Monthly water situation report: North-west England

1 Summary – June 2025

1.1 Rainfall

Rainfall for north-west England during June was classed as notably high with 163% of the long-term average (LTA). The Cumbria and Lancashire (CLA) area observed 191% of the LTA classed as exceptionally high while the Greater Manchester, Merseyside and Cheshire (GMC) area observed 93% of the LTA classed as normal.

High rainfall across north-west England during June, particularly across CLA, resulted in hydrological areas observing rainfall classed between normal and exceptionally high. The two hydrological areas located in GMC observed rainfall classed as normal. In CLA one hydrological area was classed as above normal, one as notably high and six as exceptionally high. The highest rainfall (in terms of LTA) was observed in the Kent hydrological area with 235% of the LTA classed as exceptionally high and the lowest was observed in the Cheshire Rivers Group hydrological area with 84% of the LTA, classed as normal. The Derwent hydrological area observed its second highest rainfall during June since 1871 while the Kent and Esk (Cumbria) hydrological areas observed their third wettest June since 1871.

Cumulative rainfall across north-west England over the last 3 months was classed between below normal and notably high with the higher rainfall (in terms of LTA) being observed in CLA and lower rainfall being observed in GMC. 3-month cumulative rainfall was highest in the Kent hydrological area with 136% of the LTA, classed as notably high, and lowest in the Mersey and Irwell hydrological area, with 71% of the LTA, classed as below normal.

The 6-month cumulative rainfall for north-west England was classed between notably low and normal. With higher rainfall totals observed in west Cumbria. The highest 6-month cumulative rainfall total was observed in the Esk (Cumbria) hydrological area with 90% of the LTA, classed as normal, and the lowest in the Esk (Dumfries) with 66% of the LTA, classed as notably low.

The 12-month cumulative rainfall for north-west England was classed between notably low and above normal. As the spatial variability of rainfall has varied during the last 12 months, there is no clear pattern in the 12-month cumulative rainfall. The lowest 12- month cumulative rainfall was observed in the Esk (Dumfries) with 76% of the LTA, classed as notably low, and the highest in the Cheshire Rivers Group with 109% of the LTA, classed as above normal.

1.2 Soil moisture deficit and recharge

Soil moisture deficits (SMD) across north-west England at the end of June were between 0mm and 130mm with higher SMDs being observed in GMC and south Lancashire. SMDs for north-west England ranged between 75mm below the LTA in Cumbria and 50mm above the LTA in GMC.

1.3 River flows

Monthly mean river flows across north-west England were classed between notably low and exceptionally high with one monitoring station classed as notably low, three as below normal, six as normal, three as above normal, three as notably high and nine as exceptionally high. The highest monthly mean river flow (in terms of LTA) was recorded in the River Leven at Newby Bridge with 329% of the LTA classed as exceptionally high and the lowest was recorded in the River Dane at Rudheath with 61% of the LTA classed as below normal.

1.4 Groundwater levels

Groundwater levels across north-west England were classed between exceptionally low and exceptionally high. Groundwater levels at:

- Bruntwood Hall, decreased, to above normal from exceptionally high.
- Richmond Park, increased, to exceptionally high from notably high.
- Victoria road, increased, to normal from below normal.

All other sites remained the same classification at:

- Brown Bank Lay By, classed as normal.
- Furness Abbey, classed as above normal.
- Great Musgrave, classed as exceptionally low.
- Lea Lane, classed as normal.
- Primrose Hill, classed as normal.
- Priors Heyes, classed as exceptionally high.
- Skirwith, classed as normal.

Please note, 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

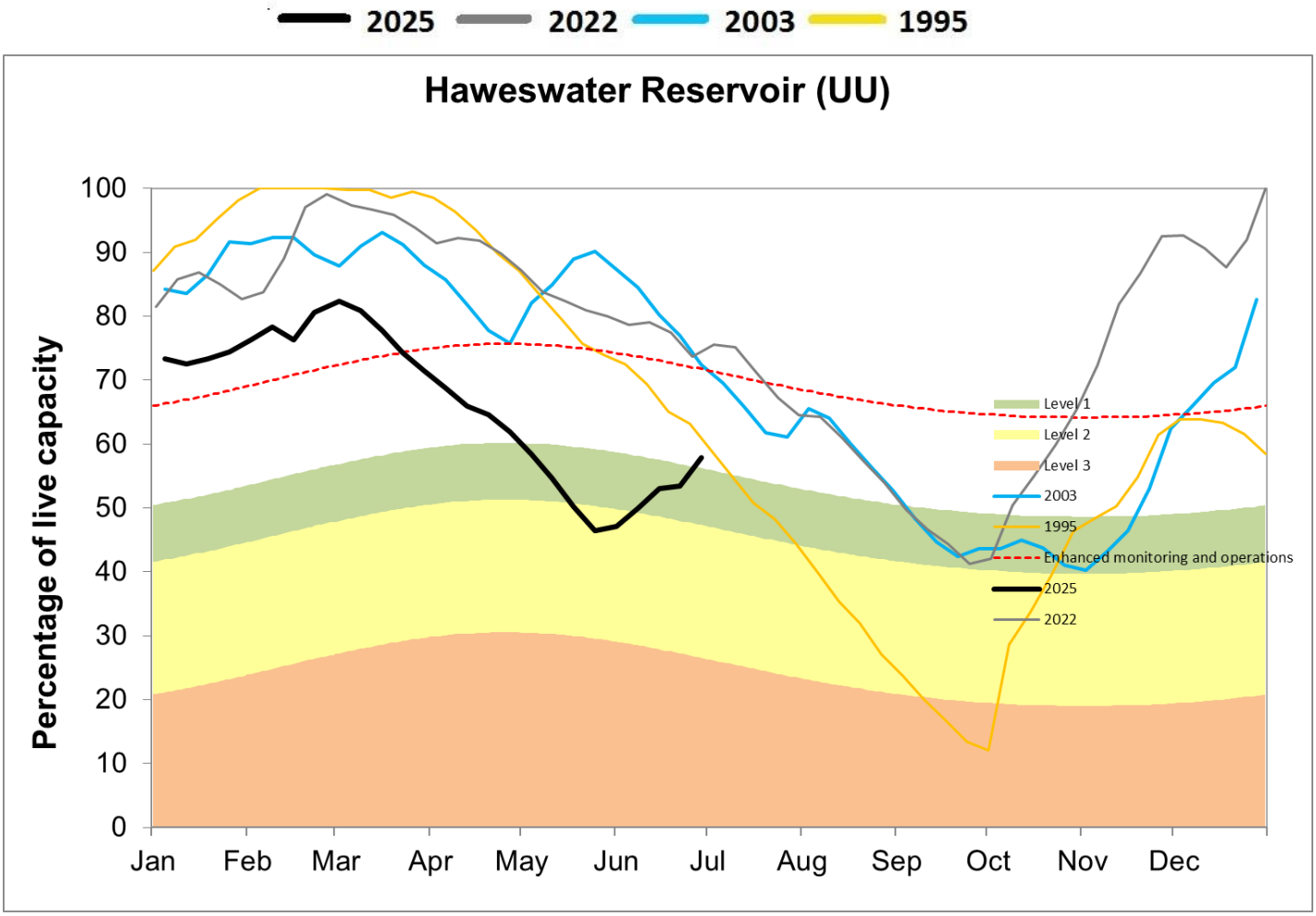
Total reservoir stocks for north-west England increased from 61% at the beginning of June to 65% at the end of June. This is lower than the average of 78% usually seen at this time of year and also lower than last year when reservoir stocks were 84%.

At the end of June, reservoir storage (in terms of percentage) was highest at Vyrnwy at 94% full and lowest at Rivington at 28%.

The combined storage at Haweswater and Thirlmere was 59% which is lower than the 69% average storage at this time of year and lower than last year when storage was 85%. Reservoirs kept low for maintenance works include part of the:

- Longdendale system - Torside
- Rivington system - Anglezarke and High Bullough
- Bolton Supply system - Dingle
- Piethorne Valley system - Norman Hill and Rooden
- Ogden (Barley) system - Ogden Lower
- Barnacre Group System – Barnacre North

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)).

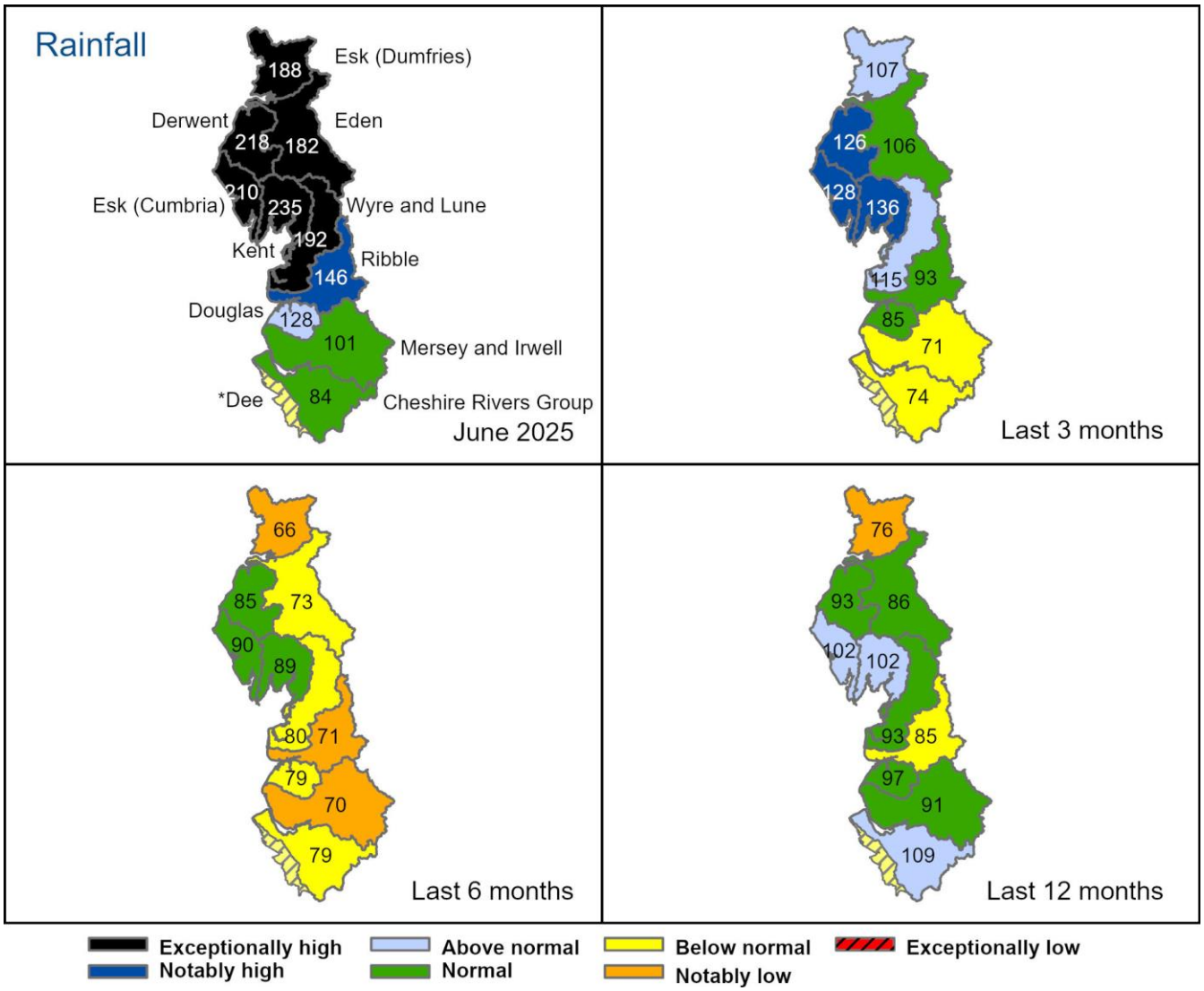


Author: Cumbria and Lancashire Hydrology Team, hydrology.CMBLNC@environment-agency.gov.uk

2 Rainfall

2.1 Rainfall map

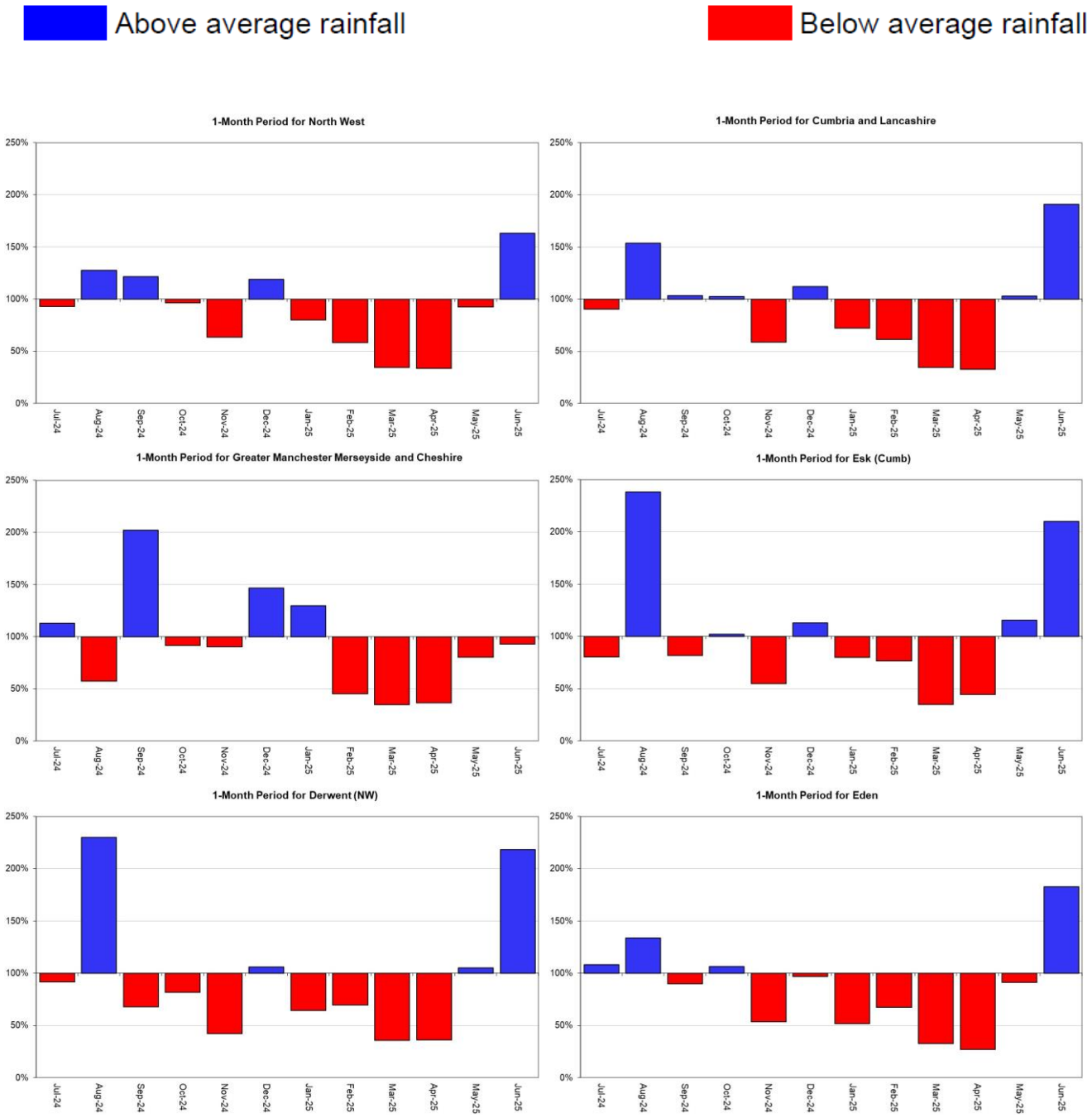
Figure 2.1: Total rainfall (as a percentage of the 1991 to 2020 long term average) for hydrological areas for the current month (up to 30 June 2025), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

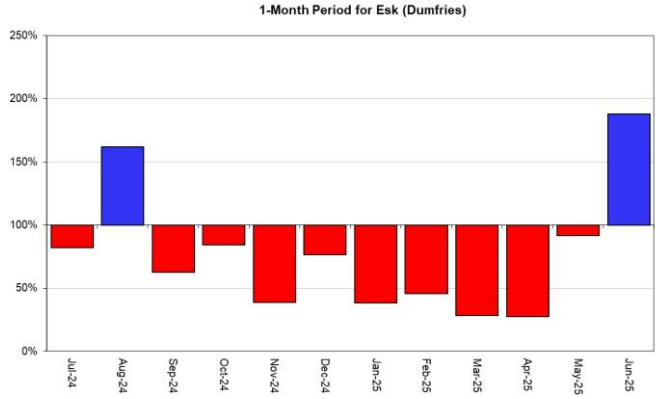


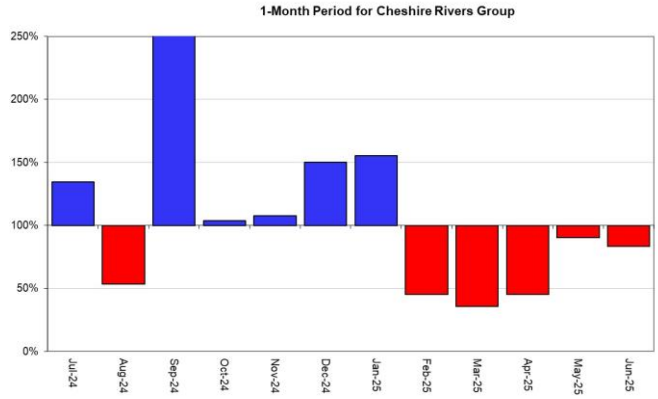
Rainfall data since October 2023, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to October 2023, extracted from Met Office HadUK 1km gridded rainfall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

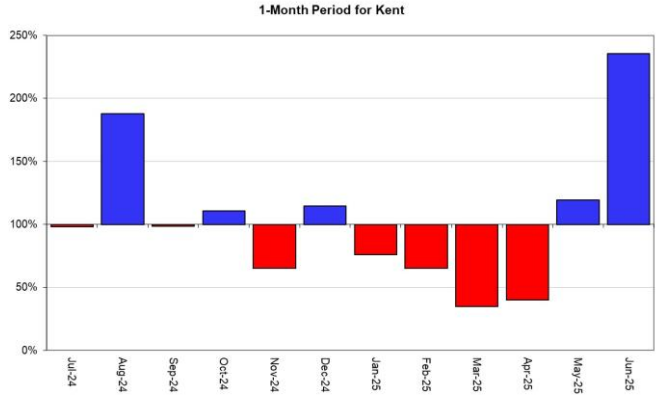
2.2 Rainfall charts

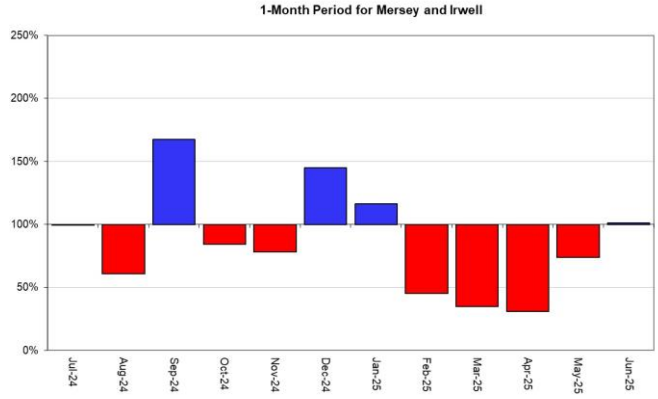
Figure 2.2: Monthly rainfall totals for the past 12 months expressed as a percentage of the 1991 to 2020 long term average for North-west England and its hydrological areas.

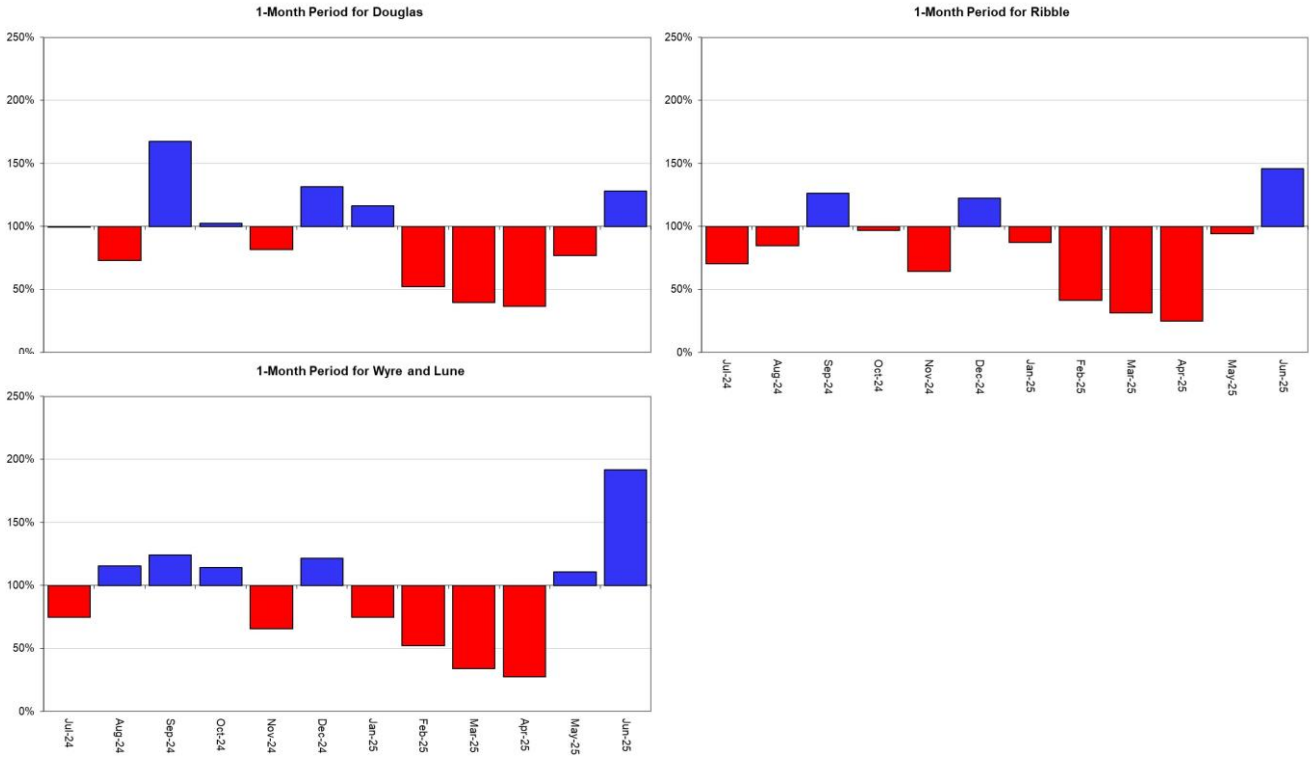



1-Month Period for Esk (Dumfries)
250%
200%
150%
100%
50%
0%
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25


1-Month Period for Cheshire Rivers Group
250%
200%
150%
100%
50%
0%
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25


1-Month Period for Kent
250%
200%
150%
100%
50%
0%
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25


1-Month Period for Mersey and Irwell
250%
200%
150%
100%
50%
0%
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25

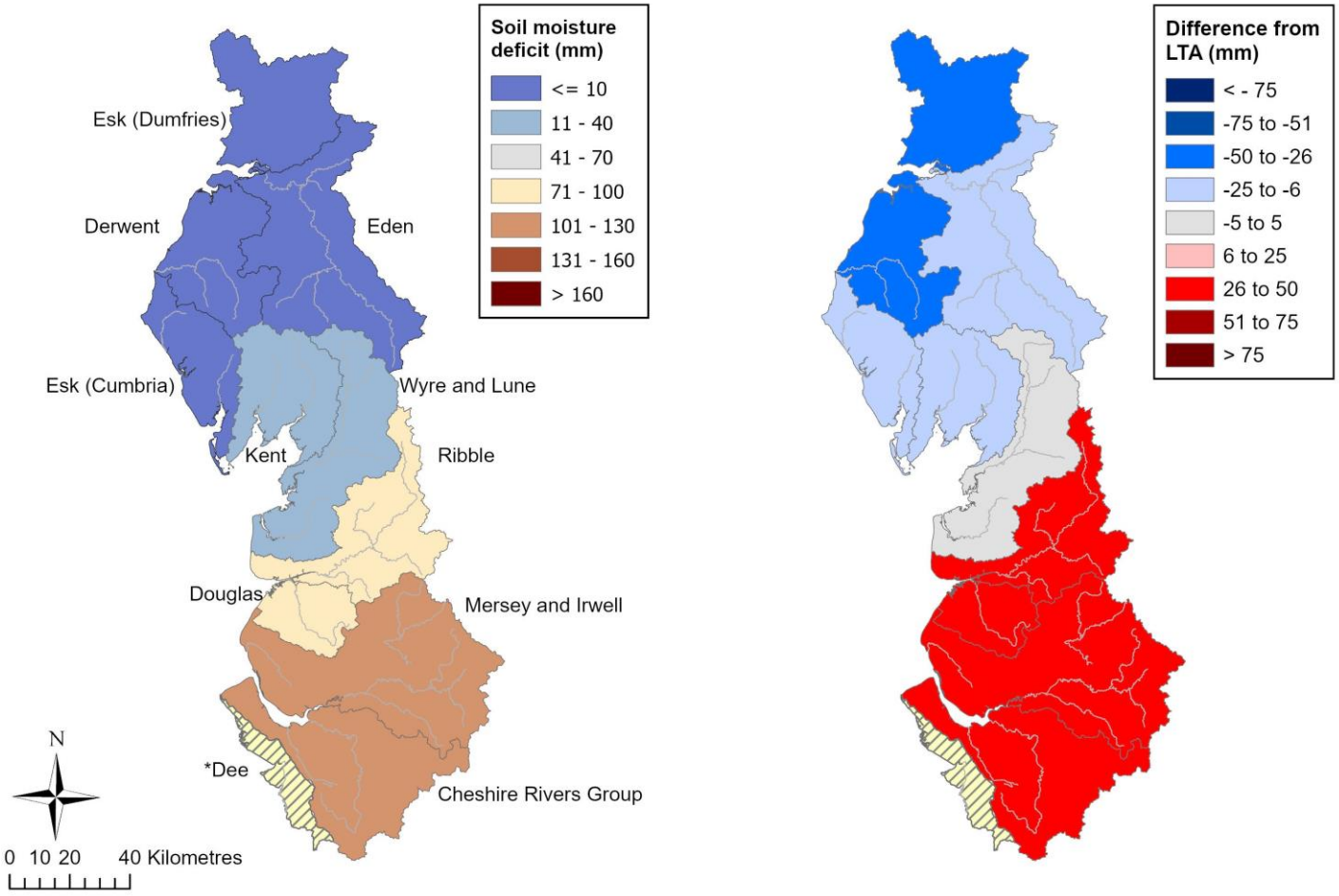


Rainfall data since October 2023, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to October 2023, extracted from Met Office HadUK 1km gridded rainfall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

3 Soil moisture deficit

3.1 Soil moisture deficit map

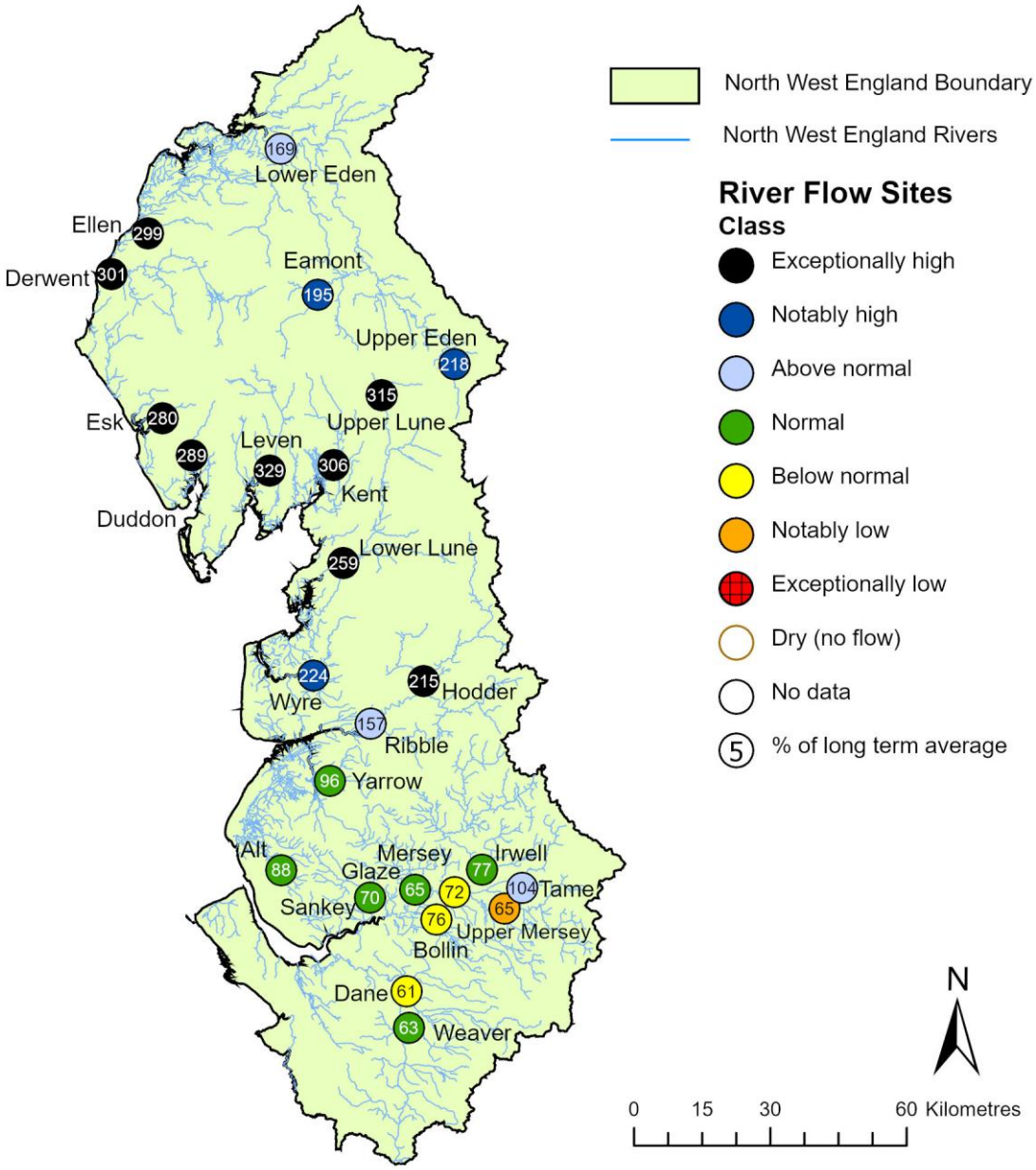
Figure 3.1: Soil moisture deficits for the week ending 30 April 2025. The map on the left shows actual soil moisture deficits (mm) and on the right shows the difference (mm) of the actual from the 1991 - 2020 long term average soil moisture deficits. MORECS data for real land use.



4 River flows

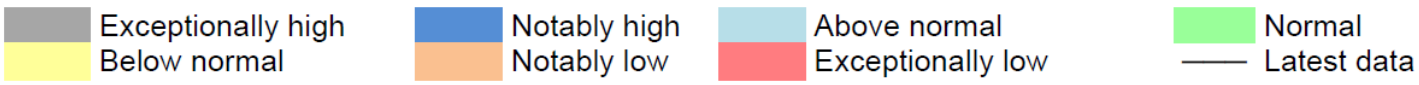
4.1 River flows map

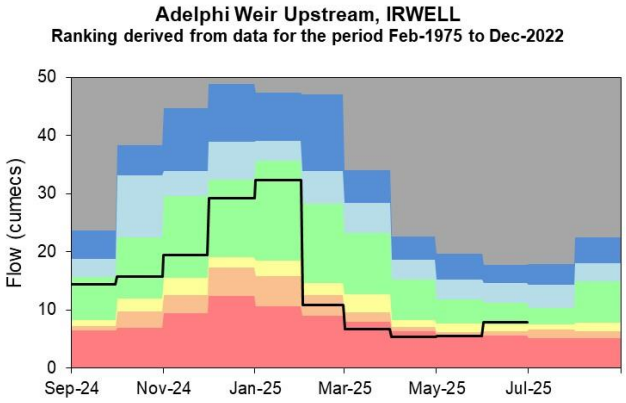
Figure 4.1: Monthly mean river flow for indicator sites for June 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic June monthly means. Table available in the appendices with detailed information.

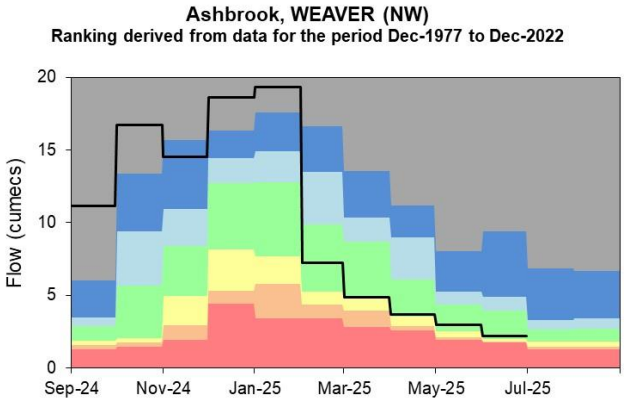


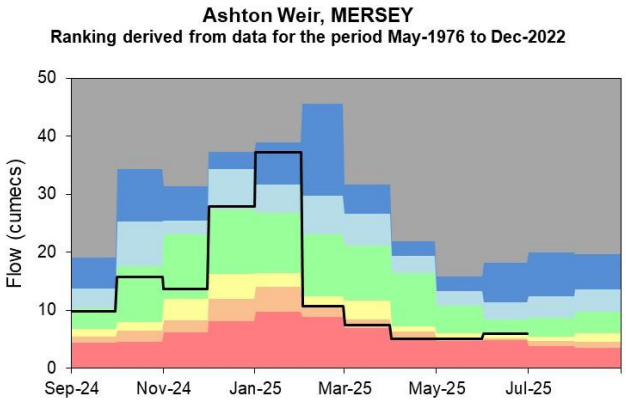
4.2 River flow charts

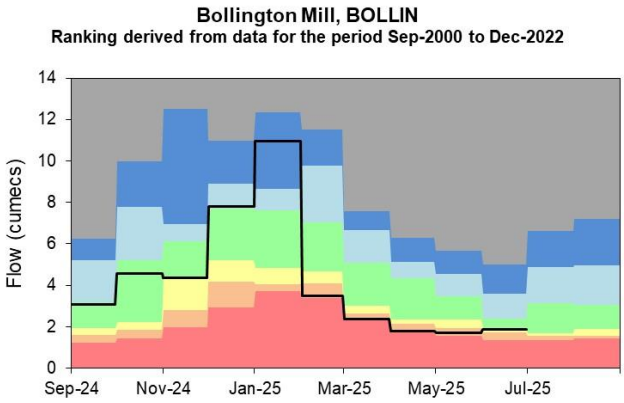
Figure 4.2: Monthly mean river flow for index sites over the past year, compared to an analysis of historic monthly mean flows.



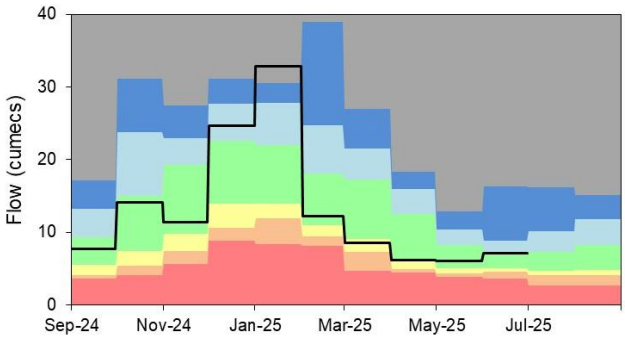




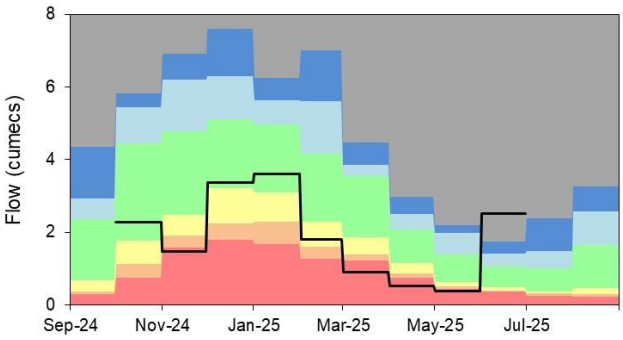




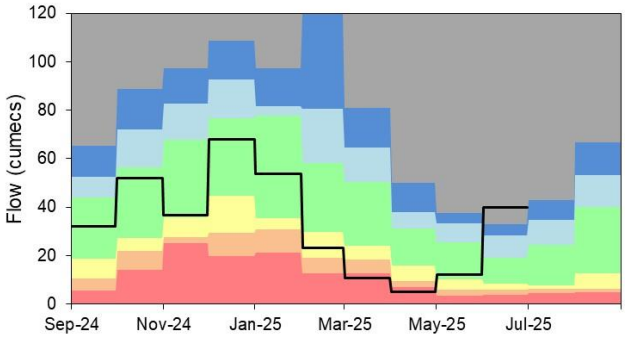
Brinksway, MERSEY
Ranking derived from data for the period Jan-1974 to Dec-2022



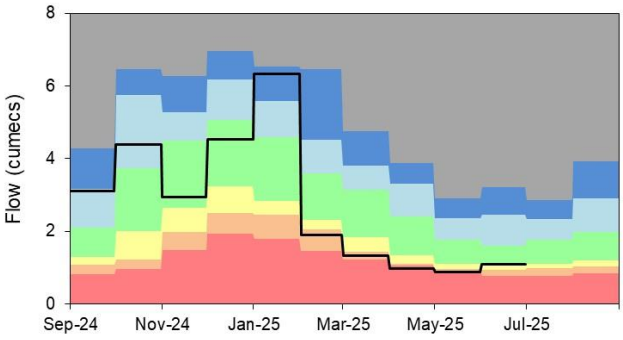
Bullgill, ELLEN
Ranking derived from data for the period Jan-1976 to Dec-2022



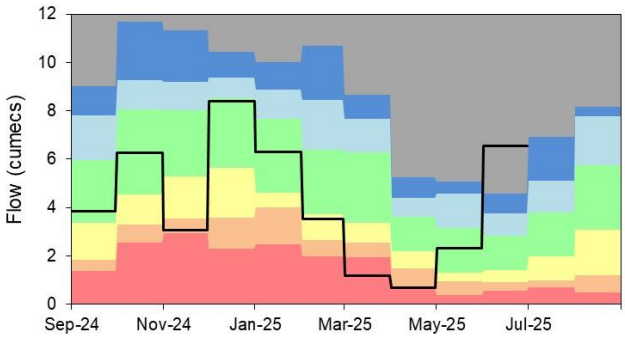
Caton, LUNE
Ranking derived from data for the period Jan-1959 to Dec-2022



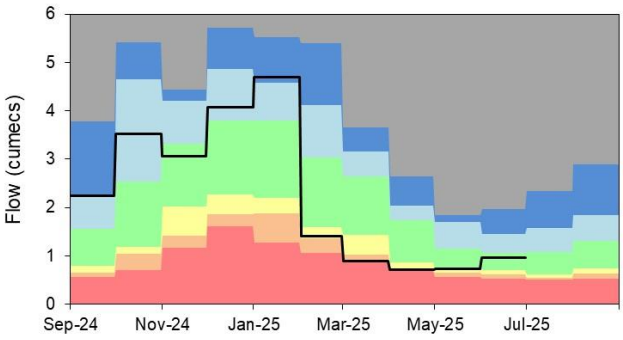
Causey Bridges, SANKEY
Ranking derived from data for the period Jan-1977 to Dec-2022



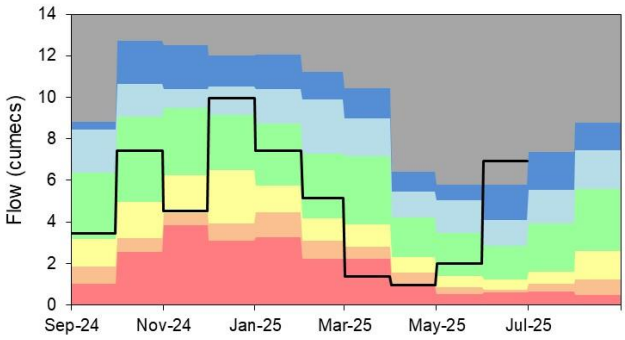
Cropple How, ESK (NW)
Ranking derived from data for the period Jan-1976 to Dec-2022



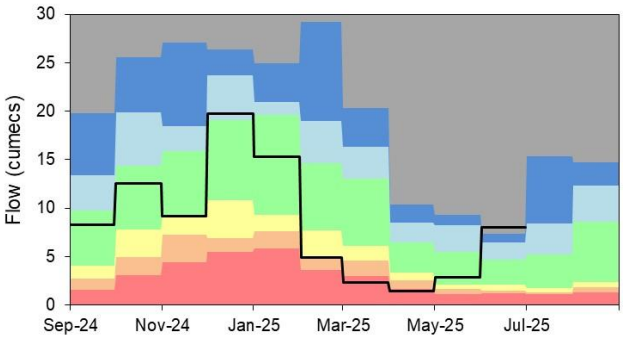
Croston, YARROW
Ranking derived from data for the period Jan-1976 to Dec-2022



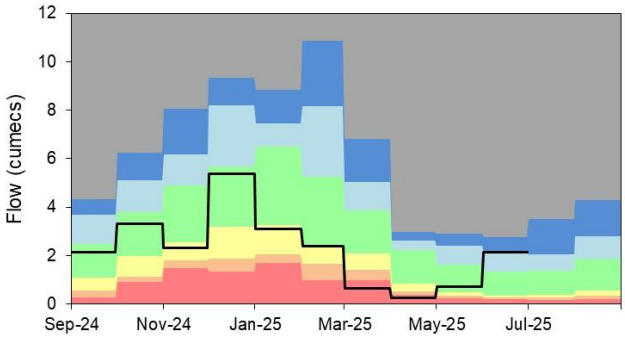
Duddon Hall, DUDDON
Ranking derived from data for the period Mar-1968 to Dec-2022



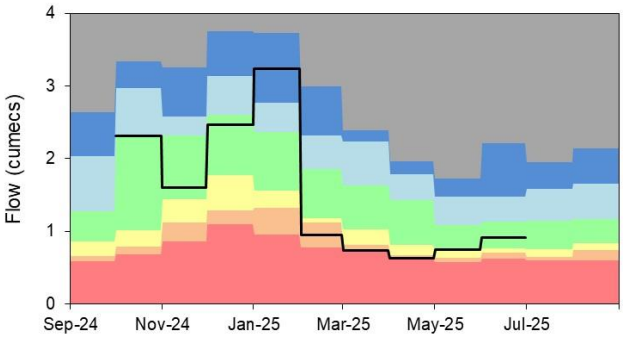
Hodder Place, HODDER
Ranking derived from data for the period Jan-1976 to Dec-2022



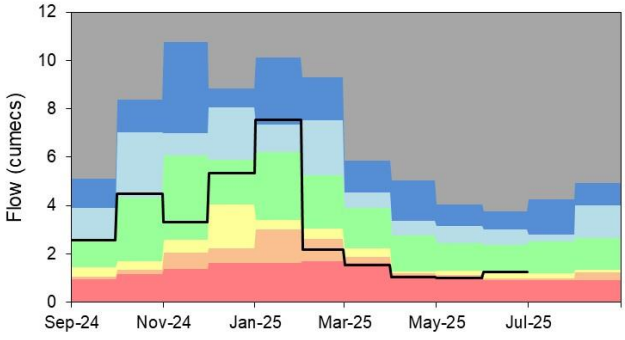
Kirkby Stephen, EDEN (NW)
Ranking derived from data for the period Oct-1971 to Dec-2022



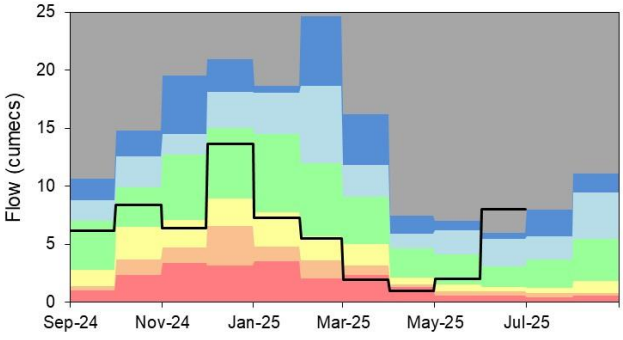
Kirkby, ALT
Ranking derived from data for the period Oct-1977 to Dec-2022



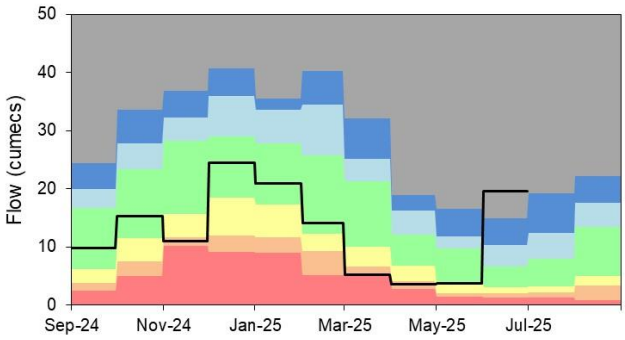
Little Woolden Hall Ultrasonic, GLAZE
Ranking derived from data for the period Jul-1995 to Dec-2022



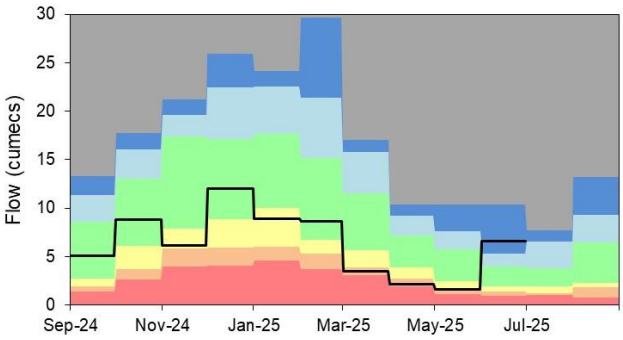
Lunes Bridge, LUNE
Ranking derived from data for the period Dec-1979 to Dec-2022



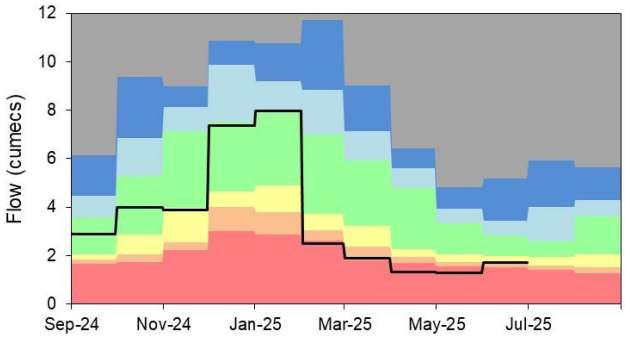
Newby Bridge FMS, LEVEN (NW)
Ranking derived from data for the period Jan-1972 to Dec-2022



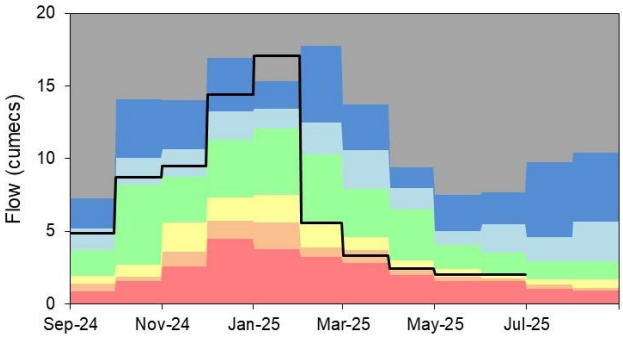
Pooley Bridge, EAMONT
Ranking derived from data for the period Jul-1970 to Dec-2022



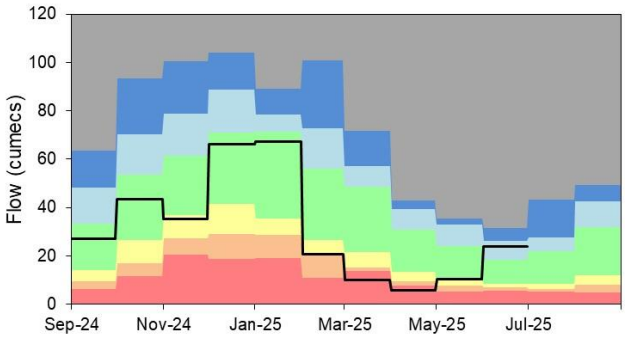
Portwood, TAME
Ranking derived from data for the period Jan-1976 to Dec-2022



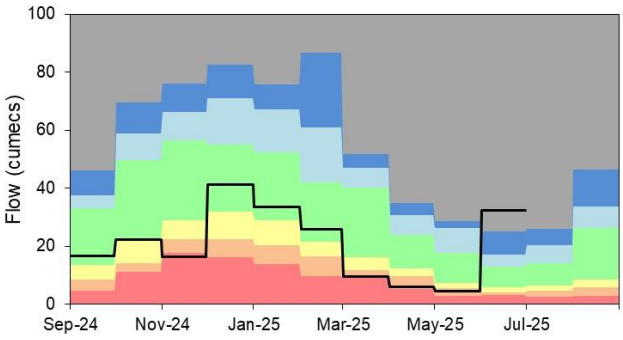
Rudheath, DANE
Ranking derived from data for the period Jan-1976 to Dec-2022

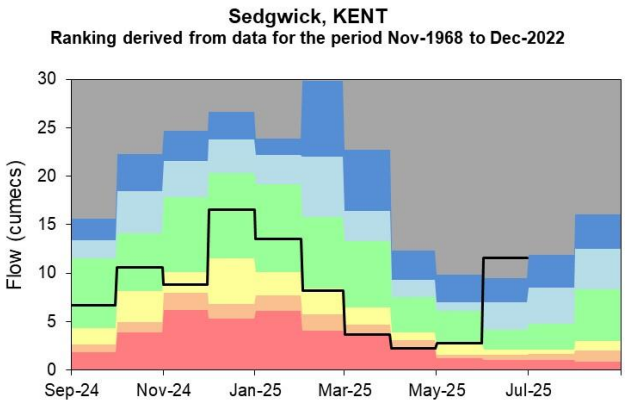


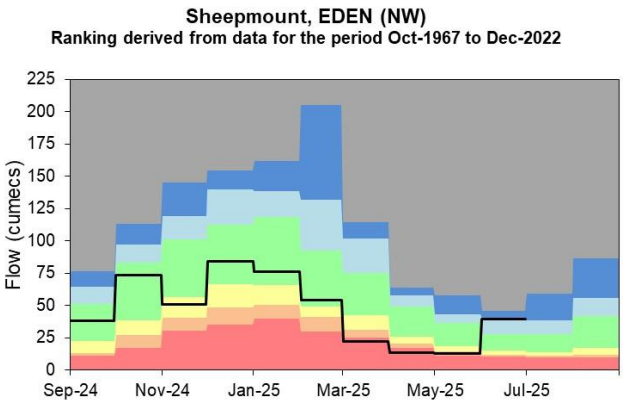
Samlesbury Pgs, RIBBLE (NW)
Ranking derived from data for the period May-1960 to Dec-2022

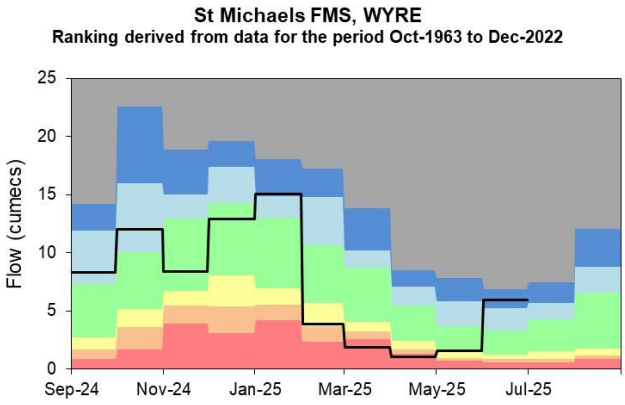


Seaton Mill, DERWENT (NW)
Ranking derived from data for the period Sep-1960 to Dec-2022







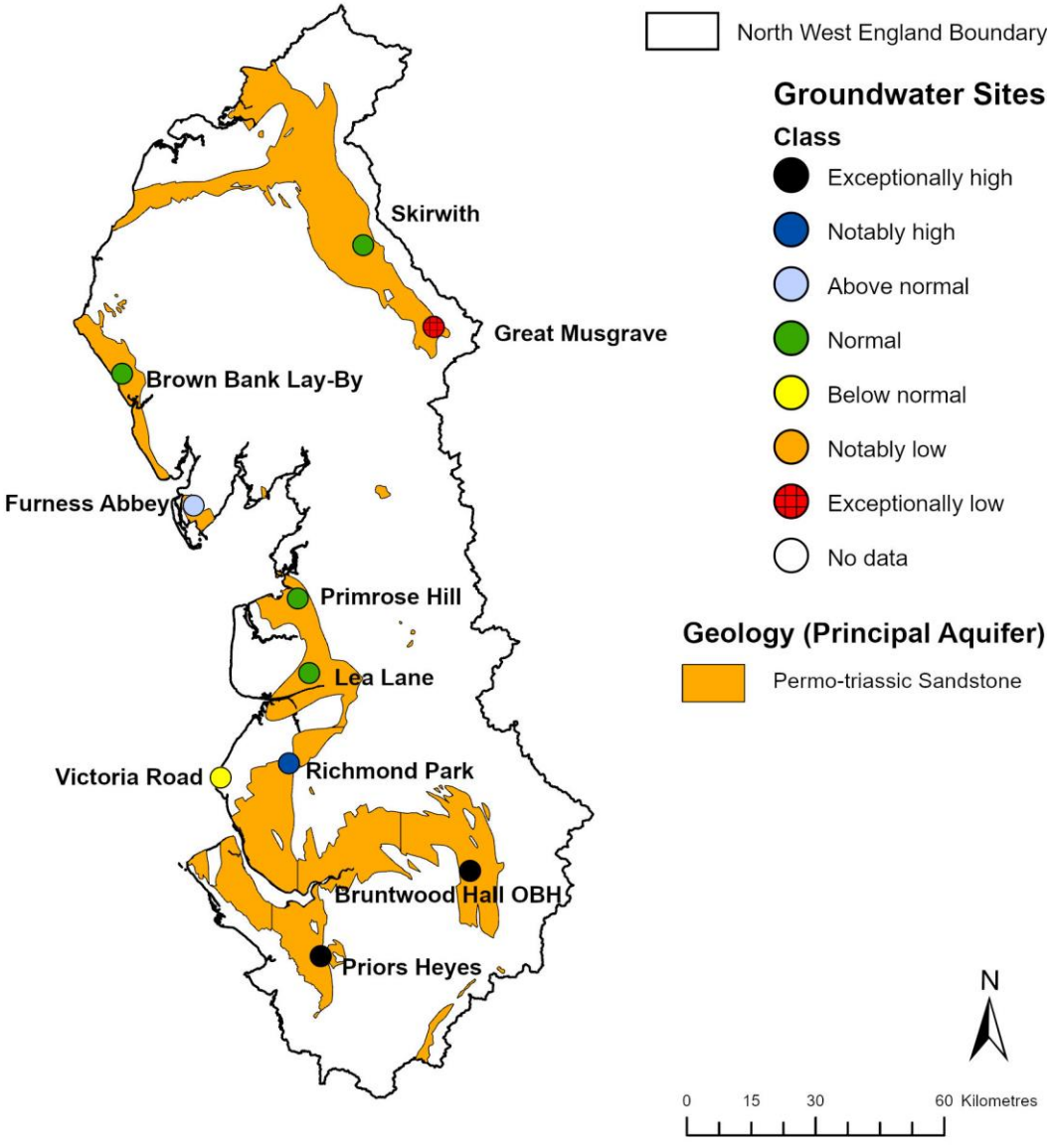


Source: Environment Agency.

5 Groundwater levels

5.1 Groundwater levels map

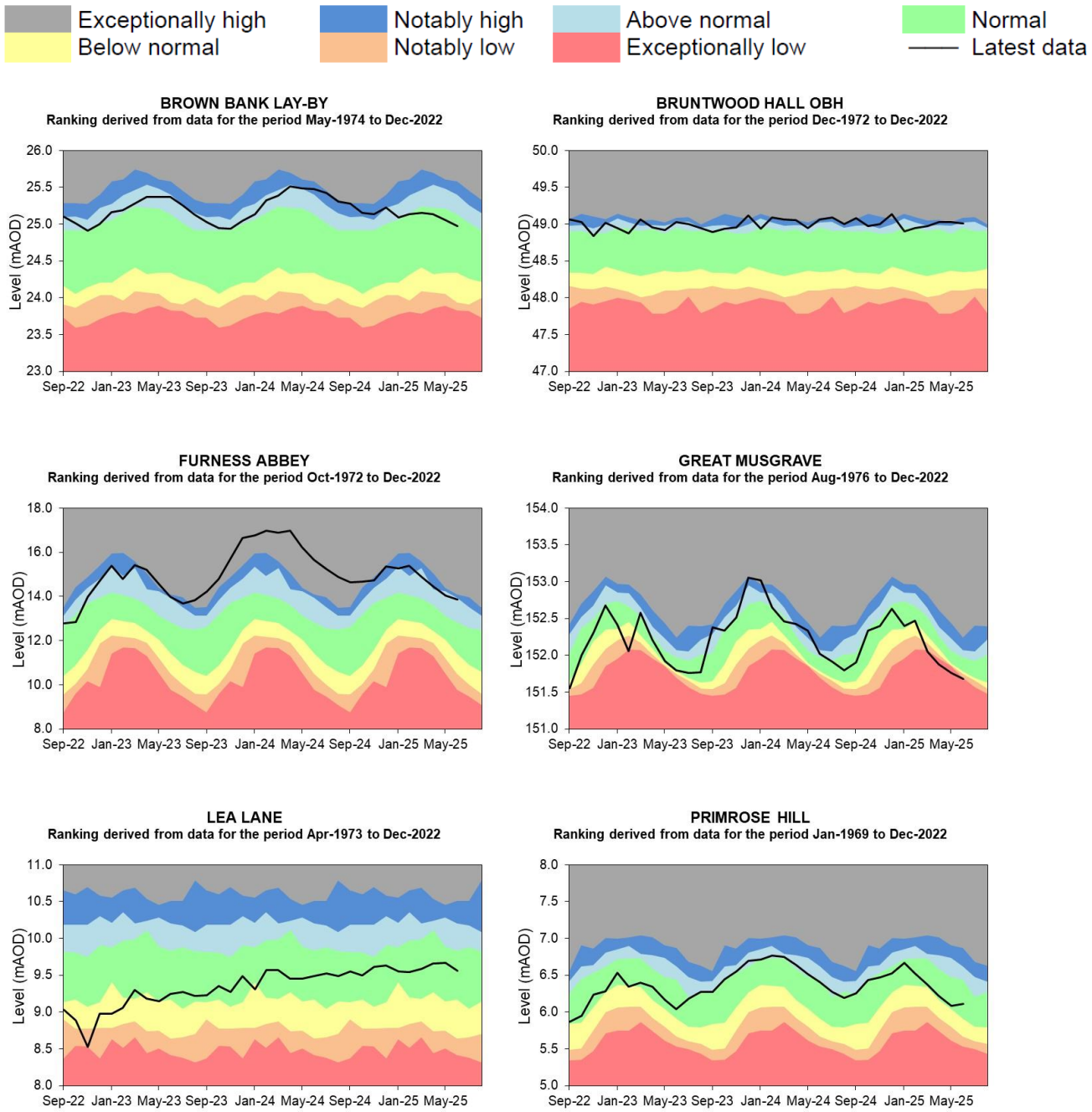
Figure 5.1: Groundwater levels for indicator sites at the end of June 2025, classed relative to an analysis of respective historic June levels. Table available in the appendices with detailed information. Please note Victoria Road Borehole sits within a superficial deposit as opposed to a bedrock aquifer.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

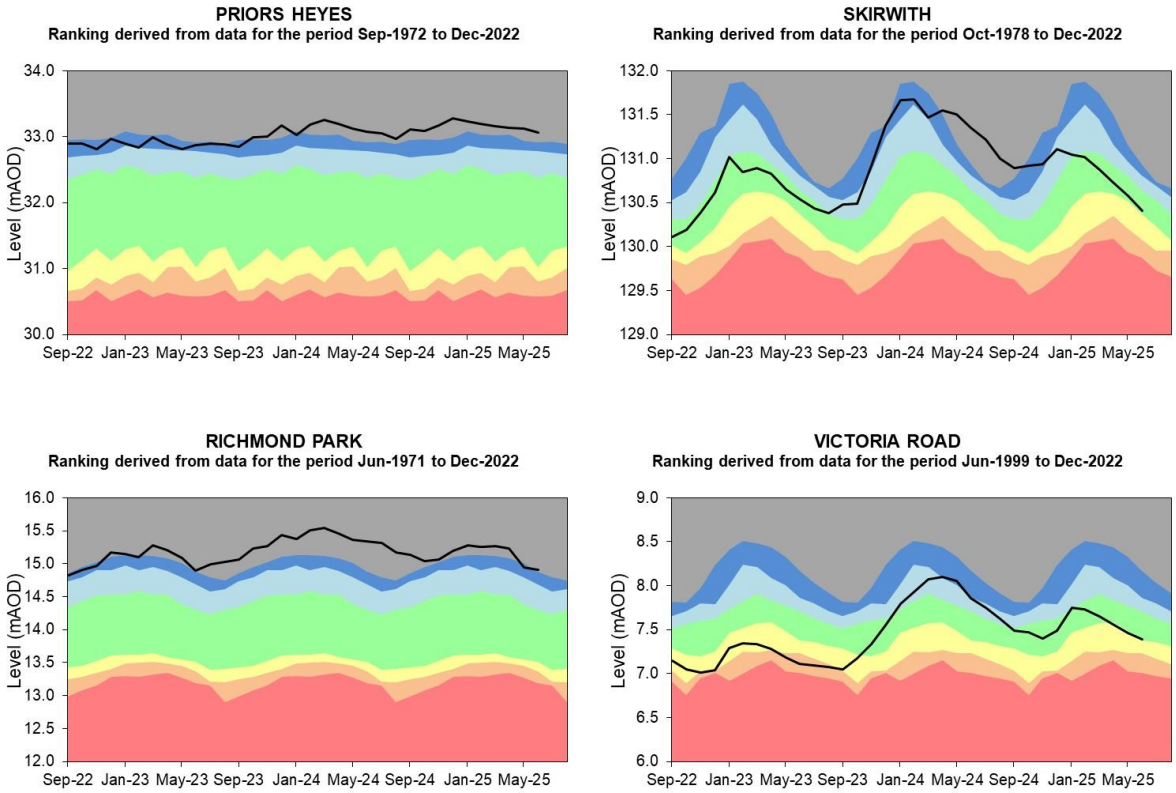


(Source: Environment Agency). Geological map reproduced with kind permission from UK Groundwater Forum, BGS copyright NERC. Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

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 stocks

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

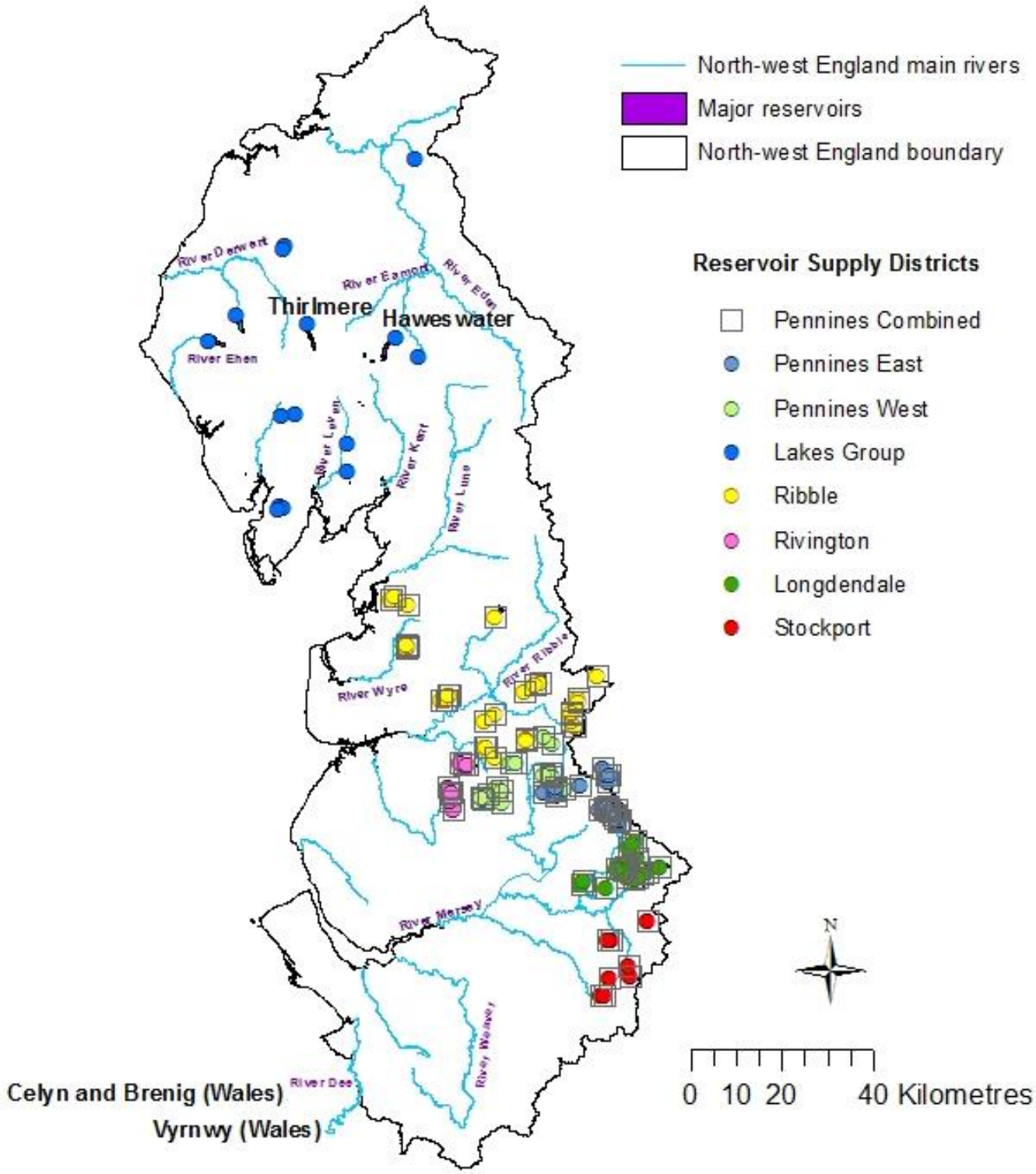
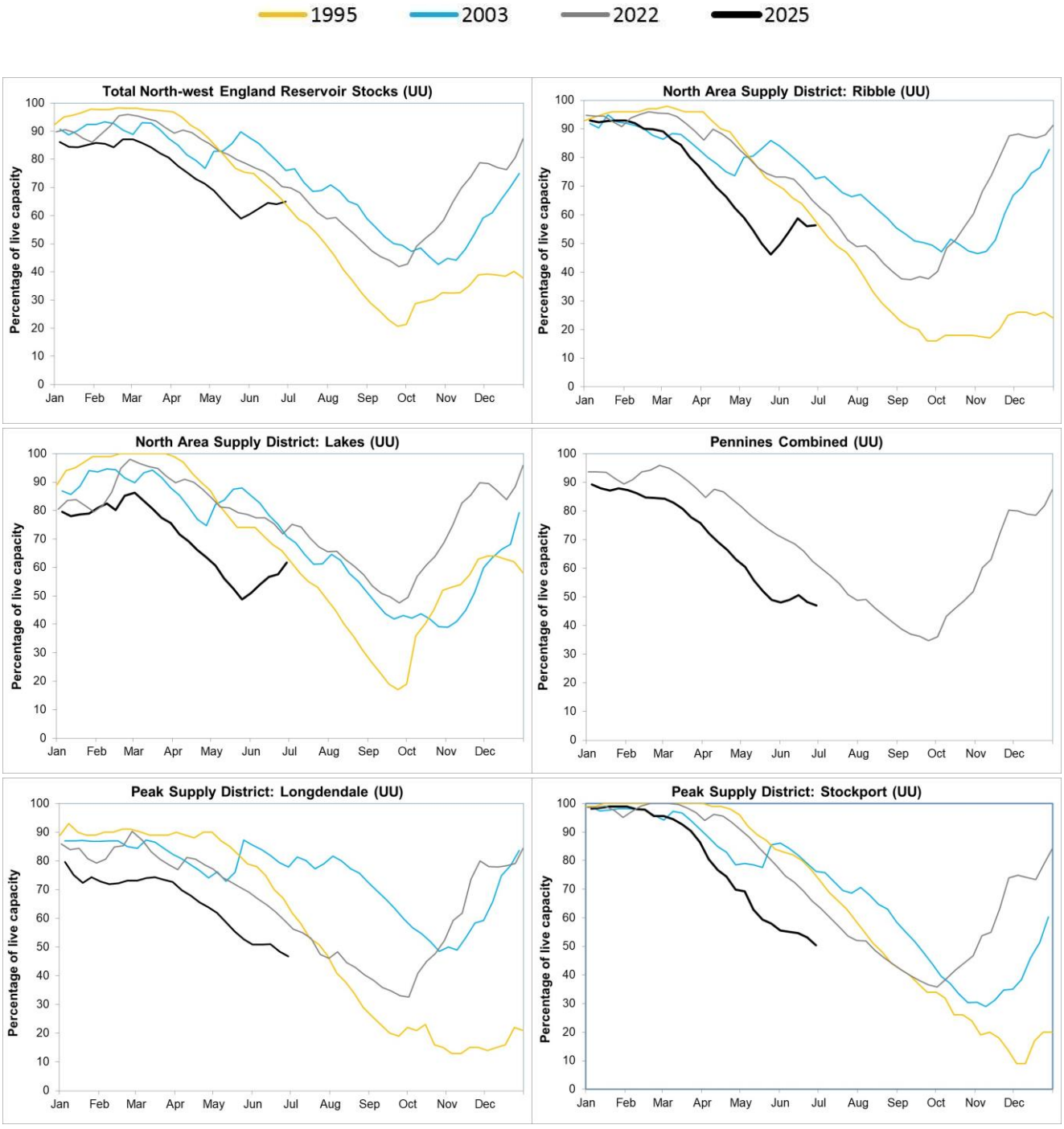
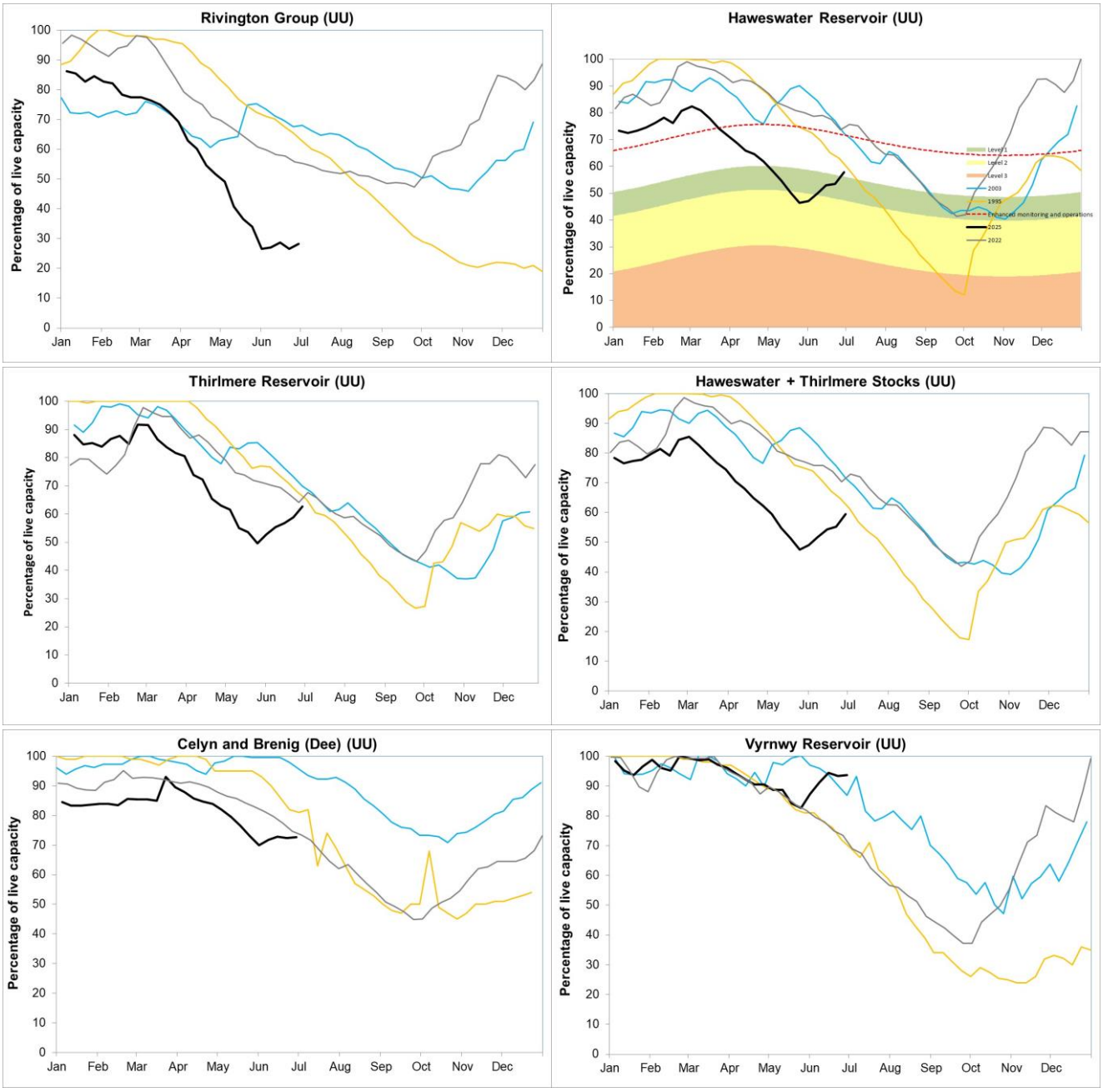


Figure 6.2: End of month reservoir stocks for supply districts across North-west England and selected individual reservoirs for current year (2025) and representative years: 1995, 2003 and 2022. Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in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





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 1991 to 2020. 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	Jun 2025 rainfall % of long term average 1991 to 2020	Jun 2025 band	Apr 2025 to June cumulative band	Jan 2025 to June cumulative band	Jul 2024 to June cumulative band
Cheshire Rivers Group	84	Normal	Below normal	Below normal	Above normal
Derwent (NW)	218	Exceptionally High	Notably high	Normal	Normal
Douglas	128	Above Normal	Normal	Below normal	Normal
Eden	183	Exceptionally High	Normal	Below normal	Normal
Esk (Cumbria)	210	Exceptionally High	Notably high	Normal	Above normal
Esk (Dumfries)	188	Exceptionally High	Above normal	Notably low	Notably low
Kent	235	Exceptionally High	Notably high	Normal	Above normal
Mersey And Irwell	101	Normal	Below normal	Notably low	Normal
Ribble	146	Notably High	Normal	Notably low	Below normal
Wyre And Lune	192	Exceptionally High	Above normal	Below normal	Normal

North West	163	Notably High	Normal	Below normal	Normal

8.2 River flows table

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

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

8.3 Groundwater table

Site name	Aquifer	End of Jun 2025 band	End of May 2025 band
Brown Bank Lay-by	West Cumbria Permo-triassic Sandstone	Normal	Normal
Bruntwood Hall Obh	East Cheshire Permo-triassic Sandstone	Above normal	Exceptionally high
Furness Abbey	Furness Permo-triassic Sandstone	Above normal	Above normal
Great Musgrave	Eden Valley And Carlisle Basin Permo-triassic Sandstone	Exceptionally low	Exceptionally low
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	Notably high

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