphorus removal is being delivered via a catchment or wetland solution. The PE for the WwTW listed in the WINEP has been given.

The historic and enhanced consent has been populated from the WINEP. Where there is a backstop permit and stretch limit, both have been populated in the enhanced consent column. Similarly, where phosphorus removal is delivered via a wetland or catchment solution this also populated in the enhanced content column. Petteril catchment solution will result in the removal of 98kg/annum in phosphorus across three different WINEP drivers: 7UU100007b Greystoke, 7UU100012b Motherby WwW and 7UU200449b Southwaite WwTW. Within Table 7F 'catchment solution' has been identified within the Enhanced consent column without a value to prevent double counting.

Where a site has multiple phosphorus drivers, requiring different phosphorus limits, both lines have been included on the table with a PE.

Expenditure in this table is consistent with line 4M.30. This includes all expenditure relating to the listed AMP7 WINEP phosphorus removal schemes, plus expenditure of £1.574m in line 7F.81 for the completion and closedown of some AMP6 schemes.

Future forecasted expenditure represents our current best view of project costs and profiling through to completion. Some schemes have multiple drivers, in these instances costs have been proportionally allocated based on the driver and solution.

# Table 8A Bioresources sludge data for the 12 months ended 31 March 2022

We use our Regional Sludge Operational Management (RSOM) system as the primary source of measuring sludge production.

**Line 8A.1 Total sewage sludge produced, treated by incumbents**

This financial year we have seen another small increase in the volume of raw sludge that we have produced. This is a result of population growth, an increase in the trade effluent loads that we have received and tighter consents on effluent discharges.

The 2021/22 figure is derived from measured data for digester feed using our RSOM system. When measured data has not been available we have applied a back calculation. We have added to this figure a raw sludge production number for the sludge that we lime. Both figures exclude any inbound sludge trading and is constrained to the sludge produced within our region. It excludes the volume of lime addition, grit and screenings from sewage treatment and excludes grit and screenings arising from sludge treatment.

It excludes our sludge that is treated using lime by a 3rd party contractor. That volume is detailed in line 8A.2. As such, none of our sludge is double-counted, it is classified as subject to either incumbent or third party treatment, never both.

**Line 8A.2 Total sludge produced, treated by 3rd party sludge service provider**

This figure is a raw sludge production number and excludes any inbound sludge trading and is constrained to the sludge produced within our region. It excludes the volume of lime addition, grit and screenings from sewage treatment and excludes grit and screenings arising from sludge treatment.

The volume of sludge has decreased again this year, as the use of third party contractors to treat sludge around the region has not been as high as seen historically. This is due to the improved availability of our existing treatment capacity.

**Line 8A.3 Total sewage sludge produced**

This is a calculated line.

**Line 8A.4 Total sewage sludge produced from non-appointed liquid waste treatment**

To calculate this figure we have interpreted "non-appointed liquid waste treatment" as septic tank and bioprocessing treatment. To estimate the figure, we firstly gather information on liquid sludge thickness from some of our representative sites that receive septic tank waste. Then apply the average percentage dry solids value (% DS) from a spot sample of tanker deliveries. Using the flow and concentration, we are then able to calculate the suspended solids of the septic sludge treated. Settled COD was converted into settled BOD using a ratio of 2:1 as advised from testing undertaken by our Bioprocessing team. Using an asset standard primary tank solids removal of 50%, the primary sludge from non-appointed activities was calculated.

We predominantly utilises activated sludge (ASP) sites, therefore we assumed a sludge yield ratio for ASP sites is an appropriate estimate to express the secondary sludge make (0.8kg SS/kg settled BOD). Adding the primary sludge and secondary sludge for both septic tanks and bioprocessing waste therefore gives a total sludge produced from non-appointed liquid waste treatment.

There has been a slight increase in the reported values from last year (72 tds) which cannot be seen in the table due to the requirement to report to 1 decimal place of ttds. This is a reflection of an increase in population having an effect on septic tank waste.

**Line 8A.5 Percentage of sludge produced and treated at a site of STW and STC co-location**

We have interpreted the line to include all co-located indigenous sludge production and indigenous sludge from physically separate sites connected by pipeline where any sludge treatment activity takes place and where that site has the appropriate Biosolids Approval Scheme (BAS) accreditation.

The minor increase in percentage in this reporting period is within the variability range we would expect in indigenous sludge calculation due to %DS assumptions at dewatering sites.

**Line 8A.6 Total sewage sludge disposed by incumbents and Line 8A.7 Total sewage sludge disposed by 3rd party sludge service provider**

The total sludge disposed by incumbents in 2021/22 has increased slightly when compared to 2020/21. This is due to the general weather conditions being continually favourable over the spreading period, meaning more sludge could be disposed to land that we would typically expect. Likewise, improvements in the way we manage our sludge disposal activities has allowed us to maximise the use of internal resources, thereby increasing sludge recycled to farmland outlet usage and conversely minimising 3$^{rd}$ party provider to restoration outlet usage.

**Line 8A.8 Total sewage sludge disposed**

This is a calculated line.

**Line 8A.9 Total measure of intersiting 'work' done by pipeline**

The work done by pipeline has been calculated using the total tonnes dry solids moved from each start site to end location. The total volume was then multiplied by the distance in one direction to give the total work done.

We have interpreted the line to include all intersiting 'work' done by pipeline that transports both raw and treated sludge, one way only.

The reported 2021/22 figure is substantially higher than 2020/21. This is due to the previous year's reporting not accounting for the full distance of the Pennine Leg of the Mersey Valley Sludge Pipeline (MVSP) due to a calculation error, therefore leading to an under-reporting of the 'work' done by pipeline. A corrected figure for 2020/21 would be 1,662 ttds*km/year and 1,697 ttds*km/year for 2019/20.

**Line 8A.10 Total measure of intersiting 'work' done by tanker**

We have interpreted the line to include all treated and untreated liquid sludge intersiting 'work' done as a liquid sludge, one way only.

The total work done via tanker has been calculated by:

- Calculating the total tTDS for each route
- Calculating the distance travelled in one direction (as opposed to estimating)
- The total distance for each route is then multiplied by the total tTDS
- The regional total is a sum of all of the routes

There has been a large increase in tankering in 2021/22 compared to the previous reporting year. This is a result of long outages at Bury WwTW and closure of digestion at Bromborough WwTW. Operational issues across the region have resulted in sludge being tankered further than in the previous year.

Additionally there has been a large increase in the volume of liquid digestate transported due to operational issues on the Mersey Valley Sludge Pipeline (MVSP) between Liverpool WwTW and Shell Green biosolids processing centre.

**Line 8A.11 Total measure of intersiting 'work' done by truck**

We have interpreted this line to be sludge as a solid (cake), with intersiting 'work' done one way only. All of this work is raw sludge cake movements.

The total work done via truck has been calculated by:

- Calculating the total ttds for each route
- Calculating the distance travelled in one direction
- The total distance for each route is then multiplied by the total ttds
- The regional total is a sum of all of the routes

In 2021/22 there has been a large increase in overall cake production 53,087 tds to 57,523 tds. A greater proportion of raw cake has been treated in-house compared to the previous reporting year, and less has gone out of the system to reclamation as a raw product (which would be captured under sludge disposal) therefore leading to an increase in the amount of inter-siting 'work' done by truck.

**Line 8A.12 Total measure of intersiting 'work' done (all forms of transportation)**

This is a calculated line.

**Line 8A.13 Total measure of intersiting 'work' done by tanker (by volume transported)**

The figure that we have reported is higher than the last financial year. As described in line 8A.10, there has been a large increase in tankering in 2021/22 compared to the previous reporting year.

**Line 8A.14 Total measure of 'work' done in sludge disposal operations by pipeline**

United Utilities do not dispose of any sludge by pipeline.

**Line 8A.15 Total measure of 'work' done in sludge disposal operations by tanker**

This year we have not disposed of any sludge by tanker.

**Line 8A.16 Total measure of 'work' done in sludge disposal operations by truck**

From 2016/17 onwards our vehicles have been able to record distances on board to automatically calculate distances travelled.

This year there has been a 626 ttds*km/year (-5.61%) decrease from the previous reporting period. This is due to the increase of sludge production from our Manchester Bioresources Centre (MBC) as enhanced cake. This has meant that sludge could be disposed closer to the site, as the material fits the requirements of the local land bank. It also meant less tonnage has gone through our Shell Green site, which has the highest average disposal distance travelled. The general rise in energy prices and its effect on the cost of manufactured fertiliser, has also driven local demand for nutrient supply from Biosolids.

**Line 8A.17 Total measure of 'work' done in sludge disposal operations (all forms of transportation)**

This is a calculated line.

**Line 8A.18 Total measure of 'work' done by tanker in sludge disposal operations (by volume transported)**

As described in line 8A.15, we have not disposed of any sludge by tanker this year.

**Line 8A.19 Chemical P sludge as % of sludge produced at STWs**

There has been an increase in the number of both chemically treated P schemes (59 to 67) and low P schemes (7 to 14) in the last year. None of these new schemes were on large treatment sites, and the increase in the reported percentage number is only marginal.

# Table 8B Bioresources operating expenditure analysis for the 12 months ended 31 March 2022

## Sludge transport method

**Sludge transport Lines 8B.1 to 8B.10**

We have reviewed the allocation this financial year and made some minor adjustments.

## Sludge treatment type

**Sludge treatment Lines 8B.11 to 8B.20**

There have been operational changes during the year due to stopping imports of sludge into Ambleside and Grange over Sands. Bromborough has ceased digestion and has changed its treatment process from conventional AD to thickening.

Our main sludge pipeline, the Mersey Valley Sludge Pipeline (MVSP) transports treated sludge and so we have included costs associated with this pipeline in the sludge treatment other column.

## Sludge disposal route

**Sludge Disposal Lines 8B.21 to 8B.30**

We have reviewed the allocation this financial year and made some minor adjustments.

**Lines 8B.1, 8B.11 and 8B.21 – Power**

Sludge treatment power costs have reduced due to increased generation benefit from additional sludge volumes being processed through the regional system and an increase in the power price for generation sold to WWN+.

**Lines 8B.2, 8B.12 and 8B.22 – Income treated as negative expenditure**

Income is generated using sludge assets, so is allocated 100% to Sludge Treatment. Income treated as negative expenditure has increased due to improved generation benefit from additional sludge volumes being processed through the regional system and the impact of significant price increases in the wholesale energy markets.

**Lines 8B.3, 8B.13 and 8B.23 – Discharge consents**

We continue to review the charges that we pay for our Pollution Prevention and Control (PPC) permits and Waste Management Licenses with the Environment Agency to ensure that we pay the correct charges.

**Lines 8B.4, 8B.14 and 8B.24 – Bulk discharge**

No costs within Bioresources.

**Lines 8B.5, 8B.15 and 8B.25 – Renewals expensed in year (infrastructure)**

Infrastructure renewals expenditure on our raw sludge pipelines has been allocated to sludge transport and expenditure on our treated sludge pipeline (MVSP) has been allocated to sludge treatment. This year we have experienced operating issues on the raw sludge pipeline from Eccles WwTW to MBC which has resulted in increased tankering costs. There has also been an issue on the MVSP between Liverpool WwTW and Shell Green all year, which required digesate to be temporarily tankered out of Liverpool.

**Lines 8B.6, 8B.16 and 8B.26 – Renewals expensed in year (non-infrastructure)**

We have not included any expenditure within this line.

**Lines 8B.7, 8B.17 and 8B.27 – Other operating expenditure excluding renewals**

Other operating expenditure in sludge transport have increased mainly due to additional sludge volumes, increased distances due to incidents/site closures, higher fuel prices and the allocation of principle use recharges to each upstream service. Principal use of assets recharges are now reported within base operating expenditure in accordance with updated RAG 4.10 guidance. In 2020/21, the recharge was recorded within depreciation (outside of totex) in Table 2A.

Farming Rules for Water (FRfW) has impacted both treatment and disposal operating expenditure due to increasing our enhanced cake production at MBC by installing additional centrifuges to increase production. This allowed us to go to more grass land bank across the North West and reduce the nitrogen impact in line with FRfW requirements. We have also purchased some new vehicles, as grassland stockpiles are smaller than arable, meaning more transport was required.

In addition to FRfW, other operating expenditure in sludge treatment has increased mainly due to regional incidents on the pipelines mentioned in the infrastructure renewals section above and the allocation of principle use recharges to each upstream service.

Other operating expenditure in sludge disposal has increased mainly due to FRfW and the allocation of principle use recharges to each upstream service. This has been offset by reductions in restoration costs due to more being processed to land.

**Lines 8B.8, 8B.18 and 8B.28 – Total functional expenditure**

This is a calculated line.

**Lines 8B.9, 8B.19 and 8B.29 – Local authority and Cumulo rates**

For sludge treatment (excluding MVSP and Shell Green) the Wastewater local list business rates costs cover the operational assets (excluding Network) which are allocated to Wastewater upstream services on a proportionate basis to GMEAV of non-infrastructure assets at each site.

The MVSP (Mersey Valley Sludge Pipeline) is allocated directly to sludge treatment as the pipeline transports treated sludge.

Shell Green is split between sludge treatment and sludge disposal based on GMEAV of the dewatering and incineration assets.

**Lines 8B.10, 8B.20 8B.30 – Total operating costs (excluding 3rd party)**

This is a calculated line.

# Table 8C Bioresources energy and liquors analysis for the 12 months ended 31 March 2022

## Energy

**Line 8C.1 Energy consumption – Bioresources**

This is the gross energy consumption across Bioresources. This has increased this year mainly due to increases in the market price of electricity, diesel and fuel oil in addition to travelling further distances to transport sludge.

**Line 8C.2 Energy generated by and used in Bioresources control [Electricity]**

This is electricity generated by undertaking activities within the Bioresources price control and which is subsequently used within the Bioresources control.

The total amount of electricity produced by Bioresources has increased compared to last year, as a result Bioresources has purchased less from grid which can be seen in line 8C.6. There has also been an increase in the market price of electricity which has impacted the equivalent monetary value. The market price reflects our hedged price of electricity.

**Line 8C.2 Energy generated by and used in Bioresources control [Heat]**

This is heat generated by undertaking activities within the Bioresources price control and which is subsequently used within the Bioresources control.

The total amount of heat produced has increased as the previous year's figures did not include heat recovered from the secondary water circuit on the CHP engines at MBC, only the exhaust stack. In addition, CHP output has also increased compared to the previous year.

There was an error in the monetary value reported in APR21 due to an error in the unit price used. The figure should have been £2.880m instead of £3.244m. There has been little change in the unit price as which is in line with expectations as natural gas prices have been fixed until FY22 and increases in fuel oil have been offset by a CCL rebate. The increase in monetary value is therefore all attributable to the increase in amount of heat produced.

**Line 8C.3 Energy generated by Bioresources and used in network plus control [Electricity]**

This is electricity generated by undertaking activities within the Bioresources price control and which is subsequently used within the wastewater network plus price controls.

Total amount of electricity produced by Bioresources has increased compared to last year. As a result, Wastewater Network+ has been supplied with a larger volume than the previous year.

The increase in monetary value has been impacted by the increased volume and the increase in the market price of electricity. The market price reflects our hedged price of electricity. There has also been a £0.444m true up of prior year generation used by Wastewater Network+ and Triad charges which should be passed onto Wastewater Network+ to reflect the correct market price.

**Line 8C.4 Energy generated by Bioresources and exported to the grid or third party [Electricity]**

This is the electricity generated by undertaking activities within the Bioresources price control and which is subsequently exported to the national grid or a third party (including non-appointee businesses).

The overall amount of electricity produced by Bioresources has increased and as such there has been an increase in electricity exported to the grid as sites will export to grid when the engines are operating at full load.

The increase in monetary value has also been impacted by the significant increase in the market price of electricity.

**Line 8C.4 Energy generated by Bioresources and exported to the grid or third party [Biomethane]**

This is the Biomethane generated by undertaking activities within the Bioresources price control and which is subsequently exported to the national grid or a third party (including non-appointee businesses).

Increasing sludge throughput into Manchester Bioresources Centre has enabled an increase in Biomethane production compared to the previous year.

The increase in monetary value has also been impacted by the significant increase in the market price of biomethane.

**Line 8C.5 Energy generated by Bioresources that is unused [Heat]**

This is heat generated by undertaking activities within the Bioresources price control and which is subsequently unused by the incumbent, third parties or the national grid.

The previous year's figures did not include heat recovered from the secondary water circuit on the CHP engines at MBC, only the exhaust stack. Including this additional heat has resulted in a large increase. In addition, CHP output has also increased compared to the previous year.

**Line 8C.6 Energy bought from grid or third party and used in Bioresources control [Electricity]**

This is electricity that is purchased from the national grid or another third party and subsequently used within the Bioresources price control.

A reduction in electricity purchased from grid has been seen due to an increase in the amount of electricity produced by Bioresources. Although the volume purchased has reduced, there is a slight increase in cost due to increase in market price of electricity purchased. The market price is the hedged price.

**Line 8C.6 Energy bought from grid or third party and used in Bioresources control [Heat]**

This is the heat that is purchased from the national grid or another third party and subsequently used within the Bioresources price control.

Minor variance seen in volumes and price.

**Line 8C.6 Energy bought from grid or third party and used in bioresources control [Biomethane]**

This corresponds to the amount of Propane that has been purchased to enrich the Biomethane to meet grid entry requirements.

There has been an increase compared to the previous year due to the increased Biomethane output and an increase in the market price.

## Income from renewable energy subsidies

**Line 8C.7 Income claimed from Renewable Energy Certificates**

This is the ROC income that applies to bioresources assets. This has increased this year mainly due to a higher ROC rate and additional sludge volumes processed through the system.

**Line 8C.8 Income claimed from Renewable Heat Incentives**

This is the total income received from Renewable Heat Incentives that apply to bioresources assets. This has increased this year mainly due to additional sludge volumes processed through the system.

**Line 8C.9-11 Income claimed from other renewable energy subsidies**

The total income received from renewable energy subsidies that are not Renewable Energy Certificates and Renewable Heat Incentives that apply to bioresources assets. This relates to RGGO's. This has increased this year mainly due to a renegotiated RGGO rates and additional sludge volumes processed through the system. We currently only receive RGGO's in additional to ROC/RHI and therefore lines 10 & 11 remain blank.

**Line 8C.12 Total income claimed from renewable energy subsidies**

This is a calculated line.

**Line 8C.13 % of total number of renewable energy subsidies due to expire in the next 2 financial years**

This is percentage of the total number of renewable energy subsidies claimed by the company that are due to expire within the next two financial years. There remains no renewable subsidies which are due to expire in the next two years.

**Line 8C.14 This year's value of renewable energy subsidies due to expire in the next 2 financial years**

This is the total value of the number of renewable energy subsidies claimed by the company that are due to expire within the next two financial years. There remains no renewable subsidies which are due to expire in the next two years.

## Bioresources liquors treated by network plus [AMP7 shadow reported values]

**Line 8C.15 BOD load of liquor or partially treated liquor returned from bioresources to network plus**

This is the biochemical oxygen demand load of sludge liquor or partially treated liquor (ie 'settled BOD') returned from bioresources to network plus in units of kilogram per day (kg BOD5/d).

BOD load has decreased, largely driven by process reallocation at two sites. Liverpool WwTW only accepts imports downstream of the thickener therefore this is now considered a network+ asset and is no longer included in this calculation. Leigh WwTW has a common liquor treatment plant which both raw and digested liquors are treated in, last year only one stream was thought to be treated which has reduced the load returned.

**8C.16 Ammonia load of liquor or partially treated liquor returned from bioresources to network plus**

This is the ammonia load of sludge liquor or partially treated liquor returned from bioresources to network plus in units of kilogram ammonia nitrogen per day (kg NH4-N/d).

Ammonia load has increased, largely driven by a change in operation at our largest sludge treatment centre, Manchester Bioresource Centre, which has increased the throughput of thermally hydrolysed digested sludge dewatering due to landbank concerns (from 22ktDS/y to 29ktDS/y). This liquor is ammonia rich and has therefore caused this increase in load.

**Line 8C.17 Recharge to Bioresources by network plus for costs of handling and treating bioresources liquors**

The sludge liquor cost for APR22 is £7.255m compared to a reported figure in APR21 of £13.559m. There are two main factors impacting this reduction. The first being the refinement of the calculation methodology and the second being changes in operations.

**i) Refinement of the calculation methodology**

As referred to in our APR21 commentary, APR21 was completed on a best endeavours basis. For APR22, we have refined the calculation of sludge liquors whilst still applying the overall methodology and approach from the Jacobs' report. The changes we have made to the calculation methodology are outlined below. As we have refined the calculation, our APR21 reported figure of £13.559m needs to be recalculated on a similar basis. This has been restated and included in the "Additional data tables for sludge liquors and energy" that will be submitted alongside APR22.

**Capital cost allocation** - The Jacobs' methodology is (naturally) focused on load, but we do not believe that it adequately recognises that wastewater treatment assets are also used to manage surface water from combined sewer systems, and that this also results in additional costs (that should be excluded from the calculation of liquor recharge costs), for example through the sizing of the treatment processes. As such, we have amended our methodology further to take into account the capacity of WwTWs designed for Peak flows. In practice this means that we have allocated a share of Capex for wastewater treatment assets to surface water drainage, based on the design capacity of WwTWs, and this will be excluded from the calculation of sludge liquor costs. The % adjustment reduces the capex charge to 41%. We have assumed that all asset components of a WwTW are scalable to flow volumes, and have applied the same percentage allocation to each of these. This is consistent with the approach used for allocating the costs of combined sewers between foul sewerage and surface water drainage for APR proformas 4E and 4K. Whilst some classes of assets, e.g. instrumentation, are potentially less scalable to flow volumes than others, this accounts for less than 6% of NMEAV and using a different approach for these would not materially affect the overall costs being allocated to surface water drainage.

Applying this factor has reduced the capex charge by £5.9m. For opex, this adjustment is not considered appropriate, as the sizing of assets for peak flows is not a key driver of cost.

**Opex cost allocation** - In FY21, the opex element of "W" reflected some higher MEAV assets that are sized for surface water e.g. storm tanks that have relatively low opex and therefore using GMEAV alone for allocating opex would tend to understate opex. We have therefore refined the approach to be based on more granular site level data rather than being based on GMEAV allocations.

This has resulted in an increase in sludge liquor costs of £1.7m.

**ii) Changes in operation**

At Davyhulme Manchester Bioresource Centre (MBC), the process has changed for APR22 where the raw sludge liquors have been returned to the splitter chamber between processes ASP2 and ASP3. Whereas the digested sludge liquors are returned directly to ASP3. Because of this the assets in scope are different for both liquor streams even though the returning site is the same.

The approach for calculating the MBC capex recharge has been calculated based on the in-scope assets for ASP2 and ASP3 associated with the thickened liquor return, and dewatering liquor is based on the in-scope assets for ASP3 only. For opex, the raw sludges use the total WWN+ excluding the inlet, whereas the digested sludges only include the opex costs for ASP3.

In addition to this the thickening liquor calculation uses the total site load as the denominator as this is split between the two treatment streams. However the dewatering liquor calculation only uses the load sent to ASP3. The approach to calculating the sludge liquors at Davyhulme was clarified on a call in June with Jacobs'.

The load impact is calculated year on year using the latest values and therefore variance within these values are to be expected. This could be due to a number of reasons including localised population increase, trade effluent changes, impact of weather and modifications to operational practices as referenced in 8.15 & 8.16.

These operational changes have resulted in a reduction in the sludge liquor cost of £2.2m.

# Table 8D Bioresources sludge treatment and disposal data for the 12 months ended 31 March 2022

## Sludge treatment process

This table has been populated on the basis of the sludge treatment centre (STC) capability not the product that is produced.

**Line 8D.1 % Sludge - untreated**

The volume, and corresponding percentage, of sludge untreated by incumbent (e.g. sent to reclamation) has decreased this year. This is due to the improved performance of our central system which has allowed us to treat a greater volume of sludge.

**Line 8D.2 % Sludge treatment process - raw sludge liming**

The volume of raw sludge liming in 2021/22 has increased to 2.9% from 2.3% in 2020/21. This is due to a small additional volume of cake from the feeder sites to our Manchester Bioresources Centre (MBC) being diverted for lime treatment.

**Line 8D.3 % Sludge treatment process - conventional AD and Line 8D.4 % Sludge treatment process - advanced AD**

Sludge treatment by conventional AD has decreased from 33.0% to 27.8% and treatment by advanced AD has increased from 59.4% to 65.9% compared to the previous reporting year. This is primarily due to an increase in sludge throughput into our largest facility at Manchester Bioresource Centre (MBC), which operates a thermal hydrolysis pre-treatment. This increase has been a result of improved resilience of our central sludge treatment system.

**Line 8D.5 % Sludge treatment process - incineration of raw sludge**

We do not utilise this treatment process.

**Line 8D.6 % Sludge treatment process - other (specify)**

We do not utilise any other treatment processes in addition to the ones described in lines 8D.1 to 8D.4.

**Line 8D.7 % Sludge treatment process – Total**

This is a calculated line.

**(Un-incinerated) sludge disposal and recycling route**
**Line 8D.8 % Sludge disposal route - landfill, raw and Line 8D.9 % Sludge disposal route - landfill, partly treated**

We do not currently use landfill as a disposal route.

**Line 8D.10 % Sludge disposal route - land restoration/ reclamation**

We have interpreted the line to be calculated from a treated sludge figure. The total volume of sewage sludge disposed by 3rd party providers to restoration has decreased again this year to 6.3%. This is due to increased visibility and management of the sludge system within United Utilities and ensuring all available sludge recycled to farmland capacity is being utilised where appropriate.

**Line 8D.11 % Sludge disposal route - sludge recycled to farmland**

We have interpreted the line to be calculated from a treated sludge figure (regardless of origin i.e. sludge traded in has been included in scope). We have interpreted this line to include the volume of lime addition, where relevant, as this is the physical volume of material actually disposed.

The figure for sludge disposed to farmland by incumbents in 2021/22 has increased by 5.2% compared to 2020/21. This is due to the general weather conditions being more favourable over the period, meaning more sludge could be disposed to land. More sludge was able to go through our digestion processes as well, meaning less volume was required to be disposed of.

**Line 8D.12 % Sludge disposal route - other (specify)**

We do not utilise any other disposal routes in addition to the ones described in lines 8D.10 to 8D.11.

**Line 8D.13 % Sludge disposal route – Total**

This is a calculated line.

# Table 9A Innovation Competition

**Line 9A.1 Allocated innovation competition fund price control revenue**

The allowed amount of revenue to be collected from customers in relation to the innovation fund in 2021/22 as per the PR19 Final determination, inflated to nominal prices for the year using Actual November CPIH.

**Lines 9A.2 Innovation fund income from customers**

The revenue collected from customers in 2021/22, which aligns to the allowance reported in line 9A.1

**Lines 9A.3 - 5 Intra company transfers**

As per the payment schedule that is issued from Nesta and Ofwat following the announcement of the winners of each round. We have not included the income transferred to other companies as part of the first Water Breakthrough challenge as the payment transfer had not taken place as at 31 March 2022.

**Line 9A.6 Non-price control revenue**

We have no comments for this line.

**Lines 9A.7 – 9A.22 Project detail**

Expenditure breakdown on our successful bids in securing for lead projects, including the first Innovation in Water Challenge (IWC) and the first Water Breakthrough Challenge (WBC). No spend has been incurred in relation to our lead WBC projects as at 31 March 2022.

**Line 9A.23 Administration charge for innovation partner**

As per the annual invoice issued to us by Ofwat for the running of the fund, which has been paid in 2021/22.

Note that the table does not include the contributions to other water companies for their lead bids, nor the income received from other partners for our lead bids, as part of the 10 per cent partnership contribution. This could be a future improvement to the table pro-forma.

# Table 10A Green recovery data capture additional items for the 12 months ended 31 March 2022

Our activities for Green recovery do not have an impact on the activities listed in lines 10A.1 to 10A.15.Therefore the reported values for these lines are stated as ‘N/A’.

Our Green recovery activities do potentially impact on lines 10A.16 and 10A.17. However, as detailed below in our commentary for table 10E, there have been no outputs completed under Green recovery this year.

# Table 10B Green recovery data capture outcome performance for the 12 months ended 31 March 2022

Our activities for green recovery do not have an impact on the activities listed in lines 10B.1 to 10B.4.Therefore the reported values for these lines are stated as ‘N/A’.

# Table 10C Green recovery data capture outcome performance for the 12 months ended 31 March 2022

## Performance commitments set in standardised units

**Line 10C.1 Internal sewer flooding - customer proactively reported, Line 10C.2 Internal sewer flooding - company reactively identified (i.e. neighbouring properties), Line 10C.3 Internal sewer flooding, Line 10C.4 Pollution incidents, Line 10C.5 Risk of sewer flooding in a storm and Line 10C.6 Risk of sewer flooding in a storm**

As detailed below in our commentary for table 10D, our Green recovery activities only potentially impact on three of our performance commitments. This potential impact excludes all of the common performance commitments outlined in table 10C, therefore the reported values are stated as N/A.

# Table 10D Green recovery data capture outcome performance for the 12 months ended 31 March 2022

### Bespoke performance commitments relevant to green recovery reporting

**Line 10D.1 Enhancing natural capital for customers, Line 10D.2 Hydraulic internal flood risk resilience and Line 10D.3 Hydraulic external flood risk resilience**

There is the potential for some of our 'sustainable drainage and natural flood management' Green recovery activities to provide additional benefit under both our 'hydraulic internal flood risk resilience' and 'hydraulic external flood risk resilience' performance commitments. However in 2021/22, none of our activities delivered any benefit in this area.

Likewise, there is the potential for some of our 'catchment phosphorus' Green recovery activities to provide additional benefit under our 'enhancing natural capital for customers' performance commitment. Again, none of our activities delivered any benefit in this area in 2021/22.

# Table 10E Green recovery data capture reconciliation model input for the 12 months ended 31 March 2022

There have been no outputs completed under Green recovery this year. This is fully in line with our plan.

A detailed overview of our Green recovery activity for 2021/22 and future milestones can be found at:

unitedutilities.com/globalassets/documents/pdf/green-recovery-2022

# Table 11A Operational greenhouse gas emissions reporting for the 12 months ended 31 March 2022

Table 11A is new this year and has been fully completed with in line with the regulatory guidance.

Information about our greenhouse gas emissions and our performance in managing them can be found in section 1.2 of our main APR document:

unitedutilities.com/globalassets/documents/pdf/united-utilities-annual-performance-report-2021-22

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