

Monthly water situation report: North-west England

1 Summary – January 2025

1.1 Rainfall

Rainfall for north-west England was classed as normal with 85% of the long term average (LTA). The Cumbria and Lancashire (CLA) area observed 78% of the LTA also classed as normal. The Greater Manchester Merseyside and Cheshire (GMC) area observed more rainfall with 129% of the LTA, which was classed as above normal. The heaviest rainfall was observed in the second half of the month directly before and after storm Éowyn (January 24th to 25th).

During January rainfall for hydrological areas within north-west England was classed between below normal and notably high. The highest rainfall (in terms of LTA) was recorded in the Cheshire Rivers Group hydrological area with 149% of the LTA classed as notably high. The lowest rainfall was recorded in the Eden and Esk (Dumfries) hydrological areas both with 58% of the LTA classed as below normal. The rainfall in all other hydrological areas was classed as normal.

Cumulative rainfall over the past 3 months was classed between below normal and notably high. The 3 month rainfall distribution shows a similar pattern to January with the highest being recorded in the Cheshire Rivers Group hydrological area with 139% of the LTA classed as notably high. The lowest was in the Esk (Dumfries) with 76% of the LTA classed as below normal.

The 6 month cumulative rainfall totals show rainfall classed between normal and exceptionally high. The highest rainfall was again seen in the Cheshire Rivers Group hydrological area with 141% of the LTA classed as exceptionally high. This is the fifth highest rainfall recorded in Cheshire rivers group for a 6 month period ending in January since 1871. The lowest rainfall was recorded in the Eden with 94% of the LTA classed as normal.

Cumulative rainfall totals for the last 12 months were classed between above normal and exceptionally high with the highest rainfall being observed in the Cheshire Rivers Group hydrological area with 146% of the LTA. This is the second highest rainfall recorded in Cheshire rivers group for a 12 month period ending in January since 1871. The lowest cumulative rainfall totals recorded for the last 12 months was for the Ribble hydrological area with 114% of the LTA.

1.2 Soil moisture deficit and recharge

SMD levels for January were recorded as being between 0mm and 1mm. By the start of January all areas across north-west England were fully saturated. While the SMD in some areas rose very slightly over January, by the start of February all but 2 of them were still below the LTA with more than half of the areas remaining fully saturated.

1.3 River flows

Monthly mean river flows for north-west England were classed between normal and exceptionally high. Of the 16 sites in the CLA area 3 were classed as below normal, 3 were classed as notably high and the remainder were classed as normal. The lowest monthly mean flow (in terms of the LTA) for north-west England during January was in the river Eden at Kirkby Stephen with 63% of the LTA classed as below normal.

Out of the 9 sites in the GMC area 1 was classed as normal, 1 was classed as above normal, 4 were classed as notably high and 3 were classed as exceptionally high. The highest monthly mean flow for north-west England during January was recorded for the river Weaver at Ashbrook with 189% of the LTA classed as exceptionally high and the highest monthly flow for January since records began in 1977 for this station.

1.4 Groundwater levels

Groundwater levels for north-west England for the end of January were classed between normal and exceptionally high. 3 sites changed classification with Brown Bank Lay-By increasing from above normal to notably high, Bruntwood Hall increasing from normal to exceptionally high and Victoria Road decreased from above normal to normal. All other sites remained the same classification as follows:

- Furness Abbey at notably high
- Great Musgrave at normal
- Lea Lane at normal
- Primrose Hill at normal
- Priors Heyes at exceptionally high
- Skirwith at normal
- Richmond Park at exceptionally high

Levels at Priors Heyes remain high compared to historic levels because the aquifer is recovering from the effects of historically high abstractions.

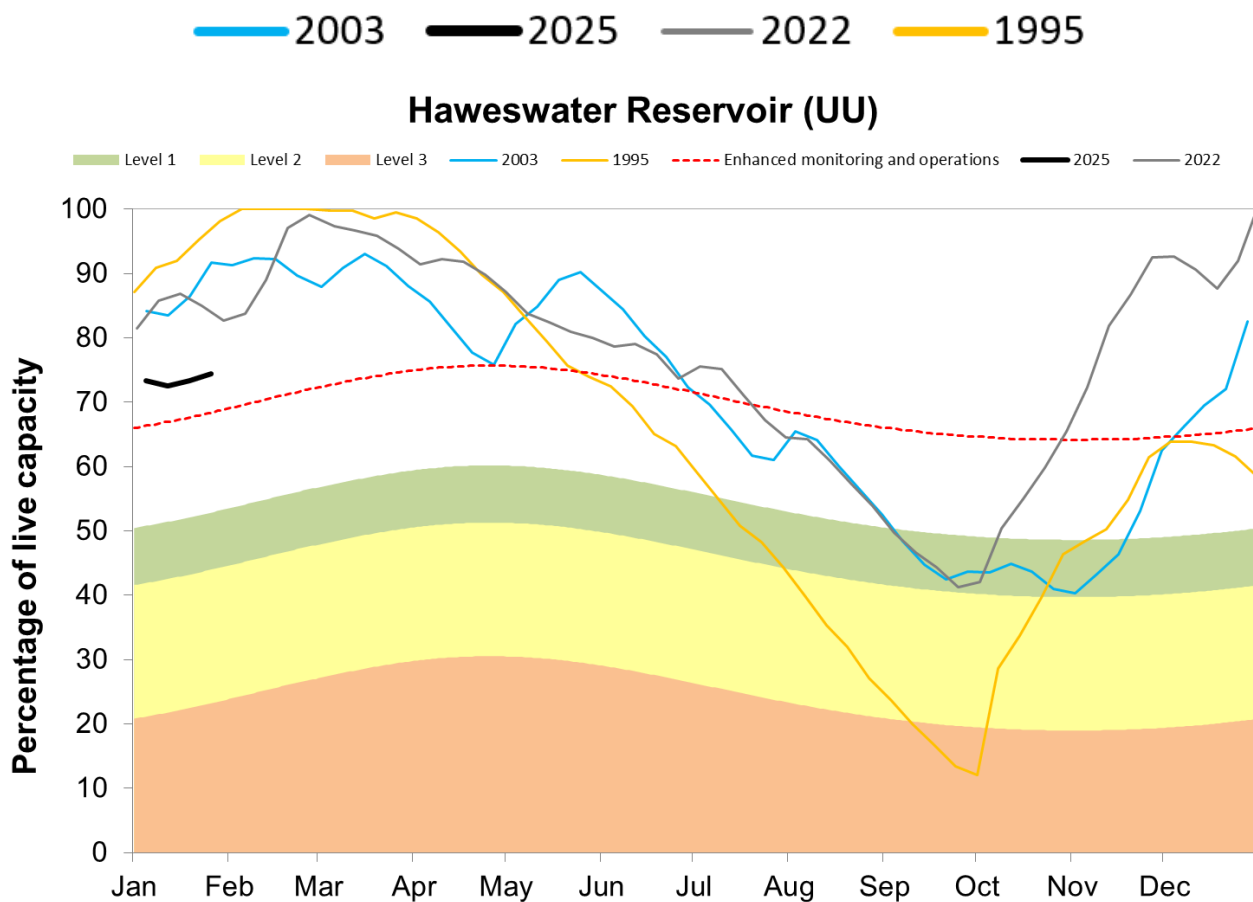
1.5 Reservoir stocks

Total reservoir storage for north-west England at the end of January was at 85.1% after increasing from 82.4% at the end of December this is lower than the average of 90.9% at this time of year and also lower than last year when storage was 91.2%.

At the end of January, reservoir storage (in terms of percentage) was highest at Crummock Water which was 100% full and lowest at Longdendale which was 74.3% full. The combined storage at Haweswater and Thirlmere was 77.7% which is lower than the average of 90.3% seen at this time of year and also lower than last year when storage was 97.7%.

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Figure 1.5: Storage in Haweswater Reservoir, including the drought levels for the reservoir and storage for the current year (2025) and representative years: 1995, 2003 and 2022 (Source: United Utilities (UU)).

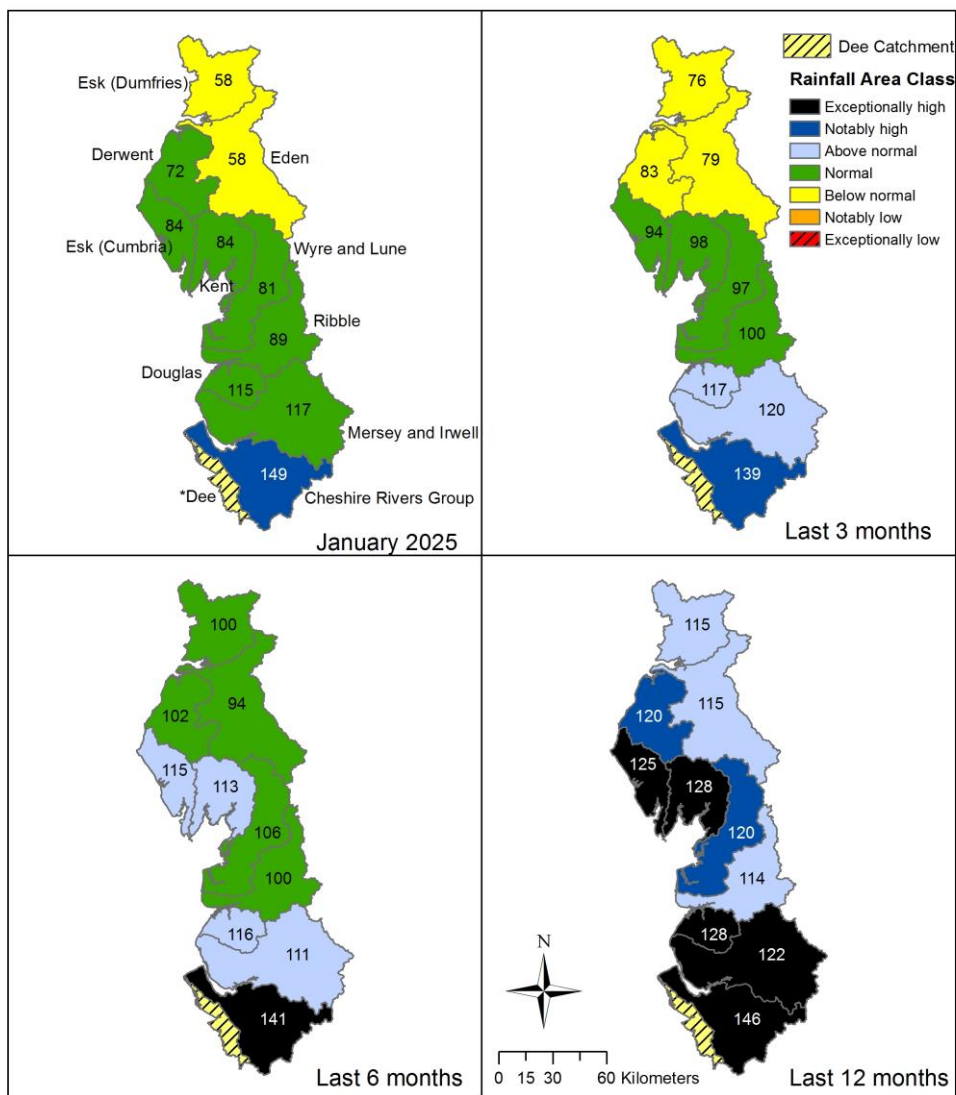


Author: Greater Manchester Merseyside and Cheshire Hydrology Team,
hydrology.gmmych@environment-agency.gov.uk

2 Rainfall

2.1 Rainfall map

Figure 2.1: Total rainfall (as a percentage) for hydrological areas for the current month (up to 31 January 2025), 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.



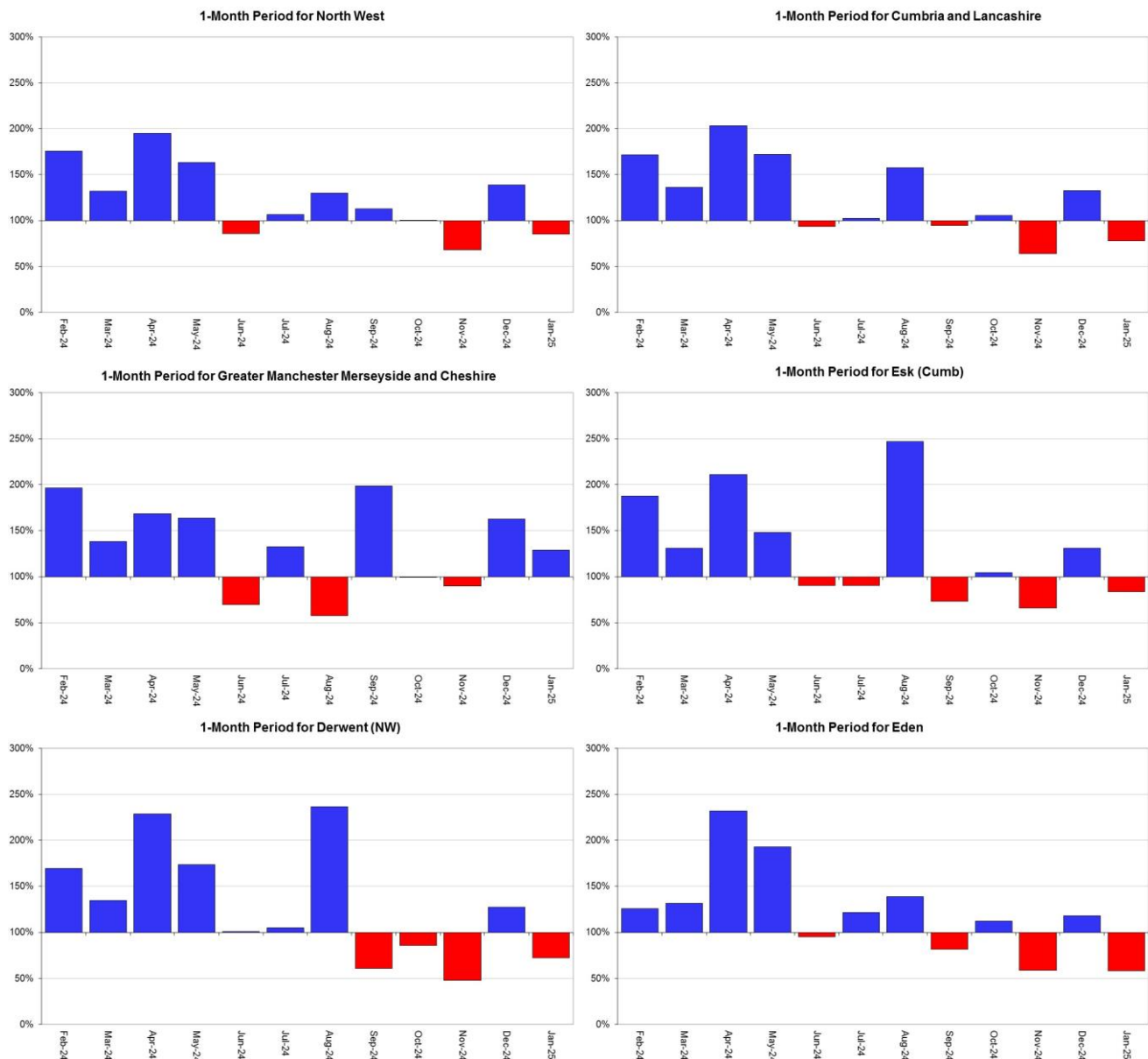
Rainfall data since 2023, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived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

2.2 Rainfall charts

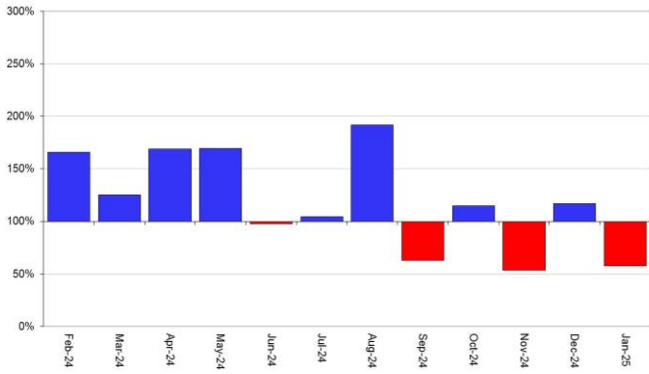
Figure 2.2: Monthly rainfall totals for the past 12 months expressed as a percentage of the 1961 to 1990 long term average for North-west England and its hydrological areas.

■ Above average rainfall

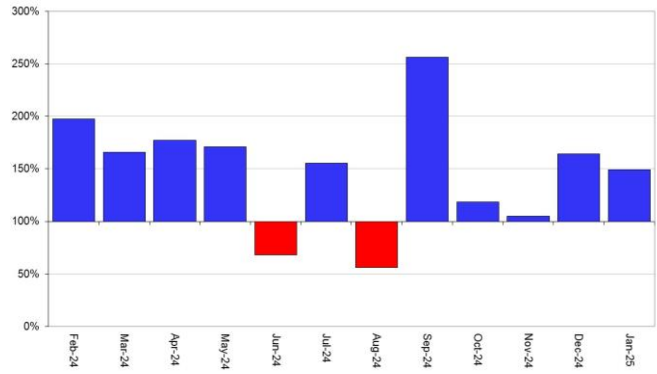
■ Below average rainfall



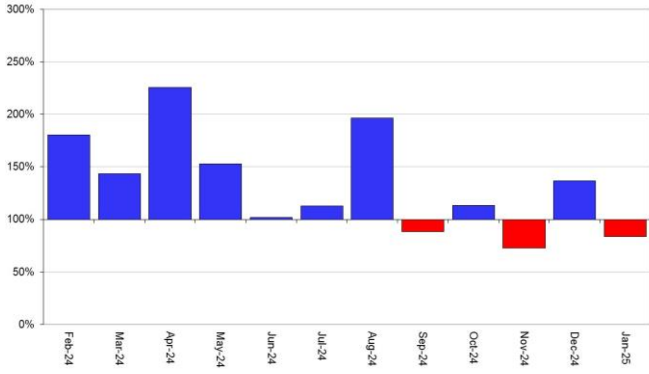
1-Month Period for Esk (Dumfries)



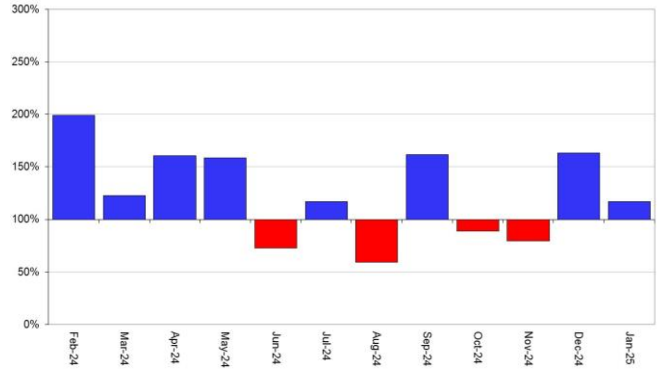
1-Month Period for Cheshire Rivers Group

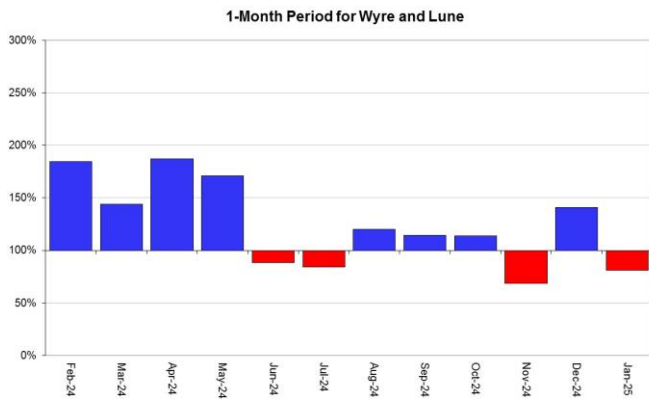
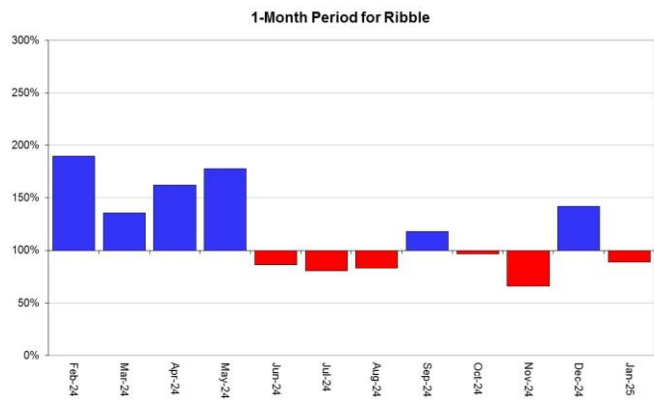
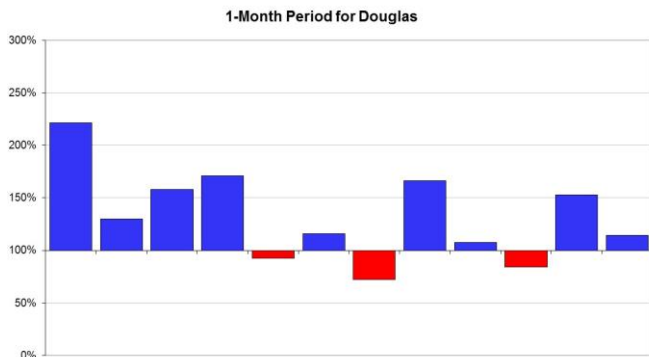


1-Month Period for Kent



1-Month Period for Mersey and Irwell



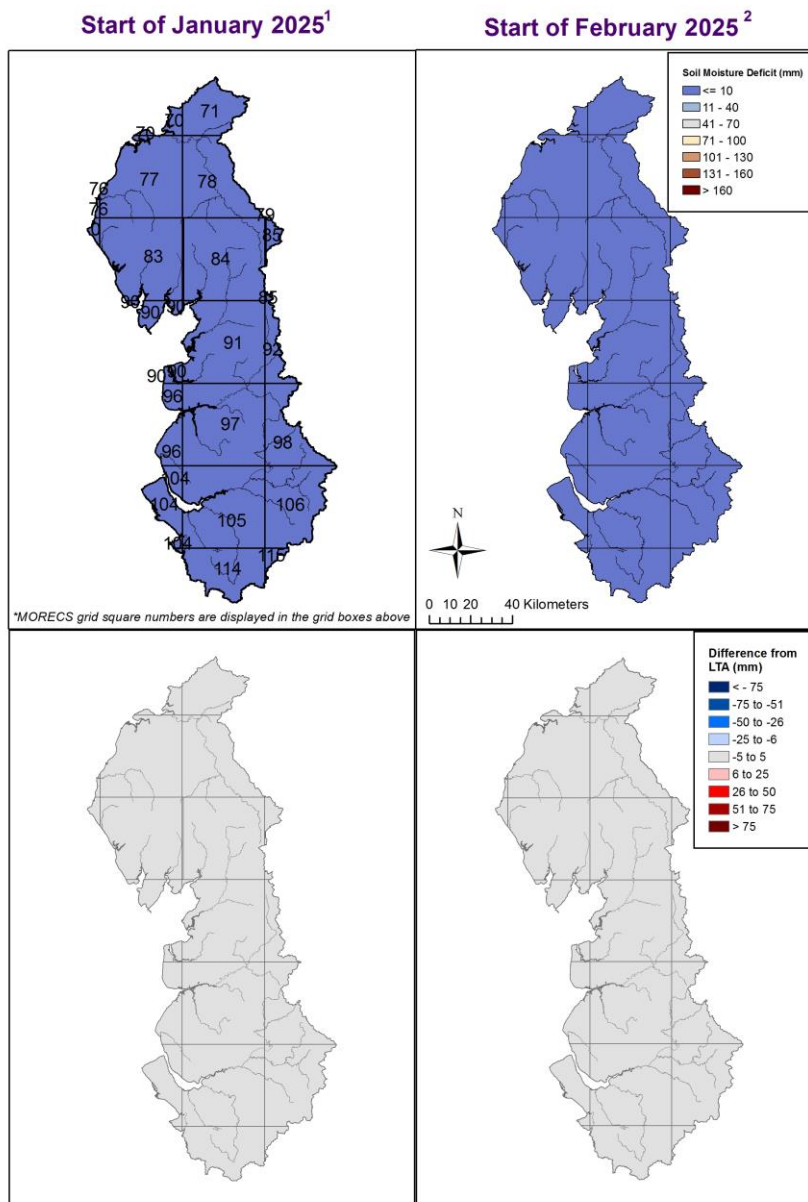


Rainfall data since 2023, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived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

3 Soil moisture deficit

3.1 Soil moisture deficit map

Figure 3.1: Soil moisture deficits for weeks ending 1 January 2025¹ (left panel) and 1 February 2025² (right panel). Top row shows actual soil moisture deficits (mm) and bottom row shows the difference (mm) of the actual from the 1961-90 long term average soil moisture deficits. MORECS data for real land use.

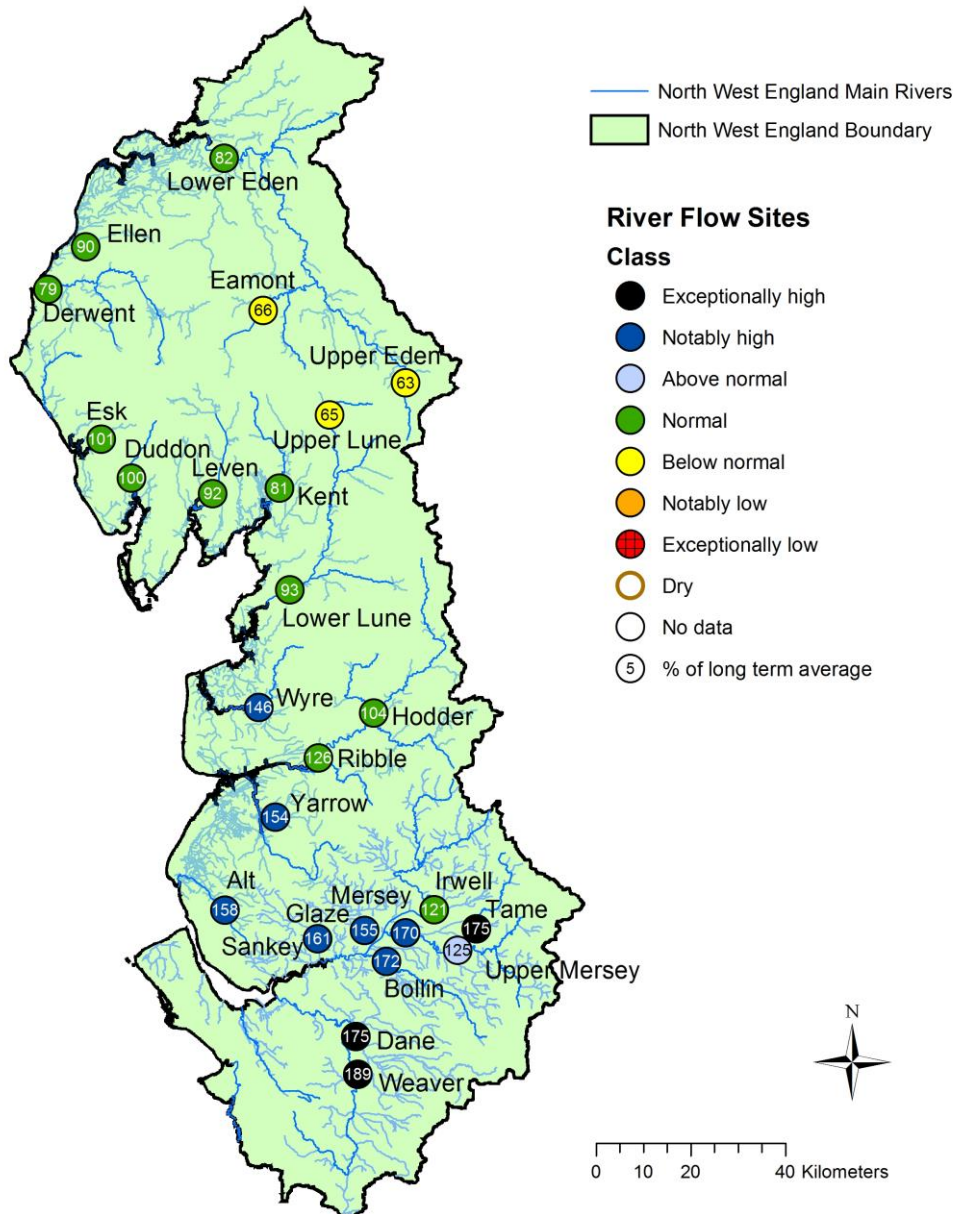


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4 River flows

4.1 River flows map

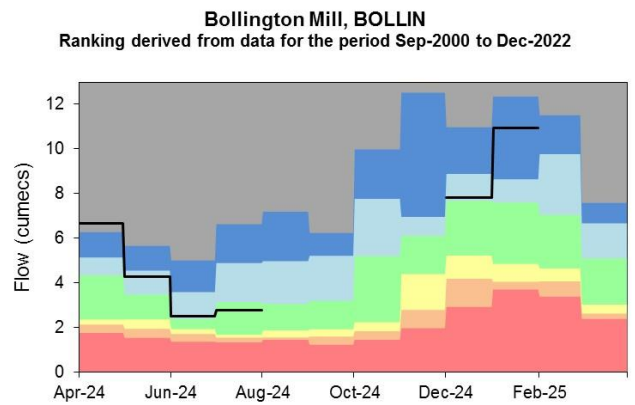
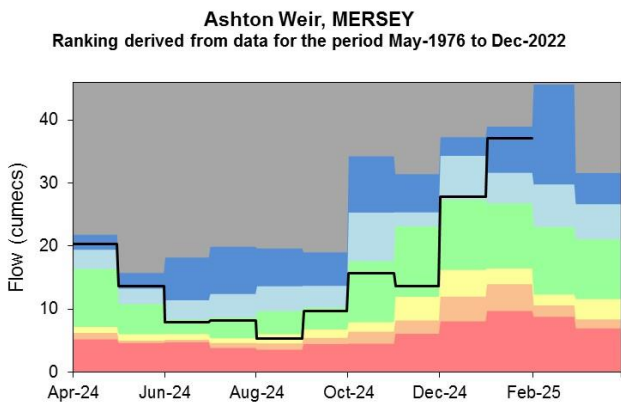
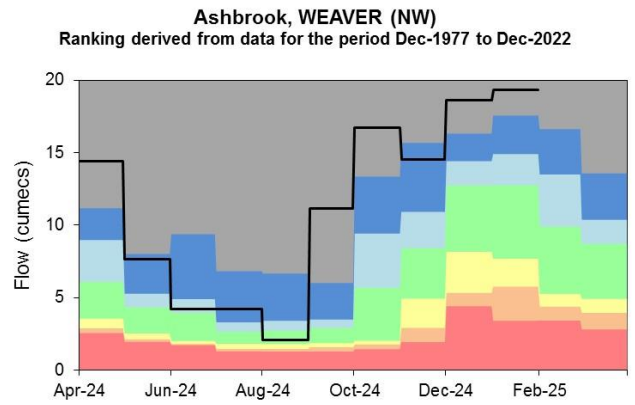
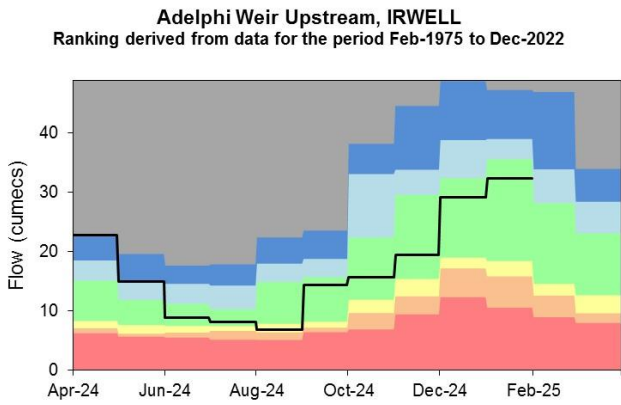
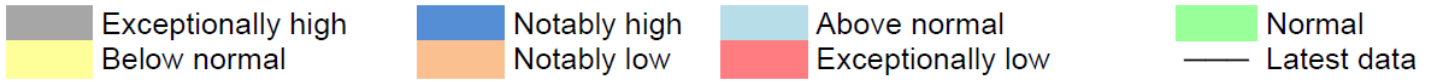
Figure 4.1: Monthly mean river flow for indicator sites for January 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic January monthly means. Table available in the appendices with detailed information.



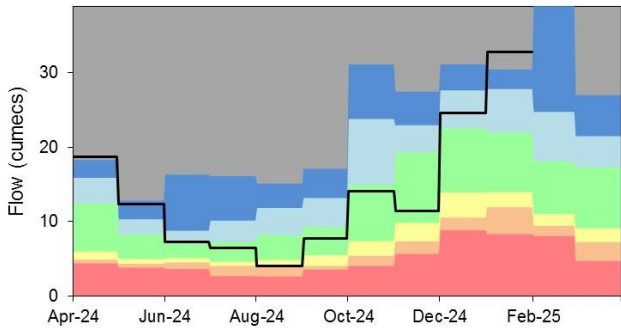
(Source: Environment Agency). Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

4.2 River flow charts

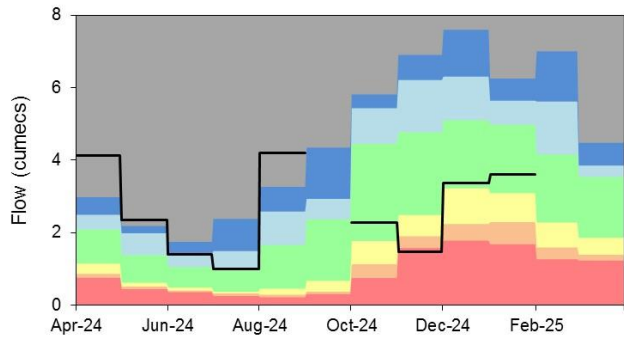
Figure 4.2: Monthly mean river flow for index sites over the past year, compared to an analysis of historic monthly mean flows.



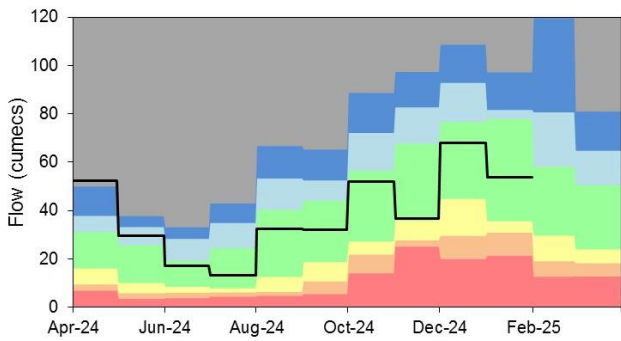
Brinksway, MERSEY
Ranking derived from data for the period Jan-1974 to Dec-2022



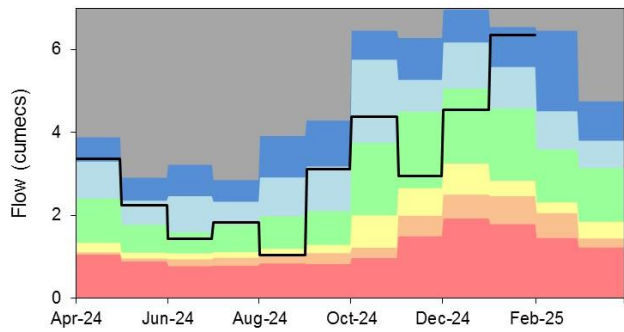
Bullgill, ELLEN
Ranking derived from data for the period Jan-1976 to Dec-2022



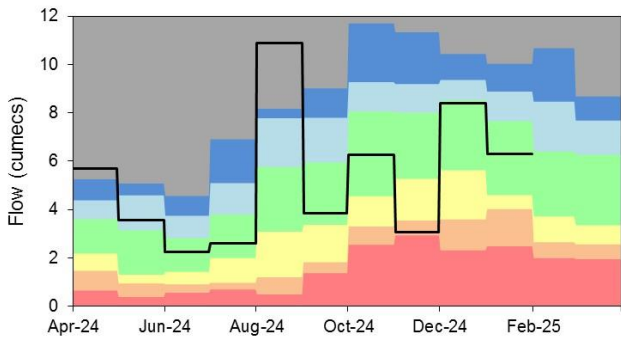
Caton, LUNE
Ranking derived from data for the period Jan-1959 to Dec-2022



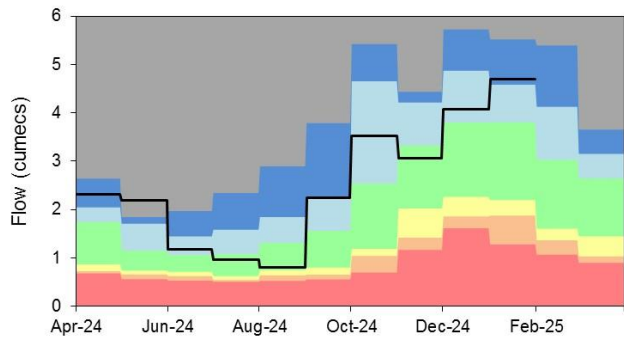
Causey Bridges, SANKEY
Ranking derived from data for the period Jan-1977 to Dec-2022



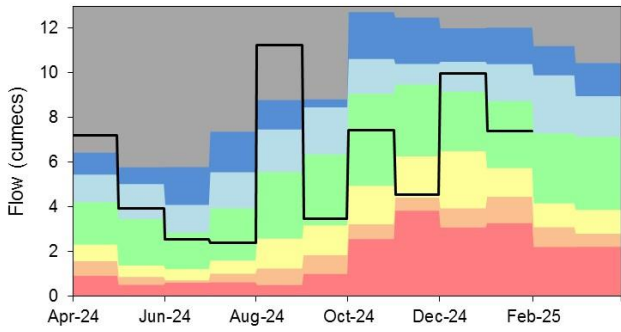
Crople How, ESK (NW)
Ranking derived from data for the period Jan-1976 to Dec-2022



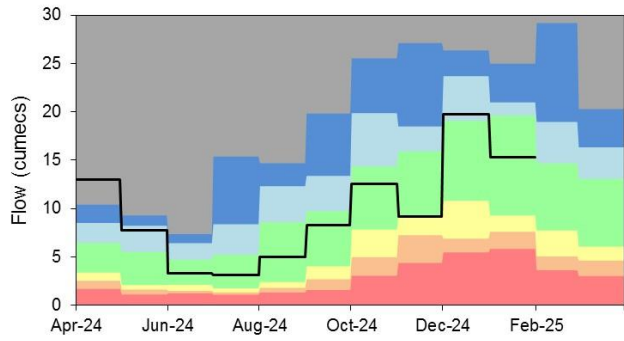
Croston, YARROW
Ranking derived from data for the period Jan-1976 to Dec-2022



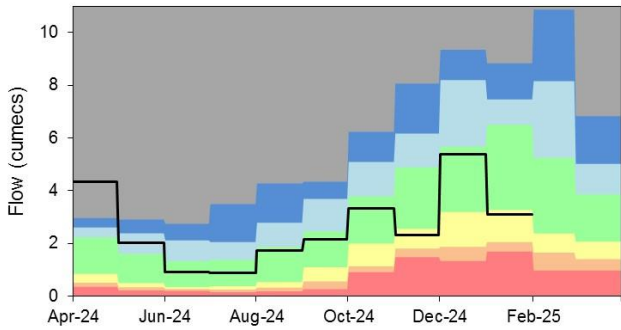
Duddon Hall, DUDDON
Ranking derived from data for the period Mar-1968 to Dec-2022



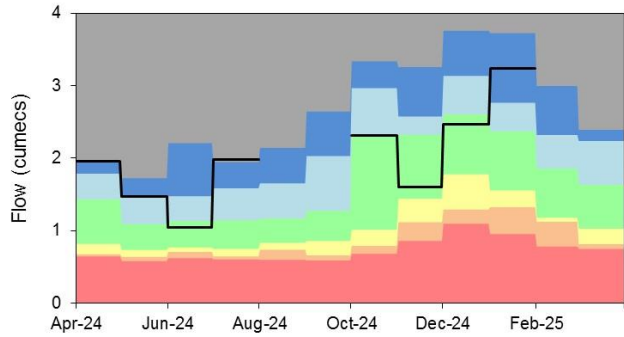
Hodder Place, HODDER
Ranking derived from data for the period Jan-1976 to Dec-2022



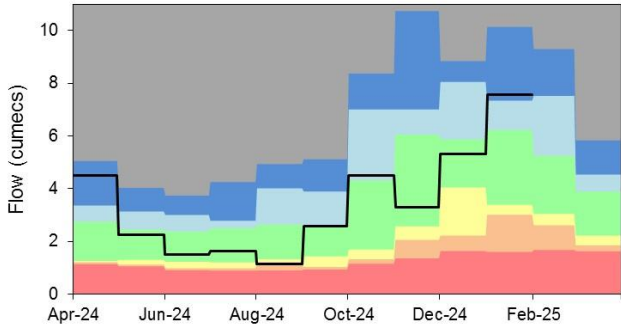
Kirkby Stephen, EDEN (NW)
Ranking derived from data for the period Oct-1971 to Dec-2022



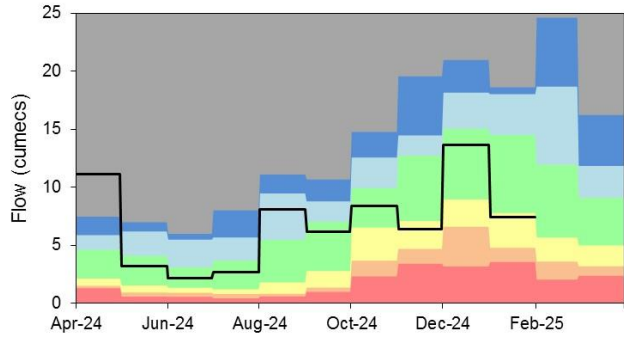
Kirkby, ALT
Ranking derived from data for the period Oct-1977 to Dec-2022



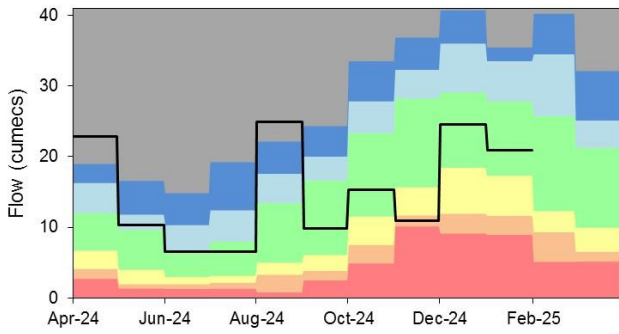
Little Woolden Hall Ultrasonic, GLAZE
Ranking derived from data for the period Jul-1995 to Dec-2022



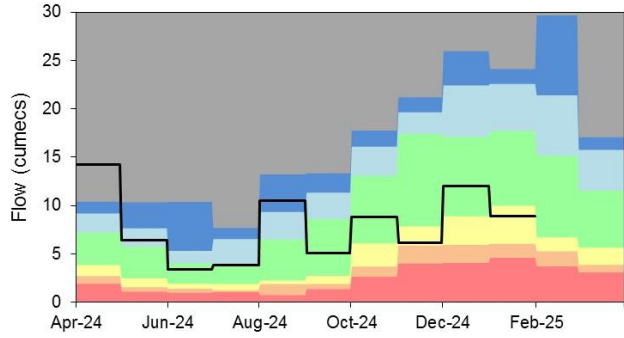
Lunes Bridge, LUNE
Ranking derived from data for the period Dec-1979 to Dec-2022



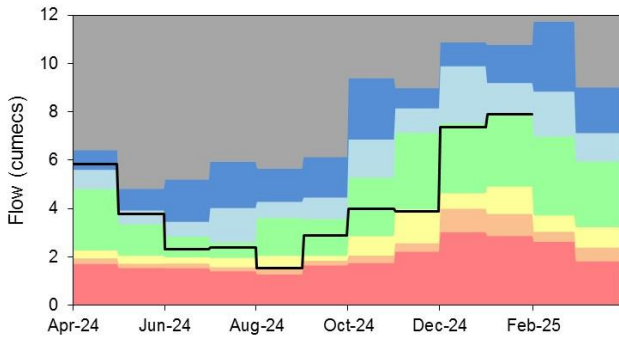
Newby Bridge FMS, LEVEN (NW)
Ranking derived from data for the period Jan-1972 to Dec-2022



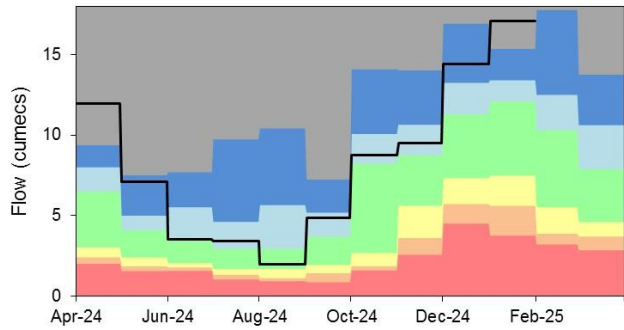
Pooley Bridge, EAMONT
Ranking derived from data for the period Jul-1970 to Dec-2022



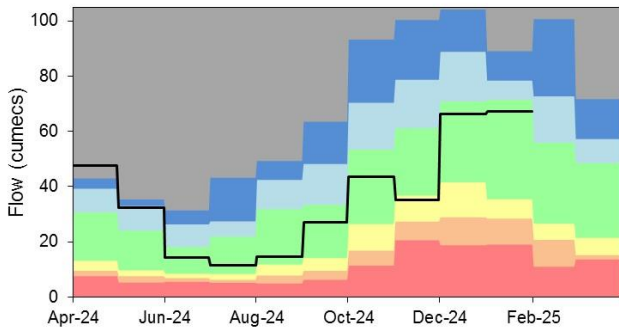
Portwood, TAME
Ranking derived from data for the period Jan-1976 to Dec-2022



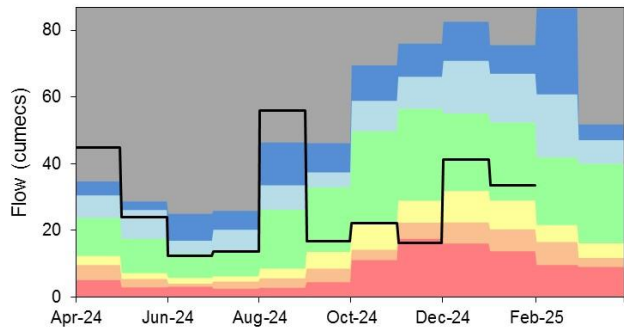
Rudheath, DANE
Ranking derived from data for the period Jan-1976 to Dec-2022



Samlesbury Pgs, RIBBLE (NW)
Ranking derived from data for the period May-1960 to Dec-2022

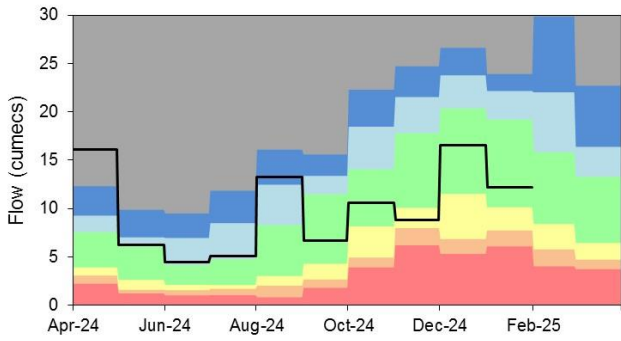


Seaton Mill, DERWENT (NW)
Ranking derived from data for the period Sep-1960 to Dec-2022



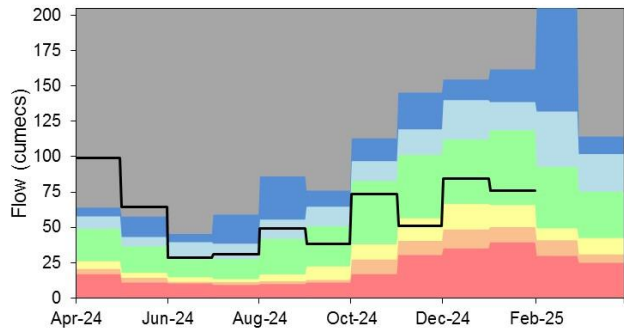
Sedgwick, KENT

Ranking derived from data for the period Nov-1968 to Dec-2022



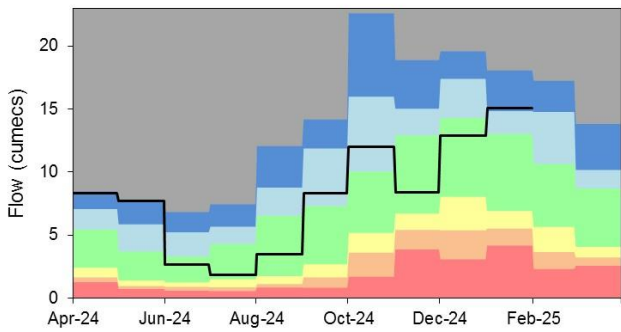
Sheepmount, EDEN (NW)

Ranking derived from data for the period Oct-1967 to Dec-2022



St Michaels FMS, WYRE

Ranking derived from data for the period Oct-1963 to Dec-2022

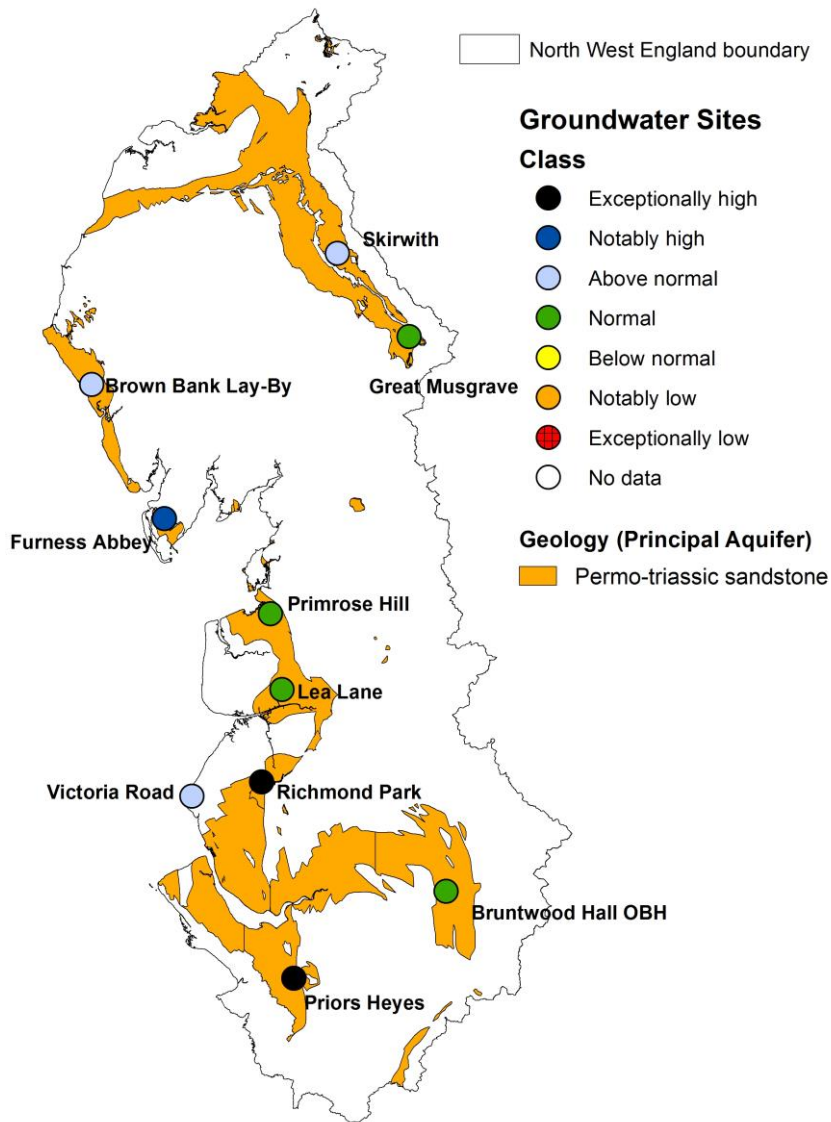


Source: Environment Agency.

5 Groundwater levels

5.1 Groundwater levels map

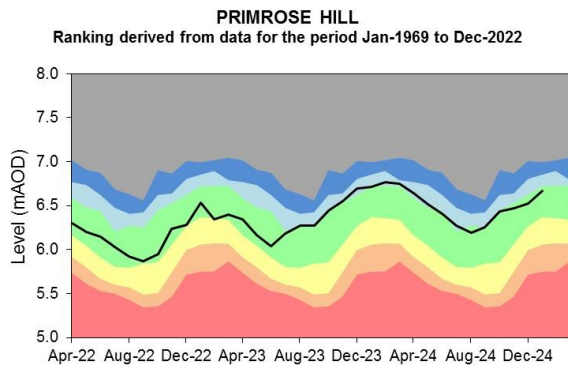
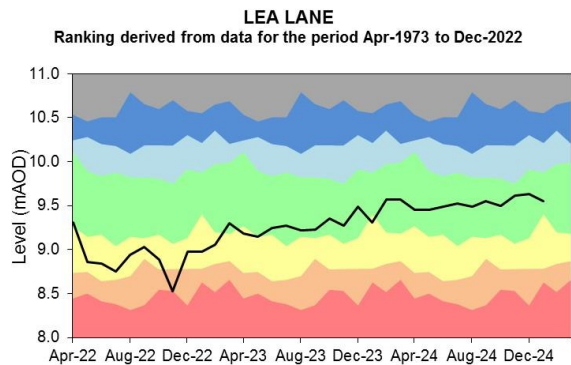
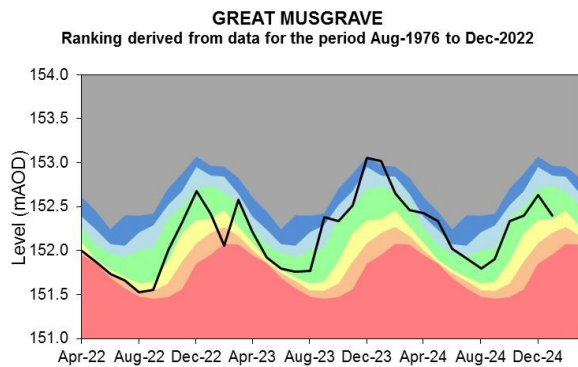
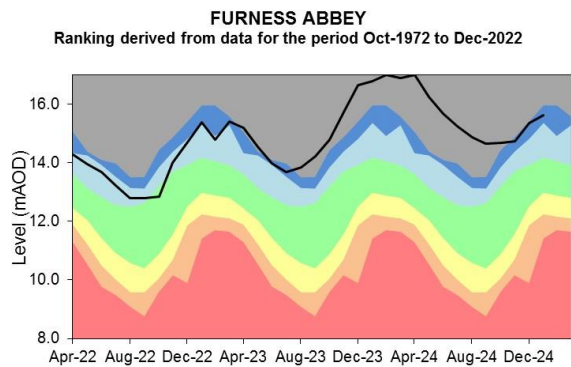
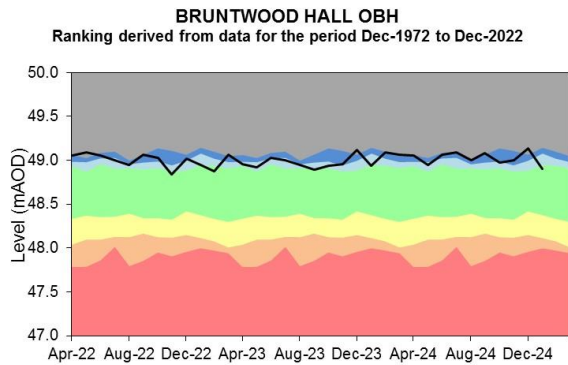
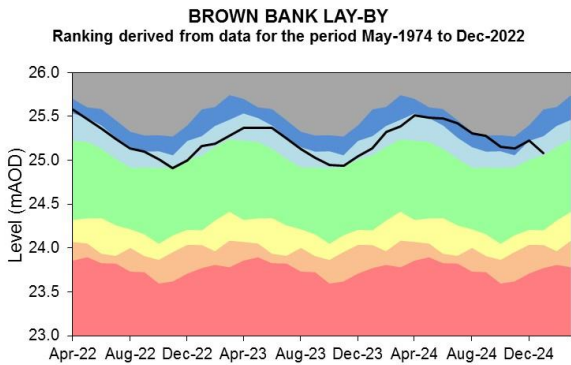
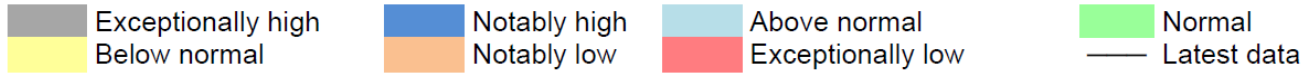
Figure 5.1: Groundwater levels for indicator sites at the end of January 2025, classed relative to an analysis of respective historic January levels. Table available in the appendices with detailed information. Please note Victoria Road Borehole sits within a superficial deposit as opposed to a bedrock aquifer. This is why the geology type is not marked on the map.

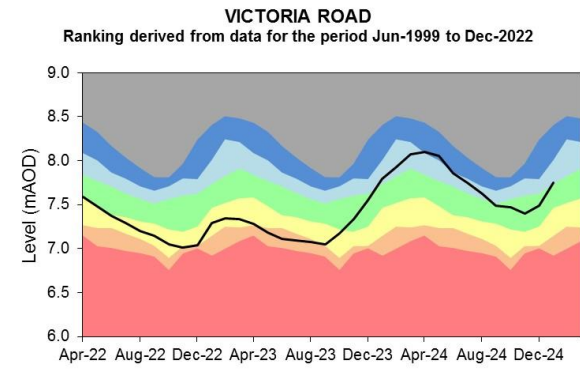
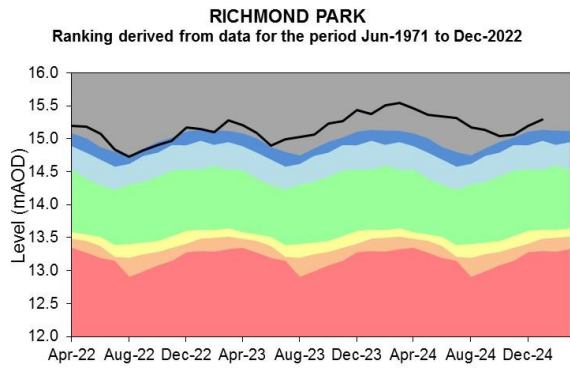
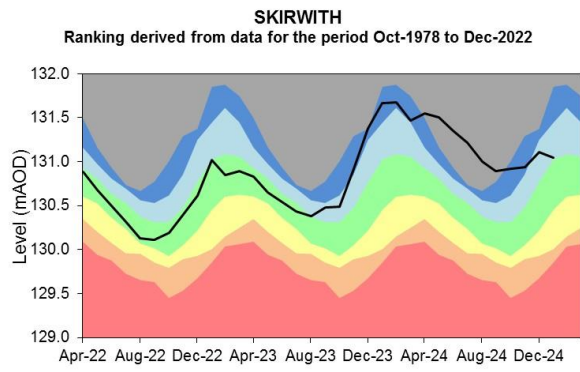
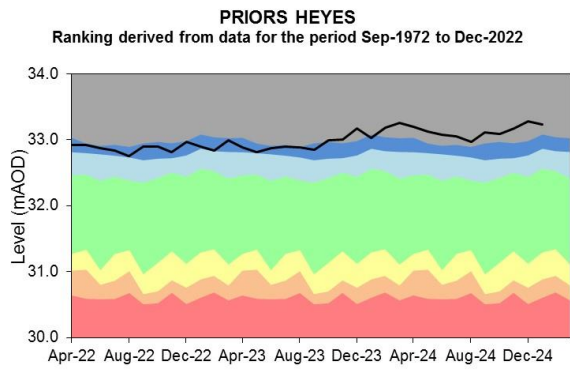


(Source: Environment Agency). Geological map reproduced with kind permission from UK Groundwater Forum, BGS copyright NERC. Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

5.2 Groundwater level charts

Figure 5.2: End of month groundwater levels at index groundwater level sites for major aquifers. 34 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.





Source: Environment Agency, 2025.

6 Reservoir storage

Figure 6.1: The location of reservoirs that comprise the supply districts across North-west England and selected individual reservoirs.

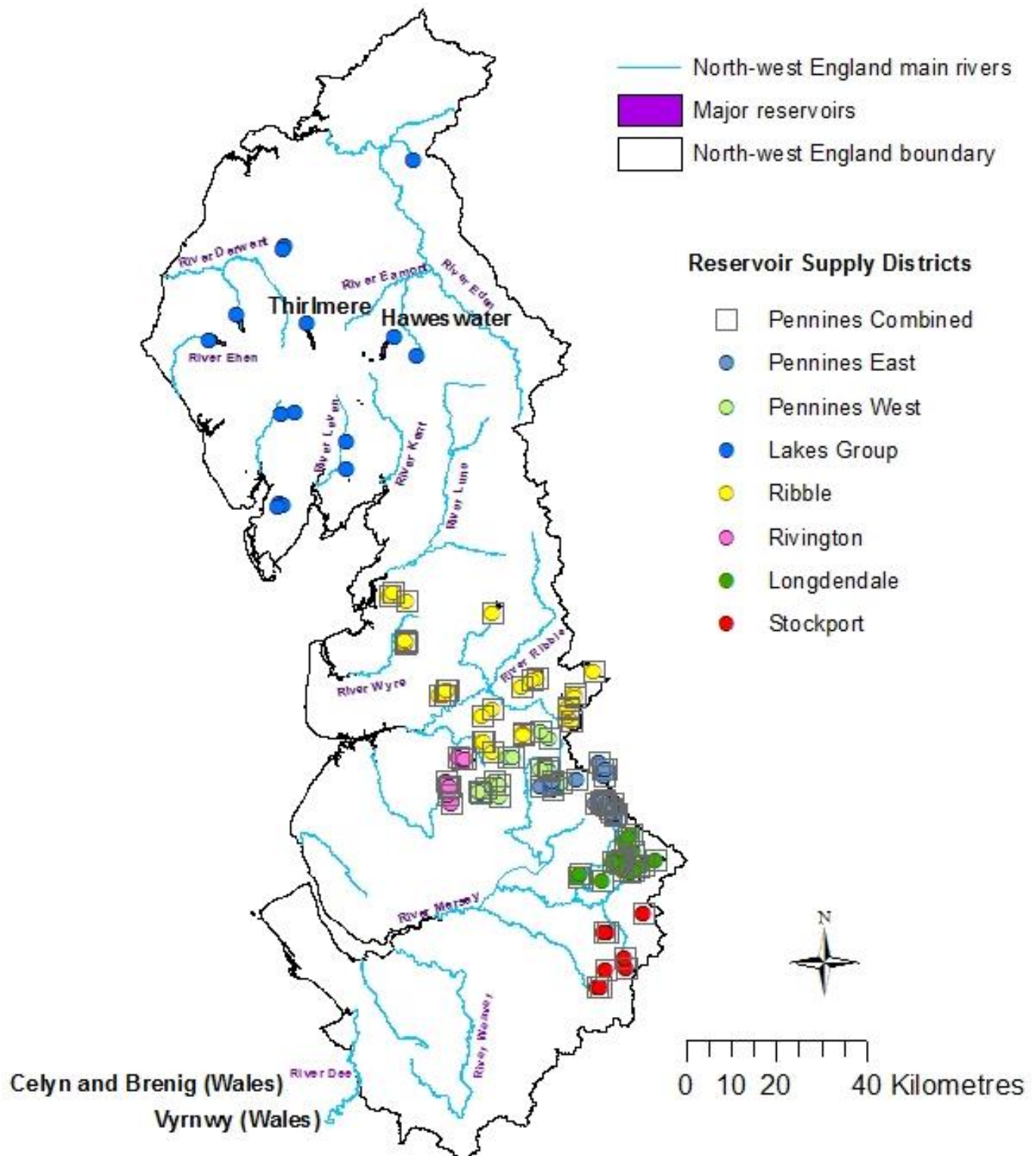
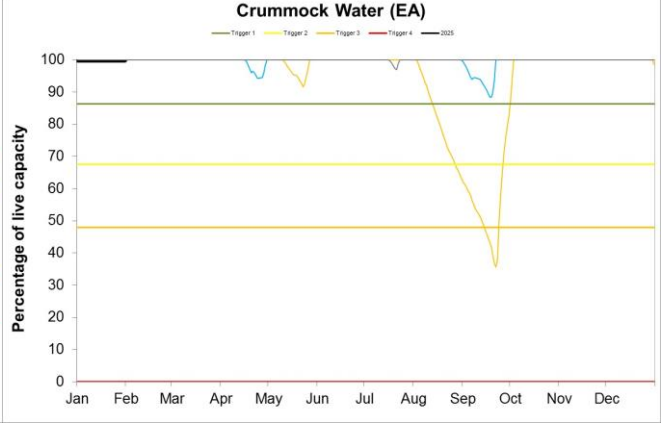
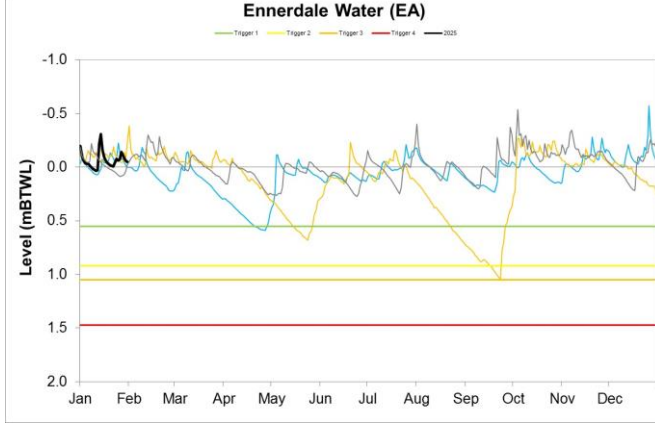
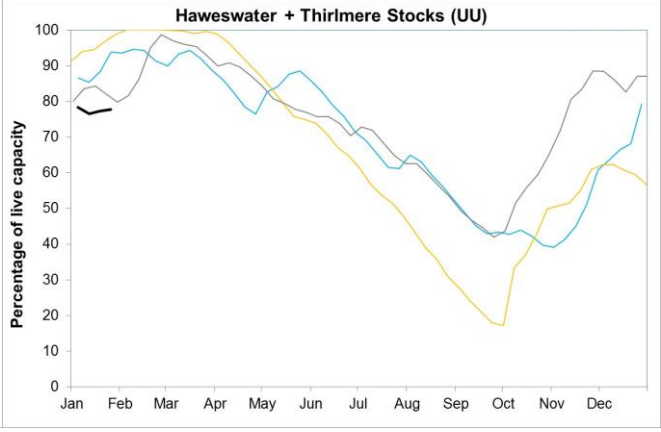
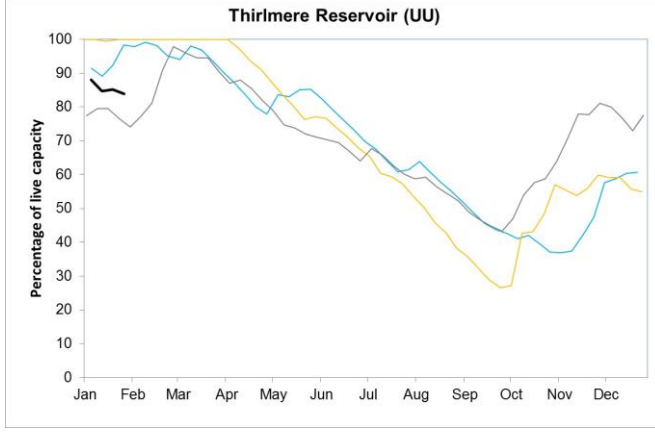
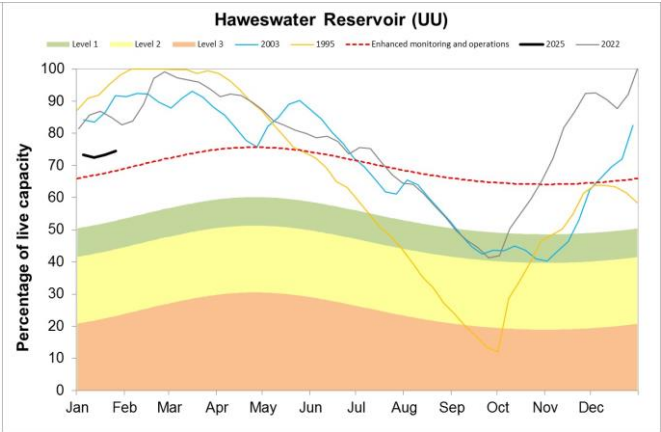
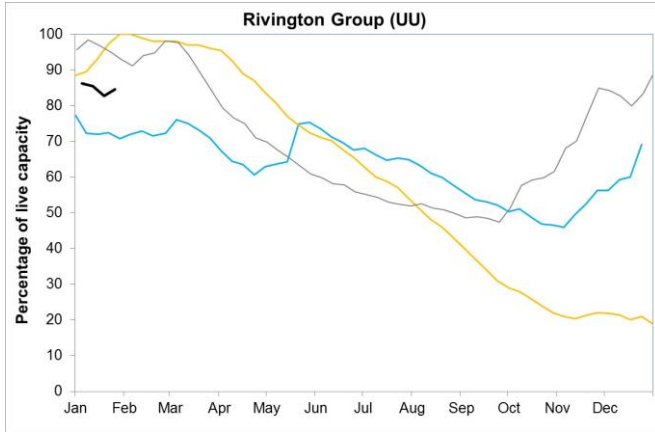
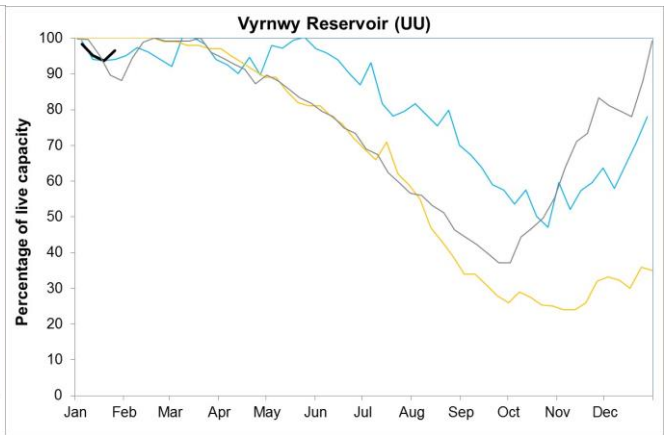
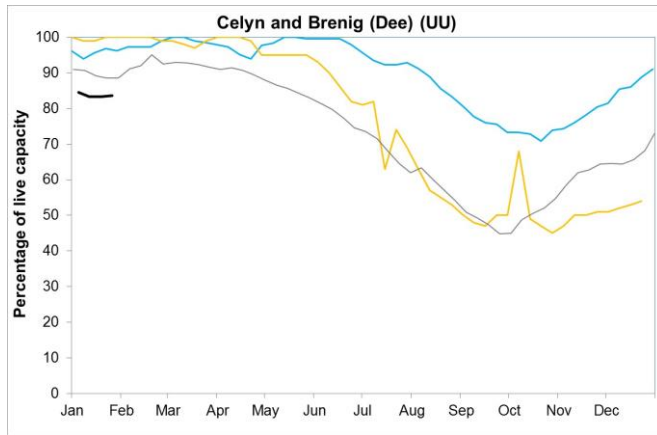


Figure 6.2: End of month reservoir storage for supply districts across North-west England and selected individual reservoirs for current year (2025) and representative years: 1995, 2003 and 2022. Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in length.

— 2003
 — 2025
 — 2022
 — 1995







Source: (UU) United Utilities, (EA) The Environment Agency.

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	Jan 2025 rainfall % of long term average 1961 to 1990	Jan 2025 band	Nov 2024 to January cumulative band	Aug 2024 to January cumulative band	Feb 2024 to January cumulative band
Cheshire Rivers Group	149	Notably High	Notably high	Exceptionally high	Exceptionally high
Derwent (NW)	72	Normal	Below normal	Normal	Notably high
Douglas	115	Normal	Above normal	Above normal	Exceptionally high
Eden	58	Below Normal	Below normal	Normal	Above normal
Esk (Cumbria)	84	Normal	Normal	Above normal	Exceptionally high
Esk (Dumfries)	58	Below Normal	Below normal	Normal	Above normal
Kent	84	Normal	Normal	Above normal	Exceptionally high
Mersey And Irwell	117	Normal	Above normal	Above normal	Exceptionally high
Ribble	89	Normal	Normal	Normal	Above normal
Wyre And Lune	81	Normal	Normal	Normal	Notably high

North West	85	Normal	Normal	Normal	Notably high
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8.2 River flows table

Site name	River	Catchment	Jan 2025 band	Dec 2024 band
Adelphi Weir Upstream	Irwell	Irwell (Croal to Irk)	Normal	Normal
Ashbrook	Weaver (NW)	Weaver Upper	Exceptionally high	Exceptionally high
Ashton Weir	Mersey	Mersey Non Tidal	Notably high	Above normal
Bollington Mill	Bollin	Bollin	Notably high	Above normal
Brinksway	Mersey	Mersey Non Tidal	Exceptionally high	Above normal
Bullgill	Ellen	Ellen Lower	Normal	Normal
Caton	Lune	Lune Lower Tidal	Normal	Normal
Causey Bridges	Sankey	Mersey Non Tidal	Notably high	Normal
Crople How	Esk (NW)	Esk (South West Lakes)	Normal	Normal
Croston	Yarrow	Yarrow Lower	Notably high	Above normal
Duddon Hall	Duddon	Duddon	Normal	Above normal
Hodder Place	Hodder	Hodder Lower	Normal	Above normal
Kirkby	Alt	Alt	Notably high	Normal

Kirkby Stephen	Eden (NW)	Eden Cumbria Upper	Below normal	Normal
Little Woolden Hall Ultrasonic	Glaze	Glaze	Notably high	Normal
Lunes Bridge	Lune	Lune Upper	Below normal	Normal
Newby Bridge Fms	Leven (NW)	Leven Cumbria	Normal	Normal
Pooley Bridge	Eamont	Eamont	Below normal	Normal
Portwood	Tame	Tame	Above normal	Normal
Rudheath	Dane	Dane	Exceptionally high	Notably high
Samlesbury Pgs	Ribble (NW)	Ribble Lower	Normal	Normal
Seaton Mill	Derwent (NW)	Derwent Cumbria Lower	Normal	Normal
Sedgwick	Kent	Levens Bridge	Normal	Normal
Sheepmount	Eden (NW)	Eden Cumbria Lower	Normal	Normal
St Michaels Fms	Wyre	Brock	Notably high	Normal

8.3 Groundwater table

Site name	Aquifer	End of Jan 2025 band	End of Dec 2024 band
Brown Bank Lay-by	West Cumbria Permo-triassic Sandstone	Above normal	Notably high
Bruntwood Hall Obh	East Cheshire Permo-triassic Sandstone	Normal	Exceptionally high
Furness Abbey	Furness Permo-triassic Sandstone	Notably high	Notably high
Great Musgrave	Eden Valley And Carlisle Basin Permo-triassic Sandstone	Normal	Normal
Lea Lane	Fylde Permo-triassic Sandstone	Normal	Normal
Priors Heyes	West Cheshire Permo-triassic Sandstone	Exceptionally high	Exceptionally high
Primrose Hill	Fylde Permo-triassic Sandstone	Normal	Normal
Richmond Park	Rufford Permo-triassic Sandstone	Exceptionally high	Exceptionally high

Skirwith	Eden Valley And Carlisle Basin Permo-triassic Sandstone	Above normal	Above normal
Victoria Road Entrance	West Lancashire Quarternary Sand And Gravel Superficial Deposits	Above normal	Normal