2027 DRAFT Drought Plan

Appendix D

Water Situation Reporting

APPENDIX D Water Situation Reporting

D1. Overview

We produce a Water Situation Report (WSR) for our supply area on a monthly basis. The analysis underpinning the report is carried out on a fortnightly basis when any Water Resource Zone (WRZ) is in Drought Event Level (DEL) 1 or higher. The output of the analysis is a recommended DEL which is approved by an executive representative. Please refer to Section 2 of the Drought Plan and Appendix F for full details on DEL assessment methodology.

The WSR provides a comprehensive assessment of the current and projected state of water resources across all Water Resource Zones (WRZs). It integrates hydrological observations, operational data, modelling outputs, and scenario-based forecasts to:

- Track hydrological conditions and system resilience
- Support operational decision-making
- Inform drought risk assessments
- Provide early warning of emerging vulnerabilities
- Monitor supply–demand balance and environmental compliance

The report is structured to present both current conditions and forward projections, enabling early identification of risks related to drought, flow constraints, groundwater stress, or storage deficits. The following sections outline what data we receive and how it is analysed, alongside sample plots taken from our monthly reporting.

D2. Hydrometeorological data

D2.1 Rainfall data

Rainfall data is received from the EA each month for 22 areas. Monthly reporting includes the following rainfall assessments:

- Total monthly rainfall (mm)
- Percentage of Long-Term Average (LTA) at:
    - Thames catchment scale
    - Sub-catchments (London, Thames Valley, Home Counties, etc.)
- 12-month accumulated rainfall compared to LTA
- Effective rainfall analysis (useful for recharge vs. runoff potential)
- Areal rainfall maps and anomalies

A sample of the graphs in our WSR is provided from Figure D1 to Figure D3.

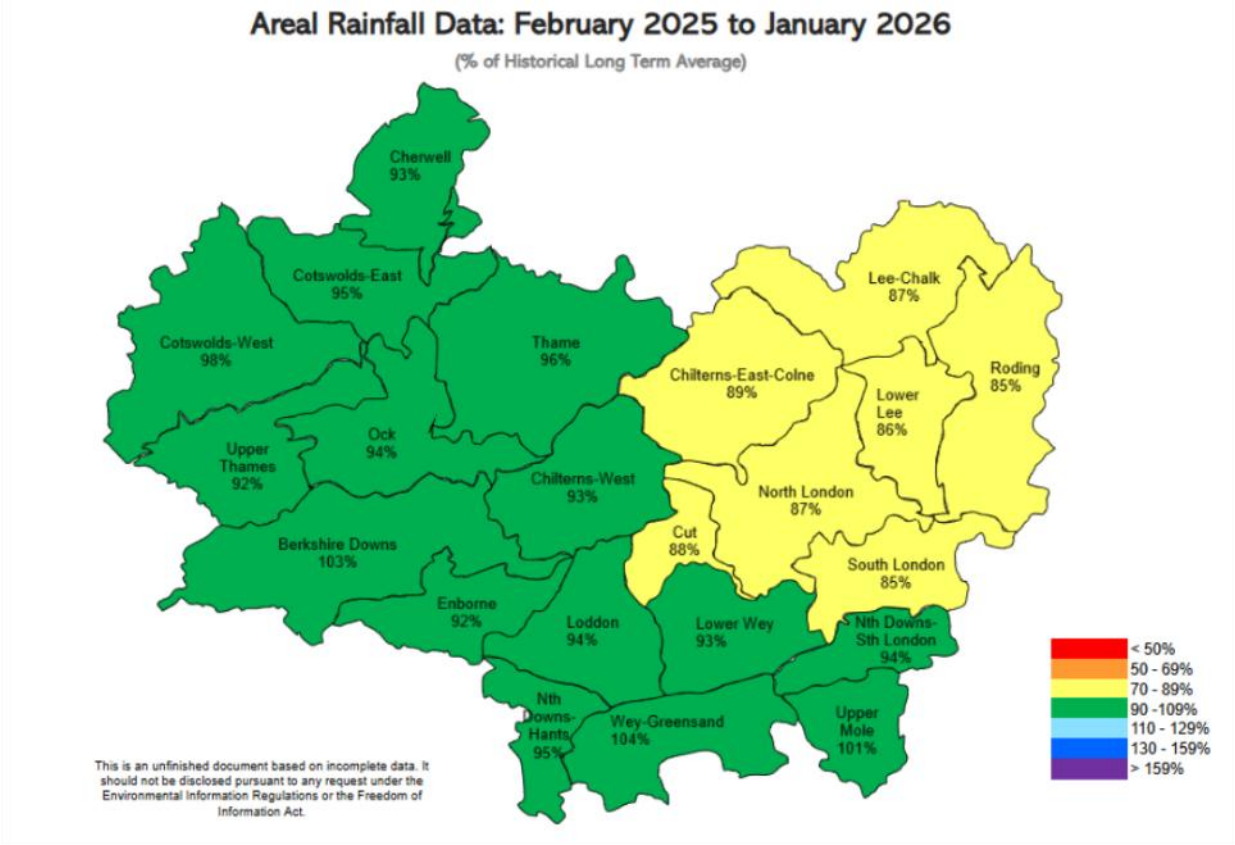

Figure D1 Areal rainfall data as a percentage of Long Term Average

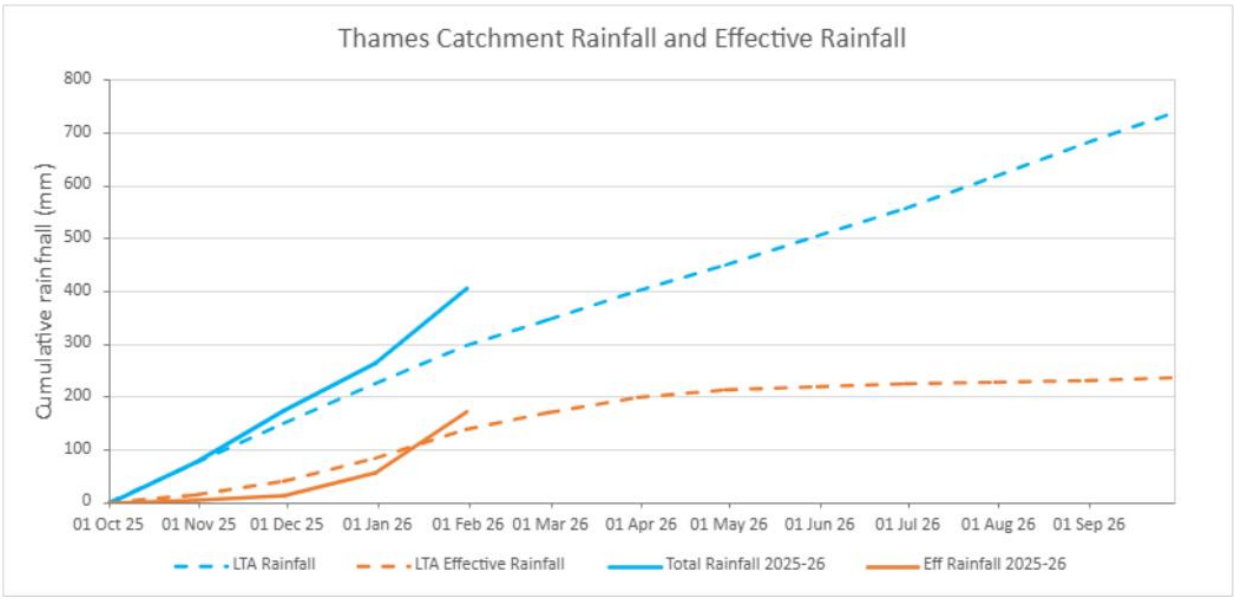

Figure D2 Thames catchment cumulative and effective rainfall

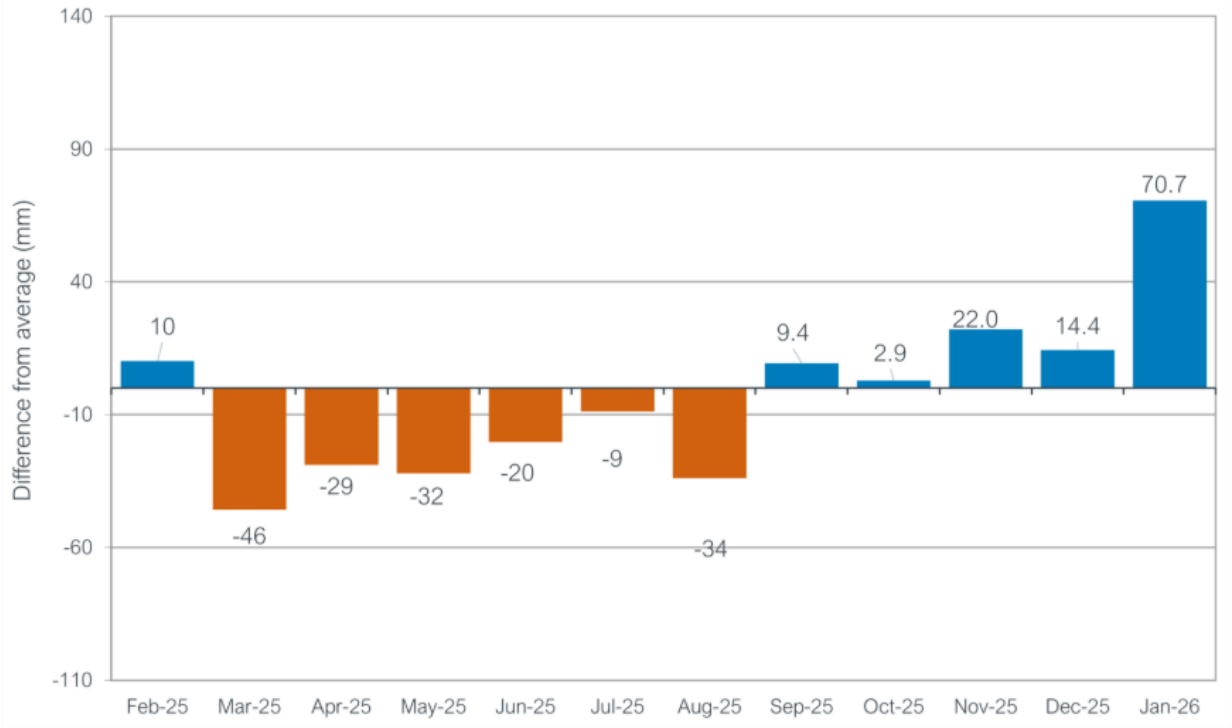

Figure D3 Monthly rainfall totals relative to long term average

D2.2 Soil Moisture Deficit

Rainfall effectiveness is governed by Soil Moisture Deficit (SMD), meaning that SMD is a critical precursor metric for groundwater recovery. SMD levels are monitored, particularly at the start of the winter recharge period (September through November) when the high SMD levels that developed over the summer are steadily reduced.

SMD data is received from the EA each month for 22 areas We analyse the current SMD across our catchment and the current situation against long term averages. We also interpret recharge conditions to provide an indication of when rapid recharge to aquifers may occur during drought recovery. A sample of the graphs in our WSR is provided in Figure D4.

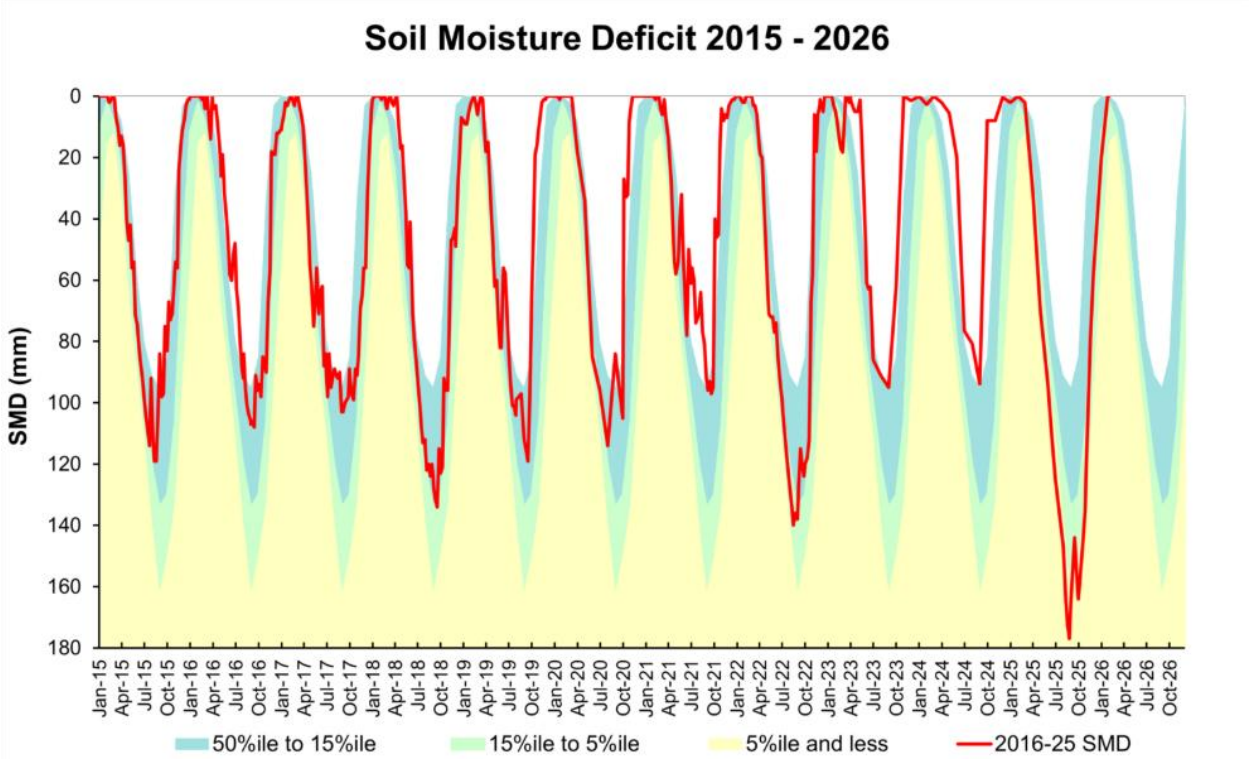

Figure D4 Monthly catchment SMD values

D2.3 Weather Forecasts

Short term, medium term, and seasonal forecasts such as the DTN sub-seasonal outlook and the Met Office 3-month outlook are reported in the WSR. These are used to provide a qualitative assessment of expected rainfall volumes, temperature anomalies, and the probability of dry/wet/normal scenarios.

D3. Groundwater monitoring and assessment

D3.1 Current groundwater levels

We receive groundwater level updates from the EA for key observation boreholes. The Chalk aquifer (e.g., South London, Berkshire Downs) and the Oolitic limestones (e.g., north of the Thames) are our most important aquifers. Current groundwater levels are classified by the EA in seven bands ranging from Exceptionally Low to Exceptionally High. The bandings are based on long term data periods provided by the EA which vary by site. A map of the observation boreholes, their bandings, and key aquifers is provided in Figure D5.

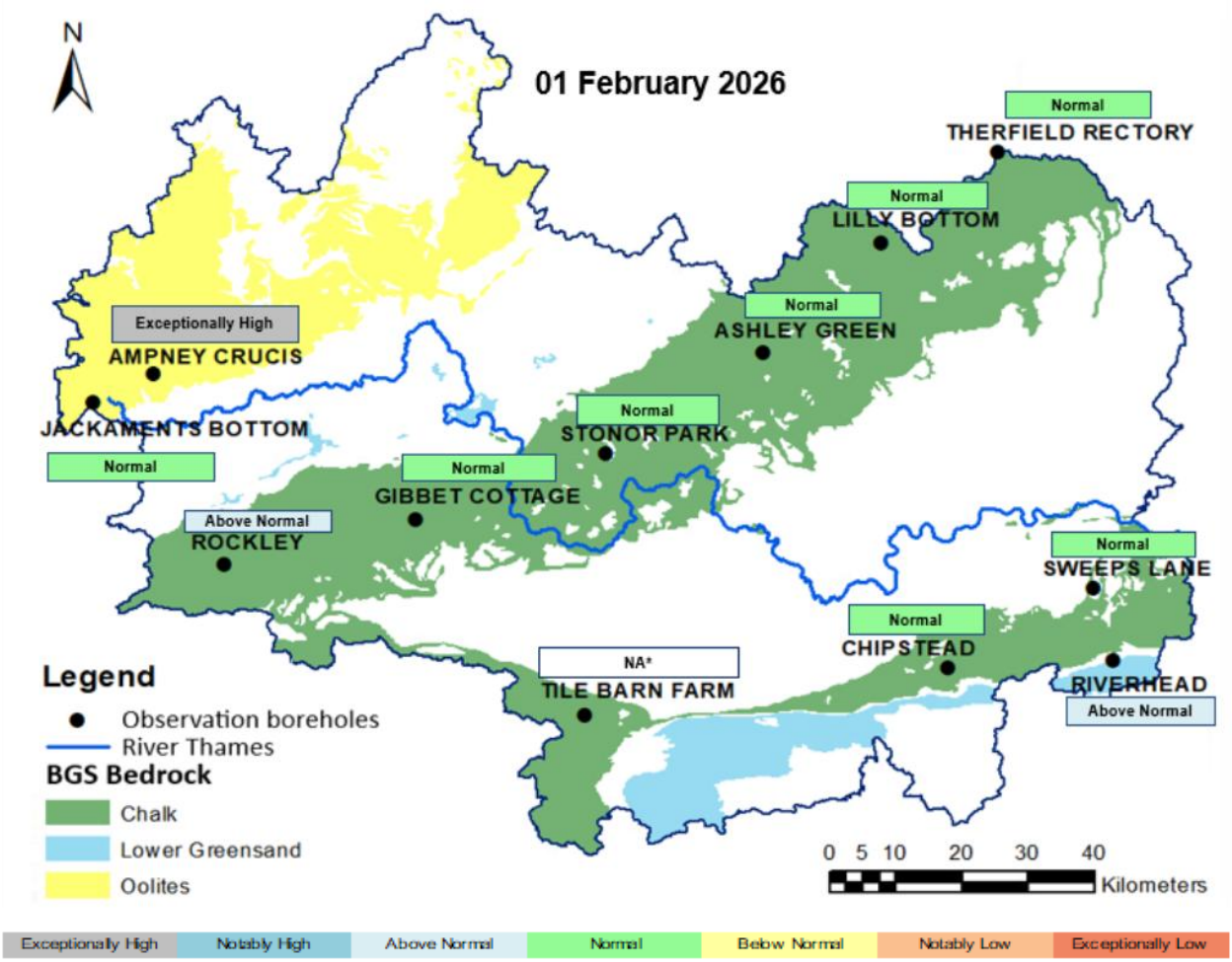

Figure D5 Map of observation boreholes

**Tile Barn Farm observation borehole has been replaced by Long Sutton as of January 2026. Work is ongoing to update the bandings and modelling data associated with this site.*

D3.2 Groundwater projections

Groundwater projections are produced for several observation boreholes using the Environment Agency's Catchmod models. We simulate a range of LTA scenarios, ranging from 40% to 120%, for the coming six months. Model outputs for Stonor Manor and Ampney Crucis are shown in Figure D6 and Figure D7.

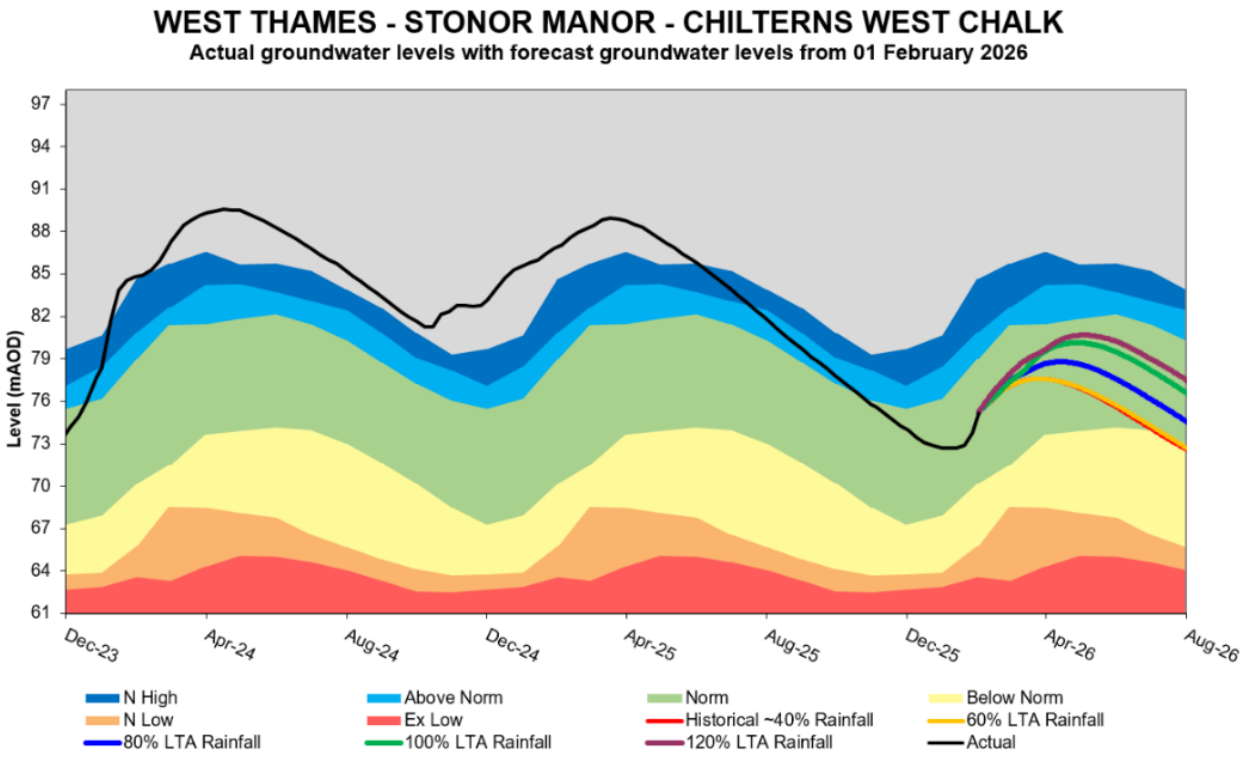

Figure D6 Stonor Manor projected groundwater levels

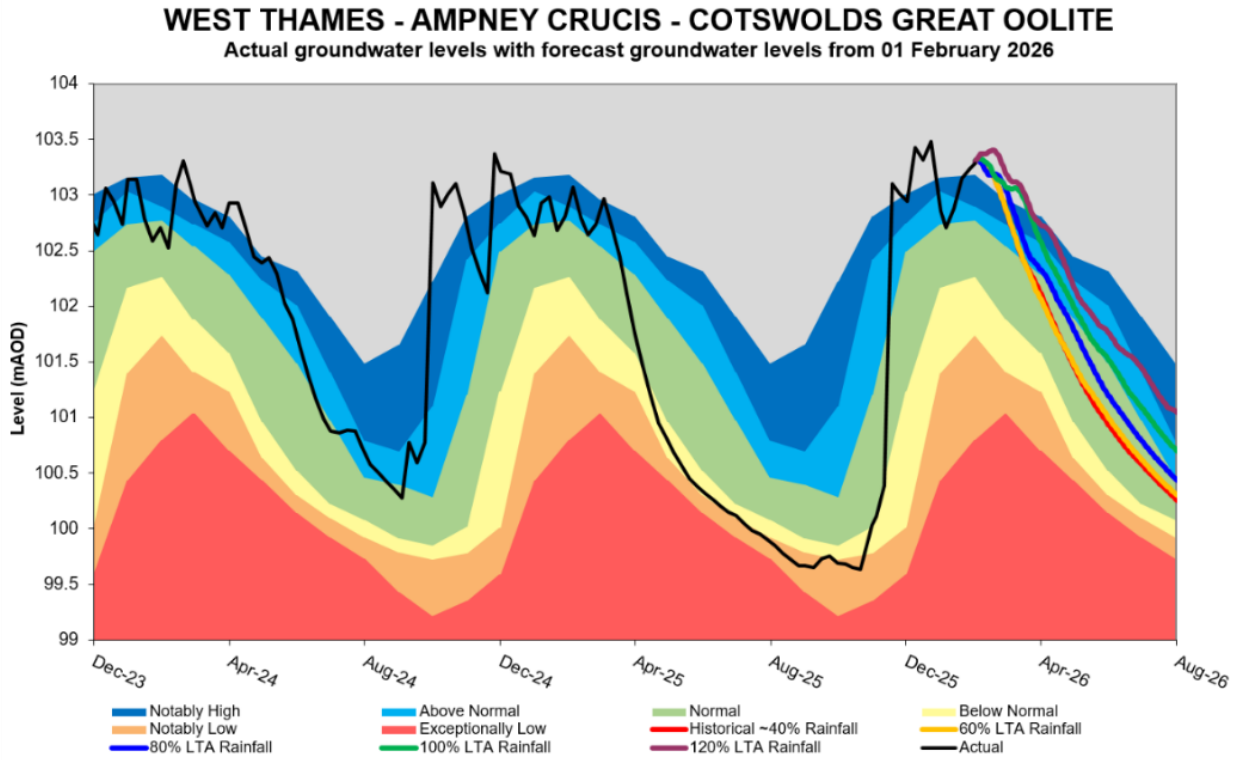

Figure D7 Ampney Crucis projected groundwater levels

D4. River flow monitoring and assessment

D4.1 Current flows

We receive flow data from the EA for key all major flow gauges relevant to abstraction and environmental compliance in our supply area including LON_0027 and SWOX_0006. A map of locations is provided in Figure D7 below. Analysis of these data include an assessment of mean monthly flows, comparison to LTA, low flow warnings, and an assessment of baseflow contributions from groundwater.

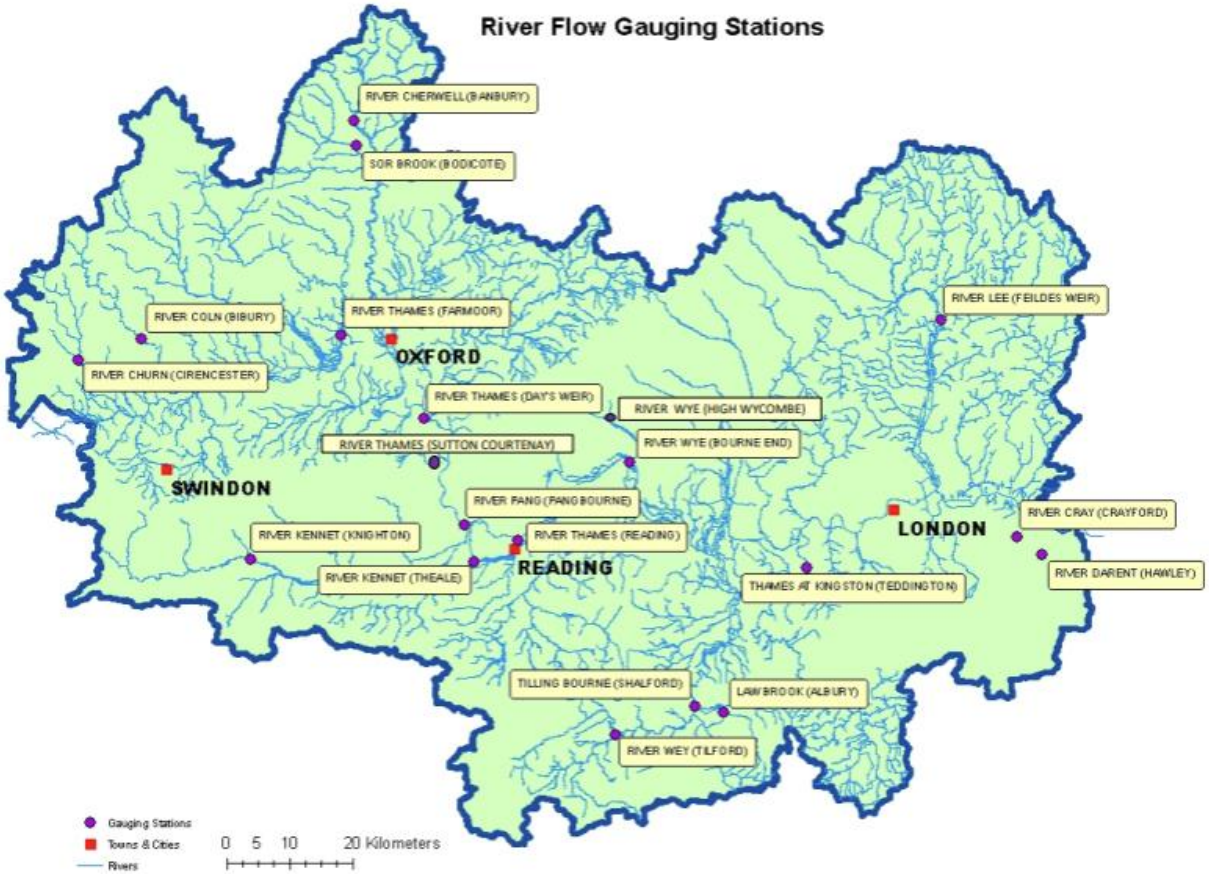

Figure D7 Map of flow gauges

D4.2 Flows projections

River flow projections are simulated at key locations. We simulate a range of LTA scenarios, ranging from 40% to 100%, for the coming six months. The report uses hydrological models to simulate the expected flows under dry/average/wet rainfall sequences.

Model outputs for LON_0027 and SWOX_0006 are shown in Figure D8 and Figure D9. River flows are plotted alongside groundwater levels projections to illustrate the relationship between the two. The EA also provides regular updates of river flows and risk of reaching abstraction licence flow constraints. A sample output is provided in Table D1.

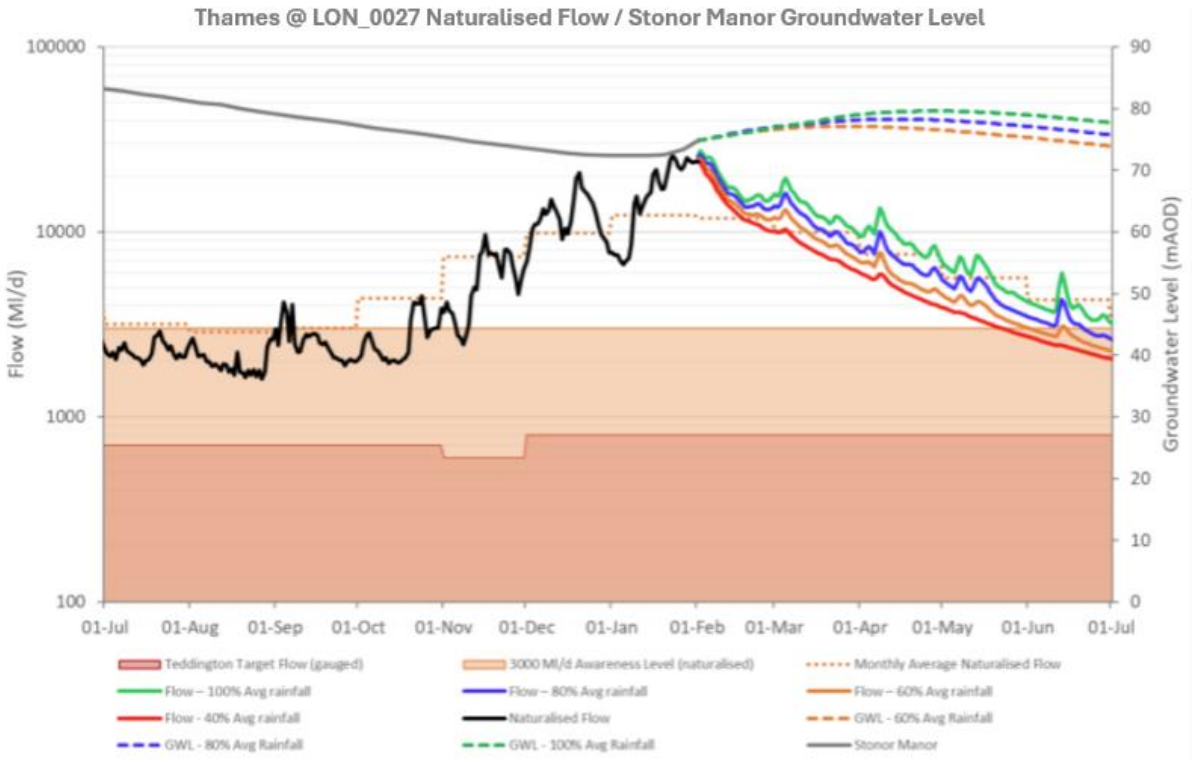

Figure D8 Thames at LON_0027 flow projections

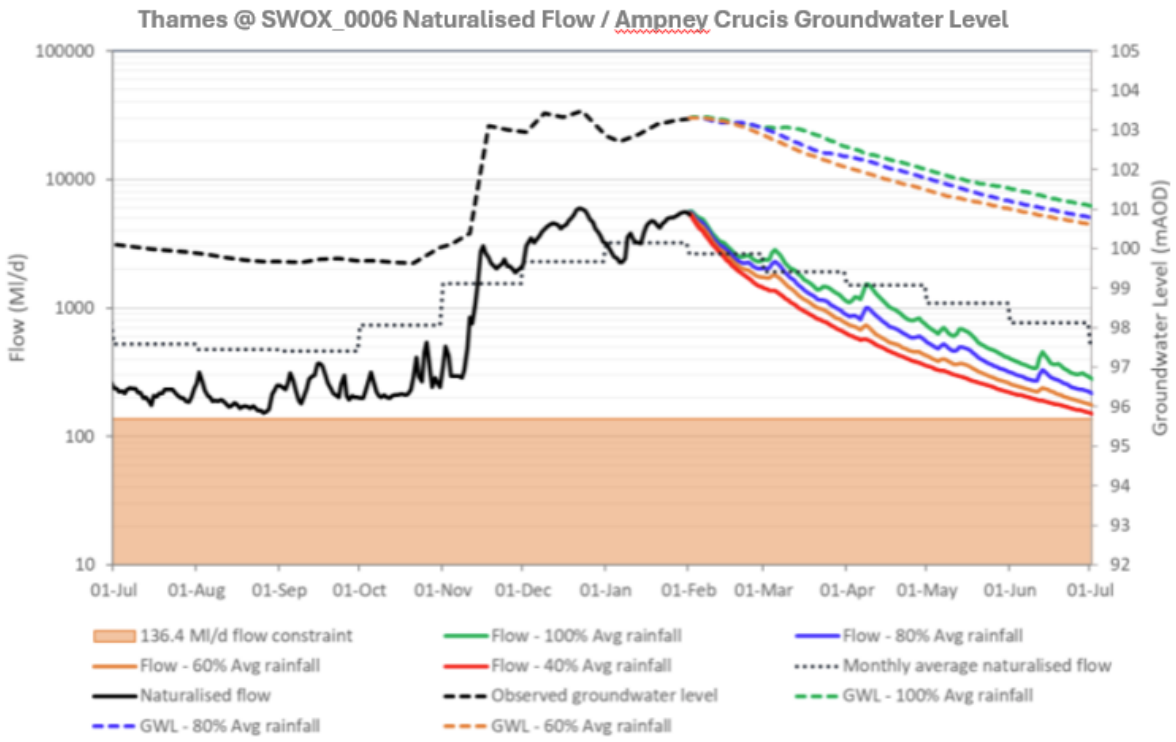

Figure D9 Thames at SWOX_0006 flow projections

Table D1 Sample river flow constraint levels and risk levels

River	Constraint Value Ml/d	Licence Condition	Date	Current Value (EA) Ml/d		Risk*		
						High	Med.	Low
Cherwell @ Banbury	10.0	6 Hr	03-Mar-19	45.0				✓
Churn @ Cirencester	32.0	5 Day Mean	h Feb - 3rd March 2019	74.3				✓
Coln @SWOX_0003	68.0	5 Day Mean	h Feb - 3rd March 2019	116.6			✓	
Cray @LON_0003	24.0	5 Day Cons Below	03-Mar-19	67.7				✓
Kennet @ Knighton	100.0	5 Days Cons Below	h Feb - 3rd March 2019	203.9				✓
Law Brook @ GUI_0001	2.27	1 Day	03-Mar-19	10.2				✓
Pang @ KEN_0004	18.0	5 Day Cons Below	03-Mar-19	41.3				✓
Sor Brook @ Bodicote	14.0	1 Day	03-Mar-19	31.0			✓	
Thames @SWOX_0006 (Natural)	136.4	1 Day	03-Mar-19	1166.4				✓
Thames @ Reading	400.0	5 Day Cons Below	03-Mar-19	2142.7				✓
*Risk indicates the chance of the river flow falling below the licence flow constraint at the gauging station								
AIM Locations (Abstraction Incentive Mechanism)	**Constraint Value Ml/d**	**Condition**	**Date**	**Current Value (EA) Ml/d**		**Risk****		
						High	**Med.**	**Low**
Cray @ LON_0003	11.40	1 Day	03-Mar-19	67.7				✓
Kennet @ Knighton	166.00	1 Day	27th Feb - 3rd March 2(	203.9			✓	
Lee @ Hoddesdon, Rye Bridge	60.00	1 Day	03-Mar-19	124.4				✓
Sulham Brook @ Sulham	1.02	1 Day	03-Mar-19	5.5				✓
Wye @ High Wycombe	5.60	1 Day	03-Mar-19	8.6			✓	
** Risk indicates the chance of the river flow falling below the AIM flow constraint at the gauging station AIM is an Ofwat scheme to reduce abstraction at environmentally sensitive sites during periods of low flow, voluntarily & without licence changes.								
Augmentation Requirement	**Constraint Value Ml/d**	**Condition**	**Date**	**Current Value (EA) Ml/d**		**Risk *** **		
						High	**Med.**	**Low**
Bibury Springs @ Trout Farm	5.5	1 Day	03/03/2019	7.0848		✓		
***Risk indicates the chance of the flow falling below the constraint value when augmentation would be required								

Note:
The risk assessment of flow constraints coming into force considers the likelihood over the next 1 month.

D5. Distribution input

We continually forecast our Distribution Input (DI) over a ten day period. DI is used to assess pressure on supplies and quantify supply demand balance and inform demand assumptions for water resources modelling. Monthly DI analysis includes:

- Company-wide demand
- WRZ specific demand patterns
- Comparison to seasonal norms
- Impacts of weather, leakage, and consumption trends

A sample plot of company DI is provided in Figure D10.

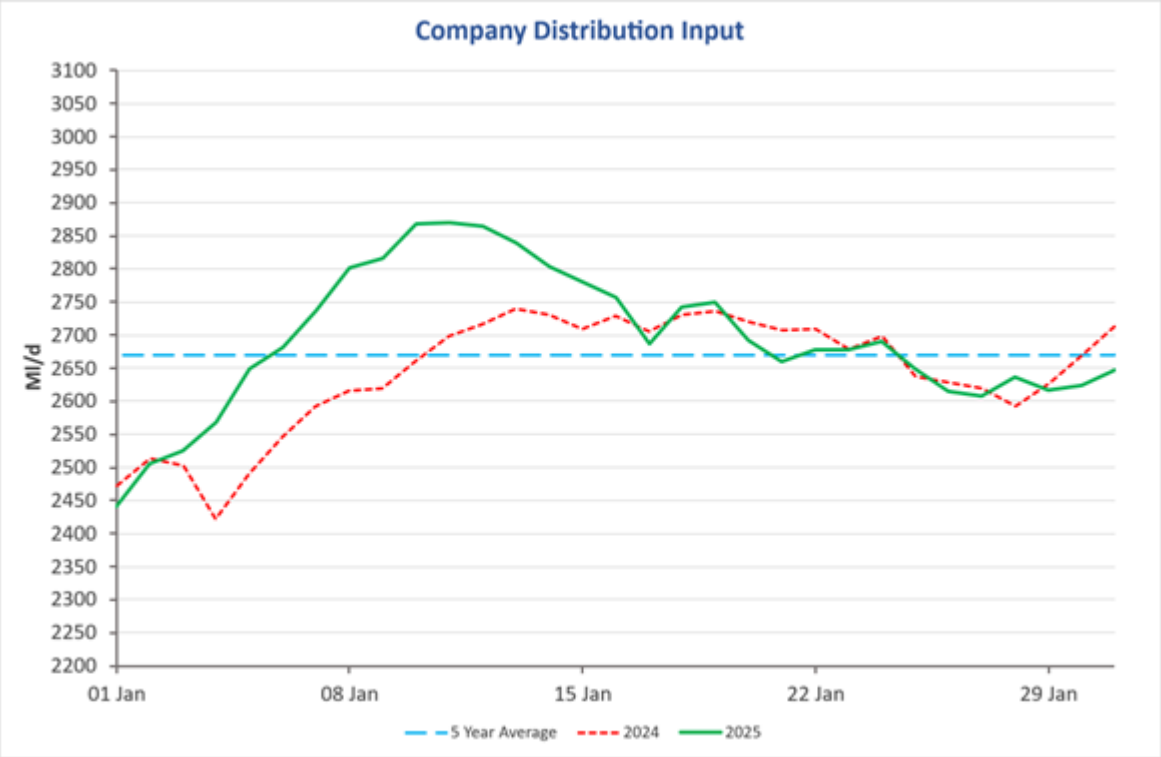

Figure D10 Sample company distribution input

D6. Reservoir storage

D6.1 Current reservoir storage

We measure our reservoir storage on a daily basis. For all key reservoirs (London, West London, Lee Valley, SWOX_0006), the report tracks:

- Total storage (Ml)
- Percentage of usable capacity
- Month-on-month changes

We also compare current storage to the previous year, previous month, the long term average, and LTCD curves.

A sample table as reported in the WSR is provided in

Table D2.

Table D2 Sample current reservoir storage tracking

Reservoir	Current Storage (Ml)	Usable Capacity (Ml)	% full on 31 Jan '26	Change from 31 Dec '25	% full (last year) 31 Jan '25
West London	146242	165090	89%	+3%	96%
Lee Valley	33151	37739	88%	+1%	89%
Total London	**179393**	**202828**	**88%**	**+3%**	**95%**
SWOX_0006	11115	13822	80%	-17%	91%

D6.2 Reservoir storage projections

Storage projections for SWOX_0006 and aggregated London Storage are simulated using our WARMS2 water resources model (refer to Appendix I). The scenarios explored over the coming six months include:

- a range of LTA scenarios ranging from 40% to 100%
- planned outages
- a range of demand scenarios
- water quality challenges

The WSR also summarises the model trigger for strategic schemes and their availability. We also report on the state of storage for LON_0013, its recent usage, and readiness for deployment.

Sample reservoir storage projection plots for SWOX_0006 and London are provided in Figure D11 and Figure D12.

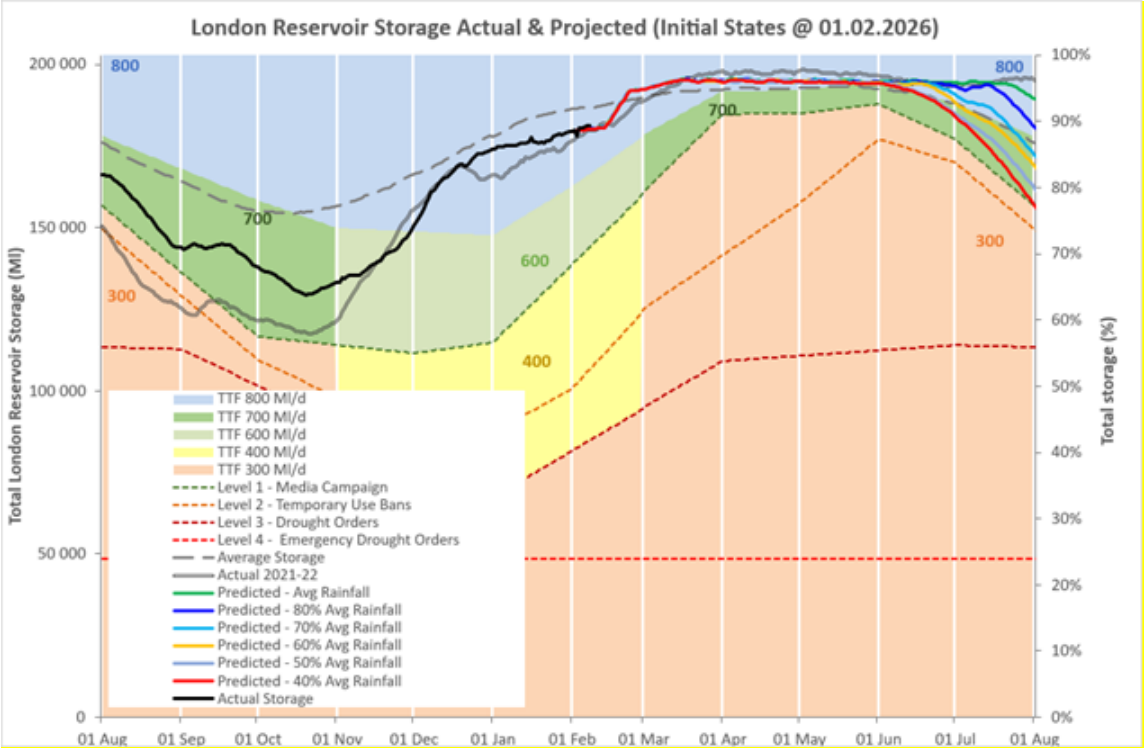

Figure D11 Sample London storage projection

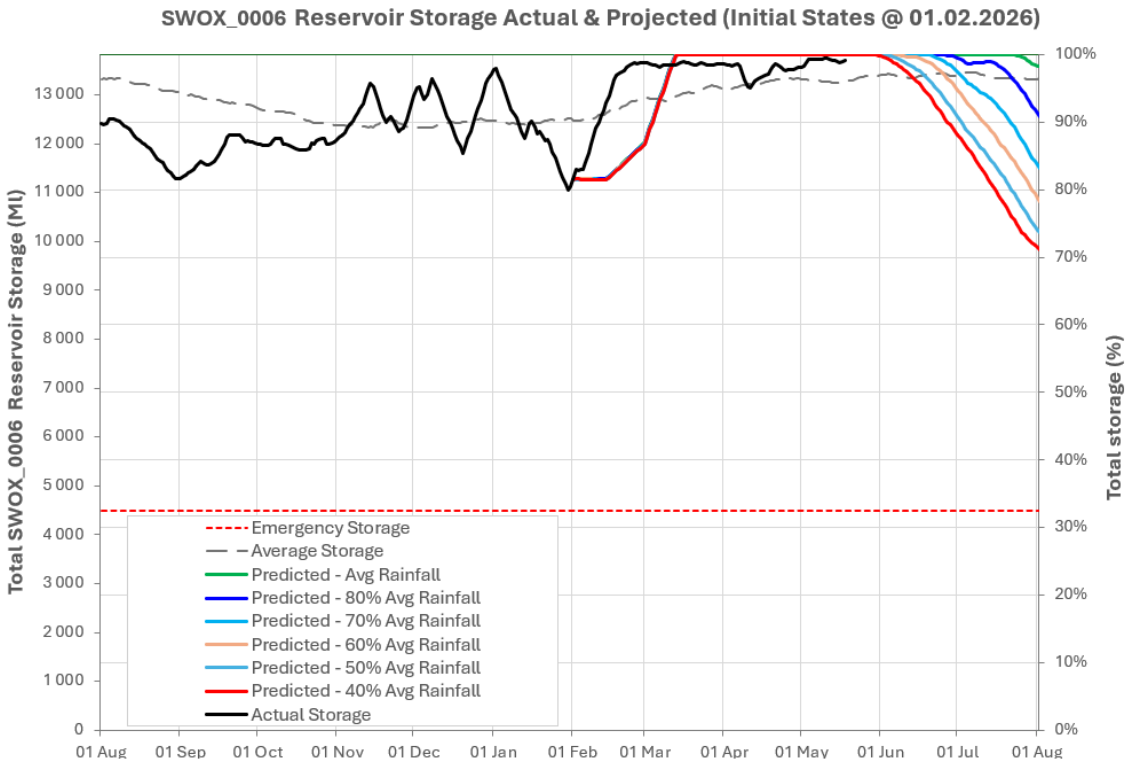

Figure D12 Sample SWOX_0006 storage projection