Water Resource Management Plan 2019

Annual Review

June 2024

Executive Summary

- Despite continued growth in population, and reflecting relatively benign weather conditions, the impacts of our smart meter rollout and behaviour change programmes, we have recorded demand this year to be 1151.76 Ml/d. This is a drop from last year's recorded value of 1173.39 Ml/d, of 21.63 Ml/d (1.8%). These levels are similar to those experienced during the pre-pandemic of 2019/20.
- Three year rolling leakage is assessed to be 182.0 Ml/d, which is above our year 4 target of 170.0 Ml/d. Three year rolling leakage has reduced by 6.2 per centagainst the 2019/20 baseline, but below our target reduction of 12.4 per cent. In April 2024 we wrote to Ofwat to explain that we uncovered an issue with the figure for Non-HH demand reported in 2022-2023. This issue has now been corrected resulting in a restatement of the in-year 3 leakage figure to 190.5 Ml/d, an increase of 7.9 Ml/d. Performance of 182.1 Ml/d in 2023/24, therefore, represents an 8.4 Ml/d decrease from the restated 2022/23 figure.
- Smart metering, customer engagement and plumbing loss reduction helped us achieve our lowest ever Per Capita Consumption (PCC) value of 127.56 litres per head (l/h/d), a reduction of 4.7 l/h/d from the previous year. Measured PCC, for our 84% measured customers, has now achieved our lowest recorded value of 120.63 l/h/d with unmeasured PCC also reducing to 165.39 l/h/d.
- We fitted 262,621 smart meters in 2023/24, which brings the total number of installations for the AMP to 806,307. In June 2023 we were given funding to install a further 60,000 smart meters under Defra's Accelerated Infrastructure Delivery (AID) programme which will be fitted in 2024/25.
- The data from smart meters has enabled us to identify 109,469 leaks in the year 2023/24. This has resulted in 29.93 Ml/d of leakage or plumbing loss being resolved.
- Meter penetration is now at 91.0% of domestic properties (including voids), with 84.8% (including voids) of occupiers being charged based on the volume of water supplied.
- Our customer engagement partnership strategy aims to educate, build intent and create behaviour change at a hyper local level with our customers; through face to face events in hotspot areas; utilizing water saving devices and with online engagement. Additionally, 'The Wild Tribe' project was aimed at families to help them understand more about water, the water cycle and how they interact with it – with a view to educate customers on the need to save water in the home.
- Parts of the Region were classified as in Drought at the start of April 2023, but the wet April helped extend the recharge season at our groundwater sites and we saw recovery through until Mid-May. The year continued to see above average rainfall notably in July, October and December. Reservoir levels remained on target thanks to continued high river flows throughout the summer months. Some groundwater aquifers saw unusual summer recharge. Grafham winter refill was delayed due to essential maintenance and flooding. The region saw surface and groundwater flooding from December onwards. The period April 2023 to March 2024 was the wettest 12 months on record at 922mm.
- We have worked closely with the Environment Agency (EA) to determine whether our abstraction licences will pose a deterioration risk. In order to manage the risk of deterioration prior to the licence changes, we are monitoring abstraction rates and working to maintain all abstractions within historical (2005-2015 peak annual) abstraction rates where reasonably practicable.
- Fifty four of our time limited licences (TLLs) expired in December 2022 with licence capping proposed by the EA. We accepted 28 of these proposed licence Caps. However, 26 licences could not achieve the proposed cap without putting public water supply at risk. We therefore submitted 11 (grouped) Overriding Public Interest (OPI) cases to the EA to maintain full licence conditions until the capping level required corresponded with our WRMP plans. These are still under review and we are working closely with the EA to deliver licence cap reductions as soon as possible, without causing public water supply concerns.

- Our Supply Demand Balance Index (SDBI) was reported as 100 (EPA Green) for normal year, dry year annual average and 100 for the critical period scenario.
- In February 2024 we engaged with Ofwat on the delivery of the Strategic interconnector programme, which has been delayed by the war in Ukraine, late planning permissions, and most recently by flooding. We are currently re-profiling the programme, with new dates for commissioning, many of which will now be in AMP8. We are working closely with the EA to assess the impacts of the delay and ascertain any temporary mitigation measures.
- In this reporting year the delivery of the East Ruston scheme under gravity provides a benefit of 2.4 Ml/d resulting in the total PC benefit delivered as 8.9 Ml/d. Once completed, we will have delivered capacity in excess of that assumed at PR19.
- We published our revised draft WRMP24 in August 2023 and continue to await approval to publish as final.

1 Introduction

In accordance with the Water Industry Act 1991 and the Water Act 2003, we have a statutory duty to produce a water resources management plan (WRMP) every five years. The plan describes how we propose to balance our supply of water with the demands of our customers over a minimum 25-year period. Following direction from the Secretary of State we published our final 2019 WRMP in December 2019, to cover the planning period from 2020 to 2045.

Section 37 A(5) of the Water Industry Act 1991 states that we must produce an annual review of the WRMP, to track progress against the plan and highlight any material change. The WRMP annual review is submitted to the Secretary of State. This annual review covers the period 1 April 2023 to 31 March 2024 which is the fourth reporting year of our WRMP 2019.

This review reports to the WRMP19 WRZs and our WRMP19 supply-demand forecast.

1.1 Water Resource Zones

Our WRMP19 is based on 27 WRZs in the AWS Region and a single WRZ for Hartlepool Water; there have been no changes to WRZs in this reporting year.

1.2 Water resources situation

1.2.1 Rainfall

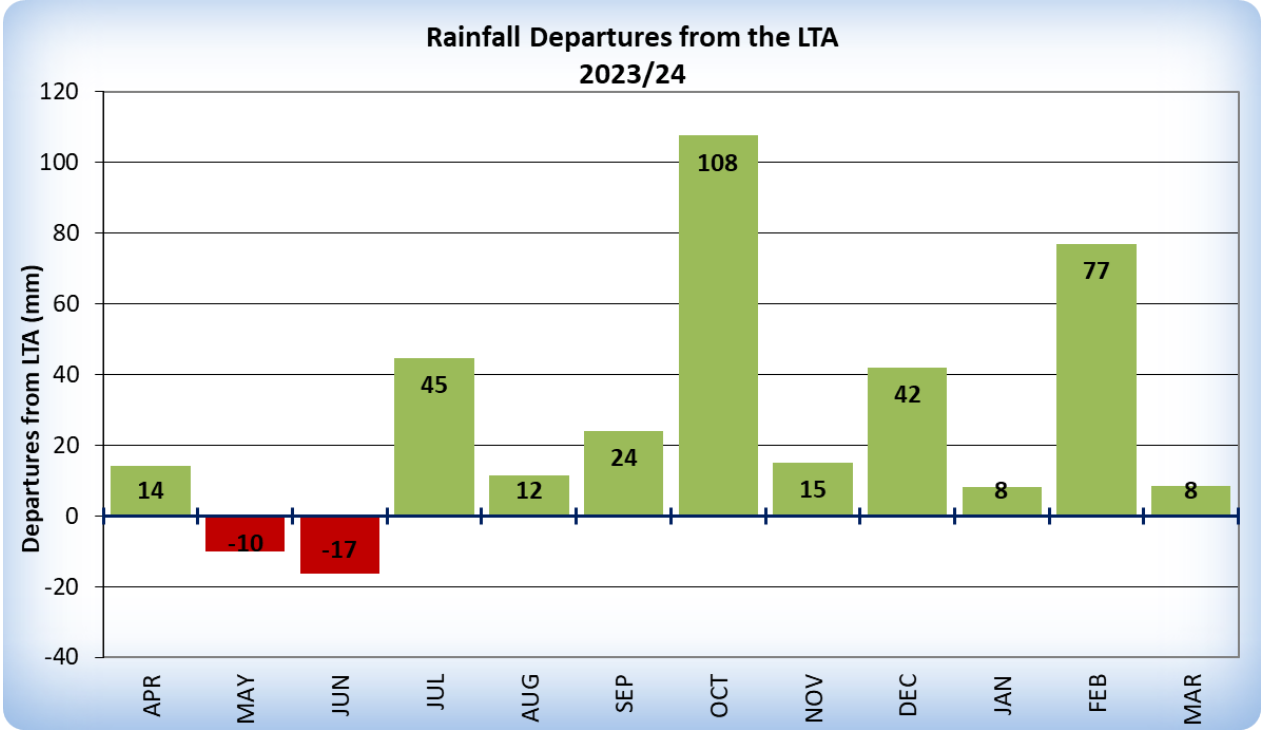
Coming into the financial year 2023/24 the Autumn/Winter saw a split in rainfall similar to 2021/22 with 3 very wet months interspersed against 3 below average months. This included the 3rd Driest February on Record.

The 6 month average between April and September was 123% of the Long Term Average (LTA). A dry start to the summer was followed by a very wet July with over 191% of the LTA. The wet summer was seen across the region, and was combined with cooler temperatures than 2022/23, although thunderstorms were seen during August and September causing localized flooding.

October started the wettest Autumn/Winter on record for the region and for the UK. Three storms crossed over the region during December; Erin, Fergus & Gerrit. 2023 was the wettest year on record for our region with 829mm of rainfall. Areas across the region saw over 300% of the LTA rainfall during October (311%) and February (308%). The period April 2023 to March 2024 was the wettest 12 months on record at 922mm, surpassing the last wettest year (2001) by 50mm. This was 155% of the yearly average (1961-1990).

Soil Moisture Deficit (SMD) remained below 20mm during April and into Mid-May, resulting in an extension of the recharge season for groundwater and river baseflow recovery. SMD remained around average for the summer months, sharply dropping at the start of October following the exceptionally high rainfall. The consistently above average rainfall saw catchments reach saturation point leading to both groundwater and surface water flooding over the winter. The amount of effective precipitation (EP) seen over the last 6 months was the highest since we started reporting on EP 5 years ago. This was in part due to the very high quantities seen in December and February.

Figure 1 – Rainfall deviation from Long Term Average (1961-1990) from April 23 to Mar 24



1.2.2 River flows and reservoir levels

Between April 2023 and October 2023 there were limited issues with abstraction related to low flows throughout this summer thanks to the above average rainfall.

Overall, reservoirs remained on target or close to target throughout the summer of 2023. Grafham started the period below target due to water quality hindering refill over the preceding winter, but soon recovered and was above target until Winter 2023.

Support sources were used at Ardleigh and Alton this summer to support in refill during low flows but to a much lesser extent than 2022/23.

Heading into the Autumn/Winter period, all reservoirs were on target except Alton 5% below, Covenham 4% below and Hollowell 12% below. The rain in October caused all reservoirs to reach target or max capacity. Grafham was impacted by a combination of poor water quality, essential pump maintenance works at Offord and flooding on site resulting in it being 7% below target at the end of March 2024, the recovery was managed locally and returned to target in June 24.

Exceptionally high rainfall over the winter period saw high river flows and flooding impact several abstraction sites, notably Offord (Grafham), Tinwell (Rutland) and Ardleigh. These flows also caused high turbidity and nitrate, further impacting abstraction. At the end of March overall reservoir levels were 92% and rivers were all classified as above normal to exceptionally high.

1.2.3 Groundwater levels

Groundwater levels remained low in the North East of our region at the start of April 2023. However, the continued rainfall throughout the start of spring and summer meant that the recharge season was extended by a further 2 months. This resulted in a number of sources getting back to normal by the end of May. The North West Norfolk and Babingley chalk started the summer at notably low levels and drought actions continued to mitigate supply risk throughout the summer. Unusual recovery was seen in some of the more reactive aquifers in July when the region saw over 2 months' worth of rainfall.

During September/ October the situation was much improved from this point last year with the majority of the region classified as normal levels or higher, the only areas with below normal or lower groundwater levels remained in North Norfolk. Increased level monitoring and water quality monitoring remained in place for North Norfolk until the end of March 2024. Recharge started almost immediately following the heavy rainfall in October, this was widespread across the region. The continued wet winter resulted in ground saturation across the region and a number of areas saw significant groundwater flooding, notably St Neots, North Norfolk and Newmarket. This is likely to continue past March 2024 due to low SMD, ground saturation and continued above average rainfall forecasted.

1.3 Impacts of exceptional events

The assessment of changes due to post Covid-19 homeworking, commuting patterns and 'stay-cationing' and the establishment of a new 'normal', along with the 'cost of living crisis' are still being assessed, but it may be noted that as these influences combine with our smart meter roll-out, our 2023/24 our PCC value of 127.6 l/h/d is a new low for the company.

Demand has also been seen to decline from 1173.4Ml/d to 1151.76Ml/d, due to relatively benign weather conditions and as these influences have impacted. Non-household demand has remained relatively stable at between 305Ml/d (for 2022/23 – re-assessed) and 306Ml/d for 2023/24. Demand is also reflective of population increases we have seen in recent years. For the year 2023/24 our population has shown an increase of 91,311 from 4,972,797 to 5,064,108. Note that this increase also reflects our reassessed of household/dwelling numbers served by the Anglian Water region (adding an additional 19,265 households to our count).

Covid-19 factors have been included in both base-line and final plan forecasts for WRMP24 as described in the 'Demand Forecast' and 'Preferred Plan' technical documents.

1.4 Supply Demand Balance Index

Our SDBI this year was reported as 100 (EPA – Green) for normal year, dry year annual average and 100 for the critical period scenario.

1.5 Outcome Delivery Incentives and Performance Commitments

1.5.1 Strategic Interconnector Programme

We have a bespoke Outcome Delivery Incentive (ODI) to track progress and effectiveness of the interconnector programme using a Performance Commitment (PC) based on capacity in Ml/d.

In February 2024 we engaged with Ofwat on the delivery of the Strategic interconnector programme. This included discussion on the need for the interconnector programme, the development of our Strategic Pipeline Alliance (SPA) and the challenges we have faced in delivering the overall programme by the end of AMP7. We produced a proposal on how to deal with the challenges and delays in the delivery of the strategic interconnectors programme. We are currently re-profiling the programme, with new dates for commissioning, many of which will now be in AMP8. We are working closely with the Environment Agency to assess the impacts of the delay and ascertain any temporary mitigation measures.

In this reporting year the total PC benefit delivered has reached 8.9Ml/d. Once completed, we will have delivered capacity in excess of that assumed at PR19.

1.5.2 Single Source Resilience

The programme for reducing the percentage of population at risk during AMP7 is closely aligned to our WRMP Strategic Interconnector Programme.

We have not completed any further capital schemes in 2023/24. The outturn for the year 2023/24 is 22.3% which is 2.3% above the performance commitment level of 20.0%. The remaining AMP7 schemes continue to

progress as part of our strategic interconnectors programme, due to the reprofiling of that programme for safe and efficient delivery we now expect to complete our AMP7 percentage population on a single supply programme in AMP8.

1.5.3 Abstraction Incentive Mechanism (AIM)

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, 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.

For 2023/24 due to the high rainfall during 2023/24 the following AIM sources did not experience any low river flows days below the AIM threshold.

- Marham (River Nar)
- Marham (Groundwater)
- Wixoe

At our Wilsthorpe source, despite the unusually high rainfall in 2023, we had 122 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. However this year Bourne water treatment works (WTW) was out of service for an extended period due to repairs required on the contact tank. The spare flow from Etton WTW was required to make up for the shortfall at Bourne. Bourne WTW was returned to service on 17/11/2023, by which time the low flow season was over. As a result abstraction was greater than the 2007-13 baseline.

Note that this measure is unrelated to our compliance on annual abstraction licences, which was 100% compliant, built on our excellent supply and demand management, and an important result to safeguard the environment through the drought.

1.6 Target Levels of Service

We continue to report against our WRMP19 reference Levels of Service. These are based on levels as defined in the EA's "Agenda for Action" review completed in 1999, and include:

1. Temporary use ban: 1 in 10 years (includes hosepipe bans)
2. Non-essential use ban: 1 in 40 years
3. Rota-cuts and standpipes: 1 in 100 years.

For WRMP19, we worked to understand if our current levels of service are appropriate, this showed that parts of our supply system are vulnerable to severe drought events that are more extreme than the historic record. We believe that the introduction of severe water restrictions, such as standpipes and rota-cuts, would be unacceptable for our customers. This has been supported by our customers and in wider stakeholder consultation. Therefore, we will alter the return period relating to rota-cuts and standpipes (LOS3 in WRMP19 or LOS4 in Drought Plan 2022) at the end of AMP7, to >1 in 200 years.

2 Supply

We currently have 5 Drinking Water Inspectorate notices at the following water treatment works (WTWs):

- Great Wratting WTW
- Kedington WTW
- Gayton WTW
- Wighton WTW
- Earls Colne WTW

There is currently not any impact on the supply forecast other than that reported as outage.

2.1 Changes to Deployable Output

Since 2022/23, there will be differences in stated deployable output (DO). There are reductions to DO in Central Lincolnshire due to changes to output assumptions at our Hall and Elsham WTWs, and East Suffolk, Ruthamford North, Ruthamford South, South Essex and South Lincolnshire due to the ongoing impacts of climate change (-13.83 Ml/d). This differs from the WRMP19 final planning tables, as some expected licence caps did not occur in 2022/23 and 2023/24 as forecast. This means the total DO for 2023/24 is 52.2 Ml/d higher than quoted in the WRMP19 tables.

2.2 Outage

2.2.1 Outage allowances

Details of the outage allowances used in WRMP19 are given in the Table 1 below. The allowances are derived from "% of DO" data used in the base year of the 2019 WRMP. To calculate the report year outage allowances, these percentages are multiplied by the equivalent report year DO data.

The outage percentages in the 2019 WRMP were calculated using a probabilistic headroom and outage model as described in the WRMP19 Managing Uncertainty and Risk report.

Table 1- Outage allowances 2023/24

WRMP19 Resource Zone	WRMP19 Outage allowance	
	% of DO (DYAA[1] and CP[2] scenarios)	Ml/d (DYAA scenario only)
Bourne	1.6%	0.7
Bury Haverhill	2.2%	0.6
Central Essex	1.6%	0.2
Central Lincolnshire	1.8%	2.3
Cheveley	3.5%	0.1
East Lincolnshire	1.5%	2.0
East Suffolk	1.7%	1.3
Ely	1.4%	0.3
Happisburgh	1.9%	0.1
Hartlepool	2.5%	0.9
Ixworth	1.8%	0.1
Newmarket	1.4%	0.2
Norfolk Rural North	2.0%	0.6
Norfolk Rural South	1.8%	0.3
North Fenland	1.7%	0.5

WRMP19 Resource Zone	WRMP19 Outage allowance	
	% of DO (DYAA[1] and CP[2] scenarios)	Ml/d (DYAA scenario only)
North Norfolk Coast	1.3%	1.2
Norwich and the Broads	1.6%	0.5
Nottinghamshire	2.3%	4.3
Ruthamford Central	0.0%	3.9
Ruthamford North	1.5%	0.0
Ruthamford South	1.6%	1.2
Ruthamford West	0.0%	0.6
South Essex	1.7%	0.4
South Fenland	1.8%	0.3
South Humber Bank	0.0%	0.1
South Lincolnshire	1.3%	0.1
Sudbury	1.5%	22.7
Thetford	1.4%	0.7
Average (un-weighted) / Total	**1.8%**	0.6

1. *Dry Year Annual Average*
2. *Critical Period*

2.2.2 Outage events

We also report against actual outage events during the report year. For these purposes, outage is defined as a temporary loss of deployable output from either planned or unplanned events[1]. The 2023/24 data has been obtained under the process developed to inform the Ofwat asset health unplanned outage performance commitment. Data is collected for all outage events at both the site and asset level. The data is an enhancement on the Drinking Water Inspectorate data used prior to the 2019/20 Annual Review, as it includes both partial outages, and outages of less than 24 hours duration. As recommended by the EA, we have reported outage against both ADSO and MAXSO. Details for 2023/24 are given in Table 2 (against ADSO) and Table 3 (MAXSO) below.

[1] Therefore this excludes sources and WTWs that have been removed from supply for significantly longer periods of time.

Table 2- Outage against ADSO during 2023/24

WRMP19 Resource Zone	WTW	Full/ Partial	Planned/ Unplanned	ADSO (Ml/d)	Days out of service	Reason
Bourne	Bourne WTW	Full	Planned	17.4	108	Planned maintenance
			Unplanned	17.4	29	Raw WQ issue
					16	Asset failure
Central Lincs	Dunston WTW	Full	Unplanned	1.3	12	Asset failure
	Hall WTW	Full	Unplanned	14.1	44	WQ issue
	Waddingham WTW	Full	Planned	3.7	1	Planned maintenance
			Unplanned	3.7	5	Asset failure
East Lincs	Driby WTW	Full	Planned	2.9	10	Planned maintenance
						Removed from supply for operational reasons
	Manby WTW	Full	Unplanned	3.6	5	Asset failure
					39	WQ issue
East Suffolk	Pettistree WTW	Partial	Unplanned	6.3	20	Asset failure
	Tuddenham WTW	Full	Planned	3.8	7	Removed from supply for operational reasons
					13	Planned maintenance
			Unplanned	3.8	8	Raw WQ issue
	Whitton WTW	Full	Unplanned	11.5	3	Site flooded
Happisburgh	East Ruston WTW	Full	Planned	2.5	166	Environmental regulation
Norfolk Rural South	Bunwell WTW	Partial	Unplanned	1.3	73	Asset failure
North Fenland	Gayton WTW	Full	Planned	3.5	60	Planned maintenance
North Norfolk Coast	Wighton WTW	Full	Unplanned	1.1	11	Removed from supply for operational reasons
Ruthamford North	Pitsford WTW	Full	Unplanned	31.8	49	Asset failure
	Ravensthorpe WTW	Full	Unplanned	6.0	8	Asset failure
Ruthamford South	Clapham WTW	Full	Unplanned	0.0	1	Asset failure
					11	Asset failure

Using days out of service and the capacity of the works affected, the time-weighted actual outage experienced in 2023/24 from both planned and unplanned events is equivalent to 16.4 Ml/d (1.14% of ADSO). Planned outages are typically carefully managed to avoid any potential risk to customer supply. When planned outage events are separated out, unplanned outage events were equivalent to 9 Ml/d (0.6% of ADSO). This is well below the unplanned outage allowance included in WRMP19. The ADSO impact of partial outages in this calculation was quantified as the difference between the revised max flow due to the outage event, and the ADSO.

The average outage quantification approach presented in Table 2 and the paragraph above is based on a fixed WTW level allocation of Deployable Output, which matches our reporting process in previous years. For 2023/24 we have carried out a further assessment to understand the effect of these outage events when considering the conjunctive benefits of our WRZ systems. This is detailed in the following section and has been used to complete our SDBI and Annual Review data returns.

Table 3 - Outage against MAXSO during 2023/24

WRMP19 Resource Zone	WTW	Full/ Partial	Planned/ Unplanned	ADSO (Ml/d)	Days out of service	Reason
Bourne	Bourne WTW	Full	Planned	25.0	108	Planned maintenance
			Unplanned	25.0	29	Raw WQ issue
					16	Asset failure
Central Lincs	Dunston WTW	Full	Unplanned	3.9	12	Asset failure
	Hall WTW	Full	Unplanned	19.7	44	WQ issue
	Waddingham WTW	Full	Planned	4.8	1	Planned maintenance
			Unplanned	4.8	5	Asset failure
	Newton WTW	Partial	Unplanned	51.3	49	Asset failure
East Lincs	Raithby WTW	Partial	Unplanned	9.6	5	Planned maintenance
					11	Asset failure
	Driby WTW	Full	Planned	4.8	10	Planned maintenance
						Removed from supply for operational reasons
		Partial	Unplanned	4.8	26	Asset failure
	Manby WTW	Full	Unplanned	9.5	5	Asset failure
					39	WQ issue
East Suffolk	Pettistree WTW	Partial	Unplanned	12.3	20	Asset failure
	Tuddenham WTW	Full	Planned	6.3	7	Removed from supply for operational reasons

					13	Planned maintenance
			Unplanned	6.3	8	Raw WQ issue
	Whitton WTW	Full	Unplanned	16.8	3	Site flooded
Ely	Beck Row WTW	Partial	Unplanned	3.5	39	Raw WQ issue
					35	Raw WQ issue
					22	Raw WQ issue
Happisburgh	East Ruston WTW	Full	Planned	2.6	166	Environmental regulation
Norfolk Rural South	Bunwell WTW	Partial	Unplanned	1.7	73	Asset failure
North Fenland	Gayton WTW	Full	Planned	3.8	60	Planned maintenance
North Norfolk Coast	Wighton WTW	Full	Unplanned	2.1	11	Removed from supply for operational reasons
Ruthamford North	Pitsford WTW	Full	Unplanned	40.8	49	Asset failure
	Ravensthorpe WTW	Full	Unplanned	12.4	8	Asset failure
Ruthamford South	Clapham WTW	Full	Unplanned	17.2	1	Asset failure
					11	Asset failure
		Partial	Planned		1	Planned maintenance
					18	Planned maintenance
					24	Planned maintenance

Using days out of service and the capacity of the works affected, the time-weighted actual outage experienced in 2023/24 from both planned and unplanned events is equivalent to 24.9 Ml/d (1.24 % of MAXSO). Planned outages are typically carefully managed to avoid any potential risk to customer supply. When planned outage events are separated out, unplanned outage events were equivalent to 14.8 Ml/d (0.74 % of MAXSO). This is within the unplanned outage allowance for MAXSO included in WRMP19. The MAXSO impact of partial outages in this calculation was quantified as the difference between the revised max flow due to the outage event, and the MAXSO value. These impacts are shown in Table 3 above.

2.2.3 Average outage for SDBI and annual review tables

Outage as presented in our SDBI return and annual review tables has been based on the out-turn of planned and unplanned outage for 2023/24, using the events presented in the section above.

We have assessed average outage for the SDBI return and annual review tables based on the zonal impact on WRZ deployable output (following the SDBI 2023 guidance), using an Aquator system assessment where further investigation was required. Modelling in Aquator enables the conjunctive operation of sources in a WRZ system to be accounted for. For example, in our Aquator model if a temporary outage occurs in a single

Water Treatment Works, other works within the system can ramp up their output to compensate, meaning annual average zonal deployable output is not reduced. Our previous outage calculation method (as presented above) does not capture this level of complexity.

2.3 Treatment works losses

In response to previous WRMP Annual Reviews, the EA recommended that we provide updates on our progress in explaining differences between Annual Review treatment losses and the WRMP19 forecast.

The Annual Review reports a simple annualised difference between abstraction (as measured in our LARS system) and the amount of water we put into supply (measured by SWORPS). The Annual Review numbers have the following limitations which would cause them to appear higher than the WRMP19 forecast:

- In many cases water is not 'lost', but is returned to reservoirs and source water bodies, and is therefore available for re-abstraction, with less of an impact on DO, and with minimal impact on the environment.
- The annual scale used for the Annual Review includes all events where water is abstracted from a reservoir or source, but not put into supply. This can occur during commissioning after maintenance works, or following outage incidents such as Water Quality events, or for other operational reasons. These events would not be used when planning for treatment works losses in the WRMP, as they are captured within our outage modelling and reporting.

We have provided our available discharge metering data to quantify the returned flows to reservoirs and source water bodies, shown in Table 4 below. The flow data available decreases the difference between the Annual Review losses number and the WRMP19 planning number by 28.85 Ml/d. This value could as be used to adjust the Treatment Works Losses numbers in the WRMP AR data tables, 90.27 Ml/d for the 2023/24 year, suggesting true losses were around 61 Ml/d. Some of our WTWs have discharges back to source water bodies and reservoirs which are not currently measured.

Table 4 - 2023/24 average returned flows to reservoirs and source waterbodies using available metering data.

WTW	Average returned flow 2023/24 (Ml/d)	WRZ	Average returned flow 2023/24 (Ml/d)
Elsham (Potable) WTW	0.22	Central Lincolnshire	0.68
Newton WTW	0.39		
Waddingham WTW	0.02		
Welton WTW	0.05		
Alton WTW	1.35	East Suffolk	1.40
Baylham WTW	0.00		
Semer WTW	0.03		
Whitton WTW	0.02		
Dalton Piercy WTW	0.06	Hartlepool	0.06
Stoke Ferry WTW	0.55	North Fenland	0.55
Foulsham WTW	0.02	North Norfolk Coast	0.02
Carbrooke WTW	0.03	North Norfolk Rural	0.37

East Dereham WTW	0.10		
West Bradenham WTW	0.24		
Heigham WTW	2.56	Norwich & Broads	2.56
Everton WTW	0.26	Nottinghamshire	0.30
Gainsborough WTW	0.04		
Morcott WTW	0.21	Ruthamford North	1.89
Pitsford WTW	0.77		
Wing WTW	0.91		
Clapham WTW	4.26	Ruthamford South	13.07
Dunton WTW	0.03		
Meppershall WTW	0.08		
Grafham WTW	8.69		
Ardleigh WTW	7.05	South Essex	7.38
Bures WTW	0.01		
Great Horkesley WTW	0.25		
Wethersfield WTW	0.07		
Marham WTW	0.50	South Fenland	0.50
Bunwell WTW	0.06	South Norfolk Rural	0.06
Total	**28.85**		**28.85**

We have developed a strategy to improve the quality of our treatment water losses measurement. Detailed audits been carried out at all our WTW sites, to quantify the extent of potential losses. The outcome of these audits has been assessed to identify and prioritise mitigation approaches. We have also developed a site leakage recording app, to facilitate more efficient recording of potential raw water loses in the future. Our WRMP24 strategy includes 13 backwash recovery schemes to reduce treatment and raw water losses at our WTWs.

2.4 Bulk supply arrangements

In the reporting year there have been no changes to our bulk supply agreements with other water companies.

2.5 Supply forecast

The anticipated changes to our supply forecast later in the AMP due to sustainability reductions are still being discussed with the EA and, therefore, are not fully impacting our supply forecast as expected in our WRMP19.

2.6 Sustainability changes

We have been proactive in assessing the impact of our abstractions on the environment since AMP3 (2000-05) and have continued to work with the EA to develop approaches that maintain the balance between environmental need and public water supply. This includes promoting investigations through the AMP3 National Environment Programme (NEP), the AMP4 Water Resources Environment Programme (WREP), the AMP5 and AMP6 NEP, and now the AMP7 Water Industry National Environment Programme (WINEP). More recently, we have been in discussions with the EA with regards to the renewal of time-limited licences in AMP7 and ensuring that these abstractions are sustainable.

We continue to work proactively with the EA to understand the requirements of no deterioration guidance and policy. The AMP7 WINEP, summarised in the section below, includes a number of obligations to investigate and appraise options required to both prevent deterioration and review whether PWS abstractions are impacting upon WFD good ecological status. These investigations were concluded in 2021/22, with sustainability changes or environmental mitigation options being taken forward into PR24.

2.6.1 AMP7 WINEP Licence Changes

To ensure that our abstractions are not contributing to a deterioration of the environment, in AMP7 we have agreed to cap the majority of licences across the region to historic maximum usage. We are committed to this delivery wherever this is reasonably practicable and does not put public water supplies at risk. These changes will be delivered in conjunction with river restoration/support projects to support our most environmentally sensitive areas.

Five additional sustainability changes (reducing abstraction below historic usage) were identified to be delivered in AMP7 for the Ant Broads and Marshes/Catfield Fen (Ludham, East Ruston and Witton), the River Poulter (Elkesley), Bumpstead Brook (Wixoe), River Lark (Rushbrooke & Bury St Edmunds), and River Nar (Marham).

We are committed to delivering these important environmental obligations and we are working closely with the EA on a package of environmental mitigation options to be delivered until the Strategic Interconnector Programme allows us to meet these licence reductions.

2.6.2 Time Limited Licences

Fifty four time limited licences (TLLs) expired in December 2022 with licence capping proposed by the EA. 28 of these proposed licence caps were accepted, however 26 licences could not achieve the proposed cap without putting public water supply at risk.

We were also required to submit Reg 19 Overriding Public Interest (OPI) case for one other licence having expired in 2024 (Costessey Boreholes) and two in 2018 (Aylsham/Metton/Matlaske and Coldham No. 2).

We have therefore submitted 11 OPI cases to the EA in total, shown in Table 5 below, in order to maintain full licence conditions until the capping level required corresponded with our WRMP plans. If an offer could be made to cap the licence below current licence levels then this was proposed within the documents. These are still under review and we are working closely with the EA to deliver licence cap reductions as soon as possible, but without causing public water supply concerns.

Table 5 - List of OPI cases 2022, 2023 and 2018

OPI Group	PZ	Licence Nr.	Licence
Bradenham	Bradenham	6/33/48/*G/0122	North Pickenham
		6/33/48/*G/0021	West Bradenham/Bradenham
	Wymondham	AN/033/0048/005/R02	East Watton
Braintree	Braintree	8/37/31/*G/0133	Shalford
			Bardfield
			*Notley (*Revoked)*
			Wethersfield
		8/37/31/*G/0214/R02	Bocking
Bury St Edmunds	Bury St Edmunds	6/33/37/*G/0428/R02	Nowton
		6/33/37/*G/0200	Rushbrooke[2]
		6/33/37/*G/0031	Bury St Edmunds[3]
		6/33/37/*G/0032	Risby
		6/33/37/*G/0205	Barrow Heath
	Newmarket	6/33/37/*G/0343	Gazeley
E Harling	East Harling	6/33/42/*G/0020	Riddlesworth
		AN/033/0044/021/R02	Harling
		6/33/44/*G/0278	Quidenham[4]
Ely	Ely	6/33/56/*G/0055	Eriswell
		6/33/56/*G/0096	Thetford
		AN/033/0037/001/R02	Ely
		6/33/39/*G/0008	Isleham
Colne	Halstead	8/37/21/*G/0064	Castle Hedingham

[2] in OPI but stated OPI not needed as HOF more restricting

[3] in OPI but stated OPI not needed as HOF more restricting

[4] *in OPI but accepting Max Peak

OPI Group	PZ	Licence Nr.	Licence
			Earls Colne
			Halstead
			*Steeple Bumpstead (*Revoked)*
Haverhill	Haverhill	8/36/11/*G/0070	Wixoe/Great Wratting
			Keddington
Norwich	Hethersett	7/34/13/*G/0229	Colney
		AN/034/0013/011/R01	Marlingford & Barford (Yare Valley)
	Norwich	7/34/15/*G/0177	Postwick
			Thorpe St Andrew
		7/34/13/*G/0186	Bowthorpe
	Poringland	7/34/14/*G/0090	Caistor St Edmunds
		AN/034/0014/002/R01	Bixley
Costessey Boreholes	Norwich	7/34/11/*G/0486	Costessey Boreholes
Aylsham	Sheringham	7/34/06/*G/0165/R01	Aylsham/Metton/Matlaske
Coldham Hall	Aylsham	AN/034/0006/024	Coldham No.2

2.6.3 Abstraction Licence Compliance 2022/2023

Within the licence review year 2022/2023 we had 1 annual licence exceedance within the EPA definition. We received feedback that our 2022 shadow EPA assessment was **'green'** at 99.5% which is the top category for performance where our 203 licences were reviewed against daily volume, annual volume, compensation releases, fish and eel screening and submission of data conditions.

3 Demand

3.1 Leakage management and reduction summary

Reflecting our customers' concerns about leakage, we are continuing to pursue our ambitious leakage reduction initiative for AMP7. As a company we committed to reduce leakage by 15% from the baseline of 191.0 Ml/d value for (2019/20 – revised methodology – note previous WRMP19 reporting methodology stated 182.4 Ml/d)). Leakage is now assessed using the methodology set out by Ofwat in the reporting guidelines published during the PR19 process.

The three-year rolling average leakage continues to reduce this year despite adverse weather impacting our network both during year 3 and 4 (2023/24). The Leakage Outcome Delivery Incentive (ODI) mechanism for

AMP7 uses a three-year average leakage figure to measure our underlying performance against the performance commitment level (PCL). Three year rolling leakage is assessed to be 182.0 Ml/d, which is above our year 4 target of 170.0 Ml/d. Three year rolling leakage has reduced6.2 per cent against the 2019/20 baseline, but below our target reduction of 12.4 per cent.

In April 2024 we wrote to Ofwat to explain that we uncovered an issue with the figure reported in 2022-2023 for Non-HH demand due to a bug in a new system. This issue has now been corrected resulting in a restatement of the year 3 leakage figure to 190.5 Ml/d, an increase of 7.9 Ml/d. Performance of 182.1 Ml/d in 2023-24 represents an 8.4 Ml/d decrease from the restated 2022/23 figure.

Table 6- Leakage performance

Leakage (Ml/d)	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Ofwat target (three-year average)	194.1	191.4	183.2	177.6	170.0	162.3
Actual (one year)	191.0*	182.4	173.4	190.5**	182.1	-
Actual (three-year average)	194.1	191.1	182.3	182.1**	182.0	-

*Assessed using new methodology ** Restated values

3.2 Leakage strategy

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 2023/24 we had 223 roles in our operational proactive leakage team (175 are field based detection roles).
- These are supported by 42 analytical roles
- In 2023/24, 15,007 leaks were located through proactive detection activities (up from 14,134 in previous year)

Leakage capital delivery programmes:

Leakage SENSORS

- Our fixed network hydrophone monitoring system now incorporates 305 DMAs. This is a slight reduction on the figures for 2022-23. This is due to removing loggers from DMAs not suitable.
- The total number of leaks found from SENSOR detection in 2023/24 was 3,289. This brings the total number of leaks detected using this technology to 19,758 since 2020.
- In 2023-24 the SENSOR programme delivered 1.89 Ml/d of leakage benefit.

Intensive Investigation

- Our intensive investigation process continues to develop well and incorporates a comprehensive programme of operational step testing using flexible metering assets, camera insertion detection and mains condition assessment, and the use of drones with thermographic imagery. 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 complement the satellite detection, we now use leakage detection dogs as part of our investigation process.

- In 2023-2024 the Intensive Investigation Process delivered 5.15 Ml/d of leakage benefit. (up from 3.54 Ml/d in previous year)

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 7,680 cases in 2023-2024 with only 930 Waste of Water notices requiring to be issued.
- SMART metering – our smart metering programme has installed 806,307 meters by the end of 2023/24, up 262,621 from 2022/23. The issues with supply chain resolved during the year with 106,000 installs being completed in Q4. In 2023/24 we identified 109,469 domestic 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. Where we informed and worked with our customers to ensure that the issue was resolved by them we saw 72,224 repaired. This has resulted in 29.93Ml/d of leakage or plumbing loss being resolved.
- Network/pump optimisation schemes – There have been 53 optimisation schemes implemented this year, delivering 2.31 Ml/d leakage reduction. This was split between:
    - 18 schemes to optimise existing pressure management assets, delivering 0.53Ml/d leakage reduction.
    - 26 schemes introducing first time pressure management, delivering 1.09Ml/d leakage reduction.
    - seven (five) pump optimisation schemes delivering 0.12Ml/d leakage reduction
    - two (two) system optimisation schemes delivering 0.57 Ml/d leakage reduction.

3.3 Per property and per capita consumption

Demand management is a key part of our strategy to balance supply and demand and we are continuing to focus on our smart meter rollout, development of our 'MyApp' account communications strategies, continuous flow reduction (plumbing losses) and our water efficiency programme.

For 2023/24:

- Per Household Consumption value recorded as 298 l/prop/d (as opposed to 306 l/prop/d 2022/23), a 2.6% reduction
- PCC value recorded at 127.56 l/h/d (as opposed to 132.31 l/h/d for 2022/23), a 3.6% reduction.

These are the lowest values for PHC and PCC recorded. For PCC we see a 4.75 l/h/d reduction, reflecting the benefits being realised from our smart meter roll-out (currently in excess of 800K smart meters installed) despite post Covid-19 societal changes. We have also seen potentially impacts of the cost-of-living crisis, as the cost of energy has been affecting water consumption, although emerging evidence suggests this impact has now ceased.

Table 7 - Household Consumption (l/property/d) (excludes customer supply pipe leakage)

Per Household Consumption	2017-18 (l/p/d)	2018-19 (l/p/d)	Baseline (2019-20)	2020-21 (l/p/d) *Covid*	2021-22 (l/p/d)	2022-23 (l/p/d)	2023-24 (l/p/d)
Unmeasured	455*	481*	472*	501	458	456	452
Measured	283*	289*	285*	313	291	281	275
Average	**316***	**322***	**316***	**342**	**317**	**306**	**298**

Table 8 - PCC (l/head/d) (excludes customer supply pipe leakage)

PCC	2017-18 (l/h/d)	2018-19 (l/h/d)	Baseline (2019-20)	2020-21 (l/h/d)	2021-22 (l/h/d)	2022-23 (l/h/d)	2023-24 (l/h/d)
Unmeasured	*162**	*175**	*173**	187	175	176	165
Measured	*129**	*126**	*126**	138	128	124	120
Actual Average	***137****	***136****	***135****	**147**	**136**	**132**	**127**

**Old calculation methodology*

Water saving activity has been accelerated during Year 4 to increase opportunities to engage with customers regarding how their actions can help in saving water.

3.3.1 Water saving activities

Following the 2022 prolong dry weather conditions and the lack of recharge over 2022-23 winter (particularly in Norfolk) we were preparing to implement further drought interventions. However, moving into summer 2023, the conditions changed with above average rainfall occurring every month for the rest of Year 4. As the water resources began to recharge, the company's focus switched from drought interventions back to delivering BAU water efficiency messaging to support our PCC performance.

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 pipe or plumbing loss.

Of all active smart meters installed by the end of Year 4, 58% of customers are registered with MyAccount and engaging 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. We consistently have around a 73% open rate, which is one of our most engaged emails and subsequently we have seen that on average these households will save 3 litres/day compared to those who don't receive the monthly communications. At the end of Year 4 we also migrated our website users.

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 cspl) accounts for most of the reduction in overall PCC/Household consumption and has been quantified separately in the smart metering benefits.

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 4 we exceeded our target by completing 22,189 water efficiency visits with assumed savings of 187,003 litres in total from devices and 22,189 litres from behaviour change. This means we achieved an average of 8.45 litres per visit from device savings, plus the additional 10 litres for behaviour change, average visits are 18.45 litres. Note that the total assumed savings using OFWAT assumptions based on the devices fitted is approximately 20 litres/prop/day. Our original target was to complete 12,500, which we exceeded in order to make up for the discrepancy in Year 3. The success was in part re-engaging our teams by delivering further training for existing and new starters, as well as improving our IT systems and reporting of visits.

3.3.2 Customer engagement activities

We have continued customer engagement activities have occurred across the region in hotspot areas (including Colchester, Ely, Norfolk and Northampton) for Year 4. 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.

- 3,268 face to face AW events throughout May-September 2023 in hotspot areas.
- 6,342 water saving devices provided to customers during events, assumed savings 27,517 litres
- 3,761 face to face engagement via paid partnerships in hotspot areas, with 2,661 water saving devices. Total assumed savings 11,546 litres
- Online engagement resulted in an increase in customers coming to our website to order water saving kits – in total 14,880 orders. Throughout the year customers could order a garden kit (8,821 orders), bathroom kit (3,023 orders) and a kitchen kit (3,036 orders). Total assumed savings 28,002 litres.

Following the long period of dry weather in 2022-23 our focus into Year 4 was to maintain the drumbeat of water efficiency messaging, and to drive behaviour change via new partnerships. Our objective is to educate, build intent and drive behaviour change connected to water use behaviours in the home.

The Wild Tribe partnership targeted families in Northampton, delivering the following key messages:

- Understanding household water consumption
- The water cycle and how Anglian Water fit in
- Climate change and the effect it is having on the water industry, water resources & flooding
- What customers can do to help

The Wild Tribe project was aimed at families to help them understand more about water, the water cycle and how they interact with it – with a view to educate customers on the need to save water in the home. The Wild Tribe team designed & delivered exceptional educational activity boxes along with downloadable activities, all aimed at pre-school children – so that families went on the journey of discovery together. The Wild Tribe team embedded the project into the heart of the community, working in a very targeted, hyperlocal way, building on their relationships with key stakeholders within the community to share the key messaging and activity boxes into the community. The boxes were collected from key locations within the community and made available free to all, to overcome barriers of access to the materials for vulnerable customers. 96% of people took at least one new water saving action because of the project, and we received positive feedback from families.

‘Walter the Robot is now on my windowsill watching me wash up! I definitely think twice now when using water around the home, my kids do too’

‘My daughters hanging is in the window and she likes reading out the water facts to me’

‘I actually knew nothing about my water usage until we did some of these boxes. My children have learnt lots and we are doing changes around the house already’

3.3.3 Staycation

Our region is a popular ‘staycation’ location for customers from all over the country to visit, putting pressure on our water resources over the summer months. In June and July 2023 we partnered with Visit East of England to reach out to businesses that host and support our customers in hotspot locations and share messaging through the businesses trusted voice. We designed a digital Newsletter targeting businesses in Norfolk before holiday visitor numbers increased. The newsletter focussed on highlighting the reasons 'why' we need to protect water, in particular in Norfolk and provided links for businesses to request their packs directly. This was sent directly from the VEoE marketing database, reaching over 50,000 local businesses. There was a 33.5% open rate and following this 34 business engaged (ranging from campsites, family outdoor activity centres and holiday homes). Businesses could request a water saving pack including posters, activity sheets for customers, shower timers, leaky loo tablets & kitchen kits to roll out on their site. The assumed combined water savings is 2,290 litres.

3.3.4 Continuing water efficiency drumbeat messaging

We have expanded our digital channels to engage with a wider audience and capture further engagement through new social platform. We launched our Tik Tok channel to focus on sharing ‘Life Hacks’ for water saving at home and in the garden. This is aimed at reaching a younger audience to raise the importance of water savings. This series of content has now evolved into our Small Swap series of building water saving content to maintain a drumbeat across our main social channels. During hotter, drier periods we also dialled up certain messages such as linking to seasonal demand.

Insight has shown that garden activity is one of the biggest areas of consumption during the summer months, so we developed new gardening content and worked with local influencers building our on Garden Responsibly campaign from 2022.

In Year 4, to increase our digital reach and engagement we have expanded our social channels to include the following:

- Facebook,
- Tik Tok,
- Instagram,
- Google Display and
- Outbrain.

Additionally, we continue to work with social influencers to educate on water saving and directed behaviour change.

3.4 Reviewing our strategic approach for AMP 7

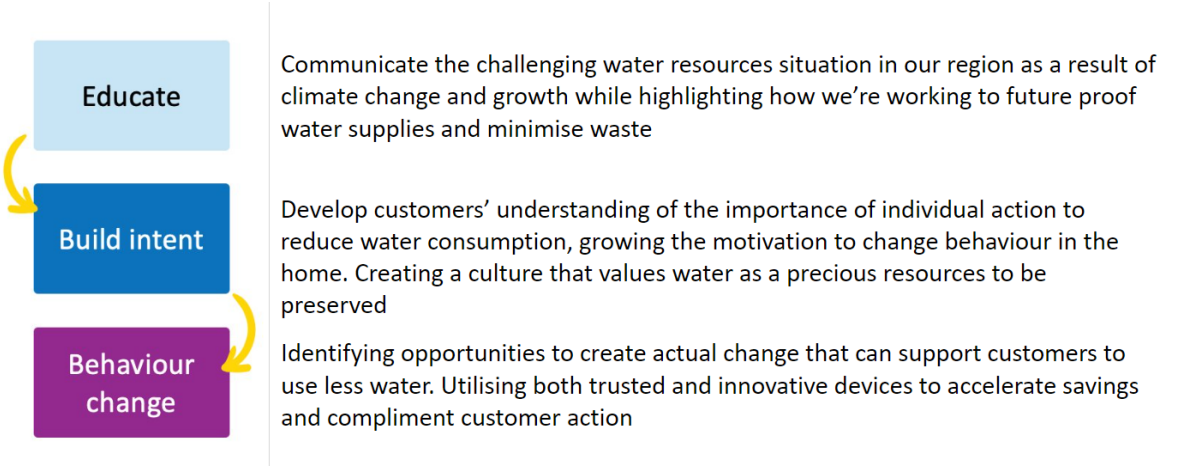
We remain fully committed to reducing consumption through a range of initiatives, especially through the introduction of our smart meter programme and digital communication strategy. As part of delivering our AMP 7 programme we have reviewed our strategic approach for driving and sustaining customer behaviour change.

Delivering behaviour change is not new in Anglian Water, and we have seen success to date by reducing PCC. However, it is getting increasingly important we broaden this work and implement and evolve the science and expertise to help us act at pace.

We are building out the strategy for demand management and beyond. We have demonstrated huge opportunities with our smart metering programme and customer engagement, informing a step change to transform how we use insights and data to inform our decision-making and planning. We continuously capture

everyday customer insight to inform our communications and approach for engagement. In addition to aligning to the strategic and operational insight from across the business. The collective insight has helped inform our behaviour change strategy, and we're building on our water efficiency approach for reducing per capita consumption.

Figure 2 - Our Strategic approach in Year 4, setting out the framework for shaping our water efficiency plans



We have a laid the foundations by educating our customers about the challenges we face in our region and communities, however we know Education and raising awareness isn't enough. We are evolving our behaviour change strategy and adapting as a team to deliver intent, drive action and create sustainable behaviour change to deliver on our purpose for social and environmental prosperity across the region.

Our framework for PCC shows that we intend to continue with 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.

We continued to work in collaboration with Waterwise and Water UK by supporting and engaging with Water Saving Week.

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.

3.4.1 Monitoring framework

Work is progressing in the development of our demand management monitoring framework and dashboard, with all relevant teams. Smart meter consumption data has now been combined with relevant influencing characteristics including tariff type, property type, Acorn category, with/without continuous flow. Visualisation and validation is proceeding, whilst we consider how to best utilise the data to progress our understanding of consumption and behavioural change. We remain fully committed to reducing consumption and meeting our targets through a range of initiatives, especially through the introduction of our smart meter programme.

3.5 Household metering

Meters are the fairest way to charge for water because customers pay for what they use. For this reason, having a meter also encourages water efficiency and we estimate savings of up to 50 l/household/d when customers switch to a measured supply. We have consistently looked to increase the number of customers who are metered, without making it compulsory (in AMP7).

91.0% of domestic properties (including voids) now have a meter fitted and 84.8% (including voids) of occupiers are charged on the basis of the volume of water which is supplied.

3.5.1 Smart metering

We are currently successfully progressing rolling out a 10-year plan to install smart meters across our region. The smart metering programme has significant benefits for optimising our networks, enabling improved customer communications on water efficiency and supporting our leakage strategy. Areas identified as water stressed are being prioritised for the smart meter programme. Arqiva is installing the radio masts which support the fixed network to obtain meter readings.

We have a target to install 1,096,397 smart meters to customers' properties by the end of 2024/25. We fitted 262,621 smart meters in 2023/24, which brings the total number of installations for the AMP to 806,307. In June 2023 we were given funding to install a further 60,000 smart meters under Defra's Accelerated Infrastructure Delivery (AID) programme. Those smart meters are in addition to the numbers quoted above. We plan to fit the 60,000 AID smart meters in 2024/25.

- The 262,621 installations include: 236,678 AMI meters for existing visual read meter household customers, 11,004 AMI meters for existing AMR meter household customers, 12,859 for visual read business customers, 603 for AMR meter business customers and 2,786 new connections).
- For 2023/24 smart meters have helped to identify 109,469 home leaks, combined with the previous year to identify 291,735 in total this AMP.
- Of the 109,469 leaks where we informed and worked with our customers to ensure that the issue was resolved by them we saw 72,224. This has resulted in 29.93 Ml/d of leakage or plumbing loss being resolved.
- We now have >800K MyAccount activated customer accounts with customer able to track their data via our online MyAccount web app platform.
- Customers have also been asked whether they wish to consent to providing hourly data to the system. Currently 275K (34%) of our smart metered customers have agreed to this.

Analysis of smart meter data has given the following insights shown in Table 9 below.

Table 9 - Smart meter insights

Item	Finding
% of HH properties with a continuous flow	11% leak on install, 4% breakout per annum
% of HH properties with a continuous flow > 7- 8l/h AMI smart meter leak trigger default (for enforcement)	27.53 %
Average size of continuous flow detected by AMI smart meter	16.62 l/h (using peak flow for all leaks)
PCC saving linked to AMI smart meter installation, with no home visit %	2.5 %

Note that only a small subset of the total continuous flow leaks are identified by their internal/external location, with the vast majority being unknown. During 2023/24 we have replaced 234,109 household meters (visual read and AMR) with AMI smart meters.

3.5.2 Enhanced metering

We have continued to actively recruit customers to switch to being measured. We will continue to work on improving this initiative by:

- Working in partnership with organisations such as Citizens Advice Bureau and Peterborough Environment City Trust, to help promote switching in enhanced metering areas

- Proactively contacting customers to promote switching via telephone, SMS and the use of personalised videos
- Using meter readings taken within the last month to calculate a more accurate estimated measured bill comparison
- Backdating savings to the last read if within the last four months
- Aligning our processes and make switching online and by telephone as easy as possible
- Making contact with customers with exceptional consumption to identify leakage.

3.5.3 Selective and optant meters

Our Selective metering programme compulsorily meters properties with unusually high consumption (for example where a swimming pool with a capacity greater than 10,000 litres is installed). Our Optant metering programmed installs meters where they have been requested by a customer.

Table 10 summarises our progress in installing meters against the schedule of outputs from our AMP7 Business Plan and our 2019 WRMP.

Table 10 - Meter installations - numbers installed in report year

Meter installation	2019-20	2020-21	2021-22	2022-23	2023-24
Selective meters - total	686	282	706	670	220
Meter optants – total	12,215	3,394	5,422	5,707	4,645
Total	**12,901**	**3,676**	**6,128**	**6,377**	**4,865**

Total water savings from selective and optant metering in the report year are estimated to be approximately 0.19 Ml/d. Meter Optant volumes for the report year are now lower than previous years due to the reduction in the pool of remaining unmetered properties following the introduction of our enhanced metering programme in AMP5. Thisresulted in a large number of unmeasured customers having meters fitted, reducing the need for customers to request a meter.

3.5.4 Percentage of households billed by meter / metered

At the end of the report year 84.8% of household properties had meters fitted and were being charged on that basis. In total 91.0% of household properties now have a meter fitted (including voids). The difference between these two is those meters fitted under the enhanced programme, which have not yet been activated for charging purposes and void properties with a meter fitted.

3.6 Demand forecast

We have made no changes to the demand forecast (including property and population forecasts) in the report year. We have now finalised the WRMP24 forecast and will review the transition between WRMP19 forecasts, actual out-turns and the revised WRMP24 base-line. We are currently beginning the re-assessment of forecast inputs as we progress to develop our WRMP29 view.

We are currently reviewing occupancy rates, household/dwelling assessments (in alignment with billing data) and non-household demand in light of recent assessments.

As we have recently received significant requests for additional non-household demand, we have developed a non-domestic revised policy position from our legal obligation; as a water undertaker we must provide water for domestic purposes, such as drinking, cooking and sanitation. As this legal obligation does not extend to the provision of water for non-domestic purposes, such as agri-food processing, we must prioritise the water we

have available for domestic users[5], now and in the future. We continue to engage with our regulators on how water resources can be developed and the water infrastructure needed to facilitate this economic growth can be funded.

4 Headroom and supply-side options

4.1 Headroom

Water Resource Zone assessments for headroom have been generated, based upon the in-year value for DI multiplied by the 2019 WRMP base-line "% of DI" target headroom uplift. These values are shown in the associated SDBI template for each required scenario and are similarly included in the Annual Performance Review tables.

4.2 Supply-side schemes progress

WRMP19 includes our Strategic Interconnectors Programme: a series of new interconnectors to connect existing infrastructure and transfer water through our region to meet supply demand. The interconnectors utilise surpluses in Lincolnshire and North Fenland to support 'downstream' WRZs.

4.2.1 Interconnector programme

In this reporting year we have completed the pipeline for the East Ruston scheme which went into supply under gravity in October 2023 delivering 2.4 Ml/d of capacity, this increases the total AMP7 benefit to date to 8.9 Ml/d. The pumping station for the East Ruston scheme will go into supply in 2024/25 increasing the capacity delivered by this scheme from 2.4 Ml/d to the full 5 Ml/d.

4.2.2 Licence trading

The proposed licence trade will allow us to abstract the volume needed to maintain output at Hall WTW, below the current licensed Hands-off-flow ("HOF"), securing the output of the works in a 1 in 200-year drought. The traded licence is not due for review until 2034. We shall be submitting the licence amendment to the Environment Agency imminently, having worked with the Environment Agency and other stakeholders on the pre-application.

5 Changes to WRMP options

In this reporting year there have been no change to the scope and capacity of the supply side options, just the timescales for delivery, see scheme delivery tab of the data table.

In June 2023 we were given funding to install a further 60,000 smart meters, as part of our full smart meter roll-out, under Defra's Accelerated Infrastructure Delivery (AID) programme. Those smart meters are in addition to the 1,096,397 smart meters we are committed to install by 2024/25. Currently we have fitted 806,307 smart meters. We plan to fit the 60,000 AID smart meters in 2024/25.

For 2024/25, we plan to continue with the raised Grafham control curve to provide essential winter refill during drought. This was originally planned to end in 2024 with the development of supply options but extending this to 2025 will provide necessary resilience.

[5] This domestic purpose extends to non-household properties when water is needed for domestic purposes.

6 Forward Look to WRMP24

We published our revised draft WRMP24 in August 2023. We are also continuing work as part of regional groups Water Resources East and Water Resources North to develop regional plans for water resources management.

The following sections describe a forward look to WRMP24 to highlight risks to our planned WRMP19 outcomes that may affect the delivery of our WRMP24. Appendix 2 includes a detailed action plan that sets out the actions we are taking to ensure we are on track for WRMP24.

6.1 Supply forecast

Any delays to our AMP7 options could have implications on the supply forecast for WRMP24. The completion of the Strategic Pipeline will enable caps to many of our groundwater sources, which are assumed within the baseline supply forecast for WRMP24. In the meantime we are working with the EA on OPI cases to protect public water supplies and to develop a package of environmental mitigation options prior to the delivery of the Strategic Pipeline.

6.1.1 Raw water losses, treatment works losses and operational use

Raw water losses, treatment works losses and operational use totalled 85.35 Ml/d in the 2025/26 year of our revised draft WRMP24 tables. This compares to a value of 90.27 Ml/d in the annual review tables for this year, noting that this excludes returns.

The methodology for forecasting these losses for WRMP24 is described in section 4.3 of the revised draft WRMP24 supply forecast.

6.1.2 Outage

The 2025/26 outage forecast for WRMP24 totalled 23 Ml/d (1.7% of deployable output) in the Dry Year Annual Average scenario, and 13.4 Ml/d (0.7% of deployable output) in the Dry Year Critical Period scenario, as set out in our WRMP24 tables.

This compares to a total outage value of 22.18 Ml/d in the annual review tables for this year.

6.2 Demand forecast

The 2023/24 outturn values show that we are on track to meet the WRMP24 forecast position for 2023/24 and 2024/25 (base-lined to 2021/22) with regard to,

- overall demand (DI) which is less than that forecast,
- Per capita consumption, which again is lower than the forecast value. and
- Non-HH demand which is in line with anticipated business consumption.

However, it is noted that leakage remains above our WRMP24 forecast value and we are, therefore, enacting our mitigation Service Commitment Plan, as described in the Action Plan in Appendix 2.

6.2.1 Distribution input

We have now published our Revised Draft WRMP24 forecasts for demand. These forecasts have been base-lined to the 2021/22 water balance, generating values for all subsequent years (This year was chosen, as 2022/23 selected a degree of volatility due to in-year influences of the ‘cost of living’ crisis).

For Revised draft WRMP24 we forecast demand (DI) to be:

Table 11 - Demand performance against WRMP24

Demand (Ml/d)	2023-24 Actual	2023-24 WRMP24 Forecast	2024/25 WRMP24 Forecast	2025/26 WRMP24 Forecast
NYAA Demand (Ml/d)	1151.76	1157.89	1157.94	1153.92
DYAA Demand (Ml/d)	1174.45	1176.98	1177.09	1173.01

- The 2023/24 DI value (1151.76 Ml/d) is below both the 2023/24 NYAA value (1157.89 Ml/d) and 2023/24 DYAA value (1176.98 Ml/d) forecast.
- The 2023/24 DI value (1151.76 Ml/d) is also below both the 2025/26 WRMP24 base-year NYAA value (1153.92 Ml/d) and 2025/26 DYAA value (1173.01 Ml/d) forecast.

6.2.2 Leakage

Three year rolling leakage is assessed to be 182.0Ml/d, which is above our year 4 target of 170.0Ml/d. This is a 6.2 per cent reduction against the 2019/20 baseline, below our target reduction of 12.4 per cent.

In April 2024 we wrote to Ofwat to explain that we uncovered an issue with the figure reported in 2022-2023 for Non-HH demand due to a bug in a new system. This issue has now been corrected resulting in a restatement of the year 3 leakage figure to 190.5 Ml/d, an increase of 7.9 Ml/d. Performance in 2023-24 represents an 8.4 Ml/d decrease from the restated 2022/23 figure.

Table 12 - Leakage performance against WRMP24

Leakage (Ml/d)	2023-24 Actual	2023-24 WRMP24 Forecast	2024/25 WRMP24 Forecast	2025/26 WRMP24 Forecast
Ofwat target (three-year average)	170.0	170.59	167.49	165.20
Actual (one year)	182.1	167.57	164.22	163.81
Actual (three-year average)	182.0	-		

Note that current leakage is significantly above the forecast value, based upon the 2021/22 water balance base-line of 173.54Ml/d. We are currently instituting our service commitment plan to accelerate leakage reduction and continuing improvement of our smart meter continuous flow 'Customer Leakage Journey'.

6.2.3 PCC

For our Revised draft WRMP24 Per capita consumption (PCC) has been forecast to be:

Table 13 - NYAA PCC performance against WRMP24

PCC (l/h/d)	2023-24 Actual	2023-24 WRMP24 Forecast	2024/25 WRMP24 Forecast	2025/26 WRMP24 Forecast
NYAA Measured PCC	120.63 l/h/d	125.80	124.71	123.25
NYAA Unmeasured PCC	165.39 l/h/d	174.27	173.86	173.48
NYAA Average PCC	127.56 l/h/d	133.15	131.79	130.15

Table 14 - DYAA PCC performance against WRMP24

PCC (l/h/d)	2023-24 Actual	2023-24 WRMP24 Forecast	2024/25 WRMP24 Forecast	2025/26 WRMP24 Forecast
DYAA Measured PCC	120.63 l/h/d	128.31	127.20	126.79
DYAA Unmeasured PCC	165.39 l/h/d	177.74	177.32	176.93
DYAA Average PCC	127.56 l/h/d	135.80	134.41	133.68

Per capita consumption is currently significantly below our WRMP24 forecasts, due to the impacts of our smart metering program (continuous flow reduction), recent cost of living impacts and the reassessment of the Anglian Water region population (accounting for single meter/multiple dwelling properties).

Appendix 1. Company specific actions from 2023 Annual Review

The EA identified two specific actions following our 2023 Annual Review. The table below sets out the identified issues and the actions required. Appendix 2 contains our action plan to meet resolve these issues.

Table 15 - EA Improvements to WRMP19 Annual Review 2022/23

EA identified issue and impact	Action and deadline
SDB Whilst your reported company-wide SDB is in surplus, you have reported deficits in nine WRZs. In five of the nine WRZs, reported actual deficits are above your planned headroom. You have explained why you consider the reported supply demand deficits as artificial for some WRZs, but we are concerned that you are not representing your annual review data and SDB in a way that reflects your true losses, operations and supply risk across your WRZs. For example, you state that your method used to report treatment works losses and operational use (TWLOU)can cause the loss to appear higher than the WRMP19 forecast. **Impact**: A deficit is concerning and suggests that there may be an increased risk to your customers' security of supply in a dry year, such as that of 2022-23. Accurate and representative data is integral to demonstrating progress and delivery of your WRMP. Your reported SDB should be consistent with your actual outturn supply-demand situation.	You should: Provide us with an action plan to reduce the number of WRZs in deficit to the lowest number that is reasonably practicable in AMP7. Your plan should clearly identify the actions you will take, the dates for delivery and evidence of progress to date. • Deliver the action plan. • Represent your annual review data in a way that better reflects your true losses, operations and supply risk across your WRZs. For instance, to better represent TWLOU in future annual review submissions you could, for example, include true losses in deployable output modelling.
Leakage Reported total leakage is 5% higher than forecast and is 5.3% higher than last year. In addition, you are not on track against your WRMP24 baseline leakage forecast of 175.2 Ml/d for 2022-23, and therefore to meet the 161.4 Ml/d by 2025-26 at the start of the WRMP24 planning period. **Impact:** Failure to achieve your leakage reductions may result in an increase in abstraction at sources that could cause deterioration in the status of water bodies. Achieving your leakage reductions is important reputationally, particularly when you are asking your customers to reduce their water use. Current performance makes achieving the planned WRMP24 starting point, and subsequent glidepath, more difficult.	You should: • Provide us with an action plan that demonstrates how you plan to bring leakage in line with your WRMP19 leakage forecast. Your plan should clearly identify the actions you will take, the dates for delivery and evidence of progress to date. • Deliver the action plan.

Appendix 2: WRMP19 Annual Review 2024 Action Plan

The table below describes our action plan submitted in November 2023 to resolve the issues raised by the EA from last year's Annual Review and also includes actions we have identified as part of the 2023/24 review. Actions 1-14 are in response to last year's Annual Review but the progress to date column has been updated to reflect the final outturn data. Actions 15 to 19 have been added as part of the 2023/24 submission.

Table 15 – WRMP19 Annual Review 2023/24 Action Plan

Action number	Action	Progress to date – 2023/24	Dates for delivery
1	Our industry leading smart metering rollout will continue, focused on water stressed areas.	• 262,621 smart meters have been installed in 2023/24, in addition to the 542,864 installed over the first three years of the AMP. • The data from the smart metering rollout has enabled 109,469 leaks to be identified over the 2023/24 period; repairing these leaks has kept peak flow volumes of over 29 Ml/d in the Company's water network. • The smart meter rollout has facilitated meter penetration increasing to 91.0% of domestic properties (including voids), with 84.8% (including voids) of occupiers being charged based on the volume of water supplied. • We are currently recording PCC for smart metered customers of 115.58 l/h/d, compared with 120.63 l/h/d for measured customers and 165.39 l/h/d for unmeasured customers, with the overall PCC being 127.56 l/h/d.	March 2025
2	We will continue our engagement with customers, focused on water efficiency campaigns and education of the challenges that the East of England faces.	• We have continued customer engagement activities have occurred across the region in hotspot areas (including Colchester, Ely, Norfolk and Northampton) for Year 4. 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. ▪ 3,268 face to face AW events throughout May-September 2023 in hotspot areas. ▪ 6,342 water saving devices provided to customers during events, assumed savings ▪ 3,761 face to face engagement via paid partnerships in hotspot areas, with 2,661 water saving devices. Total assumed savings 11,546 litres ▪ Online engagement resulted in an increase in customers coming to our website to order water saving kits – in total 14,880 orders. Throughout the year customers could	March 2025

Action number	Action	Progress to date – 2023/24	Dates for delivery
		order a garden kit (8,821 orders), bathroom kit (3,023 orders) and a kitchen kit (3,036 orders). Total assumed savings 28,002 litres.	
3	We will continue to work closely with our customers to ensure they are supported through the process of repairing private leaks in a timely manner.	• The data from the smart metering rollout has enabled 109,469 leaks to be identified over the 2023/24 period; repairing these leaks has kept peak flow volumes of over 29 Ml/d in the Company's water network.	March 2025
4	We will continue to utilise smart meters to connect customers with their data, reducing the gap between perception and actual consumption. This will ensure that usage feels relevant and quantifiable for customers	• Our intention is to deploy full MyAccount service to a minimum of 80% of customers (with aim for 6 million annual MyAccount log-ins by March 2024). • We will utilise this engagement to ensure that customers can be fully involved with their consumption data and are made aware of any leaks in a timely fashion. We are also seeing significant reductions in customer continuous flow (cspl and plumbing losses) due to the timely information available for detection from smart meters. • Additionally, we are trialling 'Seasonal tariffs' from beginning of 2024 through to the end of the AMP7 and into AMP8. • Flow restrictors are also be trialled in Q3 of 2024 through to Q1 of 2025. • Our water efficiency programme, aided by the rolling out of smart meters, has meant that Anglian Water achieved its lowest ever Per Capita Consumption (PCC) value of 127.56 litres per head (l/h/d), a reduction of 4.75 l/h/d reduction from the previous year 132.31 l/h/d.	March 2025
5	We will continue to identify continuous flow through the implementation of smart metering; this will indicate	• Of all active smart meters installed by the end of Year 4, 58% of customers are registered with MyAccount and engaging 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.	March 2025

Action number	Action	Progress to date – 2023/24	Dates for delivery
	customer side leakage – either customer supply pipe or plumbing loss	We consistently have around a 73% open rate, which is one of our most engaged emails and subsequently we have seen that on average these households will save 3 litres/day compared to those who don't receive the monthly communications. At the end of Year 4 we also migrated our website users • 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. • We continue with our customer engagement activities.	
6	We will continue to implement our recently developed protocol regarding new requests for non-household demand; this policy is significantly limiting the amount of water available. Whilst this policy will contribute to the Company's SBD actions, it may have a negative impact on development in the East of England.	• We are currently only accepting non-domestic requests at a level of 0.02Ml/d. In total, we have approved 5.5 Ml/d of non-household requests in 2023-24. During the same time period, we have rejected a number of connection applications; these requests for new non-household supplies were typically from industries such as drinks manufacturing, livestock production and waste management. In total, these requests, which we have declined, were 28 Ml/d. • We continue to work with Regulators to determine how we can ensure the East of England has the water it needs for economic growth.	March 2025
7	The development of a demand management monitoring framework will continue. This demand management framework will include new data analysis of customer usage to better understand customer behaviour and how water is used within the home. This will also help us determine the impact of water efficiency support and adapt our activity based on how effective it is.	• The data digitalisation system has now been built with work progressing on analysis; this allows us to analyse smart meter data by geography and segment.	March 2025
8	Enhanced pressure monitoring (EPM) will be progressed; this will see us install	• Enhanced Pressure Monitoring (EPM) — by installing multiple pressure monitors on our pipes we have better visibility of damaging transient activity — necessary to achieve calm, controlled	March 2025

Action number	Action	Progress to date – 2023/24	Dates for delivery
	multiple pressure monitors on our pipes so we have better visibility of damaging transient activity.	networks: 80% of District Metered Areas with Enhanced Pressure Monitoring coverage by the end	
9	Pressure optimisation will continue to install assets such as pressure reducing valves or pump controls; these will help us optimise pressure in our pipes, allowing us to achieve a calm proactively managed network.	• Pressure optimisation — by installing assets such as pressure reducing valves or pump controls, we can optimise pressure in our pipes to achieve a calm proactively managed network: 24 new, and optimisation of 20 existing, pressure managed areas by end of 2024.	March 2025
10	We will complete transient identification and reduction – we use the data from our pressure monitors and our pressure-controlling assets to detect and eliminate damaging transients.	• Complete exploration phase by end of 2025	March 2025
11	Highly skilled leakage teams equipped with the latest technology will target leakage in DMAs that have been persistently above target	• In 2023/24 we had 223 roles in our operational proactive leakage team. (175 are field based detection roles). • These are supported by 42 analytical roles • In 2023/24, 15,007 leaks were located through proactive detection activities (up from 14,134 in previous year)	March 2025
12	Reducing leakage run times by: • Using satellite imagery in rural areas to identify leaks. • Identifying leaks as they breakout. 27% of our network is covered by fixed hydrophone sensors which we will use to identify leaks as they breakout, reducing leak run times.	• On track to deliver: • Using satellite imagery in rural areas to identify leaks: 5,000km mains surveyed per year. • 27% of our network is covered by fixed hydrophone sensors. We are using these to identify leaks as they breakout, reducing leak run times: Team of 40 people dedicated to fixed sensor programme. • The software roll out needed to enable differentiation between water used by customers and leakage is being progressed.	March 2025

Action number	Action	Progress to date – 2023/24	Dates for delivery
	• Introducing software to help us differentiate between water used by customers and leakage. This will be rolled out across the network.		
13	Leak repair work planning to introduce working practices to achieve same day repair and reinstatement of non-urgent repairs and minor leaks from stop taps. The improved productivity of repair process will free up repair team time to focus on more significant leaks.	• Improved productivity of repair process and freeing up of repair team time to focus on more significant leaks: On track to deliver target of 4 jobs per day.	March 2025
14	We will continue our frequent burst mains programme; this is an annual ongoing programme of renewing water mains with the greatest risk of failing.	• On track to renew approximately 10km of the highest burst rate mains, using the most efficient renewal techniques in Year 4. This programme will continue in Year 5.	March 2025
15	Leakage reduction: we are currently implementing actions as described in our 'Service Commitment Plan November 2023'	Our strategy includes: • Rolling out a further 1.2 million smart meters by 2030, in addition to the 1.1 million currently scheduled • A fixed data network for areas with smart meters • Collecting and using additional smart meter data to identify customer side leakage. By 2030, we estimate smart meters, enabling behavioural change and improvements in leakage performance will save an additional 18.1 Ml/d. • We also plan to install boundary boxes and smart meters on properties with shared supply pipes, for example, Victorian terraced houses. This will allow us to use data to identify and reduce leak run times on these shared services and work with customers to repair the leaks.	2030
16	Re-prioritisation of the Strategic Interconnector Programme to deliver environmental obligations	• Following the unprecedented circumstances and extreme challenges which we have experienced we have engaged with Ofwat about the delays to our Strategic Interconnector Programme and are reprogramming the works to be complete in AMP8.	August 2024

Action number	Action	Progress to date – 2023/24	Dates for delivery
		• Delivery of the Southern section is prioritised to meet our key environmental obligations in these areas. • We shall be able to share the reprioritised programme later this summer.	
17	Reduce impact of Strategic Interconnector Programme delays on the risk of deterioration	• We are working closely with the EA to develop a package of environmental mitigation options to be delivered until the Strategic Pipeline allows us to meet licence reductions. • We are also reviewing enhanced demand management actions in target WRZs.	March 2025
18	To track and manage raw water losses to align with WRMP24 forecast	• We have developed a strategy to improve the quality of our treatment water losses measurement. Detailed audits been carried out at all our WTW sites to quantify the extent of potential losses. • The outcome of these audits will continue to be used to identify and prioritise mitigation approaches as well as validate the losses values used in the WRMP. • We have also developed a site leakage recording app, to facilitate more efficient recording of potential raw water loses in the future. • Our WRMP24 strategy includes 13 backwash recovery schemes to reduce treatment and raw water losses at our WTWs. Further design and development of these schemes will continue as part of our capital delivery process.	March 2025
19	SDBI reporting	• We carry out monthly monitoring of the supply demand balance of all our WRZs using a slightly simplified version of the SDBI, to identify any supply demand risks. This includes a review by a steering group, which brings together key stakeholders from our Water Resources, Demand management and behaviour change, Optimisation, Water Quality, Operations, Asset Health, and Asset Delivery Planning teams. • As part of this process, any mitigation actions required to address identified supply demand risks are determined and prioritised. • For 2023/24 for our SDBI submission tables, we have recorded DYAA theoretical deficits in Bury Haverhill and Central Essex. • Bury Haverhill has been prioritised for leakage reduction activities and pressure management. We are also progressing our smart meter roll-out in these zones, which is already assisting in reducing continuous flow and customer leakage. In the longer term, customers in Bury Haverhill and Central Essex WRZs will have additional resilience enabled by the WRMP19 strategic interconnector scheme. This will provide additional inter WRZ	March 2025

Action number	Action	Progress to date – 2023/24	Dates for delivery
		connectivity and allow water to be transferred from areas of surplus further north in our region. • With regard to deficits as reported in the Annual Performance review tables, it should be noted that these tables reflect a different assessment of key components (as previously described), leading to a different view of supply/demand balance risk.	

Appendix 3. Annual Review Table Commentary

The Annual Review (AR) table (first tab) requires a mixture of theoretical (e.g. DO) and outturn (e.g. inter-zonal transfers, DI) data. Theoretical data is based on WRMP19. Outturn data is for FY23/24.

The mixture of data types gives rise to artificial supply demand deficits for some Water Resource Zones. These are artificial deficits in that:

- They don't represent genuine supply problems in the Water Resource Zone during the reporting year; there were no issues with supplying customers in the reporting year.
- They don't represent security of supply issues in the event of a severe drought and dry year demand; the SDBI is 100 (green) for all scenarios.

Artificial deficits are produced for the following reasons:

- The AR table compares severe drought DO with DI, outturn losses and zonal outage. The reporting year did not experienced drought conditions. If there had been a severe drought then demand restrictions would have been in place (lowering DI), losses would have been further minimised and outage reduced. DO may have also been increased via use of a drought permit.
- Losses are included in the calculation based on the recorded difference between inflow and outflow from Water Treatment Works. In reality, in many cases this water isn't a true loss, for example it is returned to a reservoir and available for re-abstraction. However, in the AR table (first tab) it is subtracted from DO and therefore lowers WAFU.
- The inter-WRZ transfers included in the AR table (first tab) are based on actual transfers. Given that the normal year DO is higher than the severe drought DO, operational decisions may be made to transfer water in a way that wouldn't be implemented in a severe drought. This can be seen in adjacent WRZs that share interconnectivity, for example between the Ruthamford, Bourne and the Essex zones, where water can be transferred between the WRZs and where there is no true deficit as the combined SDB is positive. The SDBI assessment is based on the transfer capacities between WRZs and therefore represents the true SDB in a severe drought.

Some of these issues are addressed in the DYAA adjusted table (second tab), where we have adjusted internal transfers between WRZs to better represent the SDB. These adjustments and assumptions used in the data tables are described below.

Outturn data tab

- Note that as part of line 6.1_{AR} we are also including exports to NAV developments within the Anglian Water Region.
- The water balance and WRMP have different assumptions on which WRZ Stoke Ferry WTW is located within. In WRMP19 Stoke Ferry WTW forms part of the North Fenland WRZ DO as this is where the majority of its output supplies. The actual works is located within South Fenland hence the representation in the water balance, where the supply in North Fenland is met by an internal export from South Fenland. This difference in representation results in a deficit in South Fenland with a surplus in North Fenland, however we have adjusted the internal transfers in the DYAA tab to align the assumptions used in the WRMP19, see below.
- The DO within the tables had the transfer between Rutland (RTN) and Saltersford (South Lincs) already taken into account (i.e. post-transfer). For this reason, the transfer volumes have been moved back to the original WRZ, i.e. a pre-transfer DO.
- As part of our table review we have updated the QA calculation for DI, in order to account for potential double counting, as the defined value for WTU includes void property cspl. We have also revised the household metering calculation, such that it aligns with the total number of metered customers (including voids).
- Note that for Ruthamford South we have included the theoretical transfer to Affinity of 84.23Ml/d, as opposed to this year's actual transfer of 50.14Ml/d.

DYAA Adjusted tab

- Within the DYAA adjusted table, the actual outturn losses have been replaced for RTS with the losses as quoted in WRMP19. The justification for this is that much of the quoted outturn losses are from Grafham WTW, where much of the loss is returned back to the reservoir and therefore not lost from the system.
- Within the DYAA adjusted table, the actual outturn outage for RTS, which is all from our Clapham WTWs, pushes this zone into a theoretical deficit. The need for a more reliable asset has been identified in WRMP24 and a scheme has progressed to resolve the issues that currently apply.
- The internal exports/imports have been adjusted to reflect the max capacity of transfers between zones. The cells in rows 3.1, 6.1 have been highlighted green where a transfer has been adjusted. The adjusted transfers are,
    - South Essex to Central Essex – adjusted within max limit of 0.7Ml/d to close deficit
    - Thetford to Ixworth - adjusted to max limit of 1.8Ml/d
    - Ixworth to Bury Haverhill - adjusted within max limit of 3Ml/d to close deficit
    - North Fenland to South Fenland – to close deficit
    - Bourne to Ruthamford North - adjusted within max limit of 15Ml/d to close deficit
    - Ruthamford North to Ruthamford West - adjusted within max limit of 90Ml/d to close deficit
    - Ruthamford West to Ruthamford Central - adjusted within max limit of 50Ml/d to close deficit (note RTC also receives transfer from RTS which has not been adjusted for this tab)
    - Ruthamford North to Ruthamford South – adjusted within max limit of 40Ml/d
- For Bury Haverhill WRZ we have also include the benefits of tankering as used for the SDBI. We have included a tankering benefit of 1.92Ml/d from Newmarket WRZ.
- Note that for Ruthamford South we have included the theoretical transfer to Affinity of 84.23Ml/d, as opposed to this year's actual transfer of 50.14Ml/d.

Scheme delivery

- The benefits provided in column W reflect the SDB benefit from supply-side options rather than option capacity as reported in the AMP7 Performance Commitment.