Monthly water situation report: North-west England

1 Summary – April 2025

1.1 Rainfall

Rainfall for north-west England was classed as notably low with 34% of the long-term average (LTA). The Cumbria and Lancashire (CLA) area observed 33% of the LTA also classed as notably low. The Greater Manchester, Merseyside and Cheshire (GMC) area observed 36% of the LTA, also classed as notably low.

During April, rainfall for hydrological areas within north-west England was classed between below normal and exceptionally low. Seven hydrological areas were classed as notably low and two hydrological areas were classed as exceptionally low. The highest rainfall (in terms of the LTA) was recorded in the Cheshire Rivers Group hydrological area with 44% of the LTA classed as below normal. The lowest rainfall (in terms of the LTA) was recorded in the Ribble hydrological area with 24% of the LTA, classed as exceptionally low.

Cumulative rainfall over the last 3 months was classed between notably low and exceptionally low. North-west England saw the third lowest rainfall on record since 1871 for this 3-month cumulative period, as did Lancashire. All areas saw exceptionally low rainfall except for the Esk (Cumbria), Kent, and Derwent hydrological areas which saw notably low rainfall. The lowest rainfall was again in the Ribble hydrological area with 37% of the LTA classed as exceptionally low, the lowest rainfall on record since 1871 for this 3-month cumulative period. The Esk (Dumfries) hydrological area also saw record lowest rainfall for this 3-month cumulative period, at 51% of the LTA, classed as exceptionally low. The Mersey and Irwell Hydrological area saw the second lowest rainfall on record since 1871 for this period. The 3-month cumulative rainfall distribution shows lower rainfall totals recorded in the south and higher rainfall totals recorded in the more exposed west Cumbrian areas.

The 6-month cumulative rainfall period sees progressively drier areas from south to north, classed as normal in southern areas to exceptionally low in the north. The Esk (Dumfries) 6-month cumulative rainfall total was the driest since 1871, at 66% of the LTA, classed as exceptionally low. Cheshire Rivers Group hydrological area had the highest rainfall, classed as normal, at 98% of the LTA.

All hydrological areas saw 12-month cumulative rainfall totals classed as normal, with the exception of the Cheshire Rivers Group hydrological area at 118% of the LTA, classed as notably high. The Ribble hydrological area had the lowest rainfall at 89% of the LTA.

1.2 Soil moisture deficit and recharge

Low rainfall during April across the north-west of England resulted in increasing soil moisture deficit from the end of March. SMD levels were between 11mm and 70mm and were higher than expected for the time of year, with highest levels in GMC and parts of Lancashire.

1.3 River flows

As a result of the low rainfall during April, there was a further reduction in river flows across north-west England, with seven sites in the area below Q95 flow. Monthly mean river flows for April were classed between normal and exceptionally low, two being classed as normal, one below normal, eight as notably low and fourteen as exceptionally low. The highest monthly mean river flow (in terms of LTA) was recorded in the River Weaver at Ashbrook with 68% of the LTA, classed as normal. The lowest was in the River Eden at Kirkby Stephen with 15% of the LTA, classed as exceptionally low.

1.4 Groundwater levels

Groundwater levels across north-west England at the end of April were classed as between exceptionally high and exceptionally low. Groundwater levels at:

- Furness Abbey, increased, from above normal to notably high.
- Bruntwood Hall, increased, from above normal to notably high
- Victoria Road, decreased, from normal to below normal.

All other sites remained the same classification at:

- Brown Bank Lay-By, classed as normal.
- Lea Lane, classed as normal.
- Primrose Hill, classed as normal.
- Skirwith, classed as normal.
- Great Musgrave, classed as exceptionally low.
- Richmond Park, classed as exceptionally high.
- Prior Heyes, classed as exceptionally high.

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 storage

Total reservoir stocks for north-west England decreased from 81% at the end of March to 71% at the end of April. This is lower than the average of 90% at this time of year as well as lower than this time last year when total reservoir stocks were 92%.

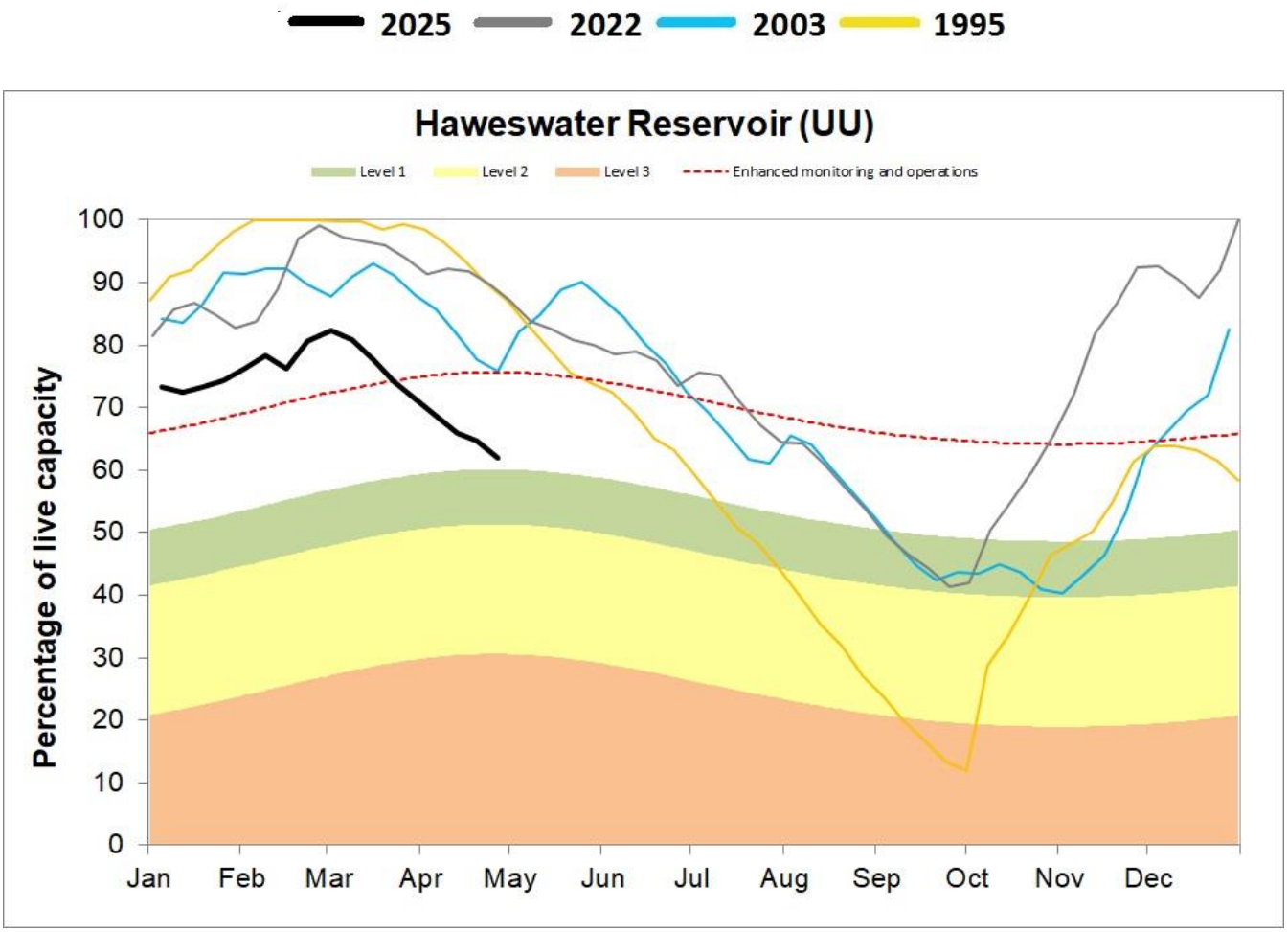
At the end of April reservoir storage (in terms of percentage) was highest at Crummock water at 100% full and lowest at Rivington at 52%.

The combined storage at Haweswater and Thirlmere was 62% being lower than the 88% average storage at this time of year and lower than last year when storage was 96%. Haweswater storage is the lowest it has been at the end of April since records began in 1980.

Reservoirs kept low for maintenance works include part of the:

- Longdendale system – Audenshaw No.1, Torside
- Rivington system – Anglezarke, and High Bullough
- Bolton supply system – Dingle
- Piethorne Valley system – Norman Hill, Kitcliffe, and Rooden
- Ogden (Barley) system – Ogden Lower, and Ogden Upper
- Barnacre Group system – Barnacre North
- Longridge system - Alston No.1, Alston No.2, and Spade Mill No.2
- Dee (Celyn and Brenig) system – Llyn Celyn
- Dubbs system – Dubbs
- Watergrove system – Watergrove

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)).

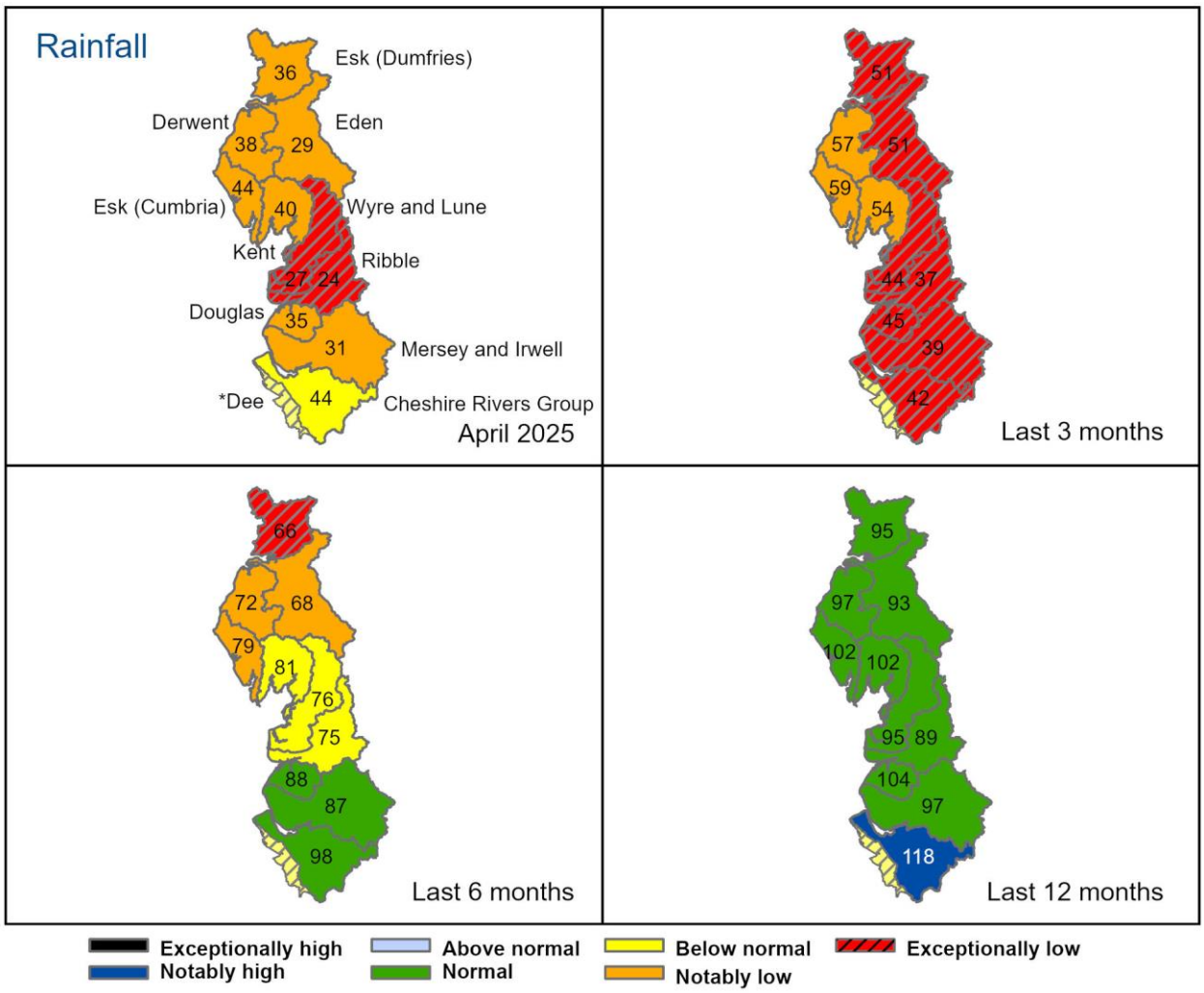


Author: Cumbria and Lancashire Hydrology Team, hydrology.CMBLNC@environment-agency.gov.uk

2 Rainfall

2.1 Rainfall map

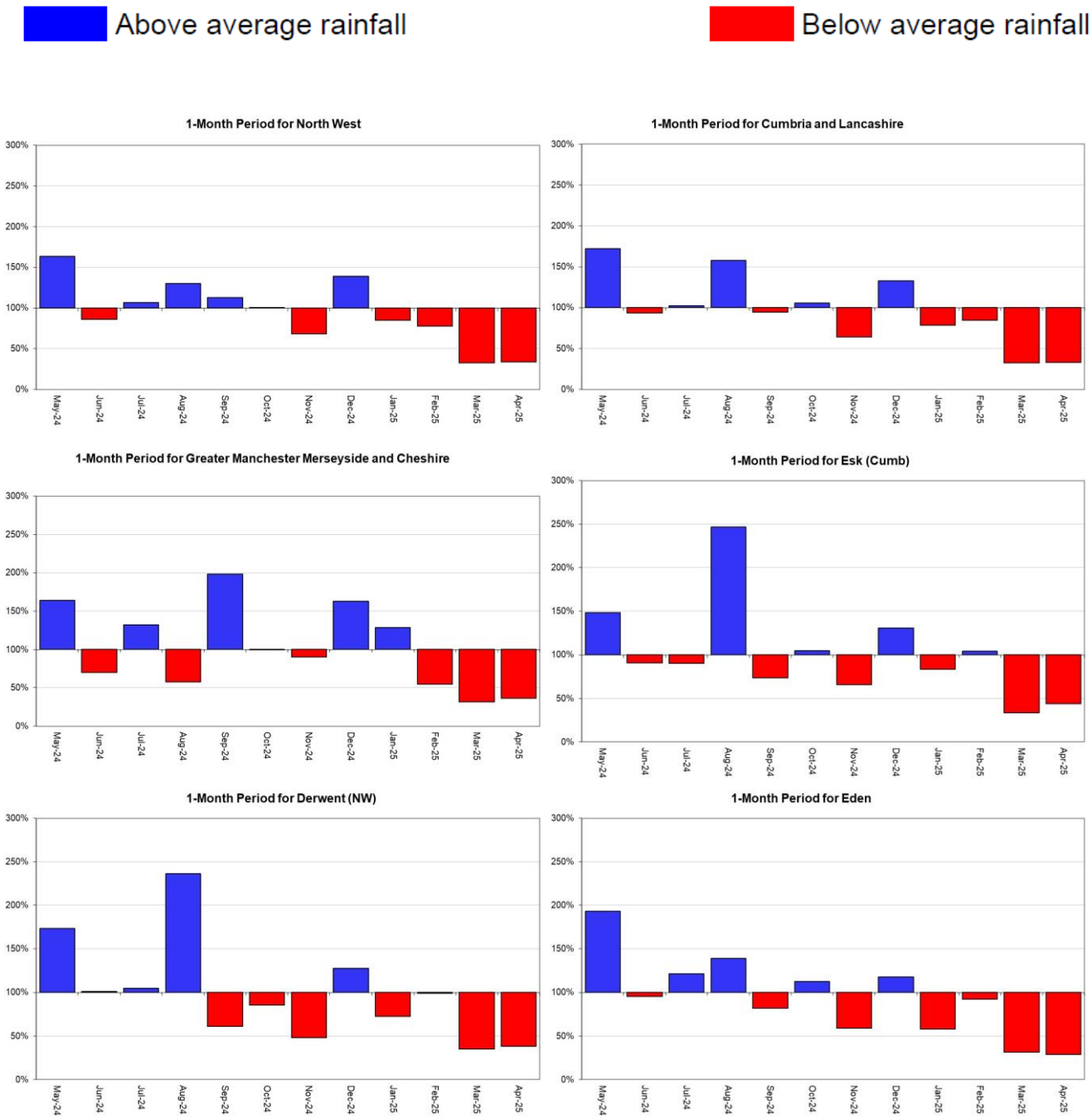
Figure 2.1: Total rainfall (as a percentage) for hydrological areas for the current month (up to 30 April 2025), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

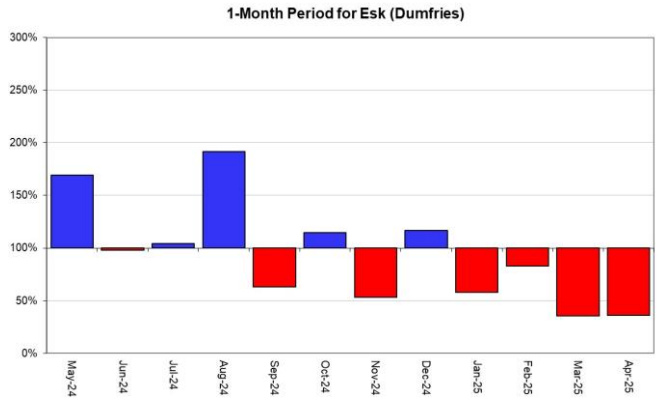


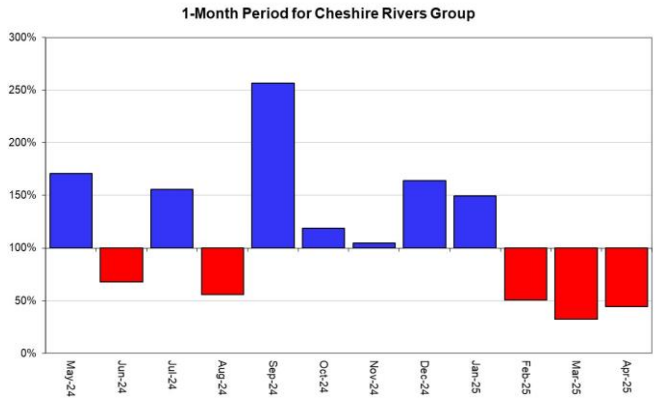
Rainfall data since 2023, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived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

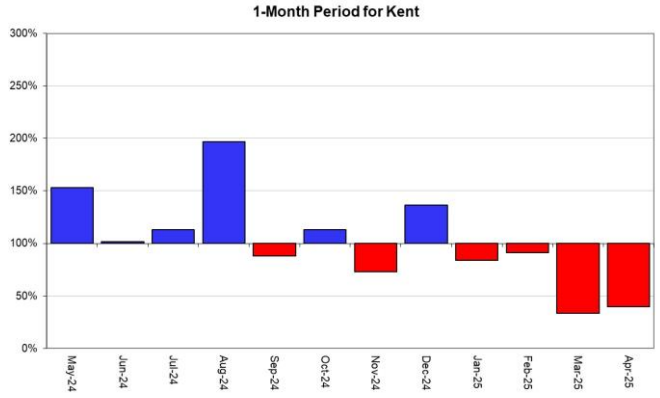
2.2 Rainfall charts

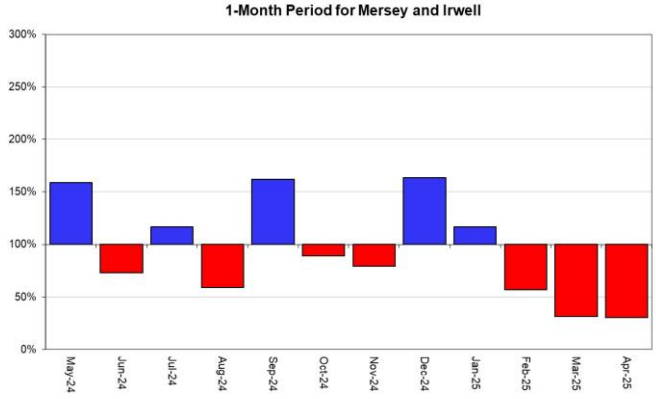
Figure 2.2: Monthly rainfall totals for the past 12 months expressed as a percentage of the 1961 to 1990 long term average for North-west England and its hydrological areas.

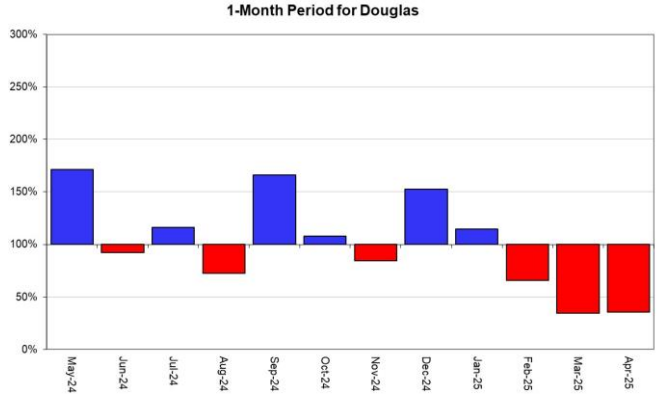


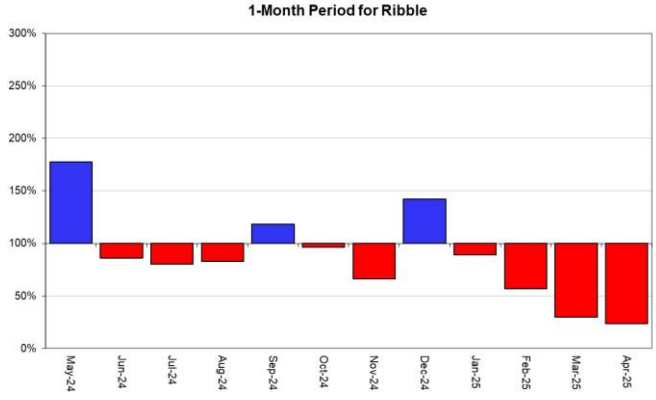

1-Month Period for Esk (Dumfries)
300%
250%
200%
150%
100%
50%
0%
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25

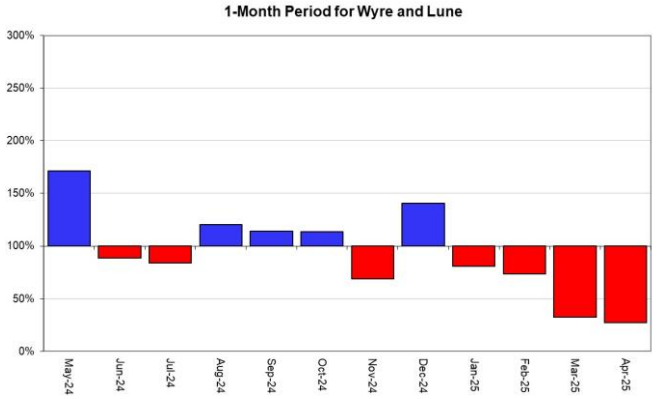

1-Month Period for Cheshire Rivers Group
300%
250%
200%
150%
100%
50%
0%
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25


1-Month Period for Kent
300%
250%
200%
150%
100%
50%
0%
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25


1-Month Period for Mersey and Irwell
300%
250%
200%
150%
100%
50%
0%
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25


1-Month Period for Douglas
300%
250%
200%
150%
100%
50%
0%
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25


1-Month Period for Ribble
300%
250%
200%
150%
100%
50%
0%
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25

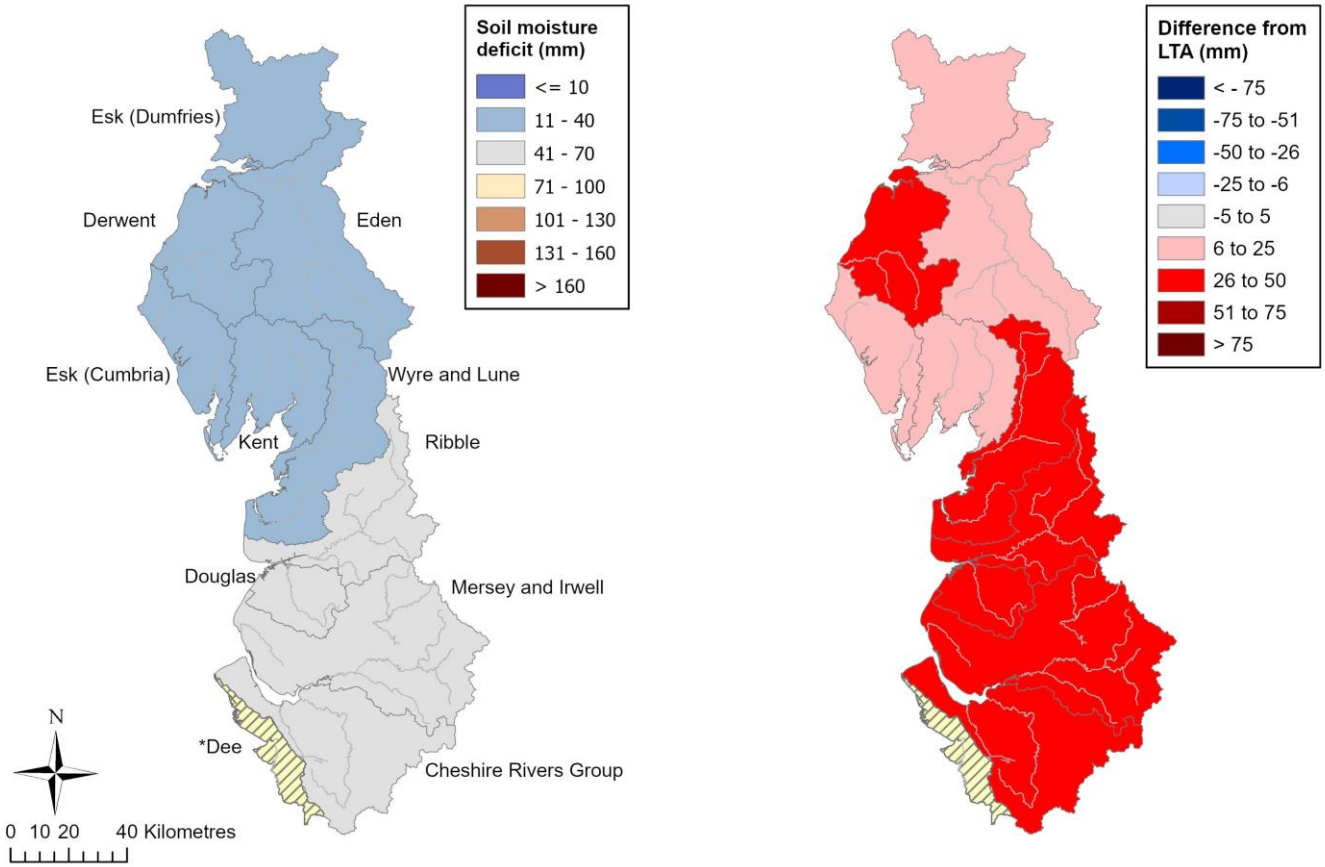


Rainfall data since 2023, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived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

3 Soil moisture deficit

3.1 Soil moisture deficit map

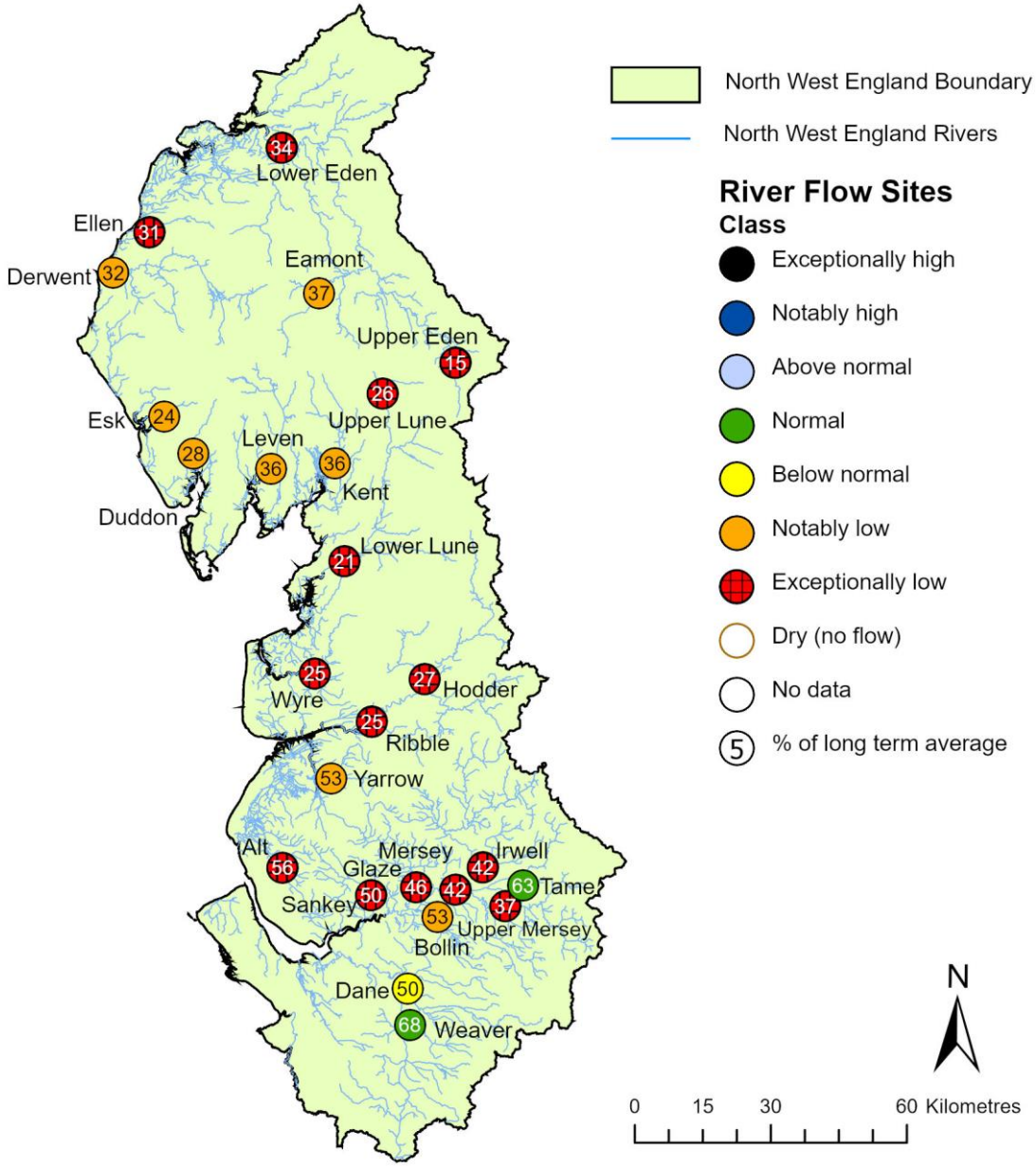
Figure 3.1: Soil moisture deficits for the week ending 30 April 2025. The map on the left shows actual soil moisture deficits (mm) and the map on the right shows the difference (mm) of the actual from the 1961-90 long term average soil moisture deficits. MORECS data for real land use.



4 River flows

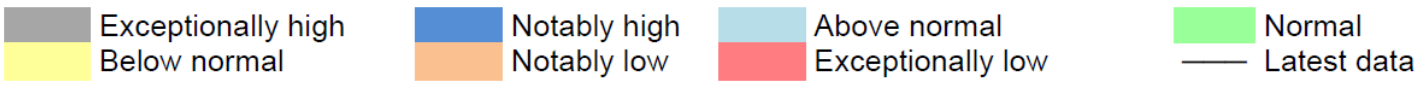
4.1 River flows map

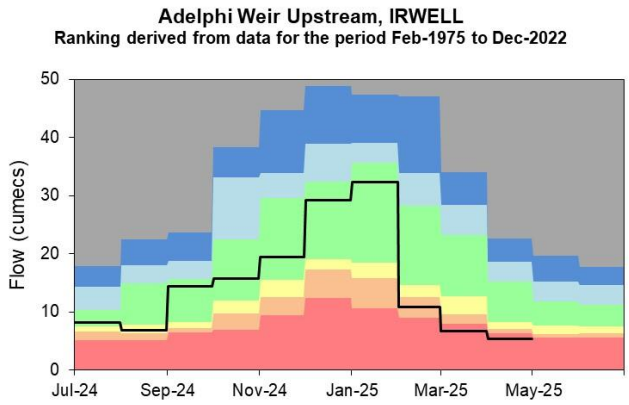
Figure 4.1: Monthly mean river flow for indicator sites for April 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic April monthly means. Table available in the appendices with detailed information.

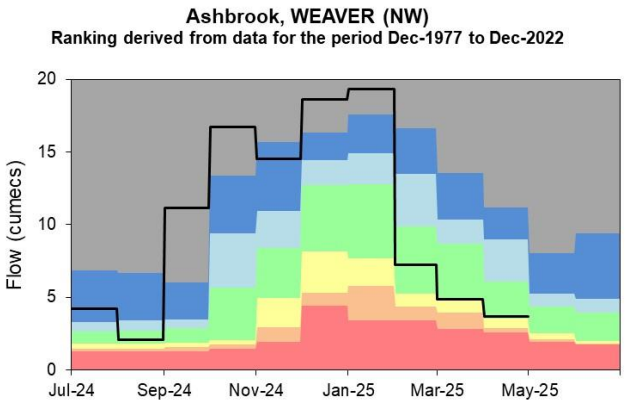


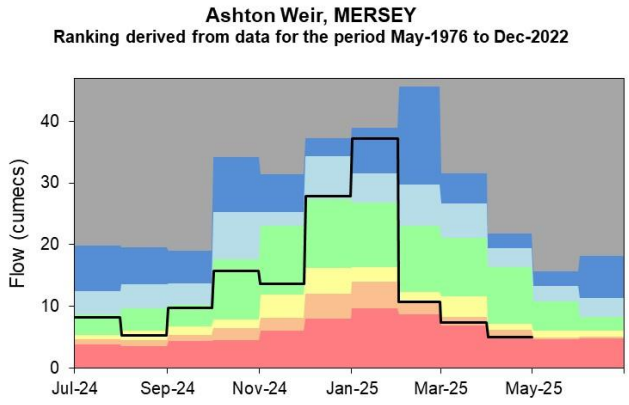
4.2 River flow charts

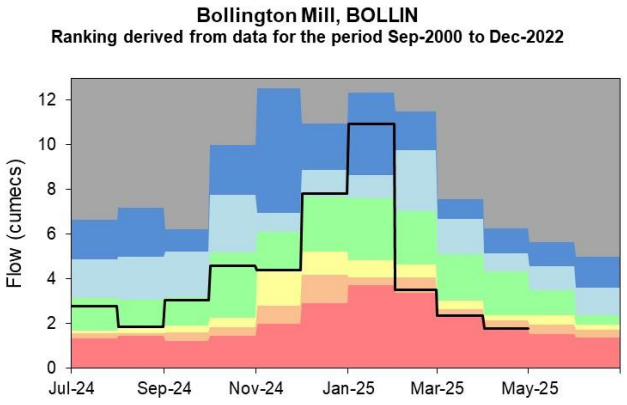
Figure 4.2: Monthly mean river flow for index sites over the past year, compared to an analysis of historic monthly mean flows.



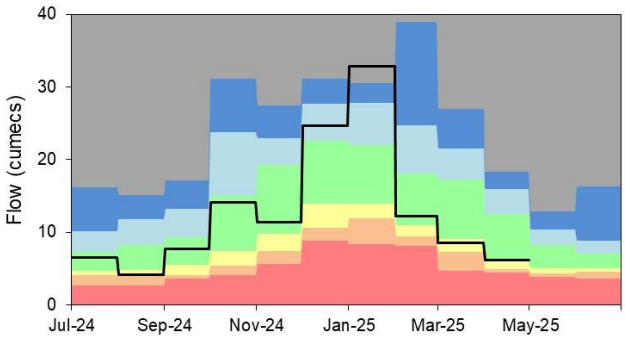




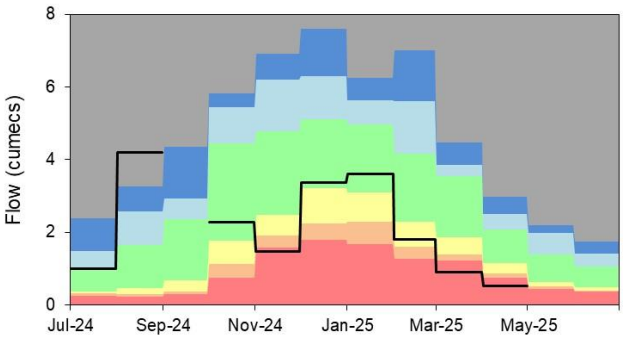




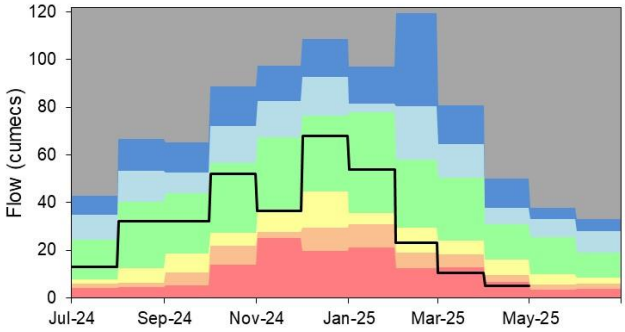
Brinksway, MERSEY
Ranking derived from data for the period Jan-1974 to Dec-2022



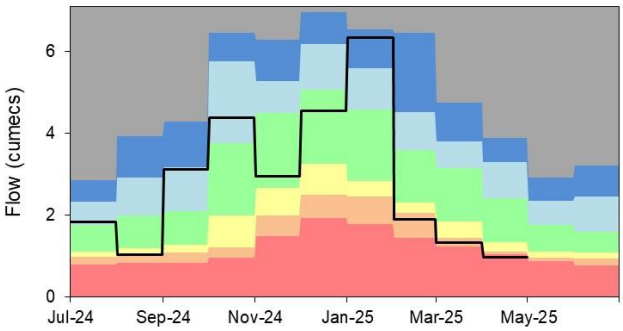
Bullgill, ELLEN
Ranking derived from data for the period Jan-1976 to Dec-2022



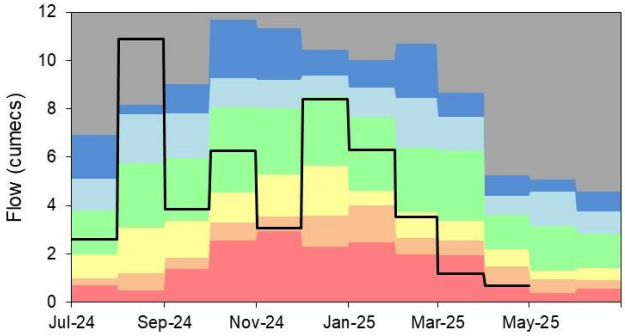
Caton, LUNE
Ranking derived from data for the period Jan-1959 to Dec-2022



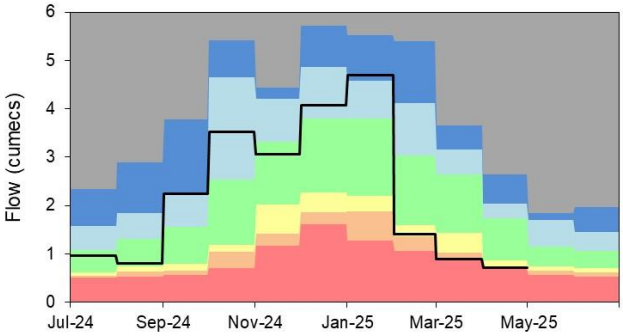
Causey Bridges, SANKEY
Ranking derived from data for the period Jan-1977 to Dec-2022



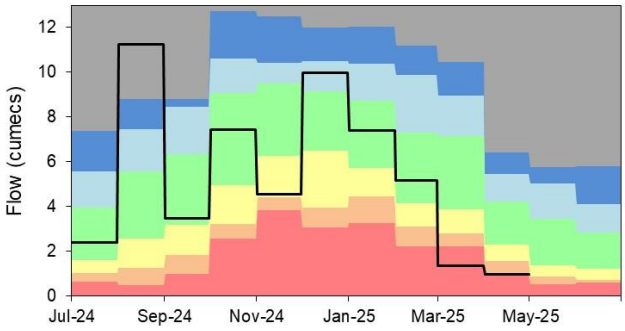
Cropple How, ESK (NW)
Ranking derived from data for the period Jan-1976 to Dec-2022



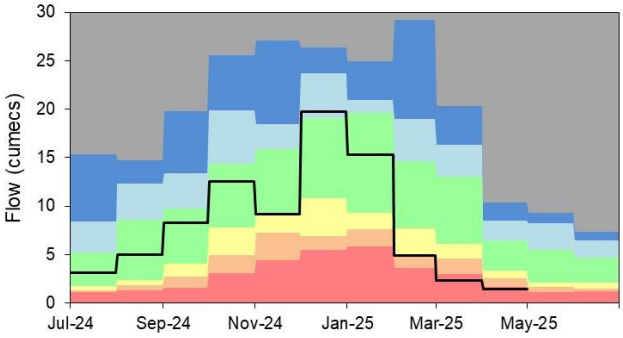
Croston, YARROW
Ranking derived from data for the period Jan-1976 to Dec-2022



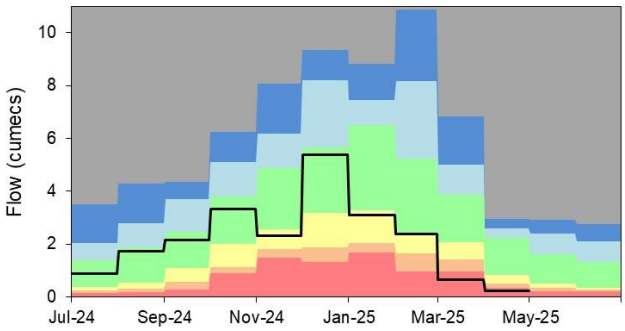
Duddon Hall, DUDDON
Ranking derived from data for the period Mar-1968 to Dec-2022



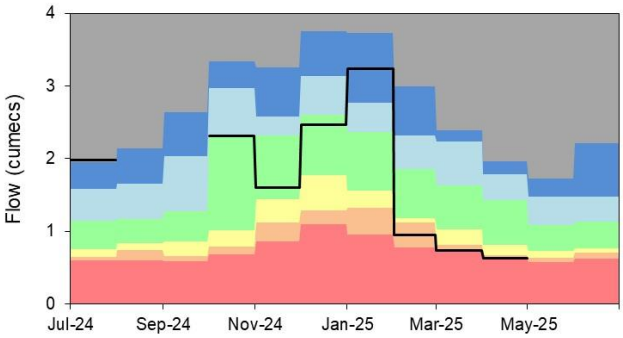
Hodder Place, HODDER
Ranking derived from data for the period Jan-1976 to Dec-2022



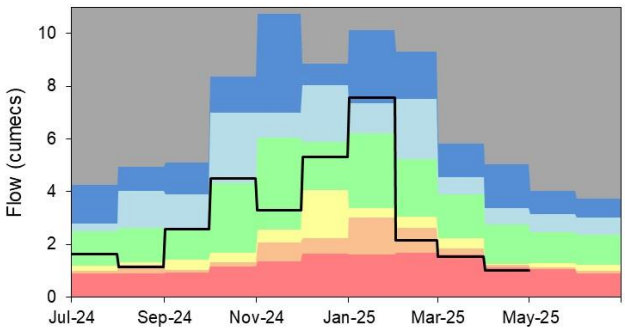
Kirkby Stephen, EDEN (NW)
Ranking derived from data for the period Oct-1971 to Dec-2022



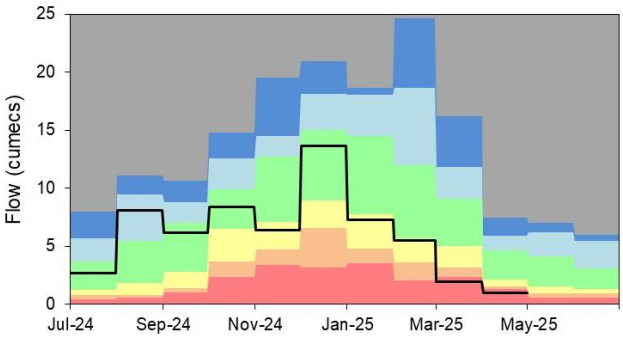
Kirkby, ALT
Ranking derived from data for the period Oct-1977 to Dec-2022



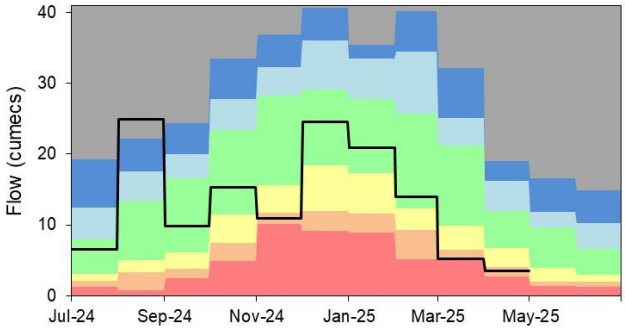
Little Woolden Hall Ultrasonic, GLAZE
Ranking derived from data for the period Jul-1995 to Dec-2022



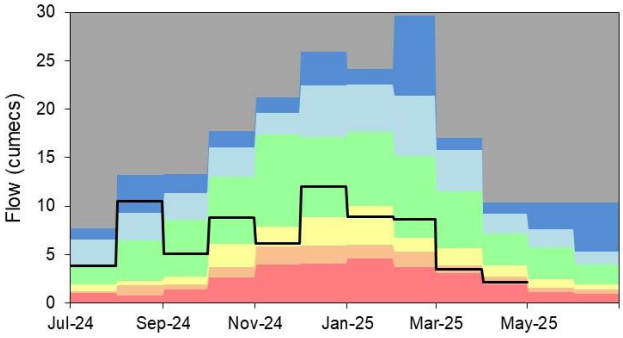
Lunes Bridge, LUNE
Ranking derived from data for the period Dec-1979 to Dec-2022



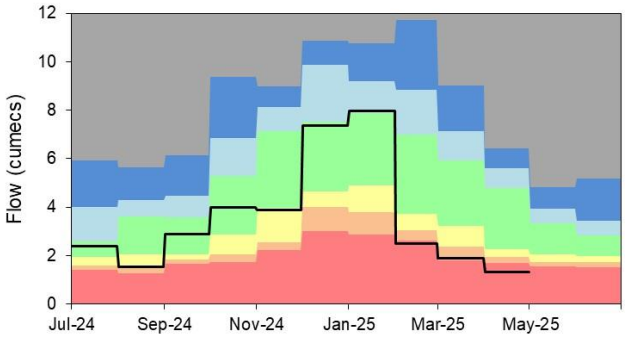
Newby Bridge FMS, LEVEN (NW)
Ranking derived from data for the period Jan-1972 to Dec-2022



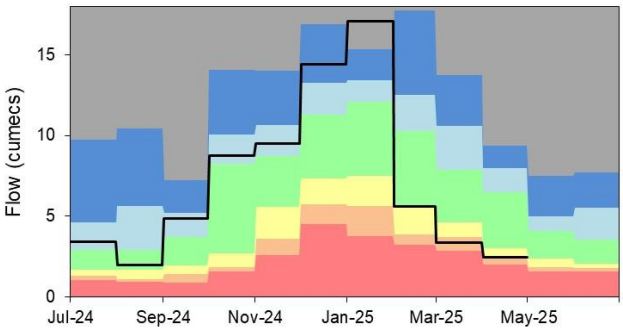
Pooley Bridge, EAMONT
Ranking derived from data for the period Jul-1970 to Dec-2022



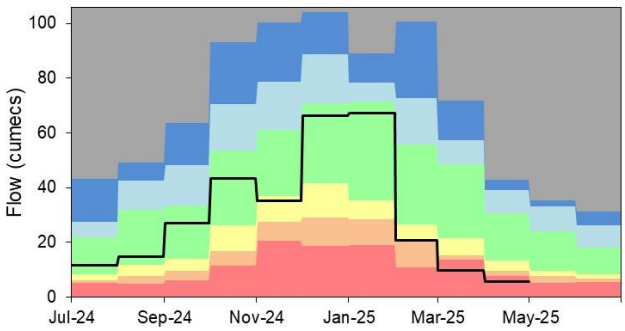
Portwood, TAME
Ranking derived from data for the period Jan-1976 to Dec-2022



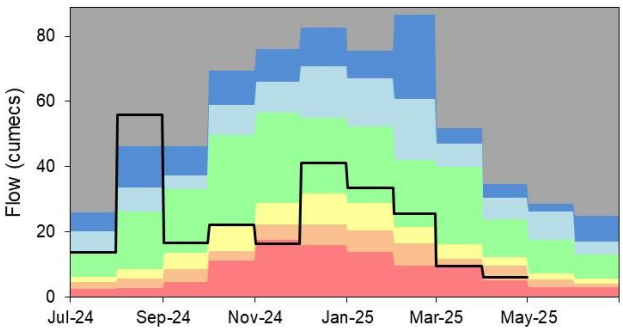
Rudheath, DANE
Ranking derived from data for the period Jan-1976 to Dec-2022



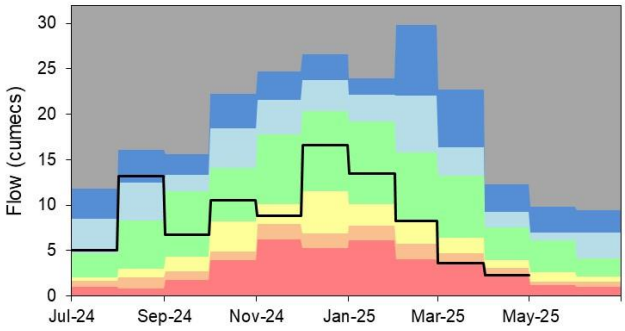
Samlesbury Pgs, RIBBLE (NW)
Ranking derived from data for the period May-1960 to Dec-2022



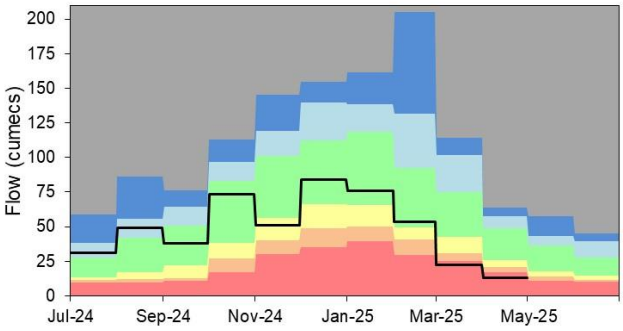
Seaton Mill, DERWENT (NW)
Ranking derived from data for the period Sep-1960 to Dec-2022



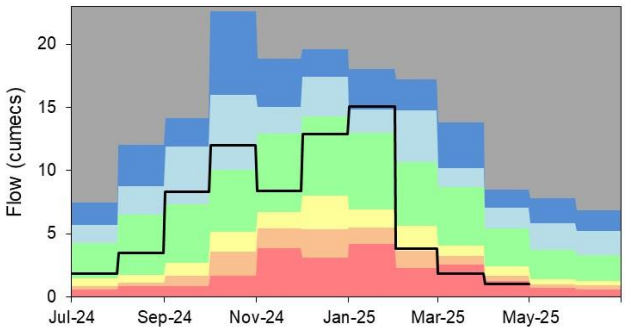
Sedgwick, KENT
Ranking derived from data for the period Nov-1968 to Dec-2022



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

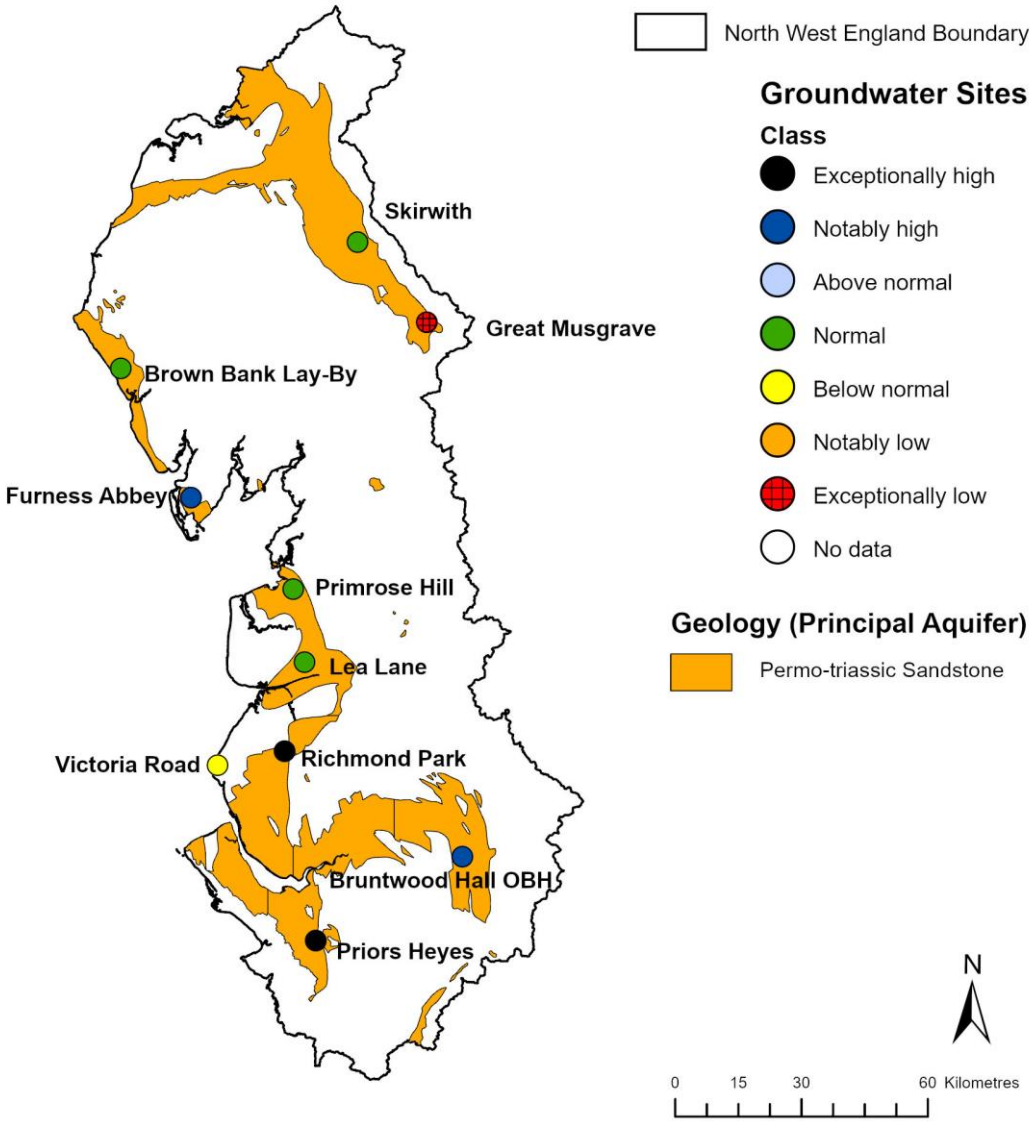


Source: Environment Agency.

5 Groundwater levels

5.1 Groundwater levels map

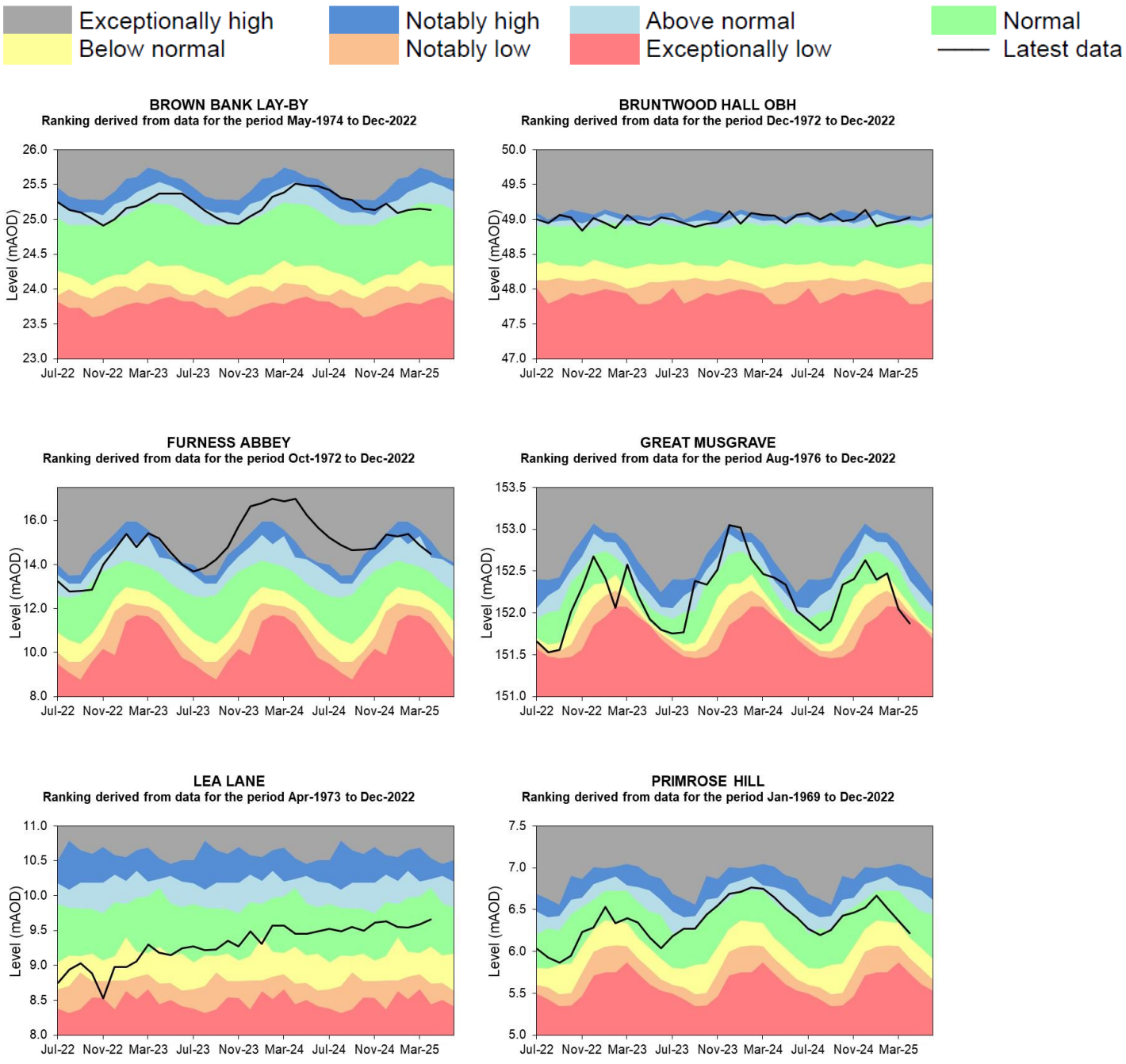
Figure 5.1: Groundwater levels for indicator sites at the end of April 2025, classed relative to an analysis of respective historic April levels. Table available in the appendices with detailed information. Please note Victoria Road Borehole sits within a superficial deposit as opposed to a bedrock aquifer.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

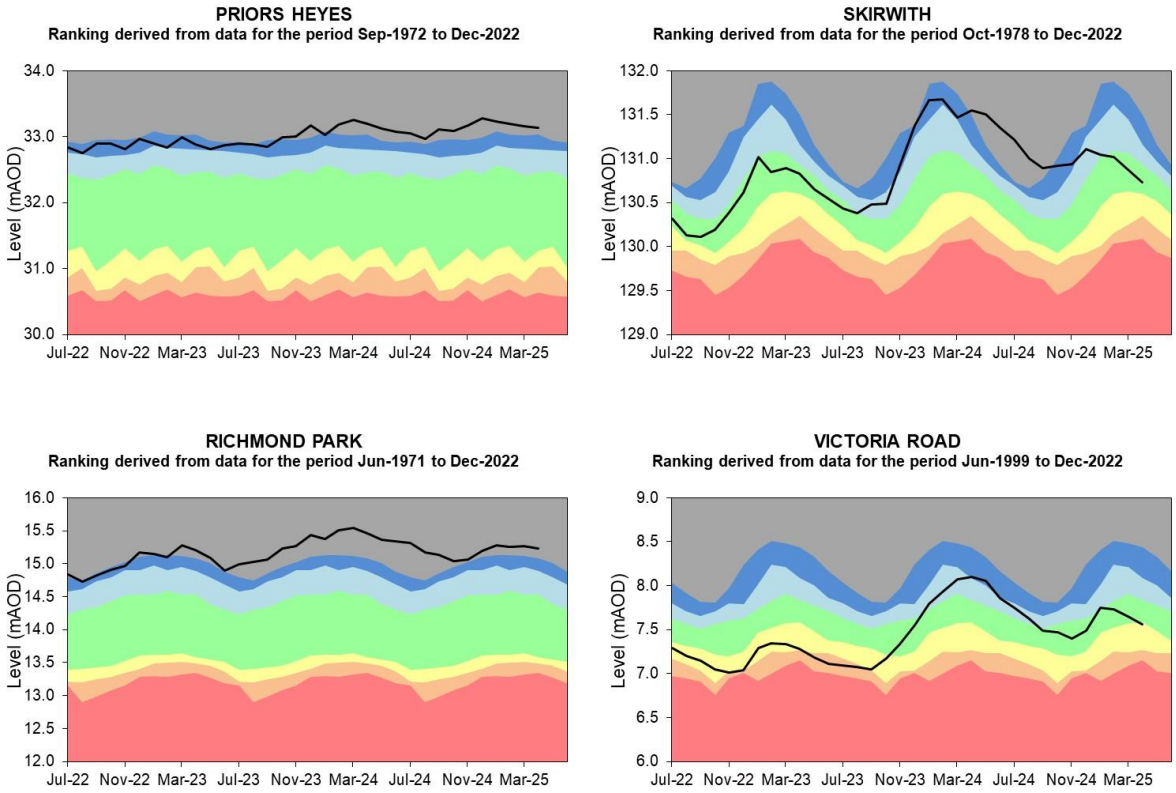


(Source: Environment Agency). Geological map reproduced with kind permission from UK Groundwater Forum, BGS copyright NERC. Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

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.

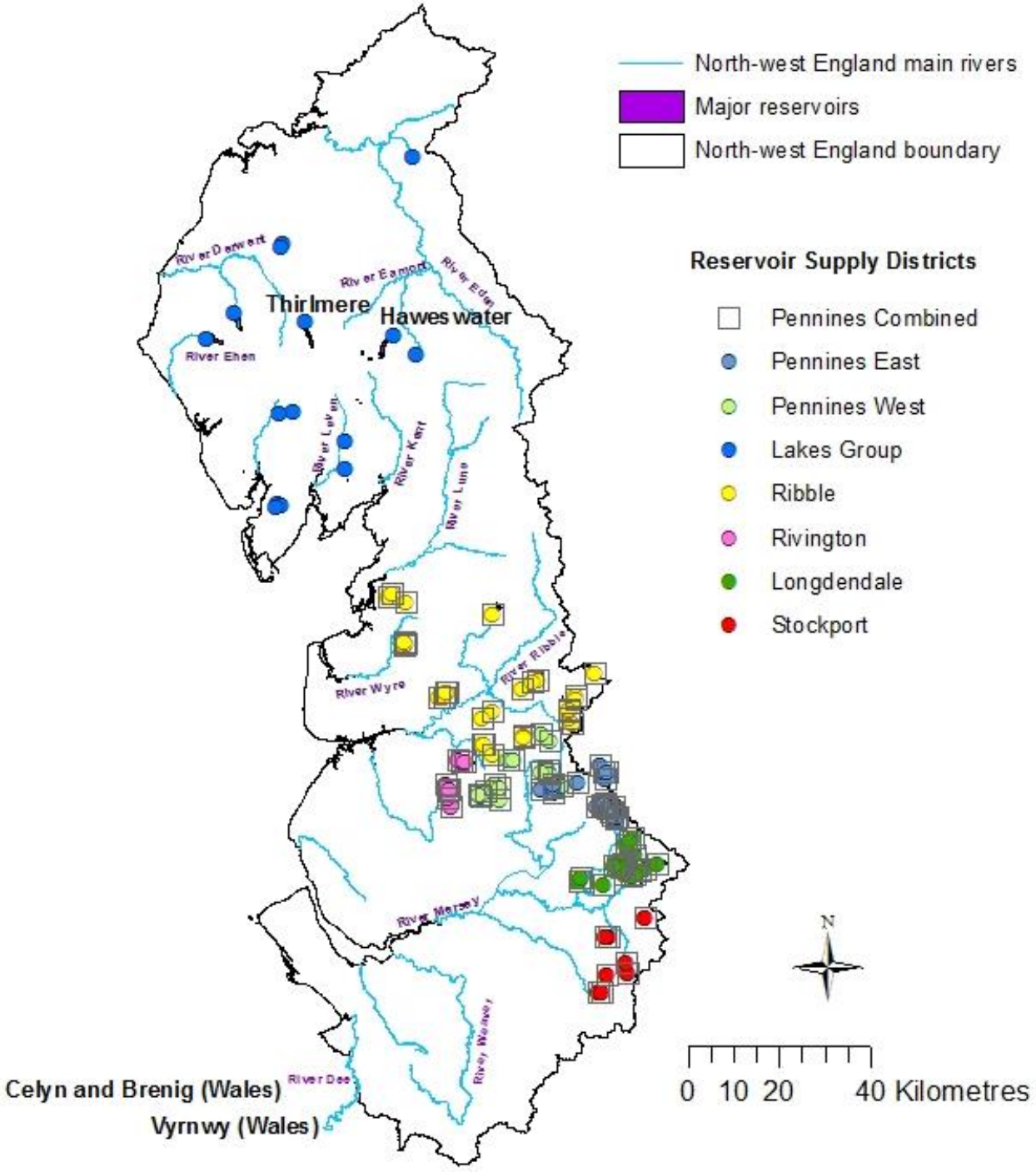
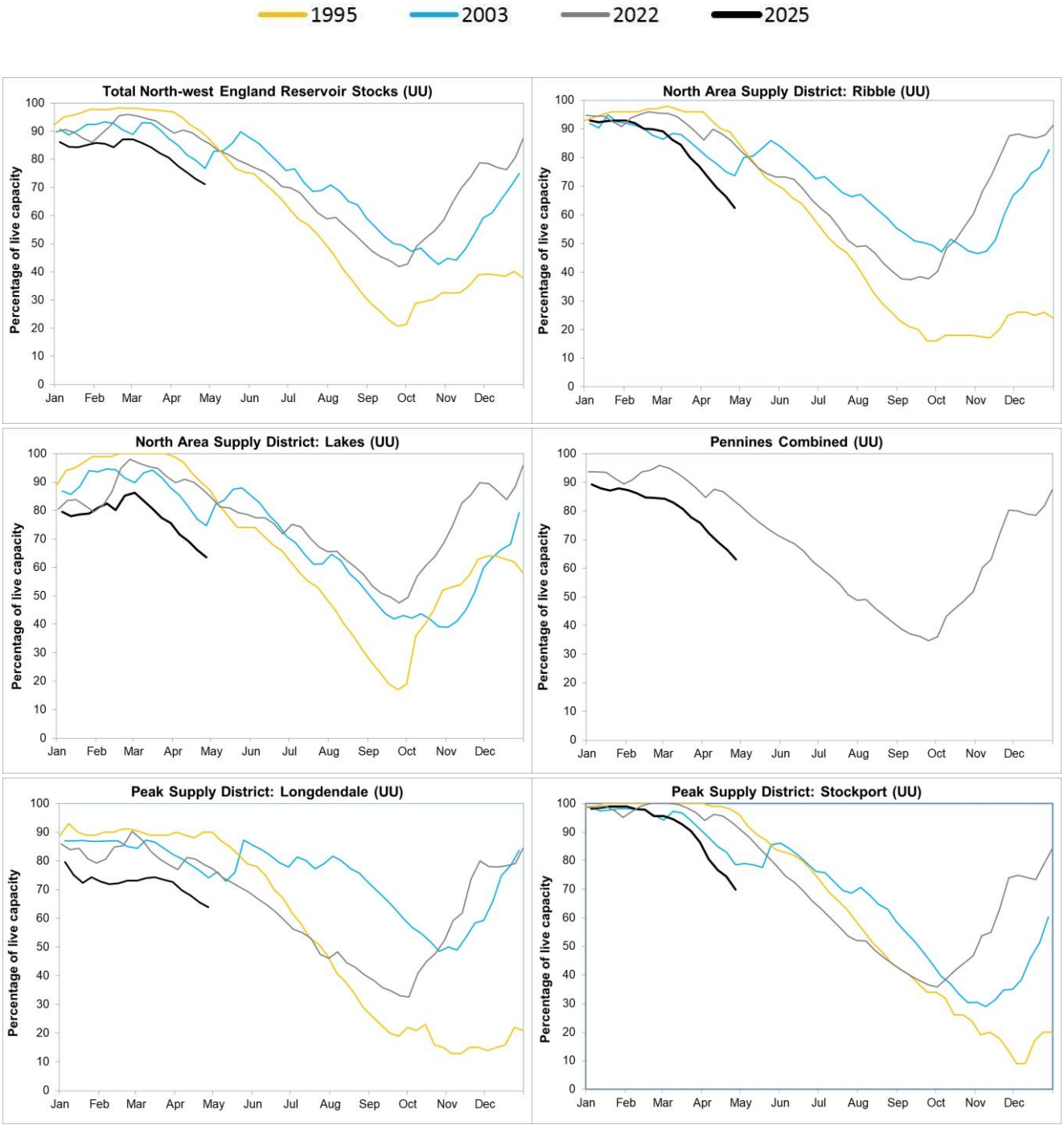
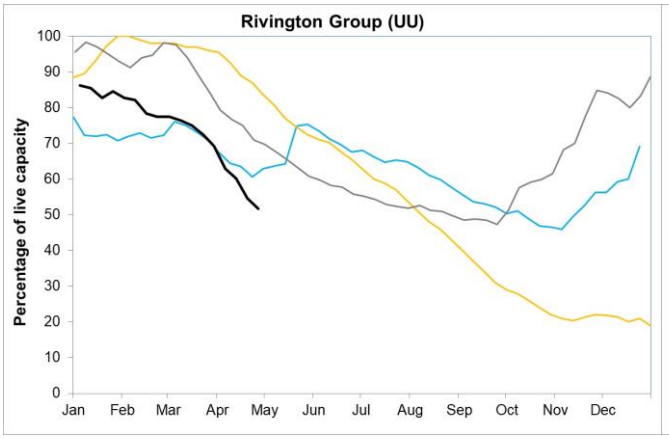
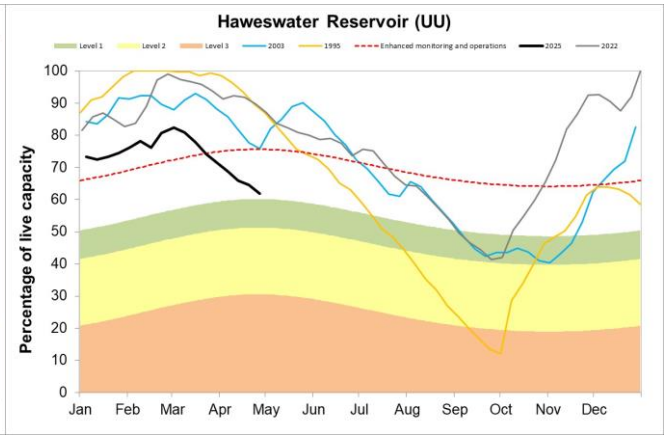
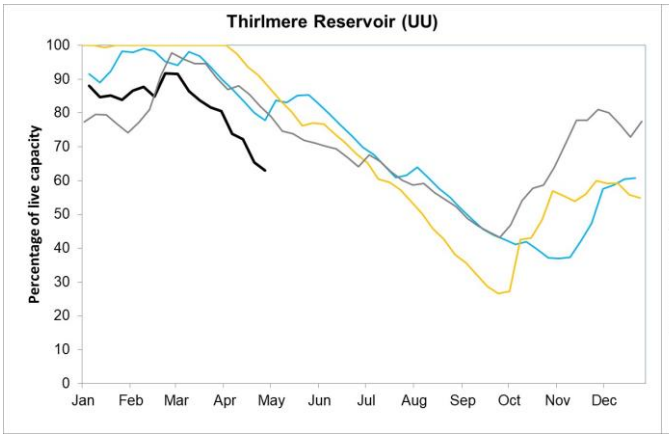


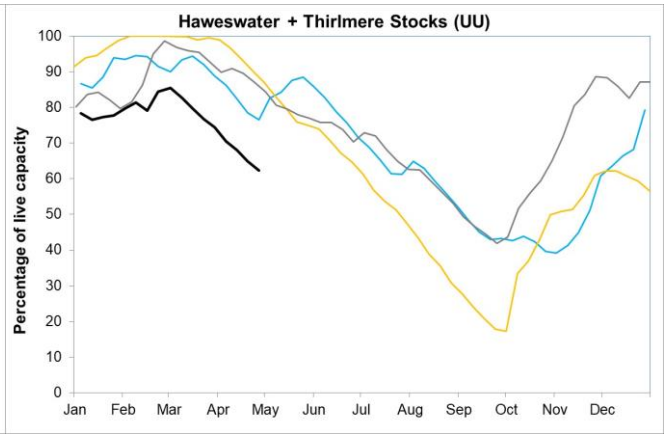
Figure 6.2: End of month reservoir storage for supply districts across North-west England and selected individual reservoirs for current year (2025) and representative years: 1995, 2003 and 2022. Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in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

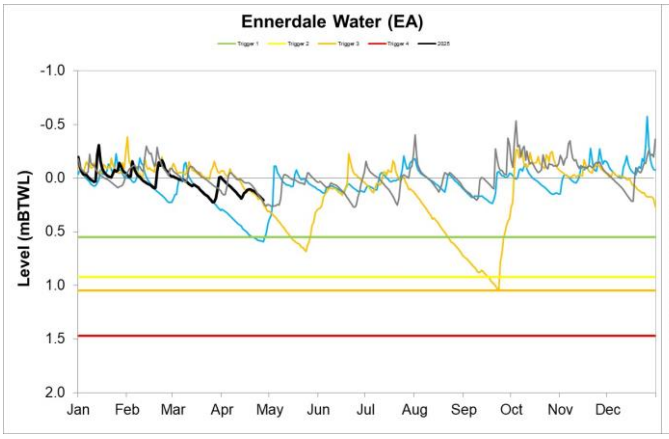


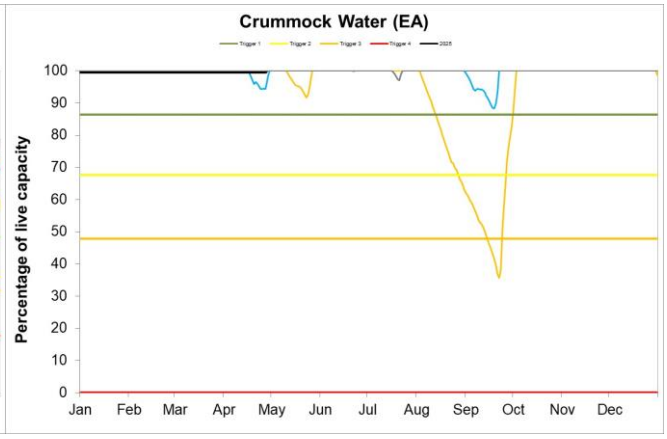

Rivington Group (UU)
Percentage of live capacity
100
90
80
70
60
50
40
30
20
10
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

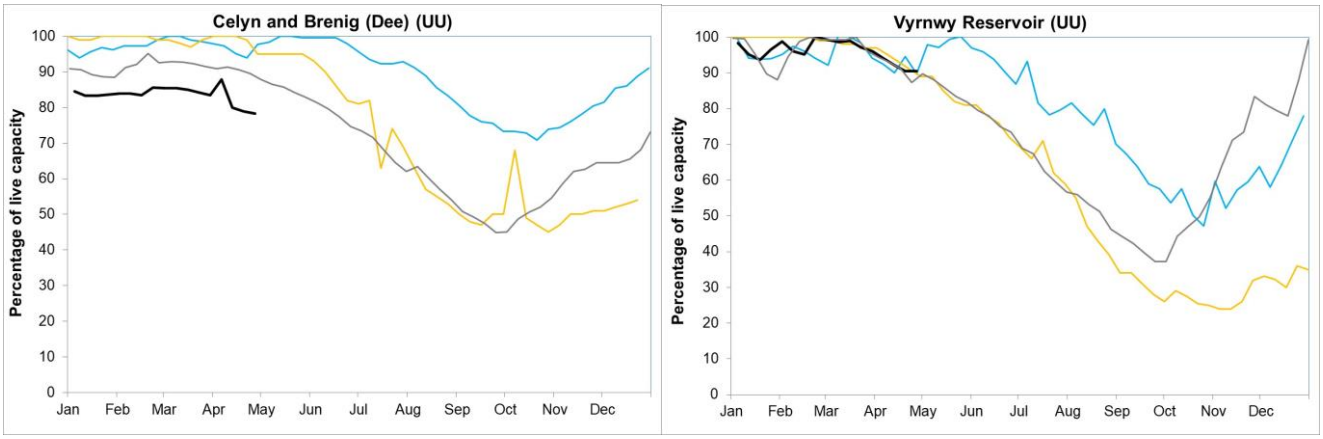

Haweswater Reservoir (UU)
Level 1
Level 2
Level 3
2003
1995
Enhanced monitoring and operations
2025
2022
Percentage of live capacity
100
90
80
70
60
50
40
30
20
10
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Thirlmere Reservoir (UU)
Percentage of live capacity
100
90
80
70
60
50
40
30
20
10
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Haweswater + Thirlmere Stocks (UU)
Percentage of live capacity
100
90
80
70
60
50
40
30
20
10
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Ennerdale Water (EA)
Level (mBTWL)
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Crummock Water (EA)
Percentage of live capacity
100
90
80
70
60
50
40
30
20
10
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec



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	Apr 2025 rainfall % of long term average 1961 to 1990	Apr 2025 band	Feb 2025 to April cumulative band	Nov 2024 to April cumulative band	May 2024 to April cumulative band
Cheshire Rivers Group	44	Below Normal	Exceptionally low	Normal	Notably high
Derwent (North West)	38	Notably Low	Notably low	Notably low	Normal
Douglas	35	Notably Low	Exceptionally low	Normal	Normal
Eden	29	Notably Low	Exceptionally low	Notably low	Normal
Esk (Cumbria)	44	Notably Low	Notably low	Notably low	Normal
Esk (Dumfries)	36	Notably Low	Exceptionally low	Exceptionally low	Normal
Kent	40	Notably Low	Notably low	Below normal	Normal
Mersey And Irwell	31	Notably Low	Exceptionally low	Normal	Normal
Ribble	24	Exceptionally Low	Exceptionally low	Below normal	Normal
Wyre And Lune	27	Exceptionally Low	Exceptionally low	Below normal	Normal

North West	34	Notably Low	Exceptionally low	Below normal	Normal

8.2 River flows table

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

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

8.3 Groundwater table

Site name	Aquifer	End of Apr 2025 band	End of Mar 2025 band
Brown Bank Lay-by	West Cumbria Permo-triassic Sandstone	Normal	Normal
Bruntwood Hall OBH	East Cheshire Permo-triassic Sandstone	Notably high	Above normal
Furness Abbey	Furness Permo-triassic Sandstone	Notably high	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	Exceptionally high
Skirwith	Eden Valley And Carlisle Basin Permo-triassic Sandstone	Normal	Normal
Victoria Road Entrance	West Lancashire Quarternary Sand And Gravel Superficial Deposits	Below normal	Normal