

# Annual Performance Report 2023

Anglian Water Services Limited  
Revised Version January 2024



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## Version Control

**1** Following the Annual Performance Report query process with our economic regulator, Ofwat, and through additional assurance procedures, in conjunction with our PR24 submission, a number of amendments were required to the document. The amendments made do not materially change a reader's understanding of our performance or financial position as described in the narrative of the Annual Performance Report, as such we have not obtained an updated audit opinion from our auditors, Deloitte. This means the assurance reports and sign offs included are aligned to our original submission.

**2** The table below summarises the changes that have been made to input data and these changes have been highlighted red within the data tables and the commentary (total values are not highlighted).

Table(s) / Line(s)	Description
6C.22	Figure revised to include areas lost to NAVs in line with reporting requirements
6D.15-17	Revised numbers
11A	Revised number calculation
3D.4	Revised number calculation
6D.24-25	Revised figure in line with population figures
3F.3	Revised as draft figure was supplied originally
4B.604-616	Figures omitted from supplied tables
4H.15-16	Removed interest income from the ratios
4D.10/ 4E.10	Increase capex for DS costs included in 4P (and linked tables including 4C)
4L.103/ 4M.80	Increase opex for innovation fund (and linked tables in section 1 plus 4C and 4H)
1F.10	Figure recalculated and updated for impact of two lines above
4W.6	Revised number
3F.6	Revised prior year number
4L.24,25, 4J.6	Revised numbers
7F	Table revised to reflect response to Ofwat query
4L.27,28, 6D.22	Revised numbers
4L.1,3,10,12	Revised numbers to reflect response to Ofwat query
4R.29,31,32	Revised as draft figures supplied originally
6F.13,18,28	Updated to reflect Ofwat query
7E.16,21	Changed to align with PR24 data tables

## Introduction

### Annual Performance Report and required regulatory information

We present over the following pages the Annual Performance Report (APR) for the year ended 31 March 2023. This provides specific and transparent information on our progress on the delivery of customer outcomes, service levels, costs and financial and environmental performance. The APR is prepared to comply with Condition F of the Instrument of Appointment of Anglian Water Services Limited as a water and sewerage undertaker under the Water Industry Act 1991 and the Regulatory Accounting Guidelines (RAGs) published by Ofwat. This report complements our separately published Annual Integrated Report, available on our website [www.anglianwater.co.uk](http://www.anglianwater.co.uk), which provides more information about our activities in 2022/23.

Commentary has been included beneath each APR table to provide further information, to explain significant year-on-year variances in performance and to highlight assumptions where appropriate. The subheadings in the commentary refer to the APR table line numbers to aid navigation.

Beyond the tables, a full set of the disclosures required by RAG 3.14 is set out in a separate section.

This report includes the data assurance summary, which demonstrates the process carried out by Anglian Water Services Limited to evidence that information provided is reliable.

At the end of the report are the summary reports of our Independent Auditor and our External Non-financial Assurance provider on the conclusions of the work they have undertaken to assess the reliability of our submission.

The APR is prepared in accordance with the Regulatory Accounting Guidelines (RAGs) issued by Ofwat, which are based on International Financial Reporting Standards (IFRSs). There are differences between IFRSs and the RAGs and where there is a conflict, the RAGs take precedence.

In this report, Anglian Water Services Limited is also referred to as Anglian Water, AWS or the Company.

The Annual Performance Report was approved by the Board of Directors on 13 July 2023 and was signed on their behalf by:

**Peter Simpson**

Chief Executive

**Steven Buck**

Chief Financial Officer

## Key Messages

### Chief Executive, Peter Simpson, commented:

"It has been a challenging year following extreme weather, a cost of living crisis, record inflation and operating in the public eye with increasing concern over the impact of pollutions and the need to upgrade aging Victorian water and sewage infrastructure.

"Our historic investments in leakage, where we have again improved on last year's industry-leading position, meant we kept water flowing, avoided a hosepipe ban and protected the environment by keeping within the amount we are licensed to safely take from rivers and watercourses.

"We supported a record 334,000 vulnerable customers, moving them to a lower tariff and helping them with wider benefits. We also managed our costs by hedging energy and made a record investment of £725 million in the region – significantly above our operating profit – which included installing a further 40 storm tanks, increasing capacity and reducing average spills to the lowest level in the industry (15 versus 29 industry average), ahead of the regulatory target.

"In achieving substantial smart meter coverage, we have helped our customers better understand their water usage and in turn reduce their consumption, conserving water as well as saving them money.

"We still have a lot more to do. We didn't achieve all of our Outcome Delivery Incentive (ODI) targets last year, largely as a result of extreme weather events, which has resulted in a year-end penalty of £22 million. We also know more investment is needed in our infrastructure, which is why we have announced plans for two more reservoirs and more than £1 billion between 2025 and 2030 to upgrade our sewerage system."

### Financial highlights

- **ODI penalty**

Operations were significantly impacted by the extreme weather, including a heatwave and drought, leading to record soil moisture deficits versus the rest of the country. These principally affected three ODIs - Burst Mains, Interruptions to Supply and Leakage, making up the majority of the £22 million penalty incurred. This year we also have an ODI penalty on leakage, despite making further reductions on our 2022 industry-leading leakage levels.

Action on our Pollution Reduction Plan includes progress on the installation of around 22,000 monitors to provide coverage on 11,000km of high and medium-risk sewers (in addition to event duration monitors on storm overflows) as part of our Dynamic Sewer Visualisation initiative. This uses predictive analytics and will provide greater insight on asset health. Avoidable blockages, 80 per cent of which are caused by fats and unflushable items in our small diameter sewers, are a primary focus. Our partnership with Environmental Compliance and Services (ECAS) to reduce the impact of food serving establishments has now been expanded to include domestic customers.

While classified as 'serious' none of the pollution incidents resulted in the death of fish. Following close review, we know the very narrow watercourses, owing to the heavily drained nature of our region, create an increased vulnerability to serious pollutions and this is something we are looking to address.

Our self-reporting has continued to improve in 2022/23. Importantly, we made gains on our comparative pollutions performance but this has been offset by our decision to retrospectively report incidents in light of our new monitoring capabilities. We are one of a few companies to take a national lead on this.

- **Totex Performance**

Our cumulative position AMP to date is an overall overspend of £67 million. Strong performance in our Water Recycling business stream has resulted in efficiencies of £173 million to date. This efficiency has been delivered in our Water Industry National Environment Programmes (WINEP) where we have continued to deliver our environmental obligations through innovative projects. The Board has agreed to reinvest this overall efficiency in order to finance future energy prices increases in years 4 and 5 as well as the additional costs pressures of the strategic pipeline mentioned above. We are confident that by the end of the AMP we will spend at least our allowance.

The table shows that the Board have utilised the efficiency being delivered in WINEP to fund the increased costs seen in delivering our strategic interconnector project. As mentioned, we have seen increased costs over and above CPIH due to increased costs of steel and other supply chain challenges.

The Board actively chose to also reinvest efficiencies in Water Recycling with a view to maintaining our industry-leading leakage position as we sought to recover from a number of weather-related events throughout the year. This means that as of Year 3 we have spent in line with our Botex allowance as we continue to deliver against the extremely challenging efficiency targets, we have set.

These decisions highlight the flexibility of the business to manage both cost and delivery across the business as a whole which has been enabled by the broadly symmetrical cost sharing rates between price controls as well as between base and enhancement expenditure.

- **Appointed revenue up £89.9 million (7.0 per cent).**

The increase is, in part, as a result of prices set based on the November 2021 Consumer Price Index (CPIH) inflation of 4.6 per cent, and the impact of changes applied to our tariffs from our revised regulatory settlement following referral to the Competitions and Markets Authority.

- **EBITDA up £16.6 million (2.4 per cent)**

The revenue increase provides some protection against inflationary increases in our cost base. However, as our revenue was set prior to the steep increase in inflation following the Russian invasion of Ukraine (February 2022), our costs rose at a greater rate creating a short-term timing mismatch.

In addition, the Board agreed to invest £13.9 million with a view to maintaining our leading leakage position as we sought to recover from the climate-related events in the year.

We have a robust energy hedging programme which means our costs have not risen in line with wholesale prices. We were fully hedged for the year to March 2023 in advance of the most significant market increases. Our hedged prices are materially below the government cap and therefore, as with furlough rates relief during the Covid pandemic, we have not had to make use of Government support for energy price rises.

- **Operating profit down £18.5 million (5.4 per cent)**

In addition to the items described above in relation to EBITDA, our depreciation charge increased in the year reflecting the significant investment in our asset base – a record year of capex at £725 million (£1.7 billion AMP to date), all centred on building a resilient business, delivering environmental improvements and supporting our customers.



- **Operating cash flow down £99.9 million (12.5 per cent)**

Operating cash was impacted by the rate of increase in operating costs exceeding the rate of increase in revenue due to the short-term timing mismatch of inflationary increases in revenue (as mentioned in relation to EBITDA). In addition, we saw short-term timing differences on working capital and additional pension contributions.

- **Dividend**

Refer to pages 327 for the statement on dividend policy for the appointed business.

We have set dividends to reflect performance and build financial resilience. After the balance sheet date, the Board proposed to pay a final dividend of £79.9 million (2022: £169.0 million). The dividend has been adjusted with a £26 million deduction to reflect aspects of underperformance against ODIs, including the ODI penalty incurred. In doing so, we aim to demonstrate how we are operating responsibly and balancing the needs of all our stakeholders, while attracting the continued investment vital for this region and customers now and in years to come.

There is no proposal to pay a dividend to ultimate shareholders for performance in this period (2022: £91.8 million).

## Investing for the future

**Largest-ever single year of capital investment** at £725.0 million in 2022/23, totalling £1.7 billion for the AMP so far, and part of a multibillion programme for 2020-2025.

**Our largest-ever environment investment programme (WINEP) is ahead of schedule:** £93 million was invested this year to deliver 215 obligations as part of a programme worth £811 million this AMP. Schemes delivered this period include 40 storm tanks which added 11,000 cubic metres of capacity to the network, thereby reducing storm spills. So far, 1,399 WINEP schemes have been delivered since 2020, more than 300 of which have been delivered early.

**Excellent progress made on reducing storm overflow spills by more than half** (down 54 per cent) to the lowest levels in the industry, (15 average spills versus an industry average of 29), building on our success in completely removing 13 per cent of storm overflows from our network since privatisation. This progress comes on our pathway to invest £200 million to reduce spills between 2020 and 2025 – a commitment made at our last price review, PR19. Last month we pledged to go further to tackle overflows with £1 billion investment between 2025 and 2030 (subject to PR24 determination). Recent commitments on storm overflows from the wider industry align with our existing **Get River Positive programme**.

## Securing water supplies

**Recorded our lowest-ever leakage level** – yet again we have improved on last year's sector leading position, which represents a 38 per cent reduction in leakage since privatisation. The year of extreme weather caused us to narrowly miss our in-year target, which means that, despite being a frontier company, we will incur an ODI penalty, while others with higher leakage levels may not. Swift action and investment to **boost the number of leakage repair teams by a third** minimised water lost during operational issues caused by the extreme weather events.

**A resilient position through drought** aided by smart metering and water efficiency. This meant we did not need to impose a hosepipe ban nor did we need to resort to drought permits, which would effectively mean over-abstraction from an already stressed environment. In addition, we provided extra water to farmers for irrigation and put additional water back into the environment to support low river flows in summer.

**Our rapid smart meter roll-out** has helped identify more than 93,000 customer-side leaks this period, saving millions of litres of water every day. Averaging 4,500 smart meter installs every week, 233,000 units have been installed this period – 544,000 over the AMP so far meaning nearly 1 in 4 homes now has one fitted. Global microprocessor supply issues on top of challenges through the Covid pandemic have marginally affected our run rate (AMP to date target of 548,000) resulting in a small penalty this year.

**Best-ever Per Capita Consumption result**, reflecting the success of our smart meter programme and ongoing efforts to engage customers on water efficiency, such as weather-triggered advertising used during the drought. Our customers are among the most water efficient in the country.

**We achieved 100 per cent compliance** with our drinking water annual abstraction licences, as a result of the smart meter programme, leakage result and water efficiency of customers. This is a stand-out result given the significant increase in demand for water last summer. We are also making the biggest reductions in abstraction of any water company this AMP (as a proportion of output) and are on track to leave an extra 85 million litres of water in the environment by 2025, despite operating in the driest region with the fastest growing population. Together these actions will help ensure chalk streams have flows they need for good ecological quality.

**Strategic interconnecting pipeline is on track** for completion with two thirds of planning permission granted and 100 per cent steel purchased to help mitigate supply chain pressures. Not only will it provide sustainable sources of water to protect the environment, on completion, more than 80 per cent of customers will have a dual supply boosting resilience and reducing the risk of water supply interruptions. With our Strategic Pipeline Alliance partners we've developed **an innovative method** to commission the pipeline using a fraction of the water than would be possible through traditional means, which was imperative given the scale of the project.

**Plans for two new reservoirs announced to secure future water supplies.** A series of customer consultations have been held this period. The reservoirs in Lincolnshire and in The Cambridgeshire Fens will allow reduced abstraction, protecting sensitive environments and we anticipate they will create new habitats for wildlife, leisure destinations, opportunities for local businesses and natural spaces for the community.

**Early investment unlocked** through Ofwat's Accelerated Infrastructure Delivery Plan with the approval of four schemes including smart metering, smart sewers, nutrient neutrality and water re-use.

### **Protecting and enhancing the environment**

**94 per cent of our 48 bathing waters have also achieved 'Good' or 'Excellent' status** as a result of WINEP investment. Investigations with the EA and local authorities continue at sites deemed as 'Sufficient' or 'Poor' although our assets are not the primary cause, and we are planning investment to support improvements at these sites. Investigations have ruled out any of our assets as contributory factors at the site rated 'Poor' (Heacham).

**Three new inland bathing waters** designated in our region, supported through our Get River Positive initiative. The programme aims to revitalise rivers and ensure our assets are not the reason for any stretch of river not achieving good ecological status, as well as working to reduce the impact of other sectors.

**98.8 per cent Special Sites of Scientific Interest in our ownership are in a favourable condition** (vs the national average of 38.6 per cent).

**Progress towards net zero** with a 63.2 per cent reduction in capital carbon against a 2010 baseline and a 6 per cent reduction in operational carbon against a 2019/20 baseline. 114 GWh renewable energy generated, just behind our target (122GWh) but still progressing well and supporting our power resilience.

### **Delivering on customer priorities and keeping bills low**

**Strong performance on drinking water quality** with our lowest-ever customer complaints for acceptability (narrowly missing the ODI target), significantly improved Compliance Risk Index score (2.92) which is well ahead of the industry average (5), plus a strong provisional Event Risk Index score of 2.77 against a target of 15 and industry average of 833. Given the volumes of water supplied during the heatwave (peaks of 1.8 billion litres supplied per day) and operationally challenging year, these scores demonstrate our robust processes and operational control. The Event Risk Index score is calculated based on incident type, duration and number of customers affected.

**£135 million package of support** pledged for 2023/24, building on a £65 million package this period which helped more than 334,000 customers.

**11.4per cent of customers are now on our Priority Services Register**, well ahead of target and the industry (average 5-6 per cent).

**Achieved the new British ISO standard 22458: Customer Vulnerability.**

**Strong financial discipline on Totex** spend shows we are well-positioned to meet future investment needs. Totex is a useful industry comparator of efficiency and capability to deliver capital improvements.

### **Acting in line with our Purpose and values**

**Keeping our people safe and well** with a 25 per cent reduction in serious accidents and near misses versus 2022 – a strong result in a record year of capital investment. **The significantly improved accident frequency rate** is also down 46 per cent to 0.07, compared with 0.13 last year.

**First water company to achieve the ISO for Psychological Health and Wellbeing for our employees.**

**Health and safety performance recognised** with a RoSPA Gold Award for the seventh year in a row, and a RoSPA Fleet Safety Gold Medal for the fifth year in a row for managing occupational road risk.

**BITC's Responsible Business tracker scored us 80 per cent** (76 per cent in the prior year) versus a utility sector average of 64 per cent.

## Board statement on accuracy and completeness of data and information

RAG 3.14 requires the Board to confirm that the data and information which the Company has provided to Ofwat in the reporting year and/or which it has published in its role as a water and sewerage undertaker was accurate and complete.

The Board has considered the following sources of assurance in response to this requirement:

- the Company's Assurance Framework, which describes the Company's assurance philosophy and the approach it takes to test the reliability and accuracy of its data. The Assurance Framework is published on the Company's website;
- the formal system used by the Company for the 'collection and storage of reliable data relating to our key assets and activities to fulfil all the requirements of Ofwat and other stakeholders and to deliver our business goals'. This system is part of our quality management system which is certified to ISO 9001;
- the other certified management systems used by the Company to manage its operations, such as water services, environmental management, occupational health and safety, laboratory services and carbon management. Accuracy of data is integral to all of these systems.
- the feedback from Ofwat on its 2021/22 Annual Performance Report and, where relevant, other submissions;
- the Board's comprehensive approach to risk management, which includes maintenance of a corporate risk register. The risk that 'the data we provide are not robust' is a Top Tier risk in the register and mitigating actions are regularly reviewed;
- reports to the Board's Audit Committee from the Company's external auditors who, as part of their routine audit process, consider and report on a range of risks which could result in inaccurate financial information (including the risk associated with the exercise of management judgement). The Board Audit Committee manages a comprehensive process to ensure that all internal audit recommendations are completed;
- reports to the Board's Audit Committee from the Company's Internal Auditors which highlight potential improvements to business activities and processes, some of which may result in the production of data and information for onwards transmission to Ofwat;
- the Board Audit Committee oversees the completion of actions to correct issues identified in audit and categorised as high risk and manages a comprehensive process to ensure that all internal audit recommendations are completed;
- the annual "Statement of Responsibility" process which requires all managers in the business to confirm that the Company's resources, policies, organisational structures, risk management processes, accounting systems and governance arrangements are sufficient to enable the Company to meet its responsibilities, including the provision of accurate information. The results of this process are reported to the Board's Audit Committee;
- the cultural values of the business, in which accurate information is valued, resources are allocated to ensure information accuracy and the provision of high quality information is rewarded;
- the Company's code of conduct, which summarises a series of policies which are designed to underpin the cultural values referred to above;
- the Company's Whistleblowing Policy and procedure which facilitates the reporting of concerns regarding the accuracy or legitimacy of data and information which may be relied upon by the Company; and
- the relevant reports of the Executive Directors to meetings of the Board during 2022/23.

The Board considered its approach to assurance in a review in 2021. The Board's discussion included consideration of the Company's Assurance Framework, the performance of its third party external assurance providers, the quality of the Company's submissions and publications (as measured by stakeholder feedback and errors found) and the roles of various parties, including the Board itself. The Board satisfied itself that the Company's

approach to assurance was fit for purpose and that the role of the Board was being fulfilled. Members of the Board have reiterated their satisfaction with the approach in subsequent discussions.

The Board Audit Committee met on three occasions during 2022/23. At each of these meetings it received reports from both internal and external auditors.

After consideration of all these factors, the Board is able to confirm that:

- all data and information provided to Ofwat or published has been compiled in a planned, professional, systematic fashion and submitted in good faith;
- the Company has sought to explain trends in data using best available, objective evidence;
- where assumptions have been required to make calculations, the Company has used its best estimates and made those assumptions clear;
- where the Company has identified errors in any data or information it has provided, it has disclosed and corrected those at the earliest opportunity;
- where relevant, the Company has made every effort to indicate the quality of its data and the likely margin of uncertainty.

Accordingly, the Board has no reason to believe that the information and data it has provided during 2022/23 is other than accurate and complete in all material respects.

This Statement was approved by the Board of Anglian Water Services Limited on 13 July 2023, drafts having been discussed by the Board meeting of 23 May 2023.

Certified by

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Claire Russell

Company Secretary

Dated: 13 July 2023

## Risk and Compliance Statement

As the Board of Anglian Water Services, we confirm the following:

- We have sufficient understanding of our obligations as set out in the Water Industry Act and our licence ('our Obligations').
- We are satisfied that we have sufficient processes and internal systems of control to meet our Obligations.
- Subject to the exceptions listed below, we believe we are meeting all our material obligations.
- We have taken adequate steps to understand the range of expectations of our diverse customer base. We have sought to provide a service offering that best meets those expectations, taking into account the requirements of other stakeholders, the sustainability of the business and the level of water bills that customers are willing and able to pay.
- We have appropriate systems and processes in place to allow us to identify, manage and mitigate our material risks.

Furthermore, we confirm the following:

- We have sufficient financial and management resources to enable us to carry out our regulated activities and have submitted to Ofwat the certificate to this effect required by Condition P.30 of our Instrument of Appointment.
- The Company has available to it sufficient rights and assets to enable a special administrator to manage the affairs, business and property of the Company in the event that a special administration order were made, as required by Condition P.14 of our Instrument of Appointment.
- All trade between the Company and associate companies in the year has been at arm's length, as required by Condition P.19 of our Instrument of Appointment.
- With our Annual Integrated Report for the year we have published a statement linking Directors' pay to standards of performance, as required under section 35A of the Water Industry Act 1991 and RAG 3.14.
- We have maintained for the whole year at least two investment grade issuer credit ratings for Anglian Water Services Financing Group in accordance with Condition P.26 of our Instrument of Appointment.

As set out in the business viability statement on pages 21-24 of this Annual Performance Report, the Directors have a reasonable expectation that the Company will be able to continue in operation and meet its liabilities as they fall due over the period set out in that statement.

In making this statement, the Board has considered specifically the information given by the Company in response to Ofwat's ongoing enquiry into companies' compliance with the flow-to-full-treatment conditions of their discharge permits.

### Exceptions

The section below identifies obligations set out in the Water Industry Act, our Instrument of Appointment and the Regulatory Accounting Guidelines which – with Ofwat's knowledge – we are not complying with.

- The Water Industry Act places an obligation on wastewater companies to maintain maps of their sewers. In common with all other wastewater companies in England and Wales, not all of our sewers are so mapped because the cost of doing so is generally agreed to be uneconomic.
- Condition J of our Instrument of Appointment creates certain obligations regarding the setting, monitoring and reporting of service targets. Because of changes to the regulatory approach we are no longer required to fulfil these obligations.

- Condition B of our Instrument of Appointment requires us to appoint a Reporter to report to Ofwat on the reliability of the information we have supplied. Ofwat removed this requirement many years ago.

Certified by

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Claire Russell

Company Secretary

Dated: 13 July 2023



## Board statement on Company direction and performance

This statement explains how the Board of Anglian Water Services Limited (the Company) sets the aspirations of the Company, to meet the significant challenges facing the business and the region it serves, and its performance against targets in pursuit of these ambitions. It explains how customers' and stakeholders' views are an integral part of setting these aspirations within our long-term strategic ambitions and Business Plan, ensuring the Company delivers for everyone it serves. We say more on these topics in our Annual Integrated Report (AIR), which is published on our website.

### Anglian Water's aspirations

Our ultimate goal is to fulfil our purpose: to bring social and environmental prosperity to the region we serve through our commitment to Love Every Drop. In doing so, we must ensure that we keep our services affordable and support our vulnerable customers.

To that end, the Board's aim is to ensure the effective delivery of the Company's Love Every Drop strategy, rooted in finding solutions to the challenges our region faces whilst providing safe, clean drinking water, protecting our environment and helping the most vulnerable in society.

Our 25-year Strategic Direction Statement (SDS), first published in 2007 and updated in 2017, sets out four long-term ambitions for us and our region:

- Make the East of England resilient to the risks of drought and flooding
- Enable sustainable economic and housing growth
- Be a carbon neutral business by 2050
- Work with others to achieve significant improvement in ecological quality across our catchments.

Importantly, our purpose locks public interest into our constitution and has kept us striving for the greatest outcomes in this difficult year of macro and operational challenges.

We have acted as lead sponsor alongside the British Standards Institution (BSI) to create a new Publicly Available Specification (PAS) for embedding purpose in organisations – *PAS 808:2022 Purpose-Driven Organisations, Worldviews, Principles and Behaviours*. Launched in July 2022, it is the bar by which we will hold ourselves to account, reporting against it to continue to embed our Purpose in all we do. We have started by conducting an initial assessment against the seven principles of the standard, considering the extent we demonstrate the behaviours associated with each.

### Responding to scrutiny

We hold ourselves to account against this purpose, and it is in this spirit we openly acknowledge some areas of performance are not yet at the level we or our customers expect.

We have listened to the concerns raised about pollutions and the need to upgrade aging Victorian infrastructure and made firm commitments to act on those issues. Where we are not performing to the standard we expect, we have plans in place to redress that. For example, in response to our pollutions position we have made key changes to senior personnel this year, bringing in a new Director of Water Recycling and implementing new systems and sensors (incorporating predictive analytics and machine learning) that will give us the visibility of asset performance necessary to bring the improvements we all want to see. However, we have been upfront that it will take time to see the cumulative impact of these actions on our results.

We have, however, also outperformed or achieved sector-leading results in many areas. For example, our lowest-ever level of leakage places us head and shoulders above the industry. We have helped more than 330,000 customers through hardship and vulnerable circumstances, met our stretching capital and embodied carbon targets, made great strides on our environmental commitments through Get River Positive, achieved a sector-leading

result on storm overflow spills, performed well on water quality indexes and protected water resources across the region in a year of challenging conditions to avoid drought permits or imposing a hosepipe ban.

Given the force of headwinds faced this year, our relative position in the sector shows we have handled these well, drawing on a reservoir of experience and consistent investment.

### **Holding ourselves to account**

Our position as a supplier of an essential public service presents us with both the opportunity and responsibility to do more for customers and the environment in our region.

It is essential we maintain the trust and confidence of our customers. That means running our business in a responsible and transparent way so customers and stakeholders can see that we act in the public interest and recognise our wider role to the communities we serve beyond providing fresh clean drinking water and protecting the natural environment we operate in. We understand they expect to see that:

- their bills are fair, affordable and value for money
- we are responsible with their money
- our profits are fair and not excessive, and
- we pay our fair share of tax.

In 2022, we experienced a number of external headwinds, and our performance did not meet our expectations in some areas. This is reflected in the remuneration of our employees and owners: bonus payments based on company performance across all senior management, including that of our Chief Executive, were reduced by over 50 per cent this year and dividends to shareholders were reduced. As a responsible business, it's also important to use these events as opportunities to learn and improve. For example, after a disappointing Environmental Performance Assessment in 2021, we launched Get River Positive and our zero tolerance pollutions strategy, driving a step change in our approach to pollutions.

This year we have further evolved our engagement with customers by re-establishing our customer board, where we facilitate an open, two-way discussion, on a variety of topics which are important to our customers. Recent topics of discussion include bill increases, our Water Resources Management Plan, water quality, leakage, and our executive bonuses.

As part of our Get River Positive initiative, we have also convened an expert scrutiny panel to hold us to account against our Get River Positive commitments.

These initiatives build on the extensive engagement we carried out in preparation for our 2020-2025 Business Plan, where we had half a million customer interactions and embarked on a process of on-going dialogue with customers and other stakeholders. We continue to listen intently to our customers and involve them in shaping our key plans and decisions.

### **Engagement with stakeholders**

We recognise the importance of engaging with a wide variety of stakeholders to inform our strategy and support the delivery of our purpose. Our AIR sets out seven key stakeholder groups:

- our environment
- our customers and communities
- our people and partners
- our regulators
- our shareholders
- investors and ratings agencies, and
- local and national government.

In the AIR we highlight how we engage with them and the outcome of that engagement.

Specifically this year, we have carried out in-depth consultations for the two new reservoirs planned in Lincolnshire and Cambridgeshire. We have started a multi-phased consultation process that will take place over a number of years and will inform our plans as they evolve over the project period.

In preparation for the submission of our 2025-2030 business plan, we also participated in the first ever 'Your water your say' events run by Ofwat earlier this year. This national conversation with customers provided every customer a chance to hear more about our plans. Every water company was asked to do this through an independent facilitator chosen by Ofwat and it provided us with another opportunity to interact with our customers.

In 2023 we published our draft Water Resources Management Plan (WRMP), having undertaken public consultation as part of our Long-Term Direction Strategy. This plan sets out how we will manage the water supplies in our region to meet current and future needs over a minimum of 25 years. We will focus on demand for water in the first instance, to reduce the amount used, which is our customers' preferred priority. We will also invest in the supply side, via ambitious measures including the creation of up to 500km of interconnecting pipelines across our region, to maintain the amount of water available.

Alongside plans for water resources management, we are focusing attention on long term planning for water recycling. This year we have been developing our first Drainage and Wastewater Management Plan (DWMP) – the new industry-standard approach for organisations to work together to improve drainage and environmental water quality. Covering the period 2025-2050, the framework puts emphasis on strong co-creation to ensure the plan joins up the approach and considers all risks from growth, climate change and customer behaviours. The DWMP was published just after the end of this reporting period, in May 2023.

In March 2023 we also published our first River Water Quality report following the launch of Get River Positive a year earlier. The plan outlines our progress against the bold commitments underpinning the Get River Positive initiative such as reducing storm overflow spills and increasing transparency around river water quality.

## **Company performance**

This year has been brought to life with intense volatility and challenge on many fronts, including the war in Ukraine, inflation, intense public scrutiny of our sector, and operational challenges as a result of two red weather warnings in the space of six months.

In the face of these pressures we acted quickly, building on our strong foundations and maintaining strong financial rigour by keeping within our final determination and carefully managing rising costs such as energy to remain efficient.

In many areas that matter to customers we have performed well. Securing water supplies and providing safe, clean drinking water has always been a key priority for customers. Our long-standing and leading track record on leakage, water efficiency and building infrastructure for resilience enabled us to stand up to the year's weather and operational challenges well, avoiding the need for a hosepipe ban or drought permits and safeguarding the environment by not taking more water than we are licensed to.

We also performed well on drinking water quality indexes, which are a strong indicator of our operational control and compliance, especially given the challenges faced.

We still have a lot more to do though. We did not achieve all of our performance commitment targets this year, but this was largely the result of the sequence of extreme weather – a prolonged heatwave and drought, as well as the extreme freeze-thaw in December, both of which principally impacted three key performance commitments.

We have also acknowledged the need to improve in other areas, such as reducing serious and total pollutions, and have put the plans in place to bring about the change we want to see. We are restless for progress and while we are embedding predictive analytics and

machine learning along with the installation of sewer monitors on 11,000km of our high and medium risk sewers, we know it will take time for the cumulative impact of these initiatives to feed through to our results.

We have made excellent progress in reduce average spills to their lowest level in the industry – an achievement made possible with the installation of 11,000 cubic metres of additional storm water capacity this year as part of our £200 million plan to tackle storm spills this AMP.

Bathing water quality remains high quality, with 94 per cent of the bathing waters in our region rated as Excellent or Good, and through our Get River Positive initiative we have also seen the successful designation of three new inland bathing waters in our region (out of four in total across the country). Five bold commitments underpin our Get River Positive programme and are driving us to work with more partners than ever to achieve a host of benefits for river water quality.

Our sector faces unparalleled demand for investment both in the near and long-term future, and on the back of a record year of capex and strong financial discipline around totex, we have provided the reassurance we can deliver the uptick in capital infrastructure anticipated in future.

With the support of our stakeholders, we are facing into the challenges ahead, investing with purpose front and centre to help the region we serve to thrive.

This Board statement was approved by the Board of Directors on 13 July 2023 and signed on its behalf by

Claire Russell, Company Secretary.

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## Long Term Viability Statement

### Background

The Directors are responsible for ensuring the resilience or viability of the Group's water and water recycling services to meet the needs of its customers in the long term. This means the Group must be able to avoid, manage and recover from disruptions to its operations and finances.

The Directors' review of the longer-term prospects and viability of the Group is an extension of our business planning process, which includes financial forecasting, a robust risk management assessment, regular budget reviews and scenario planning. This activity is strengthened by a culture throughout the Group of review and challenge. Our vision and business strategy aim to make sure that our operations are resilient and our finances are sustainable and robust.

As part of Anglian Water's approach to defining risk appetite, each year the Directors review our specific risk tolerance levels and consider whether our decision-making behaviours over the past year have been consistent with these risk levels. The Directors confirmed that the Group's behaviours over the past year had been in line with our risk appetite.

### Look forward period

As one of the 10 regional water and sewerage services companies operating in the UK, Anglian Water's prices are set by the industry regulator Ofwat for five-year Asset Management Plan (AMP) periods, which support the Group's underlying costs. This provides the basis for future tariffs, revenues, costs and cash flows over the current AMP (April 2020 to March 2025).

### Assessment of prospects and viability

The Directors have assessed Anglian Water's financial prospects over the next 10 years from April 2023 to March 2033. A 10-year period has been chosen to ensure that our business plan for the current AMP does not impact on the longer-term viability of the Group:

- The first two years takes us to the end of the current AMP, for which there is reasonable certainty and clarity, with a stretching five-year plan to deliver in line with the CMA Final Determination for AMP7.
- The next eight years of the period are outside the current AMP and therefore subject to the final outcome of the following five-year price reviews, PR24 and PR29, for which uncertainty exists. Our assumptions for AMP8 align to the AMP8 forecasts that we plan to submit in our PR24 Business Plan.
- The Board considered whether there are specific, foreseeable risk events relating to the principal risks that are likely to materialise within a 10-year period, and which might be substantial enough to affect the Group's viability and therefore should be taken into account when setting the assessment period. These events were modelled appropriately within our downside scenarios.
- The Board has considered the impact of the wider activities of other Group companies and transactions and of the overall Group structure.
- The Board considers the maturity profiles of debt and the availability of new finance over 10 years as part of its review of financial modelling and forecasting, as well as considering the credit ratings of the debt.
- Finally, we take note of the Water Industry Act, which requires Ofwat to ensure that water companies can (in particular through securing reasonable returns on their capital) finance the proper carrying out of their statutory duties.

## Principal risks

We have set out the details of the principal risks facing the Group within the full Annual Integrated Report, described in relation to our ability to deliver our 10-year outcomes. We identify our principal risks through a robust assessment that includes a continuous cycle of bottom-up reporting and review, and top-down feedback and horizon scanning. Through this assessment, priorities are elevated appropriately and transparently.

The Directors regularly review business plans that show projected cash flows for the current AMP period, and long-term cash flow modelling projections which extend into AMP8 and beyond. This includes reviewing the expected outcome relating to the principal risks with this impact included in our business plans.

## Stress testing the business plan

In reviewing its financial viability, Anglian Water considers the stringent covenant tests required under its securitised structure to provide comfort to our bondholders that our business is viable to the end of the current AMP period and beyond, and to ensure the availability of debt to finance Anglian Water's investment programme. At each regulatory price review and throughout the AMP, the Board satisfies itself that the agreed five-year business plans ensure adequate covenant headroom throughout the AMP period and beyond. This includes extensive downside scenario testing at both Anglian Water and Group level from severe, plausible and reasonable scenarios chosen because they pose the greatest risk to the business.

The following scenarios have been used individually and in combination to model the impact on the overall performance of the business, the ability of the business to service its debt and the impact on its credit rating.

The table below sets out, for each of the scenarios, whether the impact modelled would require the business to implement mitigating actions to avoid a Trigger event, or in the case of the business maintaining sufficient headroom, no mitigations are required.

Principal risk	Scenario	Impact modelled	Potential mitigations required
People Technology Financial Asset infrastructure Business resilience Commercial & third party Strategic execution	Material totex underperformance against the Final Determination allowance	- Overspend of 10 per cent across an AMP  - CAPEX overspend of 5per cent  - OPEX overspend of 5 per cent	- No mitigations required  - No mitigations required  - No mitigations required
Customer proposition Environment People Reputation Asset infrastructure Business resilience Strategic execution	Material Outcome Delivery Incentive (ODI) penalties	- Up to £105 million applied in years four and five	- No mitigations required
Environment Water supply and quality Health and safety People Reputation Legal	Regulatory fines and legal penalties	- Up to 6 per cent of turnover applied in a single year	- Mitigations required
Financial	Unfunded pension liabilities	- Up to £15 million applied per annum	- No mitigations required

Customer proposition Financial Business resilience	Risks associated with the disruption caused by cost of living crisis, potential reductions in revenue collection	- Up to 5 per cent decrease in cash collection - 20 per cent increase in bad debt	- Mitigations required - No mitigations required
Financial Reputation Strategic execution	The potential impact of credit rating agencies downgrading the debt for any companies in the Group	- 2 per cent increase in cost of new debt	- No mitigations required
Financial Reputation Strategic execution	Cost of debt increases	- 2 per cent above base level assumptions across an AMP	- No mitigations required
Customer proposition Financial Asset infrastructure Commercial & third party	Significant inflation fluctuations	- 1 per cent above and below base level assumptions for each AMP - 2 per cent below base level assumptions for each AMP	- No mitigations required - No mitigations required
Customer proposition Environment People Technology Financial Reputation Asset infrastructure Business resilience Commercial & third party Strategic execution	Combined scenario based on totex underperformance for a whole AMP, along with a significant ODI penalty and a revenue penalty	- Overspend of 10 per cent across an AMP, combined with an ODI penalty of 1.5 per cent of RORE in year four and five plus a financial penalty of 1 per cent of revenue in year four	- No mitigations required
Customer proposition Financial Asset infrastructure Commercial & third party Reputation Strategic execution	Combined scenario based on low inflation and high cost of debt	- Inflation 2 per cent below base level for the AMP combined with cost of debt 2 per cent above base level assumptions across an AMP	- No mitigations required

In deciding on appropriate downside scenarios and corresponding stress tests, management have considered the required modelling set out by Ofwat as part of the financial resilience testing for PR24. Management have taken the view that where the PR24 scenarios were more severe it would be prudent to align to these, this also provides consistency with our PR24 Business Plan submission.

As part of our stress tests for the downside scenarios we have considered the potential impacts of cost shocks resulting from climate change. Such cost shocks include the 'Beast from the East' extreme cold weather event, followed by a rapid thaw, experienced in early 2018, and the extreme wet weather events experienced in our region in the summer of 2019 and winter of 2020/21.

The cost impacts of these events (including longer term recovery impacts such as leakage reduction), were in the order of £7 million for 'Beast from the East' and £3 million for each extreme wet weather event. During the current year, as a result of a number of weather related incidents, the Board committed to investing £13.9 million to ensure we maintain our industry leading leakage position. Our modelled downside scenarios include cost shocks equal to experiencing several of these events in continuous years across the AMP; we are therefore confident that we can withstand the financial impacts of extreme weather events, predicted to increase as a result of climate change.

### Mitigating actions

For each sensitivity and combined scenario, we identify, where required, the appropriate mitigations against the potential risks. In the event that the situations used for stress testing were to result in an unacceptable level of deterioration in the Group's financial metrics,

management's principal actions would include further reducing the level of shareholder distributions, potential shareholder equity injections, reviewing the financing structure and identifying further opportunities to reduce the Group's cost base or reduce financing costs.

Evidence of the shareholders' support for equity injections is provided by the equity injections made in October 2018 of £22.0 million, April 2021 of £110.0 million and July 2021 of £1,065.0 million, although ongoing support would require equity returns sufficient to attract the significant levels of new capital investment.

As a further mitigation we have a significant portfolio of insurance cover in place to provide protection against many catastrophic scenarios such as dam failure, pluvial and fluvial flood, terrorism, and public and employer's liability. There would still be a short-term liquidity impact from such events due to the time it would take between incurring the expenditure and recovering this through the insurance claim; however, it is an important consideration in terms of medium-term liquidity. The Board formally reviews the output of the stress testing twice a year.

### **Benefits of the securitised structure**

The highly covenanted nature of our financing arrangements (often described as a whole business securitisation) enhances our financial resilience by imposing a rigorous governance framework. This requires continuous monitoring and reporting of our financial and operating performance by senior management, through a well-established business process, to ensure compliance with our financing arrangements, and provides an additional layer of control over how we transact with our stakeholders, including suppliers, business partners, customers, shareholders and lenders, compared to the regulatory frameworks by which we are governed.

### **Assurance**

Robust internal assurance is provided by the Board reviewing and challenging the stress test scenarios selected and the risk mitigation strategies. The Directors also obtain annual independent third-party assurance on the integrity of the long-term cash flow model which underpins the financial projections.

### **Directors' statement**

In making this statement, the Directors have assumed that funding for capital expenditure in the form of capital markets or bank debt will be available in all reasonable market conditions. They have also considered the impact of the Group structure, intra-Group transactions and any other Group activities on the viability of the regulated business.

In addition, the Directors have made assumptions about the ability to attract equity investment into the sector to fund the required capital investment.

This viability statement assumes that Ofwat will maintain sufficient financeability as required by the Water Industry Act, including an equity return sufficient to attract the significant levels of new capital investment in AMP8 and AMP9.

Anglian Water Services is an efficient company with a history of both operational and financial outperformance. The Directors can be satisfied that the business has a reasonable expectation of being able to continue in operation and meet its liabilities as they fall due at least to March 2033, and is financially resilient in the face of severe but plausible downside shocks.

This is based on the reasonable certainty of its future revenue stream and an acceptable PR24 determination that meets the requirement to maintain sufficient financeability as required by the Water Industry Act, the strength of the balance sheet (in particular the substantial cash balance and strong net assets), the availability of undrawn debt facilities in the unlikely event that debt markets were temporarily restricted, and by reviewing the business plans and strategic models, combined with the robust risk management process and mitigations described above.



## Statement of Directors' Responsibilities

Further to the requirements of Company law, the Directors are required to prepare accounting statements which comply with the requirements of Condition F of the Instrument of Appointment of the Company as a water and sewerage undertaker under the Water Industry Act 1991 and Regulatory Accounting Guidelines issued by Ofwat.

The Directors of the Company hereby confirm that the Company has kept proper accounting records, which comply with Condition F.

The Instrument of Appointment additionally requires the Directors to:

- a. Confirm that, in their opinion, the Company has sufficient financial resources and facilities, management resources and methods of planning and internal control for the next 12 months.

The Directors have included within this report a ring-fencing certificate which confirms the adequacy of resources and facilities as set out above and in accordance with clause P.30 of the Instrument of Appointment.

- b. Confirm that, in their opinion, the Company has sufficient rights and assets which would enable a special administrator to manage the affairs, business and property of the Company.

The Directors confirm this requirement has been met throughout the year.

- c. Confirm that, in their opinion, all contracts the Company has with any associate Company include the necessary provisions and requirements concerning the standard of service to be supplied to ensure compliance with the Company's obligations as a water and sewerage undertaker.

The Directors have included within this report a ring-fencing certificate which confirms the adequacy of contracts as set out above and in accordance with section P.30 of the Instrument of Appointment.

- d. Report to Ofwat changes in the Company's activities which may be material in relation to the Company's ability to finance its regulated activities.

The Directors hereby confirm there were no such changes in the year ended 31 March 2023.

- e. Undertake transactions entered into by the appointed business, with or for the benefit of associated companies or other businesses or activities of the appointed business, at arm's length.

This has been confirmed within disclosure 'Transactions between the appointee and associated companies'.

These responsibilities are additional to those already set out in the statutory financial statements:

In the case of each of the persons who are Directors at the time when the Report is approved under Section 418 of the Companies Act 2006 the following applies:

- So far as the Director is aware, there is no relevant audit information of which the Company's auditors are unaware; and
- He/she has taken all the steps that he/she ought to have taken as a Director in order to make himself/herself aware of any relevant audit information and to establish that the Company's auditors are aware of that information.

## Ring-Fencing Certificate

### Introduction

Condition P of Anglian Water's licence requires the Company ('the Appointee') to ensure that it maintains sufficient financial and management resources to enable it to carry out its functions in a sustainable manner, and protects the Appointee from the activities of other group entities. The Appointee must, at all times, conduct the Appointed Business as if the Appointed Business were substantially the Appointee's sole business and a public limited Company separate from any other business carried out by the Appointee. To enable it to carry out the Regulated Activities the Appointee must, at all times, act in a manner which is best calculated to ensure that it has in place adequate financial resources and facilities, management resources and systems of planning and internal control.

Condition P requires that Anglian Water submits to Ofwat a Ring-Fencing Certificate at the same time as it publishes its APR. When the Appointee submits its Ring-Fencing Certificate, it must submit a statement of the main factors which the Board of the Appointee has taken into account in giving its opinion for the Ring-Fencing Certificate. The Ring-Fencing Certificate should be accompanied by a report prepared by the Appointee's Auditors and addressed to Ofwat, stating whether they are aware of any inconsistencies between that Ring-Fencing Certificate and any information which the Auditors obtained in the course of their work as the Appointee's Auditors.

### Financial resources and facilities

In the opinion of the Directors, Anglian Water Services Limited ("the Company") will have available to it sufficient financial resources and facilities to enable it to carry out, for the next twelve months, the Regulated Activities (including the investment programme necessary to fulfil its obligations under the appointment). Additionally, the Directors have approved a business viability statement covering the ten year period to March 2032 which is included in the Annual Performance Report.

### Management resources

In the opinion of the Directors, the Company will, for the next 12 month period, have available to it management resources which are sufficient to carry out the Regulated Activities (including the investment programme necessary to fulfil the Company's obligations under the Instrument of Appointment).

### Systems of planning and internal control

In the opinion of the Directors, the Company will, for the next 12 month period, have available to it systems of planning and internal control which are sufficient to carry out the Regulated Activities.

### Rights and resources other than financial

In the opinion of the Directors, the Company will, for the next 12 month period, have available to it rights and resources other than financial resources which are sufficient to carry out the Regulated Activities.

### Contracting

In the opinion of the Directors, all contracts entered into include all necessary provisions and requirements concerning the standard of service to be supplied to the Company, to ensure that it is able to meet all its obligations as a water and sewerage undertaker.

### Material issues

The Directors have taken into consideration a number of material factors, including the response of the Company to the macroeconomic challenges of the year and the challenges posed by episodes of extreme weather.

This Certificate was approved by the Board of Anglian Water Services Limited on 13 July 2023, a draft having been discussed by the Board meeting of 23 May 2023.

The licence requires that our external auditor, Deloitte, provides an accompanying report stating whether they are aware of any inconsistencies between this Certificate and any information obtained during their assurance in relation to the regulatory accounting statements and their work as Anglian Water's auditors. Deloitte's overall auditor assurance statement is included in the APR on pages 350-354 and its assurance statement specific to the Ring-Fencing Certificate has been separately submitted to Ofwat.

Certified by

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Claire Russell

Company Secretary

Dated: 13 July 2023

## Relevant Factors

The following main factors have been taken into account by Directors in giving this declaration:

### Financial resources and facilities

- Financial details – In considering the requirements of Condition P, the Directors took financial resources and facilities to mean the cash requirements and funding arrangements needed to run the Company as follows:
  - The financial strength of the Company, as recorded in the statutory financial statements for the year ended 31 March 2023 - Cash flow projections for the forthcoming year have been prepared and subjected to sensitivity analysis using various downside scenarios. This analysis has shown that it is reasonable to believe that facilities will be sufficient for the next 12 months.
  - The Euro 10 billion global secured medium term note programme of financing implemented on 30 July 2002 by Anglian Water Services (Financing) Plc (AWSF), a subsidiary Company to, inter alia, provide future financing for the Company (including the investment programme necessary to fulfil the Company's obligations under the Instrument of Appointment).
  - Cash and deposit balances at 31 March 2023 for the Anglian Water Services Limited Group of £626.4 million - As at March 2023 Anglian Water has access to £975.0 million of undrawn facilities (March 2022: £600.0 million), to finance working capital and capital expenditure requirements. In addition, Anglian Water has access to a further £375.0 million of liquidity facilities (March 2022: £375.0 million), consisting of £254.0 million to finance debt service costs and £121.0 million to finance operating expenditure and maintenance capital expenditure in the event that the Company was in an Event of Default on its debt obligations and had insufficient alternative sources of liquidity. Subsequent to year end, the Company raised additional debt with net proceeds of £851.6 million.
  - All bank facilities and debt capital market issuance are issued pursuant to the Global Secured Medium Term Note Programme dated 30 July 2002 between the Company, AWSF and Deutsche Trustee Company Ltd (as agent and trustee for itself and each of the finance parties). This agreement provides that any facilities drawn by AWSF will be passed directly on to the Company upon utilisation of the facility.
  - Performance against the FD – Overall the Company has performed within the totex allowance set out in Ofwat's FD, despite significant challenges, mainly through our innovative approaches to capex expenditure.
  - Credit related factors – The Company has maintained its investment grade credit rating at a level that allows adequate access to the financial markets.
  - Business plans and long-term viability – In considering the Company's financial strength, the Directors are mindful that there is a reliance on the accuracy of forecasting. The Company has undertaken a detailed planning and budgeting process that incorporates the period of twelve months commencing on the date of the Certificate. The Directors have reviewed forecasting accuracy and are satisfied that it is acceptable for this purpose.

### Management resources

- In respect of the adequacy of management resources, the Directors have gained assurance from the Company's chosen business model and organisational design resulting from the ring fencing of Anglian Water Services. Robust identification and allocation of resources has been made through alignment of objectives, processes and manpower requirements.
- Management skills, experience and relevant qualifications - The Company is managed operationally by the Management Board. The Board believes that the members of the Management Board have the appropriate mix of skills, experience and relevant qualifications to continue to run the Company effectively for the next 12 months. Details

of the individuals who form the Management Board can be found on page 102 of the Annual Integrated Report 2023.

- Recruitment process, staff engagement – The Company has a robust and fair recruitment process, using an applicant tracking system (ATS) to ensure GDPR compliance. The Company is an equal opportunities employer which aims for inclusion, diversity and fair treatment for all. The Company promotes this within its attraction strategies (including branding, careers website, adverts and job boards), throughout the application process and within its hiring, manager recruitment and selection, training and ongoing coaching.
- The Company values and recognises that diversity is central to its success as an organisation and each member of the management board champions a different diversity demographic to drive advocacy, engagement and to reinforce organisational importance. We believe that the Company is better able to understand and meet the needs of its customers if the organisation reflects the communities it serves.
- The Company regularly engages with employees in a number of different ways, including regular consultations with trade unions and our 'Open House' employee forum. In the annual 'Love to Listen' employee survey, carried out in September 2022, 6,900 employees took part: our highest ever participation and representing a response rate of 82%. An action plan to follow up on the survey feedback is being implemented, with updates provided through communications channels and a shorter 'pulse' survey in April 2023 to check progress. Key themes of the action plan include reinforcing focus on our strategic priorities; supporting collaboration between teams; and refreshing our performance, recognition and reward frameworks to drive positive outcomes linked to our Purpose.
- During the year, we broadened Open House from a group of employee representatives to a truly open forum in which all our people have direct access to regular interactive sessions with our CEO and senior management. This is now well-established as an inclusive conversation, with up to 800 people participating live, both virtually and in person, at a range of Company sites and others accessing via follow-up recordings and Q&As.
- Succession Planning for key management staff - The Company's succession plans for its key management staff are developed by the Management Board, led by the Group People and Change Director. The succession plans are reviewed and challenged annually by the Company's Nomination Committee (which consists of a majority of Independent Non-Executive Directors). Further information can be found on pages 123-136 of the Company's Annual Integrated Report 2023.
- Quality of management/staff induction and other training and development - On joining the Company, all staff are required to complete online induction training to understand the Company. This, combined with other mandatory modules including Acceptable Use of IT, Data protection and Inclusion, ensure all staff understand the Company's expectations and commitments. In addition, all new starters are provided with a booklet entitled 'Doing the Right Thing'. This booklet summarises key Company policies in a clear and concise way to ensure that the Company's values and standards are clear to colleagues from their very first day. All new Directors receive a comprehensive induction to the business.
- The Company offers a wide range of training and development to its employees during their careers in both operational and non-operational roles, including the externally accredited 'Licence to Operate' programme. During 2022/23 the training team used the 'Build Back Better' ethos to ensure that we retained the efficient ways of working that were developed throughout Covid-19 whilst still ensuring that competence was assured for all roles. We continue to develop virtual and remote training options where possible whilst retaining face-to-face training where physical interaction is required. We continue to develop our e-learning suite across a broad range of business areas and have accelerated the roll-out of our Virtual Reality training programme which is now fully accredited by CABWI.
- Our apprenticeship and graduate programmes continue to grow and now cover over 200 positions across operations, project management, data analysis, IS, finance and laboratories.

- Process for ensuring diversity of perspectives - The Company is committed to creating an environment where all employees feel included and valued in order to achieve their potential. Further information on the Company's approach to inclusion can be found on page 125 of the Company's Annual Integrated Report 2023.
- Board or management activities, reports or statements – Both the Board (consisting of Executive Directors, Independent Non-Executive Directors and Non-Executive Directors) and Management Board meet regularly to consider and decide upon a range of operational, financial and strategic matters impacting the Company. Further information on the operation of the Board can be found in the Section 172 Statement on pages 65-68 and in the Corporate Governance Report on pages 106-115 of the Company's Annual Integrated Report 2023.
- The Company publishes a range of annual and periodic reports including: Annual Integrated Report, Annual and Interim Financial Results, Annual Performance Report, Drinking Water Quality Report, Gender Pay Gap Report, Drought Modelling Report, Modern Slavery Statement and Water Resources Management Plan.
- Independence of Board – It is a requirement of Ofwat's Board Leadership, Transparency and Governance (BLTG) Principles that independent non-executive directors are the largest single group on the Board. The Board confirms that, for the 2022/23 financial year and up to the date of this certificate, it has been compliant with this requirement, with the Board consisting of an independent Chairman, five Independent Non-Executive Directors, four Non-Executive Directors and two Executive Directors. The Board confirms it intends to maintain this structure for the next 12 months. Further information on the structure of the Board can be found in the Corporate Governance Report on pages 106-115 of the Company's Annual Integrated Report 2023.

### **Systems of planning and control**

- Governance procedures, risk management frameworks, oversight procedures – In October 2020, the Board adopted the Anglian Water Services Corporate Governance Code 2020 (the 2020 Code), which incorporates Ofwat's BLTG Principles and most of the provisions contained in the 2018 UK Corporate Governance Code. Full details of the compliance against the 2020 Code is detailed in the Corporate Governance Report on pages 106-115 of the Company's Annual Integrated Report 2023.
- Both the Management Board and Board regularly review the Company's Top Tier Risk Register and the Company has a full risk management framework in place, details of which can be found on pages 83-95 of the Company's Annual Integrated Report 2023.
- Internal and external audit policies, processes, activities – Deloitte was awarded the contract for external audit services in September 2016. During the 2021/22 financial year, the Audit Committee undertook a tender of the external audit contract. Following a detailed process, the Committee recommended to the Board that Deloitte be reappointed as external auditor on a four-year contract to commence from September 2023 with the option for four successive one-year extensions. The Board approved Deloitte's re-appointment on the terms detailed above at its Board meeting in March 2022.
- The internal audit function is an integral part of the Company's internal control framework. With effect from 1 August 2021, the provision of internal audit services has been undertaken by an in-house team, with support provided by external specialists as necessary. The work undertaken by the internal audit function provides key insights into the practices, processes, systems and controls of the Company. As such, the internal audit plan is approved on an annual basis at the March Committee meeting. The Head of Internal Audit then provides a detailed update on progress against the plan at each Audit Committee meeting. This update provides insight into the results of the audits, including management plans in place to address any actions. More information on the Audit Committee can be found on pages 116-122 of the Company's Annual Integrated Report 2023.
- The internal audit plan for 2023/24 is aimed at providing depth and quality assurance where it matters to the Company, taking into account the top tier risk register, discussions with management, organisational objectives and priorities. Some audits are designed to add greater value and insight to the organisation in real time whilst

other audits focus on the delivery of improvements in efficiency and effectiveness. Audits on the 2023/24 internal audit plan include Critical Asset Management, Abstraction Licence and Sludge Treatment Compliance, Supply Chain Sanctions, Operator Self Monitoring Sampling Programme and a project assurance review of the Cambridge WRC Relocation Project.

- Systems for maintaining supply/business continuity - the Company has robust operational and organisational resilience mitigations in place to ensure its essential services to customers can continue during events that affect the Company's assets, people or processes. These include plans and procedures, incident room facilities, workplace recovery facilities, emergency equipment stocks, card warning stocks and stocks of alternative supplies such as bottled water. All processes and plans are regularly reviewed against risks to the business, and the Company undertakes training and exercises to validate these. The Company continues to utilise its established Business Impact Analysis via an online platform to provide visibility and consistency across the business and respond to incidents. This uses a systematic approach to assess the criticality of activities delivered within the business and the people, buildings, equipment, partners and systems that teams need to deliver them. The Business Impact Analysis continues to be used to form a whole range of Business Continuity plans, including workplace recovery arrangements and backfill plans. These plans are regularly tested and exercised with all our critical teams. Business Impact Analysis form part of the Company's ISO 22301 Business Continuity certification for which the Company is audited annually by BSi.
- The Company has further strengthened its approach to supply chain resilience by mapping some of its most critical supply chains and producing a dashboard and supporting plans to respond to disruptive events affecting these suppliers to quickly understand the business impact and the contingencies required to maintain operations. Organisational incident management structures and processes continue to be enhanced, with a weekly risk monitoring group bringing together subject matter experts from across the Company to provide a holistic view of emerging risks, their possible impact to the business, and the response required. This was used to good effect in 2022/23 when planning for power outage risks over the winter period. In 2022/23 the Company expanded its "Anglian Water Force", with all employees allocated a secondary Incident Support role during core working hours, supported by a rigorous programme of training and exercises. This, together with our hybrid approach to managing incidents, with some incident personnel moving to a centralized space and some working remotely, has improved our capacity to resource Incident Response Teams and provided greater resilience across the business.
- Policies to prevent fraud and other unethical behaviour including whistleblowing – The Company expects all employees, partners, agents and contractors to adopt a high standard of business ethics and have zero tolerance of bribery and corruption. The Company requires all employees to complete training, including on anti-bribery, maintaining a level playing field and data protection. The Company has a whistleblowing policy whereby employees can, in confidence, report on matters where they feel malpractice, criminal activities, improper or unethical behaviour is taking place. Employees can raise any concerns with line management or, if this is inappropriate, raise them with the externally facilitated helpline or confidential email address which is managed by an independent provider. The independent provider maintains a register of all allegations and senior management decide whether there are grounds for further investigation. Further information on the Company's approach to whistleblowing, anti-fraud and anti-bribery processes can be found on page 121 of the Company's Annual Integrated Report 2023.
- Risk, compliance other assurance statements - The Company has an extensive risk management process, with key risks regularly reviewed by the Management Board and Board. A full disclosure relating to resilience, risk management and viability is included in the Company's Annual Integrated Report 2023 on pages 83-99. The Company maintains registers that demonstrate that the Company complies with the relevant sections of the Water Industry Act and its Licence. In addition, annual assurance statements from external assurance providers are included in the Annual Performance Report.



## Rights and resources other than financial

- Corporate missions and values – The Company operates within its values framework, the North Star, which combines its Purpose, Mission and Values to give a common goal for all employees. Along with the Company’s public interest commitment, which is enshrined in the Company’s Articles of Association, the values framework provides direction and guidance across all areas of the business to support the Company to deliver its purpose and keep the business running over the coming years.
- Technology and other systems for ensuring checks and balances - The Company has robust systems in place to ensure the management of a stage-gate approach to investment delivery, as well as a change control process for the initial allocation and subsequent re-allocation of capital and operational expenditure budgets. The Company has worked to better integrate these systems to improve the consistency of management information and enable improved benefits decision making. In addition to the systems it has in place to manage the delivery of the investment programme, the Company has a corporate risk tool which hosts the corporate risk register and allows risk owners to update their risks prior to Board updates.
- A wide range of technology and systems are deployed to ensure the functioning of the business, including an Enterprise Resource Planning (ERP) system, risk management system, extensive operational monitoring and control systems, field scheduling systems, employee management and customer and billing systems. The Heads of each business area are required to assess and confirm annually that the Business Unit Information Technology requirements are adequately met. The Company is undertaking a major business improvement project associated with the upgrading of its ERP to S/4HANA. Some outputs will be delivered in 2023, with the completion of phase 1 scheduled for summer 2024. Further outputs will be delivered in subsequent years.
- Policies to encourage an integrated approach and ‘systems thinking’ - The Company’s management systems help ensure it meets customer commitments and deliver its outcomes. The Company’s Integrated Management System Framework sets out all its management system standards in a clear and consistent way, aligning to strategic priorities, business goals and good outcomes. Strategic and business unit plans form the basis on which Anglian Water sets and reviews its objectives, obligations and targets. These cover areas such as the following:
  - Customer - To make life better for our customers every single day, by delivering a personal, trusted and effortless experience
  - Quality - Protecting water from source to source, providing confidence that our drinking water and recycled water is always safe and clean
  - Environment - Safeguarding and enhancing the air, water and land where we live and operate, to sustain and maintain a flourishing environment
  - Asset Management - Exploiting the whole lifecycle of our assets to maximise value and reduce our capital and operational carbon footprint
  - Resilience - Effective planning and preparation to manage and mitigate the impact of any disruptive event so we can successfully respond and recover
- Certified Business Management Systems (BMS) have been established to reinforce the management of risks associated with many areas of the business and compliance with obligations. Areas covered by BMSs include water and water recycling operations, asset management and occupational health and safety management. In 2023, we became the first water company to achieve certification for the ISO45003 standard, which recognises the important work we do to support our people’s health and wellbeing. Audits of compliance with the requirements of these systems are conducted internally and by third party certifiers.
- The Company uses the integrated human resources management software system, Workday, to ensure a common approach is taken across the business in areas such as performance management. We use Workday to ensure all relevant employees undertake training on essential legal obligations, such as the Bribery Act and GDPR, and key internal policies which protect the Company's assets, such as the acceptable use of IT and the risks of cyber attack. The Heads of each business unit are required to assess

and confirm annually that all the employees within their units are up-to-date with their training requirements.

- Planning systems - The Company has an asset management approach based on continuous planning and management of assets and investments, supported by the Company's Copperleaf C55 system, that ensures that the Company delivers efficient outcomes for customers. This is used to test all investment proposals and ensures that funds are allocated in the most efficient way to deliver benefits of greatest value to customers at the lowest whole-life cost.
- Assets maintenance/insurance factors - Anglian Water is one of the leaders in the industry when it comes to Asset Management and coverage of asset information and asset models. The Company completes deterioration modelling coupled with an assessment of criticality of the Company's asset base to identify maintenance needs and completes site by site reviews to create bespoke site and catchment asset plans.
- Working with Ofwat, in 2021 the Company completed a maturity assessment of its approach to asset health and asset resilience. In its assessment of Anglian's submission, Ofwat rated Anglian's approach most highly of all of the companies in the sector. The assessment also highlighted areas where the Company can improve further. For AMP7 the Company has developed this approach further to complete system plans, which look further at the interactions between the Company's assets and the communities they serve. These system plans are revealing forward looking risk relating to the effects of climate change and a need for a step change in asset renewal. The Company is preparing to submit plans at PR24 to ensure asset maintenance is properly funded for long term resilience.
- The Company appoints a London Insurance Broker to facilitate the placement of its insurance programme. The broker, in conjunction with the business, will annually (or more frequently if required) undertake a review of business activity combined with an assessment of the corporate risk profile, to determine the key threats to the business and its ability to meet its overall corporate objectives. This process, combined with a review of historic business losses and overall loss trends in the wider insurance market, determines the value of these financial risk exposures that can be transferred to the insurance market. The Company will, via its appointed Brokers, ensure it has met its statutory obligations to procure certain insurance policies and then, combined with approval from the Board, seek to place all other policies to the required limits (where available in the insurance market) to ensure key financial risks and assets are protected against significant loss.

## Contracting

- Position/status of key contracts in place - The Company's Delivery Investment Programme key alliance Tier one and two contracts have been sourced in compliance with EU procurement regulations and signed by all shareholders. The contracts are differentiated by the degree of integration and alignment and the opportunity for longer-term collaboration with financially sustainable contractors. They adopt an appropriate works allocation to assure no material infringements to the Company's covenants are incurred and these are assured monthly through Company procedures.
- As key contractors within the investment programme, the alliances follow the following principles:
  - Commercial arrangements align partners' returns with the Final Determination.
  - Targets and arrangements incentivise innovation and performance.
  - Stretching targets are set around affordability, outcome performance, a carbon challenge and time to deliver.
  - A strong focus on culture and behaviour exists across all of the Alliances, leading to greater collaboration and a constant exchange of best practice.
  - Engagement with the partners is at programme / portfolio level rather than project level, enabling far greater degrees of efficiencies through governance procedures.
  - Common supply chain frameworks are developed, providing scale benefits and more effective supplier management.

- Adherence to these principles creates a greater level of cost efficiency, shared resourcing, and exchange of best practice and is assured through Self Assurance Contacts embedded into the alliances.
- The terms of contracts awarded by the Company to independent third parties for the provision of certain services and operations are issued in compliance with the Utilities Contract Regulations 2006 and or 2015 (as applicable at the time of tender), and other appropriate UK regulations and EC Directives for the procurement of such outsourced services. In addition, we are taking part in the Government consultation on the creation of new utilities and public procurement regulations post Brexit which will ultimately replace the EU Utilities Contract Regulations 2006 and 2015.
- The Company currently sources from external sources a proportion of services, such as water main repairs, sewer repairs and facilities management. The Company has no intention to materially extend its outsourcing beyond current levels in the 12 months following the date of this certificate.
- The Company also complies with the requirements of the licence conditions and guidance issued by Ofwat in respect of cross-subsidies between the Appointee and any Associated Company.
- No Guarantees or Cross-Default Obligations have been given without Ofwat's written consent.
- The terms of contracts with all Associated Companies include service levels and appropriate terms and conditions and have been reviewed by the Company's auditors as part of their annual audit. Any conflicts of interest for individual Directors must be disclosed under the Company's Article of Association. No Director may vote on any contract or arrangement between the Company and any other Anglian Water Group Company if he/she is also a director of that Anglian Water Group Company.

### **Material Issues or Circumstances**

- Covid-19 - The impact of the pandemic lessened progressively during the course of the year. The Company is pleased that its approach to resilience enabled it to maintain the provision of its services to customers during the entirety of the pandemic. The Company is taking advantage of the ways of working that were devised in response to the pandemic and adopting them as 'business as usual', where appropriate.
- Weather – the Company experienced severe weather challenges during the year. The summer saw unprecedented periods of very hot weather, including two days when temperatures exceeded 40 degrees. The UK temperature record was broken at Coningsby, in the Company's operating region, on 19 July. Very low rainfall led to the Environment Agency moving the Company's region into drought in August and the East Anglia region remained in drought at the end of the year. Thanks to years of water resource management and resilience planning, the Company avoided imposing a temporary use ban in 2022/23 and experienced only localised supply problems. However, ground movement led to a substantial number of burst mains and adversely affected the Company's leakage performance.
- The Company also experienced two periods of very cold weather during the winter. Ground movement again caused a substantial number of burst mains and deprived the Company of the opportunity to recover fully from the leakage challenge posed by the summer's weather.
- Macroeconomic challenges – In common with the rest of the economy, the Company experienced very high levels of inflation for the whole year, primarily due to the war in Ukraine. The Company avoided full exposure to the rise in energy prices as a result of its hedging strategy and depended on investor support to mitigate the impact on the business. The cost of delivering the Company's enhancement programme was also severely affected as a result of the very high prices for steel and other materials. Where possible, the Company addressed this inflationary challenge by re-prioritising expenditure and seeking out new efficiencies. The rise in interest rates across the year significantly increased the Company's borrowing costs and raised the cost of new debt, with the market showing limited appetite for lending.
- Helping vulnerable customers - We remain committed to helping customers struggling to pay their bills and, through our work with local councils this year, secured over £1

million pounds for our customers through their Household Support Funding. In addition, we launched the online version of our extra-care assessment tool, helping customers maximise their income by targeting concessionary tariffs and signposting to third sector support. We are also now able to port data from the government website, giving customers the support they need on their first contact. We provided financial support through our wide-ranging schemes to over 330,000 customers. We also identified and supported over 334,000 (11.4 per cent) of our customers in non-financial circumstances through our Priority Service Register. We were amongst the first organisations in the world to achieve the international standard ISO22458 which measures how we design and deliver fair, flexible and inclusive services for consumers in vulnerable situations.

- River water quality – public dissatisfaction with the frequency of discharges to rivers from overflows continued during the year. The Company was prosecuted seven times in the year for historical offences. The Company pursued the programme of action ('Get River Positive', GRP) that it published in March 2022. Despite extending its number of installed monitors, the Company showed a 54 per cent reduction in the number of spills from combined sewer overflows in 2022 compared to the prior year, meeting its GRP target of fewer than 20 spills per overflow by 2025. One of the four new bathing waters announced by Defra in March 2023 - River Deben Estuary in Waldringfield - is within the Company's sewerage area and two of the others are on its own asset, Rutland Water reservoir.
- The Company continued to respond fully to Ofwat's information requests under its enquiry into Company's compliance with the flow to full treatment (FFT) conditions of their discharge permits and remains confident that there are very few issues at its sites. The Board receives an update on the progress of the investigation as a standing item at every meeting. The Company is undertaking a programme of works at a small number of Water Recycling Centres which are potentially FFT non-compliant and working closely with the Environment Agency to develop principles and further methodology for reporting and assessing FFT.

## Table 1A - Income statement

For the year ended 31 March 2023

	Line description	Units	Statutory	Adjustments			Total appointed activities
				Differences between statutory and RAG definitions	Non-appointed	Total adjustments	
1	Revenue	£m	1,494.936	(103.158)	25.876	(129.034)	1,365.902
2	Operating costs	£m	(1,087.263)	25.140	(16.304)	41.444	(1,045.819)
3	Other operating income	£m	16.024	(12.076)	-	(12.076)	3.948
4	Operating profit	£m	423.697	(90.093)	9.572	(99.665)	324.031
5	Other income	£m	-	104.941	-	104.941	104.941
6	Interest income	£m	19.998	(4.531)	-	(4.531)	15.467
7	Interest expense	£m	(731.395)	(40.808)	-	(40.808)	(772.203)
8	Other interest expense	£m	-	4.531	-	4.531	4.531
9	Profit before tax and fair value movements	£m	(287.700)	(25.960)	9.572	(35.532)	(323.232)
10	Fair value gains/(losses) on financial instruments	£m	645.311	-	-	-	645.311
11	Profit before tax	£m	357.611	(25.960)	9.572	(35.532)	322.079
12	UK Corporation tax	£m	24.900	(0.207)	(1.819)	1.612	26.512
13	Deferred tax	£m	(114.900)	6.762	-	6.762	(108.138)
14	Profit for the year	£m	267.611	(19.404)	7.754	(27.158)	240.454
15	Dividends	£m	(169.000)	-	(7.754)	7.754	(161.246)
<b>Tax analysis</b>							
16	Current year	£m	(25.600)	0.207	1.819	(1.612)	(27.212)
17	Adjustment in respect of prior years	£m	0.700	-	-	-	0.700
18	UK Corporation tax	£m	(24.900)	0.207	1.819	(1.612)	(26.512)
<b>Analysis of non-appointed revenue</b>							
19	Imported sludge	£m			-		
20	Tankered waste	£m			4.124		
21	Other non-appointed revenue	£m			21.752		
22	Revenue	£m			25.876		

The figures in the statutory columns in tables 1A to 1D are based on the Company only accounts of Anglian Water. The principal differences between the statutory accounts and the APR are in respect of capitalised interest and the classification of grants and contributions income. For regulatory reporting, capitalised interest is not permitted and therefore the adjustments are to reverse out the impact on depreciation, interest and deferred tax.

Grants and contributions income in the statutory accounts is classified as revenue (in accordance with IFRS 15 'Revenue from Contracts with Customers'), whereas in the regulatory accounts it is classified as 'other income'. The other adjustments are reclassifications of the following items:

- Profit on disposals of fixed assets is treated as operating costs in the statutory accounts and other operating income in the APR.
- Rents received are classified as other operating income in the statutory accounts and other income in the regulatory accounts.
- Contributions received for rechargeable works and fluoridation are other operating income in the statutory accounts, but classified as revenue in the regulatory accounts.
- Certain income items treated as negative expenditure in the regulatory accounts (table 2B) are classified as other operating income in the statutory accounts in accordance with IFRS 15.
- Interest charges in respect of defined benefit pension schemes are classified as interest expense in statutory accounts and other interest expense in the APR.
- An accrual has been recorded within the statutory accounts in relation to the innovation fund. As agreed by Ofwat, the cost has been reversed for the purposes of the regulatory accounts but no corresponding adjustment has been made within revenue. The only costs recorded in the APR for the innovation fund are the actual costs on projects that have been funded by the innovation fund. These are offset by the release of the accrual in the statutory accounts.

**1** These adjustments explaining the difference between statutory and RAG definitions are summarised in the following table.

### Difference between statutory and RAG definitions

Line description	Adjustments						Total adjustments
	Reclassification of profit on disposal of assets	Capitalisation of interest and related depreciation	Reclassification of other operating income	Grants and contributions income	Reclassification of pension scheme interest	Reversal of innovation fund provision	£m
	£m	£m	£m	£m	£m	£m	
Revenue			1.337	(104.495)			(103.158)
Operating costs	(3.949)	13.758	14.241			4.682	28.732
Other operating income	3.949		(16.025)				(12.076)
Other income			0.446	104.495			104.491
Interest expense		(40.808)					(40.808)
Interest income					(4.531)		(4.531)
Other interest expense					4.531		4.531
UK Corporation tax						(0.890)	(0.890)
Deferred tax		6.762					6.762

In addition to the above, as noted in the change log, there is a statutory to regulatory adjustment for costs incurred in relation to innovation fund expenditure (£3.6 million). This has the impact of increasing operating costs along with an associated reduction to the tax charge at 19 per cent.

The following commentary is in relation to the appointed business only.

## Revenue (1A.1)

2 Revenue for the year, excluding grants and contributions, was £1,365.9 million (2022: £1,276.0 million), an increase of £89.9 million (7 per cent) on last year. The increase in revenue is as a result of the following factors:

- The price increase for customers following the regulatory pricing formula, £87.7 million increase.
- A net decrease in demand of £13.4 million. Household consumption is down £21.8 million and non-household consumption up £8.4 million as we move back towards pre-Covid 19 levels of consumption.
- Increase in revenue of £8.4 million as a result of increase in customer numbers.
- Other increases in revenue of £7.2 million.

The money we can raise from bills, along with how much we are allowed to invest in our service, is decided every five years through Ofwat's price-setting process and set out in our Final Determination (FD).

## Operating costs (including depreciation, charge for bad and doubtful debts) (1A.2)

1. Operating costs of £1,045.8 million comprise opex of £681.7 million and depreciation of £364.1 million. Overall operating costs (including depreciation) for the year increased by £111.1 million (11.8 per cent) from £934.7 million in 2022. This increase is explained in the table below:

Summary of changes in operating expenditure	
Category	£m
Prior year	601.2
<b>Funded by FD</b>	
Inflation	53.2
Capitalisation of replacement infrastructure assets	(9.1)
<b>Weather related incidents</b>	
Investment in leakage to recover from hot weather and freeze-thaw	13.9
<b>Bad debt provision</b>	
Increase in base charge	6.3
Prior year one off release	6
Prior year change in macroeconomic outlook	6.6
<b>Power</b>	
Benefit of proactive hedging	(4.2)
<b>Other significant items</b>	
Fuel in excess of inflation	3.7
Chemicals in excess of inflation	9.4
Innovation Fund Expenditure	3.6
Business rates	(10.1)

Other	1.20
Net Increase/decrease	(76.9)

<b>Total increase</b>	
As at March 23	681.7

## Inflation

**3** The inflationary increases formed part of the Final Determination and are therefore funded through the inflationary increases in revenues.

## Capitalisation of replacement infrastructure assets

**4** In order to improve efficiency, there was a change in the way we deliver boundary box and external meter chamber replacement in the second half of last year. As a result of the change in delivery, which has moved from individual jobs to a scheme of work, the cost of the scheme is above our de-minimis threshold for capitalisation, resulting in the costs being treated as capital expenditure rather than operational. In addition, this year we have also expanded this process to include manhole covers and network fittings.

## Weather related

**5** As a result the hot summer, the Board committed to invest £13.9 million with the view to maintain our industry leading leakage position as we sought to recover from a number of weather related events throughout the year.

**6** The first six months of the year saw very little rainfall and as a result we saw exceptionally dry ground conditions. This was then compounded by two extremely cold spells in winter both followed by a rapid rise in temperatures. Fluctuations like this lead to ground movements that affect infrastructure such as pipes and valves, causing leaks, bursts and failure, resulting in additional costs to repair.

## Bad debt provision

**7** The increase in bad debt charge is primarily a result of three factors set out below but we continue to see stable cash collection with our base bad debt charge over the long term reducing as a percentage of revenue.

- The prior year reassessment of provision in our debt over 48 months old, which resulted in a one off £6.0 million provision release in the prior year, as a result of continued positive collection in combination with a change to our write-off policy in April 2020.
- An increase in our base bad debt charge of £6.3 million, partly a result of the increase in our revenue and partly due to a return to more typical levels after an exceptionally strong performance in the prior year.
- In addition, we estimate the impact of future macro-economic factors on our collection performance as required by IFRS 9. In March 2022 we released £6.6 million of this provision as the projected impact of Covid-19 on unemployment subsided, thus reducing the charge in that year. The latest forecasts for unemployment are broadly the same as that at March 2022 and therefore we have maintained the same overlay provision as at March 2022, thus having no impact on the income statement.

## Power

**8** Our Opex reconciliation splits out the impact of inflation and as we operate a robust hedging strategy our energy costs rose slower than inflation in the year thus presenting as a real terms reduction. This strategy meant that we had locked in our energy prices prior to the start of the year and the war in Ukraine. As such our weighted average hedged price for the year was £58/MWh compared to an average day ahead price for the year of £187/MWh.



### Other significant items

**9** Other significant items primarily relate to costs that have risen above average inflation, such as fuel and chemicals.

**10** The increase in innovation fund expenditure reflects the increase in schemes won and commenced within the year. For additional detail please refer to table 9A.

**11** In addition, following a rates review we received a refund of £10.1 million in the year.

### Depreciation and amortisation

**12** Depreciation and amortisation is up 9.1 per cent to £364.1 million, primarily as a result of higher fixed asset balances as we construct and commission assets in line with our capital investment programme.

### Other operating income (1A.3)

**13** Other operating income comprises primarily external income from power generation, bio-solid sales to farms, rents received and various other non-core activities; this was consistent with prior years.

### Operating profit (1A.4)

**14** Operating profit for the year was £324.0 million, a decrease of 6.4 per cent compared with the previous year. This reflects the increase in revenue and is more than offset by the increase in operating costs including depreciation, as discussed above.

### Other income (1A.5)

**15** Other income has increased by £2.7 million, 2.7 per cent. This line primarily represents the cash and asset contributions made principally by property developers and local authorities for connecting new property developments to the water and sewerage network, and for diverting existing infrastructure. This increase is driven by the strong housing market and construction sector in our region.

### Interest income (1A.6)

**16** Interest income was £15.5 million, up £14.1 million as we benefited from higher interest rates on our cash balances.

### Interest expense (1A.7)

**17** Interest expense (excluding fair value gains and losses on financial instruments) increased from £476.9 million in 2022 to £722.2 million in 2023. This was primarily the result of the non-cash impact of higher inflation on index-linked debt which increased by £306.4 million to £561.4 million. This increase was due to an increase in year-on-year average Retail Price Index (RPI) from 5.8 per cent to 12.8 per cent and year-on-year average Consumer Price Index (CPI) from 4.0 per cent to 10.0 per cent. We have both RPI-linked debt and CPI-linked debt to hedge the Regulated Capital Value (RCV).

### Other interest expense (1A.8)

**18** Other interest expense is made up of the actuarial pension charge or credit on the defined benefit pension scheme, which is partly driven by the level of the pension scheme accounting deficit or surplus at the start of the year. There was a credit for the year of £4.5 million, compared with a credit of £0.2 million in the previous year. This is consistent with there having been a significant accounting surplus on the funded defined benefit scheme.

**19** The below table shows the components which make up the interest figures in interest expense (1A.7) and other interest expense (1A.8):

Component	Amount (£m)	Table reference
Interest expense on bank loans and overdrafts	4.407	1A.7
Interest expense on other loans including financing expenses	202.074	1A.7
Indexation of loan stock	561.401	1A.7
Amortisation of debt issue costs	3.246	1A.7
Interest on leases	0.864	1A.7
Unwinding of discount on provision	(0.117)	1A.7
Debt management fee to AWSF	0.328	1A.7
Total interest expense	772.203	1A.7
Defined benefit pension scheme interest	(4.531)	1A.8
Total interest and other interest expense	767.672	1A.7 & 1A.8

### Profit before tax and fair value movements (1A.9)

**20** The profit before tax and fair value movements has increased from a £27.0 million loss in the previous year to **£323.2** million loss in 2023. This decrease is largely as a result of the increase in indexation discussed above.

### Fair value gains and (losses) on financial instruments (1A.10)

**21** There was a fair value gain of £645.3 million on derivative financial instruments in 2023, compared to a loss of £115.1 million in 2022. The fair value gains in the current year are predominantly non-cash in nature and have no material effect on the underlying commercial operations of the business. The driving factors for the gain in 2023 were primarily due to decreases in the average levels of forward inflation expectations, in combination with the rise in forward interest rates (decreasing the discounted present value of derivatives). During the period, forward inflation decreased by circa 90 basis points and forward interest rates increased by 208 basis points across the curves.

### Profit before tax (1A.11)

**22** The profit before tax for the year was **£322.1** million, compared with a loss of £142.1 million in the previous year. This reflects the increase in profit before tax and increase fair value movements referred to above.

### Current tax and deferred tax (1A.12 / 1A.13)

**23** The current tax credit for the year was **£26.5** million (2022: £19.7 million). The deferred tax charge has decreased by **£280.2** million from £306.7 million in 2022 to £108.1 million this year.

**24** The current tax credit for both years reflects receipts from other group companies for losses surrendered to those group companies. The tax losses arise mainly because capital allowances exceed the depreciation charged in the accounts, as well as some income not being taxable and the availability of tax relief on pension contributions paid in the year. This is offset by disallowable costs and interest. In the prior year there is also a one-off credit arising on a change of accounting treatment.

**25** The deferred tax charge for this year mainly reflects capital allowances claimed in excess of the depreciation charge, a charge on the fair value gains on derivatives, offset by a credit on losses carried forward to future years. The prior year charge mainly reflects the effect of a corporation tax rate from 19 per cent to 25 per cent that comes into effect on 1 April 2023 but was legislated for in Finance Bill 2021, capital allowances claimed in excess of the depreciation charge in the accounts offset by a credit on losses carried forward to future years.

**26** The Finance Bill 2021 also introduced increased tax relief for capital expenditure incurred in the period up to 1 April 2023. This has increased the deferred tax charge in this year.

**27** The current and deferred tax adjustments in respect of previous periods for both years relate mainly to the agreement of prior year tax computations.

**28** Tax forms part of the revenue building block and therefore any future tax charges will be funded through revenues. Further to this, Ofwat introduced a tax true-up reconciliation in the current AMP to account for the changes in tax rates.

**Profit / (loss) for the year (1A.14)**

**29** The profit for the year was **£240.5** million, compared with a loss of £429.1 million for the previous year. The profit in the current year is consistent with the increased profit before combined with the tax charge described above.

**Dividends (1A.15)**

**30** Dividend payments in the year of £161.2 million (2022: £83.0 million).

**Table 1B - Statement of Comprehensive Income**

Line description	Units	Statutory	Adjustments			Total appointed activities
			Differences between statutory and RAG definitions	Non-appointed	Total adjustments	
1 Profit for the year	£m	267.611	(19.404)	7.754	(27.158)	240.454
2 Actuarial gains/(losses) on post-employment plans	£m	(105.900)	-	-	-	(105.900)
3 Other comprehensive income	£m	(1.200)	-	-	-	(1.200)
4 Total Comprehensive income for the year	£m	160.511	(19.404)	7.754	(27.158)	133.354

**1** The principal difference between the statutory accounts and the APR for this table is in respect of capitalised interest. For regulatory reporting, capitalised interest is not permitted and therefore the adjustments are to reverse out the impact on profit for the year.

**2** Appointed comprehensive income for the year of **£133.4 million**, comprising profit for the year of **£240.5 million**, offset by actuarial losses on post employment benefits of £105.9 million and other comprehensive expenses which are losses on cash flow hedges of £1.2 million.

**3** Other than the changes to the profit for the year as detailed in the commentary for table 1A, there are no differences between the statutory and regulatory accounts on the statement of other comprehensive income.

#### **Actuarial gains/(losses) on post employment plans (1B.2)**

**4** Actuarial losses on retirement benefit obligations for the year were £105.9 million (2022: gains of £110.0 million), comprising actuarial losses of £141.2 million partially offset by deferred tax on these gains of £35.3 million. This resulted in Anglian Water reporting a net retirement benefit asset of £51.2 million as at 31 March 2023 (2022: £163.4 million).

#### **Other comprehensive income (1B.3)**

**5** Other comprehensive income for the year comprises losses on cash flow hedges of £1.4 million (2022: gain £70.7 million), partially offset by deferred tax credit on these gains of £0.2 million (2022: charge £15.0 million).

**Table 1C - Statement of Financial Position**

Line description	Statutory	Adjustments			Total appointed activities	
		Differences between statutory and RAG definitions	Non- appointed	Total adjustments		
<b>Non-current assets (£m)</b>						
1	Fixed assets	10,704.256	(369.743)	11.656	(381.399)	10,322.857
2	Intangible assets	253.900	(14.649)	2.178	(16.827)	237.073
3	Investments - loans to group companies	-	-	-	-	-
4	Investments - other	-	-	-	-	-
5	Financial instruments	194.425	-	-	-	194.425
6	Retirement benefit assets	84.148	-	-	-	84.148
7	Total non-current assets	11,236.729	(384.392)	13.834	(398.226)	10,838.503
<b>Current assets (£m)</b>						
8	Inventories	20.607	-	-	-	20.607
9	Trade & other receivables	564.705	-	-	-	564.705
10	Financial instruments	55.810	-	-	-	55.810
11	Cash & cash equivalents	626.374	-	-	-	626.374
12	Total current assets	1,267.496	-	-	-	1,267.496
<b>Current liabilities (£m)</b>						
13	Trade & other payables	(530.614)	(59.614)	(12.015)	(47.599)	(578.213)
14	Capex creditor	(189.501)	-	-	-	(189.501)
15	Borrowings	(584.291)	69.674	-	69.674	(514.617)
16	Financial instruments	(53.389)	-	-	-	(53.389)
17	Current tax liabilities	(123.901)	(1.911)	(1.819)	(0.092)	(123.993)
18	Provisions	(6.842)	-	-	-	(6.842)
19	Total current liabilities	(1,488.539)	8.149	(13.834)	21.983	(1,466.556)
20	Net Current assets/(liabilities)	(221.043)	8.149	(13.834)	21.983	(199.060)

Line description	Statutory	Adjustments			Total appointed activities
		Differences between statutory and RAG definitions	Non- appointed	Total adjustments	

<b>Non-current liabilities (£m)</b>					
21	Trade & other payables	-	-	-	-
22	Borrowings	(6,296.693)	-	-	(6,296.693)
23	Financial instruments	(893.758)	-	-	(893.758)
24	Retirement benefit obligations	(33.075)	-	-	(33.075)
25	Provisions	(4.806)	-	-	(4.806)
26	Deferred income – grants & contributions	-	-	-	-
27	Deferred income – adopted assets	-	-	-	-
28	Preference share capital	-	-	-	-
29	Deferred tax	(1,531.258)	96.098	-	96.098
30	Total non-current liabilities	(8,759.590)	96.098	-	96.098
31	Net assets	2,256.096	(280.145)	-	(280.145)

<b>Equity (£m)</b>					
32	Called up share capital	32.000	-	-	-
33	Retained earnings & other reserves	2,224.096	(280.145)	-	(280.145)
34	Total Equity	2,256.096	(280.145)	-	(280.145)

**1** The statement of financial position is based on the statutory Company only balance sheet with adjustments for interest capitalised and associated deferred tax, innovation fund and reclassifications of trade and other payables as detailed below.

**2** The principal difference between the statutory accounts and APR is in respect of capitalised interest. For regulatory reporting, capitalised interest is not permitted and therefore the adjustments are to reverse out the impact on accumulated depreciation, deferred tax and reserves. With the introduction of the innovation fund this AMP, as discussed in the commentary to Table 1A, the only costs related to the innovation fund expected to be included are actual costs on projects that have been funded by the innovation fund (as reported in line 9A.22 of the APR). Companies are also expected to unwind any accrual that was reported previously. The only other adjustments are the reclassification of current grants and contributions and accrued interest to trade and other payables and of capital creditors.

**3** These adjustments are summarised in the table below.

Line description	Adjustments				Total adjustments £m
	Reversal of capitalised interest cost £m	Reclassification of interest accrual on debt £m	Deferred tax impact of reversal of capitalised interest cost £m	Impact of innovation fund £m	
Fixed assets	(369.743)	-	-	-	(369.743)
Intangible assets	(14.649)	-	-	-	(14.649)
Trade & other payables	-	(69.674)	-	10.060	(59.614)
Current tax liabilities	-	-	-	(1.911)	(1.911)
Borrowings	-	69.674	-	-	69.674
Deferred tax	-	-	96.098	-	96.098
Retained earnings and other reserves	384.392	-	(96.098)	(8.149)	280.146

**4** The following commentary is in relation to the appointed business only.

#### **Fixed assets (1C.1)**

**5** The net book value (NBV) for tangible fixed assets has increased by £377.5 million due to capital expenditure in the year, partially offset by the depreciation charge.

#### **Intangible assets (1C.2)**

**6** The NBV of intangible assets increased by £31.4 million over the year, reflecting expenditure on IT systems, partially offset by the amortisation charge for the year.

#### **Retirement benefit surpluses/obligations (1C.6 and 1C.24)**

**7** Net retirement benefit assets were £51.1 million comprising a surplus of £84.1 million on the combined Anglian Water Services and Hartlepool schemes, and a £33.0 million obligation on an unfunded scheme.

#### **Current assets (1C.8-1C.12)**

**8** Total current assets have decreased by £190.3 million (13.1 per cent) in the year. This is primarily due to an decrease in cash and cash equivalents of £241.5 million.

**9** The statutory cash figure includes £298.0 million of other short term deposits with a tenor of more than three months which are classified as investments - cash deposits within the statutory accounts.

**10** Included within cash is £6.7 million of money collected from customers which has been ring fenced to be used to fund projects awarded by Ofwat in relation to their innovation fund.

#### **Trade and other payables (1C.13)**

**11** Compared with the prior year, trade payables have increased by **£26.2 million (4.8 per cent) to £578.2 million**. This is consistent with the increase in operating costs and also due to the increase in bills causing an increase in payments on account.

#### **Capex creditor (1C.14)**

**12** Capital creditors have increased by 44.7 per cent to £189.5 million at 31 March 2023. This movement reflects increased spend in the current year as reflected in the increases seen on the fixed and intangible asset lines above.

#### **Borrowings (1C.15 and 1C.22)**

**13** Total borrowings have increased by £393.9 million in the year. This primarily reflects new term loans of £740.8 million less loan repayments of £668.8 million. The remainder of the movement is largely cause by indexation of £363.0 million increasing the balance offset by fair value gains and losses and foreign exchange of £16.3 million. A full reconciliation can be found in the analysis of net debt in our statutory accounts.

#### **Current tax liabilities (1C.17)**

**14** Current tax liabilities have decreased by **£24.5 million** in the year. The liability solely reflects amounts owed to other group companies where the regulated company, Anglian Water Services Limited, has increased its taxable profits by disclaiming capital allowances only for the benefit of these other companies. There is agreement that the regulated company will pay the tax liabilities arising from the increased taxable profits when it receives the benefit of the disclaimed capital allowances. No amounts are owed to the tax authorities.

#### **Deferred tax (1C.29)**

**15** The deferred tax credit is £96.1 million lower than the statutory accounts due to the reversal of capitalised interest on fixed and intangible assets, lines 1 and 2. The deferred tax charge for this year mainly reflects capital allowances claimed in excess of the depreciation charge, a charge on the fair value gains on derivatives, offset by a credit on losses carried forward to future years.

#### **Retained earnings (1C.33)**

**16** The difference of **£280.1 million** between the statutory and regulatory accounts is the reversal of capitalised interest less the related movement in deferred tax as a result of this and the reversal of the innovation fund accrual.



**Table 1D - Statement of Cash Flows**

Line description	Statutory	Adjustments			Total appointed activities	
		Differences between statutory and RAG definitions	Non-appointed	Total adjustments		
<b>Operating activities (£m)</b>						
1	Operating profit	423.697	(90.093)	9.572	(99.665)	324.031
2	Other income	(45.971)	104.941	-	104.941	58.970
3	Depreciation	379.145	(13.758)	1.305	(15.063)	364.082
4	Amortisation – Grants & contributions	-	-	-	-	-
5	Changes in working capital	(20.345)	(1.090)	(1.937)	0.847	(19.498)
6	Pension contributions	(24.442)	-	-	-	(24.442)
7	Movement in provisions	(0.052)	-	-	-	(0.052)
8	Profit on sale of fixed assets	(3.949)	-	-	-	(3.949)
9	Cash generated from operations	708.083	(0.000)	8.940	(8.940)	699.143
10	Net interest paid	(187.200)	0.700	-	0.700	(186.500)
11	Tax paid	-	-	-	-	-
12	Net cash generated from operating activities	520.883	0.700	8.940	(8.240)	512.643
<b>Investing activities (£m)</b>						
13	Capital expenditure	(664.400)	-	(1.186)	1.186	(663.214)
14	Grants & Contributions	-	-	-	-	-
15	Disposal of fixed assets	4.400	-	-	-	4.400
16	Other	93.960	-	-	-	93.960
17	Net cash used in investing activities	(566.040)	-	(1.186)	1.186	(564.854)
18	Net cash generated before financing activities	(45.157)	0.700	7.754	(7.054)	(52.211)
<b>Cashflows from financing activities (£m)</b>						
19	Equity dividends paid	(169.000)	-	(7.754)	7.754	(161.246)
20	Net loans received	66.800	(0.700)	-	(0.700)	66.100
21	Cash inflow from equity financing	-	-	-	-	-
22	Net cash generated from financing activities	(102.200)	(0.700)	(7.754)	7.054	(95.146)
23	Increase (decrease) in net cash	(147.357)	(0.000)	-	(0.000)	(147.357)

**1** The principal differences between the statutory accounts and the APR are in respect of capitalised interest and the classification of grants and contribution income. For regulatory reporting, capitalised interest is not permitted and therefore the depreciation of capitalised interest has been removed here. Grants and contributions (G&C) income is included in revenue within the statutory accounts, but classified as other income in the regulatory accounts. As discussed in the commentary for 1A and 1C, the accrual for the innovation fund has been reversed for regulatory purposes, with the only costs recorded being those incurred on projects funded by the innovation fund. The other adjustments are a reclassification of debt issue costs from interest paid to net loans received and a reclassification of pensions operating expenditure from contributions to movements in provisions.

**2** These adjustments, explaining the difference between statutory and RAG definitions, are summarised in the table below.

Line Description	Reclass issue costs	Capitalisation of interest and related depreciation	Reclass of G&C and rental income	Reversal of provision for innovation fund	Total adjustments
Operating profit		13.758	(104.941)	1.090	(90.093)
Other income			104.941		104.941
Depreciation		(13.758)			(13.758)
Changes in working capital				(1.090)	(4.682)
Net interest paid	0.700				0.700
Net loans received	(0.700)				(0.700)

**3** The following commentary is in relation to the appointed business only.

### Operating profit (1D.1)

**4** The increase in operating profit is explained in the commentary to table 1A. Largely as a result of the increase in revenue more than offsetting the increase in costs.

### Other income (1D.2)

**5** Other income has decreased by £4.1 million to £58.9 million as a result of the strong rebound seen in the housing market in the current year and additional income from new schemes, such as HS2.

**6** The £46.0 million included within the statutory column relates to assets adopted for nil consideration. This is shown within a separate line within the statutory accounts as an adjustment within operating activities, therefore this has been included within Other income within the regulatory accounts.

### Changes in working capital (1D.5)

**7** Changes in working capital decreased by **£65.7 million** from the prior year to a reduction in cash generated from operations of **£19.5 million**. This is largely as a result of the decrease seen in trade and other payables of **£26.2 million** and the increase in trade and other receivables of £48.1 million as discussed in the commentary to table 1C. The remainder of the movement is due to the timing of certain payments around the year end.

### Pension contributions (1D.6)

**8** The pension contributions primarily comprises of the defined benefits scheme deficit reduction payments of £24.5 million.

**Profit/loss on sale of fixed assets (1D.8)**

**9** The decrease in profit on sale of fixed assets reflects the lower number of disposals in the year compared to prior year.

**Net interest paid (1D.10)**

**10** Net interest paid decreased by £36.1 million to £186.5 million in the current year - even though borrowings increased and therefore attracted additional interest costs in comparison there was a make-whole payment in respect of early repayment of debt in the prior year.

**Net cash generated from operating activities (1D.12)**

**11** Net cash inflow from operating activities decreased by £27.9 million from £540.5 million in 2022 to £512.6 million in 2023.

**Equity dividends paid (1D.19)**

**12** Appointed dividend payments in the year of £161.2 million (2022: £83.0), which excludes an assumed non-appointed dividend of £7.8 million (2022: £13.3 million).

**13** We have set dividends to reflect performance and build financial resilience. After the balance sheet date, the Board proposed to pay a final statutory dividend of £79.9 million (2022: £169.0 million). The dividend has been adjusted with a £26 million deduction to reflect aspects of underperformance against ODIs, including the ODI penalty incurred. In doing so, we aim to demonstrate how we are operating responsibly and balancing the needs of all our stakeholders, while attracting the continued investment vital for this region and customers now and in years to come.

**Table 1E - Net Debt Analysis**

Line description	Fixed rate	Floating rate	Index linked		Total	
			RPI	CPI/CPIH		
<b>Interest rate risk profile (£m)</b>						
1	Borrowings (excluding preference shares)	1,915.710	517.812	3,584.819	1,210.280	7,228.621
2	Preference share capital	-	-	-	-	-
3	Total borrowings	1,915.710	517.812	3,584.819	1,210.280	7,228.621
4	Cash	-	-	-	-	(118.374)
5	Short term deposits	-	-	-	-	(508.000)
6	Net Debt	-	-	-	-	6,602.247
<b>Gearing (%)</b>						
7	Gearing	-	-	-	-	66.297%
8	Adjusted Gearing	-	-	-	-	65.592%
<b>Interest (£m)</b>						
9	Full year equivalent nominal interest cost	113.554	28.015	551.793	134.335	827.697
10	Full year equivalent cash interest payment	113.554	28.015	59.773	10.987	212.329
<b>Indicative interest rates (%)</b>						
11	Indicative weighted average nominal interest rate	5.928%	5.410%	15.392%	11.099%	11.450%
12	Indicative weighted average cash interest rate	5.928%	5.410%	1.667%	0.908%	2.937%
<b>Time to maturity (nr)</b>						
13	Weighted average years to maturity	6.113	12.785	16.588	11.928	11.257

## Borrowings (excluding preference shares) (1E.1)

**1** As per the guidance, borrowings are shown at nominal values plus indexation to 31 March 2023. Accrued interest and fair value adjustments are excluded, and so the numbers shown are different to Anglian Water's statutory accounts which are prepared on an IFRS basis. A reconciliation of gross and net debt calculated on a regulatory and statutory accounts basis is shown below. The mix of debt has moved from prior year as discussed in the commentary to Table 4H.

	<b>Total £m</b>
<b>Borrowings (per regulatory definition)<sup>1</sup></b>	<b>7,228.6</b>
Fair value IFRS adjustments <sup>2</sup>	(63.3)
Deduct accreted indexation on swaps <sup>3</sup>	(340.0)
Adjust issue costs <sup>4</sup>	(14.1)
<b>Non-current and Current Debt as per Table 1C</b>	<b>6,811.3</b>
Debt interest accrual <sup>5</sup>	69.7
<b>IFRS debt (per statutory accounts)</b>	<b>6,881.0</b>

<sup>1</sup> Includes £27.1m of leases, in addition to £8.9m defined under the CTA.

<sup>2</sup> This represents the IFRS fair value accounting adjustment to applicable debt and derivatives due to spot foreign exchange and fair value hedge adjustments.

<sup>3</sup> Strip out accreted indexation of index-linked derivatives included in the regulatory definition but classified as derivatives under IFRS.

<sup>4</sup> Directly attributable debt issue costs added to reflect IFRS treatment but excluded from the regulatory definition.

<sup>5</sup> Under the RAGs, debt is shown excluding accrued interest. Under IFRS, debt is shown including accrued interest.

**2** Fixed rate debt increased year on year mainly due to the issuance of £224.8 million (C\$350 million) Canadian Maple and £266 million US private placement partially offset by repayment of £250 million 5.8 per cent fixed rate 2022, £31.9 million 3.9 per cent private placements 2022 and £22.3 million 3.9 per cent private placements 2022.

**3** Floating rate debt increased by £150 million mainly due to drawdown on new NatWest term loan facility.

**4** RPI Index linked debt increased as a result of £455.7 million of indexation in the year, partially offset by contractual amortisation paydowns on EIB debt, £266.5 million early repayment of accretion on £402 million 2.4 per cent index-linked 2035 and maturity of £15 million 1.37 per cent index-linked private placement. There has been no new RPI linked debt in the year.

**5** CPI index linked debt increased due to £105.7 million of indexation in the year and £100 million of new CPIH loan issuance.

## Cash and short term deposits (1E.4 - 1E.5)

**6** Cash and short-term deposits are split as per RAG 4.11. This differs from the statutory accounting treatment in that all money market deposits are shown as short-term deposits here, whereas in the statutory accounts these are split based on their original term to maturity with those with an initial term of 3 months or less classified as cash and cash equivalents.

**Adjusted gearing (1E.8)**

**7** The Adjusted Gearing calculation, which is used for covenant compliance purposes, is different to the Gearing calculation for two reasons. Firstly, because the lease debt number is based on a different calculation methodology. Secondly, the RCV used for the Adjusted Gearing calculation is Anglian Water's calculation, since Anglian Water believes that the Ofwat calculation methodology does not fully reflect RPI indexation of the RPI linked part of RCV at 31 March 2023 and that therefore the Ofwat RCV number is understated.

**Interest (1E.9 - 1E.12)**

**8** Full year cash equivalent interest rate this year is higher in 2023 as compared to previous year. This is mainly due to interest on incremental fixed and floating rate new debt.

**9** Full year equivalent nominal interest cost for CPI and RPI debt is significantly higher this year as a result of much higher inflation rates.

**Weighted average years to maturity (1E.13)**

**10** The weighted average years to maturity is similar to the previous year. The minor difference between weighted average years to maturity between 4B and 1E is due to the inclusion of derivative accretion in 4B which is not included in 1E as per the RAG.

## Table 1F - Financial Flows

			12 months ended 31 March 2023						
Line description			Notional returns and notional regulatory equity	Actual returns and notional regulatory equity	Actual returns and actual regulatory equity	Notional returns and notional regulatory equity	Actual returns and notional regulatory equity	Actual returns and actual regulatory equity	
		Units	%			£m			
1	Regulatory equity	£m	3	3,229.710	3,229.710	2,799.429	-	-	-
<b>Return on regulatory equity</b>									
2	Return on regulatory equity	See Column Heading		4.40%	3.81%	4.40%	142.107	123.175	123.175
<b>Financing</b>									
3	Impact of movement from notional gearing	See Column Heading		0.59%	0.36%		18.932	10.029	
4	Gearing benefits sharing	See Column Heading		0.00%	0.00%		-	-	
5	Variance in corporation tax	See Column Heading		0.74%	0.86%		24.032	24.032	
6	Group relief	See Column Heading		0.00%	0.00%		-	-	
7	Cost of debt	See Column Heading		-1.14%	-1.44%		(36.673)	(40.254)	
8	Hedging instruments	See Column Heading		0.00%	0.00%		-	-	
9	Return on regulatory equity including Financing adjustments	See Column Heading		4.40%	4.01%	4.18%	142.107	129.466	116.981
<b>Operational Performance</b>									
10	Totex out / (under) performance	See Column Heading		-2.27%	-2.62%		(73.253)	(73.253)	
11	ODI out / (under) performance	See Column Heading		-0.68%	-0.79%		(22.087)	(22.087)	
12	C-Mex out / (under) performance	See Column Heading		0.00%	0.00%		-	-	
13	D-Mex out / (under) performance	See Column Heading		0.03%	0.04%		1.079	1.079	

			12 months ended 31 March 2023					
Line description			Notional returns and notional regulatory equity	Actual returns and notional regulatory equity	Actual returns and actual regulatory equity	Notional returns and notional regulatory equity	Actual returns and notional regulatory equity	Actual returns and actual regulatory equity
<b>Operational Performance - continued</b>								
14	Retail out / (under) performance	See Column Heading		-0.17%	-0.20%		(5.600)	(5.600)
15	Other exceptional items	See Column Heading		0.17%	0.19%		5.384	5.384
16	Operational performance total	See Column Heading		-2.93%	-3.37%		(94.477)	(94.477)
17	RoRE (return on regulatory equity)	See Column Heading	4.40%	1.08%	0.80%	142.107	34.989	22.504
18	RCV growth	See Column Heading	10.68%	10.68%	10.68%	344.933	344.933	298.979
19	Voluntary sharing arrangements	See Column Heading		-	-		-	-
20	Total shareholder return	See Column Heading	15.08%	11.76%	11.48%	487.040	379.922	321.484
<b>Dividends</b>								
21	Gross Dividend	See Column Heading	3.18%	4.22%	4.87%	102.705	136.401	136.401
22	Interest Receivable on Intercompany loans	See Column Heading		-	-		-	-
23	Retained Value	See Column Heading	11.90%	7.54%	6.61%	384.335	243.521	185.083
<b>Cash impact of 2015-20 performance adjustments</b>								
24	Totex out / under performance	See Column Heading		-0.20%	-0.23%		(6.570)	(6.570)
25	ODI out / under performance	See Column Heading		0.37%	0.42%		11.820	11.820
26	Total out / under performance	See Column Heading		0.16%	0.19%		5.250	5.250



			Average 2020-25						
Line description			Notional returns and notional regulatory equity	Actual returns and notional regulatory equity	Actual returns and actual regulatory equity	Notional returns and notional regulatory equity	Actual returns and notional regulatory equity	Actual returns and actual regulatory equity	
		Units	%			£m			
1	Regulatory equity	£m	3	3,114.169	3,114.169	2,055.963	-	-	-

<b>Return on regulatory equity</b>									
2	Return on regulatory equity	See Column Heading		4.37%	2.88%	4.37%	136.017	89.798	89.798

<b>Financing</b>									
3	Impact of movement from notional gearing	See Column Heading		1.48%	0.67%		46.219	18.690	
4	Gearing benefits sharing	See Column Heading		0.00%	0.00%		-	-	
5	Variance in corporation tax	See Column Heading		0.56%	0.65%		18.133	18.133	
6	Group relief	See Column Heading		0.00%	0.00%		-	-	
7	Cost of debt	See Column Heading		-1.44%	-1.98%		(46.415)	(55.344)	
8	Hedging instruments	See Column Heading		-0.01%	-0.01%		(0.185)	(0.254)	

9	Return on regulatory equity including Financing adjustments	See Column Heading		4.37%	3.49%	3.70%	136.017	107.549	71.023
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<b>Operational Performance</b>									
10	Totex out / (under) performance	See Column Heading		-0.46%	-0.53%		(14.886)	(14.886)	
11	ODI out / (under) performance	See Column Heading		-0.25%	-0.29%		(8.013)	(8.013)	
12	C-Mex out / (under) performance	See Column Heading		0.01%	0.01%		0.376	0.376	
13	D-Mex out / (under) performance	See Column Heading		0.02%	0.03%		0.751	0.751	

			Average 2020-25					
Line description			Notional returns and notional regulatory equity	Actual returns and notional regulatory equity	Actual returns and actual regulatory equity	Notional returns and notional regulatory equity	Actual returns and notional regulatory equity	Actual returns and actual regulatory equity
<b>Operational Performance - continued</b>								
14	Retail out / (under) performance	See Column Heading		0.02%	0.02%		0.567	0.567
15	Other exceptional items	See Column Heading		0.07%	0.09%		2.397	2.397
16	Operational performance total	See Column Heading		-0.58%	-0.67%		(18.809)	(18.809)
17	RoRE (return on regulatory equity)	See Column Heading	4.37%	2.90%	3.03%	136.017	88.740	52.214
18	RCV growth	See Column Heading	6.35%	6.35%	6.35%	197.854	197.854	130.622
19	Voluntary sharing arrangements	See Column Heading		0.00%	0.00%		-	-
20	Total shareholder return	See Column Heading	10.72%	9.26%	9.38%	333.870	286.594	182.836
<b>Dividends</b>								
21	Gross Dividend	See Column Heading	3.18%	2.28%	3.45%	99.031	70.966	70.966
22	Interest Receivable on Intercompany loans	See Column Heading	0.00%	0.00%	0.00%	-	-	-
23	Retained Value	See Column Heading	7.54%	6.98%	5.93%	234.840	215.627	111.870
<b>Cash impact of 2015-20 performance adjustments</b>								
24	Totex out / under performance	See Column Heading		-0.34%	-0.52%		(10.652)	(10.652)
25	ODI out / under performance	See Column Heading		0.61%	0.93%		19.149	19.149
26	Total out / under performance	See Column Heading		0.27%	0.41%		8.497	8.497

## Footnotes

1. Numbers included in the above table are in 2017/18 prices in line with Ofwat Regulatory Accounting Guidelines (RAGs).
2. The numbers in the percentage column above are subject to rounding difference as a result of the way that the percentages are calculated in the Ofwat table templates. These differences do not have a material impact on the numbers presented.

## Attracting investment and sharing the rewards

**1** Our position as a monopoly provider of essential public services makes it essential that we maintain the trust and confidence of our customers while providing fair returns to our investors. Table '1F Financial Flows' compares the base return set in the Final Determination with actual performance in the period providing greater transparency to our stakeholders on how the company earns its returns and what is ultimately earned by investors.

**2** The money we can raise from bills, along with how much we're allowed to invest in our service, is decided every five years through Ofwat's price-setting process and set out in our Final Determination. Any regulated wholesale revenue raised over and above the agreed amount is returned to customers through something called the revenue correction mechanism.

Any profits, and returns to investors, that we make in excess of those derived from allowed pricing come from:

- increasing efficiency – running the business more cost-effectively than was funded at the time of the Final Determination; and
- any rewards for meeting our performance commitment targets.

**3** Efficiencies are either reinvested to improve service for customers or shared with customers, helping to keep bills down.

**4** In addition, our focus on sustainable savings that can be maintained over the long term will help reduce our cost base in 2020–2025.

**5** Profits are essential to attract private investment, which in turn enables us to spread the cost of improving and extending our assets over their operational life, similar to a mortgage. In this way, tomorrow's customers pay for tomorrow's use of the asset.

**6** We have to provide investors with a reasonable return on their investment in exchange for the risks they carry. During the past financial year, a number of risks have crystallised including high energy prices. Investors have borne the cost of dealing with these risks, which have therefore not been passed on to customers.

**7** We also believe that in years where we deliver excellent performance, this should be reflected in higher profits. In contrast, this year, dividends have been reduced down to reflect performance (see pages 326 - 329 ). However, profits can also rise or fall due to factors not directly related to performance – for instance, the level of interest rates or unexpected new legal obligations.

**8** The table is split into two sections, current year and AMP average. Each has three columns, the first shows the notional return as a percentage of notional equity (40 per cent of RCV). The next two columns show actual returns against both notional and actual regulated equity. Where actual regulated equity is different from Ofwat's notional regulated equity the two columns will show different percentage returns for the same performance. In our case, as a consequence of having higher gearing and less regulated equity than the notional company, any underperformance will adversely impact returns disproportionately for shareholders. Conversely, any outperformance will deliver proportionately greater returns.

## Key messages

- High inflation has impacted both operating and interest costs as well as growth in RCV.

- Challenging year for performance against regulatory commitments resulting in net ODI penalty.
- Cumulative dividend yield of 3.45 per cent

### **Return on regulatory equity**

**9** This reflects the return set by the CMA in their redetermination.

### **Financing**

**10** This section combines the impacts of our financing arrangements with tax performance. The table calculates a gearing out performance reflecting the difference between our actual structure and the notional structure in which funding is set.

**11** Our cost of debt underperformance in the period reflects the impact of high inflation which has increased our nominal cost of debt. In order to minimise the gearing impact of low inflationary growth in RCV we raise index-linked debt which provides a natural hedge. This does however mean that in times of high inflation our nominal cost of debt rises.

**12** Ofwat sets allowed returns at a fixed real rate plus inflation.

**13** The current tax credit reflects losses to be surrendered to other group companies. The tax losses arise mainly because capital allowances exceed the depreciation charged in the accounts, as well as some income not being taxable and the availability of tax relief on pension contributions paid in the year. The Final Determination provided a tax allowance in relation to retail profits with wholesale tax losses being carried forward to future years.

### **Operational**

#### **Totex**

**14** The table show the Company's share of the Totex overspend for the AMP to date as set out in Table 4C. Strong performance in our Water Recycling business stream has resulted in efficiencies to date. This efficiency has been delivered in our Water Industry National Environment Programmes (WINEP) where we have continued to deliver our environmental obligations through innovative projects. The Board has agreed to reinvest this overall efficiency in order to finance future energy prices increases in years 4 and 5 as well as the additional costs pressures of the strategic pipeline mentioned above. We are confident that by the end of the AMP we will spend at least our allowance.

**15** The table shows that the Board have utilised the efficiency being delivered in WINEP to fund the increased costs seen in delivering our strategic interconnector project. As mentioned, we have seen increased costs over and above CPIH due to increased costs of steel and other supply chain challenges.

**16** The Board actively chose to also reinvest efficiencies in Water Recycling with a view to maintaining our industry-leading leakage position as we sought to recover from a number of weather-related events throughout the year. This means that as of Year 3 we have spent in line with our Botex allowance as we continue to deliver against the extremely challenging efficiency targets, we have set.

**17** These decisions highlight the flexibility of the business to manage both cost and delivery across the business as a whole which has been enabled by the broadly symmetrical cost sharing rates between price controls as well as between base and enhancement expenditure.

#### **ODI**

**18** We measure our performance against a set of commitments that help us, our regulators and our customers understand the progress we are making and what we have delivered.

**19** Operations were significantly impacted by the extreme weather, including a heatwave and drought, leading to record soil moisture deficits versus the rest of the country. These principally affected three ODIs - Burst Mains, Interruptions to Supply and Leakage, making up the majority of the £22 million penalty incurred. This year we are also in an ODI penalty on leakage, despite making further reductions on our 2022 industry-leading leakage levels.

**20** Action on our Pollution Reduction Plan includes progress on the installation of 22,000 monitors to provide coverage on 11,000km of high and medium-risk sewers (in addition to event duration monitors on storm overflows) as part of our Dynamic Sewer Visualisation initiative. This uses predictive analytics and will provide greater insight on asset health. Avoidable blockages, 80 per cent of which are caused by fats and unflushable items in our small diameter sewers, are a primary focus. Our partnership with Environmental Compliance and Services (ECAS) to reduce the impact of food serving establishments has now been expanded to include domestic customers.

**21** While classified as 'serious', none of the pollution incidents resulted in the death of fish. Following close review, we know the very narrow watercourses, owing to the heavily drained nature of our region, create an increased vulnerability to serious pollutions and this is something we are looking to address.

**22** Our self-reporting has continued to improve in 2022/23. Importantly, we made gains on our comparative pollutions performance but this has been offset by our decision to retrospectively report incidents in light of our new monitoring capabilities. We are one of a few companies to take a national lead on this.

## **Retail**

**23** The retail underperformance is a result of a reversal of the prior year reduction in our bad debt charge; this brings us to a broadly neutral position on a cumulative basis for the AMP. We continually reassess our expected bad debt based on the latest macroeconomic forecasts which have been extremely volatile over the last few years. This current year has however been more stable with unemployment forecasts broadly in line with those in March 2022 resulting in what we would consider to be reflective of an underlying bad debt position.

## **Total Returns and dividends**

**24** We have set dividends to reflect performance and build financial resilience. After the balance sheet date, the Board proposed to pay a final dividend of £79.9 million (2022: £169.0 million). The dividend has been adjusted with a £26 million deduction to reflect aspects of underperformance against ODIs, including the ODI penalty incurred. In doing so, we aim to demonstrate how we are operating responsibly and balancing the needs of all our stakeholders, while attracting the continued investment vital for this region and customers now and in years to come.

**25** There is no proposal to pay a dividend to ultimate shareholders for performance in this period (2022: £91.8 million).

**26** See further details on pages 327 - 330.

**Table 2A - Segmental Income Statement**

Line description	Residential retail	Business retail	Water resources	Water Network+	Wastewater Network+	Bioresources	Additional Control	Total
Units	£m	£m	£m	£m	£m	£m	£m	£m
1 Revenue - price control	95.670	-	59.371	451.371	638.295	101.010	-	1,345.717
2 Revenue - non price control	-	-	-	15.131	5.054	-	-	20.185
3 Operating expenditure - excluding PU recharge impact	(78.951)	-	(43.411)	(224.459)	(262.474)	(75.011)	-	(684.306)
4 PU opex recharge	(4.298)	-	(1.297)	(10.582)	21.665	(5.487)	-	0.000
5 Operating expenditure - including PU recharge impact	(83.249)	-	(44.708)	(235.041)	(240.809)	(80.498)	-	(684.306)
6 Depreciation - tangible fixed assets	(0.145)	-	(10.229)	(126.971)	(156.391)	(26.992)	-	(320.728)
7 Amortisation - intangible fixed assets	(4.233)	-	(2.460)	(3.178)	(30.586)	(2.907)	-	(43.364)
8 Other operating income	0.006	-	0.008	3.720	0.238	(0.024)	-	3.948
9 Operating profit	8.049	-	1.982	105.032	215.801	(9.411)	-	321.452
<b>Surface water drainage rebates</b>								
10 Surface water drainage rebates	-	-	-	-	-	-	-	0.341

**Revenue (2A.1 and 2A.2)**

**1** Total revenue for the year was £1,365.9 million, up £89.9 million (7.1 per cent) on last year, which is explained in table 1A commentary. Non-price control revenue is in line with revenue for 2021/22.

**Operating expenditure, depreciation and amortisation (2A.3 / 2A.6 / 2A.7)**

**2** Operating costs of **£1,048.4 million** comprise operating expenditure of **£684.3 million** and depreciation (including amortisation) of £364.1 million (including the impact of the PU recharge). The increase in opex costs is explained in the commentary to table 1A.

**3** The difference in the opex figure reported in table 2A and the opex figure and that reported in 1A is as a result of retail pension deficit repair costs, £2.6 million (2C.20).

**PU opex recharge (2A.4)**

**4** This is the recharge of depreciation on assets used by multiple price controls, primarily shared information technology and vehicle assets. As the business unit of principal use, Wastewater Network+ incurs the gross depreciation charge for these shared assets in the first instance. The calculation of the recharges between price controls uses the same allocation used for information services operating expenses, under the assumption that this closely equates to the number of personnel in each area and therefore asset users.

**Other operating income (2A.8)**

**5** Represents the profit on disposal of fixed assets which was £1.0 million lower than the previous year due to a decrease in the number of land and vehicle disposals in the current year.

**Surface water drainage rebates (2A.10)**

**6** The value of surface water drainage rebates has dropped slightly this year and is in line with historic rates.

**Table 2B - Totex Analysis - Wholesale**

	Line description	Water resources	Water Network+	Wastewater Network+	Bioresources	Additional Control	Total
	<b>Base operating expenditure (£m)</b>						
1	Power	9.241	28.819	45.380	0.490	-	83.930
2	Income treated as negative expenditure	(0.280)	(1.058)	(0.990)	(11.460)	-	(13.788)
3	Service charges/ discharge consents	10.096	0.483	8.380	0.212	-	19.171
4	Bulk Supply/Bulk discharge	-	2.559	-	-	-	2.559
5	Renewals expensed in year (Infrastructure)	-	34.738	14.689	-	-	49.427
6	Renewals expensed in year (Non-Infrastructure)	-	-	-	-	-	-
7	Other operating expenditure (including Location specific costs & obligations)	16.343	113.237	144.544	87.328	-	361.452
8	Local authority and Cumulo rates	2.376	30.828	20.754	3.212	-	57.170
9	Total base operating expenditure	37.776	209.606	232.757	79.781	-	559.920
	<b>Other operating expenditure (£m)</b>						
10	Enhancement operating expenditure	1.583	7.563	5.746	-	-	14.892
11	Developer services operating expenditure	-	1.157	0.250	-	-	1.407
12	Total operating expenditure excluding third party services	39.359	218.325	238.753	79.781	-	576.219
13	Third party services	5.349	16.716	2.056	0.717	-	24.838
14	Total operating expenditure	44.708	235.041	240.809	80.498	-	601.057
	<b>Grants and contributions (£m)</b>						
15	Grants and contributions - operating expenditure	-	-	-	-	-	-
	<b>Capital expenditure (£m)</b>						
16	Base capital expenditure	5.056	86.165	187.871	16.813	-	295.905
17	Enhancement capital expenditure	8.787	225.532	116.632	(1.313)	-	349.638
18	Developer services capital expenditure	0.197	53.566	18.319	-	-	72.082
19	Total gross capital expenditure excluding third party services	14.040	365.263	322.822	15.500	-	717.625
20	Third party services	0.494	0.577	0.043	-	-	1.114
21	Total gross capital expenditure	14.534	365.840	322.865	15.500	-	718.739



Line description	Water resources	Water Network+	Wastewater Network+	Bioresources	Additional Control	Total
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Grants and contributions (£m)							
22	Grants and contributions - capital expenditure	0.219	33.909	24.395	-	-	58.523

23	Net totex	59.023	566.972	539.279	95.998	-	1,261.272
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Cash expenditure (£m)							
24	Pension deficit recovery payments	0.821	7.859	7.401	3.091	-	19.172
25	Other cash items	-	-	-	-	-	-
26	Totex including cash items	59.844	574.831	546.680	99.089	-	1,280.444

**1** Total operating costs were **£601.1 million**, an increase of **£3.6 million** in real terms on the previous report year.

**2** The wholesale cost of power increased substantially in 2022/23 due to external market conditions. However, our exposure to the unprecedented price rises was reduced through our energy hedging strategy. Our strategy is to buy multiple forward contracts for future years usage, over time in incremental blocks. These are purchased on the forward wholesale market and via market reflective power purchase agreements. This in effect fixes our wholesale cost at an average price of all the forward contracts for the relevant year. Although in 2022/23 this approach largely protected us from the significant spikes in the wholesale energy market, there remains longer term cost impacts to the company. In volatile market conditions, forecasting the direction of future prices is a risk decision, and we spread the risk by building up our purchase of future energy use over time, and we do so to ensure financial certainty, not to outperform the market. A hedging strategy of this nature, by its design, avoids the highs, but also the lows in markets through the multiple purchase of small volumes of energy over time. The result is that a large proportion of the overall forward energy purchase for the years 2023/24 and 2024/25 includes high-cost contracts purchased during the high-cost period in 2021/22 and 2022/23. Thus, whilst we may currently appear to be resilient to the market price spikes, we will see our energy cost approximately double in 2023/24 and remain high in 2024/25, regardless of what the volatile market price actually does in those years, because of the strategy of buying forward contracts.

**3** Wholesale regulated capital expenditure for 2022/23 was **£718.7 million**, split between water **£380.4 million** and wastewater **£338.4 million**.

### Change in operating expenditure compared to 2021/22

**4** Water services operating expenditure decreased by **£6.9 million (2.4 per cent)** and Wastewater costs increased by **£12.6 million (4.1 per cent)** in real terms against an underlying baseline

### Operating expenditure

Refer to the commentary within tables 4D and 4E for Key variances in underlying costs (real terms) from 2021/22

### Capital expenditure

**5** The figures presented relate to all our regulated capital investment in wholesale services. Total gross capital expenditure for the year was **£718.7 million**.

**6** Where possible, capital expenditure is allocated directly to the applicable price control. Where this is not possible because use of the asset is shared between two or more price controls (for example with capital expenditure on shared information systems, central offices and vehicles used by support services), expenditure is allocated to the price control of principal use and a subsequent recharge of the relevant depreciation charge is made between price controls.

**7** Total capital expenditure includes £1.1 million of spend on assets used to fulfil third-party agreements.

### **Cash expenditure**

**8** The only cash expenditure incurred that is not included in our operating cost totals relates to pension deficit payments. The total paid in the year was £24.5 million, of which £19.2 million was in relation to wholesale.

**Table 2C - Operating Cost Analysis - Retail**

	Line description	Residential	Business	Total
<b>Operating expenditure (£m)</b>				
1	Customer services	14.479	-	14.479
2	Debt management	8.636	-	8.636
3	Doubtful debts	30.118	-	30.118
4	Meter reading	3.422	-	3.422
5	Services to developers	-	-	-
6	Other operating expenditure	19.539	-	19.539
7	Local authority and Cumulo rates	0.165	-	0.165
8	Total operating expenditure excluding third party services	76.359	-	76.359
<b>Depreciation (£m)</b>				
9	Depreciation (tangible fixed assets) on assets existing at 31 March 2015	0.021	-	0.021
10	Depreciation (tangible fixed assets) on assets acquired after 1 April 2015	0.124	-	0.124
11	Amortisation (intangible fixed assets) on assets existing at 31 March 2015	-	-	-
12	Amortisation (intangible fixed assets) on assets acquired after 1 April 2015	4.233	-	4.233
<b>Recharges (£m)</b>				
13	Recharge from wholesale for legacy assets principally used by wholesale (assets existing at 31 March 2015)	0.623	-	0.623
14	Income from wholesale for legacy assets principally used by retail (assets existing at 31 March 2015)	0.007	-	0.007
15	Recharge from wholesale assets acquired after 1 April 2015 principally used by wholesale	3.682	-	3.682
16	Income from wholesale assets acquired after 1 April 2015 principally used by retail	-	-	-
17	Net recharges costs	4.298	-	4.298
18	Total retail costs excluding third party and pension deficit repair costs	85.035	-	85.035
19	Third party services operating expenditure	-	-	-
20	Pension deficit repair costs	2.592	-	2.592
21	Total retail costs including third party and pension deficit repair costs	87.627	-	87.627

	Line description	Residential	Business	Total
	<b>Debt written off (£m)</b>			
22	Debt written off	8.433	-	8.433
	<b>Capital expenditure (£m)</b>			
23	Capital expenditure	6.188	-	6.188
	<b>Other operating expenditure includes the net retail expenditure for the following household retail activities which are part funded by wholesale (£m)</b>			
24	Demand-side water efficiency - gross expenditure	1.365		
25	Demand-side water efficiency - expenditure funded by wholesale	-		
26	Demand-side water efficiency - net retail expenditure	1.365		
27	Customer-side leak repairs - gross expenditure	1.890		
28	Customer-side leak repairs - expenditure funded by wholesale	-		
29	Customer-side leak repairs - net retail expenditure	1.890		
	<b>Comparison of actual and allowed expenditure (£m)</b>			
30	Cumulative actual retail expenditure to reporting year end	227.324		
31	Cumulative allowed expenditure to reporting year end	234.768		
32	Total allowed expenditure 2020-25	396.800		

**1** Total operating expenditure was £76.4 million, a headline increase of £21.9 million (40 per cent) on the previous report year and a real terms increase of £8.6 million (12 per cent) after adjusting prior year atypical transactions.

**2** The cumulative AMP to date retail expenditure is £227.3 million, which is £7.4 million favourable to the cumulative allowed retail costs at PR19 (at 17/18 prices). This is due to the reduced cost of customer debt.

**3** Recharges of costs from other business units of £4.3 million reflects the recharge of IT systems from the business unit of principle use of wastewater.

**4** Pension deficit repair costs of £2.6 million reflects the share of our total deficit repair payment attributable to the retail price control.

**5** Household retail capex was £6.2 million, primarily in support of our smart metering programme and also enhanced customer data and data exploitation.

**6** Demand side water efficiency costs were £0.1 million greater than the prior year and customer side leak repairs were slightly higher at £1.9 million compared to £1.2 million in the prior year.

**7** Allowed expenditure (2C.30 and 2C.31). The outperformance of £7.4 million is largely due to customer debt costs being lower than allowed, but this is atypical due to the write back of provisions taken at the end of the previous AMP. The charge for depreciation is also less than allowed.

**8** The reforecast of customer numbers for the remaining years of the AMP is based on an interpolation of the ONS and Local Authority Plan data. This bridges from the actual customer numbers reported for 2022/23 to the forecast in WRMP24.

**9** Total household customers increased by circa 30,600 in the year (1.0 per cent).

	<b>Total £m</b>
2021/22 total reported operating expenditure	54.5
Atypical doubtful debt provision releases and provision rate changes	19.3
<b>2021/22 Underlying expenditure</b>	<b>73.8</b>
2022/23 reported operating expenditure	76.4
Atypical doubtful debt provision releases and provision rate changes	6.0
<b>2022/23 Underlying expenditure</b>	<b>82.4</b>

### **Key variances (real terms)**

**10** The underlying increase in total operating expenditure of £8.6 million from the prior year is due to increases in bad debt (£5.7 million) and in general support and other costs (£2.9 million).

**11** The increase in the bad debt charge is partly a result of the increase in our revenue and partly due to a return to more typical levels of collection after an exceptionally strong performance in the prior year. However, we continue to see stable cash collection, with our base bad debt charge over the long-term reducing as a percentage of revenue.

**12** Additionally, debt is now fully provided for after six years instead of four years and this has resulted in a further release of £6.0 million in provision relating to debt between four and six years old.

### **Debt written off**

**13** Total household debt written off was £8.4 million, an increase of £0.1 million over the prior year write offs of £8.3 million. Our write off policy has not changed in the year and broadly the same value of debt meets our ageing threshold and other criteria for assessing that collection is deemed highly unlikely or is uneconomic to pursue (e.g. old, small account balances or insolvencies).

## Table 2D - Historic Cost Analysis of Tangible Fixed Assets - Wholesale and Retail

Line description	Residential Retail	Business Retail	Water resources	Water Network+	Wastewater Network+	Bioresources	Additional Control	Total
<b>Cost (£m)</b>								
1 At 1 April 2022	10.205	-	338.522	6,077.502	7,769.534	757.859	-	14,953.622
2 Disposals	(0.041)	-	(0.621)	(34.872)	(7.095)	(2.783)	-	(45.412)
3 Additions	0.069	-	12.564	348.759	270.292	21.049	-	652.733
4 Adjustments	-	-	-	-	-	-	-	-
5 Assets adopted at nil cost	-	-	-	-	45.972	-	-	45.972
6 At 31 March 2023	10.233	-	350.465	6,391.389	8,078.703	776.125	-	15,606.915
<b>Depreciation (£m)</b>								
7 At 1 April 2022	(9.098)	-	(110.540)	(1,711.555)	(2,725.644)	(451.450)	-	(5,008.287)
8 Disposals	0.041	-	0.618	34.467	7.089	2.741	-	44.956
9 Adjustments	-	-	-	-	-	-	-	-
10 Charge for year	(0.145)	-	(10.229)	(126.971)	(156.391)	(26.992)	-	(320.728)
11 At 31 March 2023	(9.202)	-	(120.151)	(1,804.059)	(2,874.946)	(475.701)	-	(5,284.059)
12 Net book amount at 31 March 2023	1.031	-	230.314	4,587.330	5,203.757	300.424	-	10,322.856
13 Net book amount at 1 April 2022	1.107	-	227.982	4,365.947	5,043.890	306.409	-	9,945.335
<b>Depreciation charge for year (£m)</b>								
14 Principal services	(0.145)	-	(10.229)	(126.945)	(156.391)	(26.992)	-	(320.702)
15 Third party services	-	-	-	(0.026)	-	-	-	(0.026)
16 Total	(0.145)	-	(10.229)	(126.971)	(156.391)	(26.992)	-	(320.728)

**1** The net book amount includes £804.7 million in respect of assets in the course of construction, £257.2 million of adopted assets and £2,867.0 million of revaluation of assets undertaken 1 April 2013. Adopted asset additions increased from £39.2 million in 2021/22 to £46.0 million in 2022/23 in line with an increase in number and size of development mains vestings during the year. The adopted values at each site vary depending on the pipe diameter, material, depth and length and are vested by Anglian Water according to when developers complete the mains.

**2** Table 2D excludes intangible assets with a net book amount at 31 March 2023 of £237.1 million (31 March 2022: £205.7 million) as shown in table 2O. Additions have increased during 2022/23 in line with expectations of the rise in capital expenditure according to the business plan. Disposals mostly relate to removal of expired life, nil book value operational assets which have been replaced and has increased during 2022/23, especially in Water Networks plus, due to the nature of the asset replacement programmes.

**3** Following the adoption of the lease treatment standard IFRS 16 with effect from 1 April 2019, new leases form a net increase to cost of £6.1 million during the year, which mostly relates to vehicles. The net book amount of tangible assets includes £35.3 million (31 March 2022: £34.8 million) of lease assets which would not have been included in tangible assets but for the adoption of IFRS 16.

**4** The depreciation charge for third party services relates to fluoridation and some reverse osmosis assets. None of our other third party expenditure is incurred on assets used solely for the fulfilment of third party agreements. As such all other third party expenditure is included within the principal services asset values.

### **Assumptions used**

**5** In accordance with RAG 2.09, section 2.6, where assets are used by more than one business unit, these have been reported in full in the business unit of principal use. A recharge based on depreciation is made between business units to account for the use of these assets by the non-principal user(s).

**6** Due to the above, the majority of management and general assets have been assigned to wastewater network+ as the largest business stream except where the asset has been identified as relating principally to another business stream or retail operations. It is also common for general use assets, such as vans, to be allocated to a specific business unit one year but then moved to another in a subsequent year. In these cases the relevant cost and depreciation movements are reflected within the current year additions and depreciation charge.

**7** An offline assessment is made to determine whether assets are solely wholesale, solely retail or shared between the two.

**Table 2E - Analysis of grants and contributions**

Line description	Fully recognised in income statement	Capitalised and amortised (in income statement)	Fully netted off capex	Total
<b>Grants and contributions - water resources (£m)</b>				
1 Diversions - s185	-	-	-	-
2 Other contributions (price control)	-	-	-	-
3 Price control grants and contributions	-	-	-	-
4 Diversions - NRSWA	-	-	-	-
5 Diversions - other non-price control	0.219	-	-	0.219
6 Other contributions (non-price control)	-	-	-	-
7 Total grants and contributions	0.219	-	-	0.219
8 Value of adopted assets	-	-	-	-
<b>Grants and contributions - water network+ (£m)</b>				
9 Connection charges	15.715	-	-	15.715
10 Infrastructure charge receipts – new connections	10.645	-	-	10.645
11 Requisitioned mains	9.821	-	-	9.821
12 Diversions - s185	2.602	-	-	2.602
13 Other contributions (price control)	-	-	-	-
14 Price control grants and contributions before deduction of income offset	38.783	-	-	38.783
15 Income offset	7.655	-	-	7.655
16 Price control grants and contributions after deduction of income offset	31.128	-	-	31.128
17 Diversions - NRSWA	2.569	-	-	2.569
18 Diversions - other non-price control	0.278	-	-	0.278
19 Other contributions (non-price control)	(0.066)	-	-	(0.066)
20 Total grants and contributions	33.909	-	-	33.909
21 Value of adopted assets	-	-	-	-



Line description	Fully recognised in income statement	Capitalised and amortised (in income statement)	Fully netted off capex	Total
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<b>Grants and contributions - wastewater network+ (£m)</b>					
22	Receipts for on-site work	4.393	-	-	4.393
23	Infrastructure charge receipts – new connections	15.561	-	-	15.561
24	Diversions - s185	0.261	-	-	0.261
25	Other contributions (price control)	3.027	-	-	3.027
26	Price control grants and contributions before deduction of income offset	23.242	-	-	23.242
27	Income offset	-	-	-	-
28	Price control grants and contributions after deduction of income offset	23.242	-	-	23.242
29	Diversions - NRSWA	1.088	-	-	1.088
30	Diversions - other non-price control	0.015	-	-	0.015
31	Other Contributions (non-price control)	0.050	-	-	0.050
32	Total grants and contributions	24.395	-	-	24.395
33	Value of adopted assets	45.972	-	-	45.972

Line description	Water _x000D_ resources	Water _x000D_ network+	Wastewater network+	Total
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<b>Movements in capitalised grants and contributions (£m)</b>					
34	b/f	-	-	-	-
35	Capitalised in year	-	-	-	-
36	Amortisation (in income statement)	-	-	-	-
37	c/f	-	-	-	-

### Grants and contributions - Water resources

**1** Water resources income in 2022/23 represented part of a larger Non-Price Control diversion scheme.

### Grants and contributions - Water Network+

#### Connection charges (2E.9) - Connection charges

**2** Connection charges remained broadly similar in 2022/23 compared to the prior year. Contributions for on-site work have also increased significantly as schemes beginning construction post Covid have been completed.

**Diversions - NRSWA (2E.17)**

**3** This income represents contributions from all water diversion schemes applied for under NRSWA, and has increased compared to the prior year in line with a general increase in construction activity.

**Other contributions (non-price control) (2E.19)**

**4** Other contributions (non-price control) includes an adjustment for fire hydrants resulting in a reduction in revenue in the year. Other reinforcement works are also recognised in this category, with none being completed in the year.

**Grants and contributions - Wastewater****Receipts for on-site work (2E.22)**

**5** Contributions for on-site work remained in line with the prior year as schemes starting construction post Covid have reached their conclusion.

**Diversions - NRSWA (2E.29)**

**6** This income represents contributions from all sewer diversion schemes applied for under NRSWA.

**Value of adopted assets (2E.33)**

**7** Income from adopted assets increased from £39.2 million in 2021/22 to £46.0 million in 2022/23 in line with an increase in number and size of development mains vestings during the year. The adopted values at each site vary depending on the pipe diameter, material, depth and length and are vested by us according to when developers complete the mains.

**Table 2F - Household - Revenues by Customer Type**

	Line description	Revenue	Number of customers	Average residential revenues
	Units	£m	000s	£
<b>Residential revenue</b>				
1	Wholesale revenue	989.425	-	-
2	Retail revenue	95.670	-	-
3	Total residential revenue	1,085.095	-	-
<b>Retail revenue</b>				
4	Revenue Recovered ("RR" )	95.670	-	-
5	Revenue sacrifice	-	-	-
6	Actual revenue (net)	95.670	-	-
<b>Customer information</b>				
7	Actual customers ("AC" )	-	2,954.079	-
8	Reforecast customers	-	2,947.150	-
<b>Adjustment</b>				
9	Allowed revenue ("R" )	93.332	-	-
10	Net adjustment	(2.338)	-	-
<b>Other residential information</b>				
11	Average household retail revenue per customer	-	-	32.386

**Retail revenue (2F.2)**

**1** The household retail revenue control is a total revenue control, which can be recovered across the household customer base. The allowed revenue is calculated by multiplying the cost to serve by the number of unique customers.

**Net adjustment (2F.10)**

**2** The £2.3 million over recovery of revenue against the control (2.5 per cent of retail revenue) is primarily due to a slightly lower take-up on our social tariff LITE for the year as a whole, compared to the forecast when setting charges. Take-up increased during the year as we aligned eligibility criteria with "water poverty", and particularly in the second half of the year as we used data matching with the DWP to auto-enrol specific customer groups such as those receiving pension credit. We have seen customers continue to benefit from moving to the social tariff into the 2023/24 charging year. As a result, we expect to balance retail revenue recovery back to a neutral position over the remainder of AMP7.

**Table 2G - Non-household Water - Revenues by Customer Type**

Line description	Wholesale charges revenue	Retail revenue	Total revenue	Number of connections	Average non-household retail revenue per connection	Allowed average non-household retail cost	Outcome delivery incentive (ODI) payment	Allowed average non-household retail cost after ODI payment	Allowed margin	Allowed average non-household retail revenue per connection
Units	£m	£m	£m	000s	£	£	£	£	%	£

Default tariffs - customer group 1										
1	Tariff type 1	-	-	-	-	-	-	-	-	-
2	Tariff type 2	-	-	-	-	-	-	-	-	-
3	Total default tariffs customer group 1	-	-	-	-	-	-	-	-	-

Default tariffs - customer group 2										
4	Tariff type 1	-	-	-	-	-	-	-	-	-
5	Total default tariffs	-	-	-	-	-	-	-	-	-

Non-Default tariffs										
6	Total non-default tariffs	-	-	-	-	-	-	-	-	-
7	Total	-	-	-	-	-	-	-	-	-

Line description	Number of customers	Average non-household retail revenue per customer
Units	000s	£

Revenue per customer		
8	Total	-

1 The table has been left blank as the company is not required to report against this table.

## Table 2H - Non-household Wastewater - Revenues by Customer Type

Line description	Wholesale charges revenue	Retail revenue	Total revenue	Number of connections	Average non-household retail revenue per connection	Allowed average non-household retail cost	Outcome delivery incentive (ODI) payment	Allowed average non-household retail cost after ODI payment	Allowed margin	Allowed average non-household retail revenue per connection
Units	£m	£m	£m	000s	£	£	£	£	%	£

Default tariffs - customer group 1										
1	Tariff type 1	-	-	-	-	-	-	-	-	-
2	Tariff type 2	-	-	-	-	-	-	-	-	-
3	Tariff type 3	-	-	-	-	-	-	-	-	-
4	Total default tariffs	-	-	-	-	-	-	-	-	-

Non-Default tariffs										
5	Total non-default tariffs	-	-	-	-	-	-	-	-	-
6	Total	-	-	-	-	-	-	-	-	-

Line description	Number of customers	Average non-household retail revenue per customer
Units	000s	£

Revenue per customer		
7	Total	-

1 Table has been left blank as the company is not required to report against this table.

## Table 2I - Revenue Analysis and Wholesale Control Reconciliation

Line description	Household	Non-household	Total	Water resources	Water network+	Total
<b>Wholesale charge - water (£m)</b>						
1 Unmeasured	74.107	0.347	74.454	9.067	65.387	74.454
2 Measured	300.214	122.167	422.381	47.456	374.925	422.381
3 Third party revenue	-	13.907	13.907	2.848	11.059	13.907
4 Total wholesale water revenue	374.321	136.421	510.742	59.371	451.371	510.742
<b>Wholesale charge - wastewater (£m)</b>						
5 Unmeasured - foul charges	104.660	0.734	105.394	86.395	18.999	105.394
6 Unmeasured - surface water charges	15.999	0.096	16.095	15.996	0.099	16.095
7 Unmeasured - highway drainage charges	9.198	0.050	9.248	9.169	0.079	9.248
8 Measured - foul charges	358.531	116.612	475.143	394.253	80.890	475.143
9 Measured - surface water charges	78.823	4.477	83.300	82.787	0.513	83.300
10 Measured - highway drainage charges	47.893	2.232	50.125	49.695	0.430	50.125
11 Third party revenue	-	-	-	-	-	-
12 Total wholesale wastewater revenue	615.104	124.201	739.305	638.295	101.010	739.305
<b>Wholesale charge - Additional Control (£m)</b>						
13 Unmeasured	-	-	-			
14 Measured	-	-	-			
15 Total wholesale additional control revenue	-	-	-			
16 Wholesale Total	989.425	260.622	1,250.047			
<b>Retail revenue (£m)</b>						
17 Unmeasured	19.700	-	19.700			
18 Measured	75.970	-	75.970			
19 Retail third party revenue	-	-	-			
20 Total retail revenue	95.670	-	95.670			

	Line description	Household	Non- household	Total
<b>Third party revenue - non-price control (£m)</b>				
21	Bulk supplies - water	-	-	12.267
22	Bulk supplies - wastewater	-	-	4.472
23	Other third-party revenue - non price control	-	-	2.903
<b>Principal services - non-price control (£m)</b>				
24	Other appointed revenue	-	-	0.543
25	Total appointed revenue	-	-	1,365.902

**1** This table shows an analysis of revenue across our price control units split by revenue streams. The table reflects the disaggregated charges set to separately recover foul, surface and highway revenue. Calculation of water resources, water network plus, wastewater network plus and bioresources actual revenue is in line with the proportion of each fixed and volumetric charge as set when calculating charges in order to recover the allowed revenue requirement.

**2** Measured and unmeasured wholesale charges reflect the revenue recovered for the provision of principal services. Third party revenue within the price control reflects the supply of non-potable water.

**3** Bulk supplies relate to provision of treated water supplies and wastewater services to neighbouring water companies. Other third party revenue – non-price control includes “Excluded Charges” and all other sources of revenue received from third parties for which costs are not covered by the wholesale price control e.g. rechargeable works where the appointee is a monopoly supplier.

**Table 2J - Infrastructure Network Reinforcement**

Line description	Network reinforcement capex	On site / site specific capex (memo only)
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<b>Wholesale water network+ (treated water distribution) (£m)</b>			
1	Distribution and trunk mains	2.578	-
2	Pumping and storage facilities	0.796	-
3	Other	-	-
4	Total	3.374	-

<b>Wholesale wastewater network+ (sewage collection) (£m)</b>			
5	Foul and combined systems	5.140	0.300
6	Surface water only systems	-	-
7	Pumping and storage facilities	0.903	-
8	Other	-	-
9	Total	6.043	0.300

**General assumptions (2J.1-2J.9)**

**1** Table 2J shows the total capital expenditure on network reinforcement split between below ground infrastructure assets and pumping and storage facilities, classified in accordance with the definition set out in Ofwat's "Charging rules for new connections services" document.

**2** The onsite/site specific capex shows the network enhancement expenditure incurred in relation site specific new developments.

**3** The source of the data is the project systems module of our SAP business management system. Each project holds as part of its master data Business Investment Category (BIC) codes which map the expenditure to infrastructure and non-infrastructure, and between Water and Wastewater Network+.

**4** All network reinforcement spend is in relation to below ground infrastructure, pumping stations and storage facilities. No expenditure is therefore shown within "other".

**Wastewater below ground infrastructure (2J.5-2J.6)**

**5** For Wastewater Network+ infrastructure spend, an assessment of all projects has been performed to determine whether the costs are in relation to foul and combined or surface water only systems. No surface water only schemes were included in the current year.



**Table 2K - Infrastructure Charges Reconciliation**

Line description	Water	Wastewater	Total
<b>Impact of infrastructure charge discounts (£m)</b>			
1 Infrastructure charges	10.645	15.561	26.206
2 Discounts applied to infrastructure charges	-	-	-
3 Gross Infrastructure charges	10.645	15.561	26.206
<b>Comparison of revenue and costs (£m)</b>			
4 Variance brought forward	(21.627)	3.049	(18.578)
5 Revenue	10.645	15.561	26.206
6 Costs	(3.374)	(6.043)	(9.417)
7 Variance carried forward	(14.356)	12.567	(1.789)

**1** Over a rolling five-year period we expect to fully recover the costs of network infrastructure reinforcement from developers. However, owing to the long-term nature of these infrastructure schemes, the uneven profile of network reinforcement spend over an AMP period and the fact that we aim to recover these infrastructure costs over a five year period, we would not expect the costs and revenues to match in any given financial year.

**2** Our region is an area of significant growth and we continue to see a shift towards large urban expansions compared to smaller infill sites. The downturn in activity during 2020-21 saw a large drop in the number of planned New Connections, which directly impacted our recovery of Infrastructure Charges. During this period, we continued to invest in network reinforcement. Our charges scheme has been designed to maintain the pre-existing balance between developers and customers and the timing of expenditure is such that it is often out of sync with the collection of revenues. We believe the differences in expenditure and revenue seen in 2022/23 is temporary in nature and would expect this gap to narrow over time, particularly as the new development activity reaches maturity and all network reinforcement expenditure incurred to enable this growth is recovered from developers. This can be seen in the reduction in the brought forward variance from 2021/22 (£19.6 million) compared to the 2022/23 carried forward variance (£1.8 million).

**3** No discounts have been applied to infrastructure charges in 2022/23.

**Table 2L - Analysis of land sales for the 12 months ended 31 March 2023**

	Line description	Units	Water resources	Water Network+	Wastewater Network+	Additional control	Total
1	Land sales – proceeds from disposals of protected land	£m	0.604	2.997	0.102	-	3.703

**1** Proceeds are net of costs. Most proceeds are from the sale of minor pieces of land. There was one item requiring prior approval from Ofwat, which was Sundon Reservoir (£3.0 million).

**Table 2M - Revenue reconciliation for the 12 months ended 31 March 2023 - Wholesale**

Line description	Water resources	Water network+	Wastewater network+	Bioresources	Additional Control	Total
<b>Revenue recognised (£m)</b>						
1 Wholesale revenue governed by price control	59.371	451.371	638.295	101.010	-	1,250.047
2 Grants & contributions (price control)	-	31.128	23.242	-	-	54.370
3 Total revenue governed by wholesale price control	59.371	482.499	661.537	101.010	-	1,304.417
<b>Calculation of the revenue cap (£m)</b>						
4 Allowed wholesale revenue before adjustments (or modified by CMA)	59.364	471.167	632.784	104.319	-	1,267.634
5 Allowed grants & contributions before adjustments (or modified by CMA)	-	24.385	18.362	-	-	42.747
6 Revenue adjustment	(0.197)	(11.277)	8.248	(3.251)	-	(6.477)
7 Other adjustments	-	-	-	-	-	-
8 Revenue cap	59.167	484.275	659.394	101.068	-	1,303.904
<b>Calculation of the revenue imbalance (£m)</b>						
9 Revenue cap	59.167	484.275	659.394	101.068	-	1,303.904
10 Revenue Recovered	59.371	482.499	661.537	101.010	-	1,304.417
11 Revenue imbalance	(0.204)	1.776	(2.143)	0.058	-	(0.513)

**1** We allocate penalty related to wholesale water revenue imbalances between the water resources and water networks plus price controls proportionately to the allowed revenue set out in each control.

### Grants & contributions (2M.2)

**2** We do not receive any grants. All current year contributions revenue governed by the wholesale price control were received in relation to new development activities.

### Amount assumed in wholesale determination (2M.4)

**3** Wholesale revenue controls are set for water resources, water network plus, wastewater network plus and bioresources separately. The values set out in the Final Determination in 2017/18 prices are repriced based on CPIH and adjusted according to the PR19 Reconciliation Rule Book, to give the allowed revenue for 2022/23. The resulting calculation of revenue was then used for setting charges for the 2022/23 Charges Scheme.

**4** Allowed wholesale water resources revenue and network plus revenue were calculated as £59.2 million and £484.3 million, respectively.

**5** Allowed wholesale wastewater network plus revenue and bioresources revenue were calculated as £659.4 million and £101.1 million, respectively.

**Difference (2M.11)**

**6** The level of wholesale water resources revenue recovered from customers is £0.2 million above allowed revenues and water network plus is £1.8 million below allowed revenue. These represent 0.3 per cent and 0.4 per cent of allowed revenues respectively. This reflects an under-recovery of main charges (£8.3 million) partly offset by an over-recovery of grants and contributions (£6.7 million). The under-recovery on main charges is primarily due to lower household demand particularly in the second half of the year partly offset by non-household customers demand.

**7** The level of wholesale wastewater network plus is £2.1 million above allowed revenue and bioresources revenue is £0.1 million respectively below allowed revenue. These represent 0.3 per cent and 0.1 per cent of allowed revenues respectively. For wastewater network plus this reflects an over-recovery of grants and contributions (£4.9 million) partly offset by an under-recovery of main charges (£2.7 million). The under recovery on main charges is primarily due to lower household demand partly offset by higher non-household demand.

**Table 2N - Residential retail - social tariffs**

Line description	Revenue	Number of customers	Average amount per customer
Units	£m	000s	£

<b>Number of residential customers on social tariffs</b>				
1	Residential water only social tariffs customers	-	5.621	-
2	Residential wastewater only social tariffs customers	-	15.043	-
3	Residential dual service social tariffs customers	-	83.723	-

<b>Number of residential customers not on social tariffs</b>				
4	Residential water only no social tariffs customers	-	238.083	-
5	Residential wastewater only no social tariffs customers	-	838.784	-
6	Residential dual service no social tariffs customers	-	1,772.825	-

<b>Social tariff discount</b>				
7	Average discount per water only social tariffs customer	-	-	95.001
8	Average discount per wastewater only social tariffs customer	-	-	118.593
9	Average discount per dual service social tariffs customer	-	-	213.944

<b>Social tariff cross-subsidy - residential customers</b>				
10	Total customer funded cross-subsidies for water only social tariffs customers	0.534	-	-
11	Total customer funded cross-subsidies for wastewater only social tariffs customers	1.784	-	-
12	Total customer funded cross-subsidies for dual service social tariffs customers	17.912	-	-
13	Average customer funded cross-subsidy per water only social tariffs customer	-	-	2.191
14	Average customer funded cross-subsidy per wastewater only social tariffs customer	-	-	2.089
15	Average customer funded cross-subsidy per dual service social tariffs customer	-	-	9.648

<b>Social tariff cross-subsidy - company</b>				
16	Total revenue forgone by company to fund cross-subsidies for water only social tariffs customers	-	-	-
17	Total revenue forgone by company to fund cross-subsidies for wastewater only social tariffs customers	-	-	-
18	Total revenue forgone by company to fund cross-subsidies for dual service social tariffs customers	-	-	-
19	Average revenue forgone by company to fund cross-subsidy per water only social tariffs customer	-	-	-
20	Average revenue forgone by company to fund cross-subsidy per wastewater only social tariffs customer	-	-	-
21	Average revenue forgone by company to fund cross-subsidy per dual service social tariffs customer	-	-	-

Line description	Revenue	Number of customers	Average amount per customer
Units	£m	000s	£

Social tariff support - willingness to pay			
22	Level of support for social tariff customers reflected in business plan	-	4.000
23	Maximum contribution to social tariffs supported by customer engagement	-	12.000

**1** Numbers reported relate to the LITE tariffs. The average number of customers on the tariffs in the year was 104,000 which is close to the forecast take up when charges were set. Take-up increased during the year as we aligned eligibility criteria with "water poverty", and particularly in the second half of the year as we used data matching with the DWP to auto-enrol specific customer groups such as those receiving pension credit. We have seen this continue (but to a lesser degree) into the 2023/24 charging year. The discount per customer reflects the weighted average of the discount bands available. There has been limited take up for single service customers with majority of customers being dual service. When setting charges we calculated a cross subsidy of £10 for a dual service and £5 for a single service customer. The discount is fully funded by the cross subsidy set following consultation in 2020.

**2** To promote accessibility for vulnerable customers we offer additional practical support to a wide range of customers as part of our Priority Service register. The Priority Service register can provide support to our customers should their water stop, and we need to carry out a repair, including proactive contact and bottled water delivered to their door. We also provide additional services to help with managing their account, such as bills in alternative formats, translations services, help reading the meter, password schemes and our knock and wait service which can provide extra time for our customers to answer the door.

**3** During 2022/23 we increased the number of customers we support through our Priority Service register to 11.4 per cent of households, exceeding the industry target of 7 per cent by 2025. The increase is a direct result of our customer facing teams proactively responding to disclosures of vulnerability, promotional campaigns to increase awareness and continued partnership working. We have sent over 1.1 million emails, generated more than 15.7 million social media impressions, and actively engaged with over 200 partners across our region to promote the support available. When asked 61.8 per cent of our customers were aware of the support we provide as part of our Priority Services.

**4** In 2022/23 we continued to roll out bespoke vulnerability training in partnership with the Money Advice Trust to our frontline teams, building their confidence and ability to encourage and handle sensitive disclosures.

**5** We are pleased to share that in addition to maintaining certification of the BSI 18477, we are one of the first water companies and one of only nine companies globally to achieve the new international standard for Inclusive Service Provision ISO 22458. Both standards are a high-level certification only issued to businesses that have met strict criteria for protecting their customers who are in vulnerable situations.

**6** We have continued to expand the range of partners we work with, following research conducted with Scope we launched a critical partnership with Kidney Care UK to support those most at risk during an interruption to supply.

**7** We further increased our work with local government to distribute the Household Support Fund to those experiencing water poverty, through working closely with councils across our region we have been able to distribute over £2 million in support.

**Table 20 - Historic cost analysis of intangible fixed assets**

Line description	Residential Retail	Business Retail	Water Resources	Water Network+	Wastewater Network+	Bioresources	Additional Control	Total
<b>Cost (£m)</b>								
1 At 1 April 2022	82.099	-	23.853	50.083	410.675	17.053	-	583.763
2 Disposals	(0.112)	-	-	-	(11.675)	-	-	(11.787)
3 Additions	8.951	-	3.660	16.233	45.451	0.486	-	74.781
4 Adjustments	-	-	-	-	-	-	-	-
5 Assets adopted at nil cost	-	-	-	-	-	-	-	-
6 At 31 March 2023	90.938	-	27.513	66.316	444.451	17.539	-	646.757
<b>Amortisation (£m)</b>								
7 At 1 April 2022	(68.642)	-	(13.071)	(28.381)	(262.508)	(5.505)	-	(378.107)
8 Disposals	0.112	-	-	-	11.675	-	-	11.787
9 Adjustments	-	-	-	-	-	-	-	-
10 Charge for year	(4.233)	-	(2.460)	(3.178)	(30.586)	(2.907)	-	(43.364)
11 At 31 March 2023	(72.763)	-	(15.531)	(31.559)	(281.419)	(8.412)	-	(409.684)
12 Net book amount at 31 March 2023	18.175	-	11.982	34.757	163.032	9.127	-	237.073
13 Net book amount at 1 April 2022	13.457	-	10.782	21.702	148.167	11.548	-	205.656
<b>Amortisation for year (£m)</b>								
14 Principal services	(4.233)	-	(2.460)	(3.178)	(30.586)	(2.907)	-	(43.364)
15 Third party services	-	-	-	-	-	-	-	-
16 Total	(4.233)	-	(2.460)	(3.178)	(30.586)	(2.907)	-	(43.364)

**1** Intangible assets included in the above comprise capitalised software assets and models, studies and plans used to inform future investments.

**2** Additions have increased during 2022/23 in line with expectations of the rise in capital expenditure according to the business plan, including £19.3 million spent in 2022/23 on the continuing SAP system replacement scheme. Disposals relate to removal of expired life, nil book value software assets which have been replaced and has increased during 2022/23.

**3** The net book amount includes £111.8 million in respect of assets in the course of construction.

**4** Table 20 excludes tangible assets with a net book amount at 31 March 2023 of £10,322.9 million (31 March 2022 of £9,945.3 million) as shown in table 2D.

### Table 3A - Outcome performance - Water performance commitments

Line description	Unique reference	Unit	Performance level - actual	PCL met?	Outperformance or underperformance payment	Forecast of total 2020-25 outperformance or underperformance payment
					£m	£m

#### Common PCs - Water (Financial)

1	Water quality compliance (CRI)	PR19ANH_3	number	2.92	No	-1.119	-5
2	Water supply interruptions	PR19ANH_4	hh:mm:ss	00:14:35	No	-10.129	-23.9
3	Leakage	PR19ANH_5	%	7.5	No	-1.330	-10.5
4	Per capita consumption	PR19ANH_6	%	-2.3	No	0	-
5	Mains repairs	PR19ANH_11	number	173.2	No	-4.455	-4.5
6	Unplanned outage	PR19ANH_12	%	2	Yes	-	-

#### Bespoke PCs - Water and Retail (Financial)

7	Percentage of population supplied by a single supply system	PR19ANH_15	%	22.3	No	0	0.6
8	Properties at risk of persistent low pressure	PR19ANH_16	nr	53	Yes	0.615	2.2
9	Abstraction Incentive Mechanism	PR19ANH_20	nr	17	No	-0.05241	-0.1
10	Managing void properties	PR19ANH_23	%	0	Yes	1.179	5.5
11	Water quality contacts	PR19ANH_34	nr	1	No	-0.214	-1.4
12	Smart metering delivery	PR19ANH_38	nr	543,686	No	0	-
13	Internal interconnection delivery	PR19ANH_39	nr	7	-	0	-
14	Cyber Security	PR19ANH_41	%	-	-	0	-
15	Underperformance incentive for Elsham treatment works and transfer scheme	PR19ANH_47	text	n/a	-	0	-
16	Outperformance payment for Elsham treatment works and transfer scheme	PR19ANH_48	text	n/a	-	0	-

27	Financial water performance commitments achieved	%	25
28	Overall performance commitments achieved (excluding C-MEX and D-MEX)	%	55



**1** The information we have published in table 3A is consistent with the updates we have reported to our Independent Challenge Group (previously our Customer Engagement Forum) during the course of the year.

### **Water Quality Compliance (CRI) (3A.1)**

**2** The DWI developed the Compliance Risk Index (CRI), alongside the Event Risk Index (ERI), for measuring compliance based risk.

**3** The CRI for an individual exceedance is calculated based on the parameter severity and impact. The score includes factors of the cause of the failure, the way the company investigates the failure and any risk mitigation put in place by the company. It is the Inspectorate's assessment of that which produces the assessment score. Each assessment score is divided by the applicable company reference value for the type of exceedance, which produces the individual CRI score. The company CRI score is the sum of the CRI scores for each individual exceedance.

**4** In 2022 the provisional CRI score for Anglian Water is 2.92. This is lower than our 2021 score of 4.04. CRI was impacted in 2022 by an increased number of water quality exceedances from our water treatment works and public water supply zones in comparison to 2021. We have instigated a programme that is aimed to reduce the number of water quality exceedances from our assets. The final CRI score will be published by the DWI in the Chief Inspector's Report for 2022.

### **Water Supply Interruptions (3A.2)**

**5** The total time lost due to interruptions exceeding three hours per property is 14 minutes 35 seconds (compared to 9 minutes 48 seconds 2021/22). The breakdown of the score is 14 minutes 06 seconds (9 minutes 45 second in 2021/22) unplanned and 29 seconds (03 seconds in 2021/22) planned.

**6** During the course of the reporting year, the calculated verified score has been significantly affected by a number of key events:

- King's Lynn – 16-18 July 2022
- Severe drought conditions – July - August 2022
- Significant temperature swing – December 2022

**7** We have established and embedded new ways of working post Covid-19. Whilst maintaining 24/7 shift coverage within our front line Tac Operations teams, the ability to hybrid work by exception and for those non-shift personnel has been established, with the additional provision of mobile IT devices. This approach has ensured we have maintained the level of resource oversight to meet the needs of the business.

### **Common methodology compliance**

**8** For this performance commitment there is an immaterial risk of worse performance being reported due to non-compliance with the common methodology. This effects sections 2c (start time - block of flats) and 3c (stop time - block of flats).

**9** We do not treat blocks on a floor by floor basis in every circumstance as the modelling of tower blocks by floor is not cost beneficial where the information is not readily available.

**10** We verify every event on a case by case basis, not however on a floor by floor basis. Variations in building height, internal plumbing, storage tanks, boosters and header tanks present too great a challenge (currently) to be able to accurately report, though we would assess on a case by case basis were data on these factors available. Instead, a consistent approach is made to all event verification where all supply points are considered at ground level.

**11** We treat any outage where sufficient information is not available as the whole building being off water. This results in a slightly higher reported number if relevant.

### Leakage (3A.3)

**12** The three-year rolling average leakage continues to reduce this year despite adverse weather impacting our network both during the hottest summer on record and during two significant freeze thaw events during the winter. Three-year average leakage is assessed at 179.5 MI/d against a performance commitment level of 177.6 MI/d. This is a 7.5 per cent reduction against the 2019/20 baseline, slightly below our target reduction of 8.5 per cent. As a result the ODI mechanism generates £1.33m of penalty for the year.

### Leakage strategy

**13** Our AMP7 leakage strategy continues some themes that we started in AMP6 such as network optimisation and intensive leakage investigation. It is supplemented with new SMART strategies such as permanent noise logging, smart metering and widespread pressure transient monitoring. Outputs from our strategies are as follows:

#### Proactive Leakage Resource:

- In 2022/2023 we had 227.8 FTE (Full-time equivalents) dedicated proactive leakage operational roles. (170.8 FTE are field based detection roles).
- The average leakage technician productivity for 2022/2023 was 1.02 leaks per technician per day (an increase of 76 per cent when compared to the 2020 baseline).
- In 2022/2023, 14,134 leaks were located through proactive detection activities.
- In addition to proactive detection activities, Leakage Operations supported circa 3,500 customer-reported visible leaks during the summer drought period and supported incident response through network operations and bottled water deployment centres during the summer demand (drought) and winter freeze-thaw events. (Little Downham & Haddenham, Ely & Mildenhall, PA126 Grafham.)

#### Leakage capital delivery programmes:

##### 14 Leakage Sensors

- Our fixed network hydrophone monitoring system now incorporates 307 District Metered Areas (DMAs), an increase from 285 DMAs in 2021-2022.
- The total number of leaks found from sensor detection in 2022-2023 was 4,556. This brings the total number of leaks detected using this technology to 16,469 since 2020.
- In 2022/23 the sensor programme delivered 1.07MI/d of leakage benefit.

#### Intensive Investigation

- Our intensive investigation process continues to develop well and now incorporates a comprehensive programme of virtual step testing using flexible metering assets, camera insertion detection and mains condition assessment, and the use of drones with thermographic imagery. In 2022/2023 we established a contract with a company to image and analyse 5,000km of targeted large rural distribution and trunk mains each year. This technology uses Synthetic Aperture Radar with patented analysis to detect underground leaks. To compliment the satellite detection, we now use leakage detection dogs as part of our investigation process.
- In 2022/23 the Intensive Investigation Process delivered 3.54MI/d of leakage benefit.

#### Customer supply pipe leakage/internal private leakage

- We continue to work closely with our customers to ensure they are supported through the process of repairing private leaks in a timely manner. Excluding the SMART metering programme, the customer leakage policy support team resolved 10,270 cases in 2022/2023 with only 1,036 Waste of Water notices requiring to be issued.
- SMART metering - our smart metering programme has installed 543,686 meters by the end of 2022/23, up 233,365 from 2022/23. The installation programme has been slowed by issues with microprocessor availability, which has delayed deliveries of smart meters. In 2022/23 we identified 104,589 properties with continuous flow greater

than 1 l/hr. We saw 12,964 of these leaks fixed with no contact from us to the customers. Of the 93,074 leaks where we informed and worked with our customers to ensure that the issue was resolved by them we saw 70,650. This has resulted in 25.15 MI/d of leakage or plumbing loss being resolved

- Network/pump optimisation schemes – There have been 162 optimisation schemes implemented this year, delivering 4.56 MI/d leakage reduction. This was split between:
  - 43 schemes to optimise existing pressure management assets, delivering 0.4 MI/d leakage reduction.
  - 112 schemes introducing first time pressure management, delivering 2.64 MI/d leakage reduction.
  - Five pump optimisation schemes delivering 0.44 MI/d leakage reduction.
  - Two system optimisation schemes delivering 1.08 MI/d leakage reduction.

### Common methodology compliance

**15** We summarise our compliance with the common methodology in the commentary for 6B.35.

### Per capita consumption, PCC (3A.4)

**16** Three-year average PCC has reduced in 2022/23 to 138.1 l/person/day compared to a target of 129.8 l/person/day. This is a 3.0 per cent decrease from baseline against a target reduction of 3.2 per cent. The measure remains above target due to the impact of Covid-19 on domestic demand in 2020/21 and 2021/22. As the impact of these two years drops out from the three-year average in years 4 and 5 of AMP7 we expect the measure to come back on target. The reduction seen in 2022/23 is due to water efficiency, smart metering and demand management savings as detailed below as well as a reduction caused by people using less water due to the impact of rising costs across the economy.

**17** Demand management is a key part of our strategy to balance supply and demand, and up until recently (noting that recent changes in demand have been impacted by the Covid19 pandemic) we put the same amount of water into our network as we did in 1989, even though the number of properties supplied has increased by over 30 per cent. This has been achieved through household metering, leakage reduction and encouraging and supporting our customers to become more water efficient. As part of our WRMP19 demand management strategy, our ambition has been to go even further with our smart metering rollout and digital communications strategy, along with our enhanced leakage programme.

**18** Per Household Consumption values at PHC - 306 l/prop/d (as opposed to 317 l/prop/d 2021/22) and Per Capita Consumption values at PCC - 131.28 l/h/d (as opposed to 135.99 l/h/d for 2021/22) have been reduced to the lowest values we have ever recorded (a 4.71l/h/d decrease). Values have seen significant reductions as the effects of the Covid19 pandemic and lockdowns have subsided and as we have seen the benefits of smart metering fully starting to be realised. We are also potentially seeing impacts of the cost-of-living crisis as the cost of energy may be affecting water consumption.

Actuals - AMP7 method	2018	2019	2020	2021	2022	2023
In year PCC (MI/d)	134.80	134.10	133.30	146.90	136.00	131.30
3 year PCC (MI/d)			134.10	138.10	138.70	138.10
% reduction				-3.0%	-3.4%	-3.0%

**19** Both per household consumption (PHC) and average per capita consumption (PCC) have reduced dramatically from the peaks experienced during the Covid19 pandemic to the lowest levels we have recently recorded. We have potentially also seen impacts from the 'cost of living' crisis. We continue to closely monitor the change in demand as the pandemic abates and are working to mitigate the changes in demand we have seen, as we progress through AMP7.

**20** Water saving activity has been accelerated during Year 3 to increase opportunities to engage with customers regarding how their actions can help in saving water.

### Water saving activities

**21** We are focused on utilising smart meters to connect customers with their data and reduce the gap between perception and actual consumption to ensure that usage feels relevant and quantifiable for customers. Monthly comparison emails for smart metered customers use social norms to compare household usage between similar properties and occupancies, to nudge behaviour changes. One of the biggest benefits of smart meters is the identification of continuous flow, indicating customer side leakage – either customer supply pip or plumbing loss.

**22** We now have 160,000 registered active smart meter households who are engaged with their usage. We send monthly reminders to view their usage to compare from the previous month and using 'social norms' to show their usage is either efficient, average or above average to similar homes based on occupancy provided.

**23** Customers having frequent engagement with their usage helps them to take direct control of their usage by changing their behaviour. Customer side leakage (plumbing loss or customer supply pipe leakage) accounts for the majority of reduction in overall PCC/Household consumption and has been quantified separately in the smart metering benefits.

**24** Our metering visits have been maximised to include a water efficiency home audit that is tailored to customer needs and provide water saving devices relevant to their consumption patterns. During year three we have:

- completed 10,290 water saving home visits for Year three.
- Note that the total assumed savings using Ofwat assumptions based on the devices fitted is approximately 20 litres/prop/day. Based on this, the total assumed savings would be 0.2 MI/d.
- Our original target was to complete 12,500, however we're aiming to make up for the discrepancy in Year four.

### Customer engagement activities

**25** We have continued customer engagement activities have occurred across the region in hotspot areas (including Colchester, Peterborough, Northampton, Boston and Lincoln) for Year three. These activities are designed to educate customers on why it is important we protect our water resources and pipes from blockages, through helping customers reconnect with where their water comes from and the water cycle. The partnership strategy is to educate, build intent and create behaviour change at a hyper local level with our customers.

- Door knocking with partners Groundwork East and Peterborough Environment City Trust has led to almost 800 meter fitting requests in Colchester & Peterborough.
- 310 BabyDams shared through hyper local outreach with parent groups in partnership with local environmental charities in Colchester & Peterborough with an assumed saving of 8,680 litres. Note that after the phenomenal response to our baby dam campaign last year, this has now stabilised through our partnership with parent groups.
- 6,946 face to face engagements through events, partnerships and group workshops
- Across all partnerships 2,399 water saving home kits, 409 garden kits and 272 Bath Buoys have been handed out with an assumed water saving of 16,179.5 litres

**26** *Table 3: Water Saving Device breakdown*

Row Labels	Count of Device Name	Assumed savings litres per device	savings litres per prop/day
Babydam	310	28 ltr	8,680

Bath Buoy	272	15	4,080
Garden Kit	409	0.5	204.5
Water Saving Kit	2,399	5	11,995
<b>Total litres saved</b>			<b>16,279.50</b>

**27** During Year three, alongside existing and annual water saving marketing, we have also used our 'mass awareness channel mix' to run a shorter shower campaign aimed at driving water savings during the winter months. This campaign targeted our whole customer-base, but activity was increased in hotspot areas that were at risk from water stress. Utilising innovative engagement techniques, social influencers and the hook of free water saving devices we saw high levels of engagement across our digital channels and increased activity across content focussing on reducing consumption in the bathroom between January and April 2023 we saw

- Website – 56,000 unique page views across all 'in the bathroom' webpages and 1:27 avg. time of page and 8,900 participants for the shower consumption quiz.
- Social - Reached over 267,847 people and 18,821 post engagements.
- Email - 995,897 reach, open rate of 72 per cent and 30 per cent click to open rate
- Influencer performance - total insight - 1,600 likes, 314 comments, 17,000 reach, 45,000 plays
- Behaviour change kits - 6,000 kits sent out since 16/01/2023 PCC Outcome - Assumed savings 30,000 litres/day (for this 6,000 cohort).

**28** We remain fully committed to reducing consumption through a range of initiatives, especially through the introduction of our smart meter programme and digital communication strategy.

**29** We currently assume the following savings associated with the water saving devices supplied in our kits:

**30** *Table 4: Assumed water Savings per Device*

Row Labels	Assumed savings litres per device
Bath Buoy	15
Eco Beta	47
Garden Kit	0.5
Gardening crystals	
Hippo	1.6
Plumber correct toilet to be dual flush	30
Save-a-flush bag	1.6
Shower head	30
Shower timer	5
Tap Insert	18
Trigger hose gun	2
Washing up bowl	
Water Saving Kit	5
Household audit	10

## Hot weather and garden interventions

**31** Anglian Water's 'Garden Responsibly' campaign launched in May 2022 and focussed on leveraging National Gardening Week, to educate our target audience on reducing water use in outdoor spaces. Insight has shown that garden activity is one of the biggest areas of consumption during the summer months, so we have aimed to utilise mass awareness channels to educate on water saving and directed behaviour change kits in hotspot locations, where demand was predicted to be highest.

**32** We have Utilised social influencers as trusted voices to deliver behaviour change advice, customers who have then been directed to the Anglian Water website for more water saving tips or to order a kit (this was also followed up with an email journey to increase engagement).

- Behaviour change kits – 1,400 garden responsibly kits ordered

**33** As temperatures rose during the summer of 2022 our 'mass awareness campaign to drive down PCC' utilised our largest channel mix and was our biggest campaign through July and August. Our channel mix included;

- social media (organic, paid and weather ads),
- media and PR,
- email (general newsletter and targeted),
- PPC, website, community partnerships,
- internal channels and
- the trial of the 'Nextdoor' platform – an industry first. The focus was to educate customers on the challenge, reassure the region that we were doing everything to support them, and drive behaviour change action at an individual, household level.

## Email

**34** July saw 1,055,174 water efficiency emails sent with a 48 per cent open rate and 4.4 per cent click rate. August delivered an even more direct message with 1,012,443 emails sent, 59.1 per cent open rate and 12.9 per cent click rate. The August email also saw 48,000 unique clicks to water saving tips page on our website and 28,000 unique clicks to the water resources page. Our general email newsletter for August also contained water saving advice which was highest performing link clicks within the email and delivered to 765,874.

## Social and PPC (pay per click)

**35** This had a reach of 2,975,968 across our social channels, 39,395 engagements on our social posts (likes, comments, shares), PPC: 1,211 Clicks and 9,840 impressions.

## Website

**36** We had 176,014 unique page views (UPVs) across all pages relevant to 'Save Water' - up from 66,042 – 166.52 per cent increase year on year. More UPVs on Water Saving Tips page during Summer Demand Campaign (June to end of August) than it has ever had collectively since it was created in March 2019.

## Staycation

**37** Over 7,500 customer engagement packs sent out in early July to high tourist areas to drive down consumption in holiday locations.

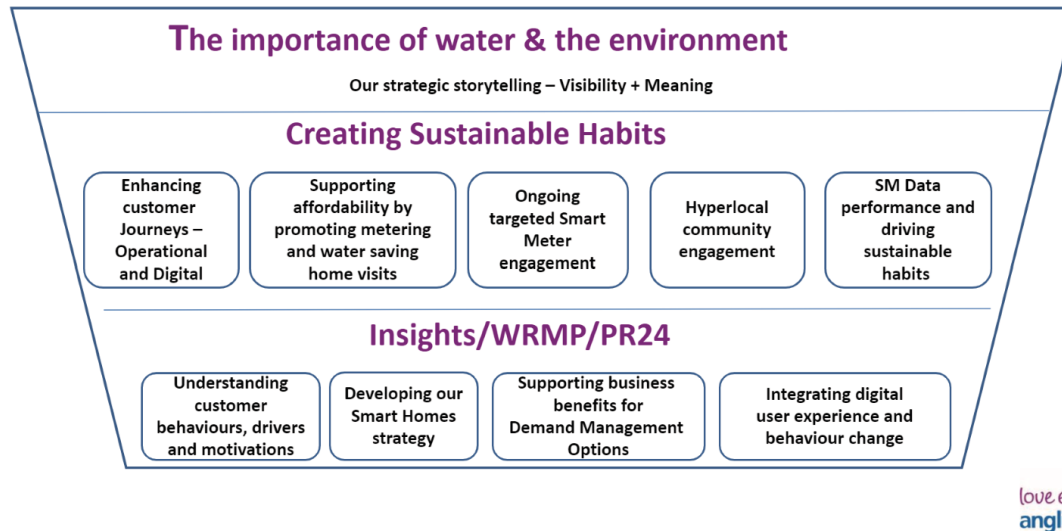
## Smart showers

**38** As part of our smart shower devices study we are currently in the final stages of data analysis for utilising 'moments of time' and the home-mover journey, to accelerate the adoption of new habits. This research with Cardiff University has involved working with customers on a trial basis and using smart shower timers to measure the impact of communications on shower duration. Results from this customer trial will inform our approach

to smart technologies and how they might be applied to engage with customers, whilst considering the timing of when it will be most effective in changing behaviours to reduce consumption.

### AMP7 programme of activities

**39** Our PCC improvement framework is summarised below:



**40** We intend to continue with our business as usual water operational and digital customer journeys through metering and completing water saving home visits. Additionally, we are gathering evidence to support our WRMP24 and PR24 options that are robust and will deliver savings for AMP7 and beyond.

**41** We continued to work in collaboration with Waterwise and Water UK by supporting and engaging with the Water's Worth Saving campaign, plus Water Saving week.

**42** One of the largest savings in PCC arises from customers volunteering to install a meter and move to a metered tariff. However, it is noted that our existing high meter penetration which means generally only the more difficult to install internal meters remain.

**43** We continue to recognise that driving down consumption in our region is critical to long term resilience. Demand management is a key element of our WRMP to manage the supply demand balance in the region, and our goal during AMP7 remains to offset the demand requirements needed to serve new housing and population growth through effective demand-side measures including leakage control and PCC reduction.

### Common methodology compliance

**44** We summarise our compliance with the common methodology in the commentary for 6B.35.

**45** It is important to note that our Annual Integrated Report (AIR) contained a provisional per capita consumption figure. The figure in this report is the final PCC figure.

### Water mains repairs per 1,000 kilometres of pipe (3A.5)

**46** For 2022/23 we are reporting 175.2 repairs per 1,000km of pipe. This is a deterioration on 2021/22 (122.2 repairs per 1,000km of pipe). We attribute this to a combination of extreme weather in the summer months, where temperatures in the region exceeded 40 degrees centigrade, combined with a particularly cold winter, when temperatures plummeted to -16 degrees centigrade. The region is particularly susceptible to these extremes, as we have detailed in previous reports.

**47** We comply fully with the consistent reporting requirements defined by Ofwat during AMP7.

### Proportion of unplanned outage of the total company production capacity (3A.6)

**48** The 2022/23 unplanned outage figure of 1.91 per cent is an increase on the 2021/22 figure.

**49** Overall Company Peak Week Production Capacity (PWPC) saw a 0.843MI/d increase from 2021/22 to 2022/23. Even though we had an hot summer in 2022, in most cases demand didn't increase above 2020 levels. Of our 144 sites, 28 increased, 101 remained the same and 15 sites decreased. The most noticeable changes are listed below;

	2021-22 (MI/d)	2022-23 (MI/d)	Difference	Comments
Littlecoates WTW	20.105	23.218	3.113	Nitrate removal installed
Weesby WTW	10.781	12.259	1.478	Summer demand peak
Hillington WTW	16.231	14.483	-1.748	Nitrate blending issues
Ludham WTW	1.577	0	-1.577	Site removed from service

**50** We comply fully with the consistent reporting requirements defined by Ofwat during AMP7.

### Percentage of population supplied by a single supply system (3A.7)

**51** The performance commitment for supply demand resilience is 'Percentage of Population supplied by a single supply system'. This is a bespoke reward-only Performance Commitment. This programme is a continuation of our AMP6 programme.

**52** The approach taken to develop the baseline was to identify the resulting deficit if each water treatment works was taken out of service for a prolonged period. The deficit was converted to an equivalent number of household customers and the percentage of population at risk calculated. The risk to the whole region was summed to form the baseline figure. This was calculated in 2014/15 to provide an AMP6 baseline of 46.9 per cent. At the end of AMP6 we reported an outturn position of 24.1 per cent which thus forms the baseline for AMP7.

**53** The programme for reducing the percentage of population at risk during AMP7 is closely aligned to our Water Resources Management Plan (WRMP) Strategic Interconnector Programme with the majority of schemes planned to be delivered towards the end of the AMP as the interconnectors are commissioned.

**54** In 2022/23 we have completed one capital scheme which provides resilience benefits to the customers supplied by High Oak WTW. 12.5km of 315mm OD HPPE pipeline has been installed connecting Little Melton WTW to the service reservoirs immediately downstream of High Oak WTW, this enables the customers to be supplied from either High Oak WTW or Little Melton WTW. The remaining AMP7 schemes are progressing through the design and construction process as part of our strategic interconnectors programme. The outturn for the year 2022/23 is 22.3 per cent which is 0.5 per cent above the performance commitment level of 21.8 per cent. This is due to the alignment with the strategic interconnectors programme and the reprofiling of that programme for efficient delivery. As this is a reward only Performance Commitment there is no penalty associated with this outturn.

Year	Schemes Delivered	% population reduction from delivered schemes	% population supplied by a single supply system
AMP7 Baseline			24.1
2020-21	Pitsford WTW	1.34	22.7



	Ludham WTW	0.09	
2021-22	No schemes delivered		22.7
2022-23	High Oak WTW	0.36	22.3

### Properties at risk of persistent low pressure (3A.8)

**55** The number of reportable properties on the register at year end is 53 for 2022/23, compared with 58 at the end of 2021/22. This is below the 2022/23 Performance Commitment Level of 150 properties.

**56** During 2022/23, no properties were added, and 5 properties were removed following a capital or operational intervention. The improvement in performance in 2022/23 is due to the beneficial completion of capital and operational work commenced previously. There were no additions to register in 2022/23 compared to one addition in 2021/22.

**57** At the end of 2022/23, of the 53 properties below the reference level, nine are included under Section 65 of the 1991 Water Industry Act where a property receives pressure below the reference level due to its height in relation to the storage point.

### Capital schemes

**58** Two capital schemes to improve pressures have realised benefits in 2022/23:

1. Rede – two properties were removed from the register following mains laying to connect to a booster pump system installed in AMP6.
2. West Haddon – one property was removed from the register following mains laying to connect to the delivery side of a boosted system.

### Operational investigations

**59** Two operational investigations provided updated information to confirm the removal of two properties in 2022/23.

1. Burghley – one building on a large estate was removed as it was not an individual property, following on-site investigation and confirmation with billing records on the actual properties supplied.
2. Westby – one property was removed following rezoning of a property onto a higher pressure zone and adjustment of the pressure reducing valve supplying the zone to increase pressure.

**60** There have been no changes to the confidence grades and no restatement of previous years' data.

### Abstraction Incentive Mechanism (3A.9)

**61** The Anglian Water supply area is geographically large with a significant rural population and experiences some of the lowest rainfall in the country. The Environment Agency has assessed the region as being in 'serious water stress' and, in addition, it is recognised as being particularly vulnerable to the impacts of climate change. The region is characterised by a high number of water-dependent designated conservation sites and we work closely with the Environment Agency to manage the associated environmental pressures. Our region's slow moving rivers are often ecologically diverse and, whilst they can support abstraction, this may cause environmental stress during periods of low rainfall.

**62** There are a number source closures and licence reductions planned for AMP7, along with river habitat improvements, as part of the Water Industry National Environment Programme (WINEP) of works to reduce our impact on the environment.

**63** The Abstraction Incentive Mechanism (AIM) was introduced by Ofwat as a reputational measure in AMP6 and this moved to a financial measure in AMP7. AIM is designed to encourage water companies to reduce their environmental impact by abstracting less water from environmentally sensitive sites at times of low river flow. This can be difficult to achieve, even where there are alternative sources, as low river flows often coincide with periods of peak customer demand. AIM allows us to target reductions in environmentally sensitive abstraction ahead of WINEP solutions programmed for later in the AMP.

**64** During AMP6 we reported AIM performance for Marham (River Nar), and this continues into AMP7 alongside three groundwater sources also identified as potentially impacting on nearby rivers. These include Marham (Groundwater), Wilsthorpe, and Wixoe sources.

**65** For 2022/23 we have engaged in active AIM management, largely focussed on our Wilsthorpe source where we are most likely to see low flows. Performance was tracked through a dedicated WhatsApp group giving the Water Resources Team, Supply colleagues and senior managers a daily/weekly view of actual abstraction and river flows. Unfortunately we have only been able to significantly reduce abstraction against the 2007-2013 baseline at some sources.

### **Marham (River Nar)**

**66** Abstraction from the Marham surface water source decreased during AMP6 and was on average below the baseline during 2022/23. There were a number of days where flows in the Nar were below the AIM threshold so we were able to record a significant reduction in abstraction compared to the 2007-13 baseline.

**67** The hands-off flow requirement in the Marham abstraction licence for the River Nar is due to significantly increase from April 2025, resulting in a large sustainability change for the Marham source. We have assessed the impacts in our Water Resources Management Plan 2019 and have included a new transfer option for delivery by 2025. Until the transfer can be implemented alternative sources are limited primarily to the Wellington Wellfield groundwater source. This source is both a drought contingency and blend source and requires careful management.

### **Marham (Groundwater)**

**68** As with the Marham surface water source, there were a number of days where flows in the Nar were below the AIM threshold so we were able to record a significant reduction in abstraction compared to the 2007-13 baseline.

**69** The Marham groundwater licence is due to decrease significantly from April 2025. The resulting deficit will be made up by the same transfer as for the surface water source. In the meantime we are endeavouring to reduce use of the groundwater during low flow periods, but we are constrained by the same limitations on the neighbouring licences.

### **Wilsthorpe**

**70** The East Glen river regularly sees low flows and this year (2022/23) there were 164 days with flow below the AIM threshold. Usually we would support Wilsthorpe from our sources at Bourne and Etton in order to reduce abstraction at times of low flow. Unfortunately this year Bourne source was out of service due to repairs needed on site, so less support was available than usual. As a result abstraction was greater than the 2007-13 baseline.

**71** The Wilsthorpe source has been identified in WINEP for a sustainability cap, plus the requirement to provide river support by April 2025. AIM is encouraging us to reduce the use of this source during low flow periods until this work can be completed.

**72** The Wilsthorpe source has been identified in WINEP for a sustainability cap, plus the requirement to provide river support by April 2025. AIM is encouraging us to reduce the use of this source during low flow periods until this work can be completed.

## Wixoe

**73** The Wixoe source is located near the Bumpstead Brook. The source has been identified in WINEP for relocation or closure during AMP7. The impact of the loss of this source has been assessed in our Water Resources Management Plan 2019 and this includes a new transfer option for delivery by 2025. Until this work is completed we are endeavouring to reduce the use of this source during low flow periods. During 2022/23 there were no flows below the AIM threshold.

AIM Site	no Low flow days	AIM vol	Reward/Penalty	
Marham GW	38	-3	-£	11,340.00
Marham SW	67	-102	-£	42,840.00
Wilsthorpe	164	122	£	106,590.00
Wixoe	0	0	£	0.00
Total		17	£	52,410.00

### Managing void properties (3A.10)

**74** The outcome figure is a calculation of the percentage of false voids against the total number of domestic properties. The figures are extrapolated using the outcome of an audit of a random sample of properties using both field visits and third party data.

**75** We committed to audit 1,000 records. To ensure our sample number contained at least 1,000 records we extracted 1,298 records. After removing genuine exclusions this returned 1,165 audit results.

**76** The performance commitment level was 0.35 per cent and we out-turned at 0.10 per cent. Accordingly, we have earned an outperformance payment of £1.2 million. The performance shows the continuing impact of the considerable work we put in to identify false voids. Activities in the year have included reviewing all properties void for more than four months, reviewing water consumption data, sharing data with water only companies, using bureau and land registry data, making doorstep visits and sending letters and emails.

### Water quality contacts (3A.11)

**77** The number of water quality contacts received in 2022 was 1.01 per 1,000 population served.

**78** The approach to improving the customer contact rate continues through our 'keep water healthy' initiative that has been running for a number of years. The campaign aims to provide customers with information and advice to help prevent water quality problems arising from their own internal plumbing. We continue to keep focus on engagement with our customers through multi platforms, especially social media, which we have further extended to deliver key messaging on water quality through a number of targeted sprint activities. We have reviewed our water quality website pages, making it easier for customers to self-serve on water quality issues.

### Smart metering delivery (3A.12)

**79** On going disruptions to supply of micro-chips means manufacturing the smart meters has been affected. Suppliers have only been able to keep to the demand we needed in the latter half of the year.

**80** This has affected the smart meter replacement programme and the volume that were originally forecasted for 2022/23.

**81** The numbers have been re-forecasted to catch up in the remaining year of AMP7.

Year	No. smart meters fitted	PCL
2020/21	164,400	219,279
2021/22	145,921	219,280
2022/23	233,365	219,279
Total	543,686	657,838

**82** The in-year PCLs are indicative only and delivery of the performance commitments is judged at end of the price control period.

### Internal interconnection delivery (3A.13)

**83** There is no target for this performance commitment in this reporting year. The performance commitment is defined in terms of capacity benefits delivered by the end of the AMP.

**84** In 2022/23 we have continued our work on the remainder of the Interconnector Programme across our region. We completed the intra-zonal scheme from Norwich to Wymondham (WRMP Ref NNR8) which consists of 12.5km of 256mm internal diameter (315mm OD) PE pipeline and a 220kW pumping station with a capacity of 5 MI/d. The scheme went into supply in June 2022, this brings the total AMP7 benefit reported to 6.5 MI/d as detailed in the table below.

Year	Schemes Delivered	Capacity MI/d	Total Capacity Delivered
2020-21	Norwich & the Broads WRZ to Happisburgh WRZ (Ludham)	1.5	1.5
2021-22	No schemes delivered		1.5
2022-23	Norwich & the Broads WRZ to Norfolk Rural North WRZ (NNR8)	5	6.5

**85** Work on the remainder of the Interconnector Programme across our region has progressed and are now on site carrying out enabling and construction activities on a number of sites. More detail can be found in the table commentary for 6F.

### Cyber security (3A.14)

**86** Our cyber security performance commitment will not be assessed until 2024/25.

**87** As required by the performance commitment, we have conducted an estate-wide risk assessment across 388 Water Supply sites to determine areas of higher risk. The risk assessment has identified one water system containing 19 operational sites with a higher risk profile and these sites are to be remediated via our AMP7 NIS Compliance Programme. The Programme's structure and governance have been implemented, with site surveys and design efforts focusing on the high-risk sites currently in progress. We will deliver remediation to all high-risk sites by the end of AMP7.

### Elsham DPC (3A.15-16)

**88** Our performance commitments for direct procurement for customers for the new Elsham water treatment works incentivise us to procure the scheme through a competitively appointed third party under a design, build, finance, maintain and operate model.

**89** To achieve an out-performance payment, we must appoint a competitively appointed provider (CAP) in circumstances where the direct procurement for customers (DPC) scheme meets certain qualifying criteria outlined by Ofwat.

**90** However, Ofwat confirmed to us on 13 May 2022 that it has accepted that we will not now progress the initially proposed Elsham DPC scheme (aka Middlegate), and instead will take forward the alternative North Lincolnshire Alternative Solution. Ofwat will not at this stage de-designate Middlegate as a DPC scheme but expects us to take the alternative solution forward at pace. We are working with Ofwat on the communication of this to the market to make clear that we are pursuing an alternative solution under which the initially proposed Middlegate scheme is not required.

**91** At this stage it is expected that these PCs will no longer be required, so we have reported these measures as N/A for 2022/23.

### Table 3B - Outcome performance - Wastewater performance commitments

Line description	Unique reference	Unit	Performance level - actual	PCL met?	Outperformance or underperformance payment	Forecast of total 2020-25 outperformance or underperformance payment
					£m	£m

Common PCs - Wastewater (Financial)							
1	Internal sewer flooding	PR19ANH_7	Number of internal sewer flooding incidents per 10,000 sewer connection	1.69	No	-1.204	-1.500
2	Pollution incidents	PR19ANH_8	Pollution incidents per 10,000 km of sewer length	33.36	No	-4.610	-17.700
3	Sewer collapses	PR19ANH_13	Number of sewer collapses per 1,000 km of all sewers	5.19	Yes	0.000	-1.700
4	Treatment works compliance	PR19ANH_14	%	98.57	No	-0.580	-2.500

Bespoke PCs - Wastewater (Financial)							
5	External Sewer Flooding	PR19ANH_17	nr	4673	No	-2.431	-5.700
6	Bathing Waters Attaining Excellent Status	PR19ANH_19	nr	32	No	0.000	0.000
7	Water Industry National Environment Programme	PR19ANH_32	nr	1399	Yes	2.240	6.900
8	Partnership working on pluvial and fluvial flood risk	PR19ANH_42	number	49	-	0.000	0.000
9	Additional sludge treatment capacity at Whitlingham	PR19CMA_ANH-01	%	0	-	0.000	0.000

19	Financial wastewater performance commitments achieved	%	29
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**1** The information we have published in table 3B is consistent with the updates we have reported to our Independent Challenge Group (previously our Customer Engagement Forum) during the course of the year.

#### Internal Sewer Flooding (3B.1)

**2** There were 491 internal flooding incidents in 2022/23. This includes 50 incidents caused by overloaded sewers and 441 incidents caused by other causes including blockages, collapses, equipment failure, pumping station failure, pumping station due to third party, collapse due to the third party, blockage due to third party and equipment failure due to third party. This total includes severe weather events, we had a total of 22 internal severe weather events for 2022/23.

**3** Our flooding performance commitment is calculated by dividing the total number of internal incidents by every 10,000 sewer connections. The total number of sewer connections is reported in thousands in table 4R (2,905,050) and is replicated in table 3G. The calculated performance level is 1.69, which is populated in table 3B.

**4** In 2021/22 we reported 497 internal flooding incidents. In 2022/23 we have seen a slight decrease in our internal flooding numbers.

### **Common Methodology Compliance**

**5** We are fully compliant with the Sewer Flooding common definition. We have not changed our methodology for calculating the number of incidents that were caused due to severe weather. We do not use the classification options for severe weather for "multiple rainfall events", surface water run-off not originated from public sewer" and "river levels > 1 in 100 year return period". Regardless of whether they are categorised as severe weather or not, these incidents must be reported as there is no exclusion for severe weather impact. As a result, there is no impact on our reported performance.

### **Pollution Incidents (3B.2)**

**6** The definition of this measure is taken from version ten of the Environmental Performance Assessment (EPA) methodology document: the total number of pollution incidents (categories one to three) from sewerage assets per 10,000km of sewer length for which the company is responsible in a calendar year. The number we have used to normalise the absolute total number of pollution incidents is also taken from this document (76,437km).

**7** Given the new monitoring in place we have voluntarily carried out additional assurance checks on our EDM data and retrospectively reported any potential dry day spills to the Environment Agency (EA). As a result, the EA has included some of these in our reported pollution figures. This is not a standard practice across the industry as some companies have chosen not to report their potential dry day spills to the EA. The EA do not expect to make this compulsory for all companies until 2024 (reported in 2025 APRs). As such the methodology for recording pollution incidents will not be consistent until this time.

**8** There has been a minor decrease in the number of total pollution incidents categories one to three in 2022 (255) compared to 2021 (258). This performance of 33.36 incidents per 10,000 km sewer does not meet the performance commitment level of 176 (23 per 10,000 km), leading to a penalty of £4.61 million.

**9** We recognise this performance is largely static. The appointment of a new Director of Water Recycling in the second half of 2022 led to an enhancement of pollution reduction activities and a revised Pollution Incident Reduction Plan for 2023. Our actions have been informed not only by the outputs of our root cause analysis but the knowledge and successes of other water companies. Mobilisation of our enhanced plan began late 2022 with encouraging results. We're confident that we're on the right path to reduce pollution but it is important to recognise that many of our activities have a cumulative effect meaning the pollution reduction benefit may not be realised in a single year but over many years.

**10** In 2021, owing to significant and prolonged rainfall hydraulic overload was our primary root cause (34 per cent). Our root cause breakdown for 2022 reflects a more typical year and aligns with historic trends. Our biggest challenge remains blockages which accounted for approximately 40 per cent of pollution incidents in 2022. We are seeing promising results in the reduction of blockages through our risk-based sewer cleansing. Our base programme showed a 55 per cent reduction in blockages in targeted areas and our bespoke small diameter sewer cleansing programme an impressive 93 per cent. We've prevented the entry of 864 tonnes of fats, oils and greases through our newly expanded food service establishment engagement programme. We've also stepped up our sewer monitoring programme with aspirations to install monitoring on 11,000kms of our highest risk sewer lengths by the end of year four of the AMP. Importantly, we're exploring how this data can be used in a proactive way to get ahead of emerging risks rather than responding reactively to events that have already occurred. This same approach is being applied across rising

mains and water recycling centres where we are seeking alternative ways to process our asset data to give us performance insight allowing early intervention. The shift to preventative action forms part of the messaging for our 'Zero Pollutions' cultural and behavioural change programme.

**11** We have seen a decrease in the number of serious pollution incidents included in this measure in 2022 (nine) compared to 2021 (14). Rising mains were the most significant contributor in 2021 and have reduced from five to three in 2022 (of which one of the three was acknowledged as a third party strike by the EA). We credit the reduction to our increased monitoring, early detection, mitigation, and replacement of rising mains. Our alarm rationalisation programme supporting visibility and fast response has also made a significant contribution to this reduction with the additional benefit of an increase in self-reporting which we saw in the latter months of 2022. Although not part of this measure, we have seen an increase in potable water events. Large water main bursts as pressurised assets with large volumes of flow are difficult to contain and more likely to lead to serious impacts. High temperatures up to 40c, an above average Soil Moisture Deficit and increased water demand lead to an increase in bursts on water mains (2145 bursts March to September in 2022 compared to 1172 in the same period in 2021). The conditions were extreme enough for the EA to declare a state of Drought in August 2022.

**12** We understand the public's concern over the condition of our blue spaces and remain committed to reduce our impact on them. Although the majority of storm spills do not lead to impact to the environment (less than three per cent of pollutions caused by combined sewer overflows in 2022), we've worked to achieve 100 per cent coverage of Event Duration Monitors on our Combined Sewer Overflows and have reduced storm spills by 54 per cent in 2022. More detail on how we are tackling storm overflows, our accelerated WINEP programme and our partnership with Severn Trent on 'Get River Positive' can be read in our '[A year of progress on river health](#)' report on our website.

### **Sewer collapses per 1,000 kilometres of sewers (3B.3)**

**13** There were 259 reactive sewer collapses and 142 reactive burst rising mains, totalling 401 for 2022/23. The total number of sewer collapses and burst rising mains (401), is divided by the total length of sewer reported for 2022/23 (77.284), giving a rate of 5.19. We've seen a decrease in sewer collapses and burst rising mains in 2022/23, this is due to a programme of work aimed at proactively finding sewer collapses to repair and improving our internal reporting to accurately capture these jobs.

### **Common Methodology Compliance**

**14** We are fully compliant with the sewer collapses common definition. We have not changed our methodology for calculating the length of formerly private sewers since our 2021 APR submission. While this is compliant to the letter of the definition (to report the length of transferred sewers separately), we have previously reported this line to Ofwat as "amber" on compliance due to the low confidence in the data that we believe exists across the industry.

**15** Our estimate of our length of formerly private sewers is based on initial assessments made before the transfer for PR09. We are aware that our approach is consistent with most of the industry in that we continue to use the modelled lengths calculated at that time. However, we believe that new technologies and approaches can be used to improve upon the modelling carried out for PR09. As a result we have commenced a project to provide improved modelled estimates for our private sewer as well as our modelled section 24 sewer lengths as part of our PR24 submission.

### **Treatment Works Compliance (3B.4)**

**16** In accordance with Information Letter EA/04/2023 we have reported in line with the Environment Agency's Environmental Performance Assessment methodology version 10.



**17** This is a measure of the number of our water treatment works and water recycling centres which were compliant during 2022 as a percentage of our total number of discharges with numerical consents. The data are sourced from the Environment Agency End of Year (EoY) Performance report.

**18** Out of 837 discharges at sites with numeric consents, twelve sites were non-compliant for 2022. At 98.57 per cent compliance for 2022, this is an improvement compared to 2021 (fifteen works out of 843, 98.22 per cent, on a like-for-like basis).

**19** The 12 non-compliant Treatment Works were Ashbrook WRC, Upwood WRC, Clacton WRC, Sutterton WRC, Caister WRC, Ingoldmells WRC, Marston Moretaine WRC, Bedford WRC, Towcester WRC, Whilton WRC, Bures WTW and Petches Bridge WTW.

**20** The numbers in our EoY report include our discharges that are located in other EA regions, such as our Hartlepool treatment works and those in the EA's Thames region.

**21** One of the 12 non-compliant discharges was due to a deficiency in the number of Urban Waste-Water Treatment samples taken at Whilton in 2022. Improvements and additional assurance measures have been implemented in the sampling deficiency process.

**22** Initiatives to drive performance improvement include:

### **Water Recycling**

- Delivering Operational Excellence through enhanced management systems and new compliance standard operating procedures to drive improvements in quality performance measures.
- Implementation of proactive monitoring exploitation targeted to the higher risk assets in Water Recycling Centre processes. This has included an assurance programme on all sludge blanket detectors on activated sludge plants, predictive analytics on targeted bio-filter sites and enhanced sludge tanker level monitor reviews.
- Enabling asset enhancement and reliability through implementing enhanced screen maintenance and proactive auditing on Upper Tier risk sites.
- Driving performance improvements through the implementation of Operational Control Performance Cells and enhancing knowledge and learning through Communities of Practice.

### **Water**

- Compliance action plans are in place for any failing water treatment works.
- Continued gathering and reporting of internal monitoring data, gives better visibility of data and triggers investigation before a permit breach occurs.
- Investigation trigger levels made site-specific for some higher risk assets and remain generic for all others. Two trigger levels are in place; the first initiates a desktop review, the second a site visit with an action plan requirement.
- Lead measure monitoring for completion of these checks and investigations completed are reviewed monthly.
- Best practice findings from site investigation are shared with operational and scientific teams

### **External Sewer Flooding Incidents (3B.5)**

**23** There were 4,673 external flooding incidents in 2022/23. This includes 237 incidents caused by overloaded sewers and 4,436 incidents caused by other causes including blockages, collapses, equipment failure, pumping station failure and due to third party causes. This total includes severe weather events; we had a total of 61 external flooding incidents caused by severe weather events in 2022/23.

**24** In 2021/22 we reported 4,181 external flooding incidents. In 2022/23 we have seen an increase in our external flooding numbers, especially flooding's caused by other causes. We have seen an increase of flooding's caused by blockages in 2022/23. We are working hard to address this decline in our performance and we plan to install monitors in our hot spot locations in 2023/24.

### **Bathing waters attaining excellent status (3B.6)**

**25** The percentage of bathing waters attaining 'Excellent' status in 2022 was 32 (66.66 per cent). This is consistent with the number of bathing waters attaining 'Excellent' in 2021.

**26** 2020 was where the Environment Agency did not take the samples required to classify bathing waters due to its interpretation of the restrictions imposed by the Covid-19 pandemic. The assessment of bathing water under the regulations depends on the sampling results from the latest four years, and the lack of sufficient data for one of these years means that assessments for 2020 were not made. Classification for 2022 use the following four years' worth of data (2018, 2019, 2021, 2022).

### **Water Industry National Environment Programme (WINEP) (3B.7)**

**27** We have delivered a total of 215 obligations in Year three of the WINEP (2022/23) set by the Environment Agency in March 2019. This give us a total of 1,399 in AMP7 to date against a baseline of 1,126. Highlights of our programme include

- 105 storm tanks installed to increase storage capacity and reduce risk of spills (under the U\_IMP6 driver)
- 406 Event Duration Monitors on storm overflows at Water Recycling Centres (under the UMON3 driver) and
- 284 Event Duration Monitors on storm overflows on the sewerage network (under the UMON2 driver).

We have secured confirmation from the Environment Agency (EA) that performance has been correctly reported using their WINEP tracker. A copy of the WINEP tracker for Anglian Water has been provided to Ofwat.

**28** Further confirmation of WINEP delivery can be found in the EA's Environmental Performance Assessment (EPA). In section 6 the EA confirms that 99 per cent of schemes considered under the EPA were completed for the financial year. The EPA does not include EDM or U\_INV2 obligations.

**29** Regulatory position remains that any obligations marked pending should be considered as signed-off for year-end reporting, with the anticipation that these will be clarified as signed-off

**30** Two additional schemes have been delivered this year which were not included in WINEP at the time of final determination (Casitor WRC U\_IMP4 and Newmarket WRC WFD\_NDLS\_Chem2, duplicate ID)

### **Partnership working on pluvial and fluvial flood risk (3B.8)**

**31** This performance commitment is designed to incentivise the company to work in partnership with others to deliver investment to protect its wastewater treatment sites and water recycling network from pluvial, fluvial and coastal flooding.

**32** We have defined an output as follows:

- A partnership scheme providing increased capacity to the sewer network shall count as one output
- Where partnership schemes provide greater resilience to one or more of our above ground assets, each individual asset shall count as one output (e.g. one pumping station and one WRC protected would count as two separate outputs).

**33** We delivered 14 outputs in 2020/21. A further 21 regulatory outputs were delivered between April 2021 and March 2022 across 12 schemes. 14 additional regulatory outputs were delivered between April 2022 and March 2023 across 12 schemes. Two schemes delivered more than one regulatory output.

**34** A table of all schemes and the respective number of regulatory outputs are in the table below:

<b>Scheme Name</b>	<b>Regulatory Outputs</b>	<b>Partner</b>
Fairfields St Ives flood investigations	1	Cambridgeshire County Council
Worlingham Primary SuDS in school	1	Suffolk County Council
Coffee Hall flood alleviation scheme	1	Milton Keynes Council
SuDS in school pilot programme	1	Milton Keynes Council
Agroecology and beavers in the Pant Valley	1	Spains Hall Estate
Blunham High Street renovations	1	Central Bedfordshire Council
Beccles Town Drain improvements	2	Beccles Town Council
Hunts Drive Writtle flood alleviation scheme	1	Chalmer Housing Association
Fotherby infiltration reduction	1	East Lindsey District Council
Gedney Drove End water course refurbishment	1	South Holland IDB
Goosemuck Lane Sibsey culvert redirection	2	Witham 4th IDB
Modelling - budget to allow modelling of future partnership schemes	1	N/A

**Table 3C - Customer measure of experience (C-MeX) table**

Item	Unit	Value
Annual customer satisfaction score for the customer service survey	Number	78.78
Annual customer satisfaction score for the customer experience survey	Number	78.76
Annual C-MeX score	Number	78.77
Annual net promoter score	Number	29.00
Total household complaints	Number	13,107
Total connected household properties	Number	3,052,907
Total household complaints per 10,000 connections	Number	42.933
Confirmation of communication channels offered	TRUE or FALSE	TRUE

**1** C-MeX is the Customer Measure of Experience, it is comprised of two surveys, the Customer Satisfaction Survey (CSS) and the Customer Experience Survey (CES).

**2** CSS survey aims to measure the experience of customers following a recent interaction with their water company.

**3** CES surveys aims to measure the overall experience of their water company, by surveying a random sample of members of the public within our region.

#### **Annual customer satisfaction score for the customer service survey (3C.1)**

**4** For Customer Service (CSS) we achieved fifth position amongst Water and Sewerage Companies (WaSCs).

**5** The CSS score is made up by performing surveys across three core areas of our Customer Service provision, these are Billing, Water and Water Recycling.

**6** Within CSS our billing performance which represents 90 per cent of all contact received during 22/23 achieved a score of 83.12 which saw us place fourth amongst all WaSCs.

**7** Water scored 76.95, again achieving fourth position amongst all WaSCs.

**8** Water Recycling scored 75.63, achieving sixth position amongst all WaSCs.

**9** Comparisons between companies remains ambiguous, as sampling quotas are aligned to the proportion of digital and non-digital contacts received by each company. This varies significantly across the industry. C-MeX has demonstrated there is a clear variance between telephone and online survey respondent scores. The variance is attributed to the survey method as opposed to the channel of contact. Digital contacts surveyed via email typically score lower.

**10** Whilst we remain committed to offering our customers the ability to contact us via their channel of choice, this results in a large proportion of our contacts being through digital channels, resulting in a lower CMEX score.

#### **Annual customer satisfaction score for the customer experience survey (3C.2)**

**11** For Customer Experience we achieved a score of 78.76 and a position of thirteenth place across all water companies and eighth place amongst WASCs.

#### **Annual C-MeX score (3C.3)**

**12** Our overall C-Mex position at the end of the reporting year was tenth across all companies and seventh position amongst WaSCs, with a score of 78.77.

**Annual net promoter score (3C.4)**

**13** Our combined Net Promoter Score achieved was 29.00.

**Total household complaints (3C.5)**

**14** For the second year in a row we have been able to achieve a significant reduction in complaints volumes. Overall, we have seen a reduction of 17.9 per cent across all areas and channels. The volume of billing complaints reduced by 21 per cent and Waste by 50 per cent.

**15** We have increased the level of insight and analytics performed into our complaints performance at a more granular level. Internally we continue to operate a complaints reduction working group to drive change and service improvements.

**16** This has helped identify areas of focus, as a result we have implemented a number of new processes including how we calculate payments and review payments, deliver targeting coaching to our customer facing teams to help tackle and improve any knowledge gaps.

**Total connected household properties (3C.6)**

**17** The number of connected properties has seen an increase from 2022/23 to this reporting year. This is the net result of growth.

**Total household complaints per 10,000 connections (3C.7)**

**18** Work continues across the industry to align reporting practices, as a result we are unable to provide a comparison to previous years due to the change in criteria and the expansion of channels in which a complaint can be reported.

**Confirmation of communication channels offered (3C.8)**

**19** In total we operate 12 communications channels, providing a diverse range of methods in which our customers can contact us. We continually evaluate and analyse our customer communication preferences and demand to ensure we are providing a service that meets our customers' needs and lifestyles. This year we expanded our communication channels to include WhatsApp in line with customer preferences, making life easier for our customers every single day.

### Table 3D - Developer services measure of experience (D-MeX) table

	Item	Unit	Value
1	Qualitative component annual results	Number	74.72
2	Quantitative component annual results	Number	99.81
3	D-MeX score	Number	87.27
4	Developer services revenue (water)	£m	38.783
5	Developer services revenue (wastewater)	£m	23.242

Calculating the D-MeX quantitative component			
	Water UK performance metric	Unit	Reporting period (1 April to 31 March)
W1	S1.1 Pre-development enquiry – reports issued within target	%	100.00%
W2	S3.1 Sewer requisition design – offers issued within target	%	100.00%
W3	S7.1 Adoption legal agreement – draft agreements issued within target	%	100.00%
W4	SAM - 3/1 Execute Adoption Agreement (Stage 3) – Sewerage Company – SAM – 3/1 – Update draft Agreement	%	100.00%
W5	SAM - 4/1 Customer notifies of construction start date and requests inspections (Stage 4) – Sewerage Company – SAM – 4/1 Inspections & construction period	%	100.00%
W6	SLPM – S1/2 POC (Stage 1C) – Water Company – SLPM – S1/2 – Review PoC proposal	%	100.00%
W7	SLPM – S2/2a Design Self-Laid Main (Stage 2) – Water Company – SLPM – S2/2a – Provide design	%	100.00%
W8	SLPM – S2/2b Design Self-Laid Main (Stage 2) – Water Company – SLPM – S2/2b – Water Company to Provide design acceptance	%	100.00%
W9	SLPM – S3 Execute Water Adoption Agreement (Stage 3) – Water Company – SLPM – S3 – Review / revise Water Adoption Agreement	%	100.00%
W10	SLPM – S4/1 Delivery Date (Stage 3 / 4) – Water Company – SLPM – S4/1 – Source of Water Delivery Date	%	100.00%
W11	SLPM – S5/1a Connect Self-Laid Main – (Stage 5) – Water Company – SLPM – S5/1a – Review request and carry out Final Connection	%	100.00%
W12	SLPM – S7/1 Make Service Connections (Stage 7 – Part 2) – Water Company – SLPM – S7/1 – Validate notification and provide consent to progress with connection	%	100.00%
W13	W1.1 Pre-development enquiry – reports issued within target	%	100.00%
W14	W17.1 Mains diversions (without constraints) - quotations within target	%	100.00%
W15	W17.2 Mains diversions (with constraints) - quotations within target	%	100.00%
W16	W18.1 Mains diversions - construction/commissioning within target	%	100.00%
W17	W26.1 Self-lay water for pressure/bacteriological testing - provided within target	%	100.00%
W18	W27.1 Self-lay permanent water supply - provided within target	%	97.73%
W19	W3.1 s45 quotations - within target	%	99.95%
W20	W30.1 Self-lay plot references and costing details - issued within target	%	100.00%
W21	W4.1 s45 service pipe connections - within target	%	98.23%

Calculating the D-MeX quantitative component			
	Water UK performance metric	Unit	Reporting period (1 April to 31 March)
W22	W6.1 Mains design <500 plots - quotations within target	%	100.00%
W23	W7.1 Mains design >500 plots - quotations within target	%	100.00%
W24	W8.1 Mains construction within target	%	100.00%
W25	WN1.1 % of confirmations issued to the applicant within target period	%	100.00%
W26	WN2.2 % Bulk supply offer letters issued to	%	98.70%
W27	the applicant within target period	%	100.00%
W28	WN4.1 % of main laying schemes constructed and commissioned within the target period	%	100.00%
W29	WN4.2 % of testing supplies provided within target period	%	100.00%
W30	WN4.3 % of permanent supplies made available within the target period	%	0.00%
7	D-MeX quantitative score (for the reporting period)	%	99.81%
8	D-MeX quantitative score (annual)	Number	1.00

### Qualitative component annual results (3D.1)

**1** Despite strong performance in the fourth quarter, achieving our second highest quarterly D-MeX score this AMP, our qualitative (customer survey) score fell by 0.74 this year to 74.72, down from 75.44 in 2021/22.

### Quantitative component annual results (3D.2 and 3D.6-8)

**2** We improved on our 2021/22 score of 99.64 across the quantitative (Water UK Service Levels) element of D-MeX with performance of 99.81, up 0.17 and achieved fourth place.

### D-MeX score (3D.3)

**3** Our overall D-MeX score for 2022/23 is 87.27, which places us ninth in the industry and the median company. This was a fall of 0.27 and 2 places from seventh.

### Developer services revenue (water and wastewater) (3D.4 and 3D.5)

**4** The impact of the increased output in wastewater during the year has resulted in the total contribution received from developers to increase compared to 2021/22.

### Table 3E - Outcome performance - Non financial performance commitments

	Line description	Unique reference	Unit	Performance level - actual	PCL met?
<b>Common</b>					
1	Risk of severe restrictions in a drought	PR19ANH_9	%	5.2	Yes
2	Priority services for customers in vulnerable circumstances - PSR reach	PR19ANH_22	%	11.4	Yes
3	Priority services for customers in vulnerable circumstances - Attempted contacts	PR19ANH_22	%	100.0	Yes
4	Priority services for customers in vulnerable circumstances - Actual contacts	PR19ANH_22	%	62.4	Yes
5	Risk of sewer flooding in a storm	PR19ANH_10	%	0.74	Yes

<b>Bespoke PCs</b>					
6	Reactive Mains Bursts	PR19ANH_18	nr	5140	No
7	Customer awareness of the company's Priority Services Register	PR19ANH_21	%	61.8	Yes
8	Operational carbon	PR19ANH_24	%	6	Yes
9	Capital carbon	PR19ANH_25	%	63.2	Yes
10	Non-household Retailer Satisfaction	PR19ANH_30	score	86.7	Yes
11	Event Risk Index (ERI)	PR19ANH_35	score	2.771	Yes
12	British Standards Institution - Standard for Inclusive Service	PR19ANH_36	text	Maintained	Yes
13	Helping those struggling to pay	PR19ANH_37	nr	344,483.0	Yes
14	Value for Money	PR19ANH_40	%	81	Yes
15	WINEP Delivery	PR19ANH_NEPO1	text	Not met	No
16	Community investment	PR19ANH_43	%	104	Yes
17	Customer trust	PR19ANH_44	score	0.09	Yes
18	Natural capital impact	PR19ANH_45	text	Fail	No
19	Regional collaboration	PR19ANH_46	text	On track	Yes

Non-financial performance commitments achieved	%	84
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### Risk of severe restrictions in a drought (3E.1)

**1** The Ofwat guidance relates to the fixed period 2020-2045. The percentage of customers at risk has been provided for, based on the total population across seven Water Resource Zones that could (in planning terms) experience severe supply restrictions during a 1-in-200 year drought. The seven Water Resource Zones are Bury Haverhill, Central Lincolnshire, Cheveley, Newmarket, Ruthamford South, South Essex and South Fenland (as defined for WRMP19).

**2** Bury Haverhill, Central Lincolnshire, Cheveley, Newmarket and South Fenland have customers at risk from a severe restriction in a 1-in-200 year drought. Ruthamford South and South Essex are included due to having baseline deficits that effectively means a 1-in-200 year drought would have an impact (non-drought investment will eliminate this deficit).

**3** The 25 year average percentage of the population we serve who would experience severe supply restrictions is 5.2 per cent, and is unchanged from the previous year. The 25 year average total population at risk is 277,063.

**4** There are no knock-on impacts to other Water Resource Zones and no Water Resource Zones that have 1-in-200 year drought impacts are in deficit as reported for the SDBI.

### Priority services for customers in vulnerable circumstances - PSR reach (3E.2)

**5** From 1 April 2022 to 31 March 2023, we have been able to increase the level of support provided to customers on our Priority Service Register (PSR) from 9.4 per cent of households to 11.4 per cent.

**6** In total we added 87,323 customers to our Priority Service Register and through our data checking activities removed 28,445 customers who no longer require support.

**7** To calculate the PSR reach we have divided the total number of households on the PSR as of the 31 March 2023 by the total number of residential billed properties.

**8** The total residential billed properties figure includes those supplied with both water and/or wastewater services and properties that are billed by other water companies on our behalf.

**9** The below table shows a breakdown of the types of supports individual households are receiving through the PSR.

PSR Membership	Forecast for reporting year	Year-end total (31 March)
Households on PSR receiving support with communications	35446	71555
Households on PSR receiving support with mobility and access restrictions	136467	208337
Households on PSR receiving support with supply interruptions	173685	328924
Households on PSR receiving support with security	5317	6790
Households on PSR receiving support with 'other needs'	4431	7453

**10** The first column shows the type of support, the second column shows the forecast figures based on our Year 2 target and the third column shows the numbers of households receiving support as of 31 March for the report year.

**11** There is a sizeable difference between our forecast figures and our year-end total as we have exceeded our year three target by 85.2 per cent. It is also worth noting that the projections were calculated based on a substantially smaller dataset and various factors may have influenced a change in demand for support services, such as enhanced service offerings, partnerships working with organisations and charities that target specific user groups.

**12** The increase to the number of customers supported by our PSR is the direct result of our customer facing teams proactively responding to disclosures of vulnerability and signposting our Priority Service register. This year we continued the roll out of bespoke vulnerability training in partnership with Money Advice Trust. The training aims to strengthen the skills and confidence of our customer facing teams to identify vulnerability and effectively encourage and respond to disclosures.

**13** Across the course of the year we have also undertaken a number of large promotional campaigns advertising the many ways in which we are able to support through both direct and indirect communications. This includes extensive engagement with a wide range of organisations who support those in most in need.

### **Priority services for customers in vulnerable circumstances - Attempted contacts (3E.3)**

**14** The percentage of customers contacted during 2022/23 reflects the numbers of customers who have been on our Priority Service register for more than two years and have received two or more attempts to confirm they are receiving the right support.

**15** The percentage of attempted contacts also includes customers whom we have successfully managed to re-engage with to confirm their support needs.

**16** We have utilised a number of different contact methods aligned to customer communication preferences using bespoke communication messages. Customers are also able to update their support needs at any time using our online account management portal and mobile app.

### **Priority services for customers in vulnerable circumstances - Actual contacts (3E.4)**

**17** Our actual contact figures represent the percentage of customers who have been on the register over two years and have confirmed their support needs, including those that no longer require support as part of our Priority Service register.

**18** The majority of those no longer requiring support are those who have vacated and no longer reside within our region or those that have subsequently passed away.

**19** As a result of our tailored communication strategy and bespoke messaging we have been able to achieve actual contact with 62.4 per cent of our customers. We also provide customers with the option to update their Priority Services registrations and support needs at a touch of a button, by having the capability to manage their services in real time using our online account management portal and mobile app.

**20** Our communication strategy captures customer communication preferences within our internal systems providing the ability to tailor our communications to our customers channel of choice. Our internal system also provides prompts to our agents during key interactions and touch points, reminding them re-confirm the support needs as part of our day-to-day conversations. In doing so, we have removed the need for additional unnecessary contacts and reduced customer effort, with the aim of making every contact count.

### **Percentage of population at risk of sewer flooding in a 1-in-50 year storm (3E.5)**

**21** For 2022/23, we have continued to use vulnerability risk grades one and five. Risk grade one represents the population equivalent (p.e.) not at risk from flooding as identified using the Option 1b methodology, for all catchments across the Anglian Water region. We continue to not exclude any catchments so to provide the true picture of risk, and to assist with future reporting and trend analysis.

**22** Risk grade five represents the p.e. identified as flooding in a 1:50 annual return period (ARP) event using the Option 1b methodology.

**23** The numbers that contribute to the summary reporting table are shown in the following table:

Total number of catchments	1,127
Total number of catchments PE. > 2,000	310
Total number of catchments PE < 2,000	817
Total PE served	6,446,809
Total PE in included catchments	6,446,809
Total PE in excluded catchments	0
Percentage of total PE in excluded catchments	0%
Total PE Option 1a	0
Percentage of total PE. Option 1a	0%
Total PE Option 1b	6,446,809
Percentage of total PE Option 1b	100%

**24** We have 1,127 modelled catchments, serving a population of over 6.4 million people. Modelled population has increased by 5,893 over the last 12 months.

**25** Due to our modelling capability, Option 1b remains the most appropriate option for undertaking this vulnerability assessment. In 2022/23 we have used the same modelling methodology used in previous years, although we have been able to undertake some sensitivity analysis which is explained in more detail below. The property threshold remains at 150mm (in line with the rest of the industry), and we have modelled storms at 60, 240 and 480 minutes.

**26** We have been unable to model two out of 1,127 catchments - Colchester and Lowestoft. We have used 2022 data for Colchester, and 2021 data for Lowestoft, as Lowestoft did not run in 2022 either. The results for 2022/23 are shown below:

High level vulnerability grade	5
Total number of catchments	1,127
Total number of nodes modelled	839,202
Total number of nodes predicted to flood	105,801
Percentage of nodes predicted to flood	13%
Total PE in modelled catchments at vulnerability risk grade	6,446,809
Total PE associated with flooding nodes	47,576
PE associated with flooding nodes as a percentage of total modelled PE	0.74%
Assessed overall model confidence grade	B4

**27** The following should be noted about the above information:

- We have continued to count only those properties (and the associated population equivalent) that have been flooded internally, in line with the rest of the industry.
- The population equivalent at risk has dropped very slightly this year from 0.75 per cent to 0.74 per cent.
- This is likely due to changes to the modelling software we use, and local changes in the models
- We have undertaken some sensitivity analysis (see below) which has highlighted an issue with the Ofwat methodology. This should be reviewed by the wider industry as this metric moves forward to support the DWMP.
- Occupancy figures are based on 2022 data.

- It remains the case that c. 50,000 p.e. will need to be made more resilient to show a one per cent improvement in the p.e. at risk. With this in mind, we continue to report the p.e. at risk to two decimal places.
- Next year we will update the receptor layer – OS master map and address point data – to ensure we have the latest view of properties at risk.

**28** Based on the above, we consider our overall model confidence to remain at B4, for the same reasons as previous years.

### **Sensitivity analysis**

**29** We have reviewed the code used to generate the numbers out of our hydraulic models, and have found the following process, which is in line with the Ofwat methodology:

- Each simulation (60, 240 and 480 min) is assessed for flood volume
- The simulation with the largest flood volume is assessed to be the critical duration
- The critical duration simulation is used to then calculate the number of affected properties.

**30** This aligns with the Ofwat methodology and was in itself not a bad approach as it is also used when assessing flooding with regular network models. The largest volume is used to determine storage requirements for solutions, for example.

**31** However, we are not trying to resolve flooding issues but find the highest number of affected properties from a particular storm duration. What we have found in some catchments is that the shorter duration storms (i.e. those with a higher intensity) often flood the largest number of manholes and properties, but do not produce the largest flood volumes.

**32** Below are the figures for Great Yarmouth as an example:

Critical Duration	Total Flood Volume (m3)	Modelled Population	Modelled Nodes	Flooding Nodes	Total number of internal flooding incidents	Total number of flooding incidents
M50-60	60,608	109,935.20	8,872	2,153	510	12,939
M50-240	66,275	109,935.20	8,872	1,486	334	8,829
M50-480	66,415	109,935.20	8,872	1,119	279	6,647

**33** Using the Ofwat methodology for this catchment we have reported the M50-480 storm as this gives the largest flood volume. However, it only gives a total of 6,647 properties affected and just 279 internal flooding incidents.

**34** It is clear from the table above that the M50-60 storm affects a larger number of locations (12,939), of which 510 are classed as internal floodings, which is significantly higher than the M50-480 storm event.

**35** With this in mind, we are able to also report the figures for all catchments using this alternative approach, and we can see that an additional 4,253 properties (8,372 population equivalent) are now at risk from internal flooding.

#### Ofwat methodology

Property Figures		
Internal only	23,845	1.00%
External only	221,319	9.31%
External other	139,370	5.86%
All flooding types	384,534	16.18%

#### Alternative methodology

Property Figures		
Internal only	28,098	1.18%
External only	298,696	12.57%
External other	184,346	7.76%
All flooding types	511,140	21.51%

**36** Using this alternative methodology, our population equivalent at risk increases from 0.74 per cent to 0.87 per cent. We believe this is an improved way of counting properties at risk from a 1:50 storm, and so will continue to assess and report these numbers in the future, and will explore with other companies whether they would be interested in also using this methodology.

**37** This approach also raises an interesting view. When looking at figures for properties flooded, and when considering all sources of flood risk, we can now see that over 20 per cent of properties across the region are at risk of either internal or external flooding from a 1:50 storm. This is a significant number, but expected given that rainfall from intense storms is more unlikely to find its way into a piped drainage network. This highlights the importance of working in partnership with lead local flood authorities to manage the risk of surface water flooding, and the links this has with sewer flooding.

### **Reactive mains bursts (3E.6)**

**38** There were 5,140 reactive mains repairs in 2022/23, compared to 3,322 in 2021/22. The region has been significantly affected by the extreme weather over the summer, where we experienced the highest number of bursts since our modern records began (from 2010), and almost double the burst rate compared to the previous year (1,835 summer bursts in 2022/23 compared to 914 summer bursts in 2021/22).

**39** For AMP7 we have moved away from our method of reporting using the WISPA (Water Infrastructure Serviceability Performance Assessment) Model. This model is now used internally to better understand the impact of external factors such as soils, tree roots and weather on our assets in order to improve our prioritisation of mains rehabilitation schemes and leakage reduction programmes.

### **Customers aware of the priority services register (3E.7)**

**40** To measure the percentage of customers aware of Priority Services, we have conducted an independent survey of 4,677 customers. Customers were selected at random and engaged through both digital and non-digital channels. Customers were asked if they are aware of additional free services provided by Anglian Water known as Priority Services, of which 61.8 per cent of respondents said yes.

**41** Throughout 2022/23 we have undertaken a wide range of promotional activities to increase awareness. We have issued more than one million emails to our customers throughout the year, promoting both the financial and non-financial assistance available. Through social media campaigns we have been able to generate 15.7 million impressions.

**42** Further promotional campaigns to increase awareness include radio advertisements, promotion through trusted organisations such as Emma's Diary and advertisements on local buses. We have also promoted the support we offer through our network of more than 202 partners who directly support those in vulnerable circumstances, such as Scope, Carers First, McMillian, Kidney Care UK and local foodbanks. Our partnership work has generated a reach of 1.1 million.

**43** We continue to look at new ways to increase awareness and have actively engaged our customers to understand how they would like to hear about the support available. We will use our customers' feedback to inform our future communication strategy to extend our reach.

### **Operational carbon (3E.8)**

**44** Operational carbon emissions for 2022/23 have been calculated using the UKWIR Carbon Accounting Methodology. In line with our performance commitment for 2022/23 as re-published by Ofwat in February 2023 we have continued to use version 16 (CAWv16) of the UKWIR greenhouse gas (GHG) workbook.

**45** Using the market-based methodology gross operational GHG emissions for the reporting year 2022/23 have reduced against the 2019/20 baseline by 6.04 per cent from 354,222t/CO<sub>2</sub>e to 332,809 t/CO<sub>2</sub>e. Our PCL for 2022/23 is a reduction of 6 per cent on the 2019/20 baseline, which we have therefore achieved.

**46** 2022/23 sees a continuation of increases in green electricity consumption over the base year. The increased portion of renewables are sourced from onsite generation, private wire renewables and green electricity purchase through the grid.

**47** Additionally we continue to seek out energy reduction through our optimisation programme. In the year this delivered a positive contribution, with 14.6 GWh (full year effect) of energy savings, mitigating 5,126 t/CO<sub>2</sub>e.

### **Embodied carbon (3E.9)**

**48** We achieved a 63.2 per cent reduction in capital carbon against our 2010 baseline.

**49** Our PCL for 2022/23 is a reduction of 63 per cent on the 2010 baseline, which we have achieved.

### **Non-household retailer satisfaction (R-MeX) (3E.10)**

**50** In order to calculate this measure there are three factors, which are Net Promoter Score (NPS), Operational Performance Standards (OPS) and Market Performance Standards (MPS).

**51** The OPS and MPS results are published via MOSL, the market operator, after they have been independently validated. MPS is calculated by the central market system (CMOS) and OPS is again validated by MOSL after we submit a MOSL data sheet containing OPS tasks completed and outstanding for the given period.

**52** Net Promotor Score is taken during each formal Account Management meeting with our Retailers. It is captured as part of the formal meeting minutes shared between the two parties.

**53** In line with Ofwat's published PR19 Outcomes & Performance commitments for Non-household retailer satisfaction (1.2.11 page 77), we use the three performance results to complete the calculation, giving us a score of 86.7 for 2022/23, exceeding our performance commitment.

### **Event Risk Index (3E.11)**

**54** The DWI has developed the Event Risk Index (ERI), alongside CRI, for measuring event-based risk.

**55** The ERI is calculated based on the event severity, DWI assessment, impacted population and event duration. This is converted into a company ERI by dividing the sum of the scores for the year by the population served by the company.

**56** Our 2022 provisional ERI score calculated by the DWI was 2.77 (this includes Hartlepool). The 2022 ERI score is an increase over the provisional 2021 figure of 0.972. Four events from 2021 remain under consideration by the DWI. Our final ERI score for 2022 will be published by the DWI in the Chief Inspector's Report for 2022.

### **BSI standard for inclusive service (3E.12)**

**57** We completed our annual assessment for BSI 18477 Inclusive Service Provision in September 2022. A statement of approval was given for our compliance with the requirements.

**58** The auditor highlighted that our management system was fully compliant with the standard and good practice was seen in the monitoring and quality checks carried out on customers calls and the commitment of everyone to dealing with vulnerable consumers. The communication with customers and the lengths being taken by the business to ensure awareness of the Priority Service Register was noted as both innovative and effective.

**59** The audit identified no areas of non-conformity or opportunities for improvement (OFI).

**60** This year we challenged ourselves to undertake assessment against the new ISO 22458:2022, we are pleased to share that we are one of the first nine companies globally to achieve the Kitemark.

**61** The ISO launched in 2023, the BSI Kitemark for inclusive service is a high-level certification, issued to businesses that have met strict criteria for protecting their customers when they are in vulnerable situations. It is a global version of BSI 18477 and will supersede this standard.

**62** The ISO specifies requirements and challenges companies to provide an inclusive service at all stages of service delivery, focusing on a companies ability to identify and support customers in vulnerable situations. We are overwhelmingly proud to be one of the first in the industry to achieve certification.

### **Helping those struggling to pay (3E.13)**

**63** We supported 344,483 customers throughout 2022/23. The breakdown by scheme is summarised in the below table:

<b>Scheme</b>	<b>Customers supported</b>
Forgiveness schemes	5,660
Payment breaks	9,508
Concessionary tariffs	243,984
Charges holiday	2,357
Temporary instalment plans	163,413
Total instances of support	424,922
Total unique customers supported	344,483

**64** We know that many households are struggling with utility bills and wider household finances. Expanding the media channels we use, we have continued to reach out to customers to encourage those in difficulty to contact us to discuss their circumstances. Affordability will vary across time for the same household and can be driven by different circumstances. We have tailored the service that we offer customers who are struggling to pay, applying experience from across our business in order to target support most effectively.

**65** Using data analytics we route customer contacts with high affordability risk through to our ExtraCare team, where we check to see if they are claiming all benefits to which their household is entitled. This year we have signposted customers to more than £2.6 million worth of potential unclaimed benefits. We have revised the basis of our assessment so that we are assisting an extra 40,000 customers in "water poverty" on our concessionary tariffs.

**66** We also look to see what help we can provide to customers in managing their payments to us.

**67** All this support is captured under our WaterCare banner, to help customers identify the help available and to promote our services directly to target groups.

### Value for money (3E.14)

**68** In the CCW 2022 survey ('Water Matters'), 79 per cent of our customers said that they were "satisfied" or "very satisfied" when asked "How satisfied are you with the value for money of water services in your area?". This is an increase compared to 76 per cent in 2021.

**69** The percentage who said that they were "satisfied" or "very satisfied" when asked "How satisfied are you with the value for money of sewerage services in your area?" increased to 82 per cent compared to 78 per cent in 2021.

**70** Our weighted performance commitment score is therefore 81 per cent and meets our performance commitment level of 81 per cent. The weighting of the scores is based on the relative sizes of the water and sewerage services we provide, which is a 44:56 split from water to sewerage.

### WINEP delivery (3E.15)

**71** We delivered all but one of our obligations in Year three of the WINEP (2022/23). This is because a scheme at Ulceby has not been signed off by the EA. The total number of schemes delivered marks significant out-performance compared to original Year three baseline (see Table 3B.7).

### Community investment (3E.16)

**72** Our community investment performance commitment consists of a number of different programmes and initiatives from long-term strategic programmes to responding to one-off requests for support. It spans the breadth of our region and supports the communities we serve and the local environment too.

**73** This performance commitment tracks the beneficiaries of our community investment programme. The methodology used is provided by the London Benchmarking Group (LBG) framework which measures community investment that is both charitable and voluntary and allows us to measure the contribution Anglian Water and our Alliances make to communities and the number of people directly reached or supported. For further information on methodology, please refer to the LBG Guidance Manual 2018. Please note, after setting this performance commitment LBG rebranded as Business for Societal Impact (B4SI).

**74** Following this methodology, during 2022/23 our community investment directly supported an estimated 58,267 people (exceeding our target). Despite the strong performance this year we saw a slight drop in our figures from 2021/22 due to a reduction in attendees at online offerings.

**75** This figure has been audited by Jacobs as required by our final determination.

### Summary table

	Number of people directly reached or supported
Education	34,313
People in vulnerable circumstances	21,602
Environmental	2352
Total	58,267

**76** This performance commitment captures investment in communities which is reportable using the B4SI methodology, but there are also wider contributions which sit outside this reporting.

**77** Further information and examples can be found in our Annual Integrated Report and Accounts 2023.



### Customer trust (3E.17)

**78** This performance commitment captures the trust that customers place in the company. The company is incentivised to improve the service and performance it delivers to customers in such a way that they can place a greater level of trust in the company.

**79** The performance commitment is calculated each year from a survey by CCW (formerly the Consumer Council for Water), which asks customers for feedback on their water and sewerage company. Customers are asked to what extent they trust their water company, on a scale of 1–10, with 1 being 'do not trust them at all' and 10 being 'trust them completely'. The measure of the performance commitment is the improvement of the company relative to the industry average of the CCW Trust score.

**80** The calculation is:

**81** (Our score minus average score of all water companies) minus (our score in 2019/20 minus average score of all water companies in 2019/20)

**82** The result of this calculation is shown in the following table:

	2019/20	2020/21	2021/22	2022/23
Anglian Score	7.69	7.89	7.67	7.3
Industry Average Score	7.69	7.87	7.33	7.21
Anglian Difference	0	0.02	0.34	0.09
Anglian Improvement	0	0.02	0.34	0.09
Performance Commitment Level	0	0	0.01	0.02
PCL met?	MET	MET	MET	MET

**83** Our absolute score for the survey question has fallen this year. However it has fallen by less than the industry average score. This means that our score as measured by the performance commitment has increased.

### Natural capital (3E.18)

**84** The Natural Capital Impact performance commitment captures the improvement the company makes through four sub-measures; water quantity, ground water quality, surface water quality and biodiversity. All sub-measures must be on track for the PC to be considered on track. In 2022/23 only three of the four measures are on track and so the overall PC must be considered to fail this year.

**85** The Water Quantity sub-measure must be classed as a fail for 2022/23. The target three year rolling average for distribution input/population was 228.6 litres/head/day but the actual was 239.28 l/h/d. This result is an impact of the dramatic change in water usage due to the current Covid-19 pandemic across the UK and is not unique to the Anglian region.

Description	Unit	2019/20	2020/21	2021/22	2022/23
Population - Total including non-household	000	4771.32	4837.75	4909.54	4972.80
Distribution input	MI/d	1136.35	1186.30	1157.31	1178.06

DI/Population	l/h/d	238.16	245.22	235.73	236.90
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3 year average DI/Pop	l/h/d	241.52	242.91	239.70	239.28
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**86** The Ground Water Quality sub-measure is on track, having delivered the nitrate engagement programme as agreed. In 2022 we delivered two nutrient management webinars, open to all local farmers. These detailed key nutrient management techniques, presented some of our trial results, and introduced our grant support schemes. In 2022/2023 we delivered two workshops in Lincolnshire around nutrient management, 'Management of undersown maize' and 'Advances in covercrop management' – the latter covered the pea and grazing trials mentioned above. These were mainly targeted to Lincs farmers, but farmers from the whole of the AW region were invited to attend. In 2022 we launched several farmer grant support schemes, advertised to all catchment contacts. These included:

- Farmer training grant (50 per cent funding up to £500; 58 successful applications, 12 of whom were in Lincolnshire)
- Cover crop grant (£250 for minimum 10 ha; 68 growers tried it for the first time or expanded their area, or tried a different mix; 23 of whom were in Lincolnshire, the majority inside a SPZ or other risk area for drinking water)

**87** The Surface Water Quality sub-measure is on track with the relevant WINEP schemes for 2022/23 delivered ahead of target.

Scheme Name	EA Driver Code	Permitted DWF (m3/day)	Existing P Limit (mg/l)	Existing load (kg/day)	New P Limit (mg/l)	New Load (kg/day)	% reduction	Saving (kg/year)	Length of River Improved (km)
Monks Eleigh WRC	WF_ND	111	6	0.666	3.00	0.333	50%	121.55	2.1
Brampton WRC	WF_ND	1500	1	1.500	0.25	0.375	75%	410.63	1.5
Holt WRC	WF_ND	1090	6	6.540	4.50	4.905	25%	596.78	3.8
Great Billing WRC	WF_ND	70000	1	70.000	0.90	63.000	10%	2555.00	15.0

<b>Total</b>	3684	22.4
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**88** The Biodiversity sub-measure is on track. The biodiversity net gain cumulative total percentage for AMP7 to the end of the financial year 2022/23 across our land management and construction activities for habitats measured by area is 281 per cent. This is through the delivery of 122 Habitat Biodiversity Units against losses of 32 Habitat Biodiversity Units. Recognising the responsibility that we have towards contributing to nature recovery across our region, both on its own land and where it impacts biodiversity through its activities, the business has made a corporate commitment to deliver 10 per cent BNG across capital schemes and land management activities where there is a material impact upon biodiversity. This is a corporate commitment and is one of the Natural Capital metrics set out in our Six Capitals Framework.

**89** The 10 per cent BNG requirement only applies against the measured losses of biodiversity. This means that if the temporary or permanent losses of an intervention (i.e. construction or land management activity) can be reduced or avoided completely then the 10% compensation has the advantage of being calculated against a lower measured loss. If there are no measurable losses, then there is no BNG requirement.

**Regional collaboration (3E.19)**

**90** This metric measures the collaborative approach to measuring and managing natural capital beyond the company's operational boundaries. It aims to drive the development of a regional approach to assessing and considering natural capital in strategic planning and decision making. In 2022/23 the Natural Capital East Group met formally twice (June 22, Jan 23) with representation from 11 organisations and members have met as subgroups to discuss mapping and aligning priorities. The Systematic Conservation Plan (now known as the Natural Capital Plan) was completed and published on the WRE website in January 2022 <https://wre.org.uk/projects/systematic-conservation-planning/>. This plan has been used by organisations to inform their planning and members are now mapping future opportunities to work in collaboration to deliver activity on the ground. The metric is therefore considered to be on track.

**Table 3F - Underlying calculations for common performance commitments - water and retail**

Line description	Unit	Standardising data indicator	Standardising data numerical value	Performance level - Actual (current reporting year)	Performance level - Calculated (i.e. standardised)
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**Performance commitments set in standardised units - Water**

1	Mains repairs - Reactive	Mains repairs per 1000 km	Mains length in km	39,248.10	5,140	130.96
2	Mains repairs - Proactive	Mains repairs per 1000 km	Mains length in km	39,248.10	1,657	42.22
3	Mains repairs	Mains repairs per 1000 km	Mains length in km	39,248.10	6,797	173.18
4	Per capita consumption (PCC)	lpd	Total household population (000s) and household consumption (Ml/d)	4,895.01	643	131.30

Line description	Unit	Performance level - actual (2017-18)	Performance level - actual (2018-19)	Performance level - actual (2019-20)	Baseline (average from 2017-18 to 2019-20)	Performance level - actual (2020-21)	Performance level - actual (2021-22)	Performance level - actual (2022-23)	Performance level 3 year average (current and previous 2 years)	Calculated performance level to compare against PCLs
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**Performance commitments measured against a calculated baseline**

5	Leakage	MI/d	191.3	199.9	191.0	194.1	182.4	173.4	182.6	179.5	7.5
6	Per capita consumption (PCC)	lpd	134.8	136.9	133.3	135.0	146.9	136.0	131.3	138.1	-2.3

Line description	Unit	Standardising data indicator	Standardising data numerical value	Total minutes lost	Number of properties supply interrupted	Calculated performance level
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<b>Water supply interruptions</b>
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7	Water supply interruptions	Average number of minutes lost per property per year	Number of properties (thousands)	2,296.61	33504480	91,120	12:14:ss AM
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Line description	Current company level peak week production capacity (PWPC) MI/d	Reduction in company level PWPC MI/d	Outage proportion of PWPC %
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<b>Unplanned or planned outage</b>
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8	Unplanned outage	1,780.09	33.95	1.91%
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Line description	Total residential properties (000s)	Total number of households on the PSR (as at 31 March)	PSR reach	Total number of households on the PSR over a 2 year period	Number of attempted contacts over a 2 year period	Attempted contacts %	Number of actual contacts over a 2 year period	Actual contacts %
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<b>Priority services for customers in vulnerable circumstances</b>									
9	Priority services for customers in vulnerable circumstances	2,962.91	336,296	11.4%	175,345	175,338	100.0%	109,424	62.4%

### Mains repairs - Reactive (3F.1)

**1** There were 5,140 reactive bursts in 2022/23, compared to 3,322 in 2021/22. The region has been significantly affected by the extreme weather over the summer, where we experienced the highest number of bursts since our modern records began (from 2010), and almost double the burst rate compared to the previous year (1,835 summer bursts in 2022/23 compared to 914 summer bursts in 2021/22).

**2** For AMP7 we have moved away from our method of reporting using the WISPA (Water Infrastructure Serviceability Performance Assessment) Model. This model is now used internally to better understand the impact of external factors such as soils, tree roots and weather on our assets in order to improve our prioritisation of mains rehabilitation schemes and leakage reduction programmes.

### Mains repairs - Proactive (3F.2)

**3** In 2022/23 we identified and repaired 1,657 bursts using proactive leak detection. This was an increase in real terms on the previous year as we deployed more resources to finding leaks owing to the extreme weather conditions in the summer and winter. The proportion of bursts being found proactively fell to 24 per cent (from 30 per cent in 2021/22) as a result of the increased number of bursts we experienced.

### Mains repairs (3F.3)

**4** This is a calculated field and is the sum of 3F.1 and 3F.2. The length of potable mains is 39,248.1km. This number is consistent with the number reported in table 6C.1.

### Per capita consumption (PCC) (3F.4 and 3F.6)

**5** The tables restrict the numbers of visible decimal places for line 3F.4 to two decimal places for population (000s) and to zero decimal places for consumption in MI/d. This does not provide sufficient accuracy to calculate PCC correctly potentially resulting in rounding errors. PCC is calculated as 131.3 l/person/day which is derived from a population of 4,895,007 and consumption of 642.605 MI/d.

**6** For further commentary on activities to manage PCC please see commentary for 3A.4.

### Leakage (3F.5)

**7** Please see commentary for 3A.3.

### Water supply interruptions (3F.7)

**8** This field takes the number of connected properties in the region and divides this into the total minutes that have been lost within the year to calculate the average number of minutes lost per property per year. The figure for 2022/23 is 14:35. The number of properties with their supply interrupted was 91,120.

**9** The total connected property figure is taken from 4R.27 (total column), which is 2,296,607. The total number of properties affected by unplanned interruptions of greater than 24 hours was 7,031 (262 properties in 2021/22). The total number of properties affected by unplanned interruptions of greater than 12 hours was 12,518 (2,420 properties in 2021/22).

### Unplanned outage (3F.8)

**10** The 2022/23 unplanned outage figure of 1.907 per cent is an increase on the 2021/22 figure.

**11** Overall PWPC increased by 0.843 MI/d. Please see table in 3A for significant PWPC site changes.

**Priority services for customers in vulnerable circumstances (3F.9)**

**12** For details please see commentary for 3E.2 - 3E.4.

**Table 3G - Underlying calculations for common performance commitments - wastewater**

Line description	Unique reference	Unit	Standardising data indicator	Standardising data numerical value	Performance level - actual current reporting year	Calculated performance level
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Performance commitments set in standardised units							
1	Internal sewer flooding - customer proactively reported	PR19ANH_7	Number of internal sewer flooding incidents per 10,000 sewer connection	Number of sewer connections	2,903.05	486	1.67
2	Internal sewer flooding - company reactively identified (ie neighbouring properties)	PR19ANH_7	Number of internal sewer flooding incidents per 10,000 sewer connection	Number of sewer connections	2,903.05	5	0.02
3	Internal sewer flooding	PR19ANH_7	Number of internal sewer flooding incidents per 10,000 sewer connection	Number of sewer connections	2,903.05	491	1.69
4	Pollution incidents	PR19ANH_8	Pollution incidents per 10,000 km of sewer length	Sewer length in km	76,437.00	255	33.36
5	Sewer collapses	PR19ANH_13	Number of sewer collapses per 1,000 km of all sewers	Sewer length in km	77,284.00	401	5.19

### Internal sewer flooding - customer proactively reported (3G.1)

**1** There were 486 internal incidents which customers proactively reported to the business in 2022/23. These include customers proactively informing us when an incident has occurred either by contacting us direct or informing us if a neighbour has been affected. This is an increase from 2021/22 when we reported 462 internal incidents proactively reported to the business.

### Internal sewer flooding - company reactively identified (i.e. neighbouring properties) (3G.2)

**2** There were 5 internal incidents which have been reactively identified by the business in 2022/23. These include reactively adding additional properties to an incident once we have confirmed from proactively visiting neighbouring properties. This is a decrease from 2021/2022 when we reported 35 internal incidents reactively identified by the business. As part of their training, our network technicians are instructed to check two properties to each side of any property reporting flooding, to ensure that no additional flooding has occurred at those properties.

**3** Ofwat has requested that, from 2021/22, if a company reports zero or near zero for this line it should explain why this is the case. At 1 per cent of the total internal sewer flooding incidents, the figure reported could be considered as near zero. While we are confident that our policies and procedures ensure that we have visited neighbouring properties and reported those that have flooded, we attribute the lower number of incidents



reported against this line to a reduction in operative understanding of the system that allows us to discern between proactively identified incidents and reactively identified ones. We are working urgently to educate our operational colleagues, improve this system and resolve the issue.

### **Internal sewer flooding (3G.3)**

**4** There were 491 internal flooding incidents in 2022/23. This includes 50 incidents caused by overloaded sewers and 441 incidents caused by other causes including blockages, collapses, equipment failure, pumping station failure, pumping station due to third party, collapse due to the third party, blockage due to third party and equipment failure due to third party. This total includes severe weather events, we had a total of 22 internal severe weather events for 2022/23.

**5** In 2021/22 we reported 497 internal flooding incidents. In 2022/23 we have seen a slight decrease in our internal flooding numbers.

**6** We have reported sewer connections in thousands (000s) to align with the reporting requirements for table 4R.16 from which this line should be copied.

### **Pollution incidents (3G.4)**

**7** The definition of this measure is taken from version ten of the Environmental Performance Assessment (EPA) methodology document: the total number of pollution incidents (categories one to three) from sewerage assets per 10,000km of sewer length for which the company is responsible in a calendar year. The number we have used to normalise the absolute total number of pollution incidents is also taken from this document (76,437km).

**8** The measure includes pollution incidents from a discharge or escape of a contaminant from a company sewerage asset affecting the water environment only (impacts to land and air are excluded). Sewerage assets include:

- Waste water treatment works
- Foul sewers, including private sewers transferred to the water companies in Oct 2011 (used in the EPA from 1 Jan 2016)
- Combined sewer overflows, excluding satisfactory CSOs
- Rising mains, including private rising mains transferred to the water companies in October 2016 (used in the EPA from 1 Jan 2021)
- Pumping stations, including private pumping stations transferred to the water companies in October 2016 (used in the EPA from 1 Jan 2021)
- Storm tanks
- Surface water outfalls
- Other

**9** Pollution incidents emanating from clean water distribution and water treatment works are excluded.

**10** There has been a marginal decrease in the number of total pollution incidents categories one to three in 2022 (255) compared to 2021 (258). The commentary associated with 3B line 2 discusses this performance in more detail.

### **Sewer collapses (3G.5)**

**11** There were 259 reactive sewer collapses and 142 reactive burst rising mains, totalling 401 for 2022/23. This is year three of reporting for AMP 7 definitions. We've seen a decrease in sewer collapses and burst rising mains in 2022/23, this is due to a programme of work aimed at proactively finding sewer collapses to repair and improving our internal reporting to accurately capture these jobs.

**12** The sewer length quoted in line 5 is our figure for 2022/23, taken from table 7C, whereas the sewer length figure in the previous line is the one for 2012/13, as specified by the Environment Agency's EPA methodology.

**13** Our estimate of our length of formerly private sewers is based on initial assessments made before the transfer for PR09. We are aware that our approach is consistent with most of the industry in that we continue to use the modelled lengths calculated at that time. However, we believe that new technologies and approaches can be used to improve upon the modelling carried out for PR09. As a result we have commenced a project to provide improved modelled estimates for our private sewer as well as our modelled section 24 sewer lengths as part of our PR24 submission.

**Table 3H - Summary information on outcome delivery incentive payments**

Line description	Initial calculation of performance payments (excluding CMEX and DMEX)
	£m (2017-18 prices)

Initial calculation of in period revenue adjustment by price control		
1	Water resources	0.28
2	Water network plus	-16.86
3	Wastewater network plus	-6.69
4	Bioresources (sludge)	0.00
5	Residential retail	1.18
6	Business retail	0.00
7	Dummy control	0.00

Initial calculation of end of period revenue adjustment by price control		
8	Water resources	0.00
9	Water network plus	0.00
10	Wastewater network plus	0.00
11	Bioresources (sludge)	0.00
12	Residential retail	0.00
13	Business retail	0.00
14	Dummy control	0.00

Initial calculation of end of period RCV adjustment by price control		
15	Water resources	0.00
16	Water network plus	0.00
17	Wastewater network plus	0.00
18	Bioresources (sludge)	0.00
19	Residential retail	0.00
20	Business retail	0.00
21	Dummy control	0.00

**1** The table below summarises our performance against the performance commitments for 2022/23 (excluding C-Mex and D-Mex). It shows that we met 55 per cent of the performance commitments for which we had performance commitment levels during the year.

	<b>PCL met</b>	<b>PCL not met</b>	<b>No PCL or PC not assessed</b>	<b>Total</b>
Water financial (3A)	3	9	4	16
Wastewater financial (3B)	2	5	2	9
Non-financial (3E)	16	3	0	19
<b>Total</b>	<b>21</b>	<b>17</b>	<b>6</b>	<b>44</b>

**2** Adding in our estimates of the rewards from C-Mex and D-Mex, we have earned total net penalty of £22.4m (2017/18 prices) for our performance under the performance framework in 2022/23. The table below shows where rewards and penalties were achieved and also shows the figures in 2022/23 prices.

	<b>Rewards/penalties from 2022/23 performance (£m)</b>	
	2017/18 Prices	2022/23 prices
<b>Water</b>	-	
Water supply interruptions	-10.1	-12.0
Leakage	-1.3	-1.6
Compliance Risk Index	-1.1	-1.3
Properties at risk of persistent low pressure	0.6	0.7
Water quality contacts	-0.2	-0.3
Abstraction Incentive Mechanism	-0.1	-0.1
Mains repairs	-4.5	-5.3
WINEP	0.3	0.4
<b>Wastewater</b>		
Internal sewer flooding	-1.2	-1.4
Pollution incidents	-4.6	-5.4
Treatment Works Compliance	-0.6	-0.7
External sewer flooding	-2.4	-2.9
WINEP	1.9	2.2
<b>Retail</b>		
C-Mex	-0.3	-0.3
D-Mex	0.0	0.0
Managing void properties	1.2	1.4
<b>Total</b>	<b>-22.4</b>	<b>-26.4</b>

**3** These payments will be applied to bills from charging year 2024/25.

### Table 3I - Supplementary outcomes information

Line description	Current company level peak week production capacity (PWPC) M/d	Reduction in company level PWPC M/d	Outage proportion of PWPC %
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Unplanned or planned outage				
1	Planned outage	1,780.09	47.97	2.69%

Line description	Deployable output	Outage allowance	Dry year demand	Target headroom	Total population supplied	Customers at risk
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Risk of severe restrictions in drought							
2	Risk of severe restrictions in drought	1,533.42	39.27	1,167.36	59.58	4,898.67	1,385.76

Line description	Total pe served	Total pe in excluded catchments	Percentage of total pe in excluded catchments	Total pe Option 1a	Percentage of total pe Option 1a	Total pe Option 1b	Percentage of total pe Option 1b	Vulnerability risk grade		
								Low	Medium	High
								Percentage of total population served		

Risk of sewer flooding in a storm											
3	Risk of sewer flooding in a storm	6,446,809	0	0.00%	0	0.00%	6,446,809	100.00%	99.26%	0.00%	0.74%

Line description	Number of patch repairs or relining undertaken on sewer and not included in reported sewer collapses.
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Sewer collapses		
4	Sewer collapses	902

**Planned outage (3I.1)**

**1** The planned outages number for 2022/23 is 2.695 per cent which equates to 47.974 Ml/d. Planned outages are captured on our Planned and Unplanned Outage event log.

**Risk of severe restrictions in drought (3I.2)**

**2** Please refer to the commentary for table 3E, line 1.

**Risk of sewer flooding in a storm (3I.3)**

**3** Please refer to the commentary for table 3E, line 5.

**Sewer collapses (3I.4)**

**4** There were 874 work orders which have been confirmed as spot repairs or relining and 41 potential sewer collapses which have been closed as relining. This totals 915 spot repairs and relining which have excluded from our reported sewer collapses. This is year three reporting on the Asset Management Plan Period seven (AMP 7) definition.

**Table 4A - Water bulk supply information for the 12 months ended 31 March 2023**

	Line description	Volume	Operating costs	Revenue
	Units	MI	£m	£m
	<b>Bulk supply exports</b>			
1	Bulk supply 1	-	-	-
2	Bulk supply 2	-	-	-
3	Bulk supply 3	-	-	-
4	Bulk supply 4	-	-	-
5	Bulk supply 5	-	-	-
6	Bulk supply 6	-	-	-
7	Bulk supply 7	-	-	-
8	Bulk supply 8	-	-	-
9	Bulk supply 9	-	-	-
10	Bulk supply 10	-	-	-
11	Bulk supply 11	-	-	-
12	Bulk supply 12	-	-	-
13	Bulk supply 13	-	-	-
14	Bulk supply 14	-	-	-
15	Bulk supply 15	-	-	-
16	Bulk supply 16	-	-	-
17	Bulk supply 17	-	-	-
18	Bulk supply 18	-	-	-
19	Bulk supply 19	-	-	-
20	Bulk supply 20	-	-	-
21	Bulk supply 21	-	-	-
22	Bulk supply 22	-	-	-
23	Bulk supply 23	-	-	-
24	Bulk supply 24	-	-	-
25	Bulk supply 25	-	-	-
26	Total bulk supply exports	-	-	-

Line description	Volume	Operating costs
Units	MI	£m

<b>Bulk supply imports</b>			
27	Bulk supply 1	-	-
28	Bulk supply 2	-	-
29	Bulk supply 3	-	-
30	Bulk supply 4	-	-
31	Bulk supply 5	-	-
32	Bulk supply 6	-	-
33	Bulk supply 7	-	-
34	Bulk supply 8	-	-
35	Bulk supply 9	-	-
36	Bulk supply 10	-	-
37	Bulk supply 11	-	-
38	Bulk supply 12	-	-
39	Bulk supply 13	-	-
40	Bulk supply 14	-	-
41	Bulk supply 15	-	-
42	Bulk supply 16	-	-
43	Bulk supply 17	-	-
44	Bulk supply 18	-	-
45	Bulk supply 19	-	-
46	Bulk supply 20	-	-
47	Bulk supply 21	-	-
48	Bulk supply 22	-	-
49	Bulk supply 23	-	-
50	Bulk supply 24	-	-
51	Bulk supply 25	-	-
52	Total bulk supply imports	-	-

### **Bulk supply exports and imports (4A.1 - 4A.52)**

**1** Nil return, we do not have any supplies that qualify under the water trading incentive framework.



## Table 4B - Analysis of debt

**1** Table 4B has not been published in this document. The published version of the Ofwat tables can be viewed through the [Our reports](#) section on our website.

**2** Table 4B is the granular data summarised in Table 1E. Foreign currency borrowings have been reported on a post-swap GBP basis as per the RAG. Some of these foreign currency borrowings are both partially fixed and floating and have been reflected in the respective category in line with guidance. Relevant commentary has been added in Table 1E and is not duplicated here.

**Table 4C - Impact of price control performance to date on RCV**

Line description	Units	12 months ended 31 March 2023					Price control period to date				
		Water resources	Water network plus	Wastewater network plus	Bioresources	Additional Control	Water resources	Water network plus	Wastewater network plus	Bioresources	Additional Control

<b>Totex (net of business rates, abstraction licence fees and grants and contributions)</b>												
1	Final determination allowed totex (net of business rates, abstraction licence fees, grants and contributions and other items not subject to cost sharing)	£m	46.373	491.802	567.118	91.816	-	117.915	1,208.858	1,471.501	262.875	-
2	Actual totex (excluding business rates, abstraction licence fees, grants and contributions and other items not subject to cost sharing)	£m	37.326	508.455	513.532	92.071	-	100.691	1,244.402	1,309.394	246.320	-
3	Transition expenditure	£m	-	-	-	-	-	5.278	10.137	3.297	-	-
4	Disallowable costs	£m	-	1.389	3.218	-	-	-	2.363	3.653	-	-
5	Total actual totex (net of business rates, abstraction licence fees and grants and contributions)	£m	37.326	507.066	510.314	92.071	-	105.969	1,252.176	1,309.038	246.320	-
6	Variance	£m	(9.046)	15.264	(56.804)	0.255	-	(11.946)	43.318	(162.463)	(16.554)	-
7	Variance due to timing of expenditure	£m	-	(304.182)	100.000	2.000	-	-	(259.182)	-	-	-
8	Variance due to efficiency	£m	(9.046)	319.446	(156.804)	(1.745)	-	(11.946)	302.499	(162.463)	(16.554)	-
9	Customer cost sharing rate - outperformance	%	0.550	0.550	0.550	-	-	0.550	0.550	0.550	-	-
10	Customer cost sharing rate - underperformance	%	0.450	0.450	0.450	-	-	0.450	0.450	0.450	-	-
11	Customer share of totex overspend	£m	-	143.751	-	-	-	-	136.125	-	-	-
12	Customer share of totex underspend	£m	(4.975)	-	(86.242)	-	-	(6.570)	-	(89.355)	-	-
13	Company share of totex overspend	£m	-	175.695	-	-	-	-	166.375	-	-	-
14	Company share of totex underspend	£m	(4.071)	-	(70.562)	(1.745)	-	(5.376)	-	(73.108)	(16.554)	-

Line description	Units	12 months ended 31 March 2023					Price control period to date				
		Water resources	Water network plus	Wastewater network plus	Bioresources	Additional Control	Water resources	Water network plus	Wastewater network plus	Bioresources	Additional Control

<b>Totex - business rates and abstraction licence fees</b>												
15	Final determination allowed totex - business rates and abstraction licence fees	£m	14.825	42.687	24.329	3.409	-	41.600	119.783	68.268	9.567	-
16	Actual totex - business rates and abstraction licence fees	£m	12.472	31.311	20.755	3.211	-	37.881	107.744	62.084	9.621	-
17	Variance - business rates and abstraction licence fees	£m	(2.353)	(11.376)	(3.574)	(0.198)	-	(3.719)	(12.039)	(6.185)	0.055	-
18	Customer cost sharing rate - business rates	%	0.831	0.899	0.900	0.900	-	0.847	0.899	0.900	0.900	-
19	Customer cost sharing rate - abstraction licence fees	%	0.750	0.750	-	-	-	0.750	0.750	-	-	-
20	Customer share of totex over/underspend - business rates and abstraction licence fees	£m	(1.955)	(10.228)	(3.216)	(0.178)	-	(3.151)	(10.825)	(5.566)	0.049	-
21	Company share of totex over/underspend - business rates and abstraction licence fees	£m	(0.398)	(1.148)	(0.357)	(0.020)	-	(0.568)	(1.214)	(0.618)	0.005	-

Line description	Units	12 months ended 31 March 2023					Price control period to date				
		Water resources	Water network plus	Wastewater network plus	Bioresources	Additional Control	Water resources	Water network plus	Wastewater network plus	Bioresources	Additional Control

**Totex not subject to cost sharing**

22	Final determination allowed totex - not subject to cost sharing	£m	5.268	40.126	17.401	0.568	-	11.422	104.184	32.303	1.922	-
23	Actual totex - not subject to cost sharing	£m	9.225	27.207	4.992	0.717	-	23.783	76.355	26.887	9.522	-
24	Variance - 100% company allocation	£m	3.957	(12.920)	(12.409)	0.149	-	12.361	(27.829)	(5.416)	7.600	-
25	Total customer share of totex over/under spend	£m	(6.931)	133.523	(89.459)	(0.178)	-	(9.721)	125.300	(94.921)	0.049	-

**RCV**

26	Total customer share of totex over/under spend	£m	(6.931)	133.523	(89.459)	(0.178)	-	(9.721)	125.300	(94.921)	0.049	-
27	PAYG rate	%	0.722	0.462	0.390	0.814	-	0.770	0.513	0.423	0.806	-
28	RCV element of cumulative totex over/underspend	£m	(1.924)	71.887	(54.527)	(0.033)	-	(2.235)	61.056	(54.803)	0.010	-
29	Adjustment for ODI outperformance payment or underperformance payment	£m	-	-	-	-	-	-	-	-	-	-
30	Green recovery	£m	-	-	-	-	-	-	-	-	-	-
31	RCV determined at FD at 31 March	£m	-	-	-	-	-	247.252	3,742.080	5,583.218	385.967	-
32	Projected 'shadow' RCV	£m	-	-	-	-	-	245.018	3,803.136	5,528.415	385.976	-

**1** The table sets out the Totex spend by price control for the year and AMP to date compared against the allowance set, in our case, by the CMA. The table is broken down into three sections,

1. Totex (net of business rates, abstraction licence fees and G&C)
2. Business rates and abstraction licence fees
3. Totex not subject to cost sharing

**2** Management is then required to show how much of the variance in spend is due to timing and how much is efficiency, with a proportion of the efficiency (or inefficiency) shared with customers as set out in the Final Determination.

### **Variance due to timing of expenditure**

**3** We note that assessing these timing impacts requires a degree of judgement to be exercised which we have undertaken to the best of our abilities, any inaccuracies in this judgement will unwind by the end of the AMP. Given the nature of assessing this, we have rounded to the nearest £million.

**4** For Water Network+ our AMP to date timing differences reflect the profile of spend in relation to our strategic interconnecting pipeline project. This project is the biggest infrastructure project in Anglian Water's history and will be key to moving water around the region and improving resilience to drought. As with a project this size it has been extremely complex. This complexity has been exacerbated by, Covid-19, which caused delays in our ability to start the project. We are also dealing with local planning and multiple different councils, who have all faced delays due to recovering from Covid-19 backlogs. In addition, supply chain challenges due to the Russian invasion of Ukraine have been particularly challenging, with the majority of the steel for the pipeline being supplied from Mariupol, where we had to find alternative sources.

**5** Despite these delays, which have caused a timing difference between the cost profile in the Business Plan and our actual spend profile we have made great progress in recent months in delivery of the project. Whilst we recognise the significant risk in delivery we are closely managing the project and expect to be complete within the original target dates, albeit these challenges have seen additional cost pressures that we expect to continue.

### **Totex Out / Under Performance AMP7 to Date**

**6** The tables show that our cumulative position AMP to date is an overall overspend of £76 million. Strong performance in our Water Recycling business stream has resulted in efficiencies of £174 million to date. This efficiency has been delivered in our Water Industry National Environment Programmes (WINEP) where we have continued to deliver our environmental obligations through innovative projects. The Board has agreed to reinvest this overall efficiency in order to finance future energy price increases in years 4 and 5 as well as the additional cost pressures of the strategic pipeline mentioned above. We are confident that by the end of the AMP we will spend at least our allowance.

**7** The table shows that the Board have utilised the efficiency being delivered in WINEP to fund the increased costs seen in delivering our strategic interconnector project. As mentioned, we have seen increased costs over and above CPIH due to increased costs of steel and other supply chain challenges.

**8** The Board actively chose to also reinvest efficiencies in Water Recycling with a view to maintaining our industry-leading leakage position as we sought to recover from a number of weather-related events throughout the year. This means that as of Year 3 we have spent in line with our Botex allowance as we continue to deliver against the extremely challenging efficiency targets, we have set.

**9** These decisions highlight the flexibility of the business to manage both cost and delivery across the business as a whole which has been enabled by the broadly symmetrical cost sharing rates between price controls as well as between base and enhancement expenditure.

**Disallowable costs (4C.4)**

**10** Disallowable costs relate to fines, penalties and guaranteed service scheme payments incurred in the year, including court costs associates with fines and penalties.

**11** As part of the IDOK settlement we agreed to invest £1.4 million in lead replacement funded by shareholders. In 2022/23 we spent £0.2 million relating to this, the remaining amount is expected to be spent across the rest of the AMP.

**RCV determined at FD at 31 March (4C.31)**

**12** This has been taken from Ofwat's published RCVs. We have not been able to fully reconcile the year-end RCV that was published by Ofwat. Whilst we have reported based on the Ofwat published RCV, we continue to believe that the RPI proportion of the RCV should be inflated by RPI only for it to be consistent with the publication of RCV in the previous years. Our calculation of the Year-end RCV on this consistent basis is around £61 million higher than the Ofwat published RCV.

**Projected 'shadow' RCV (4C.32)**

**13** These are calculated cells. We note however the shortcomings of this "shadow" RCV reported number. The calculations performed in this table do not replicate the detailed PR19 cost reconciliations model, which calculates RCV adjustments as a result of totex out / under performance. In addition this "shadow" RCV takes no account of RCV adjustments published in Ofwat's "Blind Year" adjustments document, which will apply at the end of AMP7.

**Table 4D - Wholesale Totex Analysis - Water**

Line description	Water resources	Network+				Total	
		Raw water transport	Raw water storage	Water treatment	Treated water distribution		
<b>Operating expenditure (£m)</b>							
1	Base operating expenditure	37.776	8.602	0.433	51.635	148.935	247.382
2	Enhancement operating expenditure	1.583	0.059	0.003	0.602	6.899	9.146
3	Developer services operating expenditure	-	-	-	-	1.157	1.157
4	Total operating expenditure excluding third party services	39.359	8.661	0.436	52.237	156.991	257.684
5	Third party services	5.349	1.052	0.005	5.858	9.801	22.065
6	Total operating expenditure	44.708	9.713	0.441	58.096	166.792	279.749
<b>Grants and contributions (£m)</b>							
7	Grants and contributions - operating expenditure	-	-	-	-	-	-
<b>Capital expenditure (£m)</b>							
8	Base capital expenditure	5.056	0.433	(0.045)	18.364	67.413	91.221
9	Enhancement capital expenditure	8.787	0.617	-	15.319	209.596	234.319
10	Developer services capital expenditure	0.197	-	-	-	53.566	53.763
11	Total gross capital expenditure excluding third party services	14.040	1.050	(0.045)	33.683	330.575	379.303
12	Third party services	0.494	0.013	0.003	0.458	0.103	1.071
13	Total gross capital expenditure	14.534	1.063	(0.042)	34.141	330.678	380.374
<b>Grants and contributions (£m)</b>							
14	Grants and contributions - capital expenditure	0.219	0.100	(0.004)	2.982	30.831	34.128
15	Net totex	59.023	10.676	0.403	89.254	466.639	625.995
<b>Cash expenditure (£m)</b>							
16	Pension deficit recovery payments	0.821	0.013	0.114	2.432	5.300	8.680
17	Other cash items	-	-	-	-	-	-
18	Totex including cash items	59.844	10.689	0.517	91.686	471.939	634.675

Line description	Water resources	Network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

Atypical expenditure (£m)						
19	Item 1	-	-	-	-	-
20	Item 2	-	-	-	-	-
21	Item 3	-	-	-	-	-
22	Item 4	-	-	-	-	-
23	Item 5	-	-	-	-	-
24	Total atypical expenditure	-	-	-	-	-

**1** Change in operating expenditure compared to 2021/22 - Regulatory Accounts

**2** Underlying water services operating expenditure decreased by £8.3 million (2.9 per cent) in real terms.

### Movement in costs 2021/22 to 2022/23

£m	Water Resources	Raw Water Transport & Storage	Water Treatment	Treated Water Distribution	Water Total
2021/22 reporting operating costs	42.0	9.0	55.6	157.0	<b>263.5</b>
Inflation @ 8.77%	3.7	0.8	4.9	13.8	<b>23.2</b>
2021/22 costs indexed to 2022/23 prices	45.7	9.8	60.4	170.8	<b>286.7</b>
2022/23 reported operating costs	44.7	10.1	57.7	165.8	<b>278.3</b>
<b>(Increase)/decrease in underlying costs from 2021/22</b>	<b>0.9</b>	<b>(0.3)</b>	<b>2.7</b>	<b>5.0</b>	<b>8.3</b>

### Water resources

**3** Base operating expenditure was £0.9 million lower in real terms than 2021/22 primarily due to a larger credit relating to third party services being removed from base operating expenditure than prior year due to the review of calculation methodology as explained in the 'Third Party Services' note below. This is accompanied by Abstraction Licences not being subject to the inflation rate of 8.8 per cent.

**4** Enhancement operating expenditure was £0.6 million higher than 2021/22 in real terms due to: an uptake in Leakage work, specifically the Enhanced Security of Supply project; coupled with an increase in Farmer Grant Payments within the 'Ecological improvements at abstractions' parcel of work.

### Raw Water transport and storage

**5** Total operating expenditure was £0.3 million higher in real terms than 2021/22 primarily due to increased power consumption driven by higher customer demand, particularly through the hot weather period.

### Water treatment

**6** Total operating expenditure was £2.7 million lower than 2021/22 in real terms due to a Cumulo Rates rebate received within the 2022/23 financial year after a collaborative review with the Valuation Office Agency (VOA) of the Rateable Values (RV) of our chargeable assets across the region.



## Treated water distribution

**7** Base operating expenditure was £5.0 million lower than 2021/22 in real terms due to a larger credit relating to third party services being removed from base operating expenditure than prior year due to the review of calculation methodology as explained in the 'Third Party Services' note below. This is offset by increased Network Contractor costs, being driven by an increased number of support and repair teams to combat the adverse weather events within the year. The number of repair teams throughout the region also increased year on year resulting in further costs. In contrast to 2021/22, expenditure to replace mains fittings was recognised in capital expenditure to reflect the long life of these assets which is referenced in the commentary for Table 4J Maintenance Non-Infra capital expenditure.

**8** Enhancement operating expenditure was £2.9 million lower than 2021/22 in real terms due to a reduction in Leakage spend due to the prolonged hot weather spell and unprecedented freeze/thaw incident causing a year-on-year increase in burst main incidents. This is offset by an increase in expenditure relating to Smart Meter Data Charges as the programme ramps up, and the cumulative value of prior year charges compounds.

## Power

**9** The wholesale cost of power increased substantially in 2022/23 due to external market conditions. However, our exposure to the unprecedented price rises was reduced through our energy hedging strategy, equating to a circa 9 per cent rise in energy costs.

## Third Party Services

**10** We have carried out a review of costs allocated to Third Party Services. This has resulted in an increase in the costs allocated to third party principally relating to ensuring the full cost is accounted for. Non-potable supplies now includes non direct costs including distribution and overheads, rather than solely relating to direct costs of dedicated third party assets.

## Capital Expenditure (4D.8-4D.13)

**11** All of our capital expenditure is delivered through projects where master data is used to identify whether the expenditure is for maintaining the long term capability of assets or other capital assets for both infrastructure and non infrastructure

**12** It is expected that capital expenditure profiles vary year on year significantly due to the strategic prioritisation of the investment programme. Large projects and stakeholder required investments can lead to variances in year on year comparisons of the same data point.

**13** This master data is also used for the classifying expenditure within the relevant price control. The majority of capital expenditure is directly attributable to the price control. Where this is not possible, capital expenditure is assigned to the business unit of principal use with an appropriate recharge of depreciation charges for these shared assets made between price control segments in table 2A.

**14** Refer to the commentary for 4L for enhancement variance analysis against allowances.

**15** Total water capital expenditure includes £1.1 million of spend on assets used to fulfil third-party agreements

**Table 4E - Wholesale Totex Analysis - Wastewater**

Line description	Network+ Sewage collection			Network+ Sewage treatment		Bioresources			Total
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Imported sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal	

**Operating expenditure (£m)**

1	Base operating expenditure	65.326	18.486	7.812	136.905	4.229	32.632	34.121	13.028	312.538
2	Enhancement operating expenditure	1.411	0.391	0.159	3.785	-	-	-	-	5.746
3	Developer services operating expenditure	0.166	0.021	0.063	-	-	-	-	-	0.250
4	Total operating expenditure excluding third party services	66.903	18.898	8.034	140.689	4.229	32.632	34.121	13.028	318.534
5	Total third party services	0.174	0.061	0.025	1.779	0.017	0.131	0.520	0.066	2.773
6	Total operating expenditure	67.077	18.959	8.059	142.468	4.246	32.763	34.641	13.093	321.307

**Grants and contributions (£m)**

7	Grants and contributions - operating expenditure	-	-	-	-	-	-	-	-	-
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**Capital expenditure (£m)**

8	Base capital expenditure	52.527	14.527	5.665	115.152	-	0.002	14.353	2.458	204.684
9	Enhancement capital expenditure	11.851	3.427	1.278	100.077	-	-	(1.313)	-	115.319
10	Developer services capital expenditure	13.252	3.638	1.429	-	-	-	-	-	18.319

Line description	Network+ Sewage collection			Network+ Sewage treatment		Bioresources			Total
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Imported sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal	

11	Total gross capital expenditure excluding third party services	77.630	21.592	8.372	215.229	-	0.002	13.040	2.458	338.322
12	Third party services	(0.037)	-	-	0.080	-	-	-	-	0.043
13	Total gross capital expenditure	77.593	21.592	8.372	215.309	-	0.002	13.040	2.458	338.365

<b>Grants and contributions (£m)</b>									
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14	Grants and contributions - capital expenditure	7.939	0.022	-	16.433	-	-	-	-	24.395
15	Net totex	136.730	40.528	16.432	341.344	4.246	32.765	47.681	15.551	635.278

<b>Cash expenditure (£m)</b>									
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16	Pension deficit recovery payments	2.086	0.225	0.572	4.351	0.167	1.608	1.230	0.253	10.492
17	Other cash items	-	-	-	-	-	-	-	-	-
18	Totex including cash items	138.816	40.753	17.004	345.695	4.413	34.373	48.911	15.804	645.770



Change in operating expenditure compared to 2021/22 - regulatory accounts

**1** Underlying wastewater operating expenditure increased by £10.4 million (3.4 per cent) in real terms.

### Movement in costs 2021/22 to 2022/23

£m	Sewerage Collection	Sewerage Treatment	Bioresources	Sewerage Total
2021/22 reporting operating costs	85.9	127.7	70.2	283.8
Inflation @ 8.774%	7.5	11.2	6.2	24.9
2021/22 costs indexed to 2022/23 prices	93.4	138.9	76.4	308.7
2022/23 reported operating costs	93.2	145.4	80.5	319.1
(Increase)/decrease in underlying costs from 2021/22	0.2	(6.5)	(4.1)	(10.4)

### Operating expenditure key changes (4E.1-4E.11)

#### Sewage Collection

**2** Total Collection costs decreased by £0.2 million in real terms, due to replacement manhole lids and frames being recategorised as capital expenditure and benefits from prior year proactive sewer cleaning. This was offset by above inflation cost increases, planned catchment cleansing, CCTV and sewer monitoring.

#### Sewage treatment

**3** Total Treatment costs increased by £6.5 million in real terms, mainly due to challenges around maintaining treatment work compliance throughout the year which resulted in more resources/material costs being directed to this activity.

#### Bioresources

**4** Total Bioresources costs have increased by £4.1 million in real terms. The main contributing factors are driven by chemical inflationary pressures due to Great Billing Water Recycling Centre coming back online, and tanker driver salary realignment. This is marginally offset by the increased CHP generation and power export benefit, which has increased £2.8 million since 2021/22.

#### Power

**5** The wholesale cost of power increased substantially in 2022/23 due to external market conditions. However, our exposure to the unprecedented price rises was mitigated through our energy hedging strategy, equating to a circa £0.2 million rise in energy costs.

### Capital Expenditure (4E.8-4E.13)

**6** All of our capital expenditure is delivered through projects where master data is used to identify whether the expenditure is for maintaining the long term capability of assets or other capital assets for both infrastructure and non infrastructure.

**7** This master data is also used for the classifying expenditure within the relevant price control. The majority of capital expenditure is directly attributable to price control. Where this is not possible, capital expenditure is assigned to the business unit of principal use with an appropriate recharge of depreciation charges for these shared assets made between price control segments in table 2A.

**8** It is expected that capital expenditure profiles vary year on year significantly due to the strategic prioritisation of the investment program particularly with Enhancement capex. To this effect, the Enhancement capex spend has decreased in line with our 2022/23 plan by £14.3 million in real terms.

**9** Base Capital Expenditure is 16.5 per cent higher than previous year in real terms, due to additional planned investment within Sewage collection, the recognition of Manhole replacements as capital rather than operating expenditure and maintenance expenditure in relation to a Sewer inlet collapse at Southend Water Recycling Centre.

**10** An allocation was required for the foul, surface water drainage and highway drainage split. The allocation was based on flow estimate models provided by Anglian Water's modelling team.

**11** Total wastewater capital expenditure includes £0.04 million of spend on assets used to fulfil third-party agreements.

**12** The Sludge Liquor values above do not align with table 7A, 7B, & 8B, following the guidance on improving cost allocation between Sewage treatment and bioresources units in relation to sludge liquors.

**Table 4F - Major project expenditure for wholesale water by purpose**

Line description	Expenditure in report year £m					
	Water resources	Water network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

<b>Major project capital expenditure by purpose (£m)</b>							
1	WAT-07288 - WRMP DPC - Elsham to Lincoln Transfer	-	-	-	-	(0.009)	(0.009)
2	WAT-07289 - WRMP DPC- Additional Capacity Elsham WTW	-	-	-	-	-	-
3	WAT-07462 - WRMP North Lincs Deficit DPC	-	-	-	0.002	0.002	0.004
4	WAT-07397 - WRMP19 Adaptive Planning Pre Planning	0.590	-	-	-	-	0.590
5	WAT-07356a - South Lincs Reservoir	1.127	-	-	0.783	-	1.910
6	WAT-07356b - Affinity Trf Dev (A2AT)	-	-	-	-	0.139	0.139
7	WAT-07634 - Fens Reservoir RAPID 2021-23	1.355	-	-	-	-	1.355
8	Capital expenditure purpose - line 8	-	-	-	-	-	-
9	Capital expenditure purpose - line 9	-	-	-	-	-	-
10	Capital expenditure purpose - line 10	-	-	-	-	-	-
11	Total major project capital expenditure	3.072	-	-	0.785	0.132	3.989

Line description	Cumulative expenditure on schemes completed in the report year £m					
	Water resources	Water network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

<b>Major project capital expenditure by purpose (£m)</b>							
1	WAT-07288 - WRMP DPC - Elsham to Lincoln Transfer	-	-	-	-	0.039	0.039
2	WAT-07289 - WRMP DPC- Additional Capacity Elsham WTW	-	-	-	(0.001)	-	(0.001)
3	WAT-07462 - WRMP North Lincs Deficit DPC	-	-	-	0.050	0.056	0.106
4	WAT-07397 - WRMP19 Adaptive Planning Pre Planning	1.581	-	-	-	-	1.581
5	WAT-07356a - South Lincs Reservoir	2.358	-	-	1.639	-	3.997
6	WAT-07356b - Affinity Trf Dev (A2AT)	-	-	-	-	0.292	0.292
7	WAT-07634 - Fens Reservoir RAPID 2021-23	1.912	-	-	-	-	1.912
8	Capital expenditure purpose - line 8	-	-	-	-	-	-
9	Capital expenditure purpose - line 9	-	-	-	-	-	-
10	Capital expenditure purpose - line 10	-	-	-	-	-	-
11	Total major project capital expenditure	5.851	-	-	1.688	0.387	7.926



Line description	Expenditure in report year £m					
	Water resources	Water network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

<b>Major project operating expenditure by purpose (£m)</b>							
12	Operating expenditure purpose - line 1	-	-	-	-	-	-
13	Operating expenditure purpose - line 2	-	-	-	-	-	-
14	Operating expenditure purpose - line 3	-	-	-	-	-	-
15	Operating expenditure purpose - line 4	-	-	-	-	-	-
16	Operating expenditure purpose - line 5	-	-	-	-	-	-
17	Operating expenditure purpose - line 6	-	-	-	-	-	-
18	Operating expenditure purpose - line 7	-	-	-	-	-	-
19	Operating expenditure purpose - line 8	-	-	-	-	-	-
20	Operating expenditure purpose - line 9	-	-	-	-	-	-
21	Operating expenditure purpose - line 10	-	-	-	-	-	-
22	Total major project operating expenditure	-	-	-	-	-	-

Line description	Expenditure in report year £m					
	Water resources	Water network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

<b>Major project operating expenditure by purpose (£m)</b>						
12	Operating expenditure purpose - line 1	-	-	-	-	-
13	Operating expenditure purpose - line 2	-	-	-	-	-
14	Operating expenditure purpose - line 3	-	-	-	-	-
15	Operating expenditure purpose - line 4	-	-	-	-	-
16	Operating expenditure purpose - line 5	-	-	-	-	-
17	Operating expenditure purpose - line 6	-	-	-	-	-
18	Operating expenditure purpose - line 7	-	-	-	-	-
19	Operating expenditure purpose - line 8	-	-	-	-	-
20	Operating expenditure purpose - line 9	-	-	-	-	-
21	Operating expenditure purpose - line 10	-	-	-	-	-
22	Total major project operating expenditure	-	-	-	-	-

### **Elsham to Lincoln Transfer**

**1** Please refer to commentary for table 6F.

### **North Lincs Deficit**

**2** Please refer to commentary for table 6F.

### **South Lincs and Fens Reservoirs**

**3** We are developing three strategic options as part of the Strategic Resource Option (SRO) programme overseen by RAPID (the Regulators' Alliance for Progressing Infrastructure Development):

- The Fens Reservoir which is being promoted jointly by Anglian Water and Cambridge Water
- The Lincolnshire Reservoir (previously the South Lincolnshire Reservoir, SLR); and
- The Peterborough to Grafham (P2G) strategic transfer (previously the Anglian to Affinity transfer, A2AT)

**4** The main achievement in 2022 was the identification of the preferred sites for both reservoirs. Fens Reservoir is proposed to be located just north of Chatteris and the Lincolnshire Reservoir south-east of Sleaford. The first round of non-statutory public consultation took place on these sites in October to December 2022 with good attendance at all events. Gate two reports were submitted in November 2022 with the draft decisions published in March 2023 confirming that all three options are able to progress to the next stage of the RAPID gated process. The draft regional plan and draft Water Resource Management Plans were published at the end of 2022 and both confirmed the need for the reservoirs.

**5** The Lincolnshire Reservoir and the P2G were originally promoted jointly by Anglian Water and Affinity Water but water resource modelling has confirmed there will be no exports from the region and therefore Anglian Water is now the sole promoter of the two options. The scope of the P2G has reduced to reflect this; providing a strategic transfer from Peterborough to Grafham only.

**6** Stakeholder engagement continues to be instrumental to this process with regular engagement with two stakeholder partnerships (the Lincolnshire Reservoir Working Partnership and the Fens Water Partnership) and the development of Topic Working Groups. The focus this year is around on-site surveys for both ecology and ground investigations, and option selection to determine the preferred routes for the transfers; location of the treatment works; and emergency drawdown solution. This will form the basis of the next public consultation in spring 2024 and the RAPID gate three reports which are to be submitted in September 2023.



	Cumulative expenditure on schemes completed in the report year £m								
	Wastewater network+					Bioresources			Total
	Sewage collection			Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal	
	Foul	Surface water drainage	Highway drainage						

<b>Major project capital expenditure by purpose (£m)</b>										
1	Capital expenditure purpose - line 1	-	-	-	-	-	-	-	-	-
2	Capital expenditure purpose - line 2	-	-	-	-	-	-	-	-	-
3	Capital expenditure purpose - line 3	-	-	-	-	-	-	-	-	-
4	Capital expenditure purpose - line 4	-	-	-	-	-	-	-	-	-
5	Capital expenditure purpose - line 5	-	-	-	-	-	-	-	-	-
6	Capital expenditure purpose - line 6	-	-	-	-	-	-	-	-	-
7	Capital expenditure purpose - line 7	-	-	-	-	-	-	-	-	-
8	Capital expenditure purpose - line 8	-	-	-	-	-	-	-	-	-
9	Capital expenditure purpose - line 9	-	-	-	-	-	-	-	-	-
10	Capital expenditure purpose - line 10	-	-	-	-	-	-	-	-	-
11	Total major project capital expenditure	-	-	-	-	-	-	-	-	-



	Expenditure in report year £m								
	Wastewater network+					Bioresources			Total
	Sewage collection			Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal	
	Foul	Surface water drainage	Highway drainage						

<b>Major project operating expenditure by purpose (£m)</b>										
12	Operating expenditure purpose - line 1	-	-	-	-	-	-	-	-	-
13	Operating expenditure purpose - line 2	-	-	-	-	-	-	-	-	-
14	Operating expenditure purpose - line 3	-	-	-	-	-	-	-	-	-
15	Operating expenditure purpose - line 4	-	-	-	-	-	-	-	-	-
16	Operating expenditure purpose - line 5	-	-	-	-	-	-	-	-	-
17	Operating expenditure purpose - line 6	-	-	-	-	-	-	-	-	-
18	Operating expenditure purpose - line 7	-	-	-	-	-	-	-	-	-
19	Operating expenditure purpose - line 8	-	-	-	-	-	-	-	-	-
20	Operating expenditure purpose - line 9	-	-	-	-	-	-	-	-	-
21	Operating expenditure purpose - line 10	-	-	-	-	-	-	-	-	-
22	Total major project operating expenditure	-	-	-	-	-	-	-	-	-

- 1 We have no major Wastewater projects.



**Table 4H - Financial Metrics**

	Line description	Units	Current year	AMP to date
<b>Financial indicators</b>				
1	Net debt	£m	6,602.247	-
2	Regulatory equity	£m	3,356.270	-
3	Regulatory gearing	%	66.30%	-
4	Post tax return on regulatory equity	%	-9.30%	-
5	RORE (return on regulatory equity)	%	1.08%	2.90%
6	Dividend yield	%	4.80%	-
7	Retail profit margin - Household	%	0.99%	-
8	Retail profit margin - Non household	%	0.00%	-
9	Credit rating - Fitch	Text	A- (Stable)	-
10	Credit rating - Moody's	Text	A3 (Stable)	-
11	Credit rating - Standard and Poor's	Text	A- (Negative)	-
12	Return on RCV	%	4.78%	-
13	Dividend cover	dec	1.491	-
14	Funds from operations (FFO)	£m	532.140	-
15	Interest cover (cash)	dec	3.660	-
16	Adjusted interest cover (cash)	dec	1.330	-
17	FFO/Net debt	dec	0.081	-
18	Effective tax rate	%	8.42%	-
19	RCF	£m	370.894	-
20	RCF/Net debt	dec	0.056	-
<b>Borrowings</b>				
21	Proportion of borrowings which are fixed rate	%	26.50%	-
22	Proportion of borrowings which are floating rate	%	7.16%	-
23	Proportion of borrowings which are index linked	%	66.33%	-
24	Proportion of borrowings due within 1 year or less	%	6.72%	-
25	Proportion of borrowings due in more than 1 year but no more than 2 years	%	4.80%	-
26	Proportion of borrowings due in more than 2 years but but no more than 5 years	%	21.02%	-
27	Proportion of borrowings due in more than 5 years but no more than 20 years	%	50.39%	-
28	Proportion of borrowings due in more than 20 years	%	17.07%	-

**Net debt (4H.1)**

**1** Net debt has increased this year due to higher inflation rates driving higher indexation on index-linked debt and due to the continued investment in the capex programme.

**2** There are several differences between statutory and regulatory net debt. These are principally that regulatory net debt excludes: swap accretion; accrued interest; accounting fair value adjustments; and debt issue costs. A full reconciliation between statutory and regulatory net debt can be found in the commentary to Table 1E.

**Regulated equity (4H.2)**

**3** Compared with prior year regulated equity has increased by £329.0 million to £3,356.3 million. This principally reflects the increase in RCV over the year and the increase in net debt discussed above.

**Regulated gearing (4H.3)**

**4** Regulated gearing represents net debt per table 1E divided by year-end RCV.

**Post tax return on regulated equity (4H.4)**

**5** In the previous year the return was -0.33 per cent. A break down of the calculation for both years is shown below for information.

Line description	2021/22	2022/23
Profit/(loss) before tax and fair value movements (£m)	26.957	(323.232)
UK corporation tax (£m)	19.676	26.512
Profit/(loss) after current tax (excluding fair value movements) (£m)	(7.281)	(296.720)
Regulated equity (average for year) (£m)	2,202.080	3,191.758
Post tax return on regulated equity (%)	(0.3)	(9.3)

**RORE (4H.5)**

**6** RORE is calculated in table 1F, please refer to the table and associated commentary for more detail. The Ofwat submission table displays RORE as a decimal and not a percentage.

**Dividend yield (4H.6)**

**7** A dividend of £169.0 million (£161.0 million appointed) was paid in the 2022/23 year compared to £96.3 million (£83.0 million appointed) payment in the 2021/22 year.

**Retail profit margin - household and non-household (4H.7 and 4H.8)**

**8** Both lines 7 and 8 are Ofwat calculated cells.

**9** The retail profit margins are calculated as earnings before interest and tax (after deducting wholesale charges) divided by total revenue charged to household or non-household customers respectively. Details of movements are shown in the table and discussed in the commentary to 2I and 2C.

**10** Non-household retail margin is 0.0 per cent as a result of the transfer of the non-household retail business in 2017/18 and our exit from the non-household retail market.

**Credit Rating (4H.9 - 4H.11)**

**11** The A3 (stable) relates to our Corporate Family Rating by Moody's. This is on a stable outlook as at 31 March 2023.

**12** Moody's also rate our debt as A3 and have this on stable outlook as at 31 March 2023.

**13** S&P rate our Class A debt as A- and have this on negative outlook as at 31 March 2023.

**14** Fitch rate our Class A debt as A- and have this on stable outlook as at 31 March 2023.

#### **Return on RCV (4H.12)**

**15** Return on RCV for the year was 4.8 per cent compared with 5.6 per cent for the prior year. The decrease is consistent with the reduction in profit before interest, after current tax, compared with the prior year, and the increase in average RCV.

#### **Dividend cover (4H.13)**

**16** A dividend of £169.0 million (£161.0 million appointed) was paid in the 2022/23 year compared to £96.3 million (£83.0 million appointed) payment in the 2021/22 year.

#### **Funds from operations (4H.14)**

**17** FFO is net cash generated from operating activities adjusted to remove the changes in working capital. Ofwat acknowledge that their approach to calculating this differs from some of the methodologies applied by the credit rating agencies.

**18** FFO for the year was **£532.1 million** compared with £494.3 million for the prior year. The increase is due principally due to the movement in cash generated from operations and movement in working capital discussed in the commentary for table 1D.

#### **Interest cover (cash) (4H.15)**

**19** Interest cover (cash) equals FFO as calculated above plus interest paid on borrowings (1D.10), divided by interest paid on borrowings (1D.10). Interest paid on borrowings excludes any accretion of interest-linked debt which is a non-cash item and is made up of interest paid £200.6 million, interest paid on leases £0.9 million and interest receivable £15.0 million.

**20** The interest cover ratio for the 2022/23 year was **3.66** compared with 3.22 for the 2021/22 year. This metric has increased due to the higher FFO.

#### **Adjusted interest cover (cash) (4H.16)**

**21** Adjusted interest cover (cash) is calculated as per the above but with FFO plus interest paid adjusted for regulatory depreciation of £469.5 million (2022: £413.4 million) as published by Ofwat.

**22** The cover ratio for the 2022/23 year was 1.3 compared with 1.4 for the 2021/22 year. This decrease is a result of the increase in interest payments, as discussed in the commentary to 1D, and the increase in the regulatory depreciation.

#### **FFO/debt (4H.17)**

**23** The ratio for 2022/23 is 0.08 which is marginally lower to that disclosed in the prior year, 0.09. This reflects the increase in FFO, offset by the increase net debt in the current report year.

**24** As noted above, Ofwat acknowledges that its approach to calculating FFO/debt differs from some of the methodologies applied by the credit rating agencies.

#### **Effective tax rate (4H.18)**

**25** Effective tax rate is the current tax charge for the appointed business as a percentage of the profit before tax and fair value movements for the appointed business.

**26** The rate for 2022/23 was **8.42** per cent compared with (54.1) per cent in the prior year as set out in the following table:

	2021/22	2022/23
	£m	£m
Profit/(loss) before tax per the Annual Performance Report	(142.1)	322.1
Fair value loss on derivatives included in Profit before tax	(115.1)	645.3
Profit/(loss) excluding Fair value loss on derivatives (A)	(27.0)	<b>(323.2)</b>
Corporation tax charged at 19% (2020-21: 19%)	(5.1)	<b>61.9</b>
Depreciation and amortisation	54.9	59.1
Capital allowances	(45.5)	(112.8)
Capital allowances superdeductions	(7.6)	(10.8)
Items not taxable	(8.3)	(9.5)
Items not deductible for tax purposes	2.6	2.3
Capital grants and contributions	(4.9)	(5.0)
Pension payments	(3.4)	(5.5)
Change in general provision movement	(1.7)	0.7
Transitional adjustment on adoption of SaaS	(9.9)	0
Losses carried forward	14.3	115.7
Current tax charge for the year before adjustments in respect of previous years (B)	(14.6)	<b>(27.2)</b>
Adjustments in respect of previous years	(5.1)	0.7
Current tax charge for the year after adjustments in respect of previous years	(19.7)	<b>(26.5)</b>
Effective tax rate (B/A)	-54.10%	<b>8.42%</b>

**Retained cash flow (RCF) (4H.19)**

**27** Retained cash flow for the year was **£370.9 million** compared with £411.3 million for the prior year. The decrease results largely from there being a £161.0 appointed dividend paid in the current year.

**RCF/Net debt (4H.20)**

**28** The ratio for the year was **0.08** as a result of the movement in RCF and net debt discussed above.

**Borrowings (4H.21 - 4H.28)**

**29** The Group's policy for the management of interest rate risk is to achieve a balanced mix of funding at index-linked (to RPI or CPI and, in time, CPIH), fixed and floating rates of interest. The Group endeavours to obtain the finest rates (lowest borrowing and finest depositing rates) consistent with ensuring that the relevant treasury objectives are met in full, i.e. the provision of adequate finance for Anglian Water Services Group at all times and maintaining security of principal.

**30** The proportion of borrowings split between fixed, floating and index-linked has changed modestly from the prior year. The main drivers for those change are given in the Table 1E commentary. The Treasury policy was updated and approved by the Board in January 2022 and confirmed the policy for inflation linked debt, as a proportion of RCV, to be a range of 45-55 per cent with CPIH hedging to be undertaken subject to the market developing and floating rate debt to be in a 5-15 per cent range.

**31** The maturity profile of our debt reflects the long average life of our assets and is structured to ensure the avoidance of significant concentrations of refinancing within any individual period. The weighted average years to maturity is 11.3 years and the weighted exposure to tenor of issue is 19.6 years. The main change is due to accretion on the longer dated index linked debt and the effluxion of time in relation to debt maturities and amortisation schedules.



<b>Currency interest rate</b>										
14	Currency interest rate swaps USD	110.530	-	129.725	40.067	280.322	(46.988)	-	-	-
15	Currency interest rate swaps EUR	-	-	-	-	-	-	-	-	-
16	Currency interest rate swaps YEN	-	-	-	101.230	101.230	16.681	-	-	-
17	Currency interest rate swaps Other	-	-	-	224.820	224.820	0.287	-	-	-
18	Total	110.530	-	129.725	366.116	606.372	(30.020)	-	-	-

<b>Forward currency contracts</b>										
19	Forward currency contracts USD	-	-	-	-	-	-	-	-	-
20	Forward currency contracts EUR	-	-	-	-	-	-	-	-	-
21	Forward currency contracts YEN	-	-	-	-	-	-	-	-	-
22	Forward currency contracts CAD	-	-	-	-	-	-	-	-	-
23	Forward currency contracts AUD	-	-	-	-	-	-	-	-	-
24	Forward currency contracts HKD	-	-	-	-	-	-	-	-	-
25	Forward currency contracts Other	-	-	-	-	-	-	-	-	-
26	Total	-	-	-	-	-	-	-	-	-

<b>Other financial derivatives</b>										
27	Other financial derivatives	60.949	34.158	229.637	364.121	688.866	53.585	-	-	-
28	Total financial derivatives	171.479	259.158	1,114.576	2,560.730	4,105.943	696.913	339.967	-	-





43	Currency interest rate swaps EUR	-	-	-	-	-	-	-	-
44	Currency interest rate swaps YEN	-	-	-	-	-	-	-	-
45	Currency interest rate swaps Other	-	-	-	-	-	-	-	-
46	Total	-	-	-	-	-	-	-	-

<b>Forward currency contracts</b>									
47	Forward currency contracts USD	-	-	-	-	-	-	-	-
48	Forward currency contracts EUR	-	-	-	-	-	-	-	-
49	Forward currency contracts YEN	-	-	-	-	-	-	-	-
50	Forward currency contracts CAD	-	-	-	-	-	-	-	-
51	Forward currency contracts AUD	-	-	-	-	-	-	-	-
52	Forward currency contracts HKD	-	-	-	-	-	-	-	-
53	Forward currency contracts Other	-	-	-	-	-	-	-	-
54	Total	-	-	-	-	-	-	-	-

<b>Other financial derivatives</b>									
55	Other financial derivatives	-	-	-	-	-	-	-	-
56	Total financial derivatives	-	150.000	-	983.827	1,133.827	541.920	276.543	-



71	Currency interest rate swaps EUR	-	-	-	-	-	-	-	-
72	Currency interest rate swaps YEN	-	-	-	-	-	-	-	-
73	Currency interest rate swaps Other	-	-	-	-	-	-	-	-
74	Total	-	-	-	-	-	-	-	-

<b>Forward currency contracts</b>									
75	Forward currency contracts USD	-	-	-	-	-	-	-	-
76	Forward currency contracts EUR	-	-	-	-	-	-	-	-
77	Forward currency contracts YEN	-	-	-	-	-	-	-	-
78	Forward currency contracts CAD	-	-	-	-	-	-	-	-
79	Forward currency contracts AUD	-	-	-	-	-	-	-	-
80	Forward currency contracts HKD	-	-	-	-	-	-	-	-
81	Forward currency contracts Other	-	-	-	-	-	-	-	-
82	Total	-	-	-	-	-	-	-	-

<b>Other financial derivatives</b>									
83	Other financial derivatives	-	-	-	-	-	-	-	-
84	Total financial derivatives	-	-	-	-	-	-	-	-



99	Currency interest rate swaps EUR	-	-	-	-	-	-	-	-
100	Currency interest rate swaps YEN	-	-	-	-	-	-	-	-
101	Currency interest rate swaps Other	-	-	-	-	-	-	-	-
102	Total	-	-	-	-	-	-	-	-

Forward currency contracts									
103	Forward currency contracts USD	-	-	-	-	-	-	-	-
104	Forward currency contracts EUR	-	-	-	-	-	-	-	-
105	Forward currency contracts YEN	-	-	-	-	-	-	-	-
106	Forward currency contracts CAD	-	-	-	-	-	-	-	-
107	Forward currency contracts AUD	-	-	-	-	-	-	-	-
108	Forward currency contracts HKD	-	-	-	-	-	-	-	-
109	Forward currency contracts Other	-	-	-	-	-	-	-	-
110	Total	-	-	-	-	-	-	-	-

Other financial derivatives									
111	Other financial derivatives	60.949	34.158	229.637	364.121	688.865	53.585	-	-
112	Total financial derivatives	60.949	109.158	984.850	1,210.787	2,365.744	185.012	63.425	-

Line description	Financial derivatives – (D) Other swaps								
	Nominal value by maturity (net) at 31 March				Total value at 31 March		Total accretion at 31 March	Interest rate (weighted average for 12 months to 31 March 2021)	
	0 to 1 years	1 to 2 years	2 to 5 years	Over 5 years	Nominal value (net)	Mark to Market		Payable	Receivable
Units	£m	£m	£m	£m	£m	£m	£m	%	%

<b>Interest rate swap (sterling)</b>									
113	Floating to fixed rate	-	-	-	-	-	-	-	-
114	Floating from fixed rate	-	-	-	-	-	-	-	-
115	Floating to index linked	-	-	-	-	-	-	-	-
116	Floating from index linked	-	-	-	-	-	-	-	-
117	Fixed to index-linked	-	-	-	-	-	-	-	-
118	Fixed from index-linked	-	-	-	-	-	-	-	-
119	Index-linked to index-linked	-	-	-	-	-	-	-	-
120	Total	-	-	-	-	-	-	-	-

<b>Foreign Exchange</b>									
121	Cross currency swap USD	-	-	-	-	-	-	-	-
122	Cross currency swap EUR	-	-	-	-	-	-	-	-
123	Cross currency swap YEN	-	-	-	-	-	-	-	-
124	Cross currency swap Other	-	-	-	-	-	-	-	-
125	Total	-	-	-	-	-	-	-	-

<b>Currency interest rate</b>									
126	Currency interest rate swaps USD	110.530	-	129.725	40.067	280.322	(46.988)	-	-
127	Currency interest rate swaps EUR	-	-	-	-	-	-	-	-
128	Currency interest rate swaps YEN	-	-	-	101.230	101.230	16.681	-	-
129	Currency interest rate swaps Other	-	-	-	224.820	224.820	0.287	-	-
130	Total	110.530	-	129.725	366.116	606.372	(30.020)	-	-

<b>Forward currency contracts</b>									
131	Forward currency contracts USD	-	-	-	-	-	-	-	-
132	Forward currency contracts EUR	-	-	-	-	-	-	-	-
133	Forward currency contracts YEN	-	-	-	-	-	-	-	-
134	Forward currency contracts CAD	-	-	-	-	-	-	-	-
135	Forward currency contracts AUD	-	-	-	-	-	-	-	-
136	Forward currency contracts HKD	-	-	-	-	-	-	-	-
137	Forward currency contracts Other	-	-	-	-	-	-	-	-
138	Total	-	-	-	-	-	-	-	-
<b>Other financial derivatives</b>									
139	Other financial derivatives	-	-	-	-	-	-	-	-
140	Total financial derivatives	110.530	-	129.725	366.116	606.372	(30.020)	-	-

**1** The nominal value is the face value of the financial instruments. These instruments are marked to market at the end of each reporting period and reported in the balance sheet at their fair value. The total fair value of financial instruments in Table 1C of £696.9 million agrees to the table. The power positions have been included based on the RAG guidance document which stipulates power as an example of other financial derivatives.

#### **Floating to fixed rate (4I.1)**

**2** During the year, the following changes occurred in the floating to fixed rate category:

- A BNP swap of £17.9 million matured during the year.

**3** Changes in bucketing relate to the natural passage of time. Interest rate here are higher than last year reflecting higher market rates.

#### **Floating from fixed rate (4I.2)**

**4** During the year, the following changes occurred in the floating from fixed rate category:

- A BNP swap of £17.9 million matured during the year.

**5** Changes in bucketing relate to the natural passage of time. Interest rate here are higher than last year reflecting higher market rates.

#### **Floating to index linked (4I.3)**

**6** There is no change in net notional, though there has been a change to the bucketing in respect of the maturities of £150 million of swaps.

**7** Weighted average interest rates payable for index-linked debt have increased during the year due to higher inflation. Weighted average interest rates receivable has increased reflecting the upward movement in SONIA rates within the year.

#### **Fixed to index linked (4I.5)**

**8** No notable movements in this category as no new swaps have been executed or existing swaps maturing.

#### **Currency interest rate swaps USD/YEN/CAD (4I.14 - 4I.17)**

**9** The only movement on the cross currency swaps line relates to:

- New swap in respect of a C\$350 million bond.

**10** Weighted average interest rate is no longer required, so not compared.



**Other financial derivatives (4I.23)**

**11** Other financial derivatives consists of power hedges and fixed to fixed interest rate swaps.

- There was no movement on fixed to fixed interest rate swaps.
- There was £60 million increase in commodity hedges due to increased hedging during the year

**12** Weighted average interest rate is no longer required, so not compared.

**Assumptions:**

**13** For floating rate derivatives, the SONIA rate as of 31 March 2023 has been used for calculations (4.2%). Similarly, for inflation linked derivatives, we have used a RPI rate of 13.5% and CPI rate of 10.1% which are both based on March 2023 inflation figures.

**14** The Anglian Water Services Financing Group holds some derivative financial instruments which contain more than 2 legs (i.e. multiple pay and receive legs). In legal terms these form a single contract but these have been split (where applicable) to reflect the relevant risks implied on an individual leg basis.

**15** The Mark to Market position is the full fair value of the positions with the total accretion column representing the accretion component of this full amount. Positive numbers are liability and negative numbers are asset as per the RAG.

**Table 4J - Base expenditure analysis for the 12 months ended 31 March 2023 - water resources and water network+**

Line description	Water resources	Water network+				Total
		Raw water distribution	Raw water storage	Water treatment	Treated water distribution	
<b>Operating expenditure (£m)</b>						
1 Power	9.241	4.477	0.236	8.078	16.028	38.060
2 Income treated as negative expenditure	(0.280)	(0.038)	(0.020)	(0.359)	(0.641)	(1.338)
3 Bulk Supply/Bulk discharge	-	-	-	2.358	0.201	2.559
4 Renewals expensed in year (infrastructure)	-	-	-	-	34.738	34.738
5 Renewals expensed in year (non-infrastructure)	-	-	-	-	-	-
6 Other operating expenditure	16.343	3.860	0.217	36.487	71.728	128.636
7 Local authority and Cumulo rates	2.376	0.303	-	4.588	25.937	33.204
<b>Service Charges (£m)</b>						
8 Canal & River Trust abstraction charges/ discharge consents	-	-	-	-	-	-
9 Environment Agency / NRW abstraction charges/ discharge consents	10.096	-	-	0.483	-	10.579
10 Other abstraction charges/ discharge consents	-	-	-	-	-	-
<b>Location specific costs &amp; obligations (£m)</b>						
11 Costs associated with Traffic Management Act	-	-	-	-	0.944	0.944
12 Costs associated with lane rental schemes	-	-	-	-	-	-
13 Statutory water softening	-	-	-	-	-	-
14 Total base operating expenditure	37.776	8.602	0.433	51.635	148.935	247.382
<b>Capital expenditure (£m)</b>						
15 Maintaining the long term capability of the assets - infra	0.406	0.282	-	-	20.701	21.389
16 Maintaining the long term capability of the assets - non-infra	4.650	0.151	(0.045)	18.364	46.712	69.832
17 Total base capital expenditure	5.056	0.433	(0.045)	18.364	67.413	91.221
<b>Traffic Management Act (nr)</b>						
18 Projects incurring costs associated with Traffic Management Act	-	-	-	-	18,002.000	18,002.000

## Power

**1** The wholesale cost of power increased substantially in 2022/23 due to external market conditions. However, our exposure to the unprecedented price rises was reduced through our energy hedging strategy. Our strategy is to buy multiple forward contracts for future years usage, over time in incremental blocks. These are purchased on the forward wholesale market and via market reflective power purchase agreements. This in effect fixes our wholesale cost at an average price of all the forward contracts for the relevant year. Although in 2022/23 this approach largely protected us from the significant spikes in the wholesale energy market, there remains longer term cost impacts to the company. In volatile market conditions, forecasting the direction of future prices is a risk decision, and we spread the risk by building up our purchase of future energy use over time, and we do so to ensure financial certainty, not to outperform the market. A hedging strategy of this nature, by its design, avoids the highs, but also the lows in markets through the multiple purchase of small volumes of energy over time. The result is that a large proportion of the overall forward energy purchase for the years 2023/24 and 2024/25 includes high-cost contracts purchased during the high-cost period in 2021/22 and 2022/23. Thus, whilst we may currently appear to be resilient to the market price spikes, we will see our energy cost approximately double in 2023/24 and remain high in 2024/25, regardless of what the volatile market price actually does in those years, because of the strategy of buying forward contracts.

### Maintenance Infra - Treated water distribution

**2** The year-on year-increase seen in capital maintenance spend on our treated water distribution networks is primarily driven by the capitalisation of £3.7 million relating to the installation of mains fittings to reflect the long term use of these assets. This expenditure was recognised as operating expenditure in 2021/22. Due to the adverse weather, £1.3 million relates to increased capitalisation on burst mains as volumes increased year on year and also due to replacing an additional 3km more in the distribution network. The remainder relates to various schemes where spend has increased as they were in planning stages in the prior year.

### Maintenance non-infra – Water resources

**3** This year-on year increase follows lower levels of prior year expenditure on borehole related schemes including drilling and fitout, energy optimisation and general capital maintenance. In addition, expenditure to address emerging needs at river intakes and pumping stations was over and above 2021/22 levels.

### Maintenance non-infra – Water treatment

**4** The decrease in annual expenditure on water treatment is driven mainly by lower expenditure on a large maintenance scheme at at Watton water treatment works (£1.3 million) alongside a number of smaller schemes where equivalent expenditure was higher in the previous financial year.

### Maintenance non-infra - Treated water distribution

**5** The year-on-year decrease seen in capital maintenance is due to reporting maintenance costs of £14.7 million for smart meters in Table 4L as part of enhancement spend in 2022-23.

**6** 2021-22 was impacted by the shortage of microprocessors, therefore more dumb-to-dumb exchanges were purchased, which are classed as maintenance rather than enhancement.

**7** The decrease in smart meter spend is offset by a year on year increase of £5.1 million relating to stop taps in 2022-23 due to capitalising costs of £2.1 million attributed to staff. £3 million relates to an increase in costs relating to general inflation and increased job costs.

**8** There is also a further increase of costs of £4.7 million relating to smaller schemes that commenced in 2022-23.

**Table 4K - Base expenditure analysis for the 12 months ended 31 March 2023 - wastewater network + and bioresources**

Line description	Expenditure in report year									
	Wastewater network+					Bioresources			Total	
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge Transport	Sludge Treatment	Sludge Disposal		
<b>Operating expenditure (£m)</b>										
1	Power	11.239	3.082	1.212	28.951	0.896	0.003	0.487	-	45.870
2	Income treated as negative expenditure	(0.074)	(0.020)	(0.008)	(0.887)	(0.001)	(0.007)	(9.481)	(1.972)	(12.450)
3	Bulk Supply/Bulk discharge	-	-	-	-	-	-	-	-	-
4	Renewals expensed in year (infrastructure)	10.625	2.914	1.150	-	-	-	-	-	14.689
5	Renewals expensed in year (non-infrastructure)	-	-	-	-	-	-	-	-	-
6	Other operating expenditure	41.823	12.063	5.282	82.583	2.711	32.536	39.803	14.989	231.790
7	Local authority and Cumulo rates	0.097	0.027	0.011	20.066	0.554	0.101	3.099	0.011	23.966
<b>Service Charges (£m)</b>										
8	Canal & River Trust abstraction charges/ discharge consents	0.118	0.033	0.013	-	-	-	-	-	0.164
9	EA / NRW abstraction charges/ discharge consents	1.415	0.388	0.152	6.192	0.069	-	0.212	-	8.428
10	Other abstraction charges/ discharge consents	-	-	-	-	-	-	-	-	-
<b>Location specific costs &amp; obligations (£m)</b>										
11	Costs associated with Traffic Management Act	0.082	-	-	-	-	-	-	-	0.082
12	Costs associated with lane rental schemes	-	-	-	-	-	-	-	-	-
13	Costs associated with Industrial emissions directive	-	-	-	-	-	-	-	-	-
14	Total base operating expenditure	65.326	18.486	7.812	136.905	4.229	32.632	34.121	13.028	312.538
<b>Capital expenditure (£m)</b>										
15	Maintaining the long term capability of the assets - infra	33.081	9.194	3.568	-	-	-	-	-	45.843
16	Maintaining the long term capability of the assets - non-infra	19.446	5.333	2.097	115.152	-	0.002	14.353	2.458	158.841
17	Total base capital expenditure	52.527	14.527	5.665	115.152	-	0.002	14.353	2.458	204.684

Traffic Management Act (nr)										
18	Projects incurring costs associated with Traffic Management Act	870.000	-	-	-	-	-	-	-	870.000

Operating expenditure (AMP 7 shadow reported values) (£m)										
19	Power	-	-	-	7.254	-	-	6.245	-	13.499
20	Income treated as negative expenditure	-	-	-	-	-	-	(13.746)	-	(13.746)

#### 4K.2 Income treated as negative expenditure

**1** Sewage treatment - Income treated as negative expenditure has increased in real terms by £1.2 million, due to an increase in exported power benefit.

##### Power

**2** The wholesale cost of power increased substantially in 2022/23 due to external market conditions. However, our exposure to the unprecedented price rises was reduced through our energy hedging strategy. Our strategy is to buy multiple forward contracts for future years usage, over time in incremental blocks. These are purchased on the forward wholesale market and via market reflective power purchase agreements. This in effect fixes our wholesale cost at an average price of all the forward contracts for the relevant year. Although in 2022/23 this approach largely protected us from the significant spikes in the wholesale energy market, there remains longer term cost impacts to the company. In volatile market conditions, forecasting the direction of future prices is a risk decision, and we spread the risk by building up our purchase of future energy use over time, and we do so to ensure financial certainty, not to outperform the market. A hedging strategy of this nature, by its design, avoids the highs, but also the lows in markets through the multiple purchase of small volumes of energy over time. The result is that a large proportion of the overall forward energy purchase for the years 2023/24 and 2024/25 includes high-cost contracts purchased during the high-cost period in 2021/22 and 2022/23. Thus, whilst we may currently appear to be resilient to the market price spikes, we will see our energy cost approximately double in 2023/24 and remain high in 2024/25, regardless of what the volatile market price actually does in those years, because of the strategy of buying forward contracts.

##### Maintenance infra

**3** The increase seen in Sewage Collection was driven principally by continued additional spend on proactive network maintenance, CCTV and relining activities driven by a focus on pollution incidents reduction.

##### Maintenance non-infra

**4** Small variances exist across all areas of non-infra sewage maintenance activity; treatment increase included work at Southend and sludge treatment including work at Gt Billing as advised in the Bioresources opex commentary for table 4E.

#### Shadow Reporting Line 19 & 20

**5** We have adjusted the values for Power & Income treated as negative opex to reflect the required shadow reporting position.

## Table 4L - Enhancement Expenditure - Wholesale Water

Line description		Expenditure in report year						
		Water resources	Water network+				Total	
			Raw water transport	Raw water storage	Water treatment	Treated water distribution		
<b>EA/NRW environmental programme (WINEP/NEP) (£m)</b>								
1	Ecological improvements at abstractions	Capex	0.263	(0.161)	-	-	-	0.102
2	Ecological improvements at abstractions	Opex	1.226	-	-	-	-	1.226
3	Ecological improvements at abstractions	Totex	1.489	(0.161)	-	-	-	1.328
4	Eels Regulations (measures at intakes)	Capex	1.449	-	-	-	-	1.449
5	Eels Regulations (measures at intakes)	Opex	0.015	-	-	-	-	0.015
6	Eels Regulations (measures at intakes)	Totex	1.464	-	-	-	-	1.464
7	Invasive Non Native Species	Capex	-	-	-	-	-	-
8	Invasive Non Native Species	Opex	-	-	-	-	-	-
9	Invasive Non Native Species	Totex	-	-	-	-	-	-
10	Drinking Water Protected Areas (schemes)	Capex	-	-	-	-	-	-
11	Drinking Water Protected Areas (schemes)	Opex	-	-	-	-	-	-
12	Drinking Water Protected Areas (schemes)	Totex	-	-	-	-	-	-
13	Water Framework Directive measures	Capex	1.990	0.778	-	-	-	2.768
14	Water Framework Directive measures	Opex	-	-	-	-	-	-
15	Water Framework Directive measures	Totex	1.990	0.778	-	-	-	2.768
16	Investigations	Capex	-	-	-	0.104	-	0.104
17	Investigations	Opex	0.003	-	-	0.056	0.219	0.278
18	Investigations	Totex	0.003	-	-	0.160	0.219	0.382
19	Total environmental programme expenditure	Totex	4.946	0.617	-	0.160	0.219	5.942

Line description	Expenditure in report year					
	Water resources	Water network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

Supply-demand balance (£m)								
20	Supply-side improvements delivering benefits in 2020-2025	Capex	0.046	-	-	5.731	0.013	5.790
21	Supply-side improvements delivering benefits in 2020-2025	Opex	-	-	-	-	-	-
22	Supply-side improvements delivering benefits in 2020-2025	Totex	0.046	-	-	5.731	0.013	5.790
23	Demand-side improvements delivering benefits in 2020-2025 (excl leakage and metering)	Capex	-	-	-	-	-	-
24	Demand-side improvements delivering benefits in 2020-2025 (excl leakage and metering)	Opex	-	-	-	-	0.359	0.359
25	Demand-side improvements delivering benefits in 2020-2025 (excl leakage and metering)	Totex	-	-	-	-	0.359	0.359
26	Leakage improvements delivering benefits in 2020-2025	Capex	-	-	-	-	22.216	22.216
27	Leakage improvements delivering benefits in 2020-2025	Opex	-	-	-	-	3.623	3.623
28	Leakage improvements delivering benefits in 2020-2025	Totex	-	-	-	-	25.839	25.839
29	Internal interconnectors delivering benefits in 2020-2025	Capex	-	-	-	0.020	152.204	152.224
30	Internal interconnectors delivering benefits in 2020-2025	Opex	0.128	-	-	-	-	0.128
31	Internal interconnectors delivering benefits in 2020-2025	Totex	0.128	-	-	0.020	152.204	152.352
32	Supply demand balance improvements delivering benefits starting from 2026	Capex	0.590	-	-	-	-	0.590
33	Supply demand balance improvements delivering benefits starting from 2026	Opex	-	-	-	-	-	-
34	Supply demand balance improvements delivering benefits starting from 2026	Totex	0.590	-	-	-	-	0.590
35	Strategic regional water resources	Capex	3.404	-	-	-	-	3.404
36	Strategic regional water resources	Opex	-	-	-	-	-	-
37	Strategic regional water resources	Totex	3.404	-	-	-	-	3.404
38	Total supply demand expenditure	Totex	4.168	-	-	5.751	178.415	188.334



Line description	Expenditure in report year					
	Water resources	Water network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

Metering (£m)								
39	New meters requested by existing customers (optants)	Capex	-	-	-	-	1.674	1.674
40	New meters requested by existing customers (optants)	Opex	-	-	-	-	-	-
41	New meters requested by existing customers (optants)	Totex	-	-	-	-	1.674	1.674
42	New meters introduced by companies for existing customers	Capex	-	-	-	-	0.145	0.145
43	New meters introduced by companies for existing customers	Opex	-	-	-	-	-	-
44	New meters introduced by companies for existing customers	Totex	-	-	-	-	0.145	0.145
45	New meters for existing customers - business	Capex	-	-	-	-	-	-
46	New meters for existing customers - business	Opex	-	-	-	-	-	-
47	New meters for existing customers - business	Totex	-	-	-	-	-	-
48	Replacement of existing basic meters with AMR or AMI meters for household customers	Capex	-	-	-	-	26.480	26.480
49	Replacement of existing basic meters with AMR or AMI meters for household customers	Opex	-	-	-	-	-	-
50	Replacement of existing basic meters with AMR or AMI meters for household customers	Totex	-	-	-	-	26.480	26.480
51	Replacement of existing AMR meters with AMI meters for household customers	Capex	-	-	-	-	-	-
52	Replacement of existing AMR meters with AMI meters for household customers	Opex	-	-	-	-	-	-
53	Replacement of existing AMR meters with AMI meters for household customers	Totex	-	-	-	-	-	-
54	Replacement of existing basic meters with AMR or AMI meters for business customers	Capex	-	-	-	-	1.278	1.278
55	Replacement of existing basic meters with AMR or AMI meters for business customers	Opex	-	-	-	-	-	-
56	Replacement of existing basic meters with AMR or AMI meters for business customers	Totex	-	-	-	-	1.278	1.278
57	Replacement of existing AMR meters with AMI meters for business customers	Capex	-	-	-	-	-	-
58	Replacement of existing AMR meters with AMI meters for business customers	Opex	-	-	-	-	-	-
59	Replacement of existing AMR meters with AMI meters for business customers	Totex	-	-	-	-	-	-

Line description	Expenditure in report year					
	Water resources	Water network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

Metering (£m)								
60	Smart meter infrastructure	Capex	-	-	-	-	3.055	3.055
61	Smart meter infrastructure	Opex	-	-	-	-	1.516	1.516
62	Smart meter infrastructure	Totex	-	-	-	-	4.571	4.571
63	Total metering expenditure	Totex	-	-	-	-	34.148	34.148

Line description	Expenditure in report year					
	Water resources	Water network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

Other enhancement (£m)							
64	Improvements to taste, odour and colour	Capex	-	-	-	-	-
65	Improvements to taste, odour and colour	Opex	-	-	-	-	-
66	Improvements to taste, odour and colour	Totex	-	-	-	-	-
67	Addressing raw water deterioration (grey solutions)	Capex	-	-	-	4.399	4.399
68	Addressing raw water deterioration (grey solutions)	Opex	-	-	-	0.191	0.191
69	Addressing raw water deterioration (grey solutions)	Totex	-	-	-	4.590	4.590
70	Addressing raw water deterioration (green solutions)	Capex	-	-	-	-	-
71	Addressing raw water deterioration (green solutions)	Opex	-	-	-	-	-
72	Addressing raw water deterioration (green solutions)	Totex	-	-	-	-	-
73	Addressing raw water deterioration (total)	Capex	-	-	-	4.399	4.399
74	Addressing raw water deterioration (total)	Opex	-	-	-	0.191	0.191
75	Addressing raw water deterioration (total)	Totex	-	-	-	4.590	4.590
76	Improvements to river flow	Capex	0.928	-	-	0.001	1.234
77	Improvements to river flow	Opex	0.211	-	-	-	0.211
78	Improvements to river flow	Totex	1.139	-	-	0.001	1.445
79	Enhancing resilience to low probability high consequence events	Capex	0.117	-	-	1.486	2.085
80	Enhancing resilience to low probability high consequence events	Opex	-	-	-	-	0.021
81	Enhancing resilience to low probability high consequence events	Totex	0.117	-	-	1.486	2.106
82	Conditioning water to reduce plumbosolvency	Capex	-	-	-	0.535	0.535
83	Conditioning water to reduce plumbosolvency	Opex	-	-	-	-	-
84	Conditioning water to reduce plumbosolvency	Totex	-	-	-	0.535	0.535

Line description	Expenditure in report year					
	Water resources	Water network+				Total
		Raw water transport	Raw water storage	Water treatment	Treated water distribution	

<b>Other enhancement - continued (£m)</b>								
85	Lead communication pipes replaced or relined for water quality	Capex	-	-	-	-	1.191	1.191
86	Lead communication pipes replaced or relined for water quality	Opex	-	-	-	-	0.142	0.142
87	Lead communication pipes replaced or relined for water quality	Totex	-	-	-	-	1.333	1.333
88	Other lead reduction related activity	Capex	-	-	-	-	-	-
89	Other lead reduction related activity	Opex	-	-	-	-	-	-
90	Other lead reduction related activity	Totex	-	-	-	-	-	-
91	Meeting lead standards (total)	Capex	-	-	-	0.535	1.191	1.726
92	Meeting lead standards (total)	Opex	-	-	-	-	0.142	0.142
93	Meeting lead standards (total)	Totex	-	-	-	0.535	1.333	1.868

Line description	Expenditure in report year						
	Water resources	Water network+				Total	
		Raw water transport	Raw water storage	Water treatment	Treated water distribution		

Other enhancement - continued (£m)							
94	Security - SEMD	Capex	-	-	-	-	-
95	Security - SEMD	Opex	-	-	-	-	-
96	Security - SEMD	Totex	-	-	-	-	-
97	Security - Non-SEMD	Capex	-	-	-	3.043	3.043
98	Security - Non-SEMD	Opex	-	-	-	-	-
99	Security - Non-SEMD	Totex	-	-	-	3.043	3.043
100	Additional line 1	Capex	-	-	-	0.553	0.553
101	Additional line 1	Opex	-	-	-	-	-
102	Additional line 2	Capex	-	-	-	-	-
103	Additional line 2	Opex	-	0.059	0.003	0.355	1.436
104	Additional line 3	Capex	-	-	-	-	-
105	Additional line 3	Opex	-	-	-	-	-
106	Additional line 4	Capex	-	-	-	-	-
107	Additional line 4	Opex	-	-	-	-	-
108	Additional line 5	Capex	-	-	-	-	-
109	Additional line 5	Opex	-	-	-	-	-
110	Total other enhancement expenditure	Totex	1.256	0.059	0.003	10.010	15.041

Total enhancement (£m)							
111	Total enhancement expenditure	Capex	8.787	0.617	-	15.319	234.319
112	Total enhancement expenditure	Opex	1.583	0.059	0.003	6.602	9.146
113	Total enhancement expenditure	Totex	10.370	0.676	0.003	15.921	243.465

Line description	Cumulative expenditure on schemes completed in the report year						Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Water resources	Water network+				Total			
		Raw water transport	Raw water storage	Water treatment	Treated water distribution		Total	Total	Total

EA/NRW environmental programme (WINEP/NEP) (£m)										
1	Ecological improvements at abstractions	Capex	-	-	-	-	-	-	-	-
2	Ecological improvements at abstractions	Opex	-	-	-	-	-	-	-	-
3	Ecological improvements at abstractions	Totex	-	-	-	-	-	2.871	-	-
4	Eels Regulations (measures at intakes)	Capex	-	-	-	-	-	-	-	-
5	Eels Regulations (measures at intakes)	Opex	-	-	-	-	-	-	-	-
6	Eels Regulations (measures at intakes)	Totex	-	-	-	-	-	3.758	6.243	8.695
7	Invasive Non Native Species	Capex	-	-	-	-	-	-	-	-
8	Invasive Non Native Species	Opex	-	-	-	-	-	-	-	-
9	Invasive Non Native Species	Totex	-	-	-	-	-	-	3.710	5.167
10	Drinking Water Protected Areas (schemes)	Capex	-	-	-	-	-	-	-	-
11	Drinking Water Protected Areas (schemes)	Opex	-	-	-	-	-	-	-	-
12	Drinking Water Protected Areas (schemes)	Totex	-	-	-	-	-	-	23.563	34.555
13	Water Framework Directive measures	Capex	-	-	-	-	-	-	-	-
14	Water Framework Directive measures	Opex	-	-	-	-	-	-	-	-
15	Water Framework Directive measures	Totex	-	-	-	-	-	3.928	18.762	29.246
16	Investigations	Capex	-	-	-	-	-	-	-	-
17	Investigations	Opex	-	-	-	-	-	-	-	-
18	Investigations	Totex	-	-	-	-	-	1.008	0.818	1.139
19	Total environmental programme expenditure	Totex	-	-	-	-	-	11.565	53.096	78.802

Line description	Cumulative expenditure on schemes completed in the report year						Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Water resources	Water network+				Total			
		Raw water transport	Raw water storage	Water treatment	Treated water distribution		Total	Total	Total

Supply-demand balance (£m)										
20	Supply-side improvements delivering benefits in 2020-2025	Capex	-	-	-	-	-	-	-	-
21	Supply-side improvements delivering benefits in 2020-2025	Opex	-	-	-	-	-	-	-	-
22	Supply-side improvements delivering benefits in 2020-2025	Totex	-	-	-	-	-	7.016	47.040	82.745
23	Demand-side improvements delivering benefits in 2020-2025 (excl leakage and metering)	Capex	-	-	-	-	-	-	-	-
24	Demand-side improvements delivering benefits in 2020-2025 (excl leakage and metering)	Opex	-	-	-	-	-	-	-	-
25	Demand-side improvements delivering benefits in 2020-2025 (excl leakage and metering)	Totex	-	-	-	-	-	1.316	-	-
26	Leakage improvements delivering benefits in 2020-2025	Capex	-	-	-	-	-	-	-	-
27	Leakage improvements delivering benefits in 2020-2025	Opex	-	-	-	-	-	-	-	-
28	Leakage improvements delivering benefits in 2020-2025	Totex	-	-	-	-	-	81.625	47.870	75.661
29	Internal interconnectors delivering benefits in 2020-2025	Capex	-	-	-	-	-	-	-	-
30	Internal interconnectors delivering benefits in 2020-2025	Opex	-	-	-	-	-	-	-	-
31	Internal interconnectors delivering benefits in 2020-2025	Totex	-	-	-	-	-	249.014	275.742	476.166
32	Supply demand balance improvements delivering benefits starting from 2026	Capex	-	-	-	-	-	-	-	-
33	Supply demand balance improvements delivering benefits starting from 2026	Opex	-	-	-	-	-	-	-	-
34	Supply demand balance improvements delivering benefits starting from 2026	Totex	-	-	-	-	-	2.173	3.133	4.905
35	Strategic regional water resources	Capex	-	-	-	-	-	-	-	-
36	Strategic regional water resources	Opex	-	-	-	-	-	-	-	-
37	Strategic regional water resources	Totex	-	-	-	-	-	9.604	12.907	29.273
38	Total supply demand expenditure	Totex	-	-	-	-	-	350.749	386.692	668.750





Line description	Cumulative expenditure on schemes completed in the report year						Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Water resources	Water network+				Total			
		Raw water transport	Raw water storage	Water treatment	Treated water distribution		Total	Total	Total

Metering - continued (£m)											
62	Smart meter infrastructure	Totex	-	-	-	-	-	-	-	-	-
63	Total metering expenditure	Totex	-	-	-	-	-	-	102,997	96,353	152,289



Line description	Cumulative expenditure on schemes completed in the report year						Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Water resources	Water network+				Total			
		Raw water transport	Raw water storage	Water treatment	Treated water distribution		Total	Total	Total

<b>Other enhancement - continued (€m)</b>											
87	Lead communication pipes replaced or relined for water quality	Totex	-	-	-	-	-	-	2,931	-	-
88	Other lead reduction related activity	Capex	-	-	-	-	-	-	-	-	-
89	Other lead reduction related activity	Opex	-	-	-	-	-	-	-	-	-
90	Other lead reduction related activity	Totex	-	-	-	-	-	-	-	-	-
91	Meeting lead standards (total)	Capex	-	-	-	-	-	-	-	-	-
92	Meeting lead standards (total)	Opex	-	-	-	-	-	-	-	-	-
93	Meeting lead standards (total)	Totex	-	-	-	-	-	-	6,500	9,090	14,368

Line description	Cumulative expenditure on schemes completed in the report year						Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Water resources	Water network+				Total			
		Raw water transport	Raw water storage	Water treatment	Treated water distribution		Total	Total	Total

Other enhancement - continued (£m)										
94	Security - SEMD	Capex	-	-	-	-	-	-	-	-
95	Security - SEMD	Opex	-	-	-	-	-	-	-	-
96	Security - SEMD	Totex	-	-	-	-	-	-	-	-
97	Security - Non-SEMD	Capex	-	-	-	-	-	-	-	-
98	Security - Non-SEMD	Opex	-	-	-	-	-	-	-	-
99	Security - Non-SEMD	Totex	-	-	-	-	-	4,588	10,665	16,479
100	Low Pressure (DG2)	Capex	-	-	-	-	-	8,076	-	-
101	Low Pressure (DG2)	Opex	-	-	-	-	-	-	-	-
102	Additional line 2	Capex	-	-	-	-	-	-	-	-
103	Additional line 2	Opex	-	-	-	-	-	-	-	-
104	Additional line 3	Capex	-	-	-	-	-	-	-	-
105	Additional line 3	Opex	-	-	-	-	-	-	-	-
106	Additional line 4	Capex	-	-	-	-	-	-	-	-
107	Additional line 4	Opex	-	-	-	-	-	-	-	-
108	Additional line 5	Capex	-	-	-	-	-	-	-	-
109	Additional line 5	Opex	-	-	-	-	-	-	-	-
110	Total other enhancement expenditure	Totex	-	-	-	-	-	56,929	48,577	76,401

Total enhancement (£m)										
111	Total enhancement expenditure	Capex	-	-	-	-	-	-	-	-
112	Total enhancement expenditure	Opex	-	-	-	-	-	-	-	-
113	Total enhancement expenditure	Totex	-	-	-	-	-	522,241	584,718	976,242

### Enhancement expenditure by purpose

- 1** The above table excludes £0.2 million of enhancement capital expenditure in relation to third-party agreements at the Wing and Grafham water treatment works for resilience. This spend is included within the third party services capex of £1.1 million in table 4D.
- 2** The source of the data is the project systems module of our SAP business management system. Each project holds as part of its master data Business Investment Category (BIC) codes which indicate the Ofwat categories of enhancement and maintenance, infrastructure and non infrastructure, and also align with accounting separation categories. The codes are mapped to their relevant lines in the table.
- 3** It is expected that capital expenditure profiles vary year on year significantly due to the strategic prioritisation of the investment programme. Large projects and stakeholder required investments can lead to variances in year on year comparisons of the same data point.
- 4** Some credits have occurred due to movements and payments to contractors for pain and gain share which are only confirmed when a project is final accounted.
- 5** Schemes addressing low pressure have been separately reported in 4L.100 and 4L.101 Additional line 1 - Low Pressure (DG2).
- 6** We record expenditure in the year in which it is incurred, which means that for many schemes expenditure is spread over a number of years. In contrast, we record outputs in the year that schemes are commissioned. This means that in some years we may show expenditure without any apparent output.

### Variance against allowance

- 7** The below commentary compares our actual and allowed positions. Not all lines have been commented on as we have focused on those with the larger variances.

#### 4L.6 Eels Regulations (Measures at intakes)

- 8** In the first three years of the AMP we have spent £6.3 million. The AMP to date cumulative total is offset by the large negative figure reported in 2020-21.
- 9** Under the collaborative supply chain frameworks we have across our 15 year alliances, we predominantly adopt 'NEC Option C' Target Cost Contracts. These are standard contractual arrangements whereby the supply chain partner and the client are jointly incentivised to deliver work efficiently, and gains made below the agreed target cost are shared between the alliance partners and the client, as are the cost of any overspends. This arrangement ensures collaborative behaviour between all parties and a focus on driving out carbon from solutions. These projects are part of an overall investment portfolio consisting of several thousand projects, with some projects over and some under.
- 10** The negative spend reported in 2020-21 reflects receipt of the partner's share of the overspend on AMP6 Eels projects that were being commercially settled during 2020/21. The impact of the negative figure in 4L.6 also flows through to the total line 4L.19.

#### 4L.12 Drinking Water Protected Areas (schemes)

- 11** The FD allowance for this line was predominantly enhancement opex for catchment management activities, much of which was required to mitigate metaldehyde in raw water sources. Since the ban was reintroduced by the Environment Agency we have scaled back activity in this area to deal with other raw water contaminants.
- 12** In addition, in 2020/21 and 2021/22 we were constrained by the opex-capex ratios in the PR19 FD, which were subsequently adjusted by the CMA FD. The CMA decisions are effective from 2022-23. In years one and two we therefore sought to defer any non-essential enhancement opex into later years where possible.

#### **4L.22 Supply-side improvements delivering benefits in 2020-2025**

**13** The FD allowance on this line was for four main items: Pyewipe (SHB2a), the treatment components of two interconnectors (ELY9 & RTS), and Elsham DPC. The Pyewipe scheme has now been stopped and is being replaced by the North Lincs Alternative Schemes which are in the process of being promoted for delivery in years three to five (see table 6F commentary for more information). The spend profile will therefore be different from that in the business plan. As the ELY9&RTS interconnectors progress through detailed design the balance of costs between treatment spend and pipelines will vary, and the spend will now be incurred on line 4L.31 for interconnectors.

**14** The Elsham interconnector schemes CLN15&CLN16 have been reprofiled following their de-scoping from the DPC process, and are now progressing through our delivery process to be delivered within the AMP.

#### **4L.28 Leakage improvements delivering benefits in 2020-2025**

**15** We are investing more in leakage improvement to mitigate the level of leakage in year to ensure the leakage management demand side reductions can be met to enable supply demand balance to be maintained. The summer of 2022 saw record temperatures and soil moisture deficit as well as freeze thaw events which lead to an increase in leakage requiring additional investment.

#### **4L.37 Strategic regional water resources**

**16** We have sought to make the APR reporting against this line consistent with the recent final decisions from RAPID on gate 2. The Anglian to Affinity Transfer is now renamed the Peterborough to Grafham transfer and has transferred from being a shared scheme with Affinity to an Anglian only SRO.

**17** We have aligned our PR24 plans with the recent gate 2 decisions to ensure the allocation of funding across AMP7 and AMP8 is in line with PR19 reconciliation

**18** We have underspent compared with the RAPID Gate 2 allowance for the South Lincs Reservoir because we have ensured we have followed a robust site selection process for identifying the best performing site which has taken longer than first anticipated. This has meant we haven't been able to carry out costly site surveys as originally planned. RAPID have confirmed that we can use Gate 2 underspend to offset the greater than allowed for costs anticipated to Gate three. We are planning the spend rate to increase over the next year.

#### **4L.63 Total metering expenditure**

**19** We have put contractual arrangements in place for the delivery of our smart metering and basic metering programmes during AMP7 and as such, the key variable on totex costs is the volume installed. COVID restrictions in 2020/21 and disruption to supply of Smart meters in 2021/22 due to the worldwide shortage of microchips has been reflected as a reduction in renewals of domestic meters AMP to date.

#### **4L.75 Addressing raw water deterioration (total)**

**20** Due to timing of schemes being promoted early, we are further ahead in delivery compared to the cumulative allowance.

#### **4L.93 Meeting lead standards (total)**

**21** This programme is progressing, with communication pipe replacement and customer supply pipe replacement continuing in 2023/24 and 2024/25.

## Table 4M - Enhancement Expenditure - Wholesale Wastewater

Line description	Expenditure in report year									
	Wastewater network+					Bioresources				Total
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal		

EA/NRW environmental programme (WINEP/NEP) (£m)												
1	Conservation drivers	Capex	-	-	-	-	-	-	-	-	-	-
2	Conservation drivers	Opex	-	-	-	-	-	-	-	-	-	-
3	Conservation drivers	Totex	-	-	-	-	-	-	-	-	-	-
4	Event Duration Monitoring at intermittent discharges	Capex	(0.040)	(0.011)	(0.004)	-	-	-	-	-	-	(0.056)
5	Event Duration Monitoring at intermittent discharges	Opex	0.065	0.018	0.007	-	-	-	-	-	-	0.090
6	Event Duration Monitoring at intermittent discharges	Totex	0.025	0.007	0.003	-	-	-	-	-	-	0.034
7	Flow monitoring at sewage treatment works	Capex	-	-	-	3.867	-	-	-	-	-	3.867
8	Flow monitoring at sewage treatment works	Opex	0.009	0.002	0.001	0.006	-	-	-	-	-	0.018
9	Flow monitoring at sewage treatment works	Totex	0.009	0.002	0.001	3.873	-	-	-	-	-	3.885
10	Schemes to increase flow to full treatment	Capex	-	-	-	9.434	-	-	-	-	-	9.434
11	Schemes to increase flow to full treatment	Opex	-	-	-	0.111	-	-	-	-	-	0.111
12	Schemes to increase flow to full treatment	Totex	-	-	-	9.545	-	-	-	-	-	9.545
13	Schemes to increase storm tank capacity	Capex	-	-	-	22.406	-	-	-	-	-	22.406
14	Schemes to increase storm tank capacity	Opex	-	-	-	0.374	-	-	-	-	-	0.374
15	Schemes to increase storm tank capacity	Totex	-	-	-	22.780	-	-	-	-	-	22.780
16	Schemes to provide additional effective storage at sewage treatment works through green infrastructure.	Capex	-	-	-	-	-	-	-	-	-	-
17	Schemes to provide additional effective storage at sewage treatment works through green infrastructure.	Opex	-	-	-	-	-	-	-	-	-	-
18	Schemes to provide additional effective storage at sewage treatment works through green infrastructure.	Totex	-	-	-	-	-	-	-	-	-	-





Line description	Expenditure in report year									
	Wastewater network+					Bioresources				Total
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal		

EA/NRW environmental programme (WINEP/NEP) (£m)										
23	Effective storage in the network to reduce spill frequency at CSOs etc (green solutions)	Opex	-	-	-	-	-	-	-	-
24	Effective storage in the network to reduce spill frequency at CSOs etc (green solutions)	Totex	-	-	-	-	-	-	-	-
25	Total for storage schemes in the network to reduce spill frequency at CSOs etc (grey + green)	Totex	-	0.167	-	0.501	-	-	-	0.668
26	Chemical removals schemes	Capex	-	-	-	-	-	-	-	-
27	Chemical removals schemes	Opex	-	-	-	-	-	-	-	-
28	Chemical removals schemes	Totex	-	-	-	-	-	-	-	-
29	Chemicals monitoring/ investigations/ options appraisals	Capex	-	-	-	0.141	-	-	-	0.141
30	Chemicals monitoring/ investigations/ options appraisals	Opex	-	-	-	-	-	-	-	-
31	Chemicals monitoring/ investigations/ options appraisals	Totex	-	-	-	0.141	-	-	-	0.141
32	Nitrogen removal	Capex	-	-	-	-	-	-	-	-
33	Nitrogen removal	Opex	-	-	-	-	-	-	-	-
34	Nitrogen removal	Totex	-	-	-	-	-	-	-	-
35	Phosphorus removal	Capex	-	-	-	52.091	-	-	-	52.091
36	Phosphorus removal	Opex	-	-	-	1.247	-	-	-	1.247
37	Phosphorus removal	Totex	-	-	-	53.338	-	-	-	53.338
38	Reduction of sanitary parameters	Capex	-	-	-	2.157	-	-	-	2.157
39	Reduction of sanitary parameters	Opex	-	-	-	0.336	-	-	-	0.336
40	Reduction of sanitary parameters	Totex	-	-	-	2.493	-	-	-	2.493
41	UV disinfection (or similar)	Capex	0.198	0.054	0.021	0.219	-	-	-	0.493
42	UV disinfection (or similar)	Opex	-	-	-	-	-	-	-	-

Line description	Expenditure in report year								
	Wastewater network+					Bioresources			Total
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal	

EA/NRW environmental programme (WINEP/NEP) - continued (£m)											
43	UV disinfection (or similar)	Totex	0.198	0.054	0.021	0.219	-	-	-	-	0.493
44	Investigations	Capex	0.333	0.101	0.036	1.505	-	-	-	-	1.974
45	Investigations	Opex	0.008	0.002	0.001	-	-	-	-	-	0.011
46	Investigations	Totex	0.341	0.103	0.037	1.505	-	-	-	-	1.985
47	Total environmental programme expenditure	Totex	0.572	0.333	0.062	94.394	-	-	-	-	95.361

Line description	Expenditure in report year									
	Wastewater network+					Bioresources				Total
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal		

Other enhancement (£m)											
48	Growth at sewage treatment works (excluding sludge treatment)	Capex	-	-	-	6.574	-	-	-	-	6.574
49	Growth at sewage treatment works (excluding sludge treatment)	Opex	-	-	-	0.400	-	-	-	-	0.400
50	Growth at sewage treatment works (excluding sludge treatment)	Totex	-	-	-	6.974	-	-	-	-	6.974
51	Reduce flooding risk for properties	Capex	4.863	1.334	0.525	-	-	-	-	-	6.722
52	Reduce flooding risk for properties	Opex	0.651	0.178	0.069	-	-	-	-	-	0.898
53	Reduce flooding risk for properties	Totex	5.514	1.512	0.594	-	-	-	-	-	7.620
54	First time sewerage	Capex	6.388	1.752	0.689	(0.033)	-	-	-	-	8.796
55	First time sewerage	Opex	0.065	0.018	0.007	-	-	-	-	-	0.090
56	First time sewerage	Totex	6.453	1.770	0.696	(0.033)	-	-	-	-	8.886
57	Sludge enhancement (quality)	Capex	-	-	-	-	-	-	(1.198)	-	(1.198)
58	Sludge enhancement (quality)	Opex	-	-	-	-	-	-	-	-	-
59	Sludge enhancement (quality)	Totex	-	-	-	-	-	-	(1.198)	-	(1.198)
60	Sludge enhancement (growth)	Capex	-	-	-	-	-	-	0.114	-	0.114
61	Sludge enhancement (growth)	Opex	-	-	-	-	-	-	-	-	-
62	Sludge enhancement (growth)	Totex	-	-	-	-	-	-	0.114	-	0.114
63	Odour	Capex	0.109	0.030	0.012	0.690	-	-	(0.229)	-	0.611
64	Odour	Opex	-	-	-	0.011	-	-	-	-	0.011
65	Odour	Totex	0.109	0.030	0.012	0.701	-	-	(0.229)	-	0.622
66	Enhancing resilience to low probability high consequence events	Capex	-	-	-	0.525	-	-	-	-	0.525
67	Enhancing resilience to low probability high consequence events	Opex	-	-	-	0.005	-	-	-	-	0.005
68	Enhancing resilience to low probability high consequence events	Totex	-	-	-	0.530	-	-	-	-	0.530

Line description	Expenditure in report year									
	Wastewater network+					Bioresources				Total
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal		

Other enhancement- continued (£m)											
69	Security - SEMD	Capex	-	-	-	-	-	-	-	-	-
70	Security - SEMD	Opex	-	-	-	-	-	-	-	-	
71	Security - SEMD	Totex	-	-	-	-	-	-	-	-	
72	Security - Non-SEMD	Capex	-	-	-	-	-	-	-	-	
73	Security - Non-SEMD	Opex	-	-	-	-	-	-	-	-	
74	Security - Non-SEMD	Totex	-	-	-	-	-	-	-	-	
75	Additional line 1	Capex	-	-	-	-	-	-	-	-	
76	Additional line 1	Opex	-	-	-	-	-	-	-	-	
77	Additional line 2	Capex	-	-	-	-	-	-	-	-	
78	Additional line 2	Opex	-	-	-	-	-	-	-	-	
79	Additional line 3	Capex	-	-	-	-	-	-	-	-	
80	Additional line 3	Opex	0.613	0.173	0.074	1.295	-	-	-	2.155	
81	Additional line 4	Capex	-	-	-	-	-	-	-	-	
82	Additional line 4	Opex	-	-	-	-	-	-	-	-	
83	Additional line 5	Capex	-	-	-	-	-	-	-	-	
84	Additional line 5	Opex	-	-	-	-	-	-	-	-	
85	Total other enhancement expenditure	Totex	12.689	3.484	1.375	9.467	-	-	(1.313)	25.703	

Total enhancement (£m)											
86	Total enhancement expenditure	Capex	11.851	3.427	1.278	100.077	-	-	(1.313)	-	115.319
87	Total enhancement expenditure	Opex	1.411	0.391	0.159	3.785	-	-	-	-	5.746
88	Total enhancement expenditure	Totex	13.262	3.818	1.437	103.861	-	-	(1.313)	-	121.065

Line description	Cumulative expenditure on schemes completed in the report year									Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Wastewater network+					Bioresources			Total			
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal		Total	Total	Total

EA/NRW environmental programme (WINEP/NEP) (£m)													
1	Conservation drivers	Capex	-	-	-	-	-	-	-	-	-	-	-
2	Conservation drivers	Opex	-	-	-	-	-	-	-	-	-	-	-
3	Conservation drivers	Totex	-	-	-	-	-	-	-	-	-	0.077	0.139
4	Event Duration Monitoring at intermittent discharges	Capex	-	-	-	-	-	-	-	-	-	-	-
5	Event Duration Monitoring at intermittent discharges	Opex	-	-	-	-	-	-	-	-	-	-	-
6	Event Duration Monitoring at intermittent discharges	Totex	-	-	-	-	-	-	-	-	8.116	5.776	10.496
7	Flow monitoring at sewage treatment works	Capex	-	-	-	-	-	-	-	-	-	-	-
8	Flow monitoring at sewage treatment works	Opex	-	-	-	-	-	-	-	-	-	-	-
9	Flow monitoring at sewage treatment works	Totex	-	-	-	-	-	-	-	-	6.346	8.651	15.723
10	Schemes to increase flow to full treatment	Capex	-	-	-	8.215	-	-	-	-	8.215	-	-
11	Schemes to increase flow to full treatment	Opex	-	-	-	-	-	-	-	-	-	-	-
12	Schemes to increase flow to full treatment	Totex	-	-	-	8.215	-	-	-	-	8.215	22.659	50.011
13	Schemes to increase storm tank capacity	Capex	-	-	-	22.362	-	-	-	-	22.362	-	-
14	Schemes to increase storm tank capacity	Opex	-	-	-	-	-	-	-	-	-	-	-
15	Schemes to increase storm tank capacity	Totex	-	-	-	22.362	-	-	-	-	22.362	76.217	76.573
16	Schemes to provide additional effective storage at sewage treatment works through green infrastructure.	Capex	-	-	-	-	-	-	-	-	-	-	-
17	Schemes to provide additional effective storage at sewage treatment works through green infrastructure.	Opex	-	-	-	-	-	-	-	-	-	-	-
18	Schemes to provide additional effective storage at sewage treatment works through green infrastructure.	Totex	-	-	-	-	-	-	-	-	-	-	-
19	Storage in the network to reduce spill frequency at CSOs etc (grey solutions)	Capex	-	-	-	-	-	-	-	-	-	-	-
20	Storage in the network to reduce spill frequency at CSOs etc (grey solutions)	Opex	-	-	-	-	-	-	-	-	-	-	-
21	Storage in the network to reduce spill frequency at CSOs etc (grey solutions)	Totex	-	-	-	-	-	-	-	-	-	-	-

Line description	Cumulative expenditure on schemes completed in the report year									Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Wastewater network+					Bioresources			Total			
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal		Total	Total	Total

EA/NRW environmental programme (WINEP/NEP) - continued (£m)													
22	Effective storage in the network to reduce spill frequency at CSOs etc (green solutions)	Capex	-	-	-	-	-	-	-	-	-	-	-
23	Effective storage in the network to reduce spill frequency at CSOs etc (green solutions)	Opex	-	-	-	-	-	-	-	-	-	-	-
24	Effective storage in the network to reduce spill frequency at CSOs etc (green solutions)	Totex	-	-	-	-	-	-	-	-	-	-	-
25	Total for storage schemes in the network to reduce spill frequency at CSOs etc (grey + green)	Totex	-	-	-	-	-	-	-	-	0.780	5.072	9.217
26	Chemical removals schemes	Capex	-	-	-	-	-	-	-	-	-	-	-
27	Chemical removals schemes	Opex	-	-	-	-	-	-	-	-	-	-	-
28	Chemical removals schemes	Totex	-	-	-	-	-	-	-	-	-	9.045	16.438
29	Chemicals monitoring/ investigations/ options appraisals	Capex	-	-	-	-	-	-	-	-	-	-	-
30	Chemicals monitoring/ investigations/ options appraisals	Opex	-	-	-	-	-	-	-	-	-	-	-
31	Chemicals monitoring/ investigations/ options appraisals	Totex	-	-	-	-	-	-	-	-	1.937	2.438	4.430
32	Nitrogen removal	Capex	-	-	-	-	-	-	-	-	-	-	-
33	Nitrogen removal	Opex	-	-	-	-	-	-	-	-	-	-	-
34	Nitrogen removal	Totex	-	-	-	-	-	-	-	-	-	-	-
35	Phosphorus removal	Capex	-	-	-	4.944	-	-	-	4.944	-	-	-
36	Phosphorus removal	Opex	-	-	-	-	-	-	-	-	-	-	-
37	Phosphorus removal	Totex	-	-	-	4.944	-	-	-	4.944	128.934	254.640	462.771
38	Reduction of sanitary parameters	Capex	-	-	-	2.654	-	-	-	2.654	-	-	-
39	Reduction of sanitary parameters	Opex	-	-	-	-	-	-	-	-	-	-	-
40	Reduction of sanitary parameters	Totex	-	-	-	2.654	-	-	-	2.654	22.617	21.023	38.207
41	UV disinfection (or similar)	Capex	-	-	-	0.429	-	-	-	0.429	-	-	-

Line description	Cumulative expenditure on schemes completed in the report year										Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Wastewater network+					Bioresources			Total				
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal		Total	Total	Total	

EA/NRW environmental programme (WINEP/NEP) - continued (£m)														
42	UV disinfection (or similar)	Opex	-	-	-	-	-	-	-	-	-	-	-	-
43	UV disinfection (or similar)	Totex	-	-	-	0.429	-	-	-	-	0.429	1.835	15.648	28.438
44	Investigations	Capex	-	-	-	-	-	-	-	-	-	-	-	-
45	Investigations	Opex	-	-	-	-	-	-	-	-	-	-	-	-
46	Investigations	Totex	-	-	-	-	-	-	-	-	4.859	0.176	0.319	
47	Total environmental programme expenditure	Totex	-	-	-	-	-	-	-	-	274.300	449.130	816.227	

Line description	Cumulative expenditure on schemes completed in the report year										Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Wastewater network+					Bioresources				Total			
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal	Total		Total	Total	

Other enhancement (£m)														
48	Growth at sewage treatment works (excluding sludge treatment)	Capex	-	-	-	-	-	-	-	-	-	-	-	-
49	Growth at sewage treatment works (excluding sludge treatment)	Opex	-	-	-	-	-	-	-	-	-	-	-	-
50	Growth at sewage treatment works (excluding sludge treatment)	Totex	-	-	-	-	-	-	-	-	-	-	-	-
51	Reduce flooding risk for properties	Capex	2.576	-	-	-	-	-	-	-	2.576	-	-	-
52	Reduce flooding risk for properties	Opex	-	-	-	-	-	-	-	-	-	-	-	-
53	Reduce flooding risk for properties	Totex	2.576	-	-	-	-	-	-	-	2.576	-	-	-
54	First time sewerage	Capex	4.828	-	-	-	-	-	-	-	4.828	-	-	-
55	First time sewerage	Opex	-	-	-	-	-	-	-	-	-	-	-	-
56	First time sewerage	Totex	4.828	-	-	-	-	-	-	-	4.828	13.632	12.189	22.152
57	Sludge enhancement (quality)	Capex	-	-	-	-	-	-	-	-	-	-	-	-
58	Sludge enhancement (quality)	Opex	-	-	-	-	-	-	-	-	-	-	-	-
59	Sludge enhancement (quality)	Totex	-	-	-	-	-	-	-	-	-	(0.534)	10.633	12.257
60	Sludge enhancement (growth)	Capex	-	-	-	-	-	-	-	-	-	-	-	-
61	Sludge enhancement (growth)	Opex	-	-	-	-	-	-	-	-	-	-	-	-
62	Sludge enhancement (growth)	Totex	-	-	-	-	-	-	-	-	-	0.197	-	-
63	Odour	Capex	-	-	-	-	-	-	-	-	-	-	-	-
64	Odour	Opex	-	-	-	-	-	-	-	-	-	-	-	-
65	Odour	Totex	-	-	-	-	-	-	-	-	-	2.054	8.821	14.546
66	Enhancing resilience to low probability high consequence events	Capex	-	-	-	-	-	-	-	-	-	-	-	-
67	Enhancing resilience to low probability high consequence events	Opex	-	-	-	-	-	-	-	-	-	-	-	-
68	Enhancing resilience to low probability high consequence events	Totex	-	-	-	-	-	-	-	-	-	0.559	8.356	15.187



Line description	Cumulative expenditure on schemes completed in the report year										Cumulative expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes to reporting year end	Cumulative allowed expenditure on all schemes 2020-25
	Wastewater network+					Bioresources			Total				
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	Sludge transport	Sludge treatment	Sludge disposal		Total	Total	Total	

**Other enhancement - continued (£m)**

69	Security - SEMD	Capex	-	-	-	-	-	-	-	-	-	-	-
70	Security - SEMD	Opex	-	-	-	-	-	-	-	-	-	-	-
71	Security - SEMD	Totex	-	-	-	-	-	-	-	-	-	-	-
72	Security - Non-SEMD	Capex	-	-	-	-	-	-	-	-	-	-	-
73	Security - Non-SEMD	Opex	-	-	-	-	-	-	-	-	-	-	-
74	Security - Non-SEMD	Totex	-	-	-	-	-	-	-	-	-	0.757	1.376
75	NEP Groundwater	Capex	-	-	-	-	-	-	-	-	0.019	-	-
76	NEP Groundwater	Opex	-	-	-	-	-	-	-	-	-	-	-
77	Current Quality Obligations - Other	Capex	-	-	-	-	-	-	-	-	0.014	-	-
78	Current Quality Obligations - Other	Opex	-	-	-	-	-	-	-	-	-	-	-
79	Additional line 3	Capex	-	-	-	-	-	-	-	-	-	-	-
80	Additional line 3	Opex	-	-	-	-	-	-	-	-	-	-	-
81	Additional line 4	Capex	-	-	-	-	-	-	-	-	-	-	-
82	Additional line 4	Opex	-	-	-	-	-	-	-	-	-	-	-
83	Additional line 5	Capex	-	-	-	-	-	-	-	-	-	-	-
84	Additional line 5	Opex	-	-	-	-	-	-	-	-	-	-	-
85	Total other enhancement expenditure	Totex	-	-	-	-	-	-	-	-	15.942	40.756	65.518

**Total enhancement (£m)**

86	Total enhancement expenditure	Capex	-	-	-	-	-	-	-	-	-	-	-
87	Total enhancement expenditure	Opex	-	-	-	-	-	-	-	-	-	-	-
88	Total enhancement expenditure	Totex	-	-	-	-	-	-	-	-	290.241	489.886	881.745

### Enhancement capital expenditure by purpose

- 1 £0.012 million enhancement expenditure was incurred on schemes fulfilling third-party agreements in the current year.
- 2 The source of the data is the project systems module of our SAP business management system. Each project holds as part of its master data Business Investment Category (BIC) codes which indicate the Ofwat categories of enhancement and maintenance, infrastructure and non-infrastructure, and also align with accounting separation categories. The codes are mapped to their relevant lines in the table.
- 3 It is expected that capital expenditure profiles vary year on year significantly due to the strategic prioritisation of the investment programme. Large projects and stakeholder required investments can lead to variances in year on year comparisons of the same data point.
- 4 We record expenditure in the year in which it is incurred, which means that for many schemes expenditure is spread over a number of years. In contrast, we record outputs in the year that schemes are commissioned. This means that in some years we may show expenditure without any apparent output.
- 5 Some credits have occurred due to movements and payments to contractors for pain and gain share, insurance claims and accrual movements which are only confirmed when a project is final accounted.
- 6 An allocation was required for the foul, surface water drainage and highway drainage split. The allocation was based on flow estimate models provided by our modelling team.
- 7 We previously allocated cost to between sewage treatment and imported sludge liquor treatment, this is now changed and now follows the principle use asset rule and these costs are now 100 per cent to sewage treatment & disposal.
- 8 As per Ofwat guidance, we only report cumulative expenditure on selected output types.

### Enhancement opex expenditure by purpose

- 9 The majority of enhancement opex is coming from three key areas of the plan: Phosphorus removal, schemes to increase storm tank capacity and schemes to reduce flooding risk for properties.
- 10 Due to prior year difficulty in separately identifying enhancement opex a correction of the cumulative expenditure was made last year. Due to refinery of the data capture process, a reduction of £0.4 million has been made for 2020/21 and 2021/22 combined.
- 11 Partnership funding which was originally in enhancement opex has met the criteria of an intangible asset and is therefore reported in enhancement capex.
- 12 Enhancement opex and capex can be affected by accounting rules, delays in the plan, alternative solutions etc. so may differ from proposed costs splits in our original plans.
- 13 Schemes addressing NEP Groundwater have been separately reported in 4M.75 and 4M.76 Additional line 1 - NEP Groundwater. Schemes addressing Current Quality Obligations – Other have been separately reported in 4M.77 and 4M.78 Additional line 2 - Current Quality Obligations – Other.

### Variance against allowance

- 14 The below commentary compares our actual and allowed positions. Not all lines have been commented on as we have focused on those with the larger variances.

#### **4M.9 Flow monitoring at sewage treatment works**

**15** A collaborative working group between all WASCs and the EA to clarify the scope of schemes to monitor flows at sewage treatment works led to final confirmation of scope being published in December 2021. This led to a reduced expenditure for 2021-22 (this was partially mitigated by bringing forward our expenditure programme for line 4M.6). Water companies have agreed an approach with the EA and the delayed programme will be delivered by the end of AMP7. We have also agreed with the EA that obligations at sites with liquor and storm returns can be counted as delivered before all work is completed, due to the expanding scope of works required at these sites. We expect to incur additional expenditure at these sites after the confirmed delivery.

#### **4M.12 Schemes to increase flow to full treatment**

**16** These are complex schemes meaning the majority are still in design or early construction phase. On site work has been slower to start than anticipated due to enabling issues. Based on the obligation dates, these schemes will be completed this AMP.

#### **4M.25 Total for storage schemes in the network to reduce spill frequency at CSOs etc (grey + green)**

**17** In 2021/22 we reported that due to COVID-19 the obligation dates for U\_INV Assessment of High Spilling Overflows were moved back by one year by the EA (to March 22 and March 23 respectively). These investigations required completion to allow us to collaboratively agree with the Environment Agency (EA) which overflows would be put forward for named storage schemes to reduce spill frequency. All investigations have now been completed and we have agreed the named storage schemes with the EA. These agreed schemes have now been promoted for delivery and we expect to deliver the agreed programme within AMP7.

#### **4M.28 Chemical removals schemes**

**18** Two schemes associated with this line are under discussion with the EA, there may no longer be a requirement to complete the improvement schemes following further analysis. We still plan to complete the work this AMP.

#### **4M.37 Phosphorus removal**

**19** A large proportion of these schemes were 'Amber' in WINEP so were moved back to start after the decision on Amber schemes was finalised by the Secretary of State. We increased our understanding of P removal and worked with key stakeholders to develop a risk based delivery strategy. We have some projects where we are adopting a least regrets approach involving a phased delivery, delivering the chemical dosing first before monitoring performance and using the observed sample data to inform a later decision on the need for tertiary solids removal, currently only the chemical dosing has been delivered. Further information is included in the commentary for table 7F.

#### **4M.46 Investigations**

**20** With the changing format of data tables between PR19 and APR23 some work has been allocated by internal teams to lines matching that definition, but which don't match the allocation of the equivalent FD allowance. Line 4M.46 is particularly affected by this with investigations for other drivers such as coastal (£1.37 million capex) or nutrient reduction (£0.234 million capex) being allocated to this line whereas at PR19 the line was only used for WFD No Deterioration investigations.

#### **4M.52 Sludge enhancement (quality)**

**21** In the Ofwat FD (December 2019) there was no allowance for this project to construct a new digester, instead Ofwat provided an allowance for use of markets to resolve the capacity issue. In March 21 the CMA redetermination altered the allowance, providing funding to construct the new digester and profiled it into 2022-2025 revenues. The project

is moving towards the end of the detailed design phase with construction scheduled to commence in autumn 2023. The project remains on track to complete by March 2025 in line with the performance commitment to provide an additional 6.4TTDS of additional sludge treatment capacity by the end of the AMP.

#### **4M.65 Odour**

**22** We have delayed expenditure against this driver to allow us the EA time to issue new permits for our Sludge Treatment Centres under the Industrial Emissions Directive. This will allow us to align our IED obligations with our odour enhancement investment to deliver value for money for our customers.

**Table 4N - Developer services expenditure for the 12 months ended 31 March 2023 - water resources and water network+**

Line description	Units	Water network+		
		Treated water distribution		
		Capex	Opex	Totex
1 New connections	£m	27.976	0.432	28.408
2 Requisition mains	£m	16.346	0.467	16.813
3 Infrastructure network reinforcement	£m	3.373	0.187	3.560
4 s185 diversions	£m	2.268	0.071	2.339
5 Other price controlled activities	£m	-	-	-
6 Total developer services expenditure	£m	49.963	1.157	51.120

**1** New connections further increased compared to the prior year, which, when coupled with increasing material costs resulted in an increase of £7.7 million compared to the prior year.

**2** For requisition water mains, we commissioned 63km of onsite mains delivered by our Partners and a further 73km delivered and commissioned by Self-lay Providers, an increase of two per cent and a reduction of nine per cent respectively on the previous year.

**3** S185 Diversions – these schemes can be driven by local authority spend as well as developer activity with total costs reduced by £1 million compared to the prior year.

**4** Infrastructure network reinforcement - The difference between 2022/23 and the start of AMP7 is due to our changing methodology for determining the most efficient time to complete network reinforcement. This was first seen in the results from 2021/22. We continue to use hydraulic modelling and include additional data on development progress along with intelligence gathered from other stakeholders. Our modelling specifications are now in line with the latest guidance on minimum pressures and this has delayed the need for some network reinforcement work.

**Table 40 - Developer services expenditure for the 12 months ended 31 March 2023 - wastewater network+ and bioresources**

Line description	Wastewater network+					Total
	Foul	Surface water drainage	Highway drainage	Sewage treatment and disposal	Sludge liquor treatment	

Capex (£m)							
1	New connections	0.645	0.177	0.069	-	-	0.891
2	Requisition sewers	6.619	1.815	0.714	-	-	9.148
3	Infrastructure network reinforcement	4.372	1.199	0.472	-	-	6.043
4	s185 diversions	0.251	0.069	0.027	-	-	0.347
5	Other price controlled activities	-	-	-	-	-	-
6	Total total developer services capex	11.887	3.260	1.282	-	-	16.429

Opex (£m)							
7	New connections	0.017	0.007	0.002	-	-	0.026
8	Requisition sewers	0.064	0.024	0.008	-	-	0.096
9	Infrastructure network reinforcement	0.082	0.031	0.010	-	-	0.123
10	s185 diversions	0.003	0.001	0.001	-	-	0.005
11	Other price controlled activities	-	-	-	-	-	-
12	Total developer services opex	0.166	0.063	0.021	-	-	0.250

Totex (£m)							
13	Total developer services expenditure	12.053	3.323	1.303	-	-	16.679

**1** New wastewater connections increased in line with new water connections; 30,963 for 2022/23, up from 28,818 in 2021/22. This continues the trend of post Covid recovery and general high levels of growth in the region.

**2** Spend on Infrastructure Network Reinforcement in 2022/23 is broadly in line with the prior year. However, this remains at lower levels than seen historically. Delivery of infrastructure network reinforcement is largely dependent on developers' plans, therefore, depending on activity, it can result in irregular and uneven expenditure patterns.

**Table 4P - Expenditure on non-price control diversions for the 12 months ended 31 March 2023**

Line description	Water resources	Water network+	Wastewater network+	Total
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<b>Capex (£m)</b>					
1	Capex associated with NSWRA diversions	-	3.165	1.964	5.129
2	Capex associated with other non-price control diversions	0.197	0.438	(0.074)	0.561
3	Other developer services non-price control capex	-	-	-	-
4	Developer services non-price control capex	0.197	3.603	1.890	5.690

<b>Opex (£m)</b>					
5	Opex associated with NSWRA diversions	-	-	-	-
6	Opex associated with other non-price control diversions	-	-	-	-
7	Other developer services non-price control opex	-	-	-	-
8	Developer services non-price control opex	-	-	-	-

<b>Totex (£m)</b>					
9	Costs associated with NSWRA diversions	-	3.165	1.964	5.129
10	Costs associated with other non-price control diversions	0.197	0.438	(0.074)	0.561
11	Other developer services non-price control totex	-	-	-	-
12	Developer services non-price control totex	0.197	3.603	1.890	5.690

**1** Reported expenditure reflects the size of the infrastructure programme and varies year to year. We expect the size of the overall programme in AMP7 to be larger than AMP6.

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

	Line description	Units	Water	Wastewater	Total
<b>Connections volume data</b>					
1	New connections (residential – excluding NAVs)	nr	19,294	22,767	42,061
2	New connections (business – excluding NAVs)	nr	1,239	1,462	2,701
3	Total new connections served by incumbent	nr	20,533	24,229	44,762
4	New connections – SLPs	nr	9,915	-	-
<b>Properties volume data</b>					
5	New properties (residential - excluding NAVs)	nr	20,578	24,282	44,860
6	New properties (business - excluding NAVs)	nr	1,250	1,475	2,725
7	Total new properties served by incumbent	nr	21,828	25,757	47,585
8	New residential properties served by NAVs	nr	4,423	4,117	8,540
9	New business properties served by NAVs	nr	-	-	-
10	Total new properties served by NAVs	nr	4,423	4,117	8,540
11	Total new properties	nr	26,251	29,874	56,125
12	New properties – SLP connections	nr	9,915	-	-
<b>New water mains data</b>					
13	Length of new mains (km) - requisitions	nr	73	-	-
14	Length of new mains (km) - SLPs	nr	76	-	-

**New connections, properties and length of Mains (4Q.1 - 4Q.14)**

**1** We experienced continued growth in our region throughout 2022/23 where the number of new properties connecting to our water network rose by four per cent to 26,251 properties. This included new properties being connected by Self-lay Providers and connections by New Appointment and Variation companies (NAVs). Self-lay Providers and NAV connections were up on 2021/22 and accounted for more than half of the total properties connected.

**2** Our developer customers continue to face challenges in the construction industry, not only with the increase in materials costs and labour, but also the economic shocks of rising interest rates and inflation impacting demand and supply.



**Table 4R - Connected properties, customers and population**

Line description	Units	Unmeasured	Measured	Total	Voids
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<b>Customer numbers - average during the year</b>						
1	Residential water only customers	000s	84.969	158.735	243.704	6.768
2	Residential wastewater only customers	000s	227.889	625.938	853.827	23.342
3	Residential water and wastewater customers	000s	212.356	1,644.192	1,856.548	40.546
4	Total residential customers	000s	525.214	2,428.865	2,954.079	70.656
5	Business water only customers	000s	0.556	34.579	35.135	7.151
6	Business wastewater only customers	000s	1.656	33.187	34.843	5.964
7	Business water & wastewater customers	000s	0.828	71.448	72.276	15.704
8	Total business customers	000s	3.040	139.214	142.254	28.819
9	Total customers	000s	528.254	2,568.079	3,096.333	99.475

Line description	Units	Water			Wastewater		
		Unmeasured	Measured	Total	Unmeasured	Measured	Total

<b>Property numbers - average during the year</b>								
10	Residential properties billed	000s	297.325	1,802.927	2,100.252	440.245	2,270.130	2,710.375
11	Residential void properties	000s	-	-	47.314	-	-	63.888
12	Total connected residential properties	000s	-	-	2,147.566	-	-	2,774.263
13	Business properties billed	000s	1.384	106.027	107.411	2.484	104.635	107.119
14	Business void properties	000s	-	-	22.855	-	-	21.668
15	Total connected business properties	000s	-	-	130.266	-	-	128.787
16	Total connected properties	000s	-	-	2,277.832	-	-	2,903.050

	Units	Water															Total
		Unmeasured						Measured					Unbilled				
		No meter	Basic meter	AMR meter	AMI meter (capable)	AMI meter (active)	Total	No meter	Basic meter	AMR meter	AMI meter (capable)	AMI meter (active)	Total	Uneconomic to bill	Other	Total	
Property and meter numbers - at end of year (31st March)																	
17 Total new residential properties connected in year	I	-	-	-	-	-	-	2.455	12.828	0.006	-	5.282	20.571	-	-	-	20.571
18 Total new business properties connected in year	I	-	-	-	-	-	-	0.228	0.903	-	-	0.126	1.257	-	-	-	1.257
19 Residential properties billed at year end	000s	187.545	72.081	2.461	0.463	28.132	290.682	-	1,131.197	172.957	7.593	504.761	1,816.508	-	-	-	2,107.190
20 Residential properties unbilled at year end	000s	-	-	-	-	-	-	-	-	-	-	-	-	-	13.394	13.394	13.394
21 Residential void properties at year end	000s	-	-	-	-	-	7.511	-	-	-	-	-	38.799	-	-	-	46.310
22 Total connected residential properties at year end	000s	-	-	-	-	-	298.193	-	-	-	-	-	1,855.307	-	-	-	2,166.894
23 Business properties billed at year end	000s	1.391	-	-	-	-	1.391	-	78.400	10.850	0.410	16.342	106.002	-	-	-	107.393
24 Business properties unbilled at year end	000s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25 Business void properties at year end	000s	-	-	-	-	-	0.650	-	-	-	-	-	21.670	-	-	-	22.320
26 Total connected business properties at year end	000s	-	-	-	-	-	2.041	-	-	-	-	-	127.672	-	-	-	129.713
27 Total connected properties at year end	000s	-	-	-	-	-	300.234	-	-	-	-	-	1,982.979	-	-	-	2,296.607

Line description	Units	Water	Wastewater
<b>Population data</b>			
28 Resident population	000s	4,972.797	6,494.202
29 Business population	000s	-	221.866

Household population data	Units	Water		
		Resident population	Non-resident population	Total
30 Household population	000s	4,895.007	169.889	5,064.896
31 Measured household population	000s	4,119.400	142.970	4,262.370
32 Unmeasured household population	000s	775.608	26.919	802.527

### Customer numbers - average during the year - unmeasured, measured and total columns (4R.1-9)

**1** The movement in the average number of residential customers reflects the switching from unmeasured to measured along with new connections that have become billable in the year. The level of switching and new connections is in line with historical levels.

**2** In lines five to eight we report the number of business properties for which we have reported revenue. We did not bill these. We exited the non-household retail market at the start of 2017/18 so all our connected non-household properties are now billed by licensed retailers. The average number of business properties billed in the current year is higher than the previous year, which was impacted by the last of the Covid-19 restrictions before they were lifted in February 2022. During the current year more properties have come back into charges (there has been a fall of 1,400 in the number of void properties in the year).

### Property numbers - average during the year - unmeasured, measured and total columns (4R.10 and 4R.13)

**3** The movement in the average number of residential customers reflects the switching from unmeasured to measured along with new connections that have become billable in the year. For business properties the average number of properties billed in the current year has increased over the report year 2021/22 following the lifting of Covid-19 restrictions.

### Residential void properties (4R.11)

**4** The number of measured and unmeasured household voids has remained static compared with last year. The void totals include accounts where other water companies bill on our behalf. Those numbers are provided to us by those companies and are assumed to be correct.

### Business void properties (4R.14)

**5** The Non-Household (NHH) void premises figures have been calculated using data taken from the Central Market Operating System (CMOS) which is managed by the Market Operator (MOSL) for the business retail market. We are responsible for maintaining data associated with a business premise - such as address, services provided and meter details - and retailers are responsible for maintaining data associated with the occupancy of the premise and this includes any vacant period.

**6** Data has been taken from standard reports published by the central market. These reports are known as Market Data Set reports and they are available from the central market on any day in a calendar year. This report contains all the market data on a specific day,

including whether the premise was reported as occupied or vacant and if the supply was measured or unmeasured. Data from these reports have been used to derive the NHH void figures for 2022/23 in accordance with our methodology.

**7** The occupancy status of a business property registered in the central market system is controlled by the appointed retailer through market transactions carried out in CMOS. As the wholesaler, we do not have access to alter this data.

**8** The table below presents the 12 specific published Market Data Set reports used to calculate the average business customer premises and supplies void figures for the financial year 2022/23 and the figure reported on 31 March 2023.

MDS Published Report Date	Number of Void Premises	Number of Void Water Supplies	Number of Void Sewerage Supplies
29/04/2022	29,689	23,527	22,487
31/05/2022	29,783	23,675	22,565
30/06/2022	29,631	23,571	22,388
29/07/2022	29,196	23,212	22,027
31/08/2022	28,998	23,036	21,922
30/09/2022	28,919	22,936	21,843
31/10/2022	28,541	22,613	21,464
30/11/2022	28,136	22,285	21,085
30/12/2022	27,999	22,155	20,946
31/01/2023	28,375	22,485	21,206
28/02/2023	28,366	22,450	21,123
31/03/2023	28,198	22,320	20,964
<b>Average</b>	<b>28,819</b>	<b>22,855</b>	<b>21,668</b>

**9** Calculating the year-end number of void premises: The Market Data Set reports for WSPID and SSPID published on 31 March 2023 are used to identify if a business premise has a status of vacant (as opposed to occupied) in the central market system. These supplies are then mapped to other Market Data Sets reports WSSCO and SSSCO to identify if the supply is measured or unmeasured. The final part of the methodology is to calculate the figures for void business premises, the WSPID and SSPID are mapped to identify unique core SPID references to provide the premise figures.

**10** Calculating the year-average number of void premises: To calculate the average figures the above is repeated for each of the other 11 calendar month using the same Market Data Set reports.

**11** Identification of unbilled business premises: All premises included in CMOS at the time of producing the monthly market settlement charges are included in the published settlement reports which are used to produce retailer invoices. Where a premise is not registered in the central market but is subject to a review of its billing status these premises are marked in our billing system as account class six and are included in the household APR tables figures either as unbilled or void.

**12** The number of vacant business premises (including waste water only premises) in our region on 31 March 2023 was 28.198k (16.7 per cent). This is a decrease of circa 1,300 premises from 31 March 2022 when vacant premises were 29.531k (17.5 per cent). The average number of vacant business premises across the year was 28,819. This is a decrease of circa 1,500 Premises from 2021/22 when vacant premises were 30.344.

**13** Our performance remains consistent with the overall market performance for vacancy with MOSL reporting total vacancy at 16.49 per cent in April 2022 reducing to 16.35 per cent in March 2023.

**14** This position reflects the continued focus placed on vacancy in the non-household market since the lifting of all Covid-19 restrictions in June 2021 and retailers continue to validate their customer occupancy records. We have also continued to validate vacancy data in the market and provide retailers with information that may help track down the occupier or identify the reason for any consumption recorded.

**15** Since from 1 April 2023 we will not be charging for consumption recorded from actual meter readings taken from vacant premises, we are planning to monitor occupancy changes in the market more closely to identify cases where premises appear to be occupied and require further investigation by the retailer. Our outlook for vacancy over the next year is for the number of vacant premises to reduce by one to two per cent, with a further reduction of circa two per cent over the course of the following year.

#### **New properties connected in year (4R.17 and 4R.18)**

**16** The table shows that a proportion of our new water properties had no meter installed at the end of the year. This is purely a timing issue. All new properties are metered and charged on a measured basis.

**17** We have seen an increase in new AMI meters fitted on connections of new properties which is encouraging.

**18** Self-lay connections accounted for 47 per cent of all new supply meter installations.

**19** Having enabled Self-lay Providers to source and fit Anglian Water meters in 2020/21, we have seen saw growth in this area and will be looking to make this process slicker and cost effective for our SLP customer base.

#### **Residential and business properties billed at year end (4R.19 and 4R.23)**

**20** Meters have been split by the type of meter installed at the property and include meters at unmeasured properties which are not currently used for billing. The table also shows the number of smart meters installed and includes those installed as part of the AMP7 programme along with those that were there at the start of the AMP. The smart meters are split into AMR and AMI capable and active. There has been an increase in AMI meters (up 229,000 on last year) as the AMP7 installation programme continued.

#### **Unbilled properties (4R.20, 4R.24)**

**21** We include in line 20 (residential unbilled) properties that we classify as 'Non-chargeable' on the basis that either:

- although the property is furnished, there is no consumption and the occupier is deceased, or the property is long term vacant (over three months) due to hospitalisation, admittance to a care home, imprisonment with HMPs, or the property is uninhabitable due to fire/flood; or
- the property is demolished and/or pending disconnection and removal of the meter.

**22** No charge is calculated for these premises and no bill issued. This is based on a "fairness" principle given that, whilst the property is connected, no service is provided.

**23** We do not recognise properties as uneconomic to bill. As stated above, our unbilling of properties is based on fairness rather than economics.

**24** There has been an increase in the number of Non-chargeable properties when compared with 2021/22. This is due to data cleansing activities identifying more properties where there is no consumption and the occupier is deceased.

## Resident population (4R.28)

**25** Population is calculated based upon our SAP customer information and Office of National Statistics (ONS) population and local authority household data. Population is derived using the in-year assessment of households we serve as a percentage of the ONS property totals, as applied to the ONS Local Authority and Unitary Authority (LAUA) property and population tables. Additional account is taken of non-household communal population, which is derived using census data. The estimate of household population is based on the 2012 (2018 updated - 2021 issued) sub-national population and the December 2018 (June 2021 Issue) household projections from the ONS. Population projections have been amended to reflect the current ONS mid-year population estimates.

**26** Baseline population and property figures are derived for each LAUA, utilising ONS population and household data. Actual recorded properties in our 'billing' system for the base-year are then compared to the LAUA household official totals, either directly through GIS or via parish attribution. This allows the percentage of households we serve to be determined for the Anglian Water statutory (AWS) statutory water and sewerage areas. These property totals for the AWS water and wastewater geographies, once derived, are confirmed with the 'Income and Tariff' and 'Leakage' teams and are then used to provide the baseline for the forecast models. Base-line population totals are then derived using the known household percentages derived from the comparison of Anglian Water and ONS household totals and applying these to the ONS snpp population figures (per LAUA).

**27** We apportion the data for the districts we serve to derive an estimate of both the water and the wastewater populations in the Anglian Water region.

**28** The estimate of non-household population is based on the latest census data published by the ONS. This 'communal' population covers prisons, care homes and military bases among many categories. These projections have been revised in line with the paper 'Updating the Department for Communities and Local Government's Household Projections', specifically annex 2 'Improving Institutional Population Estimates and Projections'. In addition we have added an estimate of people resident in mixed properties. This value is now based upon new estimates derived by our demographic consultants.

**29** Our Water customers population has increased by 63,258 from 4,909,539 to 4,972,797.

**30** Our Water recycling population has increased by 97,168 from 6,397,033 to 6,494,201.

**31** Water customer population has increased by 63,258, in line with additional connected properties and year-on-year changes in occupancy rates for the LAUAs in the Anglian Water region and a reassessment of non-household population.

**32** Water recycling population has increased by 97,168. This is in line with additional connected properties and year-on-year changes in occupancy rates for the LAUAs in the Anglian Water region and a reassessment of non-household population.

**33** The total population for 2022/23 can be split and shown as follows, based upon 'Billing' information and occupancy rates derived by the leakage team to determine measured/unmeasured populations.

Description	Unit	2021/22	2021/23
Population (water only)	000	509.816	487.025
Population (sewerage only)	000	1997.309	2008.429
Population (water and sewerage)	000	4399.724	4485.773
Total population (water)	000	4909.539	4972.797
Total population (sewerage)	000	6397.033	6494.202
Total population (water or sewerage)	000	6906.849	6981.226

**34** For our water customers population can be shown:

Description	Unit	2021/22	2022/23
Population households billed unmeasured water	000	817.028	775.608
Population - households billed measured water	000	4021.130	4119.400
Population non-households billed unmeasured water	000	0.000	0.000
Population - non-households billed measured water	000	71.381	77.790
Population - Total	000	4909.539	4972.797

**35** For our water recycling customers population can be shown:

Description	Unit	2021/22	2022/23
Population households billed unmeasured sewerage	000	1065.689	1014.080
Population - households billed measured sewerage	000	5244.953	5385.974
Population - non-households billed unmeasured sewerage	000	0.000	0.000
Population - non-households billed measured sewerage	000	86.391	94.148
Population - Total Resident	000	6397.033	6494.202

### Non resident population (4R.29)

**36** In 2022/23 the numbers of non-resident population was 221,866. This was an 11 per cent increase when compared to 2021/22, but the total is still 14 per cent lower than pre-pandemic levels (258,238 in 2019/20).

**37** Our methodology for how we calculate non resident population is set out in the commentary to 4R.28.

### Measured household population (4R.31)

**38** The total measured population has been derived using internal assessments of occupancy rates for both measured and unmeasured cohorts of customer (based upon customer surveys (SodCon) and smart meter data), with an understanding that the measured customer cohort will tend to have a lower occupancy rate on average than the unmeasured cohort. This split has then been apportioned to the overall regional population figure derived as above. The total population of measured water customers for 2022/23 is 4,119,400.

### Unmeasured household population (4R.32)

**39** The total unmeasured population has been derived using internal assessments of occupancy rates for both measured and unmeasured cohorts of customer (based upon customer surveys (SodCon) and smart meter data), with an understanding that the unmeasured customer cohort will tend to have a higher occupancy rate on average than the measured cohort. This split has then been apportioned to the overall regional population figure derived as above. The total population of unmeasured water customers for 2022/23 is 775,608.

## Table 4S, 4T and 4U - Green recovery expenditure and RCV

### Table 4S, 4T and 4U

**1** We do not report any figures for these tables.



**Table 4V - Mark-to-market of financial derivatives analysed based on payment dates**

Line description	Units	Derivatives - Analysed by earliest payment date			
		Net settled	Gross Settled outflows	Gross Settled inflows	Total
1 Due within one year	£m	3.505	112.255	(139.383)	(23.623)
2 Between one and two years	£m	74.681	-	-	74.681
3 Between two and three years	£m	31.636	-	-	31.636
4 Between three and four years	£m	20.785	132.445	(146.462)	6.768
5 Between four and five years	£m	9.748	-	-	9.748
6 After five years	£m	586.577	345.933	(334.808)	597.702
7 Total	£m	726.933	590.632	(620.653)	696.913

Line description	Units	Derivatives - Analysed by expected maturity date			
		Net settled	Gross Settled outflows	Gross Settled inflows	Total
1 Due within one year	£m	3.505	112.255	(139.383)	(23.623)
2 Between one and two years	£m	74.681	-	-	74.681
3 Between two and three years	£m	31.636	-	-	31.636
4 Between three and four years	£m	8.424	132.445	(146.462)	(5.593)
5 Between four and five years	£m	9.748	-	-	9.748
6 After five years	£m	598.939	345.933	(334.808)	610.064
7 Total	£m	726.933	590.632	(620.653)	696.913

**Financial derivatives analysed based on payment dates (4V.1 - 4V.7)**

**1** Derivatives analysed by earliest payment date and derivatives analysed by expected maturity date have the same classification for all but one interest rate swap which has a mutual break clause and has a fair value of £12.362 million. The overall mark-to-market ties back to Table 4I.

## Table 4W - Defined Benefit Pension Scheme – Additional Information

Line description	Units	Defined benefit pension schemes			
		Pension scheme 1	Pension scheme 2	Pension scheme 3	
<b>Scheme details</b>					
1	Scheme name	Text	Anglian Water Group Pension Scheme	-	-
2	Scheme status	Text	Closed to new members (2002) and future accruals (2018)	-	-
<b>Scheme valuation under IAS/IFRS/FRS</b>					
3	Scheme assets	£m	1,118.571	-	-
4	Scheme liabilities	£m	1,029.907	-	-
5	Scheme surplus / (deficit) Total	£m	88.664	-	-
6	Scheme surplus / (deficit) Appointed business	£m	84.148	-	-
7	Pension deficit recovery payments	£m	21.764	-	-
<b>Scheme valuation under part 3 of Pensions Act 2004</b>					
8	Scheme funding valuation date	Date	43,921.000	-	-
9	Assets	£m	1.539	-	-
10	Technical Provisions	£m	1.753	-	-
11	Scheme surplus / (deficit)	£m	(0.214)	-	-
12	Discount rate assumptions	Text	Gilts plus 0.60%	-	-
<b>Recovery plan (where applicable)</b>					
13	Recovery Plan Structure	Text	Recovery plan agreed on 29 June 2021. The company will pay the following deficit contributions arising from the latest triennial valuation carried out as at 31 March 2020: £14.6m each year from 01 April 2022 to 31 October 2026 inclusive increasing in line with RPI at each 1 November. Additionally fixed £5m pa (non indexed) from 01 April 2023 to 31 March 2025	-	-
14	Recovery plan end date	Date	46,326.000	-	-
15	Asset Backed Funding (ABF) arrangements	Text	n/a	-	-
16	Responsibility for ABF arrangements	Text	n/a	-	-

**Scheme Details (4W.1-4W.2)**

**1** The defined benefit arrangements closed to new pension accrual with effect from 31 March 2018, and employees who were members of these arrangements are eligible for entry to the Group's defined contribution schemes.

**Scheme valuations under IAS/IFRS/FRS (4W.3-4W.6)**

**2** The IAS scheme surplus has deteriorated over the past 12 months as a result of recent market volatility impacting the value of the assets held by the Scheme, however this has also been partially offset by a decrease in liabilities primarily due to a 2.00% p.a. increase in the discount rate assumption

**Pension deficit recovery payments (4W.7)**

**3** A deficit contribution of £21.764m was paid in the year to 31-March-2023. This was a prepayment of the October 2023 payment encapsulating the annual indexed £14.6m repair payment uplifted by November 2022 RPI and a £5m non-indexed amount described in 4W.13.

**Scheme valuations under part 3 of Pensions Act 2004 (4W.8-4W.12)**

**4** The next triennial valuation will be based on the 31-03-2023 deficit position. Valuation discussions between the company and the scheme have begun.

**Recovery plan (4W.13-4W.14)**

**5** The deficit recovery plan between the company and scheme expects to close the technical provisions deficit by October 2026

**Table 5A - Water resources asset and volumes data for the 12 months ended 31 March 2023**

	Line description	Units	Input
	<b>Water resources</b>		
1	Water from impounding reservoirs	MI/d	29.707
2	Water from pumped storage reservoirs	MI/d	602.168
3	Water from river abstractions	MI/d	635.981
4	Water from groundwater works,excluding managed aquifer recharge (MAR) water supply schemes	MI/d	655.796
5	Water from artificial recharge (AR) water supply schemes	MI/d	-
6	Water from aquifer storage and recovery (ASR) water supply schemes	MI/d	-
7	Water from saline abstractions	MI/d	-
8	Water from water reuse schemes	MI/d	-
9	Number of impounding reservoirs	nr	2
10	Number of pumped storage reservoirs	nr	8
11	Number of river abstractions	nr	16
12	Number of groundwater works excluding managed aquifer recharge (MAR) water supply schemes	nr	198
13	Number of artificial recharge (AR) water supply schemes	nr	-
14	Number of aquifer storage and recovery (ASR) water supply schemes	nr	-
15	Number of saline abstraction schemes	nr	-
16	Number of reuse schemes	nr	-
17	Total number of sources	nr	224
18	Total number of water reservoirs	nr	10
19	Total volumetric capacity of water reservoirs	MI	227,252.700
20	Total number of intake and source pumping stations	nr	217.000
21	Total installed power capacity of intake and source pumping stations	kW	41,491.000
22	Total length of raw water abstraction mains and other conveyors	km	120.760
23	Average pumping head – raw water abstraction	m.hd	30.640
24	Energy consumption - water resources (MWh)	MWh	90,098.338
25	Total number of raw water abstraction imports	nr	-
26	Water imported from 3rd parties to raw water abstraction systems	MI/d	-
27	Total number of raw water abstraction exports	nr	-
28	Water exported to 3rd parties from raw water abstraction systems	MI/d	-
29	Water resources capacity (measured using water resources yield)	MI/d	1,741.90
30	Total number of completed investigations (WINEP/NEP), cumulative for AMP	nr	134

**Water from impounding reservoirs (5A.1)**

**1** The reported volume of water from impounding reservoirs is 29.71 MI/d. The sum of the water abstracted cannot be directly compared to DI as it includes imports/exports, non potable and excludes the MLE adjustment to Distribution Input.

**Water from pumped storage reservoirs (5A.2)**

**2** The reported volume of water from pumped storage reservoirs is 602.17 MI/d. The sum of the water abstracted cannot be directly compared to DI as it includes imports/exports, non potable and excludes the MLE adjustment to Distribution Input. For some of our larger river abstraction works (such as Wing & Grafham) we have only included in this line the volume of water delivered from the pumped storage into the works.

**Water from river abstractions (5A.3)**

**3** The reported volume of water from river abstractions is 635.98 MI/d. The sum of the water abstracted cannot be directly compared to distribution input as it includes imports/exports, non potable and excludes the MLE adjustment to Distribution Input. The total volume of water from lines 5A.1-5A.8 is more than the total volume of water abstracted as we have included water that is firstly abstracted from the rivers and then again abstracted from the pumped storage.

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

**4** The reported volume of water from groundwater is 655.80 MI/d. The sum of the water abstracted cannot be directly compared to DI as it includes imports/exports, non potable and excludes the MLE adjustment to Distribution Input.

**Water from artificial recharge (AR) water supply schemes (5A.5)**

**5** No such schemes are operated by the company.

**Water from aquifer storage and recovery (ASR) water supply schemes (5A.6)**

**6** No such schemes are operated by the company.

**Water from saline abstractions (5A.7)**

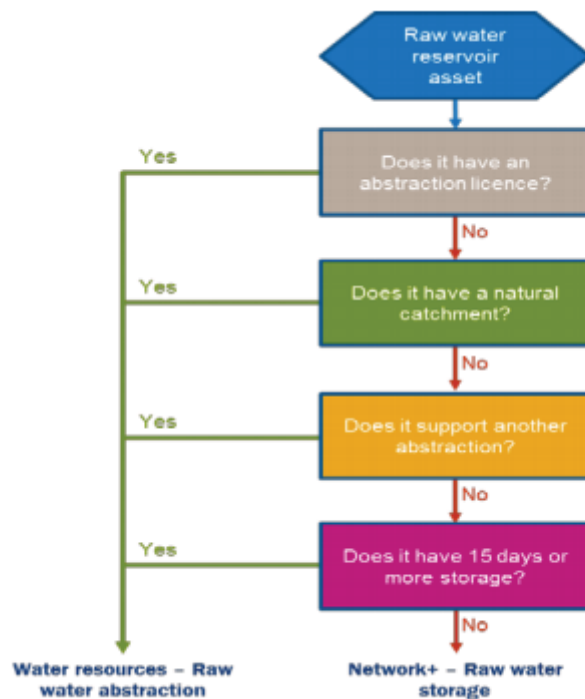
**7** No such schemes are operated by the company.

**Water from water reuse schemes (5A.8)**

**8** There are no sites that abstract water using this method. As a result, we have reported the volume of water for this line is zero.

**Number of impounding reservoirs and pumped storage reservoirs (5A.9 and 5A.10)**

**9** The reported numbers reflect the number of reservoirs classified as raw water abstraction based on the following RAG 4.11 flow chart:



**10** Figure 1. RAG 4.11 flow chart to classify raw water reservoir assets as either water resources or network+

### Impounding Reservoirs

- Ravensthorpe reservoir (Ruthamford North RZ): 100 per cent inflow
- Hollowell reservoir (Ruthamford North RZ): 100 per cent inflow

### Pumped Storage Reservoirs

- Alton Water (East Suffolk RZ): 69 per cent pumped
- Ardleigh reservoir (South Essex RZ): 82 per cent pumped
- Covenham reservoir (East Lincolnshire RZ): 100 per cent pumped
- Grafham Water (Ruthamford South RZ): 99 per cent pumped
- Pitsford reservoir (Ruthamford North RZ): 56 per cent pumped
- Rutland Water (Ruthamford North RZ): 88 per cent pumped
- Cadney Carrs (East Lincolnshire RZ): 100 per cent pumped
- Costessey Pits (Norwich & the Broads RZ): 100 per cent pumped

**11** The RAG 4.11 guidance means we also class Cadney Carrs and Costessey Pits as raw water reservoirs. Cadney has storage >15 days, and Costessey Pits has an abstraction licence.

**12** The definition for line nine specifies that the reservoirs should be classified as either pumped or impounding, on the basis of the majority of the type of flow that they receive.

### Number of river abstractions (5A.11)

**13** We are reporting sixteen river abstractions for the reporting period 2022/23. This is one different to 2021/22 as Clapham (Bedford) abstraction did not go into supply.

**14** This consists of direct river intakes and also 10 indirect supporting river abstractions. This reflects the full complement of our surface water intake assets.

1. Cadney (River Ancholme)
2. Hall (River Trent)

3. Heigham (River Wensum)
4. Costessey (River Wensum)
5. Marham (River Nar)
6. Stoke Ferry (River Wissey)
7. Tinwell (River Welland for Rutland Water)
8. Wansford (River Nene for Rutland Water)
9. Offord (River Great Ouse for Grafham Water)
10. Duston Mill (River Nene for Pitsford reservoir)
11. Sproughton (River Gipping for Alton Water)
12. Bucklesham (Mill River for Alton Water)
13. East Mills (River Colne for Ardeleigh)
14. Covenham intake (Louth Canal for Covenham reservoir)
15. Cloves Bridge (River Great Eau for support to Covenham)
16. Cut-off-Channel (for support to Stoke Ferry)

**15** Bath Springs and Cringle Brook intake at Saltersford, and Foxcote reservoir, do not enter supply so are not included in the reported list.

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

**16** We report 198 groundwater sources for 2022-23 which is different to the 200 that was reported for 2021-22. 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. The total number of sources included the re-introduction of East Ruston into supply in 2022-23.

**17** The following sources were also removed from the operational source list based on the above source definition:

- Pulloxhill (not operated into supply in 22/23, removed from operation as part of maintenance work at the Pulloxhill WTW)
- Mundesley (not operated into supply in 22/23, removed from operation due to raw water quality)
- Hibaldstow Bridge (not operated into supply in 22/23 due to changes to the operational control philosophy at the Waddingham WTW).

#### **Number of artificial recharge (AR) water supply schemes (5A.13)**

**18** No such schemes are operated by the company.

#### **Number of aquifer storage and recovery schemes (ASR) water supply schemes (5A.14)**

**19** No such schemes are operated by the company.

#### **Number of saline abstraction schemes (5A.15)**

**20** No such schemes are operated by the company.

#### **Number of reuse schemes (5A.16)**

**21** No such schemes are operated by the company.

#### **Total number sources (5A.17)**

**22** The reported number is summed from Lines 9-16.

### **Total number of water reservoirs (5A.18)**

**23** The reported number changed in 2020/21 due to the addition of two new lines in table 6A. For 2022/23 the reported number has not changed. Line 18 includes the impounding and pumped storage reservoirs reported in lines 9 and 10.

### **Total capacity of water reservoirs (5A.19)**

**24** The capacity of all water reservoirs has been revised in line with guidance to reflect the design/construction capacity of the reservoir where possible. The value changed for the 2020/21 year following the removal of the bankside storage reservoirs from this line. The value for 2022/23 has not changed from 2021/22 or 2020/21. The value is 227,252.7 MI.

### **Total number of intake and source pumping stations (5A.20)**

**25** Following guidance in the Ofwat RAG Guidelines & Appendices, we have identified raw water transport pumps within surface water systems and groundwater sources. Surface water transport has been split between abstraction to reservoir and abstraction from reservoir to treatment. Groundwater sources have been split based on the proportion of pumping head that goes to treatment (considered to be raw water abstraction) and the proportion that goes to supply (considered to be water distribution).

**26** In line with the disaggregation of raw water transport pumps, for 2022/23 we are reporting:

- 19 intake and source pumping stations including one gravity intake system at Ravensthorpe Reservoir
- 198 groundwater sources.

**27** This is a decrease of three sources from what was reported for the 2021/22 report year.

### **Total installed power capacity of intake and source pumping stations (5A.21)**

**28** The number of pumps, rated power for each pump, location and asset status have been used where this information was held in corporate databases. Where the rated power was not available in the corporate databases historical records held by the Water Resources team were used. The qualifying assets were determined by the Water Resources team. For those borehole pumps that both abstract and boost into the network only the proportion of the rated power relating to abstraction has been included.

The reduction in rated power is due to a net decrease in operational boreholes (five fewer) and an improvement in qualifying borehole pump assessment. A number of borehole pumps installed on operational sites have been found to reside in non-operational borehole shafts and these have now been removed from the figures.

### **Total length of raw water abstraction mains and other conveyors (5A.22)**

**29** This data has been reviewed and refined for PR19. This line has been calculated using the latest raw water mains data out of our corporate mapping system (G/water). The lengths have also been calculated using the guidance provided in RAG 4.11. There is a small decrease of 10km for 2022/23 compared to 2021/22 this is due to constant improvements to on-site pipe classifications.

### **Average pumping head – raw water abstraction (5A.23)**

#### **Overview**

**30** An extensive overhaul of the entire Average Pumping Head reporting process has been undertaken since the last APR submission. We have moved from annual reporting using the 53 different excel spreadsheets, to being able to calculate Average Pumping Head (APH) at a daily level. We now ingest data daily from the telemetry points, combine this with



known/fixed values and estimates and calculate the mass transfer (numerator) within a PowerBi report. The process flow used as the denominator in the APH calculation is also ingested into the PowerBi report at a daily level (LARS & SWORPS). We have configured the data model based on the previous regional excel sheets, but have combined the information into one "configuration" file. This is now accessed via a PowerApp meaning that site/asset information can be updated quickly and simply and will produce seamless reporting.

### Measured and Estimated Values

**31** The PowerBi report allows us to measure and monitor the amount of estimation used in the APH calculations. In previous years we have recorded the percentage of assets that used estimated/fixed values, but the new methodology allows us to calculate the percentage of overall contribution which has been estimated. Through this change, we can use a targeted approach. Pinpointing individual assets/pumps sets that would improve the "measured" percentage for the entire AW network.

**32** Whilst configuring the data model, we have identified new/improved telemetry that has replaced a handful of previously estimated values. Going forward, the review of estimated values can be completed using the PowerBi report and suggestions of pumps that need improved metering can be discussed with supply management.

### Validation

**33** Whilst the 21/22 changes to data quality assurance through improvements to data validation rules with statistical analysis was reasonably fit for purpose, we have further improved on this through the use of the data science team and outside data consultants. Code has been developed so that all 15 minute values ingested from the telemetry system (both flow and pressure) undergo a validation check using Mean Absolute Deviation (MAD) to detect anomaly values, and replaces them using linear interpolations. Instead of replacing them with the annual average value, they are now replaced with values determined by the last and next "good" values. We have continued to replace negative flow values with a zero, as these are likely to be driven by errors in calibration, particularly in 4-20mA flow meters. The performance of individual meters (amount of zero or anomaly values detected) is now recorded and monitored within the PowerBi report, with a view to contributing to the continuous improvements suggested by Ofwat.

### Improvement Areas For Further Review

**34** Last year, it was noted that Average Pumping Head (APH) reporting period did not align with the DI reporting period. Given the ability to report on APH at a daily level now, we have moved to Financial year reporting. No longer is there any significant delay required to undergo the annual gathering of data and calculations, so "annual" figures can be obtained at any stage. An added benefit from this is the ability to track seasonality and patterns in APH. This will be analysed separately and incorporated into energy and efficiency savings analysis by the Water Optimisation teams.

### Future Planning

**35** The next steps for APH reporting is to assist with the development of a SWORPS dataset accessible to the entire company. This will further improve the stability of the APH report and present "one version of the truth" for SWORPS reporting across the business. APH is now being monitored regularly, discussed with the wider business stakeholders, and helping to drive efficiency improvements. The regular review of the report will highlight and temporary or permanent asset/metering failures and therefore continue the improvement of data quality assurances. All of these are helping us to improve our RAG status as determined by the independent consultants that Ofwat employed last year. The detailed improvements are documented in the presentation attached.

**36** Raw Water Abstraction APH is 30.64 m.hd. Sixteen per cent of our APH value is derived from measured data.

**37** Estimated historical pumping data from site documentation has been reviewed and validated by local subject matter experts to ensure it is accurate and up to date.

**38** The APH has dropped for this price control. As we went through the configuration process for the new data model we identified numerous opportunities to re-assign assets to correct price controls. The Raw Water Transport and Treatment numbers have increased as a result, keeping the overall APH figure relatively static as expected.

### **Energy consumption - raw water abstraction (5A.24)**

**39** The energy consumption was 90,098 MWh. The equivalent number for 2021/22 was 87,450 MWh so there has been an increase of 2,648 MWh or 3.03 per cent.

**40** The main component of this change has been the electricity usage for raw water abstraction which increased by 2,455 MWh or 3.03 per cent. Abstraction from rivers into impounding reservoirs was almost unchanged from 2021/22. The exceptionally hot and dry conditions drove down river levels, restricting such abstraction and necessitating a catch-up later in the year. The observed increase was, therefore, driven by higher pumping from other sources (boreholes and direct river abstractions) driven by high summer demand for water.

**41** There has also been an increase in consumption for transport purposes of 332 MWh or 7.48 per cent due to an increase in mileage claimed versus the previous year, which was still impacted by Covid-19 pandemic restrictions.

**42** A number of assumptions have been made in calculating the raw water abstraction energy consumption data.

- For the whole of the water function, we have applied a financial split from regulatory accounts between abstraction, raw water transport, water treatment and treated water distribution for electricity consumption. This financial split is based upon assessments of proportional use by different business units made by the finance team and operational managers. Because of the more significant volumes of solar electricity being generated on sites at a lower price than grid electricity, the solar costs were deducted from this calculation. Solar consumption was added back to complete the consumption picture.
- Grid electricity and fuel (oil and natural gas) used in offices has been included and split equally between the water and water recycling functions.
- Fuel oil is not recorded on our corporate systems against Ofwat's business units and therefore the same split used for electricity has been assumed for each fuel type with the exception of gas oil delivered to water recycling sites.
- We have assumed a 35 per cent thermal efficiency for natural gas consumption in converting to energy output (boilers and CHP).
- Transport (claimed mileage and fleet fuel purchased on fuel cards) is not recorded in our corporate systems against Ofwat's business units and therefore we have split the total 50/50 between water and water recycling and then assumed that they split in the same proportions as electricity between the business units.
- Transport for company cars is collected as mileage. We have converted mileage into kWh through using BEIS' greenhouse gas reporting condensed conversion factors for 2022.

**43** For electric vehicles, a small volume of energy is collected via fuel cards or is metered at employees' homes. For the remaining, larger volume we have made the assumption that the mileage claimed relates to charging at home or on public charging points, rather than using the charging points at our offices. Many people are still working from home a lot of the time and we don't have a reliable source to tell us how many miles are being claimed from charging at Anglian Water sites. We believe this assumption to be safe and not capable of skewing the overall figures since (i) electric car consumption from claimed mileage totals just 238,643 kWh across the whole of Anglian Water and (ii) wherever cars are charged, the driver may be charging for domestic and commuting miles (which cannot be claimed) as well as for business. While there may be an overlap with the electricity consumption

data, we consider that this will be de-minimus. We are looking to improve our processes in order to better capture consumption by electric cars charged at home and AW infrastructure.

**Total number of raw water abstraction imports (5A.25)**

**44** There are currently no raw water abstraction imports, so this figure is zero.

**Water imported from 3rd parties' raw water abstraction systems (5A.26)**

**45** The volume of raw water imported from 3rd party systems is zero.

**Total number of raw water abstraction exports (5A.27)**

**46** There are currently no raw water abstraction exports, so this figure is zero.

**Water exported to 3rd parties from raw water abstraction systems (5A.28)**

**47** The volume of raw water exported to 3rd party systems is zero.

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

**48** The reporting year value has been provided for the company water resources capacity, based on the hydrological yields for all sources contributing to the WRMP19 deployable output supply forecast.

**49** The total annual average water resources capacity is 1741.0MI/d, which is made up of groundwater and direct surface water intakes (1014.6MI/d) and surface water reservoirs, including their surface water intakes (726.4MI/d). This has reduced by 0.9MI/d from the previous year, due to a small groundwater licence change. This also could be compared to the WRMP company deployable output of 1542.4MI/d. There are important differences between the two values to be aware of, such as water resources capacity does not account for water treatment works constraints or raw water network constraints. Additionally, deployable output can be constrained by the relative proximity of the population in respect to sources and assets. As a result, deployable output will always be less than water resources capacity.

**Total number of completed investigations (WINEP/NEP), cumulative for AMP (5A.30)**

**50** There were no additional investigations completed in 2022/23.

**Table 5B - Water resources operating cost analysis for the 12 months ended 31 March 2023**

Line description	Units	Impounding Reservoir	Pumped Storage	River Abstractions	Groundwater, excluding MAR water supply schemes
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1	Power	£m	0.004	0.093	4.879	4.264
2	Income treated as negative expenditure	£m	-	-	(0.158)	(0.122)
3	Abstraction charges/ discharge consents	£m	0.429	3.624	1.780	4.263
4	Bulk supply	£m	-	-	-	-

**Other operating expenditure**

5	Renewals expended in year (Infrastructure)	£m	-	-	-	-
6	Renewals expended in year (Non-Infrastructure)	£m	-	-	-	-
7	Other operating expenditure excluding renewals	£m	0.634	1.631	0.807	12.044
8	Local authority and Cumulo rates	£m	0.037	0.133	0.000	2.206
9	Total operating expenditure (excluding 3rd party)	£m	1.105	5.481	7.308	22.655

Line description	Units	Artificial Recharge (AR) water supply schemes	Aquifer Storage and Recovery (ASR) water supply schemes	Other	Total
------------------	-------	---	---	-------	-------

1	Power	£m	-	-	-	9.241
2	Income treated as negative expenditure	£m	-	-	-	(0.280)
3	Abstraction charges/ discharge consents	£m	-	-	-	10.096
4	Bulk supply	£m	-	-	-	-

**Other operating expenditure**

5	Renewals expended in year (Infrastructure)	£m	-	-	-	-
6	Renewals expended in year (Non-Infrastructure)	£m	-	-	-	-
7	Other operating expenditure excluding renewals	£m	-	-	-	15.117
8	Local authority and Cumulo rates	£m	-	-	-	2.376
9	Total operating expenditure (excluding 3rd party)	£m	-	-	-	36.550

**Table 6A - Raw water transport, raw water storage and water treatment data for the 12 months ended 31 March 2023**

Line description	Units	Input
------------------	-------	-------

<b>Raw water transport and storage</b>				
1	Total number of balancing reservoirs	nr	3.000	-
2	Total volumetric capacity of balancing reservoirs	MI	399.000	-
3	Total number of raw water transport stations	nr	10.000	-
4	Total installed power capacity of raw water transport pumping stations	kW	12,870.000	-
5	Total length of raw water transport mains and other conveyors	km	538.260	-
6	Average pumping head ~ raw water transport	m.hd	43.290	-
7	Energy consumption – raw water transport (MWh)	MWh	46,158.181	-
8	Total number of raw water transport imports	nr	-	-
9	Water imported from 3rd parties to raw water transport systems	MI/d	-	-
10	Total number of raw water transport exports	nr	-	-
11	Water exported to 3rd parties from raw water transport systems	MI/d	-	-
12	Total length of raw and pre-treated (non-potable) water transport mains for supplying customers	km	62.240	-

<b>Water treatment - treatment type analysis</b>	Surface water		Ground water		
	Water treated	Number of works	Water treated	Number of works	
Units	MI/d	nr	MI/d	nr	
13	All simple disinfection works	-	-	3.610	3.000
14	W1 works	-	-	-	-
15	W2 works	-	-	154.035	41.000
16	W3 works	-	-	139.978	33.000
17	W4 works	4.086	1.000	180.015	29.000
18	W5 works	583.073	12.000	105.713	11.000
19	W6 works	7.555	1.000	-	-

<b>Water treatment - works size</b>		% of total DI	Number of works
Units		DI	nr
20	WTWs in size band 1	0.004	9.000
21	WTWs in size band 2	0.023	20.000
22	WTWs in size band 3	0.096	41.000
23	WTWs in size band 4	0.173	33.000
24	WTWs in size band 5	0.123	14.000
25	WTWs in size band 6	0.208	10.000
26	WTWs in size band 7	0.073	2.000
27	WTWs in size band 8	0.299	2.000

<b>Water treatment - other information</b>		Units	Input	
28	Peak week production capacity (PWPC)	MI/d	1,780.090	-
29	Total peak week production capacity (PWPC) having enhancement expenditure for grey solution improvements to address raw water quality deterioration	MI/d	1.290	-
30	Total peak week production capacity (PWPC) having enhancement expenditure for green solutions improvements to address raw water quality deterioration	MI/d	-	-
31	Total water treated at more than one type of works	MI/d	-	-
32	Number of treatment works requiring remedial action because of raw water deterioration	nr	1.000	-
33	Zonal population receiving water treated with orthophosphate	000's	4,972.797	-
34	Average pumping head – water treatment	m.hd	11.420	-
35	Energy consumption - water treatment (MWh)	MWh	85,304.345	-
36	Total number of water treatment imports	nr	-	-
37	Water imported from 3rd parties to water treatment works	MI/d	-	-
39	Total number of water treatment exports	nr	-	-
39	Water exported to 3rd parties from water treatment works	MI/d	-	-

### Total number of balancing reservoirs (6A.1)

**1** The reported numbers reflect the number of reservoirs classified as Network + Raw water storage as set out in RAG 4.11 guidance (Figure 1). We only include reservoirs which have one or more days storage. For 2022/23 reporting year, Clapham (Bedford) reservoir has been removed as it was not used.

1. Heigham Large Deposit Reservoir – for Heigham WTW
2. South Clifton – for Hall WTW
3. Saltersford Raw Water Reservoir – for Saltersford WTW.

**2** The purpose of these reservoirs is to provide resilience rather than storage and as such they do not have an abstraction licence or a natural catchment. Saltersford was a new addition to the list for 2020/21 following review of the guidance. The total number is three.

### **Total volumetric capacity of balancing reservoirs (6A.2)**

**3** The capacity of balancing reservoirs reflects the design/construction capacity of the reservoir where possible and is clarified by our Reservoir Safety Manager. This value has changed this reporting year due to the removal of Clapham (Bedford) reservoir: this value is 399.26MI.

### **Total number of raw water transport stations (6A.3)**

**4** In line with guidance as described above, reporting for 2022/23 has not changed since 2021/22 the figure remains:

- 10 transfer pumping stations including one gravity intake system at Ravensthorpe Reservoir.

**5** This increased by one in 2020/21, following review of the guidance including Empingham raw water transfer to Saltersford raw water reservoir. This was unchanged for 2021/22 and remains the same for 2022/23.

### **Total installed power capacity of raw water transport pumping stations (6A.4)**

**6** The number of pumps, rated power for each pump, location and asset status have been used where this information was held in corporate databases. The assets qualifying for inclusion were determined by the Water Resources team.

### **Total length of raw water transport mains and other conveyors (6A.5)**

**7** This data was reviewed and refined for PR19. The lengths have been calculated using the guidance provided in RAG 4.11.

**8** Constant improvement to on-site pipe classification has led to a 14km increase from the figure quoted in the 2021/22 length.

### **Average pumping head ~ raw water transport (6A.6)**

**9** For an overview on how we have reported average pumping head please see the commentary for 5A.23.

**10** Raw Water Transport APH is 43.29 m.hd. 76 per cent of the APH value is derived from measured data.

**11** Estimated historical pumping data from site documentation has been reviewed and validated by local subject matter experts to ensure it is accurate and up to date. As per the Abstraction commentary, the increase in APH for this price control is due to assets being identified (and therefore re-configured) as Raw Water Transport during the building of the new data model.

### **Energy Consumption ~ raw water transport (6A.7) and water treatment (6A.35)**

**12** The total energy consumption across both lines was 131,463 MWh. The equivalent number for 2021/22 was 126,444 MWh so there has been an increase of 5,019 MWh or 3.97 per cent. For raw water transport there has been an increase of 3,949 MWh (9.36 per cent) and for water treatment the increase is 1,070 MWh (1.27 per cent).

**13** The main component of this change has been the increased electricity usage, driven by higher water demand than in 2021/22 due to the exceptionally hot and dry weather during the summer period. Electricity accounted for 4,653 MWh (3.97 per cent) of the increase. There has also been an increase in consumption for transport purposes of 544 MWh or 8.46 per cent due to an increase in mileage claimed versus the previous year, which was still impacted by Covid-19 pandemic restrictions.

**14** A number of assumptions have been made in calculating the raw water transport and water treatment energy consumption data. We have applied the same assumptions as we did in calculating raw water abstraction (see commentary for 5A.24). In addition, we have included energy from solar sources generated and used on site.

#### **Total number of raw water transport imports (6A.8)**

**15** There have been no raw water transport imports.

#### **Water imported from 3rd parties' raw water transport systems (6A.9)**

**16** There is no water imported from third parties' raw water transport systems.

#### **Total number of raw water transport exports (6A.10)**

**17** There has been no water transported.

#### **Water exported to 3rd parties' raw water transport systems (6A.11)**

**18** There has been no water transported to third parties.

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

**19** The pipes for this line mainly consist of the system that supplies the Humber Bank industrial area with non-potable water. The length quoted of 62km has remained stable when compared to 2021/22.

#### **All simple disinfection works - W6 works (6A.13 - 6A.19)**

**20** The number of sites in each specified Water Treatment Works (WTW) category (based upon MI/d DI) is defined, based upon our Source Works Output Reporting System (SWORPS) data.

**21** Volumes per WTW have been calculated using 2022/23 year values. WTWs have then been grouped by category, as described, giving total numbers of WTWs per category and the volume of water in MI/d by either ground or surface water.

**22** Significant changes to categories are explained below:

- Barnham Cross - Moved from W1 to W2 (Plumbosolvency PO4 dosing added for 2022).
- West Bradenham WTW - Moved from W1 to W2 (Addition of PO4 dosing for 2022).
- Two Mile Bottom WTW - Moved from W2 to W3 (Addition of PO4 dosing for 2022).
- Ludham WTW - Removed from count as works is decommissioned, previously W2.
- Kedington WTW - W3 (New WTW added).
- Irby (Grimsby Res) - Moved from W4 to W5 (Addition of UV at Littlecoates for 2022).

#### **WTWs by category (6A.20 - 6A.27)**

**23** We have spoken to production operatives in each region to discuss the maximum production capacity for each works irrespective of the licences that are in place. The production capacity was calculated over a three-day period and then re-proportioned over twenty-four hours.

**24** Volumes per WTW have been calculated using 2022/23 year values. WTWs have then been grouped by size band, as described, giving total numbers of WTWs per band and the percentage of DI associated with each band calculated.

**25** A summary of changes to bandings from 2021/22 to 2022/23 are summarised below:

- Belstead WTW (moved to band 3 to band 4)
- Candlesby WTW (moved from band 3 to band 4)



- East Dereham WTW (moved from band 3 to band 4)
- Elsham WTW (moved from band 4 to band 6)
- Irby WTW (moved from band 6 to band 7)
- Hall WTW (moved from band 4 to band 5)
- Houghton St Gilles WTW (moved from band 4 to band 3)
- Kedington WTW (new site - band 4)
- Little Melton WTW(moved from band 4 to band 5)
- Ludham WTW (decommissioned - was previously band 1)
- Manby WTW (moved from band 3 to band 4)
- Old Buckenham (moved from band 1 to band 2)
- Pulloxhill (moved from band 3 to band 2)
- Sandhouse WTW (moved from band 3 to band 2)
- Stoke Ferry WTW (moved from band 6 to band 4)
- Waddingham WTW (moved from band 3 to band 2)
- Winterton Holmes WTW (moved from band 1 to band 3).

**26** The following WTWs have not been in supply this year but are included within the banding count -

- Mundesley WTW (Band 1)
- Winterton Holmes WTW (Band 3)
- Barnoldby WTW (Band 1)
- Bedford WTW (Band 5)
- Colney WTW (Band 1).

#### **Peak week production capacity (PWPC) (6A.28)**

**27** Overall Company PWPC saw a 0.843 MI/d increase from 2021/22 to 2022/23. Of our 144 sites, 28 increased, 101 remained the same and 15 sites decreased.

#### **Total peak week production capacity (PWPC) having enhancement expenditure for grey solution improvements to address raw water quality deterioration (6A.29)**

**28** For the financial year 2022/23 there is one scheme (an ion exchange plant extension at Wighton WTW for nitrate treatment) which had investment and falls into the grey category of improvements.

#### **Total peak week production capacity (PWPC) having enhancement expenditure for green solutions improvements to address raw water quality deterioration (6A.30)**

**29** For the financial year 2022/23 there were no schemes which had investment and fall into the green category of improvements.

#### **Total water treated at more than one type of works (6A.31)**

**30** We do not operate any schemes where water is treated at more than one type of works.

#### **Number of treatment works requiring remedial action because of raw water deterioration (6A.32)**

**31** One water treatment works required remedial action due to raw water deterioration and this is Wighton WTW nitrate scheme, which involved upgrading the treatment capacity of the existing ion exchange plant.

### **Zonal population receiving water treated with orthophosphate (6A.33)**

**32** The zonal population receiving water treated with orthophosphate is calculated from the information reported to the DWI in the Details Tables provided annually in accordance with the Information Direction. All Public Water Supply Zones (PWSZ) receiving orthophosphate dosed water are identified in the Details Tables which also document the population of each PWSZ.

**33** There has been a steady increase in the population receiving orthophosphate dosed water, which is partly due to the increase in the number of WTWs with orthophosphate dosing plant in operation, as well as the general increase in total population we serve. This now stands at 100 per cent for 2022/23, up from 98.58 per cent for 2021/22, meaning that the population served is 4,972,797.

### **Average pumping head – water treatment (6A.34)**

**34** For an overview on how we have reported average pumping head please see the commentary for 5A.23.

**35** Water Treatment APH is 11.42 m.hd. Twelve per cent of the APH value is derived from measured data.

**36** Estimated historical pumping data from site documentation has been reviewed and validated by local subject matter experts to ensure it is accurate and up to date. Last year was the first calculation of Treatment APH using telemetry data as opposed to an estimated fixed value. Whilst every effort was made in 2022 to be as accurate as possible, we have identified more treatment pumps this year, and re-classified a proportion of abstraction or Raw Water Transport as Treatment during our overhaul of the process. This has given rise to the increase in Average Pumping Head (APH) for this price control.

### **Total number of water treatment imports (6A.36)**

**37** There are no water treatment imports.

### **Water imported from third parties' to water treatment works (6A.37)**

**38** There is no raw water imported from third parties to water treatment works.

### **Total number of water treatment exports (6A.38)**

**39** There are no water treatment exports.

### **Water exported to third parties' water treatment works (6A.39)**

**40** There is no raw water exported to third parties' water treatment works.

**Table 6B - Treated water distribution - assets and operations for the 12 months ended 31 March 2023**

	Line description	Units	Input
	<b>Assets and operations</b>		
1	Total installed power capacity of potable water pumping stations	kW	79,407.000
2	Total volumetric capacity of service reservoirs	MI	1,818.100
3	Total volumetric capacity of water towers	MI	119.000
4	Water delivered (non-potable)	MI/d	50.599
5	Water delivered (potable)	MI/d	1,029.013
6	Water delivered (billed measured residential properties)	MI/d	530.986
7	Water delivered (billed measured businesses)	MI/d	324.157
8	Proportion of distribution input derived from impounding reservoirs	Propn 0 to 1	0.021
9	Proportion of distribution input derived from pumped storage reservoirs	Propn 0 to 1	0.417
10	Proportion of distribution input derived from river abstractions	Propn 0 to 1	0.068
11	Proportion of distribution input derived from groundwater works, excluding managed aquifer recharge (MAR) water supply schemes	Propn 0 to 1	0.495
12	Proportion of distribution input derived from artificial recharge (AR) water supply schemes	Propn 0 to 1	-
13	Proportion of distribution input derived from aquifer storage and recovery (ASR) water supply schemes	Propn 0 to 1	-
14	Proportion of distribution input derived from saline abstractions	Propn 0 to 1	-
15	Proportion of distribution input derived from water reuse schemes	Propn 0 to 1	-
16	Total number of potable water pumping stations that pump into and within the treated water distribution system	nr	466.000
17	Number of potable water pumping stations delivering treated groundwater into the treated water distribution system	nr	138.000
18	Number of potable water pumping stations delivering surface water into the treated water distribution system	nr	11.000
19	Number of potable water pumping stations that re-pump water already within the treated water distribution system	nr	314.000
20	Number of potable water pumping stations that pump water imported from a 3rd party supply into the treated water distribution system	nr	3.000
21	Total number of service reservoirs	nr	254.000
22	Number of water towers	nr	126.000
23	Energy consumption - treated water distribution (MWh)	MWh	154,135.489
24	Average pumping head - treated water distribution	m.hd	67.080
25	Total number of treated water distribution imports	nr	19.000
26	Water imported from 3rd parties to treated water distribution systems	MI/d	5.264
27	Total number of treated water distribution exports	nr	101.000
28	Water exported to 3rd parties from treated water distribution systems	MI/d	79.178
29	Peak 7 day rolling average distribution input	MI/d	1,434.848
30	Peak 7 day rolling average distribution input / annual average distribution input	%	1.209

Line description	Units	Input
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<b>Water balance - company level</b>			
31	Measured household consumption (excluding supply pipe leakage)	MI/d	507.065
32	Unmeasured household consumption (excluding supply pipe leakage)	MI/d	135.536
33	Measured non-household consumption (excluding supply pipe leakage)	MI/d	323.157
34	Unmeasured non-household consumption (excluding supply pipe leakage)	MI/d	1.600
35	Total annual leakage	MI/d	182.613
36	Distribution system operational use	MI/d	6.763
37	Water taken unbilled	MI/d	21.331
38	Distribution input	MI/d	1,178.064
39	Distribution input (pre-MLE)	MI/d	1,186.939

<b>Water balance - region 1</b>			
40	Measured household consumption (excluding supply pipe leakage)	MI/d	-
41	Unmeasured household consumption (excluding supply pipe leakage)	MI/d	-
42	Measured non-household consumption (excluding supply pipe leakage)	MI/d	-
43	Unmeasured non-household consumption (excluding supply pipe leakage)	MI/d	-
44	Total annual leakage	MI/d	-
45	Distribution system operational use	MI/d	-
46	Water taken unbilled	MI/d	-
47	Distribution input	MI/d	-
48	Distribution input (pre-MLE)	MI/d	-

<b>Water balance - region 2</b>			
49	Measured household consumption (excluding supply pipe leakage)	MI/d	-
50	Unmeasured household consumption (excluding supply pipe leakage)	MI/d	-
51	Measured non-household consumption (excluding supply pipe leakage)	MI/d	-
52	Unmeasured non-household consumption (excluding supply pipe leakage)	MI/d	-
53	Total annual leakage	MI/d	-
54	Distribution system operational use	MI/d	-
55	Water taken unbilled	MI/d	-
56	Distribution input	MI/d	-
57	Distribution input (pre-MLE)	MI/d	-

Line description	Units	Input
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<b>Components of total leakage (post MLE) - company level</b>			
58	Leakage upstream of DMA	MI/day	7.393
59	Distribution main losses	MI/day	134.896
60	Customer supply pipe losses – measured households excluding void properties	MI/day	23.921
61	Customer supply pipe losses – unmeasured households excluding void properties	MI/day	12.474
62	Customer supply pipe losses – measured non-households excluding void properties	MI/day	0.999
63	Customer supply pipe losses – unmeasured non-households excluding void properties	MI/day	0.058
64	Customer supply pipe losses – void measured households	MI/day	1.658
65	Customer supply pipe losses – void unmeasured households	MI/day	0.278
66	Customer supply pipe losses – void measured non-households	MI/day	0.907
67	Customer supply pipe losses – void unmeasured non-households	MI/day	0.028

<b>Components of total leakage (post MLE) - region 1</b>			
68	Leakage upstream of DMA	MI/day	-
69	Distribution main losses	MI/day	-
70	Customer supply pipe losses – measured households excluding void properties	MI/day	-
71	Customer supply pipe losses – unmeasured households excluding void properties	MI/day	-
72	Customer supply pipe losses – measured non-households excluding void properties	MI/day	-
73	Customer supply pipe losses – unmeasured non-households excluding void properties	MI/day	-
74	Customer supply pipe losses – void measured households	MI/day	-
75	Customer supply pipe losses – void unmeasured households	MI/day	-
76	Customer supply pipe losses – void measured non-households	MI/day	-
77	Customer supply pipe losses – void unmeasured non-households	MI/day	-

<b>Components of total leakage (post MLE) - region 2</b>			
78	Leakage upstream of DMA	MI/day	-
79	Distribution main losses	MI/day	-
80	Customer supply pipe losses – measured households excluding void properties	MI/day	-
81	Customer supply pipe losses – unmeasured households excluding void properties	MI/day	-
82	Customer supply pipe losses – measured non-households excluding void properties	MI/day	-
83	Customer supply pipe losses – unmeasured non-households excluding void properties	MI/day	-
84	Customer supply pipe losses – void measured households	MI/day	-
85	Customer supply pipe losses – void unmeasured households	MI/day	-
86	Customer supply pipe losses – void measured non-households	MI/day	-
87	Customer supply pipe losses – void unmeasured non-households	MI/day	-

### Power capacity and number of potable water pumping stations (6B.1 and 6B.16-20)

**1** The number of pumps, rated power for each pump, location and asset status have been used where this information was held in corporate databases. This includes those borehole pumps that both abstract and boost into the network and apportions a percentage split of the borehole rated power to distribution.

**2** The number of sites was calculated based on this more granular pump specific asset data and applying a "co-located" logic to align with the Ofwat definition of a "site". A categorisation of each site has been applied so to allow for the total number of booster stations to be split into the four categories of ground water, surface water, relift and import.

### Number and capacity of service reservoirs (6B.2 and 6B.21)

**3** For 2022/23 there are 254 service reservoirs.

**4** The count of reservoirs has decreased by one due to one site being operationally abandoned in September 2022

### 2022/23 Structures Removed

**5** Cheveley - Warren Hill #2 Reservoir – Updated to operational abandoned in September 2022

### 2022/23 Service Reservoir Capacity Adjustments

**6** For 2022/23 we are reporting 1818.123MI which rounds to 1818.1MI as reported in the table. There is a decrease compared to 2021/22 which was 1820.393MI. This is due to Cheveley - Warren Hill number two Reservoir being updated to operational abandoned.

Site	Capacity	Comments
Cheveley - Warren Hill #2 Reservoir	2.27	Operationally abandoned in September 2022

### Total volumetric capacity of water towers (6B.3 and 6B.22)

**7** For 2022/23 we are reporting 126 water towers.

**8** The count of water towers has decreased by two from 2021/22. This is due to one site being operationally abandoned and one site being abandoned.

### 2022/23 Structures Removed

**9** Boston - Garfits Lane Water Tower

**10** Dingley Water Tower

### 2022/23 Water Tower Capacity

**11** For 2022/23 we are reporting 118.970MI which rounds to 119.0MI as reported in the table. There is a decrease compared to 2021/22 which was 120.375MI. This is due to Boston - Garfits Lane Water Tower being operationally abandoned and Dingley Water Tower being abandoned.

Site	Capacity	Comments
Boston - Garfits Lane Water Tower	1.36	Operational abandoned July 2022
Dingley Water Tower	0.045	Abandoned July 2022

## 12 For reference - Feature state definitions

Feature State	Definition
Abandoned	Assets that have been disconnected from the network but remain in situ.
Operational Abandoned	An asset that has been removed from service with the intention to decommission it but is still connected to the network

### Water delivered non-potable (6B.4)

**13** The amount of water delivered to our non-potable customers is similar to 2021/22. This water is used to supply large industrial customers on the Humber bank and in Hartlepool.

### Water delivered billed measured potable (6B.5-7)

**14** Water delivered to measured residential properties decreased this year as a result of our Smart metering and water efficiency programmes, the continued unwinding of the impact of Covid-19 and a result of customers using less water due to wider cost pressures. This is partially offset as customers switch from unmeasured to measured billing and by new domestic connections to the network.

**15** Water delivered to measured business customers has increased this year as the impacts of Covid-19 subside and businesses return to normal. We continue to find that data held in the CMOS (Central Market Operating System) is not reliable enough to calculate consumption for the water balance due to lack of readings and delays in settlements being updated with the latest meter reading data. As in previous years we have used data from loggers and additional meter reads to improve our understanding of non household consumption.

### Proportion of distribution input derived from impounding reservoirs (6B.8)

**16** The proportion of distribution input for 2022/23 from impounding reservoirs is reported as 0.021 or 24.20 MI/d.

### Proportion of distribution input derived from pumped storage reservoirs (6B.9)

**17** The proportion of distribution input for 2022/23 from pumped storage is reported as 0.417 or 490.73 MI/d.

### Proportion of distribution input derived from river abstractions (6B.10)

**18** The proportion of distribution input for 2022/23 from river abstractions is reported as 0.068 or 79.78 MI/d.

### Proportion of distribution input derived from groundwater works, excluding managed aquifer recharge (MAR) water supply schemes (6B.11)

**19** The proportion of distribution input for 2022/23 from groundwater works is reported as 0.495 or 583.35 MI/d.

### Proportion of distribution input derived from artificial recharge (AR) and aquifer storage and recovery water supply schemes (6B.12 and 6B.13)

**20** No such schemes are operated by the company.

### Proportion of distribution input derived from saline abstractions and water reuse schemes (6B.14 and 6B.15)

**21** No such schemes are operated by the company.

### Energy Consumption ~ Treated Water Distribution (6B.23)

**22** The total energy consumption was 154,135 MWh. The equivalent number for 2021/22 was 151,045MWh so there has been an increase of 3,090 MWh or 2.05 per cent.

**23** The main component of this change has been the increased electricity usage, driven by higher water demand than in 2021/22 due to the exceptionally hot and dry weather during the summer period. Electricity accounted for 2,865 MWh (2.05 per cent) of the increase. There has also been an increase in consumption for transport purposes of 496 MWh or 6.45 per cent due to an increase in mileage claimed versus the previous year, which was still impacted by Covid-19 pandemic restrictions.

**24** A number of assumptions have been made in calculating the treated water distribution energy consumption data. Please refer to the commentary for Table 6A, lines seven and 35.

#### **Average pumping head ~ treated water distribution (6B.24)**

**25** For an overview on how we have reported average pumping head please see the commentary for 5A.23.

**26** Treated Water Distribution APH is 67.08 m.hd. 85 per cent of the APH vale is derived from measured data.

**27** Estimated historical pumping data from site documentation has been reviewed and validated by local subject matter experts to ensure it is accurate and up to date. AS per the previous method, the confidence in the data is high for this price control (over 85 per cent measured). This is due to the fact that Anglian Water measures the pressure in the network more accurately. There have been a few minor changes to pumping asset price control assignment during the development of the new data model, but nothing of any significant impact to the overall numbers. Enhanced Pressure Monitoring and the business wide approach to reducing bursts and leaks has meant a continuous reduction in APH for Distribution over the past three years.

#### **Total number of treated water distribution imports (6B.25)**

**28** The total number of treated water distribution imports for 2022/23 is 19.

#### **Water imported from third parties' treated water distribution systems (6B.26)**

**29** The total volume of imported water for 2022/23 is 5.26 MI/d.

#### **Total number of treated water distribution exports (6B.27)**

**30** The total number of treated water distribution exports for 2022/23 is 101. This year has seen an increase in the number of exports to NAVs.

#### **Water exported to third parties' treated water distribution systems (6B.28)**

**31** The total volume of exported water for 2022/23 is reported as 79.18 MI/d.

#### **Peak seven day rolling average distribution input (6B.29)**

**32** The peak seven day rolling average distribution input for 2022/23 is 1434.85 MI/d.

#### **Peak seven day rolling average distribution input / annual average distribution input (6B.30)**

**33** The peak seven day rolling figure as a percentage of the annual average distribution input is 120.89 per cent.

#### **Total annual leakage (6B.35)**

**34** Leakage for 2022/23 is assessed at 182.6 MI/d. This represents a 9.2 MI/d increase from 2022/23. This is above our business plan target and our WRMP profile, which was as a result of the combined impact of the hot summer and freeze/thaw events during the winter which caused increased the number of leaks requiring repair across our network and our customers supply pipes.



**35** We have assessed our compliance against the 76 sub components and 16 high level components defined in the PR19 Leakage reporting methodology document. At the high level we are reporting all 16 as green. At the sub-components level there are two areas where we do not meet requirements set out in the document, however we consider that they do not have a material impact on our reported leakage figure. These are as follows:

*15b - Estimate of water delivered unbilled (legally and illegally) is evidence based and not greater than 1.8 per cent of distribution input.*

- We are currently reporting an overall figure of 2.05 per cent of DI for unbilled water against the target of 1.8 per cent, based on evidence from logging or studies as appropriate for the various components. This is split 0.49 per cent illegally unbilled against target of 0.6 per cent and 1.46 per cent legally unbilled against a target of 1.2 per cent. As a WASC we have more water unbilled due to Water Recycling Centre use and sewer flushing which pushes us over the threshold (would be 1.29 per cent unbilled water without these).

*16e - Water balance discrepancy -*

- Our water balance gap is 2.57 per cent this year which means this component is amber.

### **Leakage strategy**

**36** Our AMP7 leakage strategy continues some themes that we started in AMP6 such as network optimisation and intensive leakage investigation. It is supplemented with new SMART strategies such as permanent noise logging, smart metering and widespread pressure transient monitoring. Outputs from our strategies are as follows:

#### **Proactive Leakage Resource:**

- In 2022/23 we had 227.8 Full Time Equivalent (FTE) dedicated proactive leakage operational roles. (170.8 FTE are field based detection roles).
- The average leakage technician productivity for 2022-2023 was 1.02 leaks per technician per day (an increase of 76 per cent when compared to the 2020 baseline)
- In 2022/23, 14,134 leaks were located through proactive detection activities.
- In addition to proactive detection activities, Leakage Operations supported c3,500 customer reported visible leaks during the summer drought period and supported incident response through network operations and bottled water deployment centres during the summer demand (drought) and winter freeze-thaw events. (PA120 Little Downham & Haddenham, PA124 Ely & Mildenhall, PA126 Grafham).

#### **Leakage capital delivery programmes:**

##### **Leakage SENSORS**

- Our fixed network hydrophone monitoring system now incorporates 307 DMA's (an increase from 285 DMAs in 2021-2022)
- The total number of leaks found from SENSOR detection in 2022/23 was 4,556. This brings the total number of leaks detected using this technology to 16,469 since 2020.
- In 2022-2023 the SENSOR programme delivered 1.07ML/d of leakage benefit.

##### **Intensive Investigation**

- Our intensive investigation process continues to develop well and now incorporates a comprehensive programme of virtual step testing using flexible metering assets, camera insertion detection and mains condition assessment, and the use of drones with thermographic imagery. In 2022-2023 we established a contract with a company to image and analyse 5,000km of targeted large rural distribution and trunk mains each year. This technology uses Synthetic Aperture Radar with patented analysis to detect

underground leaks. To compliment the satellite detection, we now use leakage detection dogs as part of our investigation process.

- In 2022-2023 the Intensive Investigation Process delivered 3.54MI/d of leakage benefit.

### **Customer supply pipe leakage / internal private leakage**

- We continue to work closely with our customers to ensure they are supported through the process of repairing private leaks in a timely manner. Excluding the SMART metering programme, the customer leakage policy support team resolved 10,270 cases in 2022-2023 with only 1,036 Waste of Water notices requiring to be issued.
- SMART metering - our smart metering programme has installed 543,686 meters by the end of 2022/23, up 233,365 from 2022/23. The installation programme has been slowed by issues with microprocessor availability, which has delayed deliveries of smart meters. In 2022/23 we identified 104,589 properties with continuous flow greater than one l/hr. We saw 12,964 of these leaks fixed with no contact from us to the customers. Of the 93,074 leaks where we informed and worked with our customers to ensure that the issue was resolved by them we saw 70,650. This has resulted in 25.15 MI/d of leakage or plumbing loss being resolved
- Network/pump optimisation schemes – There have been 162 optimisation schemes implemented this year, delivering 4.56 MI/d leakage reduction. This was split between:
  - 43 schemes to optimise existing pressure management assets, delivering 0.4 MI/d leakage reduction.
  - 112 schemes introducing first time pressure management, delivering 2.64 MI/d leakage reduction.
  - five pump optimisation schemes delivering 0.44 MI/d leakage reduction
  - two system optimisation schemes delivering 1.08 MI/d leakage reduction.

### **Distribution system operational use (6B.36)**

- 37** Number is similar to previous year.

### **Water taken unbilled (6B.37)**

- 38** Number is similar to previous year - this excludes supply pipe leakage from void properties as per the latest RAG 4.11 guidance.

### **Distribution input (6B.38)**

- 39** DI has increased this year in line with increased non-household demand and leakage.

### **Distribution input (pre-MLE) (6B.39)**

- 40** DI has increased this year in line with increased non-household demand and leakage.

**Table 6C - Water network+ - Mains, communication pipes and other data for the 12 months ended 31 March 2023**

	Line description	Units	Input
<b>Treated water distribution - mains analysis</b>			
1	Total length of potable mains as at 31 March	km	39,248.100
2	Total length of potable mains relined	km	-
3	Total length of potable mains renewed	km	45.200
4	Total length of new potable mains	km	162.000
5	Total length of potable water mains ( $\leq 320\text{mm}$ )	km	36,215.600
6	Total length of potable water mains ( $> 320\text{mm}$ and $\leq 450\text{mm}$ )	km	1,736.500
7	Total length of potable water mains ( $> 450\text{mm}$ and $\leq 610\text{mm}$ )	km	672.800
8	Total length of potable water mains ( $> 610\text{mm}$ )	km	623.300
<b>Treated water distribution - mains age profile</b>			
9	Total length of potable mains laid or structurally refurbished pre-1880	km	19.000
10	Total length of potable mains laid or structurally refurbished between 1881 and 1900	km	8,675.400
11	Total length of potable mains laid or structurally refurbished between 1901 and 1920	km	904.500
12	Total length of potable mains laid or structurally refurbished between 1921 and 1940	km	710.800
13	Total length of potable mains laid or structurally refurbished between 1941 and 1960	km	6,982.100
14	Total length of potable mains laid or structurally refurbished between 1961 and 1980	km	3,219.100
15	Total length of potable mains laid or structurally refurbished between 1981 and 2000	km	13,273.400
16	Total length of potable mains laid or structurally refurbished between 2001 and 2020	km	5,149.100
17	Total length of potable mains laid or structurally refurbished during and after 2021	km	314.700
<b>Communication pipes</b>			
18	Number of lead communication pipes	nr	515,073.000
19	Number of galvanised iron communication pipes	nr	184,524.000
20	Number of other communication pipes	nr	1,597,010.000
21	Number of lead communication pipes replaced or relined for water quality	nr	397.000
<b>Other</b>			
22	Company area	km <sup>2</sup>	22,747.000
23	Compliance Risk Index	nr	2.920
24	Event Risk Index	nr	2.770
25	Properties below reference level at end of year	nr	53.000
26	Average time properties are below the reference level	nr	-

### **Total length of potable mains as at 31 March (6C.1)**

**1** The length from the previous year has increased by approximately 459kms to 39,248.1 km for 2022/23. This higher than normal increase is due to a combination of factors but is mainly due to the clearing of a backlog of schemes that were not captured in our corporate GIS system during the pandemic as we prioritised essential activities.

### **Total length of potable mains relined and renewed (6C.2 and 6C.3)**

**2** For 2022/23 we are reporting 45.2km of mains renewed. This is an increase on the 2021/22 figure of 32.5km and we attribute to significant efforts to target mains which frequently fail as well as efforts to target and removed leakage from our network.

**3** We are unable to separate out lengths of mains relined and renewed, and so lines two and three are combined.

**4** Our mains renewed length is affected by the AMP cycle with the design phase requiring time to complete as can be seen with the profile of mains renewals delivered during AMP6. Some of our mains renewals programme has recently been focused on short lengths with high burst frequency which also reduces the overall length renewed.

### **Total length of new potable mains (6C.4)**

**5** We report 162.0km of new mains laid in 2022/23. This is predominantly from housing estate mains work, undertaken in the year (149.1km). There were also several standalone projects where new mains were laid in order to ensure water supply security/resilience following developer driven growth.

### **Potable mains by diameter band (6C.5- 6C.8)**

**6** These lines have been calculated using the latest in-service company-owned potable water mains data out of G/water (our corporate mapping system). All mains diameter bands have experienced small changes, except the smallest diameter band with a 408km increase, which is due to the clearing of the pandemic scheme capture backlog.

### **Total length of mains laid or structurally refurbished (6C.9 - 6C.17)**

**7** All age band lengths have remained stable when compared to 2021/22, except for the total length of mains laid or refurbished between 2001 and 2020 and post 2021. When compared to the previous band (which referred to all lengths post 2001) there has been a 505km increase, mainly due to the clearing of the pandemic scheme capture backlog.

### **Number of lead, galvanised iron and other communication pipes (6C.18 - 6C.20)**

**8** Our communication pipe stock was last modelled in 2012 for the 2014 Price Review. That report has been used as a starting point and the number of replaced lead and galvanized iron communication pipe has been subtracted from the 2012 modelled totals.

**9** Lines 6C.18 and 6C.19 have experienced a small decrease, which falls in line with previous years, whereas line 6C.20 has experienced a small increase, which again falls in line with previous years as we replace our lead and galvanised iron stock.

### **Number of lead communication pipes replaced for water quality (6C.21)**

**10** In 2022/23 we have replaced 397 lead communication pipes. Over 250 of these replacements were proactive replacements of our planned programme of work, targeting streets in Norwich with known lead communication pipes. The remaining have been replaced following compliance failures of the lead standard, notification from a customer that they intend to replace or have replaced their lead pipe, or during planned work on the network. As part of our planned programme of work in Norwich, we offered customers the opportunity to have their external supply pipe replaced to the point where it enters the property, eight of these supply pipe replacements were completed in 2022/23.

**11** Nine lead supply pipe replacements (including internal and external supply pipes) to the point of compliance (kitchen tap) have been undertaken following compliance failures of the lead standard as we seek opportunities to understand how to deliver this work in readiness for AMP8.

Number of lead communication pipes replaced or relined for water quality	396
Number of lead communication pipes replaced for other reasons	1
Number of external lead supply pipes replaced or relined	17
Number of internal lead supply pipes replaced or relined	9

### Company area (6C.22)

**12** The figure reported as the area served for water is our appointed area net of the aggregate area of all NAVs within our appointed area. The year on year movements of the water area figure are shown below.

Category	2021 data (sq km)	2022 data (sq km)	2023 Data (sq km)	Notes
Appointed area	22,650	22,747	22,747	2022 area increased due to inclusion of Hartlepool
AW NAVs	1	1	1	
NAVs within AW area	-25	-27	-34	
Total reported	22,626	22,721	22,714	

### Compliance Risk Index (6C.23)

**13** Please see the commentary for 3A.1.

### Event Risk Index (6C.24)

**14** Please see the commentary for 3E.11.

### Properties below reference level at end of year (6C.25)

**15** Please see the commentary for 3A.8.

## Table 6D - Demand management - Metering and leakage activities for the 12 months ended 31 March 2023

Line description		Units	Basic meter	AMR meter	AMI meter
<b>Metering activities - Totex expenditure</b>					
1	New optant meter installation for existing customers	£m	0.638	0.824	0.688
2	New selective meter installation for existing customers	£m	0.064	0.003	0.031
3	New business meter installation for existing customers	£m	0.025	0.005	0.006
4	Residential meters renewed	£m	3.841	1.158	25.506
5	Business meters renewed	£m	1.430	0.068	1.168
<b>Metering activities - Explanatory variables</b>					
6	New optant meters installed for existing customers	000s	1.833	1.936	1.942
7	New selective meters installed for existing customers	000s	0.431	0.032	0.204
8	New business meters installed for existing customers	000s	0.121	0.028	0.049
9	Residential meters renewed	000s	17.135	8.457	216.186
10	Business meters renewed	000s	6.800	0.595	9.909
11	Replacement of basic meters with smart meters for residential customers	000s	-	-	208.558
12	Replacement of AMR meter with AMI meters for residential customers	000s	-	-	7.574
13	Replacement of basic meters with smart meters for business customers	000s	-	-	9.839
14	Replacement of AMR meter with AMI meters for business customers	000s	-	-	0.070
15	New residential meters installed for existing customers – supply-demand balance benefit	MI/d	0.08	0.07	0.10
16	New business meters installed for existing customers – supply-demand balance benefit	MI/d	-	-	-
17	Replacement of basic meter with smart meters for residential customers – supply-demand balance benefit	MI/d	-	-	1.76
18	Replacement of AMR meter with AMI meter for residential customers – supply-demand balance benefit	MI/d	-	-	0.06
19	Replacement of basic meter with smart meters for business customers – supply-demand balance benefit	MI/d	-	-	-
20	Replacement of AMR meter with AMI meter for business customers – supply-demand balance benefit	MI/d	-	-	-
21	Residential properties - meter penetration	%	52.2	8	23.6
<b>Leakage activities</b>					
22	Total leakage activity	£m	85.991	25.839	111.830
23	Leakage improvements delivering benefits in 2020-25	MI/d	-	-	(9.200)
<b>Per capita consumption (excluding supply pipe leakage)</b>					
24	Per capita consumption (measured)	l/h/d	123.09	-	-
25	Per capita consumption (unmeasured)	l/h/d	174.78	-	-

### **Metering activities - totex expenditure (6D.1 - 6D.5)**

**1** We have put contractual arrangements in place for the delivery of our smart metering and basic metering programmes during AMP7 and as such, the key variable on totex costs is the volume installed. The commentary below explains the delivery of our metering programme in the third year of the AMP.

### **Meters installed and renewed (6D.6 - 6D.14)**

**2** The number of new optants was similar to the prior year at 5,711 (2021/22: 5,422), of which 3,878 (68 per cent ) were smart meters (AMR or AMI). Whether we fit a smart (AMI), visual read or AMR meter depends on whether the customer property is in an area where we can receive remote readings via the installed masts.

**3** The number of selective meters (installed at our behest) were similar to 2021/22. Again, about a third were smart meters.

**4** A quarter of new non-household meters were smart meters.

**5** Our smart metering programme was delayed in 2021/22 due to the impact of micro-chip shortages on smart meter manufacturing. These continued in the first half of 2022/23. Suppliers have only been able to meet our demands for meters in the latter half of the year. In the absence of further supply disruption, we are confident about completing the AMP7 smart metering programme.

**6** 89 per cent of residential meters renewed were smart meters. Of these, 96 per cent involved replacing basic meters and 4 per cent involved replacing AR meters.

**7** We saw an increase in business meter renewals, of which 9,909 (57 per cent) were smart meters (AMI). Of these, 99 per cent were replacements for basic meters.

**8** The number of smart meters in 6D.6-10 total 228,290. In addition, we fitted 5,075 meters to new connections, giving a total number of smart meters fitted in the year of 233,365.

### **New residential meters installed – supply-demand balance benefit (6D.15)**

**9** As part of our meter replacement and smart meter installation program we have installed 218,276 smart meters to household customers, along with non-smart traditional meter replacement.

**10** We have assumed that the installation of smart meters will enable a three per cent change in customer behaviour and a further three per cent saving for plumbing losses and customer supply pipe leaks (in alignment with WRMP19) and that these savings should be calculated as applying to each meter for an average of six months (i.e. half a year), to account for the overall installation rate.

**11** For customers who have opted to have a visual read meter we have assumed a saving of 15 per cent as a change from being unmeasured to measured (in line with WRMP19 calculation).

**12** Savings have been calculated based upon 2022/23 per capita consumption and occupancy rates:

- Measured 2022/23 PCC – 123.09 l/h/d
- Unmeasured 2022/23 PCC – 174.77 l/h/d:
- Measured Occupancy Rate 2.32 persons/property
- Unmeasured Occupancy rate - 2.65 persons/property.

**13** For residential meter installations we have, consequently, calculated savings of 0.08MI/d for optants who have switched from being unmeasured to being billed on a visual read meter (15 per cent saving from being unmeasured), 0.07MI/d for those switching from

being unmeasured to being billed using an AMR smart meter and an additional 0.10MI/d for those switching from being unmeasured to being billed using an AMI smart meter (a 21 per cent saving from being unmeasured. i.e. visual read (15 per cent) + smart meter savings (6 per cent) combined)). The combined saving for optants (both to smart and visual read meters) would be 0.25MI/d.

**14** Note that these savings will be cumulative on top of the savings already made due to previous smart meter installations for the previous year. The cumulative AMP7 savings that can be attributed to the introduction of smart meters is 4.30MI/d for meters replaced and 0.22MI/d for customers who have opted to have a smart meter from previously being unmeasured.

**15** A straightforward and conservative approach has been adopted which applies assumed savings to the number of installed meters. As additional smart meter data becomes available we will look to use this directly observed data, (potentially using meter readings to determine the actual savings which could then be aggregated and reported). This approach is an aspiration, but will currently require significant effort to understand other impacts within those numbers (for example, the potential impact of weather on savings recorded each year).

#### **New business meters installed – supply-demand balance benefit (6D.16)**

**16** As part of our meter installation and smart meter installation programme we have installed 50 smart meters to our business customers and 149 visual read meters.

**17** We currently have not attributed water efficiency savings to the installation of non-household meters, but will look to monitor changes to non-household consumption as customers are switched to smart meters. Work is currently being undertaken to assess savings for business customers that should be attributed to the smart meter programme and options are in development in order to assist Retailers and their customers with respect to water efficiency.

#### **Replacement of basic meter with smart meters for household customers – supply-demand balance benefit (6D.17)**

**18** As part of our meter replacement and smart meter installation program we have installed 216,132 smart meters to household customers (and 9,903 smart meters to business customers), along with non-smart traditional meter replacement.

**19** We have assumed that the installation of smart meters will enable a three per cent change in customer behaviour and a further three per cent saving for plumbing losses and customer supply pipe leaks (in alignment with WRMP19) and that these savings should be calculated as applying to each meter for an average of six months (i.e. half a year), to account for the overall installation rate. This is in effect an additional six per cent saving over and above the 15 per cent saving expected from those customers who are measured as opposed to unmeasured.

**20** Note that these savings will be cumulative on top of the savings already made due to previous smart meter installations.

**21** Savings have been calculated based upon 2022/23 per capita consumption and occupancy rates.

- Measured 2022/23 PCC – 123.09 l/h/d
- Unmeasured PCC – 174.77 l/h/d
- Measured Occupancy Rate 2.32 persons/property
- Unmeasured Occupancy rate - 2.65 persons/property

**22** Consequently, for residential meter renewals, we have calculated savings of 1.76MI/d.



### **Replacement of AMR meter with AMI meter for household customers– supply-demand balance benefit (6D.18)**

**23** As part of our meter replacement and smart meter installation program we have replaced 7,574 AMR residential meters with AMI smart meters for household customers.

**24** We have assumed that the installation of AMI smart meters as opposed to AMR meters will enable a three per cent change in customer behaviour and a further three percent saving for plumbing losses and customer supply pipe leaks (in alignment with WRMP19) and that these savings should be calculated as applying to each meter for an average of 6 months (i.e. half a year), to account for the overall installation rate. This is in effect an additional six per cent saving over and above the 15 per cent saving expected from those customers who are measured with an AMR meter, as opposed to unmeasured.

**25** Consequently, for residential AMR meter replacement, we have calculated savings of 0.06MI/d.

### **Replacement of basic meter with smart meters for business customers – supply-demand balance benefit (6D.19)**

**26** As part of our meter renewal and smart meter installation programme we have installed 9,903 smart meters to our business customers and 7,391 visual read meters.

**27** We currently have not attributed water efficiency savings to the installation of non-household meters, but will look to monitor changes to non-household consumption as customers are switched to smart meters. Work is currently being undertaken to assess savings for business customers that should be attributed to the smart meter programme and options are in development in order to assist Retailers and their customers with respect to water efficiency.

### **Replacement of AMR meter with AMI meter for business customers– supply-demand balance benefit (6D.20)**

**28** As part of our meter replacement and smart meter installation program we have replaced 70 AMR meters with AMI smart meters for business customers.

**29** We currently have not attributed water efficiency savings to the installation of non-household meters, but will look to monitor changes to non-household consumption as customers are switched to smart meters. Work is currently being undertaken to assess savings for business customers that should be attributed to the smart meter programme and options are in development in order to assist Retailers and their customers with respect to water efficiency.

### **Residential properties - meter penetration (6D.21)**

**30** Overall meter penetration increased from 83.1 per cent to 83.8 per cent at the end of 2022/23. A third of our water customers now have a smart meter of some type, with the majority paying their bills based on their readings. Nearly a quarter of our water customers are paying measured bills from an AMI meter.

### **Total leakage activity - totex expenditure (6D.22)**

**31** We have reported costs to maintain leakage and costs to reduce leakage. Enhancement funding is also reported, split Opex/Capex in table 4L.26-28.

**32** Costs to maintain leakage have increased this year as a result of the combined impact of the hot summer and freeze/thaw events during the winter which have caused increased the number of leaks requiring repair across our and our customers networks.

**33** Costs to reduce leakage have marginally reduced as a result of sensor role out programmes slowing and a lower spend on pressure management new schemes as we reach the end of cost effective pressure management schemes.

**Leakage improvements delivering benefits in 2020-25 (6D.23)**

**34** The definition for this line requires us to report the difference between 2021/22 and 2022/23 leakage however we do not feel that this is the best way to reflect the outputs from leakage improvement initiatives. The definition assumes that the total of any change in leakage is as a result of direct activity where as in reality the weather plays a large part in determining how many leaks break out and the level of leakage from year to year.

**Per capita consumption (measured customers) (6D.24) and (unmeasured customers) (6D.25)**

**35** Per capita consumption is derived from the water balance and follows the reporting guidelines as set out during the PR19 process. We have assessed our compliance with the guidance against each of the 24 components and are reporting all as green.

**36** For further details about activities we have undertaken to drive PCC down please refer to the commentary in table 3A.4.

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

**1** Table 6F has not been published in this document. The published version of the Ofwat tables can be viewed through the [Our reports](#) section on our website.

### Table Notes

**2** Actual costs are included for the years 2020/21 and 2021/22. Costs incurred prior to 2020/21 have been included in the 2020/21 column. Forecast costs are based on our delivery plans as of March 2023. The nature of the programme means that the schemes are at different stages in our investment process with some more advanced than others, we therefore expect movements in the forward-looking costs as the schemes progress.

**3** All costs are presented in 2022/23 price time base.

**4** The methodology for completing this table has been updated to ensure alignment with table 4L20 and 4L29 as per the RAG. There are two projects (THT1a and CVY1) where some expenditure is coded to additional lines in table 4 as we have aligned needs to deliver a single solution to meet multiple needs. The full cost of the solution is included in 6F to align with the scope data but the costs have been split between multiple lines in table 4L and 4N.

**5** AMP8 costs for the North Lincs Alternative Strategy schemes are not included here but are now included in our PR24 business plan submission.

**6** Benefits are forecast in the year where construction is complete. There are no benefits reported against the Adaptive Planning line as we are still in the early stages of this work and the benefits have not yet been confirmed.

**7** For schemes where there are multiple pipeline diameters and materials the predominant diameter and material has been included in the table. In common with standard industry practice, polyethylene (PE) pipeline diameters are quoted as external diameter and steel as internal.

**8** Pumping station power reported (kW) is the total for each interconnector scheme, in some cases this is the sum of several pumping stations. This has been calculated on the same basis as table 6B.

**9** Delivery year is based on current programme and subject to change. Forecast costs in AMP8 are for final system wide commissioning and testing activities, the scheme-by-scheme distribution of these may change as the commissioning programme is finalised.

**10** There are no green recovery schemes included in this table.

**11** Strategic regional solutions schemes have not been included in this table as they were separately funded under the Strategic Regional Solutions enhancement allowance.

**12** We are currently working to a total PCL of 469.4 MLD as per the Ofwat published Consolidated PR19 final determinations: Anglian Water – Outcomes performance commitment appendix published 28 February 2023.

### Outcome Delivery Summary

**13** We are progressing with the delivery of the outcomes of our WRMP19 through the delivery of the schemes included in our PR19 business plan. As we have sought to optimise these schemes, we have taken forward some changes to the capacity of the individual schemes compared to the WRMP which we detailed in our commentary at APR22. We expect our overall total additional capacity delivered to exceed the 469.4 Ml/d target, once adjustments for the removal of the Pyewipe schemes are considered.

**14** Cost pressures continue to materially affect this programme and we are currently forecasting an overspend of around £347 million against the £563 million enhancement totex allowance (adjusted to 22/23 price time basis). In addition, there have been multiple challenges to the programme including planning delays and severe disruption to the supply chain due to Brexit, the Covid pandemic and the war in Ukraine. However, we continue to work hard with the supply chain to mitigate the impacts of these issues and still expect to deliver the assets by the end of AMP7.

### **Changes to WRMP19 Capacities**

**15** We are on track to deliver the overall increase in capacity as reflected in the Performance Commitment, and to deliver our WRMP customer outcomes. As reported in APR22, our optimisation process has enabled us to make some changes to individual schemes which mean we are delivering the outcomes in a cost-efficient manner and protecting our customers interests.

**16** As we reported in 2021/22, following our correspondence with Ofwat in early 2022 we are no longer progressing the two schemes at Pyewipe (SHB2a and SHB2b) or the DPC Middlegate Scheme, instead we are progressing with the North Lincolnshire Alternative Strategy. The schemes associated with this have now all progressed into delivery.

**17** SHB2a and SHB2b are no longer relevant to this programme and require removing from the Performance Commitment, and the CLN15 supply side scheme (Elsham Conditioning Plant) will be upsized from 25 MLD to 55 MLD. We note that the revised published Performance Commitment Appendix takes into account changes as a result of the CMA redetermination and IDoK but not as a result of these subsequent changes.

**18** Solution development of the NTM1 (Central Lincolnshire WRZ to Nottinghamshire) scheme has resulted in a change to the solution from a pipeline to a treatment solution. The updated capacity is reported in the table and the pipeline scope has been removed. This change was driven by abstraction licence changes in this zone that occurred after PR19 and which meant that the pipeline solution was no longer fit for purpose as the location of the deficit within the WRZ had changed. We have changed the solution to a treatment-based solution to secure a more reliable output at Hall WTW which was previously limited on nitrate levels. The capacity benefit for this is 8ML/d (the total WTW capacity is 20 ML/d).

### **Digital Twin (DT)**

**19** This programme will create a large-scale, holistically linked water transfer resilience system that connects parts of our region that were not previously joined. This will be operated, performance managed and maintained using advanced digital technology through a digital twin. This requires significant technological and cultural changes.

**20** The digital twin capabilities will draw benefits through the Project lifecycle as well as the Asset lifecycle. Alongside tangible financial benefits, we are also looking to develop the softer non-financial benefits including environmental, employee and customer, and we have also developed our User Cases with strong links through to our Six Capitals model.

**21** The key components of the DT aside from assisting the delivery and commissioning of the physical asset are supervisory control and data acquisition (SCADA), and near real time modelling (NRTM).

**22** We need a 'system' level control that can look at many different aspects of the water and pipe at a single time and draw this insight together (SCADA). We will then take this complex system to scenario rehearse and optimise the way that we move water as well as predicting when issues will arise (NRTM).

### **Schemes completed and benefits realised to date**

**23** All the WRMP schemes continue to progress through delivery by our strategic alliances.

**24** In 2022/23 the Norwich WRZ to North Norfolk Rural WRZ WRMP19 (NNR8) scheme was completed delivering a benefit of 5 MI/d. The scheme connected our Little Melton and High Oak water treatment works with 12.3km of 315mm OD PE pipeline and a 220kw pumping station.

**25** The total capacity benefit delivered in AMP7 to date is 6.5 MI/d as reported in Table 3A.

### **Schemes in construction**

**26** We are now in the active construction phase for a number of schemes including:

- East Ruston – we are on site and have laid 12.8 out of 18.5km of 355mm diameter PE pipeline
- Lincoln to Grantham (SLN6) – scheme commenced in 2021/22, we have laid 34.8km of 700 and 800mm diameter steel pipe
- Elsham to Lincoln Transfer (CLN16) - top soil stripping, temporary works and road crossings have commenced ahead of pipelaying
- Sth Lincolnshire to Ruthamford North (RTN27) – we have laid 0.9km of 800 mm diameter steel pipeline
- Ruthamford Nth WRZ to Sth Fenland WRZ (SFN4) – completion of the first HDD crossing, temporary works and topsoil stripping have commenced ahead of pipelaying
- Nth Fenland WRZ to Ely WRZ (ELY9)– temporary works and road crossings have commenced ahead of pipelaying
- Ely WRZ to Newmarket WRZ (NWM6)– temporary works and road crossings have commenced ahead of pipelaying
- Newmarket WRZ to Bury St Edmunds WRZ (BHV5) - temporary works and road crossings have commenced ahead of pipelaying
- Ruthamford S to Ruthamford Central (RTC2)– we have now completed 1.9km of 355mm diameter PE pipeline from Bow Brickhill to Brickhill Copse.

**27** The remaining schemes continue to progress with finalising design, enabling activities, ecology and archaeology surveys, and will be starting construction in 2023/24.

### **Cost and Time Pressures and Risks**

**28** Despite PR19 cost benchmarking and the use of our extensive cost model library of historic costs it became clear that the Business Plan costs were not fully reflective of the delivery cost for this scale of project and fell significantly short of actual costs to deliver this project. Recent benchmarking has confirmed that our AMP7 delivery costs are efficient and are reflective of current market rates.

**29** The key areas of cost and programme pressure are summarised below:

1. The impact of the Covid-19 pandemic resulted in supply lines being closed due to isolation requirements, both nationally and internationally. When supply lines re-opened demand out-stripped supply, resulting in unprecedented increases in material costs, particularly affecting both steel and PE pipe, and fixtures and fittings. These increases at peak were as much as 100% of pre-Covid-19 prices in some cases. This resulted in piece-meal ordering and loss of supply chain efficiencies from bulk ordering. Delivery of goods have been subject to delay and increased costs due to lorry driver shortages. Lockdowns also delayed a number of the environmental surveys required for local authority consent. Many of these are timed windows which meant six or 12 months were lost from the critical paths on individual projects.
2. The withdrawal of the UK from the European Union (Brexit) has made transacting with Members of the European Union more difficult particularly with transportation and documentation required for shipping of goods to the UK. The impact of this is circa £2 million across the programme.
3. The removal of the subsidy on diesel fuel has had a direct impact on fuel costs for constructing works as well as suppliers, for instance aggregate and concrete suppliers,

passing on the cost of the increase through increases in costs for the raw product, this is expected to increase costs by circa £8 million of direct and indirect costs. Substitutes, such as HVO, have been priced to take advantage of this market increase.

4. The situation in Ukraine led to future orders of steel pipe being deferred as suppliers were unable to quote as the iron ore for the steel mills to manufacture the plate was sourced from Mariupol in Ukraine. We have managed the impact of this by engaging with the supply chain once the market began to settle and placing staged orders to meet our delivery needs but also taking advantage of a predicted reduction on oil process and exchange rates. The final steel pipe order was placed in December 2022. Crop compensation costs have risen by an estimated £11 million across the programme due to global shortages of cereal, wheat and rape.
5. Labour and staff availability and costs continue to increase due to demand from UK wide infrastructure programmes, like HS2 and Sizewell competing for the same resource from a limited resource pool. The Anglian region particularly suffers from its proximity to London where resources in the region can travel for greater salaries. Labour/supervision/management costs have increased by circa £60 million across the programme.
6. Significant cost inflation has also been experienced on materials for the non-infrastructure assets, this is expected to be around £55 million.
7. The extent of the trenchless crossings (tunnelled and drilled) for crossing other infrastructure (railways, rivers) was undervalued within the PR19 cost submission by an estimated £50 million.
8. Land Compensation, Surveys and the works to produce the Environmental Impact Assessments have been more significant than on previous schemes, the cost impact is estimated to be circa £25 million, this also caused pressure on the programme.
9. Complexity of requiring planning consent from 13 Different LPAs under the Town and Country Planning Act provisions has led to some significant delays in gaining full planning permission on some schemes. To the end of March 2023 we have received planning permission for 65 per cent of the major schemes and we are actively working with the Local Planning Authorities (LPA's) to secure the remainder. There have been several schemes where the LPAs have failed to determine within the prescribed timescales which has delayed the start of construction and impacted on the programme.

**30** To mitigate the above, the Strategic Pipeline Alliance (SPA) is working directly with the Tier one Partners and Supply Chain partners to limit the impacts of these external pressures and find cost efficient means of delivering the outcomes expected.

**31** Supply Chain partners benefit from having visibility of the bulk requirements for the programme when sourcing alternative areas for raw product or allocating production slots. In addition, the removal of intermediaries and regular dialogue ensures that we can respond promptly to the changing market conditions. SPA has assisted Supply Chain partners with improved cash flow to help with downstream pressures.

**32** Best practise sharing is taking place with Tier 1 Partners within the alliance. For example, best in class rates for HVO (diesel substitute) and plant are being shared across partners so that they are available for all to use.

**33** Staff and labour requirements remain problematic given the demands in the market of other large programmes, but partners have committed to prioritising SPA recognising the strategic importance of the interconnector programme to AW customers.

**34** To improve safety and deliver buying gains we have established a managed service desk to manage plant in bulk across all alliances. This is being tested and rolled out during year four.

**35** The first pipeline projects of the programme are now complete and there are significant lessons that have been learned, including frontier practices, that are being shared across the Alliance and wider business.

## **Sustainability / Carbon**

**36** SPA (Strategic Pipeline Alliance) successfully challenged carbon in the design stage of the programme, identifying carbon reductions of 200,000 TCO<sub>2</sub>e as well as direct cost savings. The programme has since entered the construction stage where carbon reductions remain a focus.

**37** Over the last year SPA has trialled and implemented new products and techniques to help further reduce the programme's capital carbon footprint. These include the use of HVO fuel, using recycled pipe bedding material and trialling the pipe plough laying technique. These carbon saving measures are being reported on as the pipeline is being laid and will be quantified at the end of the project. The work of SPA was audited as part of AW's most recent PAS2080 verification and remain on track for an industry leading capital carbon reduction.

## **Metaldehyde**

**38** We have been able to avoid the use of temporary metaldehyde treatment through the careful sequencing of delivery. Working closely with the DWI, we have been successful in providing evidence of an improvement in metaldehyde levels in the raw waters entering our surface water treatment works, which has resulted in our Metaldehyde Undertaking being revoked in November 2022.

## **Demand -side Improvements (excluding leakage and Smart Metering)**

**39** We understand that the purpose of Ofwat collecting the information in table 6F is to provide an updated view on the forecast costs of investment that was funded within the Final Determination under the enhancement model 'Supply Demand Balance' (SDB). For some companies this cost assessment model covered both strategic supply side water resource schemes such as interconnectors as well as demand side options. For us the model only covered strategic supply side options and made no allowance for demand side options as these were covered by the smart metering cost assessment model. We have provided costs here for the demand side options as requested but would like to flag to Ofwat that these costs are not comparable with the SDB allowance in the adjusted Final Determination.

## **Supply demand balance improvements delivering benefits starting from 2026**

**40** Costs exclude those associated with the Fens Reservoir and associated transfers which have been moved into the RAPID process. The costs included here in table 6F include the early development of desalination, water re-use and aquifer recharge schemes.

## **Programme Assurance**

**41** We continue to work with Aqua Consultants Ltd to provide third party independent assurance of the programme. An initial report was submitted to Ofwat in January 2023, further reports will be submitted in due course.

**Table 7A - Wastewater network+ - Functional expenditure for the 12 months ended 31 March 2023**

	Line description	Units	£'000
<b>Costs of STWs in size bands 1 to 5</b>			
1	Direct costs of STWs in size band 1	000s	4,566.000
2	Direct costs of STWs in size band 2	000s	3,493.000
3	Direct costs of STWs in size band 3	000s	12,149.000
4	Direct costs of STWs in size band 4	000s	22,111.000
5	Direct costs of STWs in size band 5	000s	14,870.000
6	General & support costs of STWs in size bands 1 to 5	000s	7,918.000
7	Functional expenditure of STWs in size bands 1 to 5 (excluding 3rd party services)	000s	65,107.000
<b>Costs of large STWs (size band 6)</b>			
8	Service charges for STWs in size band 6	000s	1,292.000
9	Estimated terminal pumping costs size band 6 works	000s	3,517.000
10	Other direct costs of STWs in size band 6	000s	41,020.000
11	Direct costs of STWs in size band 6	000s	45,829.000
12	General & support costs of STWs in size band 6	000s	6,989.000
13	Functional expenditure of STWs in size band 6 (excluding 3rd party services)	000s	52,818.000
<b>Costs of STWs - all sizes</b>			
14	Total operating functional expenditure (excluding 3rd party services)	000s	117,925.000



**Table 7B - Wastewater network+ - Large sewage treatment works for the 12 months ended 31 March 2023**

Line description	Units	Large STW1	Large STW2	Large STW3	Large STW4	Large STW5	Large STW6	Large STW7	Large STW8	Large STW9	Large STW10
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**Sewage treatment works - Explanatory variables**

3	Works name	text	ANWICK STW	BASILDON STW	BEDFORD STW	BENFLEET STW	BOSTON STW	BOURNE STW	BRACKLEY STW (NEW)	BRAINTREE STW	BROADHOLME STW	CAISTER - PUMP LANE STW
4	Classification of treatment works	text	TA2	SAS	TA2	SB	SB	TA2	TA2	TA2	TA2	SAS
5	Population equivalent of total load received	000s	32.05	123.15	204.72	28.10	54.23	25.91	33.85	31.59	223.46	108.02
6	Suspended solids consent	mg/l	26	45	30	80	70	22	25	16	30	0
7	BOD5 consent	mg/l	13	25	20	25	25	11	11	8	17	25
8	Ammonia consent	mg/l	6	10	7	20	0	3	3	3	3	0
9	Phosphorus consent	mg/l	2.00	0.00	1.00	0.00	0.00	2.00	2.00	2.00	1.00	0.00
10	UV consent	mW/s/cm2	0	0	0	0	0	0	0	0	0	0
11	Load received by STW	kgBOD5/d	1,923	7,389	12,283	1,686	3,254	1,555	2,031	1,895	13,408	6,481
12	Flow passed to full treatment	m3/d	4,804	38,502	46,519	5,953	10,855	6,802	5,473	6,536	56,234	27,384

**Sewage treatment works - Functional expenditure**

13	Service charges	£000s	17	33	33	19	17	21	19	20	33	25
14	Estimated terminal pumping expenditure	£000s	2	105	185	0	0	0	0	0	24	0
15	Other direct expenditure	£000s	334	609	1,272	222	328	367	537	1,466	1,223	938
16	Total direct expenditure	£000s	353	747	1,490	241	345	388	556	1,486	1,280	963
17	General and support expenditure	£000s	53	117	225	36	52	58	83	220	194	146
18	Functional expenditure	£000s	406	864	1,715	277	397	446	639	1,706	1,474	1,109

Line description	Units	Large STW11	Large STW12	Large STW13	Large STW14	Large STW15	Large STW16	Large STW17	Large STW18	Large STW19	Large STW20
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**Sewage treatment works - Explanatory variables**

	Works name	text	CAMBRIDGE STW	CANVEY ISLAND STW	CANWICK STW	CHELMSFORD STW	CLACTON-HOLLAND HAVEN STW	COLCHESTER STW	CORBY STW	COTTON VALLEY STW	DERHAM ROAD STW	DUNSTABLE STW
3	Works name	text										
4	Classification of treatment works	text	SAS	SAS	TB2	SAS	SAS	SAS	TA2	TA2	TB2	TA2
5	Population equivalent of total load received	000s	217.71	38.97	129.32	149.87	50.40	141.54	97.78	330.07	25.90	60.32
6	Suspended solids consent	mg/l	20	0	30	40	0	60	20	25	20	20
7	BOD5 consent	mg/l	15	25	10	20	25	25	10	12	10	12
8	Ammonia consent	mg/l	5	0	3	10	0	15	1	5	4	3
9	Phosphorus consent	mg/l	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.60
10	UV consent	mW/s/cm2	0	0	0	0	0	30	0	0	0	0
11	Load received by STW	kgBOD5/d	13,063	2,338	7,759	8,992	3,024	8,492	5,867	19,804	1,554	3,619
12	Flow passed to full treatment	m3/d	51,075	9,555	32,160	34,071	13,243	35,593	21,345	71,433	3,890	12,581

**Sewage treatment works - Functional expenditure**

13	Service charges	£000s	20	19	33	34	20	36	19	59	9	19
14	Estimated terminal pumping expenditure	£000s	296	0	226	52	11	351	1	218	0	0
15	Other direct expenditure	£000s	1,344	506	622	951	418	1,388	962	2,353	241	490
16	Total direct expenditure	£000s	1,660	525	881	1,037	449	1,775	982	2,630	250	509
17	General and support expenditure	£000s	261	78	132	157	68	277	147	404	37	77
18	Functional expenditure	£000s	1,921	603	1,013	1,194	517	2,052	1,129	3,034	287	586

Line description	Units	Large STW21	Large STW22	Large STW23	Large STW24	Large STW25	Large STW26	Large STW27	Large STW28	Large STW29	Large STW30
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**Sewage treatment works - Explanatory variables**

3	Works name	text	FELIXSTOWE STW	FLITWICK STW	FORNHAM ALL SAINTS STW	GREAT BILLING STW	GRIMSBY-PYEWIPE STW	HAVERRHILL STW	HITCHIN STW	HUNTINGDON (GODMANCHESTER) STW	INGOLDMELLS STW	IPSWICH-CLIFF QUAY RAE BURN ST
4	Classification of treatment works	text	SAS	TA2	TB2	TA2	SAS	TB2	TA2	TA2	SAS	SAS
5	Population equivalent of total load received	000s	33.20	31.51	109.30	352.79	134.73	29.91	38.15	45.08	51.15	156.18
6	Suspended solids consent	mg/l	120	25	16	25	0	20	30	30	0	200
7	BOD5 consent	mg/l	25	15	8	13	25	10	15	20	25	25
8	Ammonia consent	mg/l	50	5	2	5	0	4	4	7	0	50
9	Phosphorus consent	mg/l	0.00	2.00	2.00	1.00	0.00	2.00	1.00	1.00	0.00	0.00
10	UV consent	mW/s/cm2	0	0	0	0	0	0	0	0	0	0
11	Load received by STW	kgBOD5/d	1,992	1,891	6,558	21,167	8,084	1,795	2,289	2,705	3,069	9,371
12	Flow passed to full treatment	m3/d	7,440	5,361	10,609	75,371	41,495	6,863	8,294	12,679	11,570	30,307

**Sewage treatment works - Functional expenditure**

13	Service charges	£000s	17	19	19	57	35	19	20	19	20	36
14	Estimated terminal pumping expenditure	£000s	0	0	6	622	192	63	44	0	49	169
15	Other direct expenditure	£000s	233	306	513	2,653	936	200	402	534	304	2,042
16	Total direct expenditure	£000s	250	325	538	3,332	1,163	282	466	553	373	2,247
17	General and support expenditure	£000s	37	48	80	528	184	42	70	82	56	346
18	Functional expenditure	£000s	287	373	618	3,860	1,347	324	536	635	429	2,593

Line description	Units	Large STW31	Large STW32	Large STW33	Large STW34	Large STW35	Large STW36	Large STW37	Large STW38	Large STW39	Large STW40	Large STW41
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Sewage treatment works - Explanatory variables													
3	Works name	text	KINGS LYNN STW	LEIGHTON LINSLADE STW	LETCHWORTH STW	LOWESTOFT STW	MARSTON STW (LINCS)	NEWMARKET STW	PETERBOROUGH (FLAG FEN) STW	ROCHFORD STW	SHENFIELD AND HUTTON STW	SOUTHEND STW	SPALDING STW
4	Classification of treatment works	text	TA2	TB2	TA2	SAS	TB2	TA2	TA1	TA1	TA2	SAS	SB
5	Population equivalent of total load received	000s	67.74	45.30	49.62	88.12	59.32	28.57	275.85	33.96	44.16	199.16	70.08
6	Suspended solids consent	mg/l	100	35	25	0	15	20	24	60	20	150	120
7	BOD5 consent	mg/l	25	25	13	25	10	12	9	25	10	25	25
8	Ammonia consent	mg/l	0	8	3	0	3	4	3	0	3	0	0
9	Phosphorus consent	mg/l	0.00	2.00	1.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
10	UV consent	mW/s/cm2	0	0	0	0	0	0	0	0	0	0	0
11	Load received by STW	kgBOD5/d	4,064	2,718	2,977	5,287	3,559	1,714	16,551	2,038	2,650	11,950	4,205
12	Flow passed to full treatment	m3/d	21,535	6,018	6,612	17,043	16,052	4,886	60,292	9,365	12,047	54,948	18,733

Sewage treatment works - Functional expenditure													
13	Service charges	£000s	33	20	19	32	19	20	36	17	21	33	19
14	Estimated terminal pumping expenditure	£000s	0	11	81	34	10	0	153	0	0	330	15
15	Other direct expenditure	£000s	1,157	443	498	1,330	351	263	1,698	272	46	2,297	152
16	Total direct expenditure	£000s	1,190	474	598	1,396	380	283	1,887	289	67	2,660	186
17	General and support expenditure	£000s	187	70	90	210	57	42	286	44	101	316	27
18	Functional expenditure	£000s	1,377	544	688	1,606	437	325	2,173	333	168	2,976	213

Line description	Units	Large STW42	Large STW43	Large STW44	Large STW45	Large STW46	Large STW47	Large STW48	Large STW49	Large STW50	Large STW51
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Sewage treatment works - Explanatory variables												
3	Works name	text	ST NEOTS STW	STOWMARKET STW	TEINEY-NEWTON MARSH STW	THETFORD STW	TILBURY STW	WEST WALTON STW	WHILTON STW	WHITLINGHAM TROWSE STW	WICKFORD STW	WITHAM STW
4	Classification of treatment works	text	TB2	TB2	TA2	TA2	SAS	SAS	TB2	TA2	TA1	SAS
5	Population equivalent of total load received	000s	39.99	25.76	53.63	33.13	150.70	172.71	31.27	338.57	42.57	32.72
6	Suspended solids consent	mg/l	90	30	45	50	0	80	24	40	45	40
7	BOD5 consent	mg/l	25	13	25	25	25	25	12	20	22	20
8	Ammonia consent	mg/l	0	6	0	16	65	20	3	7	10	10
9	Phosphorus consent	mg/l	1.00	2.00	0.00	2.00	0.00	0.00	2.00	1.00	0.00	0.00
10	UV consent	mW/s/cm2	0	0	30	0	0	0	0	0	30	0
11	Load received by STW	kgBOD5/d	2,399	1,546	3,218	1,988	9,042	10,363	1,876	20,314	2,554	1,963
12	Flow passed to full treatment	m3/d	10,437	4,950	16,064	5,651	38,054	14,047	5,979	68,344	10,433	6,629

Sewage treatment works - Functional expenditure													Total
13	Service charges	£000s	19	19	33	20	33	19	19	57	19	19	1,292
14	Estimated terminal pumping expenditure	£000s	0	0	3	2	147	58	0	32	0	25	3,517
15	Other direct expenditure	£000s	330	191	554	382	1,755	1,175	241	2,373	459	359	41,020
16	Total direct expenditure	£000s	349	210	590	404	1,935	1,252	260	2,462	478	403	45,829
17	General and support expenditure	£000s	52	31	88	62	296	189	39	376	71	60	6,989
18	Functional expenditure	£000s	401	241	678	466	2,231	1,441	299	2,838	549	463	52,818

### **Works name, classification of treatment works and population equivalent of total load received (7B.1- 7B.3)**

**1** We have calculated the population equivalent (pe) and the loads consistent with guidance provided by Ofwat in response to our query on the PR24 Large STW cost assessment data set in October 2022. As such, the assessment of size banding excludes imported effluents (tankered loads from septic tanks and cesspools). PE and loads reported in lines three and nine also include an assessment of non-resident (holiday) population loads. The number of works has increased by one since 2021/22.

**2** There were two works identified as marginally under the large works threshold last year which have subsequently moved above it in 2022/23 due to an increase in domestic loads. These works are Dereham Rushmeadow Road Water Recycling Centre (WRC) and Stowmarket WRC. Conversely, Market Harborough WRC, which only came on to the list in 2021/22, has fallen back under the threshold in 2022/23 due to a drop in domestic loads.

**3** All of these sites are very close to the 25,000 pe threshold for being classified as a large works and so are very sensitive to changes in population numbers.

### **Large STW Consents (7B.4-8)**

**4** We maintain an internal system (PACE) which summarises details of the permit limits relating to our WRC discharges. These are the limits which are detailed in the Environmental Permits issued to us by the Environment Agency.

**5** We have noted an error on the permit limits that were reported for Tilbury WRC in 2020/21 and 2021/22. A suspended solids limit of 95 mg/l was stated, whereas the site has no limit for this parameter. In addition an ammonia limit of '0' was reported, but the site does have a limit of 65 mg/l. These errors have been corrected in our return for this year.

**6** A tightened Phosphorus consent of 0.6 mg/l came into force at Dunstable WRC in September 2022.

### **BOD5 Consent (7B.5)**

**7** For a number of water recycling centres the UWWTD BOD limit of 25 Mg/l is tighter than the normal BOD limit specified in the Environmental Permit. In these situations, we have therefore reported the UWWTD BOD limit as we believe this is more appropriate to use for comparative efficiency purposes. This approach is consistent with that taken when the data used to be provided as part of the June Return.

### **Load received by STW (7B.9)**

**8** The total load received at large works has risen by over 190,000 pe in 2022/23. This equates to a less than four per cent increase in treated load.

### **Flow passed to full treatment (7B.10)**

**9** The numbers reported for many of our WRCs have changed noticeably when compared with those reported in 2021/22. We believe this is mainly due to the natural variance associated with different rainfall patterns from year to year. In our region the summer of 2022/23 was drier than that of 2021/22.

**10** At Basildon WRC the data for the site is based upon the sum of values from three flow meters. A telemetry fault has been identified which means that the data from one of these meters is being recorded correctly on site, but not when it is recorded on our systems. An urgent job has been raised with to investigate and correct the error. As a result, however, the flow reported for the WRC is much higher than for 2021/22.

**11** The flowmeter at Thetford WRC was faulty for a period during 2021/22. Missing data between November 2021 and May 2022 caused low values to be recorded for that period. The meter is now working correctly. As a result, however, the flow reported for 2022/23 is much higher than for 2021/22.

**12** At Tilbury WRC an issue was identified where the flowmeters were found to be scaled incorrectly. Work has been carried out to correct this.

**13** For Huntingdon WRC the value reported in 2021/22 was high due to a faulty signal from a telemetry outstation, which has now been corrected. The value reported for 2022/23 is lower but correct.

**14** The flowmeter which is used to report flows at Colchester WRC was located at the back end of the treatment process. This meter failed in July 2022 however and we have therefore changed to reporting flows from a flow meter located at the inlet works (which has been certified). Readings from the inlet flowmeter are slightly higher than the back end flow meter. We believe this may be due to an issue with double counting of flows, which we expect to resolve shortly.

**15** At Flitwick WRC there was a significant reduction in the flows reported in 2022/23 compared with 2021/22. The flow meter has been checked and no issues have been identified. We therefore believe the reduction in flow was because of different rainfall patterns.

**16** The reported flow data for Witham WRC should be based upon a summed calculation from three separate flow meters. Upon investigation it was found that data from one of the flow meters was not being included in the calculation. An allowance has therefore been made for this in the data reported for 2022/23 and the issue has been raised with our telemetry team for resolution.

### **Service charges (7B.11)**

**17** Service charges in total for large works agrees to table 7A sewage treatment (line 7A.8).

**Table 7C - Wastewater network+ - Sewer and volume data for the 12 months ended 31 March 2023**

	Line description	Units	Input
<b>Wastewater network</b>			
1	Connectable properties served by s101A schemes completed in the report year	nr	136.000
2	Number of s101A schemes delivered in the report year	nr	2.000
3	Total pumping station capacity	kW	120,179.000
4	Number of network pumping stations	nr	6,266.000
5	Total number of sewer blockages	nr	40,365.000
6	Total number of gravity sewer collapses	nr	259.000
7	Total number of sewer rising main bursts	nr	142.000
8	Number of combined sewer overflows	nr	1,203.000
9	Number of emergency overflows	nr	889.000
10	Number of settled storm overflows	nr	363.000
11	Sewer age profile (constructed post 2001)	km	2,156.000
12	Volume of trade effluent	MI/yr	18,565.950
13	Volume of wastewater receiving treatment at sewage treatment works	MI/yr	606,155.770
14	Length of gravity sewers rehabilitated	km	26.000
15	Length of rising mains replaced or structurally refurbished	km	35.000
16	Length of foul (only) public sewers	km	19,237.000
17	Length of surface water (only) public sewers	km	11,677.000
18	Length of combined public sewers	km	10,320.000
19	Length of rising mains	km	4,844.000
20	Length of other wastewater network pipework	km	6.000
21	Total length of "legacy" public sewers as at 31 March	km	46,084.000
22	Length of formerly private sewers and lateral drains (s105A sewers)	km	31,200.000

**s101A Schemes completed in the report year (7C.1 and 7C.2)**

**1** Two s101A schemes were delivered within the reporting year for 136 connected properties:

- Knapton, 112 connected properties.
- Ashington, 24 connected properties.

**Capacity and number of network pumping stations (7C.3 and 7C.4)**

**2** The number of pumps, rated power for each pump, location and asset status have been used where this information was held in corporate databases. The rated power of the remaining pumps, where data was not currently centrally held, was estimated through extrapolation based on site annual energy consumption (and pump hours run where available). Where there is no data available on a pump an estimated 2.5kW has been applied.



**3** The number of sites was calculated based on this more granular pump-specific asset data. As in previous years, inlet pumping stations sited on water recycling centres have been excluded because they have been considered to be inter-stage pumping stations.

#### **Total number of sewer blockages (7C.5)**

**4** The total number of blockages has decreased compared to 2021/22. In 2022/23 we had 40,395 blockages compared to 42,844 in 2021/22. This is predominantly due to an decrease in the number of public sewer blockages (-2,185), rather than a reduction in the blockages numbers on sewers that were previously described as transferred sewers (-294). We have been fastidiously working to drive down public sewer blockages through initiatives such as our Keep it Clear campaign, Environmental Compliance and Services engagement with food serving establishments, as well as installing flow level monitors at key points on our network enable us to to further improve our service to customers.

**5** We continue to focus on proactive measures to prevent blockages through planned preventative maintenance, with better analytical techniques being used to more effectively identify blockage hotspots and ensuring sewers that are more likely to have blockages are jetted more frequently.

#### **Total number of sewer rising main bursts / collapses (7C.6 and 7C.7)**

**6** There were 259 reactive sewer collapses reported in 2022/23. This is a decrease compared to 2021/22 when we reported 297, this is due to a programme of work aimed at proactively finding sewer collapses to repair and improving our internal reporting to accurately capture these jobs.

**7** The 259 reactive sewer collapses reported in 2022/23 includes 10 open sewer collapses that have not been closed by the 31 March 2023.

**8** There were 142 reactive burst rising mains reported in 2022/23. This is a slight increase compared to 2021/22 when we reported 132, we believe this is due to adverse weather.

#### **Numbers of overflows (7C.8 - 7C.10)**

**9** To ensure consistency we have changed our methodology for the number storm overflows we report. We have chosen to align the figures reported with those which are included within our annual storm overflow Event Duration Monitoring (EDM) report than we provide to the Environment Agency. We reported 1,552 storm discharges to the EA, which comprised of 1,189 storm overflows and 363 storm tanks. In our APR for 2022/23 we are therefore reporting 1,203 storm overflows (which includes the 14 UCSOs referred to below) and 363 storm tanks.

**10** Overall there is a small reduction in the both the number of storm overflows and storm tanks we are reporting this year. Investigations carried out as part of delivering our programme of providing 100 per cent EDM coverage of our CSOs by the end of 2023 identified that a number of CSOs did not exist and the Environmental Permits were therefore surrendered. We have continuously collaborated with the Environment Agency on developing an appropriate process for screening, assessing and permitting proactively identified UCSOs. These 14 live applications have been confirmed as UCOs and accepted by the EA National Permitting Service team where they are currently being processed.

**11** There has been no change in the methodology used for reporting the number of emergency overflows.

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

**12** The best estimated year laid of every mapped sewer has been maintained. Our approach is iterative based on our corporate systems, historical development polygons, deed dates (for non-infra sites to sub-catchments) and the length weighted median year for each material.

**13** These lengths have remained stable with a small increase of 55km in this age band when compared to 2021/22. This is due to a pandemic backlog of uncaptured schemes still existing.

**14** We have assumed that the age profile of modelled lengths of section 24 and transferred sewers is spread across the age bands and have used a weighted average method.

#### **Volume of trade effluent (7C.12)**

**15** The volume of trade effluent is lower than in 2021/22. This is understood to be due to a combination of lower general economic activity, an ongoing effect from the interruptions to trade caused by Covid-19 and the impact of water efficiency initiatives by businesses.

#### **Volume of wastewater receiving treatment at sewage treatment works (7C.13)**

**16** For smaller WRCs (serving less than 250 population equivalent) an estimate has been made of the flow discharged per year. The numbers for this line were then produced by combining the separate values for the measured flows from larger WRCs with this estimated flow from the smaller WRCs.

**17** The definition for this line within the RAG 4.11 Guidelines requires us to reflect the flow data reported to the EA in the annual OMA report. Measured flow data is reported to the EA on a calendar year basis consequently data for the 2022 calendar year has been used for this line.

#### **Length of gravity sewers rehabilitated (7C.14)**

**18** In 2022/23 26km of gravity sewer was proactively replaced or relined. This is a decrease in length based on 2021/22.

**19** As with 2021/22 we have continued our focus on large diameter gravity sewers and sewers with high levels of infiltration. We have also proactively replaced or relined smaller diameter sewers, when they were identified whilst carrying out emergency repairs on adjoining sewers that had already failed.

#### **Length of rising mains replaced or structurally refurbished (7C.15)**

**20** In 2022/23 35km of rising mains was proactively replaced or refurbished.

**21** This is a similar length to 2021/22 and a significant increase in length based on 2020/21. This reflects a continuation in our change in approach to mitigate rising mains to extend asset life, rather than a strategy based solely on rising main replacement.

**22** A pressure monitor is installed on a rising main to track the changes in pressure experienced by the rising main during the pump start/stops cycle and this information is analysed alongside site survey data to produce a transient pressure report. This report will then make recommendations about what interventions can be made to increase the life of the asset.

**23** Capital interventions include (but are not limited to) installation of air valves along the rising main length and variable speed drives (VSDs) at the pumping station to reduce pressure spikes. 14 rising mains (totalling 33km length) benefitted from these types of interventions in 2022/23. These rising mains reflect our interpretation of the term 'structurally refurbished'.

**24** Rising main replacement schemes are completed when mitigation is not possible or cost effective, or if further burst occur post mitigation. Four rising mains were fully or partially relined or replaced in 2022/23 (totalling 2km in length).

**Length of wastewater network pipework (7C.16 - 7C.21)**

**25** Our modelled estimate of ex-Section 24 sewer lengths have been included in our reported sewer lengths since 2002/03; therefore these have been included in these lines. Our modelled length includes an assessment of the surface water sewers and we have assumed, given the typical sewer practice at the time, the remainder are combined sewers.

**26** Lines 16-18 have all remaining stable for 2022/23, this is mainly due to a pandemic backlog of uncaptured schemes still existing.

**27** The only line that has experienced a more significant increase is the length of rising mains of 189kms, and this is due to a desktop assessment of the length of missing rising mains connected to our adopted private pumping stations.

**28** In line 4R.20 we have included a length of 6km which is for a sludge main.

**Length of formerly private sewers and lateral drains (s.105A sewers) (7C.22)**

**29** We are reporting our total estimated length of modelled transferred sewers. These are 26,700km of laterals and 4,500km of private drains. This estimate is based on the findings of a number of studies we undertook prior to 2011.

**30** Our estimate of our length of formerly private sewers is based on initial assessments made before the transfer for PR09. We are aware that our approach is consistent with most of the industry in that we continue to use the modelled lengths calculated at that time. However, we believe that new technologies and approaches can be used to improve upon the modelling carried out for PR09. As a result we have commenced a project to provide improved modelled estimates for our private sewer as well as our modelled section 24 sewer lengths as part of our PR24 submission.

**Table 7D - Wastewater network+ - Sewage treatment works data for the 12 months ended 31 March 2023**

Line description	Units	Treatment categories							Total
		Primary	Secondary		Tertiary				
			Activated Sludge	Biological	A1	A2	B1	B2	

Load received at sewage treatment works										
1	Load received by STWs in size band 1	kg BOD5/day	22	378	1,575	222	9	384	-	2,590
2	Load received by STWs in size band 2	kg BOD5/day	-	376	1,313	261	22	742	47	2,761
3	Load received by STWs in size band 3	kg BOD5/day	-	1,853	6,559	1,494	354	6,684	778	17,722
4	Load received by STWs in size band 4	kg BOD5/day	-	9,295	17,974	4,631	2,760	14,594	10,160	59,414
5	Load received by STWs in size band 5	kg BOD5/day	-	11,152	7,201	5,700	15,112	3,939	24,528	67,632
6	Load received by STWs above size band 5	kg BOD5/day	-	110,899	9,145	21,143	127,362	-	29,765	298,314
7	Total load received	kg BOD5/day	22	133,953	43,767	33,451	145,619	26,343	65,278	448,433
8	Load received from trade effluent customers at treatment works	kg BOD5/day	-	-	-	-	-	-	-	45,471

Number of sewage treatment works										
9	STWs in size band 1	nr	6	51	295	27	1	46	-	426
10	STWs in size band 2	nr	-	16	58	11	1	33	2	121
11	STWs in size band 3	nr	-	26	98	24	4	100	10	262
12	STWs in size band 4	nr	-	28	67	15	7	57	31	205
13	STWs in size band 5	nr	-	10	8	5	14	4	25	66
14	STWs above size band 5	nr	-	16	3	3	20	-	9	51
15	Total number of works	nr	6	147	529	85	47	240	77	1,131

Line description	Units	Treatment works consents														
		Phosphorus					BOD5					Ammonia				
		<=0.5mg/l	>0.5 to <=1mg/l	>1mg/l	No permit	Total	<=7mg/l	>7 to <=10mg/l	>10 to <=20mg/l	>20mg/l	No permit	Total	<=1mg/l	>1 to <=3mg/l	>3 to <=10mg/l	>10mg/l

**Load received at sewage treatment works**

1	Load received by STWs in size band 1	kg BOD5/day	-	-	-	2,589	2,589	-	-	160	225	2,203	2,588	-	-	78	187	2,323	2,588
2	Load received by STWs in size band 2	kg BOD5/day	-	96	59	2,590	2,745	-	54	838	1,413	440	2,745	-	22	269	586	1,868	2,745
3	Load received by STWs in size band 3	kg BOD5/day	118	2,341	850	14,209	17,518	80	496	8,549	8,328	65	17,518	-	609	5,141	5,156	6,613	17,519
4	Load received by STWs in size band 4	kg BOD5/day	462	11,341	6,928	39,851	58,582	198	10,663	27,362	20,077	283	58,583	1,082	8,309	26,453	10,793	11,945	58,582
5	Load received by STWs in size band 5	kg BOD5/day	2,133	9,566	32,424	23,510	67,633	-	9,503	31,186	26,944	-	67,633	2,560	7,791	32,917	12,271	12,095	67,634
6	Load received by STWs above size band 5	kg BOD5/day	-	129,209	33,698	135,406	298,313	-	48,189	135,121	115,004	-	298,314	5,867	64,440	125,664	42,932	59,410	298,313
7	Total load received	kg BOD5/day	2,713	152,553	73,959	218,155	447,380	278	68,905	203,216	171,991	2,991	447,381	9,509	81,171	190,522	71,925	94,254	447,381
8	Load received from trade effluent customers at treatment works	kg BOD5/day	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Number of sewage treatment works**

9	STWs in size band 1	nr	-	-	-	424	424	-	-	13	23	388	424	-	-	6	19	399	424
10	STWs in size band 2	nr	-	4	3	113	120	-	2	37	58	23	120	-	1	12	26	81	120
11	STWs in size band 3	nr	2	28	11	218	259	1	7	123	126	2	259	-	8	66	77	108	259
12	STWs in size band 4	nr	1	37	18	146	202	1	31	100	69	1	202	3	25	90	39	45	202
13	STWs in size band 5	nr	2	10	34	20	66	-	9	31	26	-	66	3	7	33	13	10	66
14	STWs above size band 5	nr	-	14	14	23	51	-	9	19	23	-	51	1	12	18	7	13	51
15	Total number of works	nr	5	93	80	944	1,122	2	58	323	325	414	1,122	7	53	225	181	656	1,122

Line description	Units	Treatment categories
		Primary

Population equivalent			
16	Current population equivalent served by STWs	000s	7,301.821
17	Current population equivalent served by STWs with tightened/new P consents	000s	359.603
18	Current population equivalent served by STWs with tightened/new N consents	000s	-
19	Current population equivalent served by STWs with tightened/new sanitary parameter consents	000s	6.442
20	Current population equivalent served by STWs with tightened/new microbiological treatment consents (for example UV, ozone etc)	000s	-
21	Population equivalent treatment capacity enhancement	000s	-
22	Current population equivalent served by STWs with tightened/new consents for chemicals or other hazardous substances.	000s	106.464

### Loads received (7D.1-7D.8)

**1** The loads reported in this table provide a consistent record which aligns with how we historically reported tables 17C and 17D in the June Return.

**2** The size banding of the individual Water Recycling Centres (WRCs) has been determined using the total resident population, which is comprised of domestic population, tankered waste (from septic tanks and cesspools) and trade effluent loads. Non-resident population has not been included when determining the size banding of the works, in line with the guidance.

**3** The treatment types at our WRCs are assumed to be the same as prior years, unless evidence from operations has been provided. There have been no changes to treatment types in 2022/23.

**4** The loads received volumes in lines 7D.1-7D.7 include non-resident population, but exclude the tankered imports from septic tanks and cesspools. This is consistent with our approach to reporting historically and in line with previous Ofwat guidance JR08/004 and RAG 4.11.

**5** The numbers in these lines include loads from nine additional WRCs, which belong to other water companies but to which our customers drain and we receive a charge for the treatment of this load. These WRCs are summarised below:

Works Name	Shortcode	APR-23 PE	Ownership	Treatment Type	Load kg/BOD/day
ALKBOROUGH STW	ALKBST	559.42	Severn Trent	SCB	33.57
BRENTWOOD NAG HEAD LN STW THAM	BRWDST	6141.94	Thames	TB1	368.52
CHEVELEY PARK STW	CHEVST	21.66	Private	PRM	1.3
STANSTED MOUNTFICHET STW	STMFST	2309.34	Thames	TB1	138.56
STEVENAGE STW	STEVST	1590.48	Thames	TA2	95.43
GT WHELNETHAM-STANFLD RD STW	GWESST	7.32	Private	SCB	0.44

HALSE STW	HATWST	1240.4	Thames	SCB	74.42
SEVERN TRENT STW	SWTWST	269.5	Severn Trent	SCB	16.17
WINGRAVE STW	WITWST	5435.26	Thames	SCB	326.12

### Load received from trade effluent customers at treatment works (7D.8)

**6** In 2022/23, the population equivalent (PE) emanating from trade effluent customers has increased by 48,419PE (6.4 per cent increase) compared to 2021/22. We attribute this increase to the country coming out of Covid-19 restrictions and operations in the region slowly returning back to normal, pre-pandemic levels.

### Number of works (7D.9-7D.15)

**7** Consent information is provided by an extract from our PACE database, which is a live document and holds all the consent limits for the WRCs the company operate. Some parameters have multiple consent values, and where this occurs we use the tightest consent limit the works is constrained to. As we do not have the consent information for the nine WRCs which are not in our control, we have not assigned these loads to any consent banding, and so they are excluded from the consents tables.

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

**8** Four STWs had schemes delivered to meet new/tightened P consents in 2022/23. They were:

- Monks Eleigh WRC
- Brampton (Cambs) WRC
- Great Billing WRC
- Holt WRC

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

**10** We have no new N permit conditions scheduled in the AMP7 WINEP.

### Current population equivalent served by STWs with tightened/new sanitary parameter consents (7D.19)

**11** We have delivered one new scheme to achieve tightened sanitary parameter consents. This was at Winslow WRC.

### Current population equivalent served by STWs with tightened/new microbiological treatment consents (for example UV, ozone etc) (7D.20)

**12** There were no schemes delivered during the reporting year which involved the tightening, or introduction, of new or tightened consent conditions for microbiological parameters to meet the requirements of the EU Shellfish Waters or revised Bathing Water Directives.

### Population equivalent treatment capacity enhancement (7D.21)

**13** In 2022/2023 there was no additional population equivalent capacity added. Schemes and progressing through design and construction however, no growth schemes have been completed within the first three years of the AMP.

### Current population equivalent served by STW with tightened / new consents for chemicals or other hazardous substances (7D.22)

**14** Six WRCs had schemes delivered to meet new/tightened consents for chemicals or other hazardous substances in 2022/23. They were:

- Burwell WRC
- Duxford WRC
- Letchworth WRC
- Newmarket WRC
- Royston WRC
- Tuddenham WRC



**Table 7E - Wastewater network+ - Energy consumption and other data for the 12 months ended 31 March 2023**

	Line description	Units	Input
<b>Other</b>			
1	Total sewerage catchment area	km2	4,221.000
2	Designated bathing waters (inland and coastal)	nr	48.000
3	Number of intermittent discharge event duration monitoring	nr	103.000
4	Number of monitors for flow monitoring at STWs	nr	10.000
5	Number of odour related complaints	nr	3,603.000
<b>Energy consumption</b>			
6	Energy consumption - sewage collection	MWh	99,046.333
7	Energy consumption - sewage treatment	MWh	233,324.043
8	Energy consumption - wastewater network +	MWh	332,370.376
<b>Scheme delivery</b>			
9	Cumulative shortfall in FFT addressed by WINEP / NEP schemes to increase STW capacity	l/s	100.330
10	Number of sites with an increase in sewage treatment works capacity delivered to address a shortfall in FFT	nr	9.000
11	Additional storm tank capacity provided at sewage treatment works (grey infrastructure)	m3	11,204.300
12	Additional effective storm storage capacity at sewage treatment works (green infrastructure)	m3	-
13	Additional volume of network storage at CSOs etc to reduce spill frequency (grey infrastructure)	m3	-
14	Additional effective storage in the network delivered through green infrastructure	m3	-
15	Total number of sewage treatment works sites where additional storage has been delivered (grey infrastructure)	nr	40.000
16	Number of sewage treatment works sites where additional storage has been delivered with pumping (grey infrastructure)	nr	18.000
17	Number of sewage treatment works benefitting from green infrastructure replacing the need for storm tank storage	nr	-
18	Number of sites delivering additional network storage (grey infrastructure)	nr	-
19	Number of sites delivering additional network storage including pumping (grey infrastructure)	nr	-
20	Number of sites delivering additional network storage through green infrastructure	nr	-
21	Surface water separation drainage area removed	m2	15,399.000
22	Number of schemes delivered to meet tightened or new sanitary consents	nr	1.000
23	Number of installations requiring civils for flow monitoring at sewage treatment works	nr	1.000
24	Number of installations requiring civils for event duration monitoring at intermittent discharges	nr	18.000
25	Number of storm overflows where improvements have been made to reduce harm or reduce spill frequencies	nr	1.000

### **Total sewerage catchment area (7E.1)**

The aggregate sewer catchment area is unchanged on the number reported in 2022. It is the total of all the areas of the ~1,100 Water Recycling Centres across the Anglian Water region.

### **Designated bathing waters (7E.2)**

**1** At the end of the 2022 bathing water season, there were 48 bathing waters, which has been consistent since 2019 when the current total dropped from 49 due to the de-designation of Clacton Groyne 41 at the end of 2019.

**2** Three new bathing waters have been designated for the 2023 bathing water season at Inland locations – Rutland Water Sykes Lane, Rutland Water Whitwell Creek and the River Deben.

**3** The designation of new bathing waters is undertaken by the Local Authority and Anglian Water have no control over designations. It may be plausible that further applications will be received in 2023 which result in further designated bathing waters in AMP8. Current information suggests this may be as may as nine additional bathing waters.

### **Number of intermittent discharge sites with event duration monitoring (EDM) (7E.3)**

**Event Duration Monitors (EDM) were installed at 102 locations to meet obligations in the Environment Agency's Water Industry National Environment Programme (WINEP).**

**4** In addition, EDM were installed at 96 sites as part of our commitment to provide 100 per cent EDM coverage for all of our CSOs by the end of December 2023.

### **Number of monitors for flow monitoring at STWs (7E.4)**

**5** We have delivered 9 FFT flow monitoring obligations in 2022/23. This is ten more than we anticipated in our initial WINEP delivery planning agreed with the Environment Agency.

### **Number of odour related complaints (7E.5)**

**6** The number of odour related complaints for 2022/23 is 3,603. This is similar to the figure reported in 2020/21 and 2021/22.

### **Energy consumption - sewage collection, sewage treatment and wastewater network plus (7E.6-8)**

**7** The total energy consumption across both lines was 332,370 MWh. The equivalent number for 2021/22 was 341,414 MWh so there has been a decrease of -9,043 MWh or -2.65 per cent. For sewage collection there has been a decrease of -3,726 MWh (-3.63 per cent) and for sewage treatment the decrease is -5,317 MWh (-2.23 per cent).

**8** The main component of this reduction is the -13,131 MWh reduction in grid electricity used on the sites. An increase was observed in the CHP generated electricity used for wastewater network plus, which reflects the higher availability of this category of electricity in 2022/23, as described in the commentary for Table 8C, lines 1-6. The overall reduction was driven by a number of factors, primarily the lower rainfall during the year, especially during the extreme hot and dry weather of the summer, so less electricity was required in collecting wastewater and pumping it to water recycling centres.

**9** An increase in fuel consumption of 1,038 MWh (42.6 per cent) was observed, as was an increase in consumption from transport of 979 MWh (6.4 per cent). The increase in fuel consumption is primarily as a result in the change in the allocation of gas oil and diesel between bioresources and wastewater network plus business units – please refer to the

section on assumptions further down this commentary. The increase in consumption for transport purposes was due to an increase in mileage claimed versus the previous year, which was still impacted by Covid-19 pandemic restrictions.

**10** A number of assumptions have been made in calculating the water recycling energy consumption data.

- For the whole of the water recycling function, we have applied a financial split from regulatory accounts between bioresources and wastewater network plus for electricity consumption. This financial split is based upon assessments of proportional use by different Ofwat business units made by operational experts.
- We have included energy from renewable sources generated and used on site, including CHP (combined heat and power), wind and solar.
- Grid electricity and fuel (oil and natural gas) used in offices has been included and split equally between water and water recycling.
- Fuel oil is not recorded on our corporate systems against Ofwat's business units and therefore the same split used for electricity has been assumed for each fuel type with the exception of gas oil delivered to water recycling sites;
- We have assumed a 35 per cent thermal efficiency for natural gas consumption in converting to energy output (boilers and CHP).
- In 2021/22 and in previous years, an assumption has been made that 90 per cent of gas oil and diesel delivered to water recycling sites is used for CHP boilers in line with the approach taken by our management accountants. However, developments in reporting through our SAP system have allowed us to allocate this more accurately to the relevant business units. For 2022/23, this means that we can allocate 68 per cent of diesel deliveries to bioresources and 32 percent to wastewater network plus. Note that due to changes in fuel taxation, we can no longer purchase gas oil, but must purchase diesel instead.
- Transport (claimed mileage and fleet fuel purchased on fuel cards) is not recorded in our corporate systems against Ofwat's business units and therefore we have split the total 50/50 between water and water recycling and then assumed that they split in the same proportions as electricity between the business units. This is with the exception of RES fleet Biosolids haulage which has been allocated entirely to bioresources.
- Sub contracted transport (bioresources and cake) has not been included, only fleet (directly operated) vehicles.
- Transport for company cars is collected as mileage. We have converted mileage into kWh through using BEIS' greenhouse gas reporting condensed conversion factors for 2022.

**11** For electric vehicles, a small volume of energy is collected via fuel cards or is metered at employees' homes. For the remaining, larger volume we have made the assumption that the mileage claimed relates to charging at home or on public charging points, rather than using the charging points at our offices. Many people are still working from home a lot of the time and we don't have a reliable source to tell us how many miles are being claimed from charging at Anglian Water sites. We believe this assumption to be safe and not capable of skewing the overall figures since (i) electric car consumption from claimed mileage totals just 238,643 kWh across the whole of Anglian Water and (ii) wherever cars are charged, the driver may be charging for domestic and commuting miles (which cannot be claimed) as well as for business. While there may be an overlap with the electricity consumption data, we consider that this will be de-minimus. We are looking to improve our processes in order to better capture consumption by electric cars charged at home and AW infrastructure.

### **Cumulative shortfall in FFT addressed by WINEP / NEP schemes to increase STW capacity (7E.9)**

**12** Nine Flow to Full Treatment (FFT) shortfall schemes were delivered, providing a total of 100.33l/s. These were all under the U\_IMP5 WINEP driver. The required figure was calculated from the required FFT in comparison to the original FFT permits.

### **Number of sites with an increase in sewage treatment works capacity delivered to address a shortfall in FFT (7E.10)**

**13** Each of the 9 U\_IMP5 schemes completed were delivered at different sites. These were:

- Buckingham WRC
- Cambridge WRC
- Doddington WRC
- Draughton WRC
- King's Cliffe WRC
- Melbourn WRC
- Silverstone WRC
- Sleaford WRC
- Winslow WRC.

### **Additional storm tank capacity provided at sewage treatment works (grey infrastructure) (7E.11)**

**14** An additional 11204.3 cubic meters of storage was delivered through 40 U\_IMP6 WINEP schemes.

### **Additional effective storm storage capacity at sewage treatment works (green infrastructure) (7E.12)**

**15** No schemes of this description were delivered in 2022/23.

### **Additional volume of network storage at CSOs etc to reduce spill frequency (grey infrastructure) (7E.13)**

**16** No schemes of this description were delivered in 2022/23.

### **Additional effective storage in the network delivered through green infrastructure (7E.14)**

**17** No schemes of this description were delivered in 2022/23.

### **Total number of sewage treatment works sites where additional storage has been delivered (grey infrastructure) (7E.15)**

**18** Additional storage has been delivered at 40 sites, all through the U\_IMP6 WINEP driver.

### **Number of sewage treatment works sites where additional storage has been delivered with pumping (grey infrastructure) (7E.16)**

**19** We have delivered 18 schemes where additional storage has been delivered with pumping in 2022/23.

### **Number of sewage treatment works benefitting from green infrastructure replacing the need for storm tank storage (7E.17)**

**20** No schemes of this description were delivered in 2022/23.

### **Number of sites delivering additional network storage (grey infrastructure) (7E.18)**

**21** There are no sites delivering additional network storage for grey infrastructure.

### **Number of sites delivering additional network storage including pumping (grey infrastructure) (7E.19)**

**22** No schemes of this description were delivered in 2022/23.

### **Number of sites delivering additional network storage through green infrastructure (7E.20)**

**23** No schemes of this description were delivered in 2022/23.

### **Surface water separation drainage area removed (7E.21)**

**24** Partnership funding contributions have been made towards flood risk management schemes which provide benefits to our customers. **These are delivered outside of our WINEP programme, delivering 15,399 m<sup>2</sup> of Drainage area removed.**

### **Number of schemes delivered to meet tightened or new sanitary consents (7E.22)**

**25** One scheme was delivered to meet a no-deterioration permit for ammonia. This was Winslow WRC.

### **Number of installations requiring civils for flow monitoring at sewage treatment works (7E.23)**

**26** One of our 10 delivered U\_MON4 schemes this year required civils work. This was White Notley WRC.

### **Number of installations requiring civils for event duration monitoring at intermittent discharges (7E.24)**

**27** There were 18 U\_MON2 schemes delivered that required civils in 2022/23.

These were 15 that needed brackets for FDTs, ultrasonics or radar:

- Bradwell - Bradwell Road Settled Storm Overflow
- Braintree - Rose Hill Sewage Pumping Station Outlet B
- Brantham Settled Storm Overflow (B)
- Kings Lynn - Millfleet SO4 Settled Storm Overflow
- Kings Lynn - St Peters Road Terminal Pumping Station
- Maldon - Fambridge Road
- Market Harborough - Coventry Road Settled Storm Overflow
- Northampton - St Andrews Road Settled Storm Overflow
- Runwell - Church End Lane Overflow
- Saffron Walden - George Abbey Overflow
- Soham - Mill Corner Terminal Pumping Station
- Southend - Leigh Hill Overflow
- Southend - Shoebury Rampart Street Sewage Pumping Station
- Southend - Woodgrange Drive Combined Sewer Overflow 2
- Wellingborough - Brook Street East.

And seven that needed traffic management:

- Southend - Woodgrange Drive
- Southend - Hamstel Royal Artillery
- Kings Lynn - Milfleet SO4
- Northampton - Cliftonville Road
- Runwell - Runwell Gardens, Church End Lane
- Haverhill - Withersfield Road
- Maldon - Fambridge Road.

**28** Four of the schemes qualified under both categories and are therefore only reported once.

**Number of storm overflows where improvements have been made to reduce harm or reduce spill frequencies (7E.25)**

**29** One scheme was delivered, at Caistor WRC, on a Storm Overflow Assessment Framework (U\_IMP4) scheme.

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

**1** Table 7F has not been published in this document. The published version of the Ofwat tables can be viewed through the [Our reports](#) section on our website.

**2** Actual capital expenditure costs are included for the years 2019/20, 2020/21, 2021/22 and 2022/23. Cost data for 2019/20, 2020/21 and 2021/22 has been inflated to 2022/23 prices using CPIH as per Ofwat's guidance. Schemes already released to our supply chain forecast costs are based on our delivery plans and status of design work as of April 2023. This includes some projects where we are adopting a least regrets approach involving a phased delivery strategy, delivering the chemical dosing first before monitoring performance and using the observed sample data to inform a later decision on the need for tertiary solids removal. The forecast costs are based on costs from our corporate systems and have been adjusted using CPIH to the common 2022/23 price time basis for APR23.

**3** Actual operational expenditure costs for schemes released to our supply chain are based on estimates calculated at design stage.

**4** The nature of the programme means that the schemes are at different stages in our investment process with some more advanced than others, we therefore expect movements in the forward looking costs as the schemes progress. As schemes progress through the process, the values used in the table will change from estimates based on models within our planning tool C55 to planned actual expenditure costs. As the design progresses for each site, these costs will become more refined.

**5** Compared with the forecasts in table 7F we believe this shows an AMP7 totex efficiency versus the regulatory allowance of around 27 per cent achieved to date. This may increase or decrease in APR24 as more projects complete the design phase. However, that efficiency is not representative of all programme areas across the price control and does not represent our view of a forecast of the overall totex sharing calculation since there are other programmes not covered by the APR tables forecasting above the PR19 allowances. We are taking the learning from our experiences of AMP7 delivery into our AMP8 programme.

### Scheme development / optimisation

**6** The AMP7 Phosphorous removal programme is significantly larger than previous AMP programmes and seeks in many places to achieve levels of phosphorus removal never before seen at scale in the UK. Following the AMP6 UKWIR National P Trials a new Technically Achievable Limit (TAL) was agreed at 0.25mg/l. Cost data from the National P Trials were used to inform the PR19 totex forecasts for schemes with the tightest consents. Schemes above the previous TAL (1mg/l) were put into the business plan using cost models built up of cost data from schemes previously completed.

**7** This programme's objective is to improve the Ecological Status of waterbodies in our region under the Water Framework Directive classification by reducing levels of Phosphorus in treated water discharged into those waterbodies. By the end of AMP7 approximately 1,650km of watercourses will have been protected or improved along with 4,100 hectares of Designated Site (HD/RAMSAR/SSSI).

**8** During PR19 business planning, given the limited time available for detailed feasibility work at a site level, a matrix was developed to determine high level solutions for each of the 182 WINEP phosphorous obligations.

## Activated Sludge / Oxidation Ditch

Existing P permit		New P permit		
No tertiary	Existing tertiary (solids removal)	Existing tertiary (solids removal)	No tertiary solids removal	New Permit limit
New technology - Mecana	New technology - Mecana	New technology - Mecana	New technology - Mecana	0.00
				0.25
New technology - Dynasand	Optimise, consider use of stretch targets	Install chemical removal - optimise tertiary process and dosing, consider use of stretch targets	New technology - Dynasand	0.35
Optimise, consider use of stretch targets				0.50
				0.75
				1.00
				1.25
1.50				

## Tracking Filters

Existing P permit			New P permit			New Permit limit
Existing Tertiary (solids removal)	Less than 30mg/l TSS current performance or permit limit	Greater than 30mg/l TSS current performance or permit limit	Existing Tertiary	Less than 30mg/l TSS current performance or permit limit	Greater than 30mg/l TSS current performance or permit limit	
New technology - Mecana	New technology - Mecana	New technology - Mecana	New technology - Mecana	New technology - Mecana	New technology - Mecana	0.00
						0.25
New technology - Dynasand	New technology - Dynasand	New technology - Dynasand	New technology - Dynasand	New technology - Dynasand	New technology - Dynasand	0.35
Optimise existing tertiary and chemical dosing. Consider use of stretch targets	New technology - Dynasand	New technology - Dynasand	Install chemical dosing and optimise	New technology - Dynasand	New technology - Dynasand	0.50
	Optimise existing tertiary and chemical dosing. Consider use of stretch targets					0.75
		Optimise existing. Consider use of stretch targets		1.00		
				1.25		
1.50						

**9** As an additional level of challenge prior to business plan submission each project was discussed with the site manager to ensure assets that already existed on site and were serviceable were not included in the requested totex. For sites with the tightest consents a check was also carried out to determine whether any existing assets had a process guarantee for the new limit, where the assets did not, technology with a process guarantee identified from the UKWIR National P Trials was included in the cost build up.

**10** Once in the delivery phase in AMP7 the schemes are taken through an initial investigation phase which includes site visits and increased sampling and then a Risk, Opportunity and Value (ROV) process to ensure the best value solution is selected for each site.

**11** ROV provides a framework to collaboratively make best value totex investment decisions through:



- Fully understanding problems at a service/risk level
- Establishing root causes
- Creatively coming up with lots of options
- Making best value choices, balancing costs and benefits
- Challenging for greater value across the Six Capitals
- Identifying Lessons Learned during and after project completion, and
- Reviewing the benefits achieved.

**12** Solution capital and operational expenditure are refined after the best value solution has been selected and agreed with all stakeholders.

**13** Nine schemes were originally raised as transition schemes, however as they were coded as Amber in WINEP they were paused until their requirement had been confirmed by Defra in December 2020. There was a small amount of costs on these schemes, which was not accounted for in last year's APRs table. These schemes have now been re-promoted for delivery and the previous costs added to the new schemes. This will show an increase in the previously reported costs.

**14** Bocking (line 7F.16) was incorrectly reported as a 0 cost scheme in last year's APR table. This has been correct in this year's table.

**15** Marston Moretaine (line 7F.115) was incorrectly reported in last years 7F table. An error on the system has now been rectified, which is why there is a change in the reported values.

### **Scheme Design**

**16** Scheme design population equivalent, included under Cost Driver 1 - We typically use a 2025 time horizon when designing the phosphorus removal schemes. The design of the scheme is not generally based on the total PE served, but is based on a combination of flow and load data and anticipated increase in PE. The design PE quoted is used for reference, but not in detailed design and this is taken at the point of scheme design and our forecasts may subsequently be updated.

**17** For some sites, a permit change only option is being explored, included under Cost Driver 4. As these are yet to be confirmed the full scheme is being planned until the outcome of the investigations is known.

**18** There are a number of schemes where transferred flow is being considered, included under Cost Driver 6. These are detailed below with the proposed receiving works:

- Draughton WRC to Brixworth WRC – considered
- Hundon WRC to Haverhill WRC – considered
- Rougham (Suffolk) WRC – flow transferred to Fornham catchment
- Stambourne WRC to Haverhill WRC - considered
- Tiffield WRC to Towcester WRC – considered
- Withersfield WRC to Haverhill WRC – considered.

**19** Fornham All Saints WRC has been added to the updated table; the Unique ID for Rougham WRC has been used as there is no AMP7 scheme for Fornham WRC . The other transfer schemes will be included in future years' submissions as they are still to be confirmed and pre-detailed design, meaning we do not have estimated costs yet. For Fornham All Saints WRC there is no additional capex required to accommodate the additional flow from Rougham WRC. The opex associated with the transfer has been included in the updated table, the costs for treating the original flow at Fornham has not been included. For Rougham WRC we can confirm that only the costs associated with the transfer have been included in the line for Rougham. If a transfer scheme is selected the WRCs will close permanently as part of the transfer and will become pumping stations.

## Delivery Strategy

**20** Through collaborative planning sessions with key stakeholders a number of efficiency strategies were developed and agreed.

#	Efficiency Reason	Comment	Applicability
<b>Developed best practice from AMP6:</b>			
A	Phased minimal build approach to solutions delivery	Implementation of chemical dosing solution where performance data supports, with subsequent monitoring to inform whether tertiary solids removal is necessary.	Schemes >0.5 mg/l P limit
B	Adoption of Standard Products and application of Minimum Asset Standards	Working to Minimum Asset Standards and adoption of standard product based solutions enables bulk purchase savings and minimal design effort.	All P Schemes
C	Optimised Team Structure	Team structured to deliver a standard product based portfolio by using a production line approach to scheme delivery.	All P Schemes
D	Offsite build and testing	Reduced time on site and reduced rework costs.	All P Schemes
E	Pump Away solution	Divert flows from smaller Water Recycling Centres to larger ones via new pipelines. Unable to be considered during PR19 due to time required to negotiate consent changes.	All P Schemes
<b>AMP7 Initiatives:</b>			
F	Delivery Optimisation	Improved delivery management process.	All P Schemes
G	Programme Optimisation	Delivery of schemes concurrently with other works on site to minimise resource requirements. Note at Draft Determination our requested totex was reduced by £37.6m in anticipation of programme synergies across large programmes.	Linked P Schemes
H	Streamlined Governance	Optimised governance process with reduced deliverables for standard schemes.	Non-linked P Schemes
I	Least regret/ Phased approach to solutions delivery	Implementation of chemical dosing solution where performance data supports, with subsequent monitoring to inform whether tertiary solids removal is necessary and if necessary optimise type of tertiary treatment required.	Schemes <0.5 mg/l P limit
J	Alternative Technologies and Nature Based Solutions	Alternative Technologies such as Algae and Wetlands may offer totex efficiencies.	All P schemes

## Schemes completed and benefits realised to date

**21** Currently 19 schemes have been completed and signed off by the EA. Of those 11 are in advance of the original obligation date set out in WINEP. These schemes provide improvement or protection to 166km of river length including chalk streams like the River Thet, and 201 hectares of SSSI.

## Wetland schemes and Nature Based Solutions

**22** After the successes of our new wetland at Ingoldisthorpe, at business planning a further 34 schemes were identified for wetland investigations. Through enhanced analysis of the portfolio 3 additional sites were identified as suitable for wetland investigations. One of the original sites Anderby WRC (line 7F.182), was closed and pumped away to a neighbouring WRC at the end of AMP6 (between submission of the PR19 business plan and the end of the AMP), so has been removed from the WINEP programme – this has been shown in table 7F as zero cost. There are 36 sites that are in the process of being investigated for their suitability for a wetland solution.

**Table 7F and Table 4M (line 35) Reconciliation**

**23** We recognise the total expenditure between Table 7F and Table 4M (line 35) do not align as required by the APR validation rules, this is due to:

- WINEP investigations expenditure reported in 7F, but reported in 4M.44 "Investigations" rather than 4M.35 "Phosphorus removal" - this includes funding for wetland investigations that were within the PR19 P Removal cost assessment model and we have therefore included in table 7F
- AMP6 carryover expenditure reported in Table 4M - we have excluded these projects from table 7F as they were not funded within the PR19 P Removal cost assessment model.

**24** We have made some changes to this table following the publication of this Annual Performance Report to reflect additional requirements of Ofwat queries.

**Table 8A - Bioresources sludge data for the 12 months ended 31 March 2023**

	Line description	Units	Total
1	Total sewage sludge produced, treated by incumbents	ttds/ year	148.100
2	Total sewage sludge produced, treated by 3rd party sludge service provider	ttds/ year	-
3	Total sewage sludge produced	ttds/ year	148.100
4	Total sewage sludge produced from non-appointed liquid waste treatment	ttds/ year	2.900
5	Percentage of sludge produced and treated at a site of STW and STC co-location	%	28.950
6	Total sewage sludge disposed by incumbents	ttds/ year	106.500
7	Total sewage sludge disposed by 3rd party sludge service provider	ttds/ year	1.900
8	Total sewage sludge disposed	ttds/ year	108.400
9	Total measure of intersiting 'work' done by pipeline	ttds*km/year	-
10	Total measure of intersiting 'work' done by tanker	ttds*km/year	2,435.000
11	Total measure of intersiting 'work' done by truck	ttds*km/year	5,363.000
12	Total measure of intersiting 'work' done (all forms of transportation)	ttds*km/year	7,798.000
13	Total measure of intersiting 'work' done by tanker (by volume transported)	m3*km/yr	87,263,792.000
14	Total measure of 'work' done in sludge disposal operations by pipeline	ttds*km/year	-
15	Total measure of 'work' done in sludge disposal operations by tanker	ttds*km/year	-
16	Total measure of 'work' done in sludge disposal operations by truck	ttds*km/year	4,992.000
17	Total measure of 'work' done in sludge disposal operations (all forms of transportation)	ttds*km/year	4,992.000
18	Total measure of 'work' done by tanker in sludge disposal operations (by volume transported)	m3*km/yr	-
19	Chemical P sludge as % of sludge produced at STWs	%	48.960

## **Changes in treatment in 2022/23.**

**1** 2022/23 was a return to a more normal year; 2021/22 was significantly affected by the partial closure of our biggest sludge treatment centre (STC), Great Billing, for cleaning and maintenance after approximately 14 years of operation. This had resulted in 2021/22, in Great Billing's throughput halving and a corresponding increase in liming.

## **Farming Rules for Water: Backlog of biosolids effecting disposals.**

**2** In the autumn of 2021, the Environment Agency placed additional restrictions on the use of biosolids (treated sewage sludge) under the Farming Rules for Water, particularly in relation to its application to land in the autumn. This resulted in the creation of significant stockpiles of material at Anglian Water's sites and other sites within our region, under a Regulatory Position Statement issued by the EA (RPS253). The industry responded by developing and implementing a package of additional measures to ensure full compliance with the EA's interpretation of the Farming Rules for Water. The Industry's package of measures prompted the Environment Agency to relax restrictions around biosolids use, allowing the industry to spread the stockpiled backlog of material in the autumn of 2022. Therefore, in 2022/23 our disposals to agriculture were high, as we cleared these stored stocks in addition to recycling the normal period's production.

## **Total sludge produced, treated by incumbents (8A.1)**

**3** The number reported was calculated in the same way as in 2021/22. This is at the point of treatment (e.g. thickened blended sludge entering sludge treatment such as the advanced digestion process, conventional digester feed or liming), rather than the exact defined boundary of network plus and bioresources. Cross-boundary raw cake or liquid sludge imports are excluded in line with the line definition, although in 2022/23 there were none; in previous years we have imported sludge from Yorkshire Water Services (YWS) and Severn Trent Water (STW). We have also included sludge that was transferred to two land reclamation schemes during 2022/23.

**4** The amount of sludge treated was lower than the prior year (affected by the temporary closure of Great Billing STC) but slightly higher than 2020/21. These movements are within normal annual variance viewed over the three year period: including sludge treated by third parties 2022/23 production was 3.3 thousand tonnes dry solids (ttds) lower than in 2021/22, which had been 4.4 ttds higher than in 2020/21. The net change from 2020/21 to 2022/23 was thus a more moderate increase of 1.1 ttds.

**5** At two water recycling centres (WRCs) we receive wastewater flows from customers of another water company. In common with previous practice, we have included the sludge arising from these flows in this line.

## **Total sewage sludge produced, treated by 3rd party sludge service provider (8A.2)**

**6** We had five ttds of sludge limed at Boston and March WRCs by a managed liming contractor. As these are managed contracts where we deliver raw cake and manage the transfer to land and recycling this does not count as a third party sludge service under the RAG.

**7** In 2022/23 there were no transfers of raw sludge to another WaSC for treatment.

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

**8** The only non-appointed liquid waste we have received in the reporting period is domestic (cess and septic tank) waste. We have calculated the sludge produced from this by taking the total wet tonnage recorded (442.8 thousand wet tonnes) and applying the average Total Suspended Solids (TSS) of randomly sampled loads at the receiving WRCs (6,450.63 mg/l, n=217) in a similar manner to 2021/22.

### **Percentage of sludge produced and treated at a site of WRC and STC co-location (8A.5)**

**9** We have included the percentage of sludge produced on a co-located WRC and STC only when sludge treatment is permanently present (i.e. not raw dewatering sites). We have therefore counted our nine advanced AD sites and one conventional AD site (Chelmsford). The two operational lime plants (at Boston and March WRCs - operated for liming by a managed contractor) have not been included. March WRC does not have its own dewatering and therefore its indigenous sludge is transported by tanker elsewhere for treatment. Boston WRC does have indigenous dewatering but the contractor-operated lime plant only operated for two short durations and processed a mixture of indigenous raw cake and imported raw cake; disaggregation of this ad hoc operation is challenging and so has not been included to aid consistency.

**10** In 2021/22 a proration was made for co-location at Great Billing STC, which is also our biggest WRC. This is because the STC was not operational for part of that reporting period and Great Billing's indigenous sludge was exported as raw cake for treatment (liming) during the downtime. As a result the reported value fell from 28.53 per cent (unadjusted) in 2020/21 to 25.94 per cent in 2021/22. The 2022/23 value of 28.95 per cent should be viewed in this context and is thus a return to the normal stable trend if 2021/22 is excluded.

**11** As in previous submissions, we have adhered to the updated definition following clarification from Ofwat in 2019, namely:

**12** "The percentage of the sludge quantity reported in 8A.5 (previously 4R.25) that is produced at co-located sites. For the purposes of this definition: i) "co-located" includes sites where the STC is physically separate but the sludge is transferred from a wastewater treatment site by pipeline; and ii) STC means any site where sludge is treated to a standard such that it can be recycled to the environment or disposed of without any further treatment".

### **Total sewage sludge, disposed by incumbents (8A.6)**

**13** The number reported was calculated in the same way as in prior years in line with the definition, based on treated material hauled to agricultural land (but not necessarily spread), into composting (zero this year) and into land reclamation (zero this year, by ANH) as now defined. This number would include the treated equivalent of the raw sludge received from third parties; however, we did not receive any such imports in the reporting year.

**14** The amount of sludge disposed was 46 per cent higher than the prior year (33.7 ttds increase). This was due to a return to treatment normality after the Great Billing temporary closure, and the clearance of large quantities of treated material that had been stored as a result of the issues with Farming Rules for Water in 2021/22. A significant quantity of the material that had been stored was lime treated which has a further additive effect on the amount of material to be recycled. This is because of the lack of solids destruction (compared with digestion) and addition of lime mass. These effects were in addition to a normal year's production.

### **Total sludge disposed by third party sludge service provider (8A.7)**

**15** In 2022/23 we exported 1.9 ttds of raw sludge to two out-of-area third party land reclamation schemes. There was no export of sludge to other WaSCs for treatment or otherwise.

**16** We would also include here any amounts of sludge transferred to third parties for activated sludge or digester plant seeding, if material. In 2022/23 there were no such movements.

### **Total measure of intersiting 'work' done by pipeline (8A.9)**

**17** In previous years we have included here sludge transferred by pipeline from Southend WRC to Rochford WRC for dewatering. This had stopped but resumed in 2021/22 due to the opening of a sinkhole at Southend WRC which required the centrifuges to be moved and pumping to resume for part of that year. In 2022/23 this pumped transfer was not used.

### **Truck and tanker distances (8A.10, 11, 13, 15 and 16)**

**18** All our 'trucked' distance is estimated road distance (km), based on straight line distance x 1.35, which we have assessed as the average relationship between straight line and road distance. All 'tankered' lines use measured road distance.

### **Total measure of intersiting 'work' done by tanker (8A.10)**

**19** We measure tankering work volumetrically, so to convert cubic metres to ttds we have used an average percentage of dry solids (DS) of 2.79 per cent. This is the average of measured data for the 2022/23 reporting period. Our systems now allows us to update the thickness on an annual basis. Table 8A line 13 is unadjusted for dry solids content equivalent number.

**20** In the reporting year tankered sludge returned to a more normal tankering distance: In 2021/22 it had travelled further, mainly due to the operational disruption caused by the temporary closure of Great Billing STC (see commentary above).

### **Total measure of intersiting 'work' done by truck (8A.11)**

**21** We have included all raw cake transfers between dewatering centres and STCs in this line. We would also included raw cake exported to other WaSCs for treatment but there were no such transfers in 2022/23.

**22** In the reporting year trucked movement of raw sludge cake returned to more normal distances and consequently the metric reduced significantly. We had seen this number increase considerably in 2021/22 due to the temporary closure of Great Billing STC; this resulted in raw cake production (Great Billing's indigenous) being exported, mostly to Whilton WRC for liming. Raw cake imports to Great Billing had been diverted elsewhere, including to other STCs, to March WRC for liming and exported out of ANH. These activities have now ceased, although a reduced amount of sludge to land reclamation has continued.

### **Total measure of 'work' done in sludge disposal operations by tanker and by volume transported (8A.15 and 8A.18)**

**23** There were no tanker transfers to 3rd parties in the reporting year. We have previously included activities such as other WaSC, or private digester or activated sludge process seeding in these lines.

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

**24** Treated cake that is transferred to intermediate storage, as well as from STC direct to the landbank, has been included. This number has increased by 7.5 per cent in comparison to 2021/22 because at the beginning of the reporting period we had a significant amount of treated cake in onsite storage due to the Farming Rules for Water situation. All resulting material stored under the Regulatory Position Statement, and additional amounts on normal storage pads, was taken to land and thus had an additive effect to the metric in the period. We also exported 1.9 ttds of raw sludge to two out-of-area third party land reclamation schemes, these were relatively long distance transfers and therefore affect the total number disproportionality.

**25** Land-bank restrictions are influencing how far treated sludge cake is having to be hauled for recycling. In 2022/23 we move treated cake an average of 36 km compared with 29 km in 2021/22; this is a 20 per cent increase in one year.

**26** In the reporting year we made an improvement to the calculation of ttds by using product-specific dry solids percentage applied to each treated cake product transfer rather than a estimated 24 per cent dry solids regional average applied to all.

#### **Chemical P sludge as percentage of sludge produced at STWs (8A.19)**

**27** The number reported was calculated in the same way as in 2021/22 in line with the definition.

**28** We have not included sludge arising from phosphorus (P) removal at Whitlingham WRC (Norwich), either now or previously, as this site has a biological nutrient removal plant and we do not dose chemicals there. Similarly, we do not include iron salt dosing at Clacton WRC, which is for enhanced settlement.

**29** It should be noted that this line is a measure of 'the total quantity of sludge produced at WRCs which use chemical dosing for phosphorus removal expressed as a percentage of total sludge produced at all in-area WRCs', not a measure of the proportion of additional chemical P sludge which results on those sites. Therefore, additional P removal obligations taken as a whole do not necessarily have much of an impact on this line because either a) they are a tightening of the consent on a WRC that already has a P removal consent - no effect, or b) their impact is yet to be seen due to obligations coming in during the last two year of the price control period. Furthermore, the impact on the metric is unlikely to be large as those in a) are often larger WRCs and whilst those in b) are typically smaller Water Recycling Centres (WRCs).



**Table 8B - Bioresources operating expenditure analysis for the 12 months ended 31 March 2023**

Line description	Pipeline	Tanker	Truck	Total
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<b>Sludge transport method (£m)</b>					
1	Power	-	0.003	-	0.003
2	Income treated as negative expenditure	-	(0.007)	-	(0.007)
3	Discharge consents	-	-	-	-
4	Bulk discharge	-	-	-	-

<b>Other operating expenditure (£m)</b>					
5	Renewals expensed in year (Infrastructure)	-	-	-	-
6	Renewals expensed in year (Non-Infrastructure)	-	-	-	-
7	Other operating expenditure excluding renewals	-	32.536	-	32.536
8	Total functional expenditure	-	32.532	-	32.532
9	Local authority and Cumulo rates	-	0.101	-	0.101
10	Total operating expenditure (excluding 3rd party)	-	32.633	-	32.633

Line description	Untreated Sludge	Raw Sludge liming	Conventional AD	Incineration of raw sludge	Photo-conditioning/ composting	Advanced Anaerobic Digestion	Other	Total
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<b>Sludge treatment type (£m)</b>									
11	Power	-	0.097	(0.108)	-	-	1.635	-	1.624
12	Income treated as negative expenditure	-	-	(0.046)	-	-	(9.435)	-	(9.481)
13	Discharge consents	-	-	0.007	-	-	0.288	-	0.295
14	Bulk discharge	-	-	-	-	-	-	-	-

<b>Other operating expenditure (£m)</b>									
15	Renewals expensed in year (Infrastructure)	-	-	-	-	-	-	-	-
16	Renewals expensed in year (Non-Infrastructure)	-	-	-	-	-	-	-	-
17	Other operating expenditure excluding renewals	-	0.257	0.981	-	-	41.742	-	42.980
18	Total functional expenditure	-	0.354	0.834	-	-	34.230	-	35.418
19	Local authority and Cumulo rates	-	0.015	0.084	-	-	3.686	-	3.785
20	Total operating expenditure (excluding 3rd party)	-	0.369	0.918	-	-	37.916	-	39.203

Line description	Landfill, raw	Landfill, partly treated	Land restoration/ reclamation	Sludge recycled to farmland	Incineration of digested Sludge	Other	Total
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<b>Sludge disposal route (£m)</b>							
20	Power	-	-	-	-	-	-
21	Income treated as negative expenditure	-	-	-	(1.972)	-	(1.972)
22	Discharge consents	-	-	-	-	-	-
23	Bulk discharge	-	-	-	-	-	-

<b>Other operating expenditure (£m)</b>							
24	Renewals expensed in year (Infrastructure)	-	-	-	-	-	-
25	Renewals expensed in year (Non-Infrastructure)	-	-	-	-	-	-
26	Other operating expenditure excluding renewals	-	-	-	14.989	-	14.989
27	Total functional expenditure	-	-	-	13.017	-	13.017
28	Local authority and Cumulo rates	-	-	-	0.011	-	0.011
29	Total operating expenditure (excluding 3rd party)	-	-	-	13.028	-	13.028

**1** See Table 4E for commentary on bioresources expenditure.

**Table 8C - Bioresources energy and liquors analysis for the 12 months ended 31 March 2023**

Line description	Electricity	Heat	Biomethane	Total	Electricity	Heat	Biomethane	Total
	MWh	MWh	MWh	MWh	£m	£m	£m	£m

<b>Energy</b>									
1	Energy consumption - bioresources	-	-	-	218,921.000	-	-	-	25.777
2	Energy generated by and used in bioresources control	29,373.000	82,456.000	-	111,829.000	3.533	7.943	-	11.476
3	Energy generated by bioresources and used in network plus control	52,331.000	-	-	52,331.000	6.294	-	-	6.294
4	Energy generated by bioresources and exported to the grid or third party	32,756.000	-	-	32,756.000	3.910	-	-	3.910
5	Energy generated by bioresources that is unused	-	57,405.000	-	57,405.000	-	-	-	-
6	Energy bought from grid or third party and used in bioresources control	39,611.000	41,871.000	-	81,482.000	4.744	4.033	-	8.777

<b>Income from renewable energy subsidies</b>		Value
7	Income claimed from Renewable Energy Certificates (ROCs)	5.663
8	Income claimed from Renewable Heat Incentives (RHIs)	-
9	Income claimed from [other renewable energy subsidy (1)]	-
10	Income claimed from [other renewable energy subsidy (2)]	-
11	Income claimed from [other renewable energy subsidy (3)]	-
12	Total income claimed from renewable energy subsidies	5.663
13	% of total number of renewable energy subsidies due to expire in the next 2 financial years	0.020
14	This year's value of renewable energy subsidies due to expire in the next 2 financial years	0.114

<b>Bioresources liquors treated by network plus (shadow reported)</b>		Unit	Value
15	BOD load of liquor or partially treated liquor returned from bioresources to network plus	kg/d	19,257.647
16	Ammonia load of liquor or partially treated liquor returned from bioresources to network plus	kg Amm-N/d	2,558.594
17	Recharge to Bioresources by network plus for costs of handling and treating bioresources liquors	£m	10.007

	Electricity	Heat	Biomethane	Total	Electricity	Heat	Biomethane	Total
	MWh	MWh	MWh	MWh	£m	£m	£m	£m

Energy (AMP 7 shadow reported values)									
18	Energy consumption - bioresources	-	-	-	218,921.000	-	-	-	25.777
19	Energy generated by and used in bioresources control	29,373.000	82,456.000	-	111,829.000	3.533	7.943	-	11.476
20	Energy generated by bioresources and used in network plus control	52,331.000	-	-	52,331.000	6.294	-	-	6.294
21	Energy generated by bioresources and exported to the grid or third party	32,756.000	-	-	32,756.000	3.910	-	-	3.910
22	Energy generated by bioresources that is unused	-	57,405.000	-	57,405.000	-	-	-	-
23	Energy bought from grid or third party and used in bioresources control	39,611.000	41,871.000	-	81,482.000	4.744	4.033	-	8.777

	%
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24	Percentage of bioresources energy consumption that is metered	0.583
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## Energy generation and use - bioresources (8C.1-6)

**1** The total energy consumption shown in line one was 218,921 MWh. This is made up of 136,465 MWh, which is all of the energy consumed by bioresources, including grid electricity, self-generated electricity, fuel and transport, and 82,456 MWh of heat generated from biomethane and used in the boilers. It includes gas, fuel and transport and an allocation of consumption from administrative buildings and head office function; it is, therefore, not the total of lines 8C.2 and 8C.6. This is a new input for 2022/23; the equivalent number for 2021/22 was 206,526 MWh, which is made up of 137,953 MWh energy consumed and 64,573 MWh heat generated from biomethane. There has been a reduction in energy consumed (excluding heat) of 1,488 MWh or 1.08 per cent.

**2** The total cost associated with the above was £25.777 million, which includes costs for electricity, gas, fuel and transport, including an allocation of costs from the administrative buildings and head office function, and an assessment of the cost of the heating the boilers with biomethane.

**3** Electricity usage by bioresources increased slightly by 1,464 MWh or 2.16 per cent, mostly driven by an increase of 1,640 MWh in CHP output used on site. The main reason for the reduction in total energy consumption (excluding heat) was the reduction in the consumption associated with Fuel Oil of 4,747 MWh or 23.62 per cent.

**4** This change was due to a reduction in the purchase of gas oil and diesel in the water recycling function, most of which is allocated to bioresources due to its use for process heating. The reduction here was 3,482 MWh or 40.29 per cent, the remainder of the change being a reduction in the consumption of natural gas by the bioresources sites of 1,281 MWh or 11.32 per cent. The main drivers explaining this were, firstly, a recovery in biogas production after the maintenance issues at Great Billing STC in 2021/22 and, secondly, a change in the allocation of gas oil and diesel between bioresources and wastewater network plus business units – please refer to the section on assumptions further down this commentary.

**5** All energy generated by bioresources is from biomethane, which is –

- Converted into electricity and heat in combined heat and power (CHP) engines, or
- Converted into heat in boilers, or
- Converted into heat via waste gas burner (flared).

**6** Electricity generated is used by bioresources and network plus first with any surplus being exported to the grid (line 4). We do not export any biogas or heat energy to network plus (line three).

### Electricity

**7** A much improved CHP generation output – mainly driven by the recovery at Great Billing STC - impacted lines 8C.2 to 8C.6. Electricity generated by bioresources through CHP and used in bioresources was 29,373 MWh which was higher than in 2021/22 at 27,764 MWh (line 8C.2). The CHP electricity used by wastewater network plus also increased to 52,331 MWh versus 50,308 MWh in 2021/22 (line 8C.3). There was a much increased export of electricity to the grid – 32,756 MWh in 2022/23 compared to 23,292 MWh in 2021/22 (line 8C.4). None of the generated electricity was unused, as in 2021/22 (line 8C.5). Finally, slightly less electricity was imported from the grid to bioresources in 2022/23 – 39,611 MWh compared to 39,786 MWh in 2021/22 (line 8C.6), slightly offsetting the higher usage of CHP generated electricity already mentioned (line 8C.2).

**8** Costs for the electricity consumed were £3.533 million in line 8C.2, £6.294 million in line 8C.3 and £4.744 million in line 8C.6. These sums were calculated using the average unit cost for half-hourly metered electricity for 2022/23 of £120.27/MWh. Despite the significant rise in the market price for electricity due to the Ukraine war, our expenditure on imported power in 2022/23 was not very different to the prior year due to our practice of hedging wholesale energy for years ahead. In line with the Ofwat guidance, it is assumed

that CHP generated electricity which was used on site has the same unit cost as imported grid electricity. For sales of exported electricity, the sum used is that received from the export supplier of £3.910 million, compared to £1.280 million in 2021/22. The average price achieved for exported electricity in 2022/23 was much higher than in 2021/22 as we were able to take advantage of the higher prices in the wholesale market.

9 A number of assumptions have been made in calculating the water recycling energy consumption data:

- For the whole of the water recycling function, we have applied a financial split from regulatory accounts between bioresources and wastewater network plus for electricity consumption. This financial split is based upon assessments of proportional use by different Ofwat business units made by operational experts.
- We have included energy from renewable sources generated and used on site, including combined heat and power (CHP), wind and solar.
- Grid electricity and fuel (oil and natural gas) used in offices has been included and split equally between water and water recycling.
- Fuel oil is not recorded on our corporate systems against Ofwat's business units and therefore the same split used for electricity has been assumed for each fuel type with the exception of gas oil and diesel delivered to water recycling sites;
- We have assumed a 35 per cent thermal efficiency for natural gas consumption in converting to energy output (boilers and CHP).
- In 2021/22 and in previous years, an assumption was made that 90 per cent of gas oil and diesel delivered to water recycling sites was used for CHP boilers in line with the approach taken by our management accountants. However, developments in reporting through our SAP system have allowed us to allocate this more accurately to the relevant business units. For 2022/23, this means that we can allocate 68 per cent of diesel deliveries to bioresources and 32 percent to wastewater network plus. Note that due to changes in fuel taxation, we can no longer purchase gas oil, but must purchase diesel instead.
- Transport (claimed mileage and fleet fuel purchased on fuel cards) is not recorded in our corporate systems against Ofwat's business units and therefore we have split the total 50/50 between water and water recycling and then assumed that they split in the same proportions as electricity between the business units. This is with the exception of RES fleet for biosolids haulage which has been allocated entirely to bioresources.
- Sub contracted transport (bioresources and cake) has not been included, only fleet (directly operated) vehicles.
- Transport for company cars is collected as mileage. We have converted mileage into kWh through using BEIS' greenhouse gas reporting condensed conversion factors for 2022.
- For electric vehicles, a small volume of energy is collected via fuel cards or is metered at employees' homes. For the remaining, larger volume we have made the assumption that the mileage claimed relates to charging at home or on public charging points, rather than using the charging points at our offices. Many of our employees are still working from home a lot of the time and we do not have a reliable source to tell us how many miles are being claimed from charging at our sites. We believe this assumption to be safe and not capable of skewing the overall figures since (i) electric car consumption from claimed mileage totals just 238,643 kWh across the whole of our business and (ii) wherever cars are charged, the driver may be charging for domestic and commuting miles (which cannot be claimed) as well as for business. While there may be an overlap with the electricity consumption data, we consider that this will be de-minimus. We are looking to improve our processes in order to better capture consumption by electric cars charged at home and with our infrastructure.
- Electricity figures used in table 8C.2 to 6 – grid import, CHP generation and export – are all metered so there is a high confidence in them.

## Heat and Biomethane

**10** In previous years we have captured the calorific value of biogas in the biomethane column as well as recording the calorific value of the heat and electricity generated from it. In 2022/23 we have avoided this double-count and show zeroes in the biomethane column for all lines, in common with most other companies.

**11** Heat generation and used in bioresources (line two) for 2022/2023 was up by 13,883MWhs compared to 2021/2022 across the region. This was mainly due to the fact we had Great Billing STC fully operational, whereas in 2021/2022 we had to take the STC offline for cleaning and maintenance and subsequently generated less heat and electrical power through our CHPs.

### Heat generated and used in bioresources (8C.2)

**12** For heat we have used a calculation for the mass balance of our STCs, with assumptions that CHPs are 90 per cent efficient, and 20 per cent of heat energy is lost in transfer through availability of asset, fouling etc. The calculation is based on the maximum available heat from CHP capacity pro rata to actual CHP output and then divided by throughput (measured as tonnes of dry solids, tds) to give a MWh/tDS. This is then multiplied by total tDS to give a total heat generated.

**13** In this heat column, line 2, we have also added the MWh of heat generated in bioresources through steam or hot water boilers using biomethane as the fuel. This heat energy is calculated based on a calorific value per m<sup>3</sup> of biogas used in boilers (captured via flowmeters) of 6.7 KWh. An 85 per cent efficiency assumption is then applied for the boilers converting into heat energy.

### Energy unused (8C.5)

**14** Gas is only flared if CHPs and / or boilers are offline or the biomethane supply exceeds the capacity of the CHPs and boilers (line five). Volumes are taken from on-site readings. (There are no readings for Chelmsford waste gas burner, with meters to be installed). Flared Biogas is down by 29 per cent on the previous year with the issues at Great Billing STC issues resolved. Flared gas accounts for 9 per cent of total biogas production, down from 14 per cent last year.

**15** To calculate the MWh value of the heat generated from flared (unused) biogas we have used biogas flowmeter recordings to measure volume (m<sup>3</sup>) and then multiplied by 6.7KWh / 1000 to convert into heat energy through the waste gas burner. Again, this flare data was previously captured in the biomethane column as well as the heat column.

**16** Note that the measurement of biogas through flow meters is difficult due to biogas properties (variance in methane and gas moisture content) causing inaccuracies in flowmeters and is therefore subject to error.

**17** References used for biogas energy calculations

**18** [Biogas | Anaerobic Digestion \(biogas-info.co.uk\)](https://biogas-info.co.uk/)

**19** [https://www.valorgas.soton.ac.uk/Pub\\_docs/JyU%20SS%202011/CB%204.pdf](https://www.valorgas.soton.ac.uk/Pub_docs/JyU%20SS%202011/CB%204.pdf)

**20** Heat generated by bioresources is used by bioresources and our calculations show that some of our site processes will generate more heat than is required in bioresources. This heat is then unused.

### Energy bought from the grid for heat (8C.6)

**21** In periods natural gas/gas oil is bought in to top up boilers to provide heat for the process when we are unable to recover enough heat or where instantaneous heat demand is greater than instantaneous heat available from the CHP engines. This is due to inefficiencies in processes, such as low temperature hot water circuits or downtime of assets for events such as maintenance on CHPs or waste heat boilers etc.

**22** Subsequent to submitting APR22 an error was found in the APR22 data for heat generated from energy bought from grid or third party and used in bioresources control. This was due to a fault with the gas oil flow meter at Whitlingham which had under-recorded gas oil usage. This flowmeter has since been replaced and subsequently the volume of recorded gas oil used has increased from 95,000 litres in 2021/22 to 935k litres and therefore the £ value for energy brought in has a significantly increased.

**23** Overall the energy brought in from the grid or third party shows an increase by 33 per cent. However, if we account for the Whitlingham flowmeter error and add in Chelmsford gas oil usage which could not be obtained in 2021/22 due to the lack of flowmeter both years come out very similar at 42k MWhs of purchased energy for heat. Due to a 97 per cent rise in gas oil price (switch from red diesel to white from 1st April 2022) and a 42 per cent rise in the price of natural gas our overall expenditure on fossil fuels was up 73 per cent on the previous year.

### Income claimed from bioresources (8C.7 to 8C.14)

**24** The income from renewable energy subsidies for the period April 2022 to March 2023 totals £5.663 million, all of which came from sale of Renewable Obligations Certificates (ROCs); no other income was claimed or received. This is £0.57 million higher than the equivalent figure calculated for 2021/22. The increase is due to the higher number of ROCs associated with a higher volume of electricity generated.

**25** The number of ROCs generated in 2022/23 was 10,567 higher (11.63 per cent) than in 2021/22; this was from increased generation at bioresources sites, notably at Great Billing STC which had required extended maintenance in 2021/22 and was fully back in service in 2022/23.

**26** No income was gained from the Renewable Heat Incentive (RHI) as we do not have any facilities at bioresources sites which are registered for RHI. No other renewable energy subsidies were applied for nor obtained. In 2021/22 we had obtained £0.007 million by selling the Renewable Energy Guarantees of Origin (REGOs) gained from generation on the bioresources sites, however, for 2022/23 we took a policy decision to retain all of these instead. They will be retired as our carbon accounting rules allow us to use them to offset our emissions.

**27** Because Ofgem issues ROCs three months in arrears, the ROCs for February and March 2023 are yet to be issued at the time of writing. Instead, for those months only, we have used the numbers of ROCs that we have already applied to Ofgem for on the basis of the metered records of electricity generated and exported. Normally, any differences between applied for and issued certificates are only very small and due to rounding.

**28** Lines 8C.13 and 8C.14 show the percentage and 2022/23 value of renewable energy subsidies due to expire on bioresources sites in the next two financial years. Line 8C.13 totals two per cent and 8C.14 totals £0.114 million. This reflects the 2,044 ROCs generated at Cambridge STC between 01/10/2022 and 31/03/2023 by number one CHP, where the ROC accreditation is due to expire on 01/10/2024.



### **BOD and ammonia loads of liquor or partially treated liquor returned from bioresources to network plus (8C.15, 8C.16)**

**29** Improvements to data collection and handling have been implemented in 2022/23 for these lines. Models have been made available from company subject matter experts who provide data for sample results, onsite readings and tankering/haulage volumes. These models have all been connected together to a single point, combining the relevant data and performing calculations needed to provide the data for lines 15, 16 and 17.

**30** Significantly different volume data has been used for two sites, Ingoldmells and Pyewipe, which were both outliers in the 2021/22 data collection. Haulage/tankering records were not available for those sites in 2021/22 and flow points from ViewX (our telemetry system) were used instead. Ingoldmells has a drainage liquors flow meter and Pyewipe has two GBT Feed flow meters. Neither of these are accredited flow meters. In 2022/23, haulage records have been used for all sites which has improved the accuracy of data for these two sites.

**31** A further improvement in 2022/23 is the use of actual recorded percentage dry solids data rather than assumed values. This was highlighted as a proposed improvement to the process to achieve in 2022/23 as it is believed to have a material cost to the volumes.

### **Recharge to Bioresources by network plus for costs of handling and treating bioresources liquors (8C.17)**

**32** The prior year methodology was used again to calculate the returned liquor load recharge attributable to bioresources as a proportion of total load treated by network plus. As referenced in the commentary to lines 15 and 16, we have continued to improve the process for determining the load on the WRC attributable to sludge liquors, by gathering better haulage data for the two remaining sites (Pyewipe & Ingoldmells) that were left to move across to the standardised 2021/22 process. All sites are now using the same methodology. The outcome of this data improvement is that our estimate of the share of WRC load attributable to sludge liquors is lower than in previous years. Applying this share to our WRC costs results in a decrease between the 2021/22 TOTEX position of £13.2 million and the 2022/23 TOTEX position of £10.01 million. Circa 75 per cent of the year-on-year movement is due to this data improvement.

**33** This recharge in accordance with the methodology set out in the Jacobs report (*'Setting a standardised methodology for quantifying the cost of sludge liquor treatment in the water industry'*, Jacobs, December 2020). Under the old methodology, the value of the recharge would have been £8.39 million.

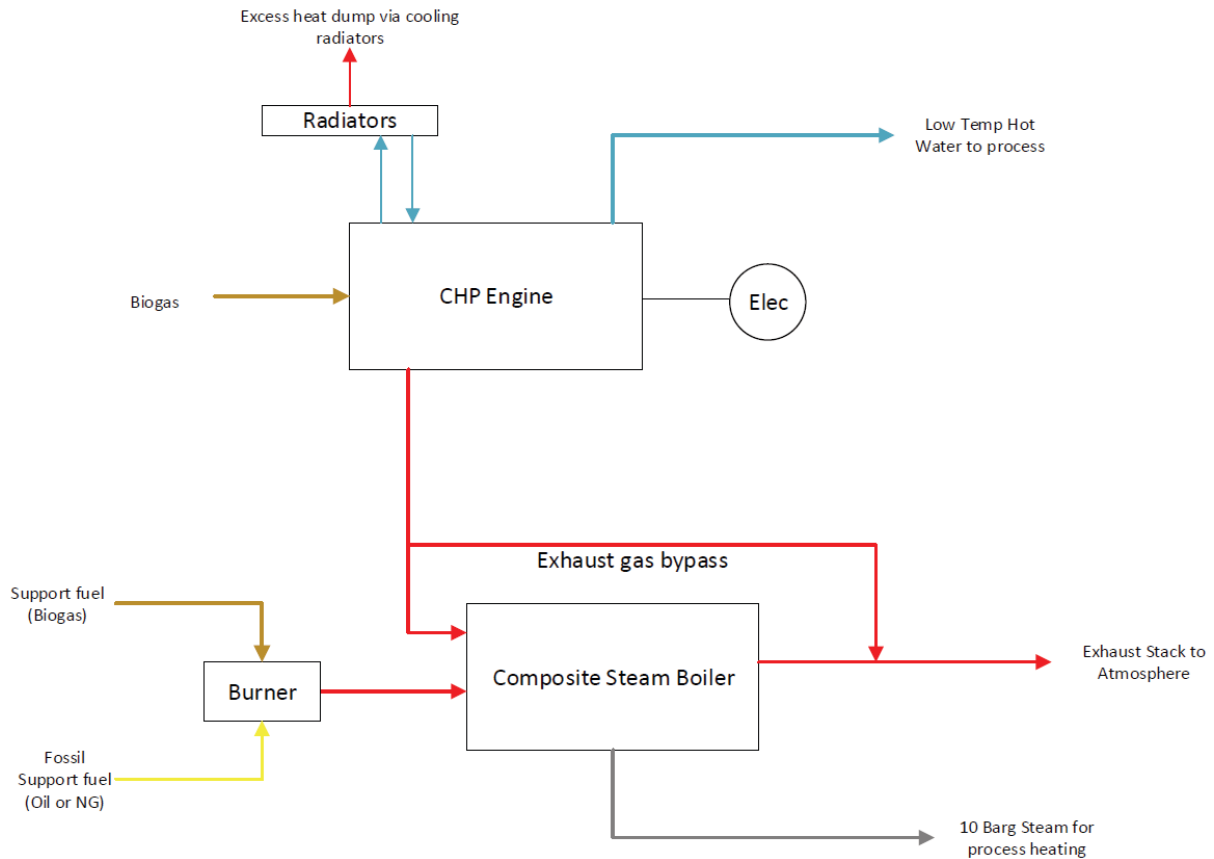
### **Energy Consumption – bioresources (AMP7 Shadow Reported Values, 8C.18-23)**

**34** These lines were new for 2021/22 and are a shadow reporting requirement for the remainder of AMP7. The definitions supplied by Ofwat in RAG4 for lines 8C.18 to 8C.23 match the definitions for lines 8C.1 to 8C.6, save that the former are to be based upon improved allocation of revenues and costs between the Wastewater Network + price control and the bioresources price control. This is to be achieved through improved metering of the bioresources assets on our sites.

**35** We already have sub-metering to measure the electricity used on many of the bioresources assets and this has been used as part of the assessment to allocate revenues and costs since 2016/17, however, this isn't yet sufficient to meet Ofwat's target of 80 per cent metered consumption. For 2022/23, therefore, the values for lines 8C.18 to 8C.23 are identical to lines 8C.1 to 8C.6. Please refer to the commentary for these lines, including for the assumptions made in calculating the values.

**36** We have not completed the heat and biomethane columns for line 18-23 because the prescribed methodology is not appropriate for our systems.

**37** To further explain why we use mass balance for heat produced and used in bioresources instead of taking monthly spot samples it important to understand how the heat recovery systems from our CHP's and boilers operate. The diagram below is a typical arrangement for our STC's.



**38** The diagram displays the complexity of the system, with heat recovered from CHP engines through hot water and a separate exhaust gas stream. This is typical of advanced anaerobic digestion which uses steam injection for the pasteurisation process step and has a much greater level of system complexity compared with traditional systems where heat is all recovered into simple hot water circuits. The CHP engines are the prime user of biogas as fuel and the engines typically modulate in a range of 50 to 100 per cent of the rated capacity. For example, depending on the rate of gas production from the digestion process a 1.2MWe engine would automatically modulate its output between 0.6 - 1.2MWe to balance output versus biogas production. Heat is produced proportionate to engine output as either hot water or exhaust gases. This heat is available for process heating but is only used where there is a heat demand from the advanced anaerobic digestion process. If heat produced is in excess of heat demand then exhaust gases bypass the boiler and/or hot water is diverted to fan radiators to dump heat to protect the CHP engines. As a result, a spot sample of exhaust gas flow and temperature as an input into the composite steam boiler would not be representative of the heat generated, it would only be relevant for that moment in time. By measuring CHP electrical output, fossil fuel input to boilers and understanding the heat demand from the process we believe it is much more accurate to calculate heat produced and heat used in bioresources than taking monthly spot samples.

**39** The methodology prescribed for shadow reporting (lines 18 to 23) may be appropriate for the sludge treatment arrangements of other companies but does not provide meaningful information for our operations. Our inability to shadow report has no bearing on transfer prices between bioresources and network plus or any other party because we do not export heat from bioresources.

### Percentage of energy consumption that is metered (8C.24)

**40** Line 8C.24 measures the percentage of energy consumption in bioresources that is metered as opposed to being estimated. The value for 2022/23 is 58.3 per cent. In 2021/22 the value was 22.0 per cent. The increase is because we have updated the methodology to include energy from natural gas, fuel, transport and heat as well as electricity.

- For electricity, this has been assessed using the percentage of the total energy cost in the regulated accounts for those sites where the costs have been allocated based upon sub-metered data collected from meters connected to IRIS in January 2017. This is considered the most accurate of the assessment methodologies that we currently use to allocate revenues and costs for electricity. While the electricity data used in the 2022/23 allocation of costs and consumption has not been taken from those sub-meters in that period, our interpretation of the line description is that it represents the total from sites that have accurate metering.
- For gas, we have used the metered natural gas delivered to bioresources facilities. We have assumed a 35 per cent thermal efficiency for natural gas consumption in converting to energy output (boilers and CHP).
- For diesel fuel, we have used the volumes actually delivered to our bioresources facilities. We have converted the litres delivered to an equivalent energy output using the UK Government's conversion factors.
- For diesel transport fuel, we have used the volume of diesel purchased through fuel cards for the bioresources transport vehicles. We have converted the litres consumed to an equivalent energy output using the UK Government's conversion factors.
- For heat, we have used the gas volume measured at boiler biogas flow meters. A thermal efficiency factor has been applied to convert to energy output.

**41** In future years, the level of submetering will increase and the approach will change to include the actual sub-metered data for the period.

**Table 8D - Bioresources sludge treatment and disposal data for the 12 months ended 31 March 2023**

Line description	Units	By incumbent	By 3rd party sludge service providers
<b>Sludge treatment process</b>			
1 % Sludge - untreated	%	1.10%	0.00%
2 % Sludge treatment process - raw sludge liming	%	3.40%	0.00%
3 % Sludge treatment process - conventional AD	%	1.40%	0.00%
4 % Sludge treatment process - advanced AD	%	94.10%	0.00%
5 % Sludge treatment process - incineration of raw sludge	%	0.00%	0.00%
6 % Sludge treatment process - other (specify)	%	0.00%	0.00%
7 % Sludge treatment process - Total	%	100.00%	0.00%
<b>(Un-incinerated) sludge disposal and recycling route</b>			
8 % Sludge disposal route - landfill, raw	%	0.00%	0.00%
9 % Sludge disposal route - landfill, partly treated	%	0.00%	0.00%
10 % Sludge disposal route - land restoration/ reclamation	%	0.00%	1.70%
11 % Sludge disposal route - sludge recycled to farmland	%	98.30%	0.00%
12 % Sludge disposal route - other (specify)	%	0.00%	0.00%
13 % Sludge disposal route - Total	%	98.30%	1.70%

### Sludge treatment process

**1** We confirm that the percentages reported in lines one to seven (inclusive) relate to the sludge production figures reported in table 8A, lines one to three.

#### % Sludge - untreated (8D.1)

**2** We have included here raw sludge that was disposed to two land reclamation schemes without treatment.

#### % Sludge – raw sludge liming (8D.2)

**3** We have used liming for peak lopping of raw sludge cake loads in the last few years. As such, 3.4 per cent was limed in 2022/23, compared with 1.5 per cent and 4.4 per cent in 2020/21 and 2019/20 respectively.

**4** However, in 2021/22 the temporary closure of Great Billing STC, our biggest STC, required diversion of raw cake imports and export of indigenous sludge as raw cake for treatment elsewhere. We therefore limed substantially more sludge (14.0 per cent) than we had done for a few years. Whilst we cannot entirely predict operational disruption, it is reasonable to think that an event of this scale was relatively unique. However, the challenge of treating increasing sludge loads with older assets remains.

### **% Sludge treatment process - conventional AD (8D.3)**

**5** 1.4 per cent of our total sludge production was conventionally digested in 2022/23 - similar to 2021/22 (1.7 per cent): This is the proportion of sludge treated through our pasteurisation and digestion process at Chelmsford STC, which was commissioned in February 2021. The process was designed to upgrade from the previous conventional treatment achieved by raw sludge digestion with secondary batch liquid storage to produce enhanced treated product. However, as there is no significant hydrolysis occurring, we do not consider this process to be advanced anaerobic digestion (AD).

### **% Sludge treatment process - advanced AD (8D.4)**

**6** Our continued focus on active management of STC performance had reaped benefits in recent years, allowing us to process 96.7 per cent of our sludge production through advanced AD in 2020/21, up from 94.0 per cent in 2019/20, 90.9 per cent in 2018/19 and 82.2 per cent in 2017/18. The temporary closure of Great Billing STC saw this fall to 81.8 per cent in 2020/21. However, as expected, 2022/23 saw a return to more normal throughputs, namely 94.1 per cent. This was in spite of having a digester offline at Basildon STC for most of the year and clean-outs of the EEH plants at Cambridge and Kings Lynn STCs.

### **% Sludge treatment process - incineration of raw sludge (8D.5)**

**7** We do not incinerate any sludge.

### **Sludge disposal route**

**8** We confirm that the percentages reported in lines eight to 13 (inclusive) relate to the sludge production figures reported in 8A.6-8.

### **% Sludge disposal route - land restoration/reclamation (8D.10)**

**9** 2022/23 saw a reduction in sludge recycled to out-of-area land reclamation schemes to 1.7 per cent, compared with some 4.4 per cent in 2021/22. Of this, in 2022/23, 86 per cent (1.61 ttds) was raw sludge cake and 14 per cent digested cake (0.26 ttds) which was deemed by us to be unsuitable for recycling to agriculture.

### **% Sludge disposal route - sludge recycled to farmland (8D.11)**

**10** The majority (98.3 per cent) of our treated sludge was recycled to farmland in 2022/23.

### **% Sludge disposal route - other (8D.12)**

**11** We have previously included sludge transferred to other Water and Sewerage Company (WaSC) – a company responsible for the provision of both water and sewerage services. WaSCs for treatment because of operational issues. However, in 2022/23 we did not export any sludge for third party treatment and disposal.

**12** We would also include sludge that went to third parties for activities such as digester seeding or for research projects in the 'by third party sludge service providers' sections. However, no sludge went to third parties for these purposes in the reporting year.

**Table 9A - Innovation competition**

Line description	Units	Current year
<b>Allowed</b>		
Allocated innovation competition fund price control revenue	£m	4.682
<b>Revenue collected for the purposes of the innovation competition</b>		
Innovation fund income from customers	£m	4.682
Income from customers to fund innovation projects the company is leading on	£m	1.800
Income from customers as part of the inflation top-up mechanism	£m	-
Income from other water companies to fund innovation projects the company is leading on	£m	15.355
Income from customers that is transferred to other companies as part of the innovation fund	£m	4.450
Non-price control revenue (e.g. royalties)	£m	-
<b>Administration</b>		
Administration charge for innovation partner	£m	0.189

Line description	Total amount of funding awarded to the lead company through the innovation fund	Total amount of inflation top-up funding received	Forecast expenditure on innovation fund projects in year (excl 10% partnership contribution)	Actual expenditure on innovation fund projects in year (excl 10% partnership contribution)	Difference between actual and forecast expenditure	Forecast project lifecycle expenditure on innovation fund projects (excl 10% partnership contribution)	Cumulative actual expenditure on innovation fund projects (excl 10% partnership contribution)	Difference between actual and forecast expenditure	Allowed future expenditure on innovation fund projects (excl 10% partnership contribution)	In year expenditure on innovation projects funded by shareholders of the lead water company	In year expenditure on innovation projects funded by project partner contributions	Cumulative expenditure on innovation projects funded by shareholders of the lead water company	Cumulative expenditure on innovation projects funded by project partner contributions
Units	£m	£m	£m	£m	£m	£m	£m	£m	£m	£m	£m	£m	£m

Innovation project 1 <please insert project name>	0.187	-	0.127	0.129	0.002	0.187	0.129	(0.058)	0.058	0.016	0.016	0.020	0.020
Innovation project 2	3.782	-	1.849	1.599	(0.250)	3.782	1.600	(2.182)	2.182	0.178	-	0.178	-
Innovation project 3	7.524	-	0.898	0.746	(0.152)	7.524	0.746	(6.778)	6.778	0.083	-	0.083	-
Innovation project 4	0.314	-	0.298	0.298	-	0.314	0.298	(0.016)	0.016	0.033	-	0.033	-
Innovation project 5	5.535	-	0.834	0.819	(0.015)	5.535	0.819	(4.716)	4.716	0.091	-	0.091	-
Innovation project 6	-	-	-	-	-	-	-	-	-	-	-	-	-
Innovation project 7	-	-	-	-	-	-	-	-	-	-	-	-	-
Innovation project 8	-	-	-	-	-	-	-	-	-	-	-	-	-
Innovation project 9	-	-	-	-	-	-	-	-	-	-	-	-	-
Innovation project 10	-	-	-	-	-	-	-	-	-	-	-	-	-
Innovation project 11	-	-	-	-	-	-	-	-	-	-	-	-	-
Innovation project 12	-	-	-	-	-	-	-	-	-	-	-	-	-
Innovation project 13	-	-	-	-	-	-	-	-	-	-	-	-	-
Innovation project 14	-	-	-	-	-	-	-	-	-	-	-	-	-
Innovation project 15	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	17.342	-	4.006	3.592	(0.414)	17.342	3.593	(13.749)	13.749	0.401	0.016	0.405	0.020

- 1** All funding has been recovered through main charges. We do not currently receive or forecast to receive any royalties.
- 2** Up to the 31 March 2023 Anglian Water Services has been awarded:
  - IWC - £186,900 for the Whole Life Carbon project within the Innovation in Water Challenge.
  - WBC1 - £11,305,688 for the Safe Smart Systems and Triple Carbon Reduction projects
  - WBC2 - £5,849,316 for Enabling Water Smart Communities and Unlocking bioresources market growth.
- 3** Delivery of these projects is now underway and we are actively engaging with the Challenge Works reporting processes and any other assurances required from Ofwat. We are awaiting payment of inflation-based uplifts for the WBC1 projects in Q1 of 2023/24 which will go towards mitigation of risks carried as a result of unforeseen cost increases to these projects.
- 4** We comply with the terms of any innovation competition funding decision's, including that innovation competition funding is not being used to fund business as usual activities funded through totex. Where we have recovered revenue from customers for the purposes of the innovation competition this revenue has been paid into the innovation competition fund as requested.



## **Table 10A, 10B, 10C, 10D and 10E - Green recovery**

### **Table 10A, 10B, 10C, 10D and 10E**

**1** We are not required to report any figures for these tables.

**Table 11A - Operational greenhouse gas emissions reporting for the 12 months ended 31 March 2023**

Line description	Operational emissions		
	Water	Wastewater	Total
Unit	tCO2e	tCO2e	tCO2e
<b>Scope one emissions</b>			
1 Burning of fossil fuels (location-based)	2,509.460	8,031.787	10,541.247
2 Burning of fossil fuels (market-based)	2,509.460	8,031.787	10,541.247
3 Process and fugitive emissions	7,746.949	78,112.352	85,859.302
4 Vehicle transport	5,922.657	15,981.396	21,904.053
5 Emissions from land	-	-	-
6 Total scope one emissions (location-based)	16,179.066	102,125.535	118,304.601
7 Total scope one emissions (market-based)	16,179.066	102,125.535	118,304.601
8 Scope one emissions; GHG type CO2	8,317.489	23,675.587	31,993.076
9 Scope one emissions; GHG type CH4	1.858	37,116.377	37,118.235
10 Scope one emissions; GHG type N2O	7,625.710	41,099.561	48,725.272
11 Scope one emissions: GHG other types	234.004	234.004	468.009
<b>Scope two emissions</b>			
12 Purchased electricity (location-based)	64,860.322	57,077.855	121,938.177
13 Purchased electricity (market-based)	107,120.523	82,285.263	189,405.786
14 Purchased heat	-	-	-
15 Electric vehicles	28.303	28.303	56.606
16 Removal of electricity to charge electric vehicles at site	-	-	-
17 Total scope two emissions (location-based)	64,888.625	57,106.158	121,994.783
18 Total scope two emissions (market-based)	107,148.825	82,313.566	189,462.392
19 Scope two emissions; GHG type CO2	64,160.490	56,465.353	120,625.843
20 Scope two emissions; GHG type CH4	268.438	236.242	504.680
21 Scope two emissions; GHG type N2O	459.697	404.563	864.260
22 Scope two emissions: GHG other types	-	-	-
<b>Scope three emissions</b>			
23 Business travel	310.608	310.608	621.215
24 Outsourced activities	27.737	13,116.429	13,144.166
25 Purchased electricity; extraction, production, transmission and distribution (location-based)	22,865.893	20,122.431	42,988.324

26	Purchased electricity; extraction, production, transmission and distribution (market-based)	22,865.893	20,122.431	42,988.324
27	Purchased heat; extraction, production, transmission and distribution	-	-	-
28	Purchased fuels; extraction, production, transmission and distribution	1,887.777	8,386.239	10,274.016
29	Chemicals	16,259.387	13,345.564	29,604.951
30	Disposal of waste	143.894	23,171.915	23,315.809
31	Total scope three emissions (location-based)	41,495.296	78,453.185	119,948.481
32	Total scope three emissions (market-based)	41,495.296	78,453.186	119,948.481

33	Scope three emissions; GHG type CO2	6,177.780	18,371.530	24,549.310
34	Scope three emissions; GHG type CH4	167.600	3,286.640	3,454.240
35	Scope three emissions; GHG type N2O	42.400	19,709.600	19,752.000
36	Scope three emissions: GHG other types	-	-	-

**Gross operational emissions (Scopes 1,2 and 3)**

37	Gross operational emissions (location-based)	122,562.987	237,684.878	360,247.866
38	Gross operational emissions (market-based)	164,823.187	262,892.287	427,715.474

**Emissions reductions**

39	Exported renewables	-	6,334.442	6,334.442
40	Exported biomethane	-	-	-
41	Insets	-	-	-
42	Other emissions reductions	-	-	-
43	Total emissions reductions	-	6,334.442	6,334.442

**Net annual emissions**

44	Net annual emissions (location-based)	122,562.987	231,350.437	353,913.424
45	Net annual emissions (market-based)	164,823.187	262,892.287	427,715.474

Line description	Water	Wastewater
Unit	kgCO2e/MI	kgCO2e/MI

GHG intensity ratios				
46	Emissions per MI of treated water	283.609	-	-
47	Emissions per MI of sewage treated	-	384.597	-

Line description	Water	Wastewater	Total
Unit	tCO2e	tCO2e	tCO2e

Other				
48	Green tariff electricity	-	-	-

Line description	Embedded emissions		
	Water	Wastewater	Total
Unit	tCO2e	tCO2e	tCO2e

Capital projects				
49	Capital projects (cradle-to-gate)	-	-	-
50	Capital projects (cradle-to-build)	10,565.843	13,827.917	24,393.759

Purchased goods and services				
51	Purchased goods and services	-	-	18,356.900

### Emissions reductions (11A.28-29)

**1** Table 11A presents 2022/23 performance using both location-based and market-based methodologies methodology and was generated using the latest version of the Carbon Accounting Workbook (CAW) version 17.

**2** For electricity purchased from the grid, location-based reporting uses the grid average CO2 emissions factor. Market-based reporting uses the grid CO2 emissions factor for the electricity supplier and the mix of electricity purchased (in our case, SSE). Due to the different electricity generation fuel mixes of the various suppliers, this CO2 emissions factor differs between suppliers and from the grid average. Therefore, location-based reporting and market-based reporting give different total emissions numbers.

**3** Electricity consumption is one of the main emissions sources for our company. In 2022/23 we have consumed less grid energy than in the previous year. The location-based emissions have seen reductions owing to decarbonisation of the grid, therefore reducing emissions factors. From a market-based perspective we have benefited from the purchase of an increased portion of sleeved renewable energy in 2022/23 against 2021/22. However, as the market-based residual emissions factor for our supplier (SSE) increased in 2022/23 this has resulted in an increase in market-based emissions in 2022/23 over 2021/22.

**4** Scope three emissions from purchased electricity extraction, production and transmission & distribution is a new reporting category for 2022/23. This includes extraction and production emissions. In 2021/22 only purchased electricity transmission and distribution was reported. These numbers therefore cannot be directly compared.

**5** Scope three emissions from chemicals has been reported. This number includes chemicals specified in the CAW with associated emissions factors. In addition, we have included a further eight chemicals not listed in the CAW for which we sourced a relevant emissions factor. These eight further chemicals represent 6.6 per cent of the total chemicals emissions.

**6** Whilst reporting chemical emissions is a new requirement for APR 2022/23, we reported chemicals emissions in APR 2021/22 in the narrative accompanying table 11A paragraph 32.

**7** Lines 11A.33 to 36 present information around the various greenhouse gas types (GHG) types for scope 3 emissions. For purchased electricity and chemicals GHG information is available only as a CO<sub>2</sub>e figure and therefore cannot be split into the various GHG types. The numbers presented in 11A.33 to 36 are those scope three emissions where information is available to split emissions into GHG types.

**8** Emissions for capital projects is provided cradle-to-build. Our capital carbon approach has been developed over the last decade and, in order to provide the most comprehensive understanding of capital carbon, a cradle-to-build approach was adopted. We view this approach as more effective and comprehensive than a cradle-to-gate approach.

**9** In order to calculate emissions for capital projects for 2022/23 we have included all projects where construction started and completed in the year. In addition, we have included on a pro-rata basis those projects underway in 2022/23 but not yet completed.

**10** For goods and services we have included emissions under the following categories: PPE/Uniform, catering services, professional fees, laboratory and office consumables and contract services. Chemicals are excluded as reported separately.

**11** Every year we undertake an ISO14064-1 audit on our emissions for our regulatory boundary and have been undertaking this audit for over 10 years. This audit excludes the emissions from purchased goods and services. However, for our 2022/23 audit we engaged our auditors to undertake an analysis of our wider scope three emissions in order to better understand our data gathering and monitoring approach such that they can be included in our audit for 2023/24. The numbers presented therefore are not audited but auditor feedback has been used in calculating the numbers.

**12** We assess ourselves to be 'green' against the embedded reporting criteria as we have met six of the reporting criteria as follows:

**13** Reporting criteria one - *Provision of embedded emissions data as it relates to capital projects (cradle-to-build). We anticipate good practice in this area being for companies to provide cradle-to-gate as well as cradle-to-build based data.*

**14** Cradle-to-build embedded emissions data as it relates to capital projects has been provided.

**15** Reporting criteria two - *Clear evidence of external verification and accreditation as it relates to the use of standards and frameworks, and quality of data.*

**16** Our capital carbon approach is verified annually to PAS2080.

**17** Reporting criteria 3 - *Engagement with more than one recognised standard, framework, or approach for managing and reporting on embedded emissions*

**18** As above, our capital carbon approach is verified annually to PAS2080. In addition, in 2021 we also completed a Maturity matrix Asset Management Maturity Assessment (AMMA) for Ofwat. The results of this exercise showed us as a top performer of water

companies against the AMMA criteria. External accreditation underpins our approach. We are both ISO55001 and PAS55 certified. These standards form part of our Integrated Management System (IMS).

**19** Reporting criteria 4 - *Complete and detailed SWOT analysis referring to embedded emissions.*

**20** Our SWOT analyses for embedded and operational carbon are set out below.

**21** Reporting criteria 5 - *Purchased goods and services emissions information has been provided*

**22** Purchased goods and services information has been provided.

**23** Reporting Criteria 6 - *Evidence of clear stakeholder engagement and education on its GHG emissions management and reporting approach*

**24** A number of approaches are employed, internally and externally, to engage stakeholders around ongoing performance and to encourage further reductions:

**25** The Climate and Carbon Steering Group meets monthly, made up of senior leaders and subject matter experts from around the business, chaired by a Management Board Director. The group monitors carbon performance and progress against our net zero and capital carbon targets and sets the trajectory for ongoing work. The group provides an update to Management Board three times a year. The Terms of Reference for this Steering Group (anonymised for membership) is attached.

**26** A Leaders and Managers event is held quarterly for all staff at the level of manager and above. The update contains presentations on a host of business matters including by the CEO and CFO. The presentation by the CFO always contains an update on carbon performance.

**27** A monthly report is generated detailing performance against a number of energy consumption, energy generation and capital carbon metrics. This is circulated to key stakeholders in the organisation and extracts of the report are included in a dashboard reviewed monthly by the Management Board. The report is made available on the Intranet and is accessible to all staff.

**28** We maintain a Carbon Neutrality intranet site with a host of case studies, reports, information, performance metrics and the contact details of the carbon neutrality team. The intranet site is accessible to all staff.

**29** Totex Delivery Workflow (TDW) is used to monitor capital project performance over time. Approvals are required from a host of stakeholders at each design stage gate around issues such as capital carbon performance, programme, financial performance etc. In this way a wide range of stakeholders understand the relationship between carbon performance and the other aspects influencing overall project delivery. When projects progress between design stage gates presentations on project performance, including capital and operational carbon performance, are made to approvals boards made up of senior leaders in the organisation.

**30** In order to calculate and understand the capital carbon performance of projects we use a host of carbon models and a carbon modelling tool to model overall performance. Access to the modeller is granted to any staff involved in scheme design. Carbon modeller training for new users and masterclass training for more experienced users is provided regularly. Ad hoc queries are addressed through direct enquiries.

**31** We have a group of carbon champions throughout the business who champion carbon reductions on their own projects and provide guidance and assistance to others in delivering carbon reductions. This group meets every six weeks and has over 30 members.

**32** On 23/02/23 we ran a 'Climate for Change' event in London attended by approximately 100 senior staff, primarily from our external value chain. The event set out our carbon reduction progress, the scale of the challenge and investigated ways through which collaboration in the value chain can better deliver carbon reductions. The key speakers at the event were Chris Stark, Chief Executive, Climate Change Committee, Prof Emily Shuckburgh from the Cambridge Institute of Sustainability Leadership and Peter Simpson, Anglian Water Chief Executive.

**33** To coincide with World Environment Day on June 5<sup>th</sup> 2023, in partnership with the @one Alliance (which delivers a large proportion of our capital programme), we ran sustainability week with a host of discussions, presentations and collaboration opportunities available to staff. The event was supported by an internal communications campaign.

## **SWOT analysis – embedded carbon**

### **Strengths**

**34** Accounting for embedded carbon is well established in our company processes and culture. In 2016 we became the first organisation globally to be externally verified (through LRQA) to PAS2080 Carbon Management in Infrastructure. The carbon framework at the heart of the PAS2080 standard ensures that our approach is aligned with key stakeholders within the value chain - including product suppliers, constructors and designers - in demanding and enabling low carbon solutions. We undertake an annual verification of PAS2080.

**35** We participated in the steering group for the revision of PAS2080 published in April 2023.

**36** As we have been measuring, managing and reducing capital carbon since 2010, we have access to significant levels of data to support our reporting and strategy for delivering against ambitious targets. Evidence has now been collated over a number of years, illustrating the relationship between reducing carbon and reducing cost.

**37** We have over 1,300 carbon models which not only allow us to be consistent with baselines but also allow our alliances to identify areas of high carbon and to optioneer lower carbon solutions. The scope of these models is cradle to 'as built'. We believe this approach is more comprehensive than cradle to gate and allows for a more accurate understanding of performance and the identification of carbon reduction approaches in the construction phase.

**38** The models contain a consistent data set sourced from the Inventory of Carbon and Energy, CESSM workbook, Defra emission factors and direct data from several product and material suppliers.

**39** As per our Net Zero Carbon Routemap 2030 published in July 2021, we committed to achieving 70 per cent capital carbon reductions by 2030. We will also develop a strategy to further reduce these emissions post 2030.

**40** We have provided emissions data for chemicals, including eight further chemicals not specified within the CAW. Whilst this reporting is new for APR 2022/23, we have been gathering chemical use data by annual volume for a number of years. We are confident that the data we have provided for chemicals, whilst not currently within scope of our ISO14064-1 audit, is robust.

**41** From the beginning in understanding and delivering capital carbon reductions, there has been consistent support from the our Board which has been vital in achieving the reductions we have seen and the commitments to future reductions we have made.

**42** The importance of embedded carbon emissions reductions are well communicated to and understood by staff. All staff understand that they can play a role in the delivery of carbon reductions. In addition, we have a dedicated Carbon Neutrality Team of committed and talented individuals specialising in investigating, analysing, delivering and communicating carbon reduction approaches.

### Weaknesses

**43** There is currently a fragmented approach within the water sector in terms of approaches to capital carbon, ranging from limited experience through to global leadership. A future consistent methodology and framework across the sector will send strong signals to the supply chain, where innovations and opportunities need support in unlocking low carbon solutions.

**44** Additional carbon savings from the use of new materials, such as low carbon concretes, is progressing slowly. The low carbon concrete group, through BEIS and the Green Construction Board, published a low carbon concrete routemap in April 2022. However, sector demand for this type of material needs to be further enhanced amongst other infrastructure sectors to provide confidence for products suppliers to invest.

**45** We have reported data on scope 3 (embedded emissions) which sit outside of our regulatory boundary. For much of the data around 'products and services' these are new areas for us to gather and report data. The numbers reported are the best available data. In order to better understand the data we possess we engaged our auditors to assess the data and make recommendations to improve data quality. During 2023/24 we will be improving our systems so as to improve data accuracy for the next reporting period.

### Opportunities

**46** Through utilising historical information, and based on our experience of reducing capital carbon, we recognise that there are different opportunities in finding carbon reductions between above ground and below ground assets and between water and water recycling schemes. Information such as this can help us identify areas of greater challenge. The table below illustrates this with actual data from 2022/23.

	2022-23 actual
Water infrastructure	61.4%
Water non-infrastructure	43.7%
Water Recycling infrastructure	60.1%
Water Recycling non-infrastructure	74.9%
Total	63.2%

**47** Additional use of datasets enables the focus on sustainable materials, by helping us understand carbon/cost tipping points.

**48** Investors are increasing understanding the value of low capital carbon solutions. Being able to demonstrate savings and verification against PAS2080 allows access to green finance options. This was highlighted with us being the first utility to issue a sterling green bond in 2017. This leading position in the finance and investment community has been further re-enforced with the issue of sustainably linked bonds, with KPIs on both Net Zero carbon and capital carbon.

**49** Our @One Alliance is a partnership between Anglian Water and a number of construction companies developed to deliver our capital programme. This has proved a very successful model to deliver reduced capital carbon through collaboration across the value chain. We understand that to go even further in capital carbon reductions will require greater



collaboration with our entire value chain. Our 'Climate for Change' event (mentioned above) is part of this ongoing engagement with our value chain and we will continue to collaborate and innovate with partners to deliver carbon reductions.

### Threats

**50** Lack of modelled carbon data for new products and techniques could provide a blocker to innovation as solutions engineers may be unable to compare the carbon impact against a standard solution.

**51** Through detailed analysis in collaboration with our supply chain, we have identified that reductions approaching or in excess of 72 per cent result in a carbon/cost tipping point, leading to higher cost solutions to achieve lower carbon outcomes.

**52** With the requirement to remove per and polyfluoroalkyl substances (PFAS) compounds there will be an increase in treatment requirements and a likely consequent increase in chemical usage. Furthermore, it is possible that in the coming years additional PFAS compounds will be identified increasing chemical requirements further.

### Operational Carbon SWOT

#### Strengths

**53** We have a well-developed carbon culture and processes. We measure our operational carbon emissions using the UK Water Industry Research (UKWIR) Carbon Accounting Methodology through the Carbon Accounting Workbook (CAW). This is an industry standard approach which is updated annually and is reflective of carbon reporting and emissions guidance from Defra. Our annual emissions are verified to ISO-14064-1 through Achilles Carbon Reduce (formerly CEMARS). We have achieved Platinum status for over 10 years of carbon reductions and have achieved our reduction targets over the last two AMP periods.

**54** We have a performance commitment for carbon reductions that aligns with the AMP period.

**55** We have well established energy optimisation processes which have proved successful, and we will continue to improve our performance in this area.

**56** We submit an annual response to CDP (formerly Carbon Disclosure Programme). For 2021/22 we achieved a rating of B. In 2022 the scheme received over 18,700 submissions.

**57** We report in line with the government's guidance on Streamlined Energy and Carbon Reporting (SECR), which seeks to align with the principles of the greenhouse gas (GHG) protocol corporate standard.

**58** We produce an annual Tack Force for Climate Related Disclosures (TCFD) submission contained within our Annual Integrated Report. Whilst this is not a statutory obligation its completion illustrates the importance to the organisation of carbon reductions and wider climate related issues.

**59** From the beginning in understanding and delivering carbon reductions, there has been consistent support from the our Board which has been vital in achieving the reductions we have seen and the commitments to future reductions we have made.

**60** The importance of operational carbon emissions reductions are well communicated to and understood by staff. All staff understand that they can play a role in the delivery of carbon reductions. In addition, we have a dedicated Carbon Neutrality Team of committed and talented individuals specialising in investigating, analysing, delivering and communicating carbon reduction approaches.

## Weaknesses

**61** A challenging area for achieving reductions is process emissions associated with water and waste treatment. In recognition that the emissions arising from treatment process are not well understood, a review, led through UKWIR, is currently ongoing into the quantification and reduction of this emissions source. As part of this process we are undertaking trials in measurement of these emissions and in the introduction of new technologies. Recommendations from phase one of the review led to a change in accounting for Nitrous Oxide (N<sub>2</sub>O) [AS1] loading in the CAWv15, increasing emissions from wastewater treatment. This change in N<sub>2</sub>O loading was carried through to CAWv16 and now CAWv17.

**62** Outputs at the end of the review will mean that the way that process emissions are measured and reported will be more robust. However, this may mean that reported outputs rise increasing the challenge to achieving net zero carbon.

## Opportunities

**63** Our longer-term aim is to achieve net zero carbon by 2030, a water sector ambition that was set out in a Public Interest Commitment with the other English Water companies in 2019. Consultants Mott McDonald and Ricardo, in collaboration with a steering group representing water companies, published an industry route map in 2020. This was followed by an Anglian Water-specific net zero Routemap in July 2021. This Routemap contains more details on the approaches we will undertake to reach our net zero goal. The Routemap is publicly available through our webpages.

**64** There are a host of initiatives currently under way or in the development phase to further reduce our GHG emissions to achieve our net zero 2030 target. We will continue with our programme of developing renewable energy generation with a particular focus on solar photovoltaics (PV), with a parallel programme of developing energy storage solutions to maximise renewable electricity consumption.

**65** We are currently planning for a number of our water recycling centres (WRC) to export biogas into the gas network. This will result in carbon savings over and above those which could be achieved through energy generation from combined heat and power (CHP).

**66** Our energy optimisation programme will continue, driving out inefficiencies using increased understanding achieved through improved data quality.

**67** We have commenced a programme to introduce electric vehicles (EV) into our fleet, with a programme for annual replacement of Internal Combustion Engine (ICE) vehicles to EV. This programme currently concentrates on our smaller fleet where EVs with adequate range are available.

**68** We are currently trialling the use of electric heavy vehicles at one of our sites and will shortly be engaging with a truck manufacturer to use electric trucks and truck charging infrastructure. Over the coming years we will be investigating the opportunities around hydrogen powered HGVs when they become available, possibly close to 2030.

**69** We have introduced a programme to replace fossil fuels with hydrotreated vegetable oil (HVO) in our back-up generators, boilers and construction plant and equipment, thereby reducing carbon emissions.

**70** We also plan to introduce natural capital solutions for the treatment of water to reduce operational energy, reduce the amount of capital carbon in their construction compared to a traditional solution, as well as deliver the associated biodiversity benefits.

**71** Studies are also underway to understand opportunities for carbon sequestration at a local level. At present these studies involve soil carbon and seagrass (led by Affinity Water through the Ofwat Innovation Fund). It is hoped that large scale carbon sequestration opportunities are identified.

**72** N<sub>2</sub>O monitoring programmes are underway to better understand the detailed mechanics of N<sub>2</sub>O generation and release and strategies to reduce these emissions are under development.

**73** Last year it was unclear as to the longer term impact of changing work patterns as a consequence of the Covid-19 pandemic on household consumption and the issue was included in our SWOT analysis as a threat and we are still assessing the extent of new social norms regarding home working and water consumption. Determining the 'new normal', however, is significantly complicated by not only the introduction of smart meters across the Anglian Water region (over 500,000), but also by changes in consumption due to the current 'cost of living crisis'. These combined changes have led to a significant reduction in per capita consumption this year, down to the lowest levels recorded in recent times (131 l/h/d).

### **Threats**

**74** As discussed above, process emissions from wastewater treatment are not currently well understood and are subject to further studies. It is possible that, following the conclusion of these studies, emissions factors for process emissions increase further, leading to a requirement for larger carbon reductions.

**75** Population continues to grow in our region, with a forecast of approximately one million new homes to be built in the next 25 years. This will increase water demand and therefore the energy required to supply and recycle water.

**76** There are also threats associated with national policies and regulations. The mandatory introduction of labels on taps, showers, dishwashers and washing machines will assist consumers in selecting low water use appliances but delays in its introduction will delay uptake and therefore the water and associated energy savings. Similarly, delays in changes to building regulations around water usage and planning policies around sustainable drainage for new developments will also reduce the opportunity for energy and carbon savings.

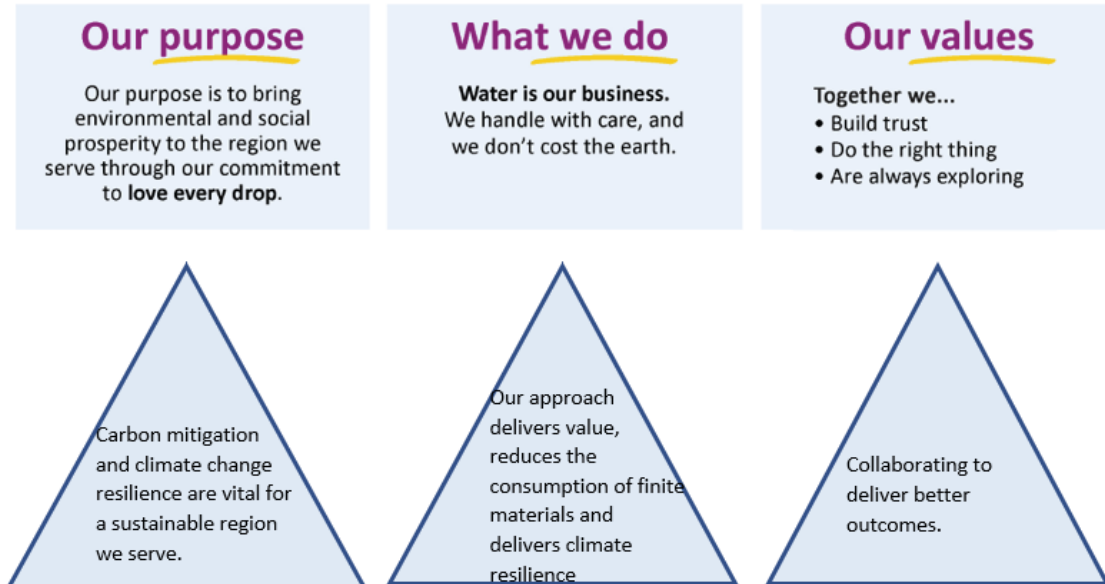
**77** Changes to the green gas levy could undermine the business case for CHP and/or injecting gas into the grid, making these carbon saving opportunities unviable.

**78** Abstraction licence caps being imposed by the EA to protect sensitive environments (under the Water Framework Directive (WFD) no deterioration principle) can result in the construction of more infrastructure and the use of more energy to move water over longer distances.

**79** Designation of inland bathing waters could lead to a need to treat effluent with carbon intensive options such as ozone, UV or carbon filtration at relevant WRCs. This would increase energy requirements.

## Appendix A - Climate and Carbon Strategy Group – Terms of Reference

### Vision



**80** Leading and influencing on actions that will deliver climate change mitigation, adaptation and resilience through our journey to net zero carbon and beyond.

### Objectives

- Understand how climate change impacts on our ability to deliver against our purpose
- Understand climate change implications at a system level and the actions we need to take in designing and maintaining assets to deliver resilience
- Lead and collaborate across our business, the water sector and the wider infrastructure sector to deliver Net Zero Carbon and 70 per cent capital carbon reductions by 2030
- Monitor performance and take appropriate action where required, ensuring carbon ODI performance targets are exceeded and Green Bond and Sustainable Linked Bond targets are met
- Horizon scan and review government energy and climate change policy to mitigate impacts and maximise opportunities
- Horizon scan and review innovation approaches so as to maximise carbon saving opportunities
- Support our Alliances and develop multi stakeholder partnerships to deliver carbon reductions and climate change resilient outcomes
- Ensure carbon reduction opportunities and climate resilient investments are an integral part of the PR24 submission including the development of a bespoke carbon related ODI
- Define the AW carbon position post 2030 to include scopes one, two and three and offsetting.

### Scope and Deliverables

**81** Scope includes:

- Operational and capital carbon measured within our regulatory activity. Influencing policy through Water UK and industry partnerships including the Green Construction Board, Infrastructure Client Group (ICE) and Corporate Leaders Group.

- Review and challenge performance against carbon ODI's and Net Zero 2030 trajectory. This includes ensuring definition and approach to carbon ODI's deliver value within the PR24 process and are supported by customers.
- With treasury, validate and ensure compliance against the suite of measures including carbon and climate change in accordance with requirements of the issuing of 'green and sustainable linked Bonds' and data provided through investment teams.
- Review forecasting, budgeting and efficiency of electricity, natural gas and other carbon related data across the business and challenge on under/over performance.
- Challenge and support actions and activities across the business, including renewable energy, energy efficiency, sustainable design, energy purchasing, vehicle fleet management, nature-based solutions, offsetting, etc, and aligned to our Net Zero Carbon Routemap.
- Reporting and communicating performance where required through regulation, or our leadership position, including Task Force for Climate Related Financial Disclosures (TCFD), Task Force for Nature Related Financial Disclosure (TNFD), Climate Change Adaptation Reporting (ARP4), Transition Plan, etc
- Challenge and support our strategy and performance in assessing and delivering climate resilient investments.

### Workstreams

**82** The group will focus on the delivery of a number of workstreams:

- Decarbonising our vehicle fleet
- Maximising the value of our biogas
- Renewable Energy
- Managing our process emissions
- Developing our offsetting strategy
- Opting for alternative fuels
- Energy Efficiency
- Capital Carbon
- Finance Climate Gp/CDP
- Climate Change Adaptation Strategy, Reporting and Transition Plan
- CReDo

**83** Workstreams may be amended in response to changing demands.

### Membership Format

**84** The group will meet monthly. Relevant SME's will be invited to meetings on an ad hoc basis relevant to discussions.

### Membership

- Chair – Director, Quality and Environment
- Director, Strategic Delivery and Commercial Assurance
- Head of Carbon Neutrality
- Head of Fleet Services
- Portfolio Lead - Bioresources
- Head of Business Improvement and Optimisation
- Energy Contract and Information Manager
- Head of Quality Transformation
- Climate Change and Carbon Manager
- Natural Catchment and Biodiversity Manager
- Regulatory and Sustainable Reporting Manager
- Head of Strategic Investment Finance
- Head of Corporate Reporting
- LTDS Manager
- Head of Sustainability

- Group Financial Controller
- Head of Innovation and Carbon @One
- Head of Innovation
- SPA Carbon and Sustainability Manager and Project Management

**Governance**

**85** Meetings will be held monthly chaired by the Director of Quality and Environment.

**86** The group will provide an update for Management Board three times a year. For the meeting immediately prior to the development of the Management Board update, the Directors of Water and Water Recycling will be invited.

## Accounting, performance and transfer pricing disclosures

**1** RAG 3.14 specifies a number of statements, notes and other disclosures which the company should make. Some of these disclosures are also required by law or by conditions in Anglian Water's licence. In this section we set out those statements or explain where they can be found.

### Accounting disclosures

#### Statement on executive pay and performance

**2** Section 35A of the Water Industry Act 1991 contains a requirement for companies to make a statement to Ofwat at the end of each financial year, regarding links between Directors' pay and standards of performance. Details of Directors' pay can be found in the Remuneration Report within the Annual Integrated Report (pages 127 - 155).

#### Statement on disclosure of information to auditors

**3** In the case of each of the persons who are Directors at the time when the Report is approved under Section 418 of the Companies Act 2006 the following applies:

- So far as the Director is aware, there is no relevant audit information of which the Company's auditors are unaware; and
- He/she has taken all the steps that he/she ought to have taken as a Director in order to make himself/herself aware of any relevant audit information and to establish that the Company's auditors are aware of that information.

#### Statement on dividend policy for the appointed business

**4** In line with the approved dividend policy, a final dividend for 2022/23 of £79.9 million was paid on 15 June 2023. This dividend has been adjusted with a £26 million deduction to reflect aspects of underperformance, including the ODI penalty incurred.

**5** A £169.0 million prior year final dividend was paid in the period, a deduction was made to the base dividend of £9 million to reflect performance in 2021/22. As shown below, the Board took the prudent decision to withhold the available dividend in 2020/21 given the risks associated with the Covid-19 pandemic and uncertainty at the time around the CMA process. In May 2023, with the risks associated with the Covid-19 pandemic reducing substantially, the CMA process concluding and a £1.2 billion equity injection strengthening financial resilience, it was decided to release an element of the dividend withheld in 2020/21 which formed part of the £169.0 million paid.

**6** These dividends have been paid against a backdrop of an equity injection of £1,165.0 million in the prior period and results in a net equity injection for the AMP of £819.8 million. Through these capital injections the company continues to benefit from the strong support of shareholders.

**7** Our Dividend policy, which has been updated to reflect the latest guidance set by our economic regulator, Ofwat, can be found on the our reports section of our website: <https://www.anglianwater.co.uk/about-us/our-reports> and below we set out how we have applied our policy in determining the dividends paid. Our Dividend policy focuses on the performance of the Company's regulated business. However, dividends may also be paid in respect of the Company's non-appointed activities. The non-appointed dividend is equal to the profit after tax from non-appointed activities and is set out below.

	2020/21	2021/22	2022/23	2023/24
	Year 1	Year 2	Year 3	Year 4
Total Statutory dividend paid and proposed	-	96	169	80
Less: Non-appointed dividend paid and proposed <sup>1,2</sup>	-	(13)	(8)	(8)
Actual appointed dividend paid and proposed	-	83	161	72

1 The non-appointed dividend paid in year 2 reflects non-appointed profits carried forward from year 1 that were not distributed

2 The non-appointed dividend in year 4 is an estimate based on the expected profit of the non-appointed business

**8** We have set dividends to reflect performance and build financial resilience. In so doing, we aim to demonstrate how we are operating responsibly and balancing the needs of all our stakeholders, while attracting the continued investment vital for this region and customers now and in years to come.

**9** In determining an appropriate dividend, the Company considers the available dividend based on the free cash flow of the business which the Board are satisfied is sufficient. The Board also has regard to the overall appointed dividend yield with reference to that quoted by Ofwat in the Final Determination. Directors then consider performance of the regulated business in the round and have regard to performance for customers, operational commitments which are of importance to customers and wider social and environmental commitments and adjusts the dividend accordingly.

**10** Lastly, the Board considers its financial resilience, both in year and over time, by considering, but not limited to, forecast financial metrics and covenant constraints.

### Assessment of appointed dividend

**11** The table and subsequent commentary below sets out the application of the policy with the key considerations and conclusions described in further detail.

	2020/21	2021/22	2022/23	2023/24
	Year 1	Year 2	Year 3	Year 4
RCV Average	7,913	8,349	9,366	10,311
Gearing (avg CTA)	82.50%	69.40%	66.20%	68.40%
Average reg equity	1,385	2,555	3,166	3,258
Assumed dividend 4% £m	<b>55</b>	<b>102</b>	<b>127</b>	<b>130</b>
Adjustment (outturn) +	-	-	12	
Adjustment (outturn) -	-	-	(9)	(26)
<b>Adjusted dividend</b>	<b>55</b>	<b>102</b>	<b>130</b>	<b>104</b>
Deferral brought forward	-	55	74	43
<b>Available dividend</b>	<b>55</b>	<b>157</b>	<b>204</b>	<b>147</b>
Deferral carried forward	(55)	(74)	(43)	(75)
<b>Actual appointed dividend paid and proposed</b>	<b>-</b>	<b>83</b>	<b>161</b>	<b>72</b>
Cumulative Dividend yield (actual regulated equity)	0.00%	2.10%	3.40%	3.10%



**Dividend payment in 2022/23**

**12** The table above shows the dividend paid in 2022/23 utilised some of the deferral carried forward from years one and two. As the risks associated with the Covid-19 pandemic were no longer considered material, it was decided to release the dividend withheld in 2020/21. Therefore, whilst the dividend payment in year was slightly above a 4 per cent yield as a proportion of equity Regulatory Capital Value (RCV), on a cumulative basis over the first three years of the AMP the yield remains below this level at 3.4 per cent with £43 million of headroom carried forward to the final two years of the AMP.

**Dividend payment in 2023/24**

**13** The available dividend for year four, after adjusting for performance is £147 million. However, in the light of the current volatile environment, the Board has decided to defer £75 million in order to ensure that the Company remains resilient during the remainder of the AMP period – thereby reducing the dividend to £80 million.

Dividend policy consideration	Conclusions
<p><u>Short-term liquidity</u></p> <p>As set out in the Company’s going concern assessment there is sufficient liquidity to meet liabilities as they fall due after the proposed dividend has been paid. The free cash flow of the business is also in excess of the assumed 4% dividend yield deemed appropriate by Ofwat.</p>	<p>The Board considers the short-term liquidity requirements have been met and no deduction has been made.</p>
<p>Assessment of business performance “in the round” (having regard to performance for customers, operational commitments and wider social and environmental commitments) In considering the need to make an adjustment for performance the Company uses a performance scorecard which has been developed and framed around the six capitals. The performance scorecard includes 54 metrics For year 3 (which determines the dividend paid in year 4) 37 metrics scored green, 11 amber and 6 red. Whilst the overall performance assessment shows strong performance in the year across a number of metrics, particularly those related to environmental sustainability and financial resilience, the Board recognised that there are areas that have not performed as well and therefore made an appropriate adjustment..</p>	<p>One of the metrics classified as red related to the overall position in relation to Ofwat’s ODI performance assessment.</p> <p>Of the five other metrics rated as red, three were in relation to measures duplicated by the ODI framework, CMEX, Pollutions and Mains repairs. The Board has therefore deemed it appropriate to deduct the £26 million ODI penalty (2022/23 prices) from the base dividend to be paid with no further deduction for the three other metrics. This is consistent with the approach taken in the prior year in relation to the £9 million deduction.</p> <p>As ODI rewards are received 2 years in arrears it is the Company’s policy to include these when received and therefore the Year 1 reward of £12 million is shown in Year 3.</p> <p>In addition, there are two other performance metrics rated red that are not captured by the ODI framework:</p> <ul style="list-style-type: none"> <li>• SPA delivery – Overspend on the SPA project is being funded by shareholders and therefore no dividend reduction has been applied.</li> <li>• Capital delivery efficiency – excluding SPA this is on track and therefore no dividend restriction has been applied.</li> </ul>
<p><u>Financial resilience</u></p> <p>In assessing financial resilience, the assessment considers forward looking forecasts to ensure we remain compliant with covenant levels in the period to March 2025 (the end of the AMP 7 period), as required by the Common Terms Agreement (CTA).</p> <p>In addition, the Board considers key credit rating metrics with reference to the recent licence change by Ofwat.</p>	<p>As set out in our long-term viability statement, our latest approved forecast indicates we are within our covenants therefore no dividend deduction is required.</p> <p>In addition, we expect to maintain our strong credit ratings which are above the level set by Ofwat in the recent licence modification.</p> <p>The Board has however made the prudent decision, as with previous years to defer an element of the available dividend give the current volatility in the economy. As such a deduction of £75 million has been made to reduce the appointed dividend to £72 million.</p>

<p><u>Long term investment</u></p> <p>The assessment also considers the level of growth in RCV throughout the AMP as the 4% yield set by Ofwat was based on a flat RCV. This growth in RCV reflects investment in Capex over the AMP set out in our PR19 plans.</p>	<p>As part of our financial restructure in 2021, £1,165 million was injected as equity into the business to reduce the gearing level of the business and fund the equity component of the growth in RCV. Therefore, no dividend restrictions are required for RCV growth in AMP7.</p> <p>The cumulative dividend yield for the AMP represents 3.1% of actual regulatory equity against an expectation of 4.0% set by Ofwat as a reasonable return.</p>
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## Conclusion

**14** Overall, the Board believes that the dividends paid and proposed for this AMP represent a balance between reflecting performance and maintaining resilience on the one hand and a delivering a reasonable yield on the investments made in order to continue to attract equity on the other.

## Accounting policy note for price control units

In order to produce the APR and in addition to the accounting structure used for internal management reporting, we have created a separate regulatory cost structure in our financial system. This means that operating costs relating to water, wastewater and household retail price controls can largely be directly assigned. Where costs are not directly allocated to a specific price control, management has assessed an appropriate allocation in accordance with the regulatory accounting guidelines.

Capital expenditure is also largely directly attributable to price control. Where this is not possible, capital expenditure is assigned to the business unit of principal use with an appropriate recharge of depreciation charges for these shared assets made between price control segments in table 2A.

All cost allocations have been carried out in line with the guidance in RAG 2.09, with no material impact on the allocation of costs between price controls when compared to the previous year. More detail on our cost allocation processes can be found in our accounting methodology statement on our company website: [www.anglianwater.co.uk](http://www.anglianwater.co.uk).

## Revenue recognition note

The following detailed policy on revenue recognition supplements the turnover accounting policy within the statutory financial statements.

i. Occupied properties are chargeable for water and sewerage, and revenue is recognised based on services supplied. The identity of the occupier is ascertained by either contact initiated from the occupier, completion of a questionnaire sent out by the Company to the premises, a visit by a customer services representative or searches of available data. Unoccupied and unfurnished properties are vacant properties and deemed void, and along with non-household properties classified as vacant under the Market Codes, no billing is raised and no turnover recognised. The status of a property as vacant/void is confirmed by reading of the meter to ascertain changes in consumption, or in relation to unmeasured properties through providing a questionnaire for completion and return by any occupier, plus an inspection where considered necessary.

ii. Household and non-household charges apply to unoccupied premises in certain circumstances as set out in our Legal Charges Scheme, and revenue is recognised on these properties consistent with occupied properties. Unoccupied premises which attract charges include:

- premises which are left unoccupied for periods of time but are left with bedding, a desk or other furniture so that they may be used as a dwelling or as office or commercial premises

- premises where renovation or building work is being undertaken
- premises which are not normally regarded as being occupied such as cattle troughs and car parks
- all metered premises (furnished and unfurnished) where water is being consumed.

We classify properties as 'non-chargeable' on the basis that either:

- although the property is furnished, there is no consumption and the occupier is deceased, or the property is long term vacant (more than three months) due to hospitalisation, admittance to a care home, imprisonment with HMPs, or the property is uninhabitable due to fire/flood; or
- the property is demolished and/or pending disconnection and removal of meter.

No charge is calculated for these premises and no bill issued. This is based on a "fairness" principle given that, whilst the property is connected, no service is provided.

Further, the following provisions are applied in respect of disconnections:

- Premises listed in Schedule 4A of the Water Industry Act 1991 (e.g. any dwelling occupied by a person as his or her only or principal home) cannot be disconnected for non-payment of charges.
- If the water supply to any premises is disconnected for any reason but we continue to provide sewerage services to those premises, the customer will be charged the appropriate sewerage tariff unless it can be demonstrated that the premises will be unoccupied for the period that the premises are disconnected, in which case there is no charge. Revenue is recognised for sewerage services up to the point we are aware the property becomes unoccupied.
- If it is subsequently found that the premises were occupied for any period when we were advised that the premises would be unoccupied, we will apply the appropriate sewerage tariff to that period, raise appropriate retrospective bills and recognise revenue at that point.
- In the event that we suspect that a property is occupied but we have no record of the occupier, we take steps to establish the identity of the occupier in order that billing can commence and revenue be recognised. 'Occupier' is defined to include any person who owns premises as set out in part (i) above, and also any person who has agreed with us to pay water supply and/or sewerage charges in respect of any premises (e.g. a Bulk Meter Agreement).

iii. Charges on income relating to debt recovery costs, which are chargeable to customers, are credited to operating costs and charged to the relevant customer account. Turnover is unaffected by these debt recovery costs. Historically, we have only sought to recover court and solicitors' fees where we have issued a County Court Claim. From 2009/10 the Legal Charges Scheme was amended to allow debt recovery agency fees to be recharged to customers.

iv. As soon as new properties are occupied and furnished or consumption is recorded, liability for water and sewerage charges commences, and revenue starts to accrue.

### **Use of social tariffs**

**15** Anglian Water offers the LITE tariff to eligible customers. The tariff provides banded discounts of 25 per cent and 50 per cent to standard rate charges. Eligibility is based on individual financial assessment by our ExtraCare team using charges as a proportion of effective disposal income (net income after housing costs). The majority of applicants qualify for the discount of 50 per cent. The discount is fully funded by the customer cross subsidy, set following consultation in 2020.

**16** To promote accessibility for vulnerable customers we offer additional practical support to a wide range of customers as part of our Priority Service register. The Priority Service register can provide support to our customers should their water stop, and we need to carry out a repair, including proactive contact and bottled water delivered to their door. We also

provide additional services to help with managing their account, such as bills in alternative formats, translations services, help reading the meter, password schemes and our knock and wait service which can provide extra time for our customers to answer the door.

**17** During 2022/23 we increased the number of customers we support through our Priority Service register to 11.4 per cent of households, exceeding the industry target of 7 per cent by 2025. The increase is a direct result of our customer facing teams proactively responding to disclosures of vulnerability, promotional campaigns to increase awareness and continued partnership working. We have sent over 1.1 million emails, generated more than 15.7 million social media impressions, and actively engaged with over 200 partners across our region to promote the support available. When asked 61.8 per cent of our customers were aware of the support we provide as part of our Priority Services.

**18** In 2022/23 we continued to roll out bespoke vulnerability training in partnership with the Money Advice Trust to our frontline teams, building their confidence and ability to encourage and handle sensitive disclosures.

**19** We are pleased to share that in addition to maintaining certification of the BSI 18477, we are one of the first water companies and one of only nine companies globally to achieve the new international standard for Inclusive Service Provision ISO 22458. Both standards are a high-level certification only issued to businesses that have met strict criteria for protecting their customers who are in vulnerable situations.

**20** We have continued to expand the range of partners we work with, following research conducted with Scope we launched a critical partnership with Kidney Care UK to support those most at risk during an interruption to supply.

**21** We further increased our work with local government to distribute the Household Support Fund to those experiencing water poverty, through working closely with councils across our region we have been able to distribute over £2 million in support.

### **Measured income accrual**

We highlight the following comments in respect of turnover for the year:

Appointed turnover for the year ended 31 March 2023 included a measured income accrual of £298.2 million (year ended 31 March 2022: £294.3 million). The value of billing recognised in the year ended 31 March 2023 for the prior year was £293.3 million. This has resulted in a recognition in the current year's turnover of an estimation difference for the prior year of £1.0 million (2022: £2.8 million) representing 0.1 per cent of turnover (2022: 0.2 per cent) and within acceptable tolerances for accounting estimates.

There have been no changes to the methodology used in calculating the measured income accrual from the prior year.

### **Capitalisation policy note**

The capitalisation policy applied to the APR is consistent with that used in the statutory accounts (accounting policy 1(l) of the Annual Integrated Report), with the exception of the capitalisation of interest. This has been excluded from the APR as per the guidance in RAG 1.09, section 4.8.

### **Bad debt note**

The Group assesses impairment of trade receivables on a collective basis and where they possess shared credit risk characteristics they have been grouped; these groups are residential, non-household and developer services, and other customers.

In particular, existing or forecast adverse changes in financial or economic conditions that are expected to cause a significant decrease in the debtor's ability to meet its debt obligations is taken into account when assessing whether credit risk has increased significantly since initial recognition.

The write off policy has been consistently applied throughout 2022/23. Debt is only written off after all available economic options for collecting the debt have been exhausted and the debt has been deemed to be uncollectable or is subject to a settlement agreement or forgiveness scheme. This may be because it is, unrealistic, impractical, inefficient or uneconomic to collect the debt.

Situations where this may arise and where debt may be written off are as follows:

- Where the customer has absconded and attempts to trace the customers whereabouts prove unsuccessful.
- Where the customer has died without leaving an estate or has left an insufficient estate on which to levy execution.
- Where the debt is subject to insolvency proceedings and there are insufficient funds to settle the debt.
- Where the value and/or age of debt make it uneconomic to pursue.
- Where debt becomes statute barred.

We also write off debts following a settlement arrangement on an outstanding balance and for eligible customers on our debt forgiveness scheme (Back on Track) as part of payment matching.

Debt that is still subject to enforcement activity is not written off unless it becomes uneconomic to pursue.

The debt written off in the current year was £8.6 million (2022: £8.8 million). The reason for the decrease is that less debt met the write off criteria during the year. There have been no changes to our debt write off policy during the year.

### **Sufficiency of non-financial resources**

Condition P.14 of Anglian Water's licence requires that the Company must ensure that, as far as reasonably practicable, it has available to it sufficient rights and resources other than financial resources so that if, at any time, a special administration order were to be made in relation to it, the special administrator would be able to manage the affairs, business and property of the Company in accordance with the purposes of the special administration order. The Company was in compliance with this requirement at the end of the 2022/23 financial year.

### **Ring-fencing certificate**

In accordance with condition P.30 of Anglian Water's licence, the Company has published a Ring-Fencing Certificate as part of its Annual Performance Report.

### **Tax strategy for the appointed business**

We have prepared a statement on tax and transparency which can be found on our website at [www.anglianwater.co.uk](http://www.anglianwater.co.uk) and is also included within the "Fair charges, fair returns" section of our Annual Integrated Report.

### **Statement on differences between statutory and RAG definitions**

Under the RAGs the classification of certain balances within the regulatory accounts differs from that disclosed in the statutory financial statements. Where differences in values due to differences in statutory and regulatory definitions are material, these have been explained in the commentary to tables 1A, 1B, 1C and 1D.

### **Long term viability statement**

Our long term viability statement is set out on pages 20 - 23 of this report.

### **Return on regulatory equity (RORE)**

Differences between RORE performance in 2022/23 and base RORE set out at the last price review have been explained in the commentary to Table 1F.

### **Infrastructure charges**

The Company has provided narrative on the variance between revenues and costs arising from providing infrastructure network reinforcement for developers in its commentary to table 2K.

### **Innovation competition**

All funding has been recovered through main charges. We do not currently receive or forecast to receive any royalties.

Up to the 31st March 2023 Anglian Water Services has been awarded:

1. IWC - £186,900 for the Whole Life Carbon project within the Innovation in Water Challenge.
2. WBC1 - £11,305,688 for the Safe Smart Systems and Triple Carbon Reduction projects
3. WBC2 - £5,849,316 for Enabling Water Smart Communities and Unlocking bioresources market growth

Delivery of these projects is now underway and we are actively engaging with the Challenge Works reporting processes and any other assurances required from Ofwat. We are awaiting payment of inflation-based uplifts for the WBC1 projects in Q1 of 2023/24 which will go towards mitigation of risks carried as a result of unforeseen cost increases to these projects.

We comply with the terms of any innovation competition funding decision's, including that innovation competition funding is not being used to fund business as usual activities funded through totex. Where we have recovered revenue from customers for the purposes of the innovation competition this revenue has been paid into the innovation competition fund as requested.

Included within the commentary to table 1C is the breakdown of the cash balance which relates to the innovation competition.

## **Narrative disclosures on performance**

### **Outcomes**

We have provided narrative on outcome performance in the commentary to tables in section 3 of this report. The information in section 3 is consistent with the information on outcome performance which we have provided to stakeholder groups such as the Independent Challenge Group (previously the Customer Engagement Forum) during the year and with the information published in our Annual Integrated Report.

### **Totex**

We have provided narrative on our totex performance in the commentary to tables in section four of this report. This narrative includes explanation of:

- the difference between actual and allowed totex values
- costs which we believe to be exceptional or atypical
- links between outcome performance and expenditure
- any costs categorised as disallowable for cost sharing (e.g. fines)
- recharges between business units in respect of the 'principal use' of assets.

### **Retail**

We have provided narrative on any material differences between our total operating costs and retail revenues allowed in price limits in our commentary to table 2C.

### **Wholesale revenues**

We have provided narrative on differences between our actual and allowed revenue under the wholesale control in our commentary to table 2M. In this commentary we explain how we have allocated any penalty related to wholesale water revenue imbalances between the water resources and water networks plus price controls.

### **Current tax analysis**

Our explanation of our current tax payment is set out in the commentary to table 1A, lines 12 and 13 and 4H line 18.

## Current tax reconciliation

A reconciliation of the appointed corporation tax (credit) reported in table 1A to that resulting from applying the standard rate of tax to the profit on ordinary activities before tax as shown in table 1A is set out below.

		Notes		£m
Profit per the Annual Performance Report				325.7
Corporation tax charged at 19%				61.9
Depreciation and amortisation				59.1
Capital Allowances		(i)		(112.8)
Capital Allowance superdeductions		(ii)		(10.8)
Items not taxable		(iii)		(9.5)
Items not deductible for tax purposes		(iv)		2.3
Capital grants and contributions		(v)		(5.0)
Pension payments				(5.5)
Change in general provision movements		(vi)		0.7
Fair value losses on financial instruments (not deductible)				(122.6)
Wholesale losses carried forward		(vii)		115.7
Adjustments in respect of previous years		(viii)		0.7
Current tax (credit) for the year				(25.8)

The table below sets out the reconciliation between the UK corporation tax (credit) reported in Table 1A to the total current tax charge allowed in price limits.

				£m
Tax charge in price limits at 19% and in 2017/18 prices				
Retail tax allowance				2.1
Wholesale tax allowance				0.0
				2.1
Tax effect at 19% and in 2017/18 prices of:				
Decrease in profits before tax				(58.0)
Increase in disallowable depreciation and amortisation				(0.1)
Increase in allowable amortisation on Intangible assets				(2.2)
Increase in capital allowances		(i)		37.2
Capital allowances superdeduction		(ii)		(9.8)
Increase in items not taxable		(iii)		(7.9)
Increase in items not deductible for tax purposes		(iv)		-
Increase in pension deductions				(0.5)



Increase in change in general provision movements		(vi)		0.7
Decrease in wholesale losses carried forward		(vii)		88.8
Other				0.2
Current tax (credit) before adjustments for previous years at 19%				(23.9)
Adjustments in respect of previous years		(viii)		0.6

Current tax (credit) in APR at 2017/18 prices				(23.3)
Indexation up to Outturn prices				(2.5)
Current tax (credit) in APR				(25.8)

## Notes

- i. The Finance Bill 2021 introduced increased tax relief for capital expenditure incurred in the period up to 31 March 2023. Allowances of 130 per cent on general plant and machinery and 50 per cent on special rate assets were allowed. This increase includes 100 per cent of the allowance on general plant and machinery with the additional 30 per cent shown separately below. In the calculation of tax in price limits it was assumed that only 18 per cent tax relief would be available on expenditure on general plant and machinery and 6 per cent on special rate assets.
- ii. This capital allowance superdeduction represents the additional 30 per cent tax relief available in excess of the actual expenditure on general plant and machinery allowed by the 2021 Finance Bill.
- iii. The items not taxable are income from adopted assets which are included in other income and profits arising on the sale of land.
- iv. Items not deductible for tax purposes mainly consist of depreciation on assets not eligible for capital allowances and compliance fines.
- v. The capital grants and contributions are included in other income but are treated as capital grants for tax purposes and deducted from additions to the short life asset capital allowance pool.
- vi. The calculation of tax in price limits assumed there would be no changes to general provisions.
- vii. The calculation of tax in price limits assumed that all losses would be carried forward. However, due to increased costs and capital allowances, the level of tax losses in the year has increased. We have surrendered some losses to other group companies but carried forward the majority to relieve taxable profits in future periods.
- viii. The adjustments in respect of prior years relates to adjustments due to the agreement of prior year tax computations.

The main rate of corporation tax will increase from 19 per cent to 25 per cent on 1 April 2023.

## Tax and Transparency

We have prepared a statement on tax and transparency which can be found on our website at [www.anglianwater.co.uk](http://www.anglianwater.co.uk), and is also included within the "an open and constructive approach" section of our Annual Integrated Report.

## Interest

We have provided analysis of our appointed interest expense and our appointed other interest expense in our commentary to table 1A.

## Financial flows

We have provided analysis of our financial flows in our commentary to table 1F.

## Narrative on costs

Where we have allocated costs to the 'freeform' lines in tables 4L and 4M we have provided commentary to explain them.

Where we have proportionally allocated costs between expenditure categories in tables 4L and 4M, or between enhancement and base expenditure, we have explained this in the commentary to those chapters.

In table 6A, where we have reported water treatment works that have not been used in the year but have not been decommissioned we have provided commentary to explain them.

We have explained how we have calculated population and household growth, including how we have taken account of the 2011 census, in the commentary to table 4R.

We have explained how we interpret 'structurally refurbished' in our commentary to table 7C. In the same commentary we have explained the methodology and assumptions we have used to estimate the length of rising main that has been replaced or structurally refurbished.

In our commentary to table 8A we have explained:

- the basis of its estimate of all the untreated sewage sludge produced by in-area wastewater treatment processes in the report year and which is produced as a result of treating non-appointed liquid wastes through appointed wastewater treatment assets
- how we have estimated the road distances travelled in reporting sludge inter-siting and biosolids disposal work done
- how we avoid double-counting of sludge quantities where both the incumbent and a third party service provider undertake different stages of sludge treatment, e.g. dewatering followed by lime stabilisation
- the basis of our estimate of total sewage sludge produced from non-appointed liquid waste treatment.

In our commentary to table 7D we have reported the the population equivalents served by sewage treatment works (STWs) at which the required output has been delivered primarily by an opex solution (there are none this year).

In our commentary to table 4R we have explained our methodology to calculate non-resident population.

## Supply-demand balance and metering

In our commentary to table 4L we have commented on progress in delivering long term improvements to the supply-demand balance and strategic regional water resource solutions, including explanation of any variances from our business plan and water resources management plan proposals.

In our commentary to 6F we have commented on progress in delivering our internal interconnection programme, including detail of installed pipe material, length, diameter and capacity and explanation of any variances from our business plan and water resources management plan proposals.

In our commentary to table 6B we have explained any variances in reported leakage from our business plan and water resources management plan proposals.

In our commentary to table 6D we have included narrative commentary explaining the smart metering technologies we are utilising and the capabilities and benefits these provide. We also explain how the metering and leakage figures reported in table 6D relate to our business plan and water resources management plan forecasts.

### **Analysis of debt**

In our commentary to table 1E we have provided reconciliations to explain the reason for any differences between comparable lines in tables 1E and 4B. We have also provided an explanation where we have inserted a restated gearing level in line eight.

### **Common performance measures**

There is no shadow reporting of common performance measures in this year's Annual Performance Report. We have commented on our compliance with performance commitment definitions where relevant.

### **Board statement on accuracy and completeness of data and information**

Our statement is set out on pages 13-14 of this report.

### **Return on regulatory equity**

We have explained any exceptional items included in our calculation of RORE in our commentary to table 1F.

### **Financial derivatives**

We have provided information on other derivatives in table 4I and enables a full reconciliation with table 1C.

### **Transactions between the appointee and associate companies**

The Company's activities are regulated by the conditions of the Licence granted to the Company by the Secretary of State for the Environment. With certain exceptions, the regulatory provisions do not apply to business activities which are not connected with the carrying out of the water and sewerage function; these business activities are referred to as non-appointed business.

Non-appointed business activities include legal searches to locate utility infrastructure, domestic emergency and personal accident insurance cover, recreation services, leisure services and the provision of consultancy services. The North Tees water supply agreement to the Huntsman Petrochemical site, which is not in our area, has also been treated as non-appointed business.

Approximately 95 per cent of the operating costs relating to these activities is directly incurred and does not require allocation. Other relevant costs have been allocated according to time spent on these activities, volume of water supplied to customers, or in proportion to direct costs.

We also charge costs to other parts of the organisation that sit outside the regulated business. In these cases, the guidance provided by RAG5 is followed, with costs charged on an arms-length basis, either as a cost pass through or via an hourly rate.

To the best of the Directors' knowledge, all appropriate transactions with associated companies have been disclosed in notes (a) to (g) below.

**(a) Receivables**

Receivables totalling £1.0 million were outstanding from other Group companies at 31 March 2023 (2021: £1.4 million).

**(b) Payables**

An amount payable of £43.3 million was owed to Anglian Water Services Financing Plc at 31 March 2023 (2022: £46.4 million). Payables totalling £1.0 million were owed to other group companies at 31 March 2023 (2022: £0.7 million).

**(c) Borrowings**

Sums borrowed, including accrued indexation by the appointee from Anglian Water Services Financing Plc at 31 March 2023, are set out in full in our Annual Integrated Report, note 18, which can be found on the AWS website:

<https://www.anglianwater.co.uk/about-us/our-reports/>

**(d) Guarantees/securities**

The Company, as part of the Anglian Water Services Financing Group, guarantees unconditionally and irrevocably all the borrowings and derivatives of Anglian Water Services Financing Plc, which at 31 March 2023 amounted to £8,080.1 million (2022: £7,709.5 million). The borrowings of Anglian Water Services Holdings Limited and Anglian Water Services UK Parent Co Limited are also guaranteed unconditionally and irrevocably by the Company. Anglian Water Services Holdings Limited and Anglian Water Services UK Parent Co Limited had no outstanding indebtedness at 31 March 2022 (2021: £nil).

**(e) Supply of services**

In order to achieve economies of scale across the Anglian Water Group, some services are provided to associated companies by the appointed business. We ensure that the cost of any services provided to associated businesses are fully recovered including an element of overhead costs. There has been a slight increase in recharges from the prior year as we have moved a number of employees back into the regulated business who spend a small amount of their time on the non-regulated business activities.

Recharges by the appointee to associated companies during 2022/23:

Service Provided	Company	Turnover of Associate £m	Terms of supply	Value £m
HR, Payroll, H&S, Regulation, Q&E	AWG Group Ltd	-	Actual Costs	0.451
Strategic Delivery and Commercial Assurance	AWG Group Ltd	-	Actual Costs	0.047
Strategic Delivery and Commercial Assurance	AWG Land Holdings Ltd	0.591	Actual Costs	1,143
Brand and Communication	AWG Group Ltd	-	Actual Costs	0.185
Finance	AWG Group Ltd	-	Actual Costs	0.361
IT	AWG Group Ltd	-	Actual Costs	0.136
IT	Anglian Venture Holdings Ltd	-	Actual Costs	0.000
Accommodation - Lancaster House	AWG Group Ltd	-	Actual Costs	0.106
Accommodation - Osprey House	Anglian Venture Holdings Ltd	-	Actual Costs	0.217
Land rental	Alpheus Environmental Ltd	11.72	Actual Costs	0.193
Vehicle Costs	AWG Group and Alpheus Environmental Ltd	-	Actual Costs	0.123
Tide recharge	Tide Services Ltd	6.714	Actual Costs	0.027

Total		19.025		2.988
Corporation tax group relief surrendered by the regulated business	AWG Group Limited	-	See note 1 below	23.4

**22** Note 1 The losses surrendered to AWG Group Limited are provided for at a rate of 19 per cent. However, we already have a liability to pay for losses surrendered to it in earlier years and there is an agreement that we will not have to pay for these losses until it receives the benefit of the capital allowances that were disclaimed in order to generate the taxable profits against which the surrendered losses could be utilised. The losses incurred this year will reduce the liability for prior years and so will give rise to lower payments to other group companies in future years.

## Recharges by associated companies to the appointee during 2022/23:

Nature of transaction	Company	Turnover of associated Co	Terms of supply	Value £m
Directors' costs	AWG Group	-	Time apportioned	0.0603
CEO costs	AWG Group	-	Time apportioned	1.1670
CFO	AWG Group	-	Time apportioned	0.8766
Treasury services	AWG Group	-	Time apportioned	0.9372
IS services	AWG Group	-	Time apportioned	0.3183
Corporate Affairs services	AWG Group	-	Time apportioned	0.2118
Health and Safety services	AWG Group		Time apportioned	0.8383
Legal services	AWG Group	-	Time apportioned	0.2952
HR services	AWG Group	-	Time apportioned	0.3234
Property services	AWG Group	-	Time apportioned	0.0460
Strategy and Risk	AWG Group	-	Time apportioned	0.3449
Internal audit services	AWG Group	-	Direct	0.5345
Insurance administration	AWG Group	-	Negotiated	0.4290
Group Life Assurance	AWG Group	-	Pass through	0.2970
Income Protection costs	AWG Group		Pass through	1.6195
Taxation services	AWG Group	-	Direct	0.1954
External audit services	AWG Group	-	Direct	0.1278
Pension admin, advice and audit	AWG Group	-	Pass through	-
Miscellaneous items	AWG Group	-	Pass through	0.0300
Office accommodation - Lancaster House	OHL Piper Ltd	1.397	Other market testing	0.5047
Bulk purchase of water	Ardleigh reservoir committee	1.584	Actual costs	1.1826
			<b>Total</b>	<b>10.339</b>

Services provided by the non-appointed business:

Service provided by the non-appointed business	Basis of recharge made by the appointed business	Value of the recharge made by the appointed business (£m)
Treatment of tankered waste	Recharge to non-appointed is based on full cost including fixed and variable costs, depreciation and financing	3,537
Others	Key activates include mapping and data services, recreation facilities and wind turbines. The recharges made to the non-appointed business have been delivered on a bottom-up basis to include recovery of the fixed and variable costs along with an appropriate share of the depreciation and financing costs. A positive margin is made on this activity. Approximately £1.3 million of the reported costs are related to depreciation and financing recharges.	12,768
Total non-appointed operating costs		16.305

**(f) Omissions of rights**

No material omissions took place during the year.

**(g) Waivers**

There were no material waivers during the year.

**Conduct of the appointed business**

Condition P of Anglian Water's licence requires that the company meets the objectives on Board Leadership, Transparency and Governance (BLTG) which are also set out in Condition P. The company has adopted the BLTG principles into its Corporate Governance Code. Its Corporate Governance report is in its Annual Integrated Report.

Ofwat's Principles on BLTG require that the Board submits an annual statement which sets out how the company has set its aspirations and performed for all those it serves. This statement is included in pages 17-20 of this APR.

## Data Assurance Summary

### Introduction

We understand that customers and other stakeholders want information about our performance and that the information needs to be accessible and understandable. We are committed to providing information that is reliable and can be trusted.

Our overall approach to assurance is set out in *Our Assurance Framework* which can be viewed on the Anglian Water website. This submission has been completed within that framework.

### General assurance processes

We have a company wide Business Management System (BMS) that is certified to the ISO 9001 quality management systems standard, whose scope includes the processes for ensuring the collection and storage of reliable performance data. We have established processes and procedures that we adopt when compiling performance data for publication into the public domain:

- Roles and responsibilities are established, including the allocation of named data providers for each line of data
- Methodologies for compiling data are documented in procedures if necessary
- Draft data and commentaries are reviewed by individuals (including senior managers), who are independent of the processes being reviewed
- Final data and commentaries are signed off by the individuals who are assigned by the risk assessment rating determined for each individual line
- Data may be subject to review by our third party assurance provider, Jacobs, or our independent financial auditors, Deloitte. Our use of third parties as part of the assurance process is informed by our assessment of risks to data quality.

### Specific assurance processes for 2022/23 performance information

As described in *Our Assurance Framework*, central to our assurance process is our assessment of the risk of data error for each piece of reported data. We have continued the approach taken in 2021/22 where, in consultation with our assurance provider, Jacobs, we amended the risk assessment questions and scoring metrics and completed process risk and control (PRC) documents for the higher risk lines. This ensures that our regulatory risk assessment process places a greater focus on where risks sit within the data production and reporting processes.

### Annual Performance Report (APR) Non-financial data

Our assurance programme for non-financial aspects of our APR comprised of the following stages this year.

#### Review of the risk assessment scores

We asked Jacobs to review the ratings we had determined against our revised risk assessment framework and consider whether the answers to the risk assessment questions align with their knowledge of our processes, and whether the potential impact of risks has been appropriately represented in the risk rating score.

#### Review of PRC documents

The PRC framework is a structured approach which requires us to



- Set out each step in the data collection process
- For each step, identify the risks to data quality
- For each risk, identify the controls in place as mitigation and the strength of those controls.

**1** The PRC documents allow us to identify the highest areas of risk in the process and target areas of focus for the year-end audits. It also shows us where we may need to strengthen our controls. Where an area had a pre-existing Process Risk and Control document, we asked Jacobs to review the document, ensure this was up to date and audit the controls in place for targeted areas.

### **In-Year assurance**

**2** Jacobs were requested to conduct in-year process audits for 10 audit groups. They used a similar approach and terms of reference for the year-end audits, focused on suitability of processes and procedures. Our Integrated Management Systems (IMS) and Economic Regulation team also conducted 13 internal audits on lower risk audit groups following the same approach.

### **Year-end assurance**

#### Internal assurance reviews

All data and commentary for the APR were reviewed by a colleague who is independent of the team and process which generates the information. These reviews allow us to sense-check to draft submission, understand the reasons for material variances from prior years and apply cross-checks to information in other parts of the Return.

#### External assurance reviews

As described above, external reviews were commissioned for a subset of non-financial APR lines, selected according to their risk ratings. Jacobs conducted our year-end assurance programme for 16 audit groups, though we used other specialist auditors in specific areas (see table below). The standard terms of reference of these reviews were to:

- Review the company's methodologies and procedures for identifying, analysing and recording data and, on a sample basis, test the application of those methodologies and procedures.
- Provide an opinion on the adequacy of the methodologies and procedures adopted by the company to provide reliable information.
- Alert the company to any material areas of concern or weakness observed.
- Review progress against issues raised in the last audit.
- Review whether the APR procedures and any associated local procedures / work instructions are current, accurate and appropriate.
- Check that data stated in the tables is supported by audit trails which are reliable, accurate and complete.
- Check that suitable commentary is provided which explains performance.
- Confirm that changes from previous submissions have been adequately explained.
- Seek understanding of the upstream processes which generate data and the controls in place for ensuring the reliability of those data. Test where possible.
- Where applicable, the auditor should focus on the identified targeted areas that are set out in the Process Risk & Control (PRC) document.
- Where applicable, the audit should provide an opinion on the way that risk is described within the PRC document.

The reviews were carried out between April and June 2023. The results of each review were documented in summary audit reports, including information about the tests applied and the results, along with details of recommendations for longer term improvements. Any outstanding data issues were addressed prior to finalising the data.

A summary of the findings of Jacobs' reviews is set out in their Technical Assurance Executive Summary. A summary of all the year-end assurance reviews and their key findings is listed in the Appendix.

Due to a conflict of interest on the Strategic Pipeline Alliance (SPA), Jacobs did not conduct the audit for 3A.13 - Internal interconnection delivery. This audit was completed by Aqua Consultants in June 2023 and the standard terms of reference were provided.

#### Director sign-off

As set out in *Our Assurance Framework*, the sign-off protocols which form part of our assurance process are based on our data quality risk assessment. All APR data lines are approved by the nominated 'line approver', who is a different individual from the one who provided the data. Further sign-off is required for higher risk data lines by the Head of Business Unit (for lines rated as Medium risk) or Management Board Director (where the rating is High or Critical). These protocols were all applied to the 2021/22 APR.

At the AWS Board on 23 May 2023 the Board delegated authority to certain directors to approve the final versions of the APR including all disclosures. Final drafts of the APR were approved by the company's Executive Directors on 13 July 2023.

#### **APR Financial data**

Our Regulatory Accounts have been prepared in accordance with the Regulatory Accounting Guidelines issued by Ofwat. In accordance with our plan, they were subject to review by the company's independent financial auditors, Deloitte, to ensure compliance with Condition F of the Instrument of Appointment as a water and sewerage undertaker under the Water Industry Act 1991.

The review took the following form:

- Audit of APR Tables 1A-1E, lines 1F.1 to 1F.3, 1F.5 to 1F.8, 1F.12 to 1F.14, 1F.21 to 1F.22 and 1F.24 to 1F.26 of the statement of financial flows (table 1F) and 2A-2O. Deloitte's audit was conducted in accordance with International Standards on Auditing (UK) issued by the Financial Reporting Council, and included such tests of transactions and of the existence, ownership and valuation of assets and liabilities as they considered necessary. Deloitte planned and performed their audit to be able to provide reasonable assurance that the regulatory accounting statements are free from material misstatement and are properly prepared in accordance with Regulatory Licence Condition F.
- In line with the approach last year, in order to provide more robust assurance, Deloitte conducted audits on the financial data in tables 4D, 4E, 4F, 4H (excluding line 5), 4I, 4J and 4K.
- It is important to us that our Annual Performance Report (APR) to Ofwat is completed accurately and in line with the guidance provided (Ofwat Guidance RAG 4.11). We have obtained assurance over the majority of the values to be submitted which includes an opinion from Deloitte, our external auditors, of certain financial values. However, Deloitte have identified certain data within Table 1F (Financial Flows) that they consider to be outside the scope of their opinion. We have therefore requested they perform a series of agreed upon procedures over these remaining values to confirm the values entered into the prescribed fields of the Table 1F have been accurately drawn from the relevant data source.

Our auditor has provided its audit opinion that our Regulatory Accounting Statements have been prepared in all material respects, in accordance with Condition F, the Regulatory Accounting Guidelines as issued by Ofwat, and the accounting policies. The full audit opinion is included in our APR.

The first line of defence against data error lies in the processes that we follow to prepare our regulatory accounts tables. The following table reports the risks we have identified around our processes that could, without controls, result in mis-statement in our APR. It also shows the controls we have implemented for 2022/23 reporting.

### **Feedback**

We welcome feedback from stakeholders on all aspects of our performance reporting. You can contact us in any of the following ways:

- email: [Stakeholderfeedback@anglianwater.co.uk](mailto:Stakeholderfeedback@anglianwater.co.uk)
- call: 03457 91 91 55

We undertake to share the feedback we receive and explain how we have responded to it.

## Appendix: Summary of assurance reviews carried out in 2022/23

The tables below shows the assurance activities carried out during 2022/23. This is broken down by when the audit took place and assurance provider.

Assurance	Assurance Provider	Table numbers	Topic	Comments
In-Year	AW	5A, 6A, 6B	Average Pumping Head	Recommendation to update the procedure to reflect current data gathering process.
In-Year	AW	8C	Liquor quality	No material issues.
In-Year	AW	3E	Non-household retailer satisfaction	No material issues.
In-Year	AW	8C	Bioresources energy	No material issues.
In-Year	AW	3A, 3E, 6C	Water quality	No material issues.
In-Year	AW	4R, 6A, 6D	Raw water, resident population and supply demand	No material issues.
In-Year	AW	5A, 7D, 7E	Environmental Outputs	Recommendation to update the procedure to provide a more detailed breakdown of the process for gathering data.
In-Year	AW	3A, 6D	Metering	Recommendation for the creation of a process risk and control (PRC) document.
In-Year	AW	3E, 3I	Flooding resilience	No material concerns.
In-Year	AW	4R	Business customers & properties	Recommendation to generate the figures on a quarterly basis to ensure consistency with the procedure.
In-Year	AW	3B	Treatment work compliance	No material issues.
In-Year	AW	5A, 6A, 6B, 7E, 8C	Bioresources energy / Energy	Recommendation to update the procedure to confirm that biomethane should not be used in the calculation, as this is counted in other columns.
In-Year	AW	6F	WRMP annual reporting	No procedure in place at the time of audit, procedure needs to be created to detail the robust process of providing accurate information.
In-Year	AW	7F	WINEP phosphorus removal scheme costs and cost drivers	Recommendation to move the methodology for these lines into the standard procedure template.
In-Year	Jacobs	3C	C-MeX	Recommendation to update the procedure and PRC document to reflect the current process and responsible individuals.
In-Year	Jacobs	3D	D-MeX	Recommendation to update the procedure to reflect the roles and responsibilities of the team, following expansion and update the classification of risk in the Process Risk and Control (PRC) document.
In-Year	Jacobs	3A, 4R	Managing void properties	Recommendation to update the methodology in the procedure to link to the source data and include information on the frequency of data checks.
In-Year	Jacobs	6C, 7C	Length of mains and sewers	It is recommended to update the PRC document with the new process risks and investigating whether there is a better way to manage communication pipe data and addressing this where possible.
In-Year	Jacobs	3A, 3F, 3I, 6A	Unplanned outage	Recommendation to update the procedure to include how decommissioned and commissioned sites are handled for the rolling PWPC calculation.
In-Year	Jacobs	3A, 6C	Properties at risk of persistent low pressure	No material issues.

In-Year	Jacobs	3A	Abstraction Incentive Mechanism	Recommendation to update the Process Risk and Control document to include a risk related to internal communications and include a description of communication channels in the method statement along with reasons for when communication is required.
In-Year	Jacobs	5A, 6A, 6B, 7C	Pumping stations	Recommendation to assign pumping station categoriations to the source data, to prevent clasifying sites year-on-year.
Year-end	Achilles	3E	Carbon	No material issues.
Year-end	Aqua	3A	Internal Interconnectors	Data was reliable but there are concerns over whether outputs will all be delivered on time.
Year-end	Jacobs	3A	Percentage of population served by a single supply system	Recommendation to include an alternative definition for completion of a scheme within our systems.
Year-end	Jacobs	3E	Helping those struggling to pay	Recommendation to consider checking the assumption that the proportion of customers with two BP numbers is indeed lower for other forms of assistance than for the Assistance Fund.
Year-end	Jacobs	3E	Community investment	No material issues.
Year-end	Jacobs	3A, 3F, 6A, 6B	Leakage	No material issues.
Year-end	Jacobs	3B, 3G	Sewer flooding (internal & external)	There should be more training for the crews and the Collection Leads to improve the quality of notes and ensure photos are taken when they attend flooding incidents.
Year-end	Jacobs	3B, 3G, 3I, 7C	Sewer collapses	Ask crews to take photos at every incident
Year-end	Jacobs	4Q, 4R	New connections	Supporting information for some SLP data was not available in all cases.
Year-end	Jacobs	8C	Liquor cost	Consider finding out how the increased percent dry solids data availability has affected the reported figure and include this in the commentary if it is significant. We recommend production of a single methodology covering the process from end to end and covering responsibilities. We recommend considering whether the sampling programme could be rationalised.
Year-end	Jacobs	6C, 7C	Lengths of mains and sewers	It is recommended to address issues from last audit as stated in the Comments section above.
Year-end	Jacobs	3A, 3F	Water supply interruptions	No material issues.
Year-end	Jacobs	3C, 4R	Properties and population	No material issues.
Year-end	Jacobs	3A, 6C	Properties at risk of persistent low pressure	No material issues.
Year-end	Jacobs	3A, 3E, 3F	Water mains	No material issues.
Year-end	Jacobs	7B, 7C, 7D, 7E	Consents, overflows and flow monitoring	Recommendation to define roles and responsibilities for data checking and review within the procedure.
Year-end	Jacobs	3B, 3E	Delivery of WINEP requirements	Recommendation to expand the written procedure to reference the documents that are used, the process to follow if any changes are made and provide examples of previous submissions. A flow chart showing links between communicating parties should also be included.
Year-end	Jacobs	7B, 7D	Water Recycling Centres	Recommendation to review four areas of the data gathering process and consider automation.

## Independent Auditors' Report

### Independent Auditor's report to the Water Services Regulation Authority (the WSRA) and the Directors of Anglian Water Services Limited

#### Opinion

**1** We have audited the sections of Anglian Water Services Limited's ("the Company") Annual Performance Report for the year ended 31 March 2023 ("the Regulatory Accounting Statements") which comprise:

- the regulatory financial reporting tables comprising the income statement (table 1A), the statement of comprehensive income (table 1B), the statement of financial position (table 1C), the statement of cash flows (table 1D), the net debt analysis (table 1E), Lines 1F.1 to 1F.3, 1F.5 to 1F.8, 1F.12 to 1F.14, 1F.21 to 1F.22 and 1F.24 to 1F.26 of the statement of financial flows (table 1F) and the related notes; and
- the regulatory price review and other segmental reporting tables comprising the segmental income statement (table 2A), the totex analysis for wholesale water and wastewater (table 2B), the operating cost analysis for retail (table 2C), the historical cost analysis of tangible fixed assets for wholesale and retail (table 2D), the analysis of grants and contributions (table 2E), household revenues by customer type (table 2F), the non-household water revenues by customer type (table 2G), the non-household wastewater revenues by customer type (table 2H), the revenue analysis & wholesale control reconciliation (table 2I), the infrastructure network reinforcement (table 2J), the infrastructure charges reconciliation (table 2K), the analysis of land sales (table 2L), the revenue reconciliation for wholesale (table 2M), residential retail social tariffs (table 2N) and historic cost analysis of intangible fixed assets (table 2O) and the related notes; and
- the wholesale totex analysis – water (table 4D), the wholesale totex analysis – wastewater (table 4E), the financial metrics (table 4H excluding line 5), the Financial derivatives (table 4I), the Base expenditure analysis – water resources and water network + (table 4J), the Base expenditure analysis – wastewater network + and bioresources (Table 4K).

**2** We have not audited lines 1F.4, 1F.9 to 1F.11, 1F.15 to 1F.20 and 1F.23 of the statement of financial flows (table 1F), the Outcome performance table (tables 3A to 3I) or the additional regulatory information in tables 4A to 4C, 4F to 4G, 4L to 4W, 5A to 5B, 6A to 6F, 7A to 7F, 8A to 8D, 9A, 10A to 10E and 11A.

**3** In our opinion, Anglian Water Services Limited's Regulatory Accounting Statements have been prepared, in all material aspects, in accordance with Condition F, the Regulatory Accounting Guidelines issued by the WSRA (RAG 1.09, RAG 2.09, RAG 3.14, RAG 4.11 and RAG 5.07) and the accounting policies (including the Company's published accounting methodology statement(s), as defined in RAG 3.14, appendix 2), and available on the Company website at <https://www.anglianwater.co.uk/about-us/our-reports/>) as set out in the notes to the Annual Performance Report.

#### Basis for opinion

**4** We conducted our audit in accordance with International Standards on Auditing (UK) ("ISAs (UK)"), including ISA (UK) 800, and applicable law, except as stated in the section on Auditors' responsibilities for the audit of the Regulatory Accounting Statements below, and having regard to the guidance contained in ICAEW Technical Release Tech 02/16 AAF 'Reporting to Regulators on Regulatory Accounts' issued by the Institute of Chartered Accountants in England & Wales.

**5** Our responsibilities under ISAs (UK) are further described in the Auditors' responsibilities for the audit of the Regulatory Accounting Statements within the Annual Performance Report section of our report. We are independent of the Company in accordance with the ethical requirements that are relevant to our audit, including the Financial Reporting Council's

(FRC's) Ethical Standard as applied to public interest entities, and we have fulfilled our ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

### **Emphasis of matter – special purpose basis of preparation**

**6** We draw attention to the fact that the Regulatory Accounting Statements have been prepared in accordance with a special purpose framework, Condition F, the Regulatory Accounting Guidelines, the accounting policies (including the Company's published accounting methodology statement(s), as defined in RAG 3.14, appendix 2) set out in the statement of accounting policies and under the historical cost convention. The nature, form and content of the Regulatory Accounting Statements are determined by the WSRA. As a result, the Regulatory Accounting Statements may not be suitable for another purpose. It is not appropriate for us to assess whether the nature of the information being reported upon is suitable or appropriate for the WSRA's purposes. Accordingly we make no such assessment. In addition, we are not required to assess whether the methods of cost allocation set out in the accounting methodology statement are appropriate to the circumstances of the Company or whether they meet the requirements of the WSRA.

**7** The Regulatory Accounting Statements are separate from the statutory financial statements of the Company and have not been prepared under the basis of international accounting standards in conformity with the requirements of the Companies Act 2006 ("UK IASs"). Financial information other than that prepared on the basis of UK IASs does not necessarily represent a true and fair view of the financial performance or financial position of a Company as shown in statutory financial statements prepared in accordance with the Companies Act 2006.

**8** The Regulatory Accounting Statements on pages 37 to 182 have been drawn up in accordance with Regulatory Accounting Guidelines with a number of departures from IASs. A summary of the effect of these departures in the Company's statutory financial statements is included in the tables within section 1.

**9** Our opinion is not modified in respect of this matter.

### **Conclusions relating to going concern**

**10** In auditing the Regulatory Accounting Statements, we have concluded that the directors' use of the going concern basis of accounting in the preparation of the Regulatory Accounting Statements is appropriate.

**11** Our evaluation of the directors' assessment of the company's ability to continue to adopt the going concern basis of accounting included:

- Understanding management's process to model the impact of going concern and agreeing relevant data points in the model to supporting documentation;
- Assessing the sophistication of the model used to prepare the forecasts, testing of the clerical accuracy of those forecasts and assessing the historical accuracy of forecasts prepared by management;
- Assessing the assumptions used in establishing management's base case, including comparison of key assumptions to independent data sources where relevant;
- Evaluating liquidity, including in the scenario where future financing is restricted;
- Evaluating the external financing to establish and assess the covenant requirements attached to this financing;
- Assessing the amount of headroom in the forecasts (cash and covenants); and
- Evaluating the sensitivity analysis prepared by management.

**12** Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the company's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

**13** Our responsibilities and the responsibilities of the directors with respect to going concern are described in the relevant sections of this report.

#### **Other information**

**14** The other information comprises all of the information in the Annual Performance Report other than the Regulatory Accounting Statements and our auditors' report thereon. The directors are responsible for the other information. Our opinion on the Regulatory Accounting Statements does not cover the other information and we do not express any form of assurance conclusion thereon.

**15** In connection with our audit of the Regulatory Accounting Statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the Regulatory Accounting Statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If we identify an apparent material inconsistency or material misstatement, we are required to perform procedures to conclude whether there is a material misstatement of the Regulatory Accounting Statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of the other information, we are required to report that fact.

**16** We have nothing to report based on these responsibilities.

#### **Responsibilities of the Directors for the Annual Performance Report**

**17** As explained more fully in the Statement of Directors' Responsibilities set out on page 25, the directors are responsible for the preparation of the Annual Performance Report in accordance with the Regulatory Accounting Guidelines issued by the WSRA and the Company's accounting policies (including the Company's published accounting methodology statement(s), as defined in RAG 3.14, appendix 2).

**18** The directors are also responsible for such internal control as they determine is necessary to enable the preparation of the Annual Performance Report that is free from material misstatement, whether due to fraud or error.

**19** In preparing the Annual Performance Report, the directors are responsible for assessing the Company's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Company or to cease operations, or have no realistic alternative but to do so.

#### **Auditors' responsibilities for the Audit of the Regulatory Accounting Statements within the Annual Performance Report**

**20** Our objectives are to obtain reasonable assurance about whether the Regulatory Accounting Statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the Regulatory Accounting Statements.

**21** Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud. The extent to which our procedures are capable of detecting irregularities, including fraud, is detailed below.

**22** We considered the nature of the company's industry and its control environment, and reviewed the company's documentation of their policies and procedures relating to fraud and compliance with laws and regulations. We also enquired of management about their own identification and assessment of the risks of irregularities.



**23** We obtained an understanding of the legal and regulatory frameworks that the company operates in, and identified the key laws and regulations that:

- had a direct effect on the determination of material amounts and disclosures in the Regulatory Accounting Statements. These included Regulatory Accounting Guidelines as issued by the WRSA, UK Companies Act, pensions legislation and tax legislation; and
- do not have a direct effect on the Regulatory Accounting Statements but compliance with which may be fundamental to the company's ability to operate or to avoid a material penalty. These included the company's operating licence, regulatory solvency requirements and environmental regulations.

**24** In common with all audits under ISAs (UK), we are also required to perform specific procedures to respond to the risk of management override. In addressing the risk of fraud through management override of controls, we tested the appropriateness of journal entries and other adjustments; assessed whether the judgements made in making accounting estimates are indicative of a potential bias; and evaluated the business rationale of any significant transactions that are unusual or outside the normal course of business.

**25** In addition to the above, our procedures to respond to the risks identified included the following:

- reviewing financial statement disclosures by testing to supporting documentation to assess compliance with provisions of relevant laws and regulations described as having a direct effect on the financial statements;
- performing analytical procedures to identify any unusual or unexpected relationships that may indicate risks of material misstatement due to fraud;
- enquiring of management, internal audit and in-house legal counsel concerning actual and potential litigation and claims, and instances of non-compliance with laws and regulations; and
- reading minutes of meetings of those charged with governance and reviewing any correspondence with HMRC and WSR.

**26** A further description of our responsibilities for the audit of the Regulatory Accounting Statements is located on the Financial Reporting Council's website at [www.frc.org.uk/auditorsresponsibilities](http://www.frc.org.uk/auditorsresponsibilities). This description forms part of our auditor's report.

### **Use of this report**

**27** This report is made, on terms that have been agreed, solely to the Company and the WSR in order to meet the requirements of Condition F of the Instrument of Appointment granted by the Secretary of State for the Environment to the Company as a water and sewage undertaker under the Water Industry Act 1991 ("Condition F"). Our audit work has been undertaken so that we might state to the Company and the WSR those matters that we have agreed to state to them in our report, in order (a) to assist the Company to meet its obligation under Condition F to procure such a report and (b) to facilitate the carrying out by the WSR of its regulatory functions, and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the WSR, for our audit work, for this report or for the opinions we have formed.

**28** Our opinion on the Regulatory Accounting Statements is separate from our opinion on the statutory financial statements of the Company for the year ended 31 March 2023 on which we reported on 7 June 2023, which are prepared for a different purpose. Our audit report in relation to the statutory financial statements of the Company (our "Statutory audit") was made solely to the Company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our Statutory audit work was undertaken so that we might state to the Company's members those matters we are required to state to them in a statutory audit report and for no other purpose. In these circumstances, to the fullest

extent permitted by law, we do not accept or assume responsibility for any other purpose or to any other person to whom our Statutory audit report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

**Deloitte LLP**

Birmingham, United Kingdom

14 July 2023

## Technical Assurance Executive Summary

### Terms of Reference and Assurance Approach

Anglian Water Services Limited (Anglian Water) commissioned Jacobs UK Ltd (Jacobs) to provide independent technical assurance on selected non-financial data tables/lines for its 2023 Annual Performance Report (APR). This information is part of Anglian Water's APR which Ofwat requires all companies to publish by 15 July 2023. The APR is a collection of data and commentary relating to Anglian Water's performance in defined areas, including the Performance Commitments (PCs) for 2022/23. Anglian Water's PCs are defined in Ofwat's PR19 Final Determination.

We carried out limited assurance in areas targeted by Anglian Water's risk assessment process as described below. We had full access to corporate systems to audit how information is extracted and used. We worked on the basis that information in corporate databases is reliable.

### Risk Assessment

In 2021 the Economic Regulation team in Anglian Water updated the regulatory risk assessment process to place a greater focus on where risks sit within the data production and reporting processes. Anglian applied this updated risk assessment process to its regulatory reporting processes for APR2022.

The risk assessment was refreshed for APR2023 by Anglian completing assessment meetings with data providers and data owners. This produced a new risk profile for APR2023 which was shared with us in December 2022 with Process, Risk & Control assessments (PRC) completed for 44 PCs.

### In-year process audits

Anglian Water requested 'in-year' process audits in ten areas, some of which were PCs. The purpose of the audits was to ensure the processes of systems and control behind the data collection were being implemented effectively and adhered to; that any risks or gaps in those processes were being identified and managed; and that the data being collected were reliable and therefore confidence in the final submission data can be assured with confidence that the resulting data is able to be used for managing the business and describing its performance.

The ten audit topics were:

- Abstraction Incentive Mechanism \*
- Properties at risk of persistent low pressure \*
- C-MeX \*
- Pumping stations
- D-MeX \*
- Sewer flooding (internal & external) \*
- Large sewage treatment works
- Unplanned outage \*
- Length of mains and sewers
- Managing void properties \*

\* Denotes a Performance Commitment

Anglian Water provided terms of reference for each audit, the associated PRC document and methodology/work instructions/local procedures. Jacobs' technical auditors were asked to:

- Review the company's methodologies and procedures for identifying, analysing and recording data and, on a sample basis, test the application of those methodologies and procedures.

- In particular the auditor should focus on the identified targeted areas within the PRC document as outlined in the table (provided in the Terms of Reference).
- Provide an opinion on the way those risks are described within the PRC document.
- Provide an opinion on the adequacy of the methodologies and procedures adopted by the company to provide reliable information.
- Alert the company to any material areas of concern or weakness observed.
- Review progress against issues raised in the last audit.
- Review whether the APR procedures and any associated local procedures / work instructions are current, accurate and appropriate.
- Seek understanding of the upstream processes which generate data and the controls in place for ensuring the reliability of those data. Test where possible.
- Note any observations and recommendations for longer term improvements.

Our audit findings were recorded in Track Record for review by Anglian staff. We provided a summary assurance report detailing our key findings and recommendations from the In-year programme. This work was completed on 17 April 2023.

### Year-end audits

The refreshed risk assessment and the findings of the In-year audits were used by Anglian to compile the year end audit programme which comprised 16 audit areas covering process and data:

- Percentage of population served by a single supply system \*
- Leakage \*
- Liquor cost
- Properties and population
- Helping those struggling to pay \*
- Sewer flooding (internal & external) \*
- Lengths of mains and sewers
- Properties at risk of persistent low pressure \*
- Community investment \*
- Sewer collapses \*
- Water supply interruptions \*
- Water mains
- Natural capital impact \*
- New connections
- Unplanned outage \*
- Consents, overflows and flow monitoring
- Delivery of water industry national environment (WINEP) programme requirements \*
- Water Recycling Centres

\* *Denotes a Performance Commitment*

The purpose of the Year-end audits was to provide assurance that the processes and systems of control for generating data included in the Company's APR are adequate and that the resulting data are reliable.

Anglian Water issued Terms of Reference for each audit which contained the audit scope. The scope was the same as that used for the In-year audits described in 1.2 above and included extracts from the PRC assessment as the areas targeted for audit.

Our audit findings were recorded in Track Record. We provided a summary assurance report (this report) detailing our key findings and recommendations from the Year-end programme.

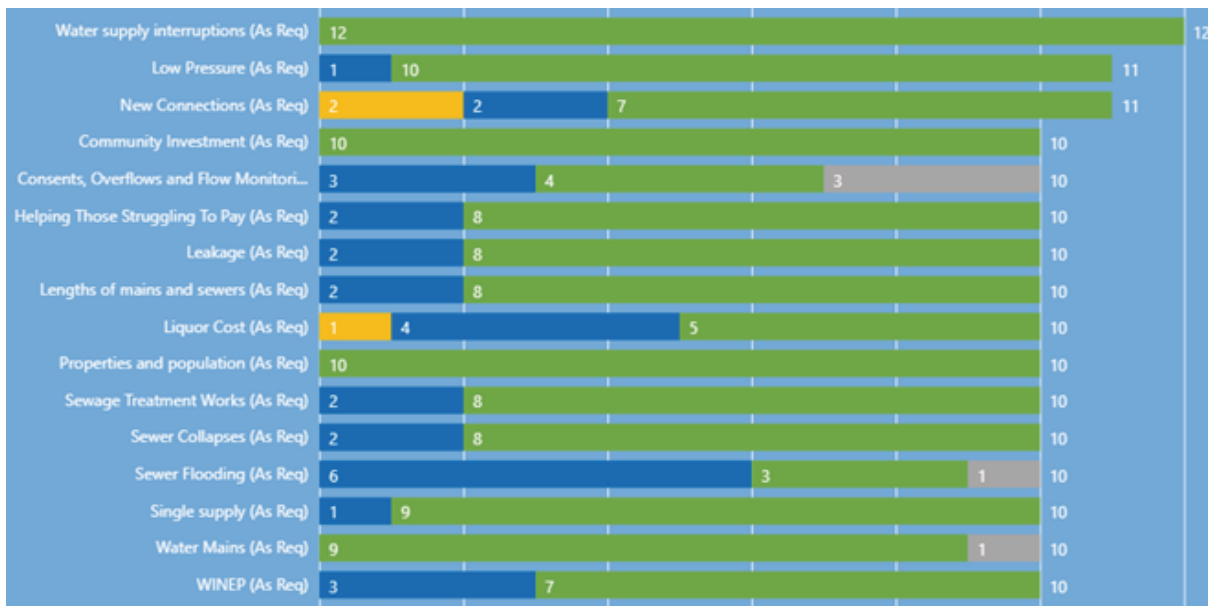
The audits took place in May and June 2023, remotely using Microsoft Teams.

The technical assurance team comprised technical and operational specialists led by the Assurance Director. We used risk-based samples to trace data to source.

## Track Record

Audit results have been documented using Jacobs' Track Record system which is our online audit database used to store audit results, supporting documentation and to summarise the issues identified. Anglian and Jacobs can track progress of the audit programme in real time through Power BI dashboards.

Our audit findings are RAGB rated for reporting risk as Material concerns (Red), Minor concerns (Amber), No concerns (Green) and Non-material observations/recommendations (Blue). A summary of the Track Record Power BI dashboard for APR23 as of 06 July 2023 is below.



## Key Findings

### Summary audit statement

Based on our audits and sample checks carried out for the In-year and Year-end audit programmes, we are satisfied that for the Ofwat APR data lines and PCs we were asked to assure, there are no material issues with the reported information. We have made observations detailed in Key Findings (identified as 'Amber' and 'Blue'). We have highlighted a number of non-material observations and recommendations for Anglian Water's consideration. These are either work in progress by Anglian Water or opportunities to improve processes to provide further confidence in resulting data for the Company to consider.

We noted the use of Power BI dashboards has improved visibility of performance information and has removed some manual processing of data previously completed in Microsoft Excel spreadsheets. We noted a small number of methodologies require updating. Anglian Water is progressing the recommendations we have made and addressing the minor concerns highlighted through audits. Our audits confirmed information has been combined for the Anglian and Hartlepool operating regions.

In accordance with Ofwat's Information Note IN23/03, we have provided a statement confirming the status of Third-party audits of the PCs with financial rewards and penalties.

G D Hindley

Assurance Director

Jacobs UK Ltd

06 July 2023

## In-year audits

For nine of the ten topics we were asked to audit 'In-year', there were robust processes in place to generate the information used for reporting of PCs. The process for Length of Mains and Sewers is being redeveloped and should be stronger once complete. The risks to data production, processing and reporting were adequately explained for most of the areas.

Some PRC risk assessments required minor updates to reflect the actual process that take place. Similarly, methodologies were generally sound, although a small number required updating to record the processes more accurately. We did not identify any material risks or concerns. Our detailed findings for all audits and audit tests are recorded in Track Record.

## Year-end audits

We identified some issues to which we have alerted the Company at audit and included in the audit reports held in Track Record. The items of note are detailed below.

Audit RAG Key: ● No concerns; ● Minor concerns; ● Material concerns; ● Non-material observations/recommendations

Performance Commitment /APR data table	ANH risk rating (highest rating from assessment)	Audit RAG	Summary findings by exception and/or good performance
PC Leakage/water balance information 3A, 3F, 6B, 6D	Critical	Green	Anglian Water's PC for year 3 of AMP7 is an 8.5% reduction in the three-year average leakage 2019/20 baseline level (194.1 MI/d), giving a year 3 target of 177.6 MI/d. We confirmed the three-year average leakage outturn for 2022/23 as 179.5 MI/d which underperforms the PC as a 7.5% reduction, incurring a penalty. 2022/23 was a challenging year for leakage performance. The period started positive however the exceptionally dry summer led to high numbers of leakage breakouts. This was followed by two winter freeze/thaw events in December and January which led to another leakage peak. Other companies experienced similar patterns. Notwithstanding missing the leakage target, Anglian's leakage reporting methodology is well established to produce reliable data. We confirmed the methodology continues to be followed.
PC Interruptions to Supply (I2S) 3A, 3F	Critical	Green	We confirmed performance of 14 minutes 35 seconds per property which does not meet the PC target of 5 mins 45 secs per property. Anglian experienced a greater number of interruption events compared to 2021/22 with the summer drought and winter freeze/thaw events influencing performance. Anglian also experienced three relatively large events. Event Management Platform went live in April 2022 as the new system on which I2S events are recorded. We found the I2S investigation process is being diligently followed. All events audited were traceable in Event Management Platform including events we selected from sources external to Anglian.
PC Properties at risk of persistent low pressure 3A	Medium	Green	Anglian is reporting a year end figure of 53 properties at risk of persistent low pressure. This is the closing balance on the low pressure register following removals during the year which came from four interventions (two capital schemes and two proactive removals). Data was traceable to the audit packs which have complete records to support removal of the properties.
New connections 4Q, 4R	High	Green	Anglian's new connections data shows trends which reflect the changes in the region's economy and fluctuations in the housing market.
		Amber	Power BI dashboards present the data in real time based on closed jobs with connection made and a meter fitted. We found a small number showing this status were still open and therefore not counted. Data from NAVs was found to be accurately evidenced and reported, however supporting information for some SLP data was not available in all cases.
PC Helping those struggling to pay 3E	Medium	Blue	There has been a change in the underlying activity reported for this PC because the rules for the 'LITE' tariffs were modified in a way which increases the proportion of customers eligible to be put onto one of these tariffs. Anglian's estimate for the size of this effect is 40,000 additional individuals. We note that the estimated increase in LITE tariffs is more than double the overall increase in the reported total, meaning that the total might have reduced on a like-for-like comparison. It is important understand that the key metric is the total number of people helped, not the number who would have been helped if rules had not changed; the increase in the total is correctly recorded and in line with the agreed basis for calculating the PC. Also, it should be noted that the reported total exceeds the target by considerably more than 40,000; the change in the rules has increased the number of people being helped but was not in itself critical to the target being exceeded.
Liquor costs 8C	Critical	Green	All recommendations identified in APR22 have been satisfactorily resolved, although one is superseded with the introduction of Power BI dashboard replacing the former Excel worksheets.
		Blue	We recommended aggregating load measurements to remove any bias towards heavily-sampled sites and create a 3-year rolling average. We have suggested a method that Anglian could implement to achieve this. We noted a large number of BOD and/or ammonia samples are available for some flows, with valid reasons but this could lead to duplication of effort. We recommended that the sampling programme could be rationalised. We also recommended combining methodologies into a single document covering the process from end to end and covering responsibilities.
		Amber	The audit identified some incomplete documentation. There was no documentation for the Power BI dashboard and the capex calculation did not have a methodology. The opex calculation has a

			very brief methodology. We recommended a single methodology is produced covering the process from end to end including responsibilities.
Properties & population 4R	High	Green	Properties and population data are used as denominators for some PCs and other critical data for Anglian's business. The methodology used to obtain the data is embedded and the source systems are mature. We traced information to source. No issues were identified, and we consider the process produces reliable information.
Length of mains and sewers 6C, 7C	High	Green	Anglian's process for calculating the reported numbers for length of mains and length of sewers was updated in 2021/22 to use more automation. We reviewed the process during this year's audit and confirmed the process had been followed. We traced sample data from source to the reported numbers. We confirmed that the final processed numbers are consistent with the source numbers and calculations were correct. Anglian is investigating the use of a GIS model with information about road layouts and property locations to further refine its sewer lengths for its PR24 submission.
Consents, overflows & flow monitoring 7B, 7C, 7D, 7E	Critical	Green	Methodologies and procedures were available for all data and were followed to provide reliable information. Data were traced back to corporate systems and audited by sample. There are sufficient controls to ensure the data in corporate systems are reliable, and there are multiple checks.
		Blue	At present, most of the analysis and data handling occurs manually using Microsoft Excel spreadsheets. To improve audit trails, we suggested data handling and analysis be completed with a tool such as Power BI with live links to original data sources. For line 7C.9 - Number of emergency overflows, we recommended that the comparison of differences between APR 2022 and APR 2023 be included within the procedure.
Sewage treatment works 7B, 7D	Low	Blue	The methodologies and procedures used to produce this data are broadly adequate and provide reliable information. Our sample checks to source data did not identify any errors. There are four areas that can be considered weaknesses that carry some risk to the reliability of the data. These are: - Data processes that could be automated. - Clarity whether erroneous data is being included or excluded from Flow to Full Treatment estimates, where flow meters have faults for extended periods of time. Inclusion of erroneous data (e.g. zero values) could impact the accuracy of the daily average calculation. - The procedure for calculating the PE associated with trade effluent can yield negative values for individual transactions, where negative PE is clearly implausible in reality. This is the result of rebates due to overcharging in previous years which could be resolved by using a rolling average across multiple years. - The survey data underpinning the non-residential or 'holiday' PE was created in c.2010 and its currency should be reviewed. The degree of risk carried was discussed in each instance, but the overall risk remains low.
PC Sewer flooding 3B, 3G	High	Green	The sewer flooding team reviews jobs in the reporting year to check whether they should be included in the reported performance. The team looks at all the reports of flooding when carrying out the checks, reads all the text and records whether they agree with the conclusion. The review is completed weekly and identified an additional 489 incidents (58 internal incidents and 431 external incidents). Anglian has implemented a mandatory learning course for crews to improve crew records of events.
		Blue	From our audit sample we found two internal incidents and two external incidents which had been incorrectly excluded from the reported data. We confirmed that these have since been correctly included in the performance. Anglian also checked the rest of its excluded data and included anything without sufficient evidence, which brought the total to 8 internal floodings and 36 external floodings were added back in. We recommended the APR procedure is updated to set out details of the checks made within the sewer flooding team and a threshold of acceptable evidence for excluding a report of sewer flooding from the reported data.
PC Sewer collapses 3B, 3G, 3I, 7C	Critical	Green	The audit trail for sewer collapses was satisfactory, although we noted that records of actions taken by crews attending collapses could be improved. We saw partially populated tables for Tables 3B or 3G, 3I and 7C because at the time of audit the total length of sewers has not been subject to external audit and therefore the final normalised figures were not available. This has since been satisfactorily completed. An internal audit of the collapse data had been carried out, followed by the Jacobs audit after which the completed the figures are approved internally.
PC Water Mains (mains repairs) 3A, 3E, 3F, 6C	Critical	Green	Anglian's process appears adequate to provide reliable information. The weekly process of checking job classification ensures that a broader set of jobs are checked, rather than just a specific set of expected mains repairs. Checks should help identify false negatives and false positives. The mains repairs are then selected and exclusions removed (third party and ferrules). Our spot checks during the audit did not identify any errors. 2022/23 was subject to a hot summer and two freeze/thaw events in the winter. These events resulted in peaks in mains repairs which was demonstrated in the data. The year does appear to be an anomaly and not consistent with the trends from previous years. This should be reviewed again next year to ensure there is not a rising trend in the rate of mains repairs.
PC Delivery of water industry national environment programme requirements 3B, 3E	Low	Green	The PC submissions are based on data which is held in a spreadsheet that is shared with DEFRA. The spreadsheet contains all the sites requiring signoff against a defined programme and a record of status. AW holds a copy of this spreadsheet internally to track its submissions to EA and identify any outstanding issues. The data and information submitted to the EA for each scheme is recorded separately and examples were reviewed during the audit. No issues were identified.
		Blue	We recommended that the written procedure is updated to include how decisions on schemes are made and collaboration with EA in the case of delay and the process to follow if any changes are made.
PC Percentage of population supplied by a single supply system 3A	Low	Green	Anglian Water has a robust methodology to ensure accurate reporting against this PC. We found the delivery of schemes was confirmed with records of 'water into supply'.
		Blue	Anglian Water has not re-calculated the baseline, which is unchanged from the start of this measure and is supportable. However, we recommended an alternative definition of 'water in supply' is

			developed as Delivery Milestone 4 (DM4) in the Totex Delivery process is an extended step and could be many weeks after the scheme is in supply.
PC Community investment 3E	High	Green	<p>Anglian Water follows the framework methodology defined by Business For Social Impact (B4SI). We tested the application of methodologies, procedures and definitions on a sample basis and saw evidence that these were being consistently applied. Anglian Water relies on data provided by partner organisations for many of the individual programmes. We saw evidence of verification processes ensuring beneficiary counts are signed off and checked as distinct.</p> <p>It is a requirement of the performance commitment that "the Company will publish a report each year, assured by an appropriately qualified third party to provide verification of the numbers provided.". We reviewed Anglian's Community Investment Report 2023" and the numbers provided in that document are those which were assured in our audit. We can therefore state that the Company can describe the report as having been assured by a third party.</p>

### Third party assurance of PCs with financial rewards and penalties

Ofwat's Information Note (IN23/03) requires companies to provide a statement from their Assurers confirming that appropriate third-party assurance has been carried out on their reported 2022-23 PCs that have financial rewards and penalties. This statement should specify which of these PCs the third-party assurers have reviewed as part of their assurance work.

All financial PCs have been part of Jacobs' audit programme, except five where the data are sourced from the EA or DWI. These were not in Jacobs' scope and are Water quality compliance (CRI), Pollution incidents, Treatment works compliance, Bathing waters attaining excellent status, and Water quality contacts.

C-MeX and D-Mex scores are confirmed by Ofwat and were also subject to third-party audit by Jacobs as part of the In-year programme.

The table below confirms the audits that have taken place. For clarity, as explained in this assurance report, in-year audits are of the process only and year-end audits are of the process and data.

PC with financial reward/penalty	In-year audit (Jacobs)	Year-end audit (Jacobs)
Water supply interruptions		Yes
Leakage		Yes
Per capita consumption		Yes
Mains bursts		Yes
Unplanned outage	Yes	
Internal Sewer Flooding	Yes	Yes
Sewer collapses		Yes
Customer Measure of Experience (C-MeX)	Yes	
Developer Measure of Experience (D-Mex)	Yes	
Percentage of population supplied by single supply system		Yes
Properties at risk of persistent low pressure	Yes	Yes
External sewer flooding	Yes	Yes
Abstraction Incentive Mechanism	Yes	
Managing void properties	Yes	
WINEP		Yes



## Glossary

**Annual Integrated Report (AIR)** - report by the Company on the year's activities. Includes the strategic report, corporate governance report, remuneration report and the statutory accounts

**Annual Performance Report (APR)** – report produced by the Company for regulatory reporting purposes, in accordance with the Regulatory Accounting Guidelines.

**Appointed business** – the appointed business comprises the regulated activities of the Company which are activities necessary in order for a company to fulfil the function and duties of a water and sewerage undertaker under the Water Industry Act 1991.

**Arm's-length trading** – arm's-length trading is where the Company treats the associate companies on the same basis as external third parties.

**Asset Management Plan (AMP)** – a plan agreed with Ofwat on a five-yearly basis for the management of water and wastewater assets. The plan runs for a five-year period. AMP6 covered April 2015 to March 2020 and AMP7 covers April 2020 to March 2025.

**Associate company** – whereas Anglian Water Services (AWS) Limited is the regulated company within the AWG group, the group also contains other companies ('associates') which are not regulated by Ofwat. The Licence requires that AWS is ring-fenced from these associates and that all transactions between them are disclosed.

**Botex** - base expenditure to operate and maintain our assets to a fixed service performance level.

**Botex plus** - botex expenditure plus the costs of dealing with sewer flooding and low water pressure and extending the off-site network to meet the demands of growth

**Carbon Reduce Scheme (formerly CEMARS - Certified Emissions Measurement and Reduction Scheme)** - the methodology for producing an organisational carbon footprint is aligned with the internationally recognised Greenhouse Gas Protocol for corporate accounting and reporting.

**CMOS (Central Market Operating System)** - CMOS is the core IT system which underpins MOSL's role in the water retail market. CMOS manages all the electronic transactions involved in switching customers and provides usage and settlement data that is used in the billing process.

**Competition and Markets Authority (CMA)** - the non-ministerial department which works to promote competition and the fair conduct of markets for the benefit of consumers. In the event that a water company rejects Ofwat's determination at a price review the CMA conducts a re-determination.

**Competitively Appointed Provider (CAP)** - the firm appointed to deliver a scheme under the DPC regime.

**Consumer Price Index including owner occupied housing costs (CPIH)** - compiled and published monthly by the Office of National Statistics, this is a measure of consumer inflation which includes a measure of the owner occupied housing costs (costs that are associated with owning, maintaining and living in one's home) and council tax. Anglian Water's allowed revenues can be raised annually by the value of CPIH.

**Direct Procurement for Customers (DPC)** - individual very large construction schemes, which previously would have been delivered by the water undertaker by default, can be designated by Ofwat to be delivered by a competitively appointed provider instead.

**Enhancement expenditure** - expenditure to deliver a higher quality of service than is delivered through base expenditure, such as meeting tighter environmental standards or complying with new statutory obligations.

**Final Determination (FD)** – this is the conclusion of discussions on the scale and content of the Asset Management Plan for the forthcoming five-year period. It is accompanied by a determination of the allowable 'K' factor for the forthcoming five-year period.

**K factor** – the annual charge, set by Ofwat, in revenue that companies in the water industry can make. The amount by which a company can increase (or must decrease) its charges is controlled by the price limit formula  $CPIH + \text{or} - 'K'$ . 'K' is a number determined by Ofwat for each company, usually at a price review, for each year to reflect what it needs above or below inflation in order to finance the provision of services to customers, and is subject to adjustment mechanisms to reflect prior year revenue recovery and in-period performance commitments.

**Licence** – the Instrument of Appointment dated August 1989 under Sections 11 and 14 of the Water Act 1989 (as in effect on 1 August 1989) under which the Secretary of State for the Environment appointed Anglian Water Services Limited as a water and sewerage undertaker under the Act for the areas described in the Instrument of Appointment, as modified or amended from time to time.

**MOSL (Market Operating Services Limited)** - MOSL is the not-for-profit company which operates the business water market which opened on 1 April 2017.

**Non-appointed business** – the non-appointed business activities of the Company are activities for which the Company as a water and sewerage undertaker is not a monopoly supplier (for example, the sale of laboratory services to an external organisation) or involves the optional use of an asset owned by the Company (for example, the use of underground assets for cable television).

**Ofwat** – the name used to refer to the Water Services Regulation Authority (WSRA). The WSRA acts as the economic regulator of the water industry.

**Outcome Delivery Incentives (ODIs)** – financial incentives which reward companies for outperforming their performance commitment levels and penalises them for under-performing.

**Performance commitment** - a measure chosen to track the delivery of outcomes which customers have told us are valued by them

**Performance Commitment Level (PCL)** – the standard of performance that we expect to deliver against each performance commitment. Typically, though not always, there will be a separate PCL for each year of the price control period.

**Periodic Review** – the price determination process undertaken by Ofwat every five years. Each water and sewerage undertaker submits an Business Plan covering the five-year period for which Ofwat will determine allowed revenues.

**Price Control Units** – at the 2019 price review, Ofwat introduced separate price controls for water resources, water network plus (water treatment and treated water distribution), wastewater network plus (waste water collection and treatment), bioresources, retail household and retail non-household.

**Regulatory Accounting Guidelines (RAGs)** – the accounting guidelines for the APR issued, and amended from time to time, by Ofwat.

**Regulatory Capital Value (RCV)** – the capital base used in setting price limits and the value of the appointed business that earns a return on investment. It represents the initial market value (200-day average), including debt, at privatisation, plus subsequent net new capital expenditure including new obligations imposed since 1989. The capital value is calculated using the Ofwat methodology.

**Retail Price Index (RPI)** – the RPI is compiled and published monthly by the Office for National Statistics. RPI is an average measure of change in the prices of goods and services bought for the purpose of consumption by the vast majority of households in the United Kingdom. From 1 April 2020 50% of Anglian Water's RCV is indexed to the RPI, with the balance indexed to CPIH.

**Retail services** – the elements of the business responsible for direct contact with customers e.g. the contact centre, billing and reading meters. From April 2017, following the opening of the non-household market, business customers became able to choose their retail supplier. Anglian Water's appointed business exited all non-household market activities.

**Section 24 Sewers** - In England there is a category distinction between sewers built before or after 1937. Sewers dating from after 1937, and that only serve your own home (albeit that the drain line crosses somebody else's land) are "private" or "lateral drains". On the other hand if your house was constructed before 1st October 1937 and your drains are shared, serving two or more homes, then that drain line is a "public" sewer (a "section 24 sewer").

**Sludge Treatment Centre (STC)** - These are sites where we convert sludge into biosolids that can be recycled to agricultural land. We have ten of these and they are all located at water recycling centres. Each STC treats the sludge produced by its host WRC plus the sludge that is tankered into it from surrounding WRCs.

**Third-party contributions since 1989/90** – grants and third-party contributions received in respect of infrastructure assets and any deferred income relating to grants and third-party contributions for non-infrastructure assets.

**Totex** – total expenditure comprising operational expenditure (opex) and capital expenditure (capex).

**Transferred private sewers** - On 1 October 2011 all privately owned sewers and lateral drains which drained to existing public sewers as at 1 July 2011 became the responsibility of the sewerage undertaker. This covered foul, surface water or combined sewers, and any drains serving individual properties, which are outside the curtilage of the property they serve, connect to the public sewerage system and were previously the responsibility of homeowners. In the second tranche of this programme all privately owned pumping stations serving more than one property and their associated rising mains transferred to the sewerage undertaker on 1 October 2016.

**UKWIR (UK Water Industry Research)** - the body which facilitates, manages and delivers a strategic programme of research projects for its members, the water companies of the UK and Ireland, to address the key challenges they face

**Water and Sewerage Company (WaSC)** – a company responsible for the provision of both water and sewerage services.

**Water only company (WOC)** - a company responsible for the provision of water services only.

**Water recycling** - to promote public understanding of the water cycle and encourage stakeholders to value water appropriately, we use this term to describe our waste water or sewerage service.

**Water Recycling Centre (WRC)** - we use this term, rather than sewage treatment works, to describe the facilities which return used water to a condition where it can safely be discharged to environmental waters.

**Water Treatment Works (WTW)** - operational site where raw water from the environment is made potable.

**Wholesale services** – the elements of the business responsible for the abstraction, treatment and distribution of water and the collection, treatment and disposal of sewage and sludge.

**Working capital** – the aggregate of stocks, trade debtors and trade creditors.

