

Data Table Commentaries

5 Water Resources

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1. Introduction

These tables are collecting information on water resource assets and their characteristics. The data will be used alongside cost data as inputs into our cost assessment models.

Where Confidence Grades are not detailed against line commentary, all forecasts have been produced from historical data with a confidence grade of B3 or better.

2. RES1 Water resources asset and volumes data

Water resources

<i>RES1.1</i>	<i>Water from impounding reservoirs</i>
<i>RES1.2</i>	<i>Water from pumped storage reservoirs</i>
<i>RES1.3</i>	<i>Water from river abstractions</i>
<i>RES1.4</i>	<i>Water from groundwater works, excluding managed aquifer recharge (MAR) water supply schemes</i>
<i>RES1.5</i>	<i>Water from artificial recharge (AR) water supply schemes</i>
<i>RES1.6</i>	<i>Water from aquifer storage and recovery (ASR) water supply schemes</i>
<i>RES1.7</i>	<i>Water from saline abstractions</i>
<i>RES1.8</i>	<i>Water from water reuse schemes</i>

Confidence grade A3

Lines 1 – 8 In line with equivalent lines for the APR, these lines ask us to report on the volume of water abstracted from each of the eight source types shown in lines RES1.1 to RES1.8. The Ofwat RAG 4.11 guidelines ask us to only include abstraction volumes from sources that have directly supplied a water treatment works, in line with the guidance for Lines 9 to 17 of Table 5A. Ofwat guidance also requires us to include bulk supplies and so the volume of water from our impounding reservoirs is particularly high as this includes the bulk supply to Severn Trent Water from Elan Valley. Our Revised draft WRMP24 and PR24 Business Plan does not forecast any material changes in source number and or source abstraction volume and so the main impact to future volumes of water supplied will be the weather on an annual basis that may cause year to year fluctuations and the delivery of our demand management strategy which aims to reduce the volume of water delivered through reductions in leakage levels and consumption.

The main impact to future volumes of water supplied will be the delivery of our demand management strategy which aims to reduce the volume of water delivered (DI) through reductions in leakage levels and consumption. The year on year reductions calculated in the demand forecast produced for our WRMP have therefore been applied to the forecast volumes of water in lines RES1.1 to RES1.8.

The greater % reductions in 2023/24 and 2024/25 reflects our leakage recovery programme for the remainder of AMP7.

Our revised draft WRMP24 and PR24 Business Plan does not forecast any material changes in source types and we have no plans to abstract water from the source types defined in line RES1.5 to RES1.8.

<i>RES1.9</i>	<i>Number of impounding reservoirs sources</i>
<i>RES1.10</i>	<i>Number of pumped storage reservoirs sources</i>
<i>RES1.11</i>	<i>Number of river abstractions sources</i>
<i>RES1.12</i>	<i>Number of groundwater works excluding managed aquifer recharge (MAR) water supply schemes</i>
<i>RES1.13</i>	<i>Number of artificial recharge (AR) water supply schemes</i>
<i>RES1.14</i>	<i>Number of aquifer storage and recovery (ASR) water supply schemes</i>
<i>RES1.15</i>	<i>Number of saline abstraction schemes</i>
<i>RES1.16</i>	<i>Number of reuse schemes</i>
<i>RES1.17</i>	<i>Total number of sources</i>
	Confidence grade A1

Lines 9 – 17 In line with equivalent lines for the APR, these lines ask us to report on the number of raw water source types shown in lines RES1.9 to RES1.17. The Ofwat RAG 4.11 guidelines ask us to only include sources that feed directly to a WTW and so sources that transfer water to a river or a reservoir, or sources unused during the year, are excluded.

Our Revised draft WRMP24 and PR24 Business Plan do not forecast any changes in the number of operational sources that will be in use during the period 2025/26 to 2029/30. No additional sources are planned to come online between 2023/24 and 2024/25.

<i>RES1.18</i>	<i>Total number of water reservoirs</i>
	In line with equivalent lines for the APR, these lines ask us to report on the total number of water reservoirs. We include the number of reservoirs with a status of Current, Emergency, Standby or PRDC (Privately owned, Run by Dwr Cymru). We exclude balancing reservoirs and those with a status of disused or sold.

Our Revised Draft WRMP24 and PR24 Business Plan do not include any plans for the development of new reservoirs currently used for holding raw water in the period up to 2029/30. We are planning to abandon Clydach reservoir during year 1 of AMP8 therefore, we are reporting a lower number of water reservoirs from 2025/26.

<i>RES1.19</i>	<i>Total volumetric capacity of water reservoirs</i>
	In line with equivalent lines for the APR, this line asks us to report on the construction capacity of our reservoirs which includes impounding and pumped storage reservoirs but excludes bankside sources. Our Revised draft WRMP24 and PR24 Business Plan do not include any plans for the development or increase of existing raw water reservoirs in the period up to 2029/30. We are planning to abandon Clydach reservoir during year 1 of AMP8 therefore, we are reporting a lower volumetric capacity of water reservoirs from 2025/26.

<i>RES1.20</i>	<i>Total number of intake and source pumping stations</i>
<i>RES1.21</i>	<i>Total installed power capacity of intake and source pumping stations</i>
	Confidence grade B3

Lines 20 & 21 the forecast for these assets is to maintain the existing assets and their associated capacity. Consequently the 2022/23 value has been copied across all years from 2023/24 to 2029/30.

<i>RES1.22</i>	<i>Total length of raw water abstraction mains and other conveyors Confidence grade B3</i>
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The forecast for these assets is to maintain the existing asset base and keep the current mains length in operation with minor changes in 2023/24 and 2024/25. These years will follow the historic variations in mains length using a 5 year rolling average length of mains. This results in the length of mains in km 22/23 to 24/25 being 78.84, 80.27, 79.30 and for AMP8 remain at 79.30.

The values for the raw water mains have for 2022/23 used the APR Data for 2022/23. For the 2023/24 and 2024/25 years used the five year average of the previous five years 2018/19 to 2022/23.

The values for the 2025/26 to 2029/30 years used the 2024/25 value and copied this across all years.

RES1.23 Average pumping head – raw water abstraction Confidence grade B3

For the years 2023/24 to 2029/30 a five year rolling average has been used to calculate the Average Pumping Head (APH), see row highlighted in light yellow Table 1a&b below. This is because no significant changes to water pumping are forecast which will impact the calculation of APH. However, the improvements to existing data which are outlined within the APR commentary will result in improvements to the data used to calculate APH values which may result in a change to the numbers currently forecast.

The APR 2022/23 commentary provided the updated calculation method and restated the values for 2019/20 and 2020/21 and for values for the 2022/23 APR. The APR commentary provides the detail for the calculation of APR for the four PR24 lines for APH lines in the bullets below. The linkage between the APR tables lines and the PR24 Table lines can also be seen in the bullets below.

- Line CW4.6 - Average pumping head – Raw water transport, RAG reference 6A.6
- Line CW4.49 Average pumping head – Water treatment, RAG reference 6A.34
- Line CW5.24 Average pumping head – Distribution, RAG reference 6B.24
- Line Res1.23 Average pumping head – Water Abstraction, RAG Reference 5A.23

Table 1a – APR Values

Line Ref	Average Pumping Head	Units	DPs	18/19	19/20	20/21	21/22	22/23
RES1.23	Abstraction (resources)	m.hd	2	35.99	31.02	38.83	34.17	37.46
CW4.49	Treatment	m.hd	2	13.42	16.01	12.85	12.96	12.44
CW5.24	Distribution	m.hd	2	70.91	70.35	72.57	73.64	71.58
CW4.6	Raw water transport	m.hd	2	22.25	22.50	16.82	14.95	16.94

Table 3b – Rolling Average Figures from 2023/24 to 2029/30

Line Ref	Average Pumping Head	Units	DPs	23/24	24/25	25/26	26/27	27/28	28/29	29/30
RES1.23	Abstraction (resources)	m.hd	2	35.49	35.39	36.27	35.76	36.08	35.80	35.86
CW4.49	Treatment	m.hd	2	13.54	13.56	13.07	13.11	13.14	13.28	13.23
CW5.24	Distribution	m.hd	2	71.81	71.99	72.32	72.27	71.99	72.08	72.13
CW4.6	Raw water transport	m.hd	2	18.69	17.98	17.08	17.13	17.56	17.69	17.49

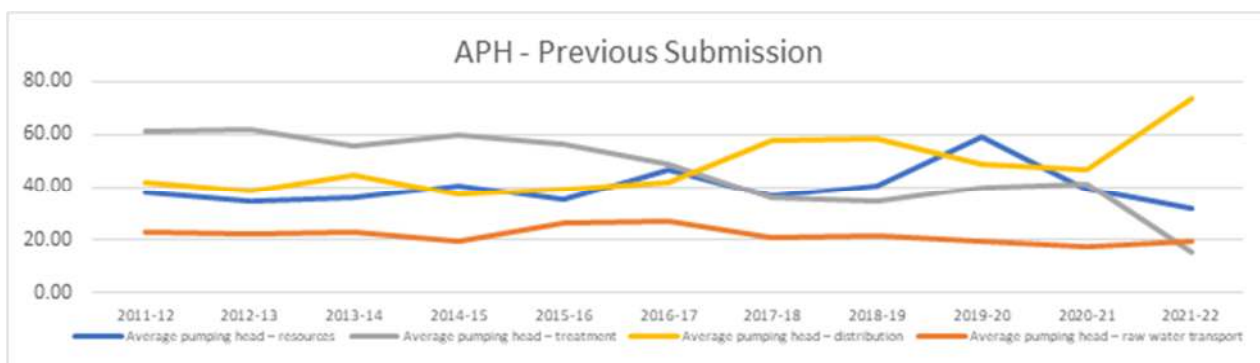


Figure 1 – APH Values 2011/12 to 2021/22 Submitted for the 2021/22 APR

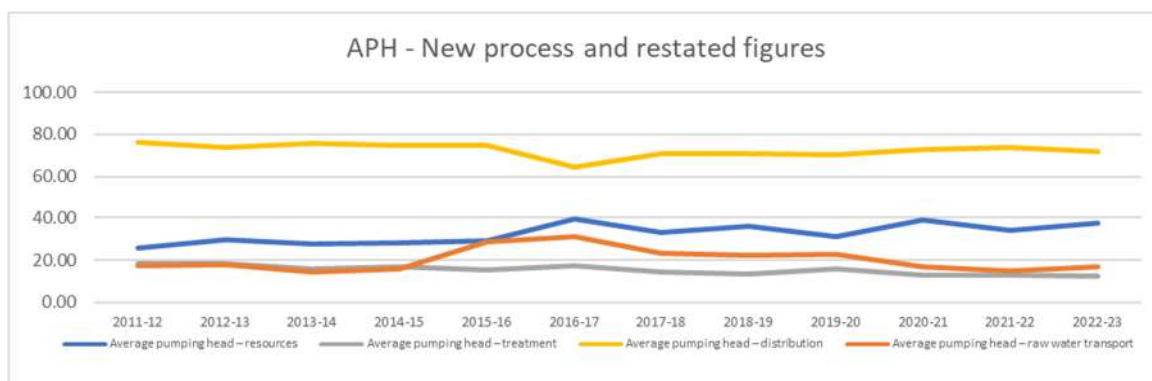


Figure 2 – Restated APH Values 2011/12 to 2022/23 Submitted for the 2022/23 APR

RES1.24 *Energy consumption - water resources (MWh)*

Energy consumption for clean water is expected to reduce over the period. This reduction is primarily driven by a reduction in Distribution Input (DI) but also contributed to by energy efficiency measures such as pump replacement and smart network optimisation.

The reduction in DI is planned to be achieved by a mix of demand reduction from customers and leakage reduction. The DI forecasts are in line with the figures provided in table CW5 line 39. The reduction in energy consumption is gradual over time reflecting the gradual delivery of reduction measures over the AMP. The energy consumption impact of the forecast DI reduction has been made by an extrapolation of the relationship between DI and energy usage in recent years.

RES1.25 *Total number of raw water abstraction imports*

RES1.26 *Water imported from 3rd parties to raw water abstraction systems*

RES1.27 *Total number of raw water abstraction exports*

RES1.28 *Water exported to 3rd parties from raw water abstraction systems*

Lines 25 – 28

Confidence grade A1

Lines 25 & 27 In line with the equivalent lines for the APR, these lines ask us to report on the number of raw water import and export points shown in lines RES1.25 and RES1.27. The Ofwat RAG 4.11 guidelines ask us to include all points even if unused during this year. We currently have no raw water abstraction imports and only one raw water abstraction export point (bulk supply to Elan Valley) and our Revised draft WRMP24 and PR24 Business Plan do not forecast any changes to this.

Confidence grade A3

Lines 26 & 28 In line with the equivalent lines for the APR, these lines ask us to report on the daily average volume of raw water imported and exported from/to 3rd parties raw water abstraction systems, as shown in lines RES1.26 and RES1.28. The Ofwat RAG 4.11 guidelines ask us to use an average daily figure. Our Revised draft WRMP24 and PR24 Business Plan does not forecast any change in either the volume of raw water imported or exported to/from 3rd parties.

Under Ofwat RAG definitions, the Heronsbridge supply is classified as a “raw water transport import” and hence is not reported in these lines.

RES1.29 Water resources capacity (measured using water resources yield) Confidence grade A3

In line with equivalent lines for the APR, this line asks us to report on the water resources yield which captures the average volume of water available from the environment and constrained by water resources control assets. The Ofwat RAG 4.09, Appendix 2 guidelines states that the calculation of water resources yield should be consistent with guidance used to calculate deployable output and the assumptions made in those calculations for the company's latest water resources management plan (WRMP). However, the key difference is that the constraints included in the deployable output calculation which are influenced by network plus Water Assets (e.g. treatment capacity) need to be excluded.

Our assessment of water resources capacity is based on the yield available under the Dry Year Annual Average planning scenario and accounts for our 23 WRZ for our company Level of Service, which for the implementation of emergency measures (standpipes/rota cuts) is 1 in 200 years on average. Our forecast of water resources capacity accounts for the effects of climate change that have been calculated within our WRMP24 and so we have applied these values as a direct reduction, as we have done in our reporting of forecast DO. Given that across the company area our calculated water resources capacity (Yield) for the reporting year 2022-23 is only c2% greater than our reported DO for the same year, we have utilised the same DO reduction values for climate change. This Climate change reduction was not applied to the APR reported figures.

Guidance also notes that other factors such as water quality, abstraction licence change etc can reduce our water resources capacity. For the AMP8 period we have not included any reductions in DO due to these factors and so similarly have not done so for water resources capacity. We are anticipating that from AMP9 onwards there may be a requirement to amend our abstraction licences to meet environmental targets which would reduce both our calculated DO and water resources yield accordingly.

From 28/29 we expect our WRMP24 supply side schemes to be delivered and provide additional water resource capacity, explaining the step change in the values reported.

RES1.30 Total number of impounding reservoirs assets

Figures for 22/23 were taken from the Dam Safety Annual Report 2022-23 which was presented to our Board and underwent a rigorous review process. The total number of impounding reservoir assets in the Dam Safety Portfolio were provided as we are responsible for the reservoir safety and so need to carry out regular maintenance and surveillance visits and may need capital investment in the future. This includes all 'impounding reservoir assets' irrelevant of their purpose e.g. water supply, industrial supply, environmental, recreational and emergency/ mothballed sources.

The table below also shows the number of impounding reservoirs covered under the Reservoirs Act 1975. In 22/23 four reservoirs were not covered under the Reservoirs Act; Lower Neuadd which was discontinued in 2019, Llyn Bran which was discontinued in 2022 and Bwlfa Dare and Mountain Reservoir as their volumes are too small to be classed as large raised reservoirs under the Act. (NB Llyn Cowlyd has been included as we own the dam, but RWE are the undertakers under the Reservoirs Act.) Under the Reservoirs Act 1975 reservoirs are deemed to be 'impounding' if they 'block the natural flow of a river or drainage from an area'. Non-impounding reservoirs are defined in SI 1985 No. 1086 as 'a reservoir which is not designed to obstruct or impede the flow of a watercourse'. The reservoirs listed below therefore all block a natural river and have a natural catchment upstream. In addition to the natural drainage there may also be some pumped inflow, for four sites this exceeds 60%.

Forecasts for future years were confirmed with Dam Safety Engineering Managers and checked against the AMP8 Readiness Plan. Numbers for 22/23 are correct but forecasts for future years are uncertain

as the exact timing of formal discontinuance will depend on budgets and NRW's approval for the rate of drawdown permissible at Llyn Anafon, see comments in table below. A confidence grade of A1 has been given to the Actuals as the numbers are highly reliable and are based on current information which is regularly checked. The forecasts have been assigned a confidence grade of A2 as, although the information is highly reliable, the timing of discontinuances in the future may vary slightly. It will only affect 1 of the 85 reservoirs in each year (i.e. more than 1% but less than 5%).

Line description	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30
Total number of impounding reservoirs assets (within Dam Safety team asset portfolio)	85	83	83	83	82	82	82	82
Number of impounding reservoir assets which are covered under the Reservoirs Act	81	79	79	78	76	76	76	76

Discontinuances:

Year	Reservoir to be discontinued	Covered Under Reservoirs Act after discontinuance?	Removed from Dam Safety Portfolio?	Comment
2022-23	Llyn Bran	No	No	Discontinued 21/10/22. Will remain part of our portfolio due to environmental commitments.
2023-24	Cilcain 1	No	Yes	Discontinued 26/7/23.
	Cilcain 2	No	Yes	Discontinued 26/7/23.
2024-25	None			
2025-26	Clydach	No	No	Ofwat commitment to discontinue by Dec 25 but might be done earlier if AMP8 early start money is made available. Will remain part of portfolio due to potential maintenance requirements.
2026-27	Anafon	No	No	Active discontinuance began in 2020 but needs to take place gradually to allow protected plant species to adapt. Timescales are uncertain but expected to be complete by mid AMP8. Will remain part of our portfolio due to environmental commitments.
	Brithdir Mawr	No	Yes	Planned for Year 2 AMP8 but timings may change depending on budgets.
2027-28	None			
2028-29	None			
2029-30	None			

RES1.31 *Total number of new eels/fish entrainment screens Confidence grade A1*

We are proposing to deliver a total of 3 Eel screens in AMP8. We have proposed that 1 is delivered in 2025/26 and the remaining 2 schemes delivered in 2029/30. These schemes are in line with our WINEP & NEP commitments for PR24.

RES1.32 *Total number of new eels/fish passes***RES1.33** *Total number of new wetlands***RES1.34** *Total area of new wetlands***RES1.35** *Total number of investigations; (WINEP/NEP) desk based only***RES1.36** *Total number of investigations; (WINEP/NEP) survey, monitoring or simple modelling*

We are not proposing any schemes in **lines 32 - 36**.

RES1.37 *Total number of investigations; (WINEP/NEP) multiple surveys, and/or monitoring locations, and/or complex modelling water Confidence grade B2*

We are proposing to deliver 16 complex studies in AMP8 to comply with WINEP/NEP commitments for PR24. These investigations have been allocated against this line where they do not naturally fit against the other WINEP & NEP drivers listed in CW3 and CW9. These have been profiled over the first 3 years of the AMP to inform possible plans for interventions to be funded in subsequent investment periods. Although investment is flat profiled across the whole AMP we have profiled the number of investigations over the first 3 years considering that is the year of substantive investment for each of those investigations and to provide an early indication of future interventions. However, the investigation may continue into subsequent years on a reduced scale to ensure completion of monitoring and modelling.

RES1.38 *Total number of investigations; (WINEP/NEP)*

Calculated cell

RES1.39 *Additional line 1; water resources cost driver***RES1.40** *Additional line 2; water resources cost driver***RES1.41** *Additional line 3; water resources cost driver*

We are not proposing any schemes in **lines 39 - 41**.