Monthly water situation report: Devon and Cornwall Area

1 Summary – December 2024

Devon and Cornwall received 60% of the December long term average (LTA) rainfall, which was below normal for the time of year. Soil moisture deficit (SMD) increased initially in December before decreasing again in the second half of the month, ending the month similar to the LTA for the time of year. Monthly mean river flows ranged from below normal to normal for the time of year across the area. Groundwater levels ended the month between below normal and exceptionally high for the time of year. Total reservoir storage across Devon and Cornwall ended the month at 89% net storage, with Wimbleball, Colliford and Roadford reservoirs at 87%, 79%, and 95% of net storage respectively at the end of December.

1.1 Rainfall

Devon and Cornwall received 83mm of rain during December (60% of the December LTA), which is classed as below normal for the time of year. Rain fell throughout the month, but the most significant periods of rain occurred between 4 December and 6 December and between 17 December and 23 December, as well as on the first and last day of the month. December was one of 4 months in the last 12 months to have experienced below average rainfall.

In December, rainfall was below normal in most hydrological areas except for the Otter, Sid, Axe and Lim, Fal and St Austell, and West Cornwall hydrological areas, where rainfall was notably low for the time of year. Cumulative rainfall in the last 3 and 6 months has been normal for the time of year across most areas. In the last 12 months, most of Cornwall and north Devon recorded notably high cumulative rainfall, with most of south Devon and east Devon recording exceptionally high cumulative rainfall.

1.2 Soil moisture deficit

SMD increased in the first part of December, before decreasing again in the second half of the month. The average deficit for Devon and Cornwall remained below 10mm for the whole of December, meaning the average deficit was similar to the LTA for the time of year. The SMD at the end of December was similar to the SMD at the end of December 2023.

SMD was less than 10mm across the whole Devon and Cornwall area on 1 January, which is within 5mm of the LTA.

1.3 River flows

December monthly mean river flows ranged between below normal to normal for the time of year. Bellever on the East Dart, Chudleigh Bridge on the Teign, Dotton on the Otter, Gunnislake on the Tamar, Torrington on the Torridge, and Umberleigh on the Taw all recorded below normal monthly mean flows, reflecting lower rainfall in these catchments. Most reporting stations experienced a decrease in daily mean flows over the month with some peaks seen in response to rainfall, particularly from 4 to 6 December. On 31 December, all reporting sites recorded below normal daily mean flows for the time of year, except for Chudleigh Bridge on the Teign and Whitford on the Axe, which reported notably low and normal flows respectively for time of year.

1.4 Groundwater levels

On 31 December, groundwater levels were classed as follows:

- Exceptionally high at Branscombe Lane (monitoring the Dawlish Sandstone), Whitlands (monitoring the Upper Greensand), Woodbury Common No2 (monitoring the Budleigh Salterton Pebble Beds), and Woodleys No1 (monitoring the Otterton Sandstone Formation).
- Normal at Bussels No7A (monitoring the Dawlish Sandstone) and Coleford Production (monitoring the Permian Breccias and Sandstones).
- Below normal at Winnards Perch (monitoring the Staddon Formation).

1.5 Reservoir stocks

Total reservoir storage was 89% at the end of December, which is an increase of 3% in storage since the end of November. This is higher than the total storage at the same time last year and in 2022. At the end of the month, storage at Wimbleball, Colliford and Roadford was 87%, 79% and 95% of net storage respectively, compared to 100%, 73% and 82% this time last year.

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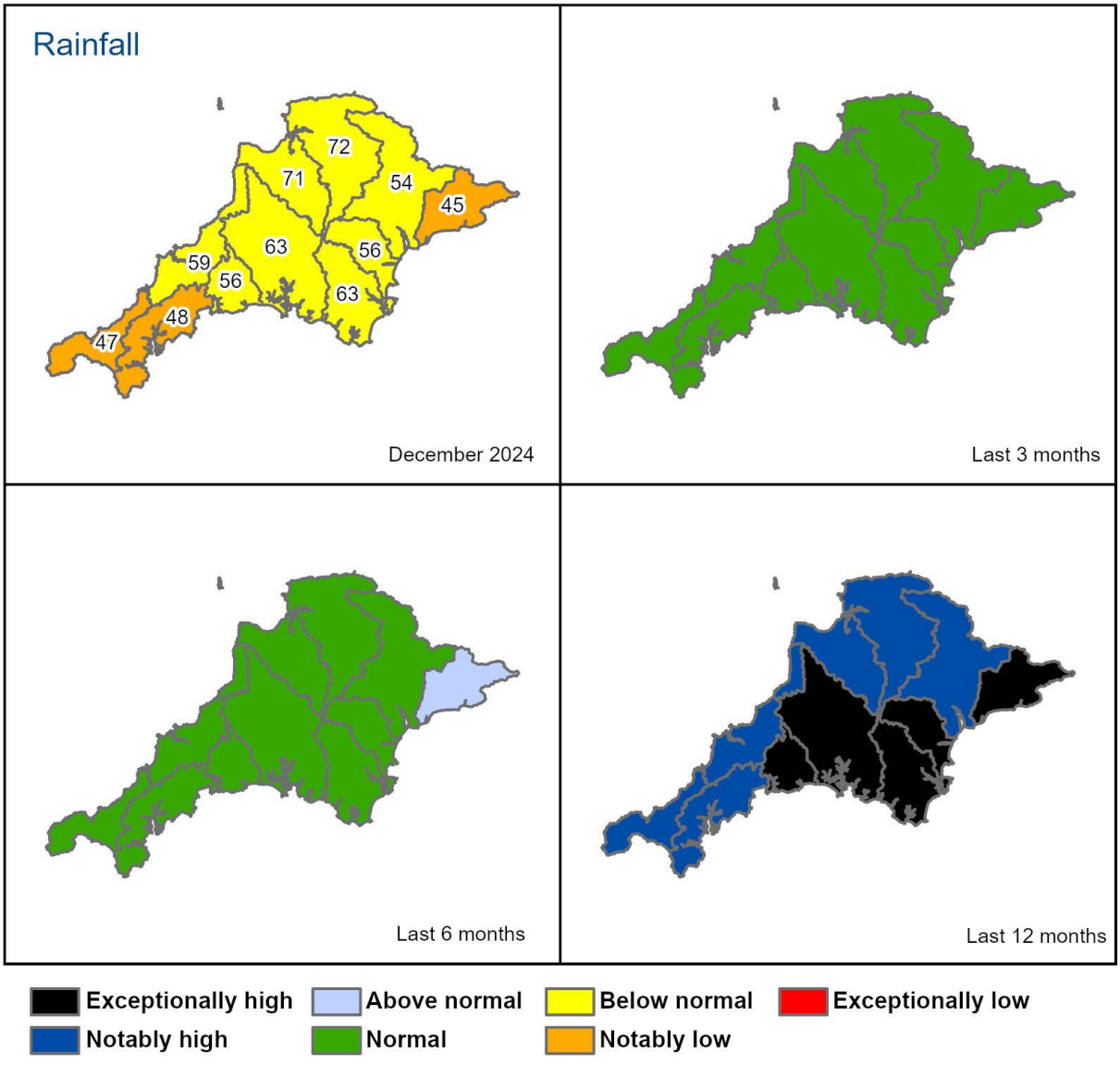
2 Rainfall

2.1 Rainfall map

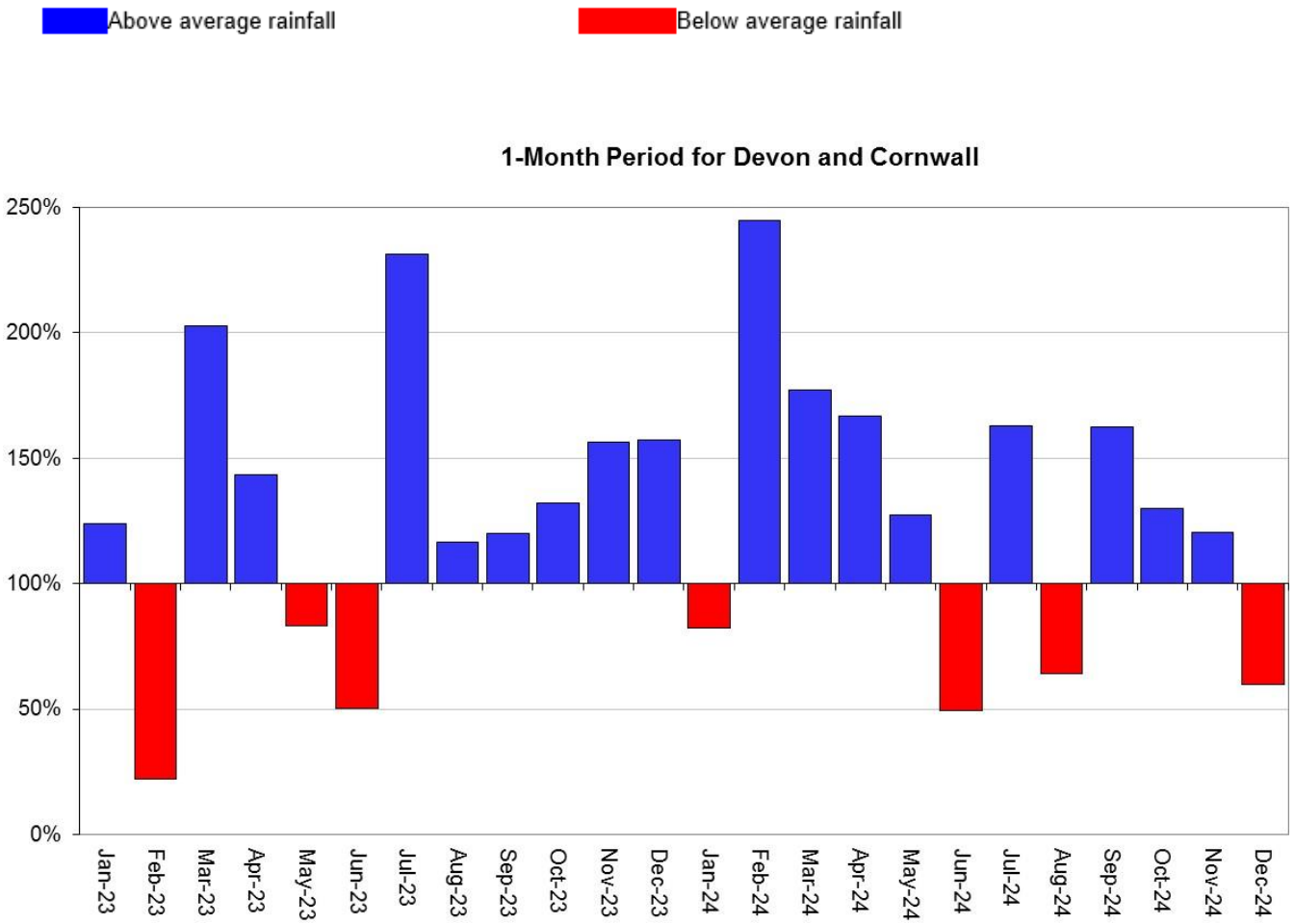
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 31 December 2024), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.



HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2025). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

2.2 Rainfall charts

Figure 2.2: Monthly rainfall totals for the past 24 months as a percentage of the 1961 to 1990 long term average for Devon and Cornwall area.

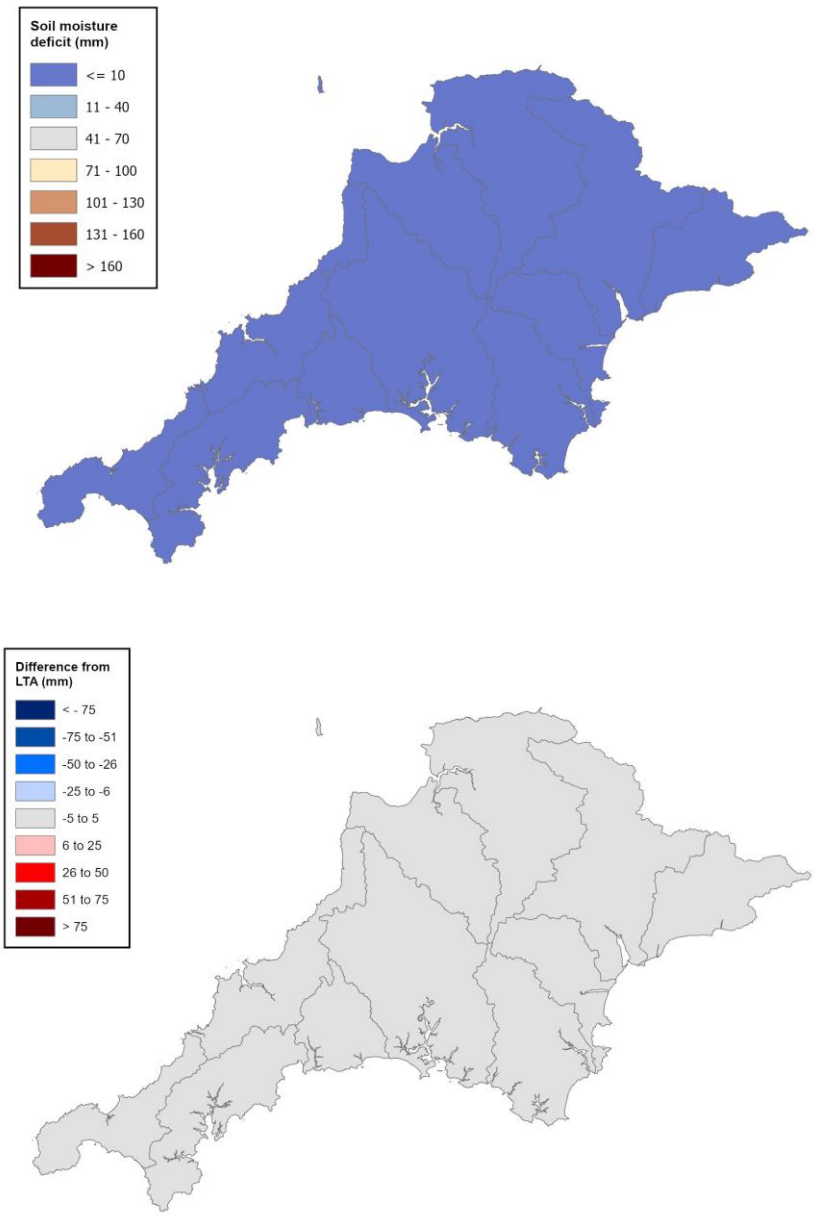


Rainfall data for 2024, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived from registered rain gauges (Source: Met Office. Crown copyright, 2025).

3 Soil moisture deficit

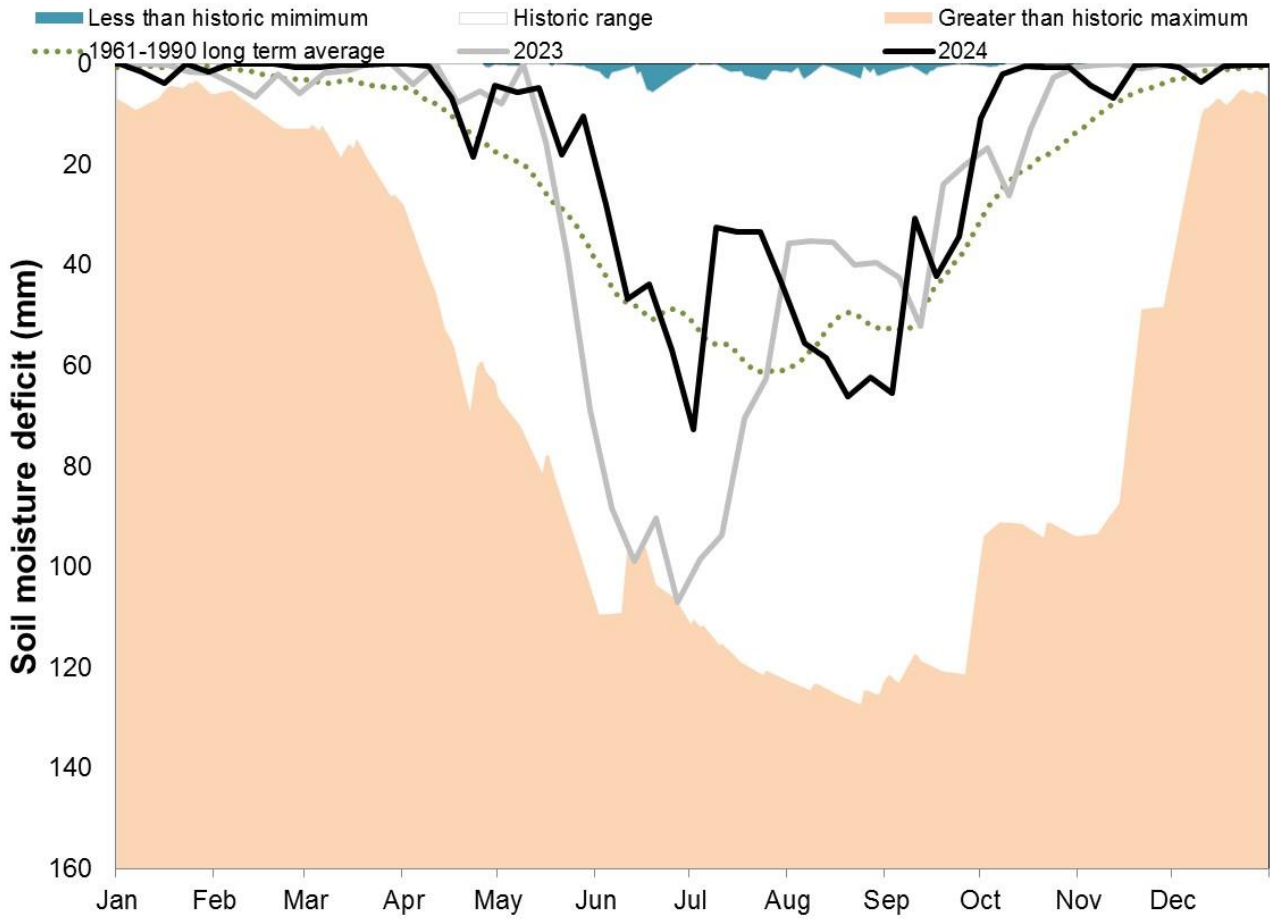
3.1 Soil moisture deficit map

Figure 3.1: Top map shows soil moisture deficit for week ending 31 December 2024. Bottom map shows the difference (mm) between the actual soil moisture deficit and the 1961 to 1990 long term average soil moisture deficits. MORECS data for real land use.



3.2 Soil moisture deficit charts

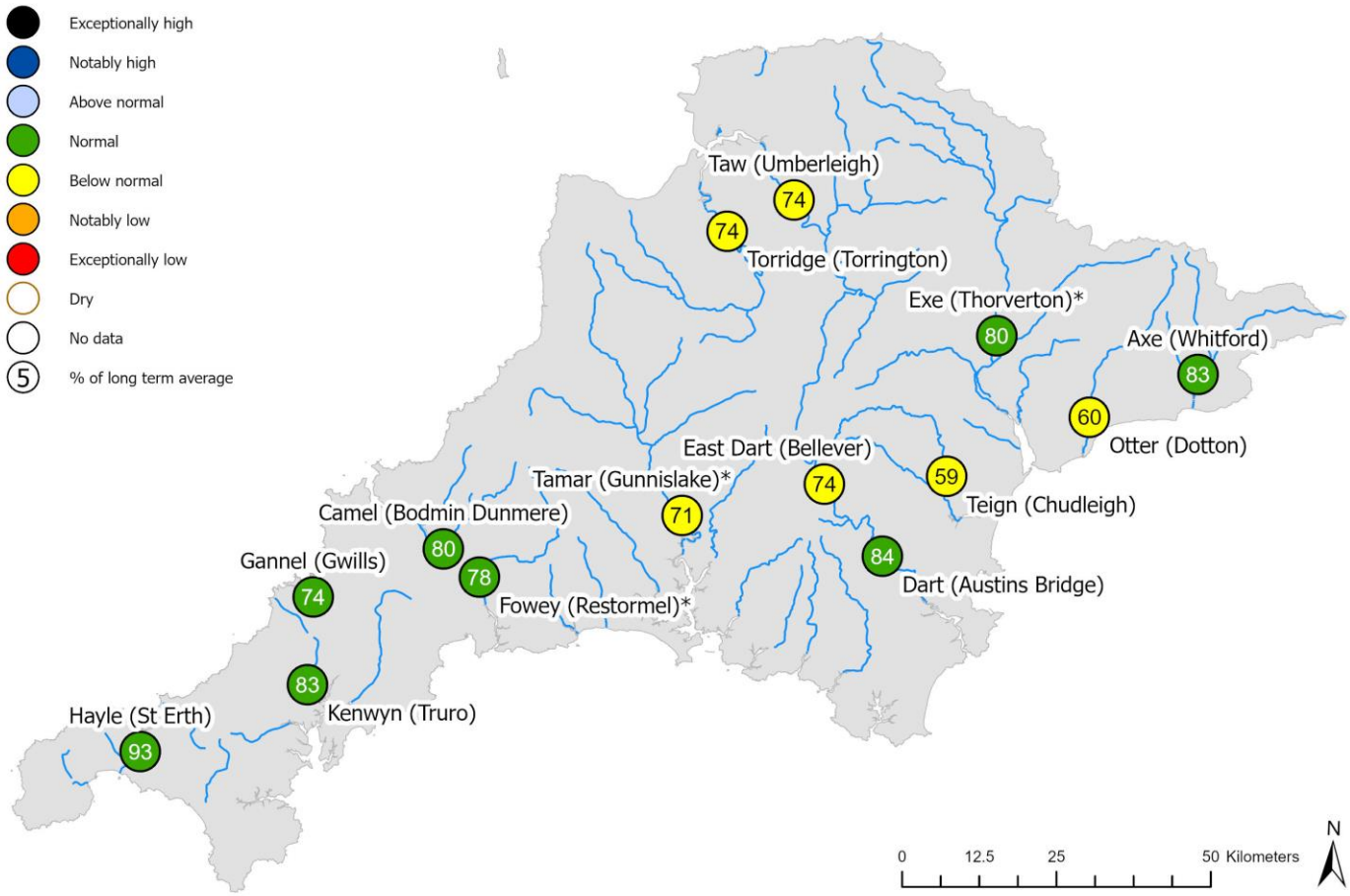
Figure 3.2: Latest soil moisture deficit compared to previous year, maximum, minimum, and 1961 to 1990 long term average. Weekly MORECS data for real land use.



4 River flows

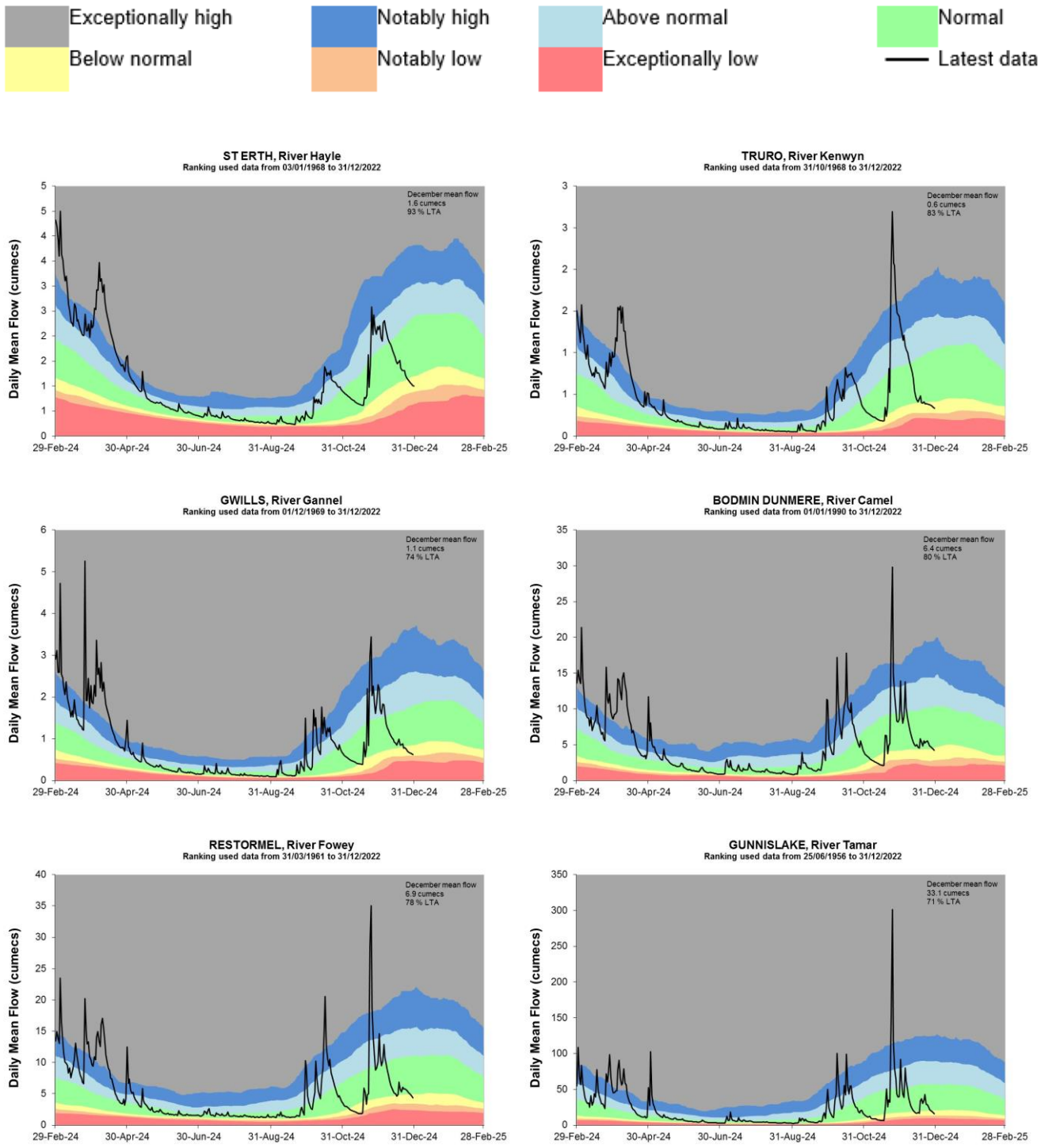
4.1 River flows map

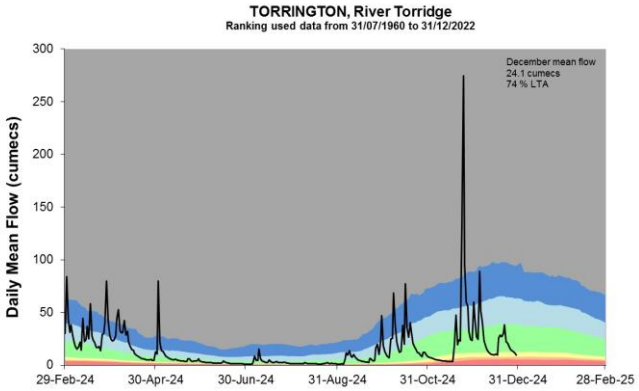
Figure 4.1: Monthly mean river flow for indicator sites for 31 December 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic September monthly means. Table available in the appendices with detailed information.

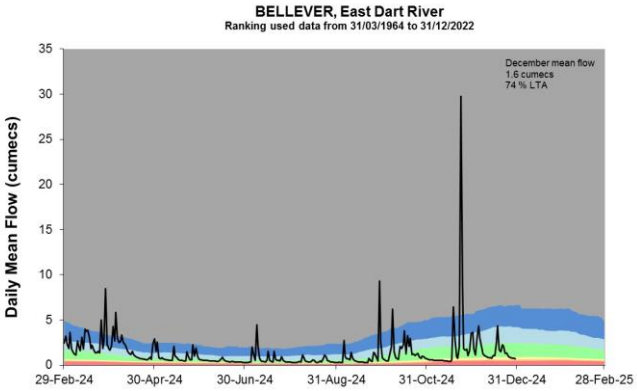


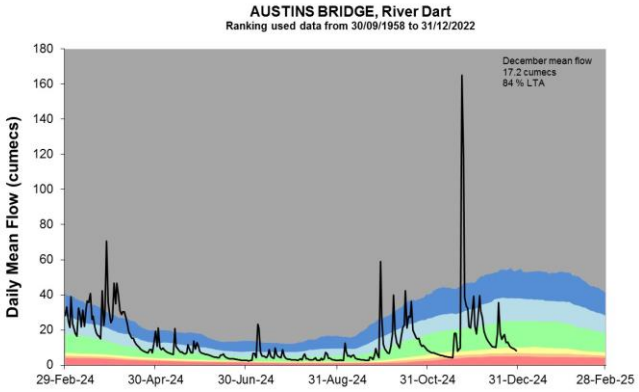
4.2 River flow charts

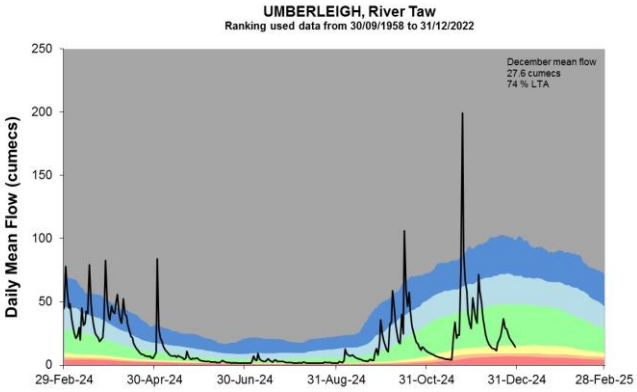
Figure 4.2: Daily mean river flow for indicator sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.

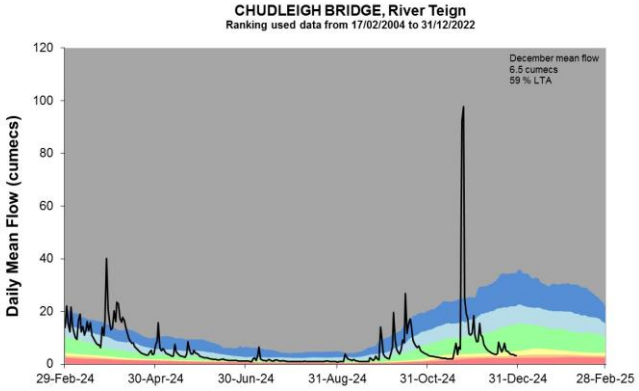


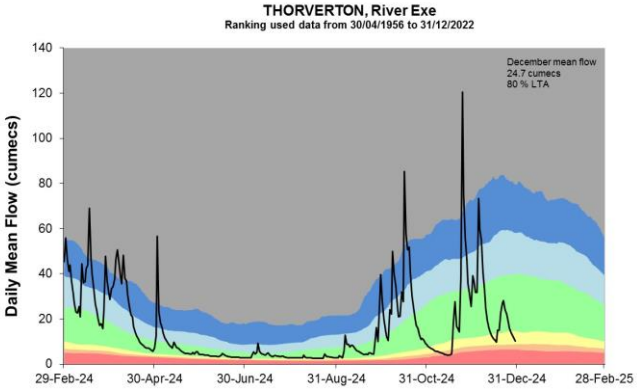


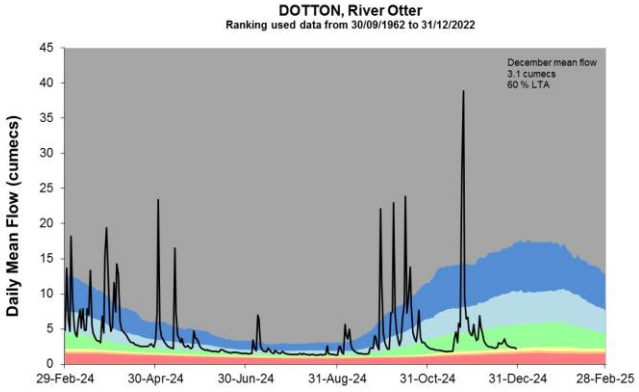


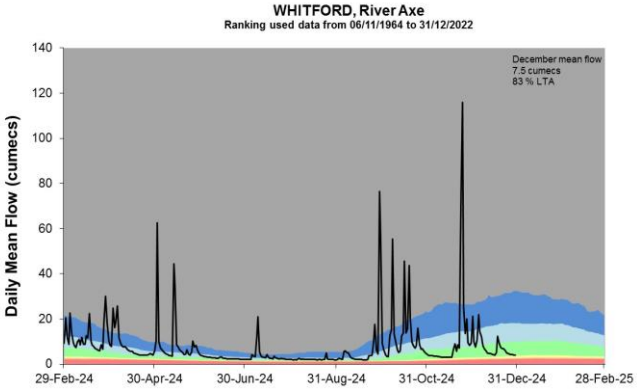










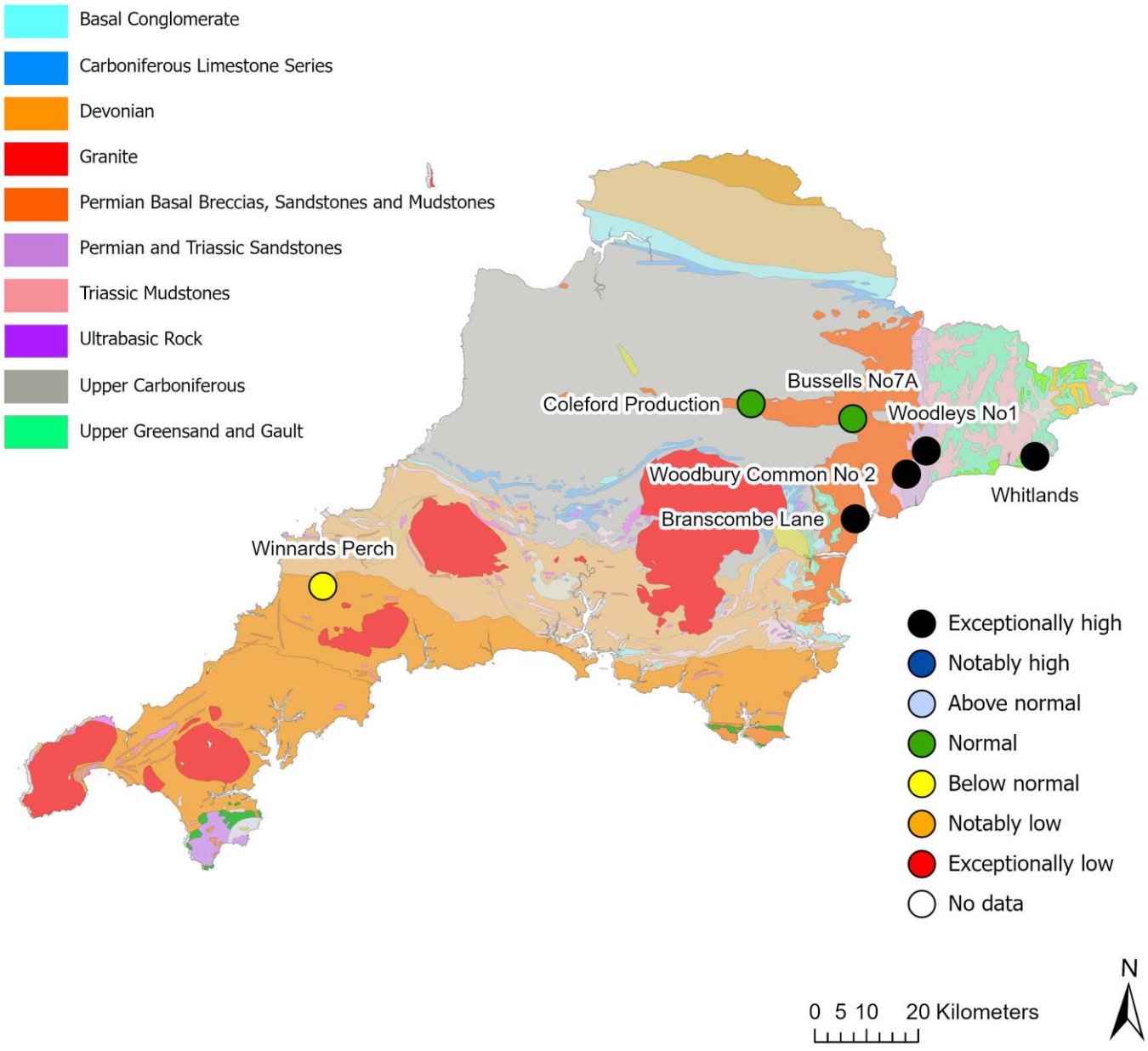


Source: Environment Agency.

5 Groundwater levels

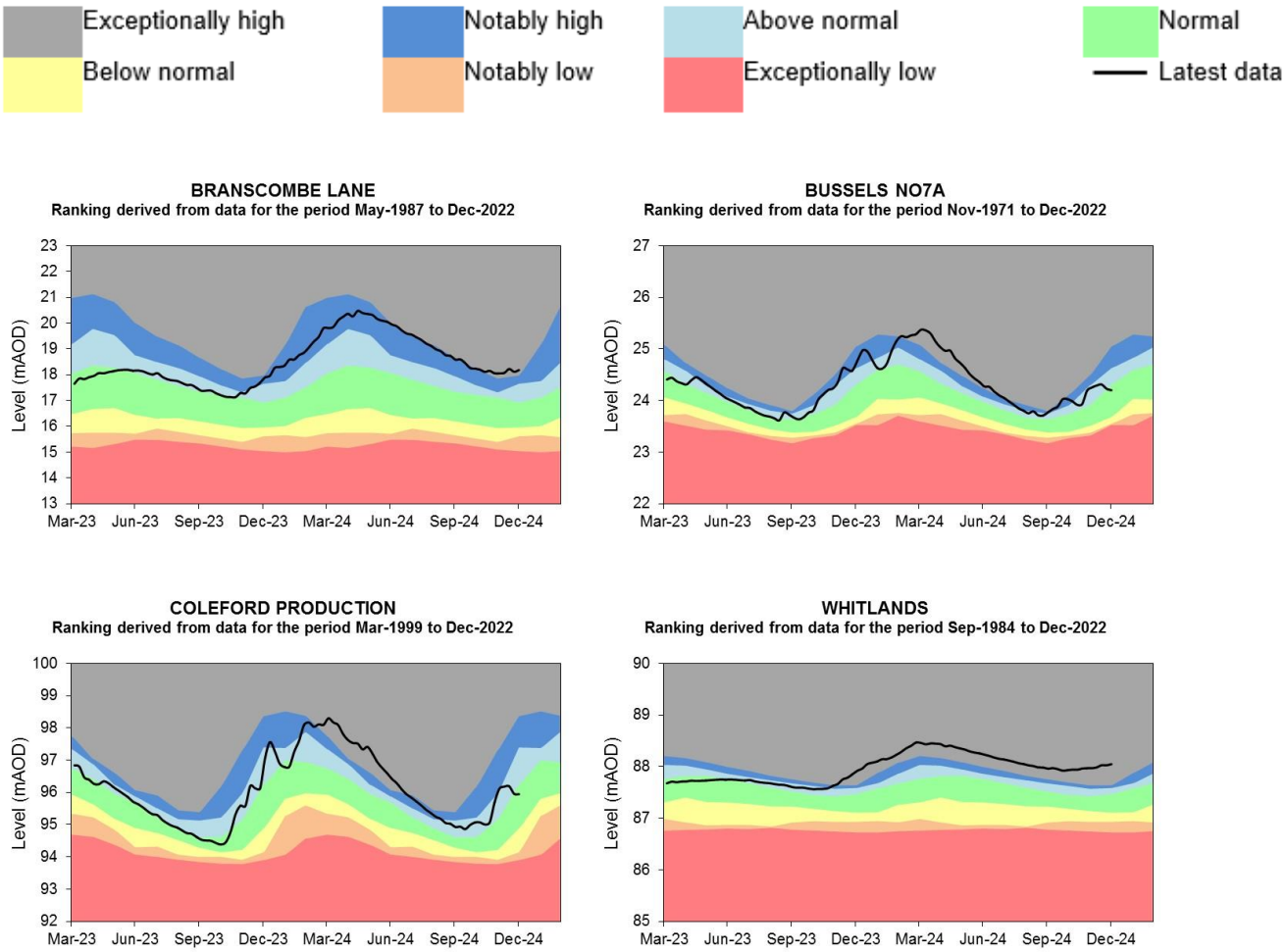
5.1 Groundwater levels map

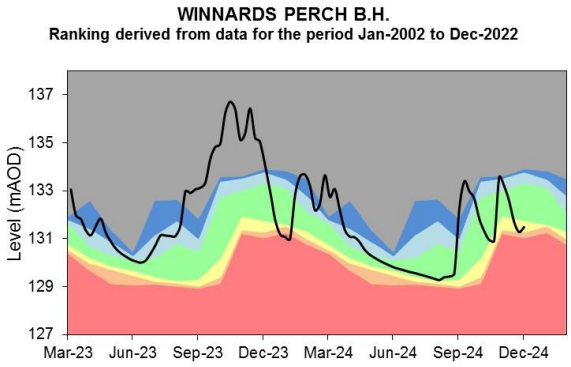
Figure 5.1: Groundwater levels for indicator sites at the end of 31 December 2024, classed relative to an analysis of respective historic September levels. Table available in the appendices with detailed information.

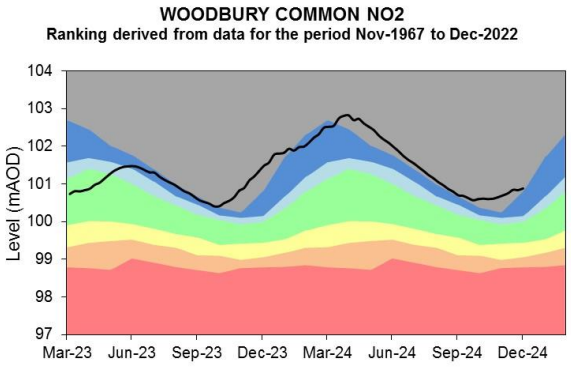


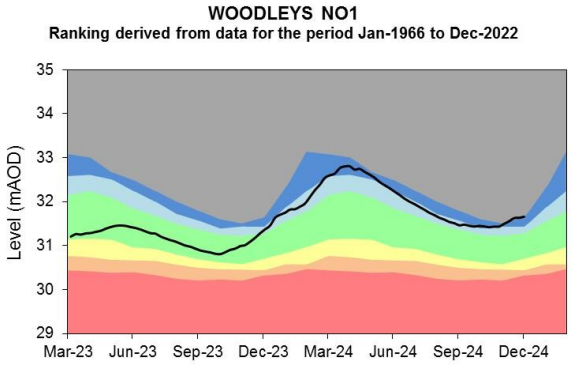
5.2 Groundwater level charts

Figure 5.2: End of month groundwater levels at index groundwater level sites for major aquifers. 22 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.





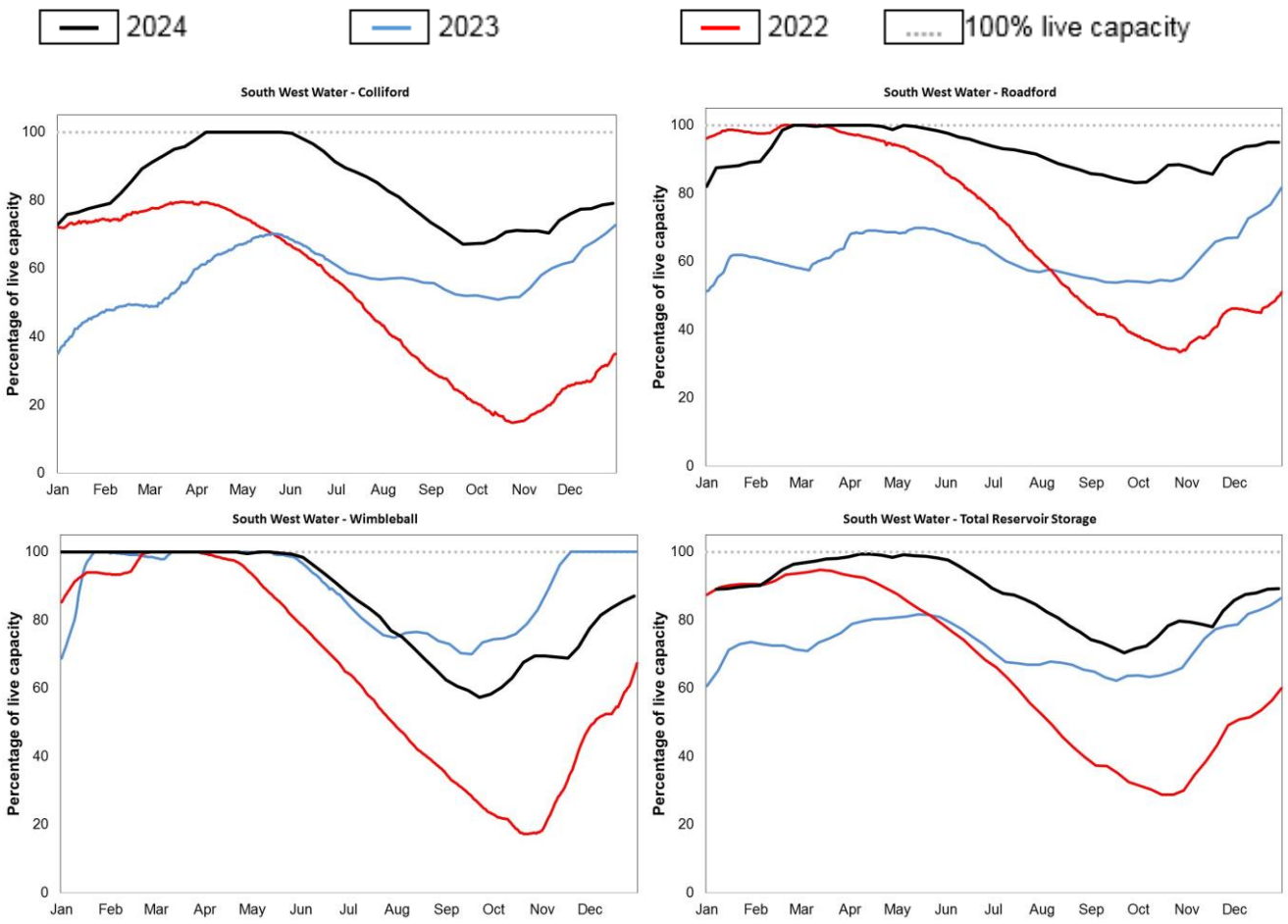




Source: Environment Agency, 2025.

6 Reservoir stocks

Figure 6.1: End of month reservoir storage compared to previous year and a historic drought year. Note: Historic records of individual reservoirs vary in length.



(Source: South West Water).

7 Glossary

7.1 Terminology

Aquifer

A geological formation able to store and transmit water.

Areal average rainfall

The estimated average depth of rainfall over a defined area. Expressed in depth of water (mm).

Artesian

The condition where the groundwater level is above ground surface but is prevented from rising to this level by an overlying continuous low permeability layer, such as clay.

Artesian borehole

Borehole where the level of groundwater is above the top of the borehole and groundwater flows out of the borehole when unsealed.

Cumecs

Cubic metres per second (m^{3s-1}).

Effective rainfall

The rainfall available to percolate into the soil or produce river flow. Expressed in depth of water (mm).

Flood alert and flood warning

Three levels of warnings may be issued by the Environment Agency. Flood alerts indicate flooding is possible. Flood warnings indicate flooding is expected. Severe flood warnings indicate severe flooding.

Groundwater

The water found in an aquifer.

Long term average (LTA)

The arithmetic mean calculated from the historic record, usually based on the period 1961 to 1990. However, the period used may vary by parameter being reported on (see figure captions for details).

mAOD

Metres above ordnance datum (mean sea level at Newlyn Cornwall).

MORECS

Met Office Rainfall and Evaporation Calculation System. Met Office service providing real time calculation of evapotranspiration, soil moisture deficit and effective rainfall on a 40 by 40 km grid.

Naturalised flow

River flow with the impacts of artificial influences removed. Artificial influences may include abstractions, discharges, transfers, augmentation and impoundments.

NCIC

National Climate Information Centre. NCIC area monthly rainfall totals are derived using the Met Office 5 km gridded dataset, which uses rain gauge observations.

Recharge

The process of increasing the water stored in the saturated zone of an aquifer. Expressed in depth of water (mm).

Reservoir gross capacity

The total capacity of a reservoir.

Reservoir live capacity

The capacity of the reservoir that is normally usable for storage to meet established reservoir operating requirements. This excludes any capacity not available for use (for example, storage held back for emergency services, operating agreements or physical restrictions). May also be referred to as ‘net’ or ‘deployable’ capacity.

Soil moisture deficit (SMD)

The difference between the amount of water actually in the soil and the amount of water the soil can hold. Expressed in depth of water (mm).

7.2 Categories

Exceptionally high

Value likely to fall within this band 5% of the time.

Notably high

Value likely to fall within this band 8% of the time.

Above normal

Value likely to fall within this band 15% of the time.

Normal

Value likely to fall within this band 44% of the time.

Below normal

Value likely to fall within this band 15% of the time.

Notably low

Value likely to fall within this band 8% of the time.

Exceptionally low

Value likely to fall within this band 5% of the time.

8 Appendices

8.1 Rainfall table

Hydrological area	Dec 2024 rainfall % of long term average 1961 to 1990	Dec 2024 band	Oct 2024 to December cumulative band	Jul 2024 to December cumulative band	Jan 2024 to December cumulative band
Avon Dart And Erme	63	Below Normal	Normal	Normal	Exceptionally high
Exe	54	Below Normal	Normal	Normal	Notably high
Fal And St Austell	48	Notably Low	Normal	Normal	Notably high
North Cornwall	59	Below Normal	Normal	Normal	Notably high
Otter Sid Axe And Lim	45	Notably Low	Normal	Above normal	Exceptionally high
Seaton Looe And Fowey	56	Below Normal	Normal	Normal	Exceptionally high
Tamar	63	Below Normal	Normal	Normal	Exceptionally high
Taw And North Devon Streams	72	Below Normal	Normal	Normal	Notably high
Teign And Torbay	56	Below Normal	Normal	Normal	Exceptionally high

Torridge And Hartland Streams	71	Below Normal	Normal	Normal	Notably high
West Cornwall	47	Notably Low	Normal	Normal	Notably high

8.2 River flows table

Site name	River	Catchment	Dec 2024 band	Nov 2024 band
Austins Bridge	Dart	Dart	Normal	Normal
Bellever	East Dart	Dart	Below normal	Above normal
Bodmin Dunmere	Camel	Camel	Normal	Normal
Chudleigh Bridge	Teign	Teign Upper	Below normal	Above normal
Dotton	Otter	Otter	Below normal	Above normal
Gunnislake	Tamar	Tamar Lower	Below normal	Normal
Gwills	Gannel	Gannel	Normal	Normal
Restormel	Fowey	Fowey	Normal	Normal
St Erth	Hayle	Hayle	Normal	Normal
Thorverton	Exe	Exe Lower	Normal	Normal
Torrington	Torridge	Torridge Middle	Below normal	Normal
Truro	Kenwyn	Tresillian Trevella Kenwyn	Normal	Normal
Umberleigh	Taw	Taw Middle	Below normal	Normal
Whitford	Axe	Axe Devon Middle	Normal	Above normal

8.3 Groundwater table

Site name	Aquifer	End of Dec 2024 band	End of Nov 2024 band
Branscombe Lane	Dawlish Sandstone	Exceptionally high	Exceptionally high
Bussels No7a	Dawlish Sandstone	Normal	Above normal
Coleford Production	Permian Breccias And Sandstones	Normal	Notably high
Whitlands	Upper Greensand	Exceptionally high	Exceptionally high
Winnards Perch B.h.	Staddon Formation	Below normal	Normal
Woodbury Common No2	Budleigh Salterton Pebble Beds	Exceptionally high	Exceptionally high
Woodleys No1	Otterton Sandstone Formation	Exceptionally high	Notably high