WRMP24 Water Resource Planning Tables

Supporting notes

April 2025

1 Table Updates

We have updated our published WRMP24 tables to,

1. Align our demand forecast with our Business Plan
2. Reflect the re-profiled AMP7 supply-side options

For our Business Plan we updated our demand forecast to a new base year of 2023/24. The new demand forecast shows a small overall reduction in demand compared to our previous published WRMP tables. To align to our Business Plan submission we have agreed with our Regulators to re-issue our WRMP24 tables to include the updated demand forecast. Going forward this will ensure we are reporting against aligned targets for leakage, PCC and non-household demand between all plans and Regulators.

We have re-programmed the delivery of our AMP7 strategic pipeline, with the final date for completion being April 2028. This includes an interim delivery of a temporary solution for the southern section by August 2025 and full completion by April 2028. We have worked closely with the Environment Agency to reprofile our abstraction licence reductions accordingly and reflected these changes in our WRMP24 tables and our representation on Ofwat's review of our draft Business Plan. Table A below summarises the updates we have made.

Table A: Updates to WRMP24 tables

Table	Updates
1g	Aligned to Essex and Suffolk Water's Table 1g.
2	Updates to demand forecast to a new base year of 2023/24.
3	Updates to all supply demand balances (DYAA and DYCP) to reflect • updates to demand forecast, • re-profiling of strategic pipeline and relevant mitigation forecast, • re profiling of licence reductions to annual average, and • recalculation of DYCP supply forecast.
4	Costs for DMOs updated to reflect new demand forecast and inclusion of AMP8 OPI to support re-programmed strategic pipeline.
5	Updated to reflect updated supply demand balances.
6	Updated to include demand savings relative to new forecast and inclusion of the drought measures required for re-programmed strategic pipeline mitigation.
5a-5c	No updates
7	Updated with revised demand management options. There are no changes to supply-side options.
8	Updated with revised demand management options. There are no changes to supply-side options.

The company level supply demand balance shows an initial surplus compared to the previous data tables. This surplus is limited to the first few years of the plan prior to completion of the strategic pipeline.

This arises due to following factors:

- ‘Locked in’ resource in Lincolnshire that cannot be utilised in other zones without the strategic pipeline.
- The mitigation measures implemented prior to completion of the strategic pipeline, such as retaining groundwater licences, generate local benefits exceeding the requirements for local demand. This surplus cannot be moved to other areas without the strategic pipeline.

Given that the surplus availability is limited to up to 2029, it is unsuitable for addressing non-household demand and does not alter our decision to restrict new non-domestic requests.

2 Table 1 Base year licences

The base licences and deployable output values quoted are assuming a 2025/26 base year, 1:200 drought resilience, recent actual peak and climate change impact in 2025/26.

3 Table 2 WC Level Data

3.1 Table 2d: WC Level DYAA – key components baseline

The Supply demand balance (10BLW) in 2049/50 varies from the one reported in Figure 1 in the Main WRMP report,

- The deficit in the Main report, Figure 1 is 585Ml/d. This does not include the supply demand balance for Hartlepool WRZ as the surplus in this remote zone cannot be used to meet the deficits in the rest of the Anglian water region.
- The deficit in the tables (10BLW) is 589.21Ml/d. The surplus in Hartlepool WRZ 2.11Ml/d. If Hartlepool is excluded from the supply demand balance the equivalent number is 591.32Ml/d.
- The Main report, Figure 1 also includes the benefit of drought demand savings of 6.1Ml/d, which are not included in the tables baseline supply demand balance. By including the drought demand savings the deficit is reduced to 585.22Ml/d.

4 Table 3 WRZ supply demand balances

4.1 Table 3 Updates

For the table re-issue we updated elements of the supply forecast and preferred most likely scenario, these include,

- The DYCP forecast has been updated to use the latest maximum treatment works capacity to align with the data collected for the Ofwat Unplanned Outage ODI (asset health indicator). This has the impact of reducing the overall peak DO available from 1627.4 Ml/d to 1616.2 Ml/d, a reduction of 11.2Ml/d. However, this has not resulted in any supply demand deficits over the planning period.
- For the North Norfolk Coast, Norfolk Aylsham and Norfolk Happisburgh WRZs, we have re-run the Aquator model for both the DYAA and DYCP scenarios with the updated treatment

works capacities. This has provided an additional 2.4Ml/d overall in DYAA and an increase of 1Ml/d in DYCP across these 3 zones.

- The preferred most likely scenario is based on utilising all available surplus to meet licence caps to annual average as soon as reasonably practicable. The updated demand forecast provides an overall reduction in DI compared to the original WRMP tables, however the distribution between WRZs is slightly different. This means in some WRZs it is not possible to meet the licence caps to average on the same timescales as the original tables. We have reprofiled the licence reductions to still provide the same quantity of reductions regionally, as Table 29 in the Decision Making report, but in different locations. All licences will be capped to average by 2036 once the Fens Reservoir is completed, as in the original tables.

The tables include the reprofiling of the strategic pipeline based on the following dates,

- Suffolk East WRZ to Essex South WRZ: August 2025 (temporary solution)
- Ruthamford North WRZ to Suffolk East WRZ: November 2027
- Lincolnshire to Ruthamford North WRZ: April 2028

The supply demand balances include retaining current licences (i.e. not capping to max peak) and drought measures to meet demand before the strategic pipeline is completed. All the interventions and their benefit are listed in Table B below. These have not been previously included in the Supply Forecast for the final WRMP24 submission.

Table B: Interventions required before the strategic pipeline is operational

WRZ	Interventions	Benefit (Ml/d)	Notes
Essex Central	Retaining current licences	0.06	DO benefit of not moving to a recent actual peak cap in 2025 for some of our abstraction licences
Essex South	Retaining current licences	1.16	DO benefit of not moving to a recent actual peak cap in 2025 for some of our abstraction licences
	Rolling licence management	0.79	DO benefit of abstracting above the equivalent annual average rate on our multi-year abstraction licences for a temporary duration
	Drought demand savings*	1.68	DO benefit of applying demand saving measures e.g. TUBS and NEUBS, during the reference drought model run
	Drought permit*	3.88	DO benefit of applying a drought permit during the reference drought model run
Fenland	Retaining current licences	6.69	DO benefit of not moving to a recent actual peak cap in 2025 for some of our abstraction licences

WRZ	Interventions	Benefit (Ml/d)	Notes
	Retain original HoF at Marham	13.62	DO benefit of retaining the current licensed Hands-off-flow condition at Marham surface water
Lincolnshire Bourne	Retaining current licences	7.60	DO benefit of not moving to a recent actual peak cap in 2025 for some of our abstraction licences
Suffolk East	Retaining current licences	1.71	DO benefit of not moving to a recent actual peak cap in 2025 for some of our abstraction licences
	Delayed river support cap	2.32	DO benefit of not supporting local waterbody flow with PWS-licensed water from Raydon
	Drought demand savings*	2.47	DO benefit of applying demand saving measures e.g. TUBS and NEUBS, during the reference drought model run
	5yr licence management and use of emergency storage in drought	2.96	DO benefit of abstracting above the equivalent annual average rate on our multi-year abstraction licences for a temporary duration. This also includes the benefit of abstracting some or all of the emergency storage volume reserved at Alton Reservoir
Suffolk Ixworth	Retaining current licences	3.81	DO benefit of not moving to a recent actual peak cap in 2025 for some of our abstraction licences
Suffolk Sudbury	Retaining current licences	1.26	DO benefit of not moving to a recent actual peak cap in 2025 for some of our abstraction licences
Suffolk Thetford	Retaining current licences	2.35	DO benefit of not moving to a recent actual peak cap in 2025 for some of our abstraction licences
Suffolk and West Cambs	Retaining current licences	4.00	DO benefit of not moving to a recent actual peak cap in 2025 for some of our abstraction licences
	No HoF on Lark sources	6.19	DO benefit of retaining the current licensed Hands-off-flow conditions at Bury Kings Road and Rushbrooke

WRZ	Interventions	Benefit (Ml/d)	Notes
	Retain Wixoe licence	4.24	DO benefit of retaining the current groundwater source at Wixoe

*Application of these benefits defined by a specific trigger or triggers e.g. reservoir storage

In Year 1 of the DYAA final plan the pipeline between Suffolk East and Essex South is required to transfer 2.75Ml/d on average over the year. This is achievable over the remainder of the year once the pipeline is completed in August 2025. Note that in the DYCP scenario this transfer is not required to meet demand in Year 1. To provide adequate resource for the transfer the following mitigations in Suffolk East WRZ are required up to 2029/30, after the strategic pipeline is completed.

- River support cap delayed (+2.32 Ml/d)
- Demand savings (+2.47 Ml/d)

In addition to the measures listed above we have engaged with numerous stakeholders to develop mitigation measures to the impacted waterbodies, aiming to build on mature catchment plans and ongoing work to maximise benefit. These mitigations include river restoration and wider catchment improvements.

We are implementing an enhanced package of demand management measures including compulsory metering, leakage reduction and an extension to our summer tariff trial.

4.2 Table 3a: DYAA - Baseline

The supply data in Table 3a uses deployable output in a 1:500 year drought with our licence capping scenario 6, see Section 5.2.2 of the WRMP24 Decision Making technical supporting document.

The following data is used from 2025/26 to 2049/50,

- 3BL and 5BL – imports/exports to other companies based on 1:500 drought
- 6BL – Deployable output in a 1:500 year drought
- 7.1BL – climate change impact relative to a 1:500 drought
- 7.2BL – Time limited licences capped to recent actual annual average from 2025/26. All other permanent licences to recent actual annual average from 2030/31.
- 7.5BL – no drought demand savings
- 12BL –has been updated in line with Table Guidance to exclude non-HH void property attributed demand which is included in the Water Taken Unbilled volume (Line 21BL)
- 21BL Water Taken Unbilled now includes Non-HH void property demand.

4.3 Table 3b: DYAA – Final plan Options

Our WRMP24 preferred plan is based on our preferred most likely scenario which has been developed through Policy decision modelling and Customer and stakeholder preferences, see Sections 5.2 and 6.2 of the WRMP24 Decision Making technical supporting document.

Our preferred scenario is based on,

- Drought resilience to 1:500 from 2040/41 for our Ruthamford WRZs and 2039/40 for all others.

- Climate change relative to 1:200 from 2025/26 to 2039/40 (or 2038/39) and 1:500 from 2040/41 for our Ruthamford WRZs and 2039/40 for all others.
- Licence cap scenario 8 - time limited licences reduced to average recent actual by 2030, all licences by 2030-2036.
- Includes the benefits for drought demand savings for surface water zones.

To represent our preferred most likely scenario we must adjust the assumptions used in the baseline. These adjustments are listed as options in Table 4, as follows,

- Adjustment for Licence cap scenario 8
- Adjustment to 1:200 drought – this includes the adjustment to climate change relative to drought.

For each relevant WRZs these adjustments form part of the data in 6.3FP Other options to increase deployable output.

4.4 Pre-plan data 2019/20 to 2024/25

Our WRZs have changed between WRMP19 and WRMP24, some have been split into smaller zones and others have been combined into larger WRZs, see Section 4.1 of the WRMP24 Decision Making technical supporting document.

To complete the pre-plan year data we have used a combination of modelled and hindcasted data.

We have used our WRMP24 Aquator model to estimate the deployable output for the pre-plan years, but with the AMP7 investments removed from the model, i.e. the interconnectors being developed in AMP7 (and included in our WRMP24 baseline), were removed from the model. This is not the data used for WRMP19, which was based on a different set of assumptions, see Table 8 of the WRMP24 Decision Making technical supporting document.

For demand, outage and target headroom we have used the WRMP24 data from 2025/26 and hindcasted them back to the pre-plan years.

For some WRZs there is a residual deficit in the pre-plan years in the final plan tables. It should be noted that the WRZs developed in WRMP24 do not technically exist until 1st April 2025, and as such will not be reported against these in the SDBI or Annual review until this date.

5 Table 4 Option Appraisal Summary

5.1 Column E: Option Type

We have listed the adjustments required to represent our preferred most likely scenario in Table 4. As agreed with the Environment Agency for the draft WRMP submission we have categorised these as ‘Other changes to DO’. This applies to adjustments for

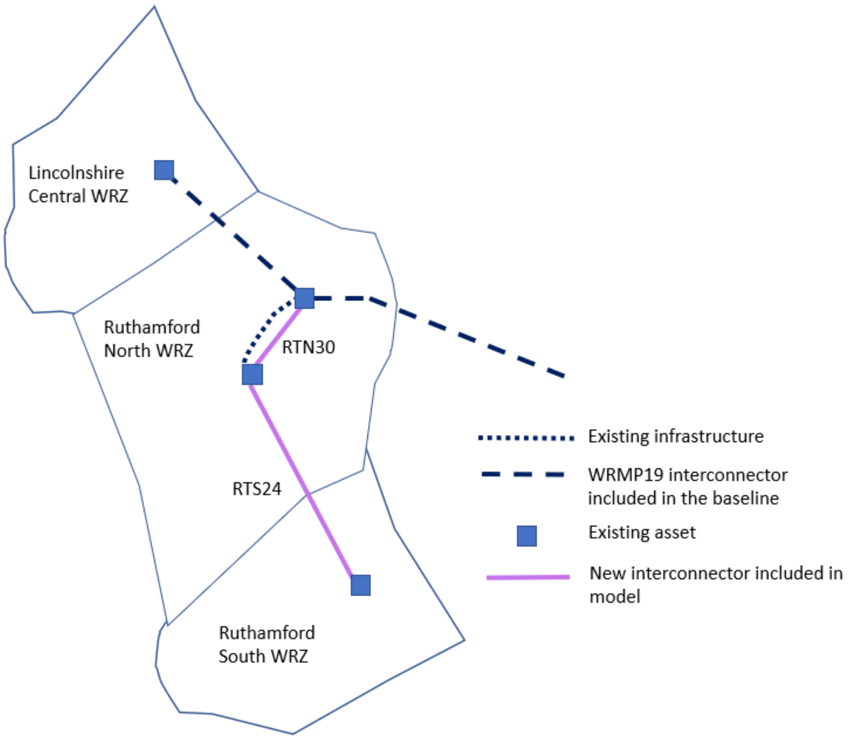
- Licence cap scenario 8 – denoted as LC01, LC02 etc
- 1:200 drought – this includes the adjustment to climate change relative to drought – denoted as DA01, DA02 etc
- AMP8 OPI adjustment – denoted as OPI1, OPI2 etc.

Our CAM4 interconnector option is a transfer from Ruthamford South WRZ to a node where Cambridge Water can use a time limited import into their system, see Figure 2. CAM4 connects to SWC8 which extends the transfer into Suffolk West and Cambs WRZ. Though CAM4 ends and SWC8 starts at Cambridge Water's CAMCAM WRZ, it is a temporary arrangement and not an external bulk supply. Therefore we have categorised these options as internal potable water transfers.

5.2 Column K: Independent Options

We have shown option RTS24 with a dependency to RTN30 in table 4, however we modelled it in a different way. Option RTN30 starts from a point on the WRMP19 interconnectors and connects to an existing service reservoir in Ruthamford North WRZ. As the connection point on the WRMP19 interconnectors is physically located within Ruthamford North, this becomes an inter-WRZ scheme when reported in the tables. In our models we can better represent this to include the capacity constraints of the new and existing interconnectors, see figure below.

Figure 1: Configuration of interconnectors in Ruthamford North WRZ



5.3 Columns L, M, N and O: Programmes

We define our preferred best value plan as comprising a core pathway and an adaptive pathway to meet our preferred most likely scenario. The adaptive pathway contained within our preferred best value plan can be contrasted with alternative adaptive pathways that would be triggered if circumstances turn out differently to what we consider most likely at present (as described in our preferred most likely scenario). See Section 10 of our WRMP24 Decision Making technical supporting document.

We have completed the programme columns as such,

- Preferred most likely – all the schemes required in our Plan B as described in the WRMP24 Decision Making technical supporting document
- Least cost – all the schemes required in Plan C
- Ofwat Core – all the schemes required in our core pathway (a subset of preferred plan, Plan B)
- Alternative – all the schemes in the adaptive pathway of our preferred plan (a subset of preferred plan, Plan B)

Our core pathway consists of the no-and-low-regret investments we need to commit to in AMP8, this includes the SROs. The SROs must be started in AMP8 due to the length of time to plan, design and construct them. The core pathway includes:

- Transfers needed in AMP8 to connect water resource zones to the WRMP19 interconnectors.
- Options where we are making upgrades/improvements to maximise output from existing resources.
- Water reuse scheme required in early AMP9, but development/design must start in AMP8 approved as part of the Accelerated Infrastructure Development programme.
- The two SROs, Fens and Lincolnshire reservoirs.
- Our preferred demand management strategy.

5.4 Column U: Gains in WAFU

For the Internal potable transfers (Interconnectors) the figures in the Gains in WAFU column are capacity in Ml/d rather than WAFU. The interconnectors transfer water from a donor WRZ to recipient WRZ and therefore their WAFU benefit is zero.

For some options the gains in WAFU varies relative to the drought scenario. The WAFU benefit will change in 2039/40 when drought resilience to 1:500 occurs. Some option benefits will increase and others decrease depending on the type of option.

The options in our preferred plan where the WAFU benefit changes relative to the drought scenario are listed in Table C below.

Table C: WAFU benefits relative to drought scenario

Option Ref	Option Name	1:200 WAFU (Ml/d)	1:500 WAFU (Ml/d)	How the drought impacts the WAFU
EXS19	Colchester WRC direct to Ardleigh Reservoir (no additional treatment)	11.4	13.9	1:500 drought reduces the raw water available to Ardleigh WTW more than 1:200 does. The transfers of treated effluent to the reservoir is not impacted by the drought and can replace the additional raw water lost in the 1:500 scenario, therefore providing a greater WAFU benefit in 1:500.
LNE12	Lincolnshire East Surface Water enhancement	13	7.3	The 1:500 drought reduces the amount of raw water available to be abstracted compared to 1:200, reducing the benefit of the option.

FND22	Marham abstraction relocation	7.9	12.3	The 1:500 year DO benefit is higher than the 1:200 due to a considerable conjunctive benefit related to the large 1:500 impact in the Fenland WRZ. Even with the option in place, the overall 1:500 Fenland deployable output would still be less than the 1:200 Fenland deployable output, but this option would bring them closer.
RTS21	Ruthamford South surface water enhancement	9.5	6	The 1:500 drought reduces the amount of raw water available to be abstracted compared to 1:200, reducing the benefit of the option.

In column U we have provided the lower capacity for each option. However in our supply demand balances (Table 3s) and Options benefits (Table 5) we adjust the WAFU benefit to align to the timing of the transition to 1:500 drought resilience.

5.5 Column AA: Average utilisation

Utilisation rates for preferred plan options of 10 Ml/d or above in capacity have been provided in the accompanying spreadsheet. The spreadsheet is structured to align with the template previously provided by Ofwat, which we used in our response to Query 005 of our draft WRMP. The data expands on the figures provided in Table 4 (column AA) of our September submitted WRMP tables by providing a view of changes in utilisation over time.

The utilisation rates have been derived from WRMP24 EBSD modelling and represent an initial indicative view of potential utilisation. Assessment of potential utilisation is subject to inherent uncertainties associated with the forecasts for growth, climate change and environmental destination (amongst other factors) as described in the main WRMP plan.

It is important to note that our WRMP24 EBSD model optimises the utilisation of new options only, based on their costs within the model. It is not a cost optimised model of our entire system including existing infrastructure. In reality, we would expect utilisation to be balanced between both new and existing resources.

We intend to carry out further modelling of utilisation across our entire system using PyWR simulation in the future, providing a more balanced view of new and existing resources.

For each option in the preferred plan, utilisation rates for the 2025-2050 planning period have been generated using EBSD modelling of four scenarios as set out in the template:

- Normal Year Annual Average (NYAA): This scenario represents the utilisation of the option in average ‘business as usual’ conditions. Demand is based on the final plan forecast without a dry year uplift. The supply forecast used was the same as the Dry Year Annual Average (DYAA) scenario but adjusted to remove the DO reduction associated with 1:500 drought resilience.
- Dry Year Annual Average (DYAA): This is the WRMP24 preferred most likely scenario as included in the WRMP tables. The supply forecast includes reductions for 1:500 drought resilience, climate change and sustainability reductions.

- Dry Year Annual Average without drought: This is the WRMP24 preferred most likely scenario, but without the reduction in DO due to drought resilience. The supply forecast includes reductions for climate change and sustainability reductions.
- Dry Year Critical Period (DYCP): This is the same scenario as included in the WRMP24 tables. This scenario represents utilisation of the option during a 3-day period of peak demand across the system. Water resources can output based on daily abstraction licences rather than annual in this scenario, meaning more water is available within the system than annual average scenarios. The model is based on the existing system operating at full peak capacity, which means this scenario typically results in lower utilisation of new options than in the other EBSD scenarios. In practice we would expect all options to be used at the same or higher capacity as under the DYAA scenario. Desalination would be operated as a baseload option and therefore would always operate at the same utilisation.

We expect all options to be utilised in all scenarios due to the minimum flow requirements which maintain their availability.

The accompanying spreadsheet provides data in the requested format (which has been interpreted as the maximum in-AMP utilisation for each timestep). Commentary for each option is provided.

A weighted average has been calculated based on the NYAA scenario occurring 70% of the time, DYAA (without drought) occurring 29% of the time, and DYAA with drought occurring 1% of the time. All options have been assigned the same weighting.

This is a change from the draft WRMP where we incorporated the DYCP scenario in the calculation. This was done because DYCP does not capture the need for the options to increase utilisation post-critical period to prevent over-abstraction in the longer term. We have also added a DYAA without drought scenario, which captures utilisation during a dry year, but not in drought conditions. This occurs roughly once in every three years.

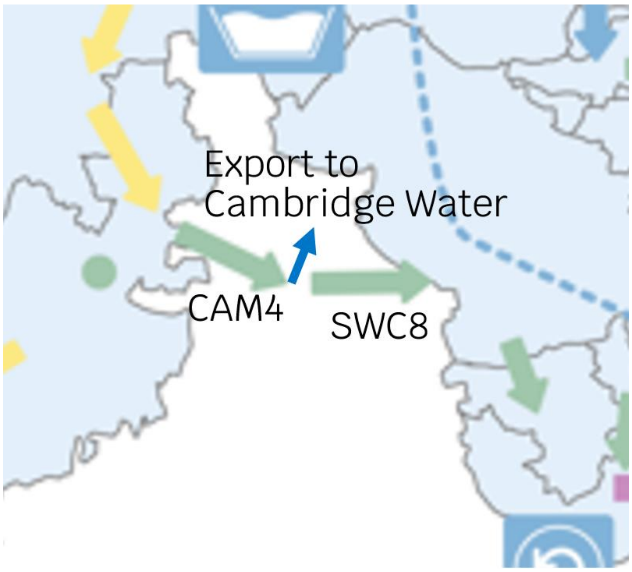
To populate Table 4, column AA, the scenarios and weighting provided in the spreadsheet are averaged across the entire 25 year planning period rather than AMP periods.

The Table 4 average utilisation values were used to calculate average operational costs in Table 4 Column Z, and average operational carbon in Column AE.

5.6 CAM4 utilisation

CAM4 is a transfer from Ruthamford South WRZ to a node where Cambridge Water can use a time limited import into their system. CAM4 connects to SWC8 which extends the transfer into Suffolk West and Cambs WRZ, see figure below.

Figure 2: Configuration of interconnectors between Ruthamford South WRZ and Suffolk West and Cambs WRZ, via Cambridge water



The 25-26 Ml/d export to Cambridge Water is time limited and will cease when the Fens reservoir is available to supply directly into Cambridge's zone.

After the offtake to Cambridge Water, at the end of CAM4, SWC8 transfers resource into Suffolk West and Cambs WRZ and onto the other Suffolk and Essex zones further south via the WRMP19 interconnectors. In 2032 the Colchester water reuse options creates a temporary surplus in Essex South WRZ, this reduces the amount required to be transferred via CAM4 and SWC8.

Once Fens reservoir is available in 2036 and the export to Cambridge Water ceases, the utilisation in these transfers reduces further. In 2040 the impacts of Environmental destination occur across our region and at this stage utilisation in the CAM4 and SWC8 transfers increases to meet the demand due to the supply reductions.

The average utilisation of CAM4 provided in Table 4, Column AA is based on Anglian Water needs for utilisation only, and does not incorporate the temporary utilisation required for Cambridge Water.

5.7 Column AG: Average Incremental Costs (AIC)

The AIC values provided in Column AG of Table 4 have been calculated based on the distribution of costs and benefits in Table 5a. The distributions in Table 5a spread of capex expenditure over time, with the WAFU benefit realised after the capex lead-in period is complete.

For our Fens and Lincolnshire Reservoir options, we have included a distribution of capex which reflects their expected construction period until 2036 and 2040 respectively. Whereas other options, including desalination and reuse options have used a shorter capex periods, before the WAFU benefits are realised. These differing cost and benefits distributions have the effect of increasing the reported AICs of the reservoir options compared to other supply-side options.

Our EBSD modelling uses AICs as part of its optimisation process, however it applies capex as a single value occurring in the year the benefit is realised. Table D below shows how the AICs vary using the method reported in Table 4 and that used within the EBSD optimisation.

The EBSD approach reduces the AICs of the preferred plan reservoir options by around 20%, whilst the desalination option AICs are slightly increased.

Table D: Difference approaches to AIC

Option Ref	Option Name	Type	Table 4 AIC	Alternative 'EBSD' AIC
EXS10	Holland on Sea desalination (seawater) 26 Ml/d	Desalination	430	439
EXS19	Colchester WRC direct to Ardleigh Reservoir (no additional treatment)	Water reuse	419	415
FND29	Fens reservoir 50 MCMD high yield	New reservoir	457	375
LNE6	Mablethorpe desalination Seawater (50 Ml/d)	Desalination	270	277
NTB17	Bacton desalination (seawater) 25 Ml/d	Desalination	435	443
RTN17	Lincolnshire reservoir 50 MCMD	New reservoir	348	274

6 Table 5 Option Benefits

As described in Section 4.2 above, we have provided option benefits for the following programmes,

- Preferred most likely – all the schemes required in our Plan B as described in the WRMP24 Decision Making technical supporting document
- Least cost – all the schemes required in Plan C
- Ofwat Core – all the schemes required in our core pathway (a subset of preferred plan, Plan B)
- Alternative – all the schemes in the adaptive pathway of our preferred plan (a subset of preferred plan, Plan B)

6.1 WAFU profiles relative to drought

For some options the gains in WAFU varies relative to the drought scenario. The WAFU benefit will change in 2039/40 when drought resilience to 1:500 occurs. Some option benefits will increase and others decrease depending on the type of option.

The options in our preferred plan where the WAFU benefit changes relative to the drought scenario are listed in the Table D above. We have used these profiles relative to drought impact in each WRZ for completing the option benefits in Table 5.

6.2 Regional planning solution to export to Cambridge Water

The route of the CAM4 transfer goes via Cambridge Water's system, providing a resilience link or opportunity to support Cambridge Water ahead of Fens reservoir being available, using spare capacity within the new transfer. The export to Cambridge Water is dependent on Affinity Water's Grand Union Canal (GUC) scheme. The full capacity GUC option is to be delivered in 2032 which will temporary reduce Affinity's need to fully utilise the transfer from our Grafham water treatment works. The surplus at Grafham can then be transferred onto Cambridge Water via the surplus capacity in our pipeline.

Cambridge Water have confirmed that they require this transfer as soon as it would be available. We have included the elements to enable the trade in Table 5. We have used the profile in Table E below.

Table E: Details of export to Cambridge Water

	2031/32	2032/33	2033/34	2034/35	2035/36
Export to Cambridge Water (Ml/d)	25	26	26	26	26
CAM4 utilisation for Anglian Water needs (Ml/d)	24.8	17.2	16.2	15.6	13.1
CAM4 utilisation including export to Cambridge Water (Ml/d)	49.8	43.2	42.2	41.6	39.1
Export (shown as a negative value) to Affinity without reduction to support Cambridge Water (Ml/d)	-88.0	-87.9	-87.9	-87.8	-87.7
Export (shown as a negative value) to Affinity including reduction to support Cambridge Water (Ml/d)	-63.0	-61.9	-61.9	-61.8	-61.7

In Table 5 we have used the profile for CAM4 including the export to Cambridge Water. The reduction in export to Affinity is captured within the adjustment to existing potable water exports EE12.

6.3 Demand management option benefits

All demand management option benefits have been split by Water Resource Zone and the options WEF 2a-2b-2d-2f and WEF-Innovation-Fund have been included despite having no directly included benefits (note that the 2a-2b-2d-2f MyApp Account savings are included in the smart meter benefits, to avoid double counting and we have not attributed savings to the 'demand reduction discovery fund'). Option benefits have been modified to reflect updated baseline figures from the 2023/24 water balance (Population, PCC, cspl), however all options have remained as included in the WRMP24 submission.

7 Table 5a-5c Cost profiles

All our WRMP options have been entered into our C55 Asset Investment Planning and Management tool, a proprietary software tool we use for the estimation of all Business Plan investments, see Supply side Options Develop report, Section 5.4.

The capex profiles for the options in Tables 5a and 5b are based on C55 output, using the standard profiles built into C55. These are different to the profiles used in the Business Plan, where the

WRMP investment portfolio is optimised with the other portfolios to create the cost profile used in PR24 tables.

We have used the full capital costs for all supply-side options, including those within the Accelerated Infrastructure Delivery (AID) programme, in the modelling and Decision Making process. This enables us to fully evidence and justify why these schemes are required. The costs we have presented in Tables 5a and 5c reflect the data we have used in our modelling.

8 Table 6 Drought Plan Links

In Table 6 we have included all the potential benefits of demand and supply side measures for all WRZs. Demand savings and drought permit benefits have not been used to allow earlier licence capping because this would require onerous iterative modelling of all currently modelled scenarios to quantify deployable output reductions for all individual sources and combinations of sources within a zone, as well as to ensure the benefit of the demand saving isn't compromised by the changes made. It would also mean swapping benefits and disbenefits between sources.

8.1 Drought demand savings

We have provided potential demand savings for all WRZs in Table 6. However, only those WRZs that include a surface water source, such as the Ruthamford zones, have been modelled to confirm the WRZ DO benefit.

We have only included the modelled demand saving benefits within the individual water resource zone (Table 3, 7.02FP) because they provide greater reliability to the likely benefit within the reference drought.

For zones which are exclusively or primarily groundwater, there are no modelled WRZ DO benefits of demand savings. For GW-only zones this is a consequence of the deployable output methodology. However, we would expect there to be some benefit to reduced demand in those WRZs, even if it is not shown as DO. The demand savings for the groundwater-only WRZs quoted in Table 6 are based on a reduced demand from the population within the zone. These have been provided in Table 6 for transparency and information only and have not been included in Table 3. These are potential benefits that align with our 2022 Drought Plan; as they include less certain modelling assumptions, we have less confidence in the benefits and do not include them in our SDB modelling. For the demand management benefits we have used agreed percentage changes for TUBs and NEUBs and have also modelled some generic demand management options that might be applied to moderate summer consumption.

8.2 Drought permit options

All drought permit benefits quoted in Table 6 are taken from modelled output. The potential benefit on a daily basis has been listed in the Supply forecast technical document.

We have not included the benefits of drought permits within Table 3 WRZ supply demand balances but have provided the data in Table 6 for transparency and information. The only exceptions are the Ruthamford South drought permit (RTS16) which is required to satisfy deficits between 2030/31 and 2031/32 and Ardleigh drought permit (ESX21) between 2025/26 and 2027/28.

9 Table 7 Adaptive Programmes

As described in Section 4.2 above, we have provided data for the following programmes,

- Least cost – all the schemes required in Plan C
- Ofwat Core – all the schemes required in our core pathway (a subset of preferred plan, Plan B)
- Alternative – all the schemes in the adaptive pathway of our preferred plan (a subset of preferred plan, Plan B)

The supply demand balance data in Table 7a includes the following assumptions,

- It does not include the surplus for our Hartlepool WRZ as the surplus in this remote zone cannot be used to meet the deficits in the rest of the Anglian water region.
- The adjustments included in Table 3 final plan to adjust the baseline to our preferred most likely scenario for drought, AMP8 OPI and licence caps (scenario 8) are included.
- The WAFU for the options listed in Table 1 above, have been adjusted relative to the level of drought resilience.

10 Table 8 Business Plan Links

Cost data is presented in different formats throughout the WRMP data tables, the RAPID gated process and business plan. We have ensured consistency for the scale and timing of need, the performance levels forecast to be delivered, and scope of associated investments. However it should be noted that these programmes are running in parallel and we have used interim data where appropriate for the SRO schemes (post Gate 2) for developing our WRMP. These differences are described below.

10.1 Scope and cost models

All our WRMP options have been entered into our C55 Asset Investment Planning and Management tool, a proprietary software tool we use for the estimation of all Business Plan investments, see Supply side Options Develop report, Section 5.4.

The RAPID schemes have been costed using a combination of C55 and detailed 'bottom up' cost estimation.

For our draft WRMP and RAPID Gate 2 we used the PR19 C55 cost models and inflated from 2017/18 to 2020/21. For the final WRMP we have used the updated cost models for PR24, which now include actual cost data from the latter part of AMP6 and early AMP7, and deflated to 2020/21. To ensure consistency in our modelling of all options in the WRMP we have updated the Gate 2 costs for the SROs using the new PR24 cost models where appropriate.

Though the same scope from C55 is used to produce the costs in the WRMP tables and PR24 there are key differences between the cost data presented these are shown in the table F below.

Table F: key differences between costs in WRMP and PR24

Cost element	WRMP	PR24
Cost base year	2020/21	2022/23
Real Price Effects (inflation above CPIH) and Frontier shift	Not included	Included*
Optimism bias	Included	Reflected as part of calculation in table RR30
SRO costs	Full capex and opex costs of scheme delivery	DPC or SIPR development allowance only

** PR24 cost tables CW3, 7 and 8 are populated prior to the application of RPE and Frontier shift so this difference will only exist between PR24 data in CW1 and WRMP tables*

The same core cost data is used in Tables 4, 5a-c and 8. However there are some nuances how elements are presented in each table, in particular opex costs.

Table 5a-c show the cost profiles of each feasible option. To enable consistent comparison, all options are presented with capex starting in year 1 and the opex based on the full utilisation from the earliest available date, usually in year 4 or 5. This data is used to calculate the NPV and AICs and allows for comparison across all feasible options. It is not possible to show actual utilisation of options in Table 5a-c as we only have this data for those selected within the plans presented in the tables.

The 'totex prior to option in use' in Table 4 is the sum of the capex and optimism bias lines in Tables 5a-c. This is the capex required to design and construct the options and can be considered as the capex prior to the full opex occurring. See example below.

Table H: Extract from Table 5a-c

Opt Ref	Option name	Cost Metric (£m)	Cost Sub-metric (£m)	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
NTB17	Bacton desalination (seawater) 25 Ml/d	Capex		0	25.12	68.86	109.2	61.00	0.00
NTB17	Bacton desalination (seawater) 25 Ml/d	Capex	Optimism Bias	0	11.53	31.60	50.14	27.99	0.00

Table I: Extract from Table 4

Opt Ref	Option name	Totex expenditure prior to option in use (£m)
NTB17	Bacton desalination (seawater) 25 Ml/d	385.49

Table 8 is only populated for the options featured in our preferred and alternative plans. For these options we understand the timing of when they need to be delivered and the utilisation profile is based on the option benefits in Tables 3 and 5.

The capex is profiled to reflect the start date of when an option is required, in the example above NTB17 is required from 2040-41. The opex used in Table 8 is also based on the actual utilisation of the option rather than at maximum capacity as in Table 5a-c.

It should also be noted that the capex presented in Table 8 includes the capital maintenance costs over the lifecycle of the option. These are shown in Table 5a-c in the capex line.

The capex profiles used in Table 5a-c are taken directly out of C55.

Note that for Table 8a-c and demand-side options (in particular metering), we see some negative values. This is due to the deviation in pro-active meter replacement between the base-line and final plan meter roll-out projections, with the base-line proactive meter replacement cycle being based upon a 15 year 'natural replacement' cycle and the preferred plan being based upon an accelerated cycle due to the 10 year roll-out of smart meters. The lack of synchronisation between these two roll-out profiles and subsequent comparison causes these negative values. Additionally, we see the impact of opex savings (due to reduced physical meter reading).

10.2 Assumptions used for Table 8b

We have used the following assumptions to complete Table 8b,

- The costs of the non-potable South Humber Bank desalination (SHB9) has been included in the core pathway table. However this option is not included in PR24.
- The costs profiles are based on C55 and not the optimised profiles used for PR24.
- We have used the full capital costs for all supply-side options, including those within the Accelerated Infrastructure Delivery (AID) programme
- Excludes other PR24 investment such as Adaptive planning programme, Bramford Tye, see Section 6.22 of supply-side option development technical supporting document.

10.3 Assumptions used for Table 8e

The benefit data provided for Table 8e are incremental.

The benefit data provided for interconnectors is incremental capacity not WAFU, as the interconnectors do not provide an WAFU, see Section 4.3 above.

The difference between interconnector capacity for the least cost plan and the preferred plan is the inclusion of the Norfolk Aylsham transfer 3Ml/d (NAY1) in the best value plan.