Monthly water situation report: North-west England

1 Summary – February 2025

1.1 Rainfall

Rainfall for north-west England was classed as normal with 78% of the long-term average (LTA). The Cumbria and Lancashire (CLA) area observed 84% of the LTA also classed as normal. The Greater Manchester, Merseyside and Cheshire (GMC) area observed 54% of the LTA, which was classed as below normal.

During February, rainfall for hydrological areas within north-west England was classed between below normal and normal. Six hydrological areas were classed as normal and four hydrological areas were classed as below normal. The highest rainfall (in terms of the LTA) was recorded in the Esk (Cumbria) hydrological area with 104% of the LTA classed as normal. The lowest rainfall (in terms of the LTA) was recorded in the Cheshire Rivers Group with 51% of the LTA classed as below normal. There was a clear spatial trend in rainfall across north-west England, with hydrological areas located in the south receiving below normal rainfall, and hydrological areas located in the north receiving more rainfall, classed as normal.

Cumulative rainfall over the last 3 months was classed between normal and above normal. The 3-month cumulative rainfall distribution shows a different pattern to January, with higher 3-month cumulative rainfall totals recorded in the south and lower 3-month cumulative rainfall totals recorded in the north.

The 6-month cumulative rainfall period sees a similar trend, with lower 6-month cumulative rainfall totals in the north and higher 6-month cumulative rainfall totals in the south. The Esk (Dumfries), Eden, and Derwent hydrological areas had rainfall classed as below normal. The Esk (Dumfries) 6-month cumulative rainfall total (478.3mm) was the fifth driest since 1871. The Cheshire Rivers Group hydrological area had rainfall classed as exceptionally high, at 144% of the LTA.

12-month cumulative rainfall totals display a more varied pattern but reflect how wet the last 12 months have been, with all hydrological areas observing normal rainfall or above. The lowest 12-month cumulative rainfall total was observed in the Ribble hydrological area at 106% of the LTA, classed as normal. The highest 12-month cumulative rainfall total was observed in the Cheshire Rivers Group at 137% of the LTA, classed as exceptionally high, the fourth highest 12-month rainfall total (1059.2mm) since 1871. All other hydrological areas were classed as above normal or notably high.

1.2 Soil moisture deficit and recharge

In response to the rainfall observed in the second half of the month, notably on the 26th of February, soils across north-west England remained saturated at the beginning of March. SMD levels were as expected for the time of year.

1.3 River flows

February monthly mean river flows for north-west England were classed as between exceptionally low and normal. Monthly mean river flows within 17 river flow sites were classed as between below normal and normal. Lower monthly mean flows were generally observed to the south, with 7 river flow sites classed as notably low and one river flow site classed as exceptionally low. River flows were highest (in terms of percentage of the LTA) in the Weaver catchment at Ashbrook (87% of the LTA, classed as normal), and lowest in the Tame catchment at Portwood (45% of the LTA, classed as exceptionally low).

1.4 Groundwater levels

Groundwater levels across north-west England at the end of February were classed between normal and exceptionally high. Groundwater levels at:

- Skirwith, decreased, from above normal to normal
- Brown Bank Lay-By, decreased, from above normal to normal
- Victoria Road, decreased, from above normal to normal
- Bruntwoood Hall, increased, from normal to above normal
- Furness Abbey, increased, from above normal to notably high

All other indicator sites remained at the same classification at:

- Lea Lane, classed as normal
- Primrose Hill, classed as normal
- Great Musgrave, classed as normal
- Priors Heyes, classed as exceptionally high
- Richmond Park, 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 storage for north-west England increased from 85% from the end of January, to 87% at the end of February. This is lower than the average of 92% at this time of year, and lower than this time last year when total reservoir storage for north-west England was 92%.

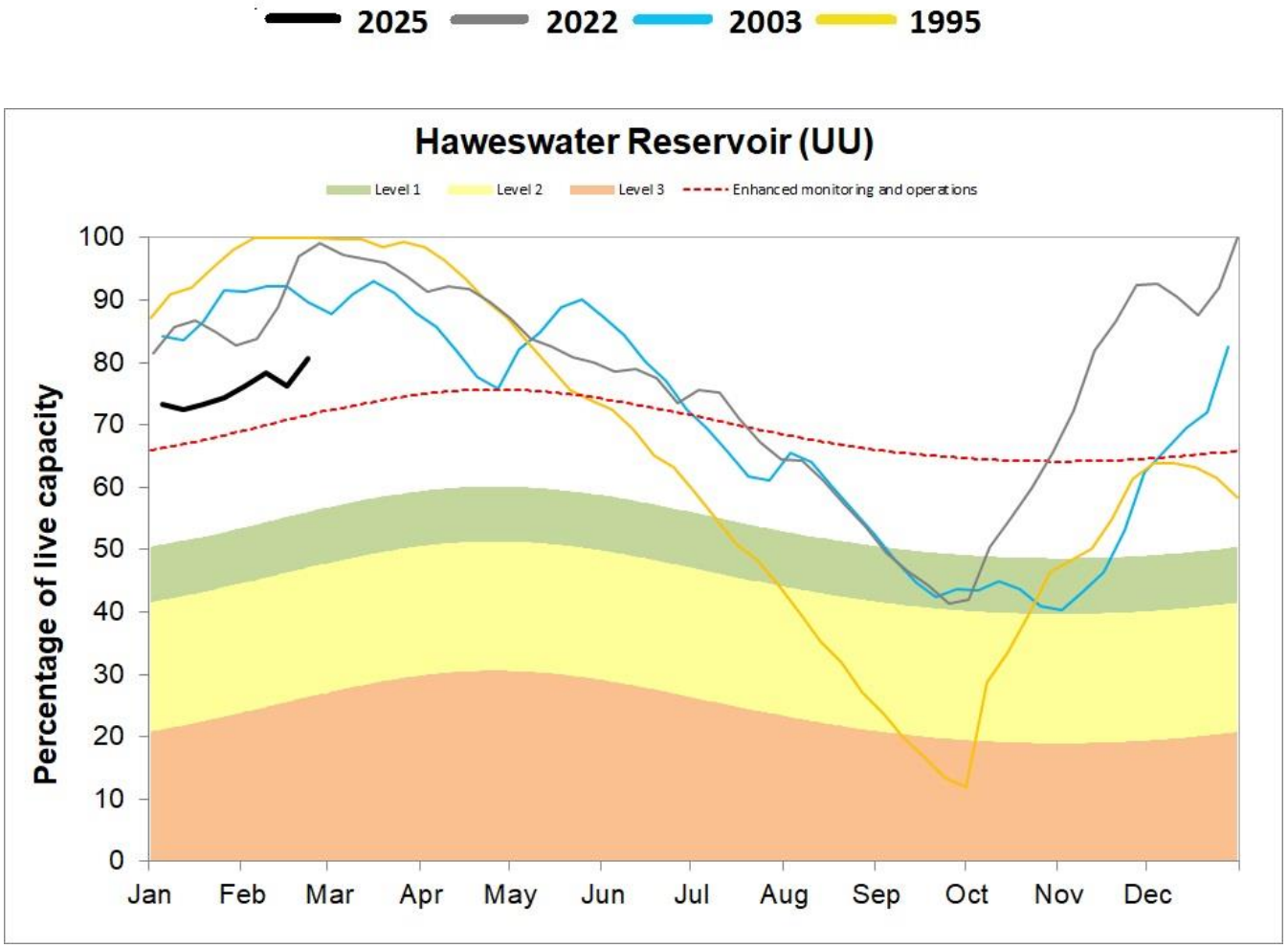
At the end of February, reservoir storage (in terms of percentage) was highest at Crummock Water and Lake Vyrnwy, both at 100% full and lowest (in terms of percentage) at Longdendale which was 73% full.

The combined storage at Haweswater and Thirlmere was at 84% which is lower than the average of 91% seen at this time of year and also lower than this time last year when storage was 98%.

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)).

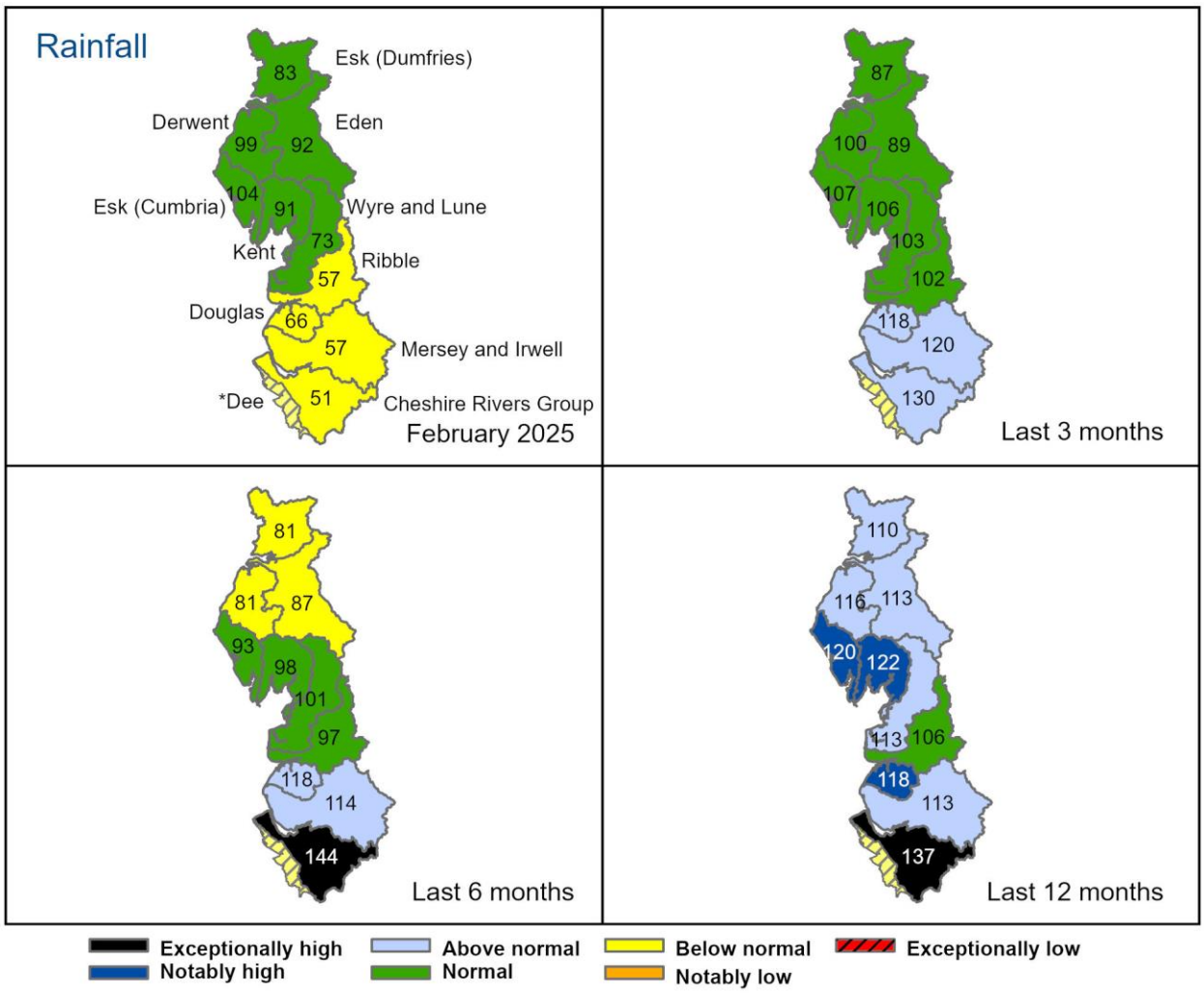


Author: Cumbria and Lancashire Hydrology Team, hydrology.CMBLNC@environment-agency.gov.uk

2 Rainfall

2.1 Rainfall map

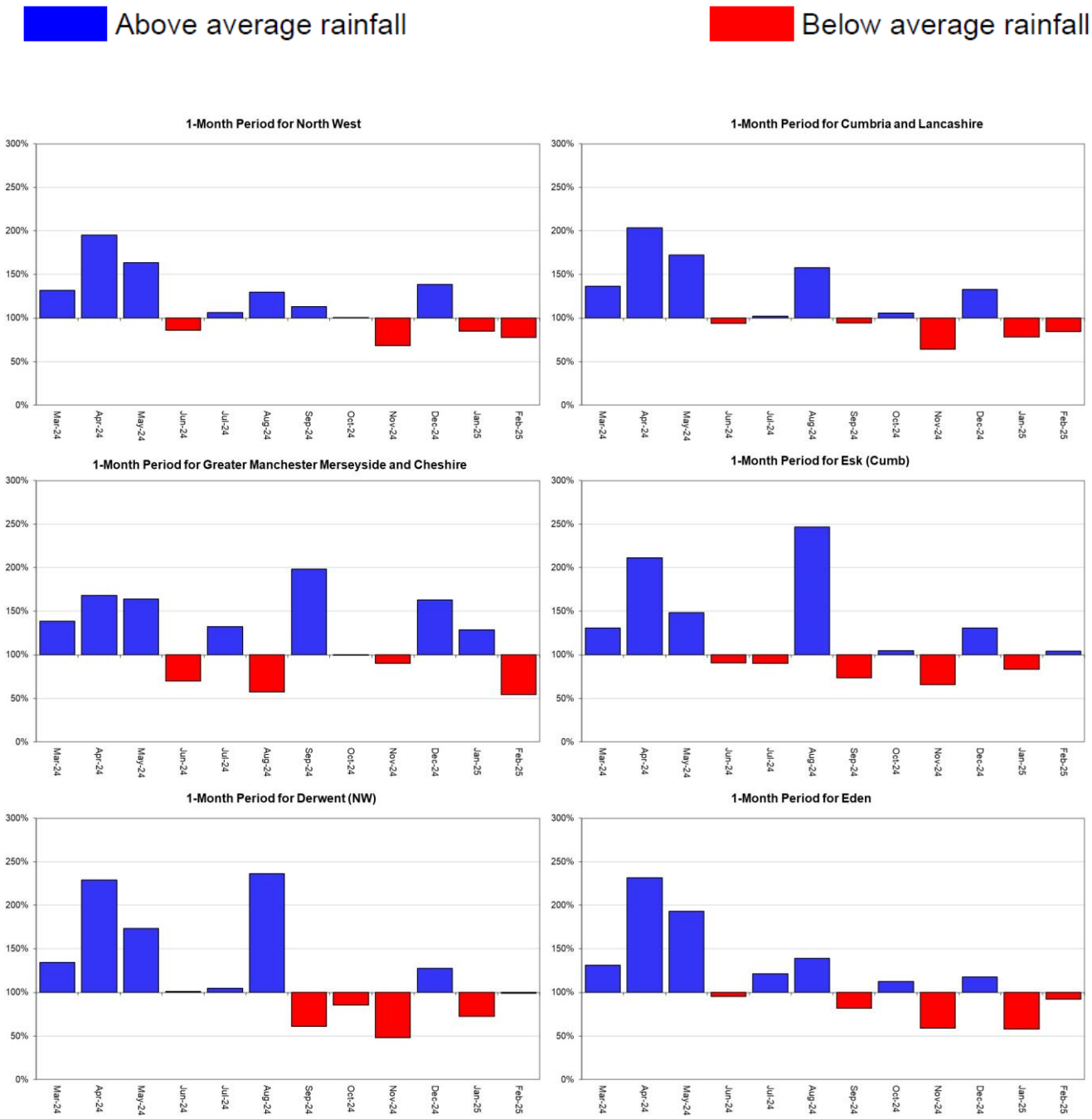
Figure 2.1: Total rainfall (as a percentage) for hydrological areas for the current month (up to 28 February 2025), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

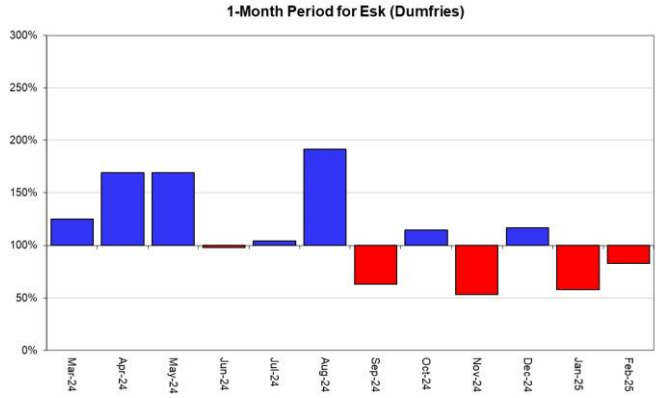


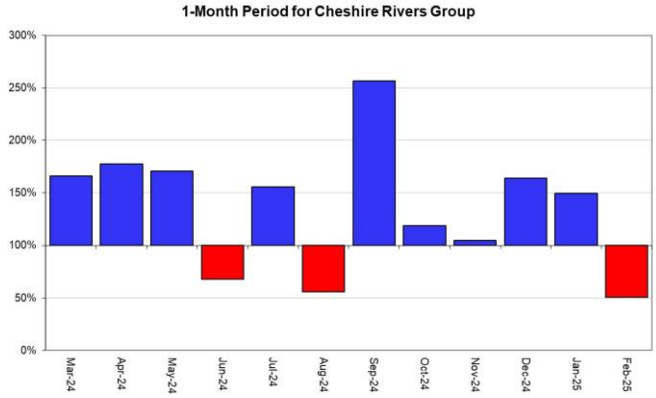
Rainfall data since 2023, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived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

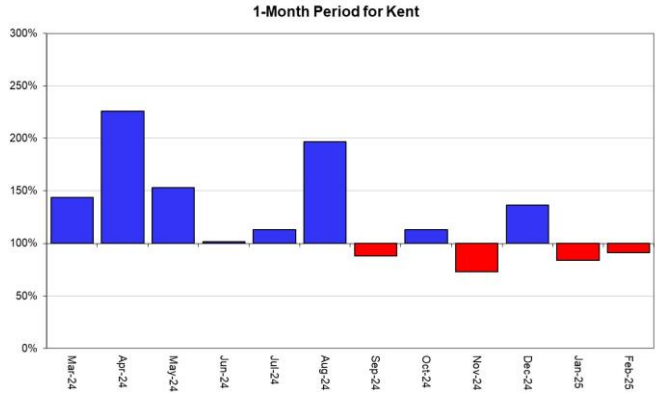
2.2 Rainfall charts

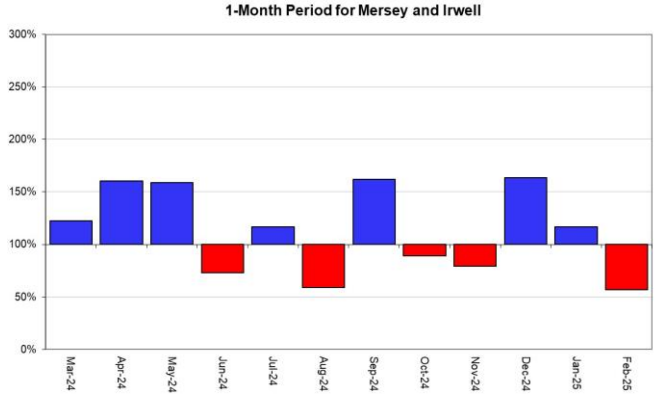
Figure 2.2: Monthly rainfall totals for the past 12 months expressed as a percentage of the 1961 to 1990 long term average for North-west England and its hydrological areas.

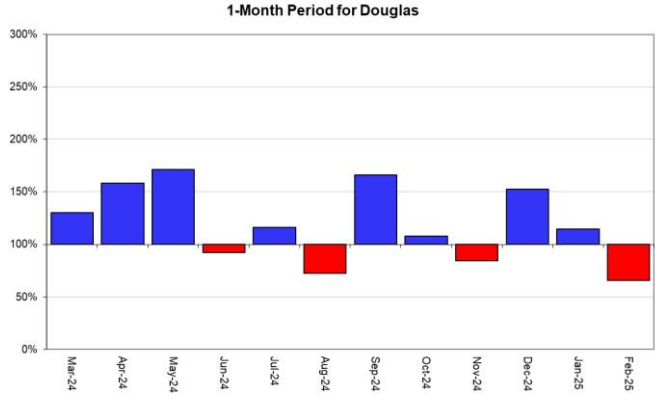



1-Month Period for Esk (Dumfries)
300%
250%
200%
150%
100%
50%
0%
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25


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


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


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


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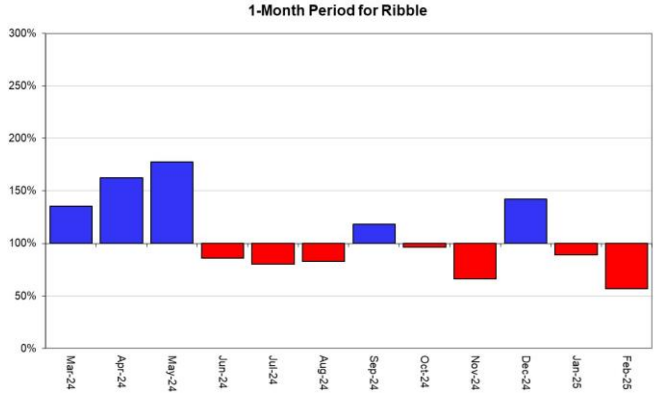
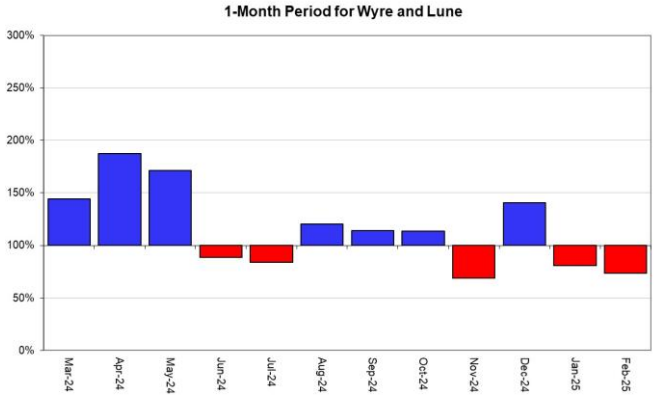
Dec-24
Jan-25
Feb-25


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

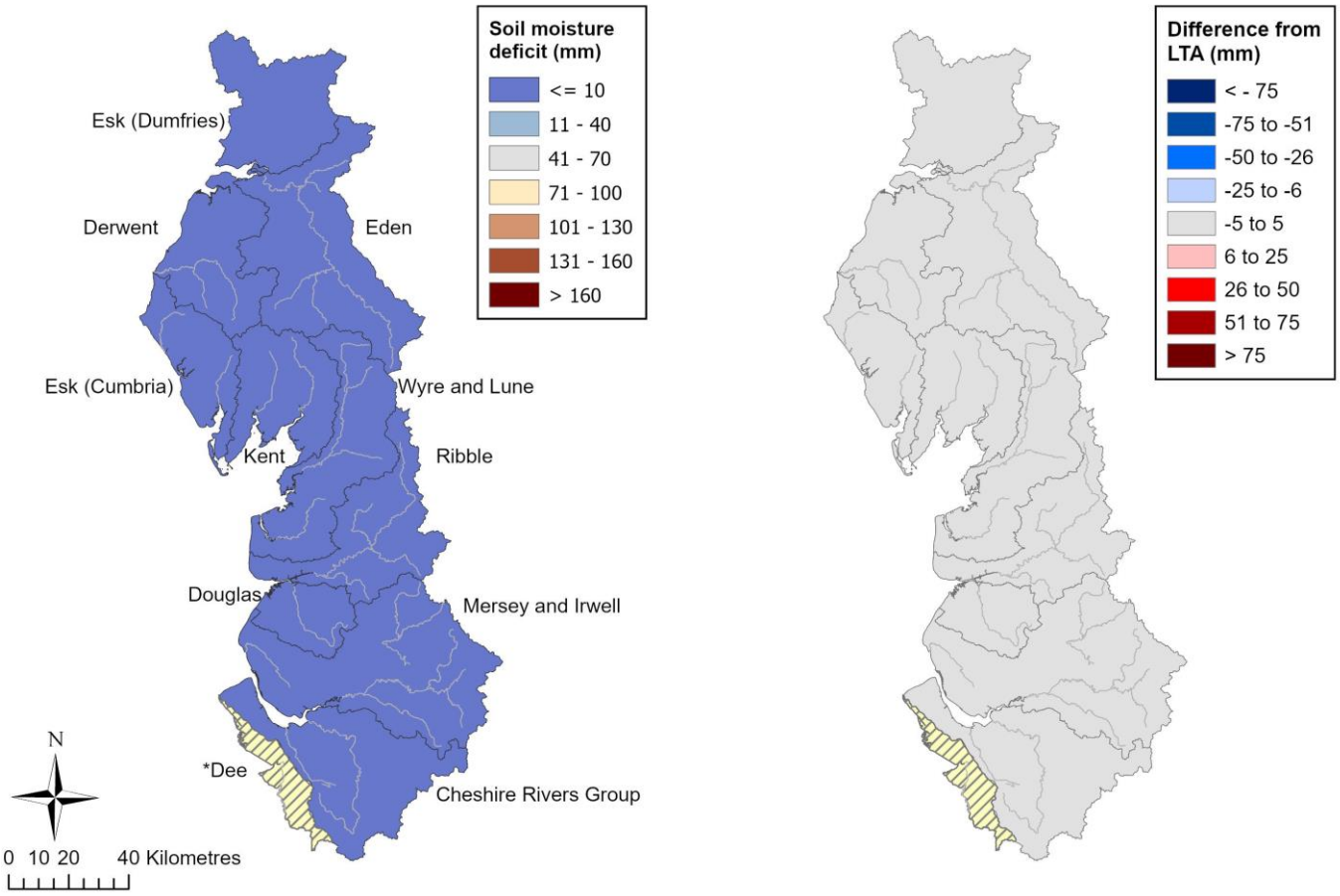


Rainfall data since 2023, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived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

3 Soil moisture deficit

3.1 Soil moisture deficit map

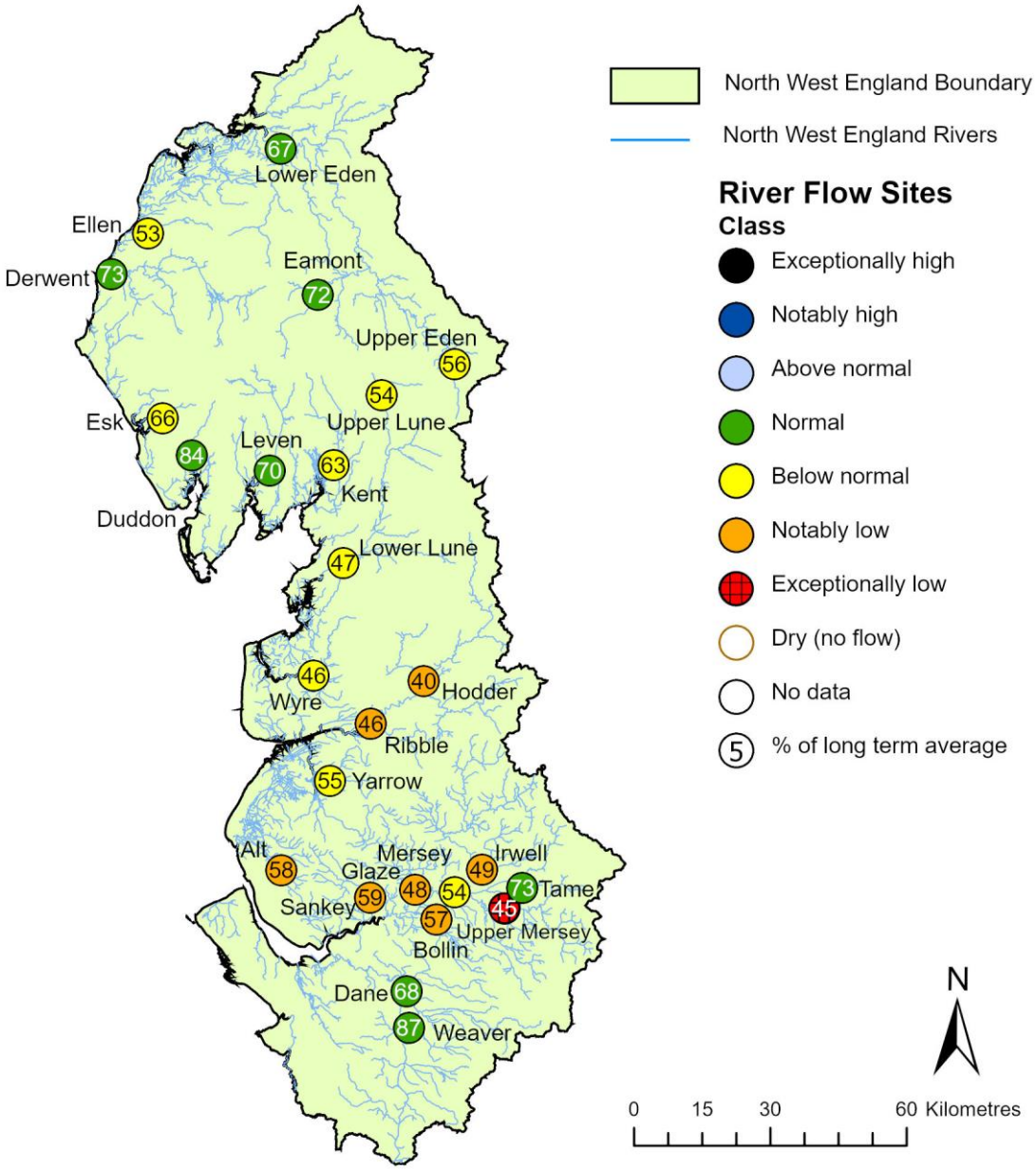
Figure 3.1: Soil moisture deficits for the week ending 26 February 2025. Left panel shows actual soil moisture deficits (mm) and right panel shows the difference (mm) of the actual from the 1961-90 long term average soil moisture deficits. MORECS data for real land use.



4 River flows

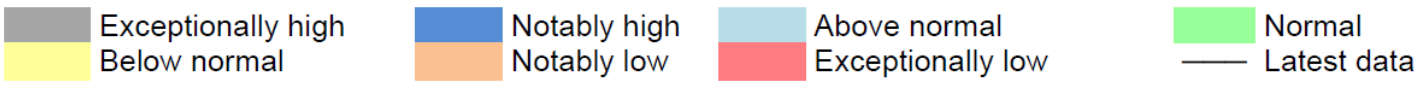
4.1 River flows map

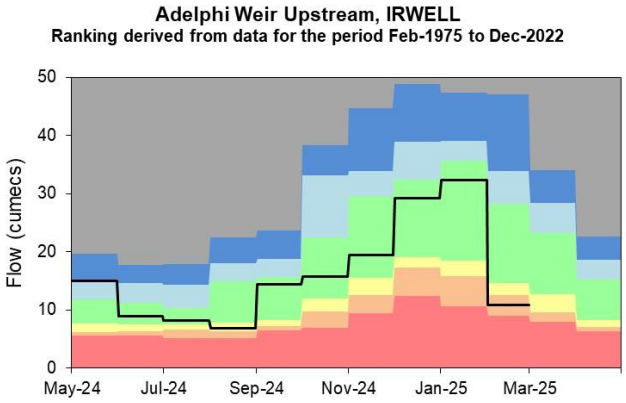
Figure 4.1: Monthly mean river flow for indicator sites for February 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic February monthly means. Table available in the appendices with detailed information.

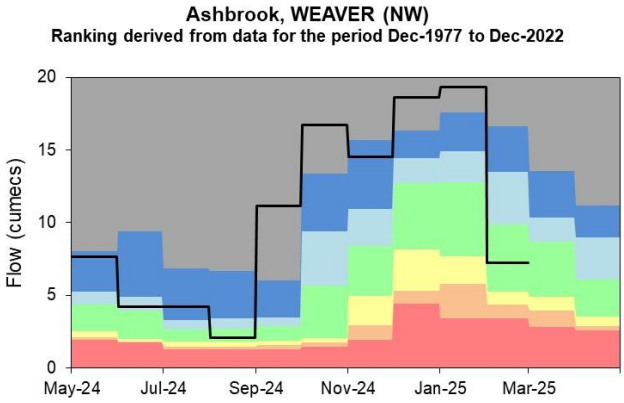


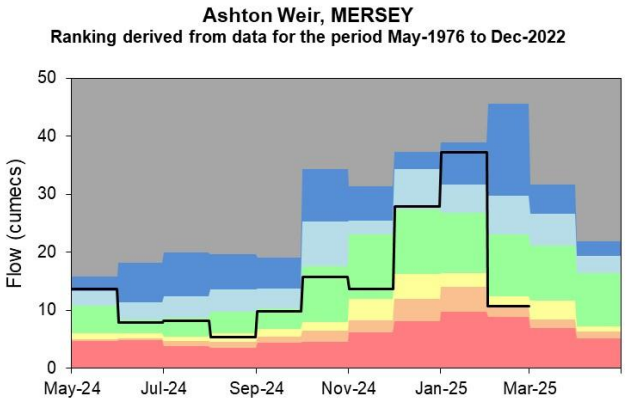
4.2 River flow charts

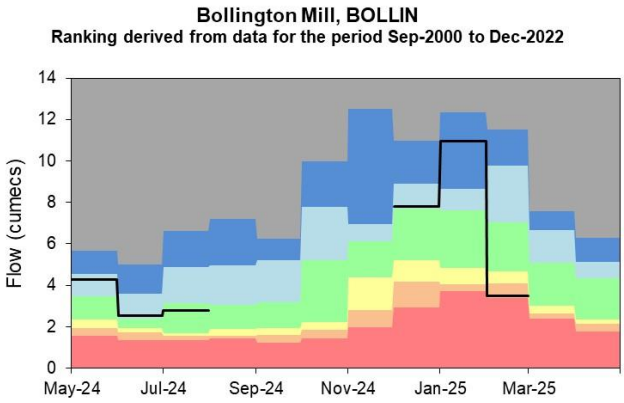
Figure 4.2: Monthly mean river flow for index sites over the past year, compared to an analysis of historic monthly mean flows.



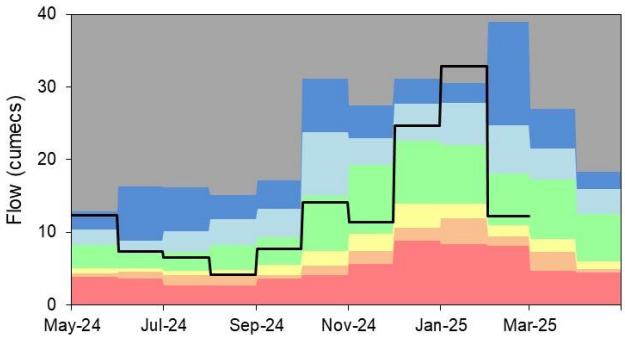




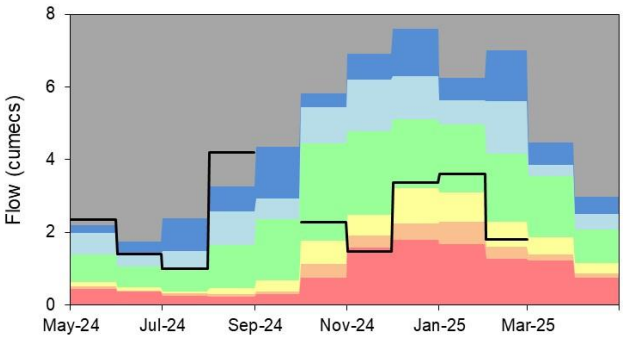




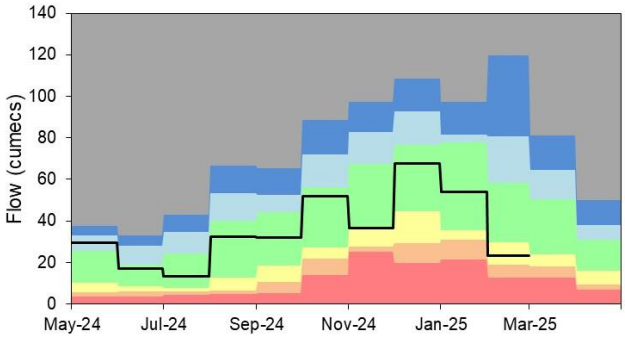
Brinksway, MERSEY
Ranking derived from data for the period Jan-1974 to Dec-2022



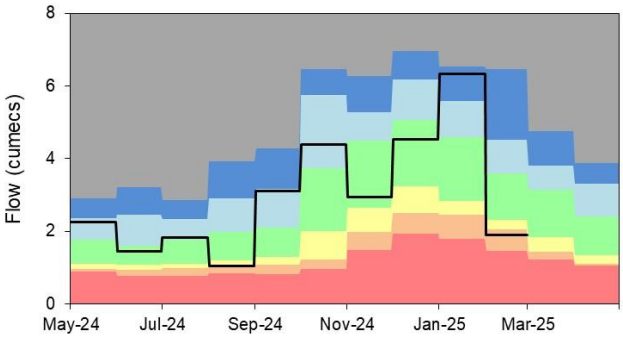
Bullgill, ELLEN
Ranking derived from data for the period Jan-1976 to Dec-2022



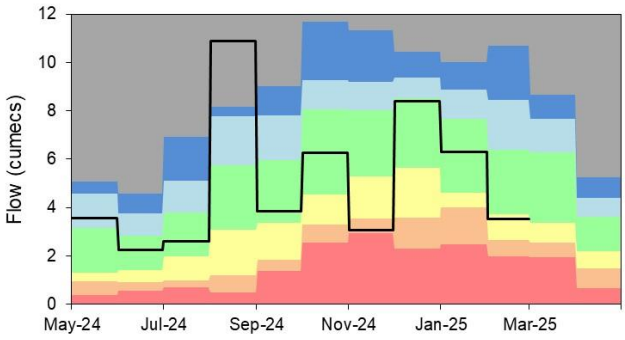
Caton, LUNE
Ranking derived from data for the period Jan-1959 to Dec-2022



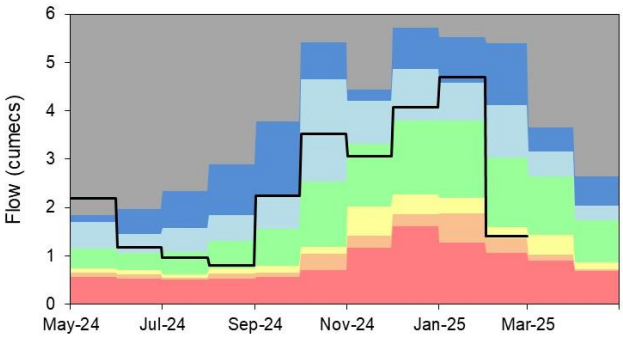
Causey Bridges, SANKEY
Ranking derived from data for the period Jan-1977 to Dec-2022



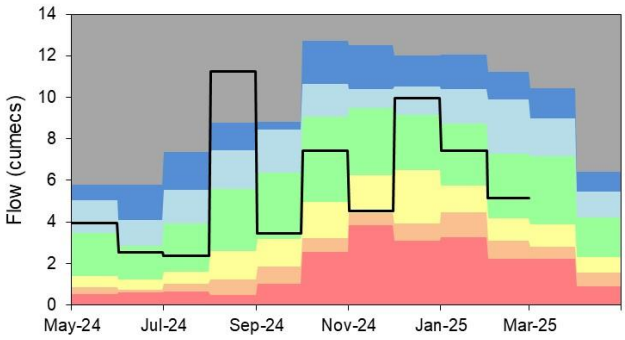
Cropple How, ESK (NW)
Ranking derived from data for the period Jan-1976 to Dec-2022



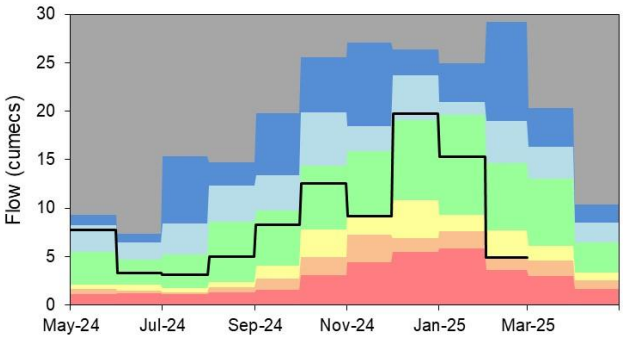
Croston, YARROW
Ranking derived from data for the period Jan-1976 to Dec-2022



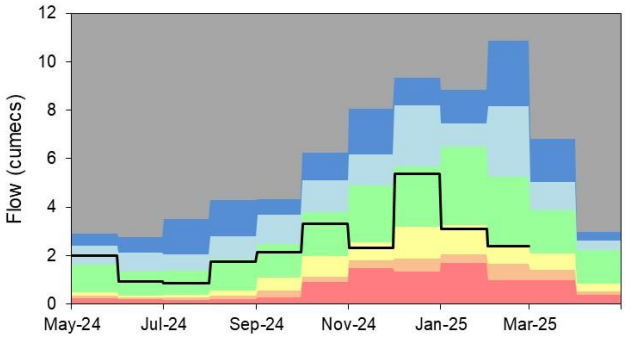
Duddon Hall, DUDDON
Ranking derived from data for the period Mar-1968 to Dec-2022



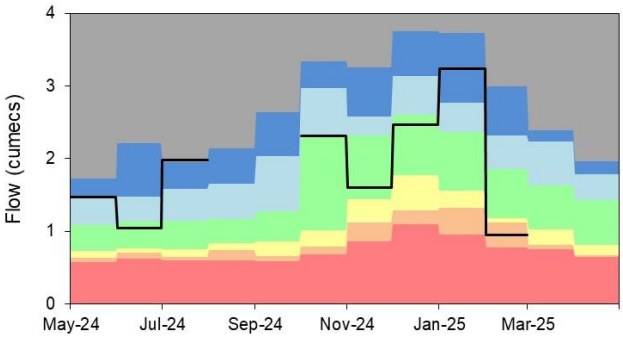
Hodder Place, HODDER
Ranking derived from data for the period Jan-1976 to Dec-2022



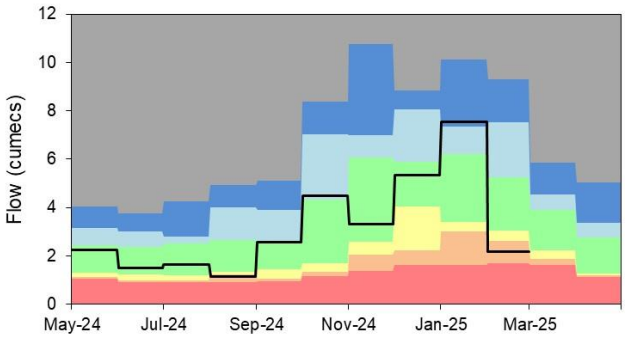
Kirkby Stephen, EDEN (NW)
Ranking derived from data for the period Oct-1971 to Dec-2022



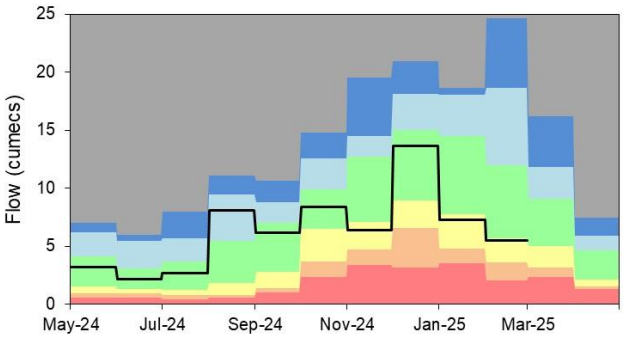
Kirkby, ALT
Ranking derived from data for the period Oct-1977 to Dec-2022



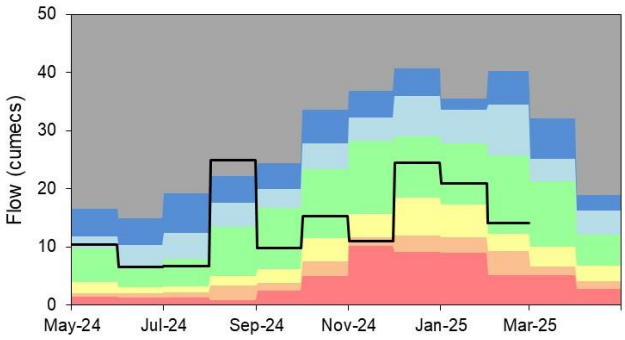
Little Woolden Hall Ultrasonic, GLAZE
Ranking derived from data for the period Jul-1995 to Dec-2022



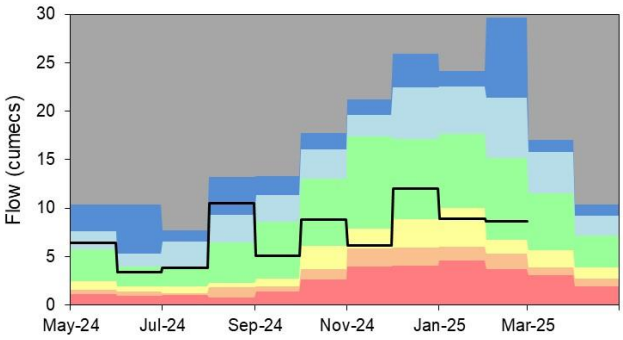
Lunes Bridge, LUNE
Ranking derived from data for the period Dec-1979 to Dec-2022



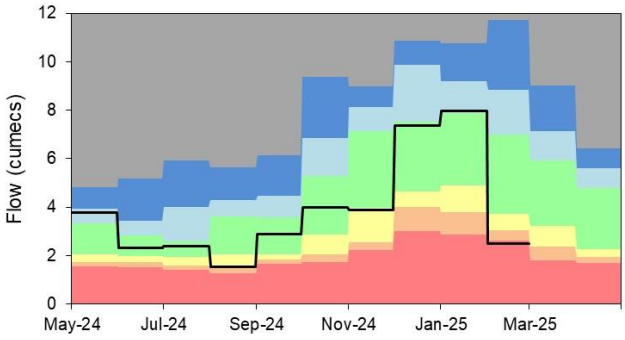
Newby Bridge FMS, LEVEN (NW)
Ranking derived from data for the period Jan-1972 to Dec-2022



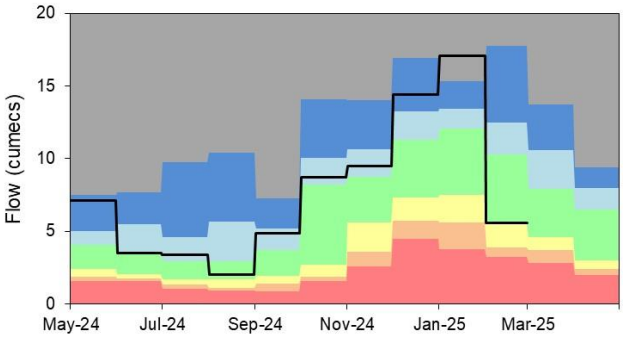
Pooley Bridge, EAMONT
Ranking derived from data for the period Jul-1970 to Dec-2022



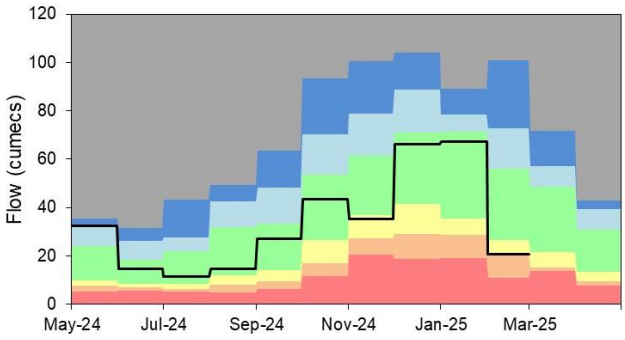
Portwood, TAME
Ranking derived from data for the period Jan-1976 to Dec-2022



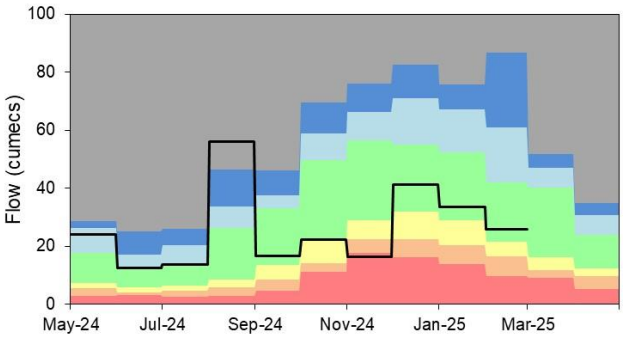
Rudheath, DANE
Ranking derived from data for the period Jan-1976 to Dec-2022

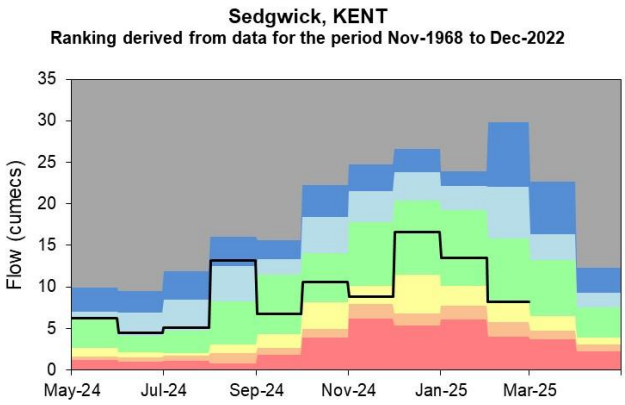


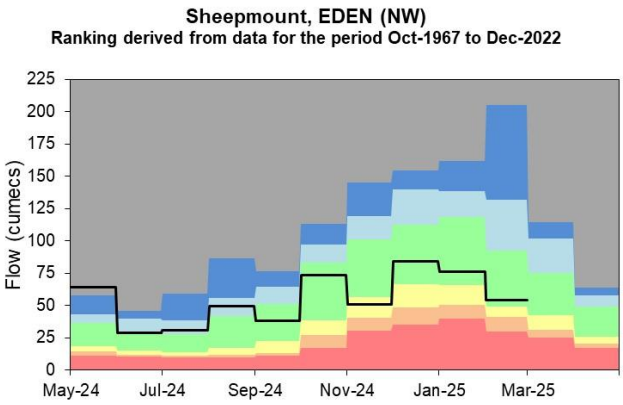
Samlesbury Pgs, RIBBLE (NW)
Ranking derived from data for the period May-1960 to Dec-2022

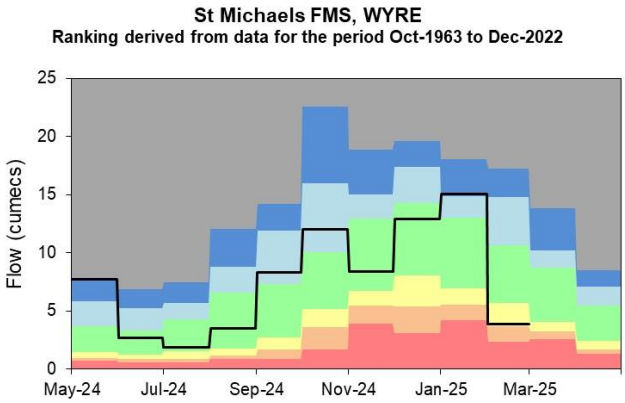


Seaton Mill, DERWENT (NW)
Ranking derived from data for the period Sep-1960 to Dec-2022







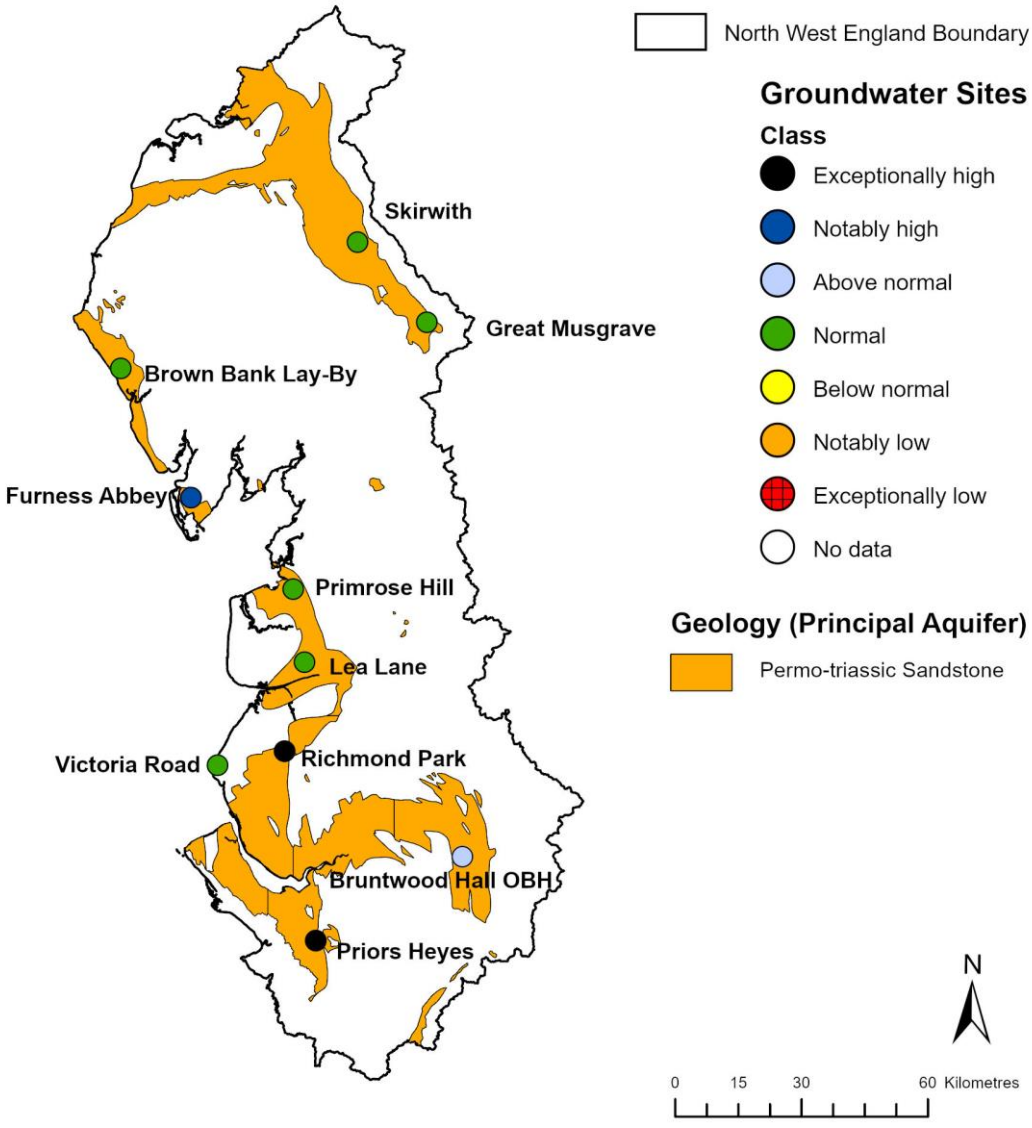


Source: Environment Agency.

5 Groundwater levels

5.1 Groundwater levels map

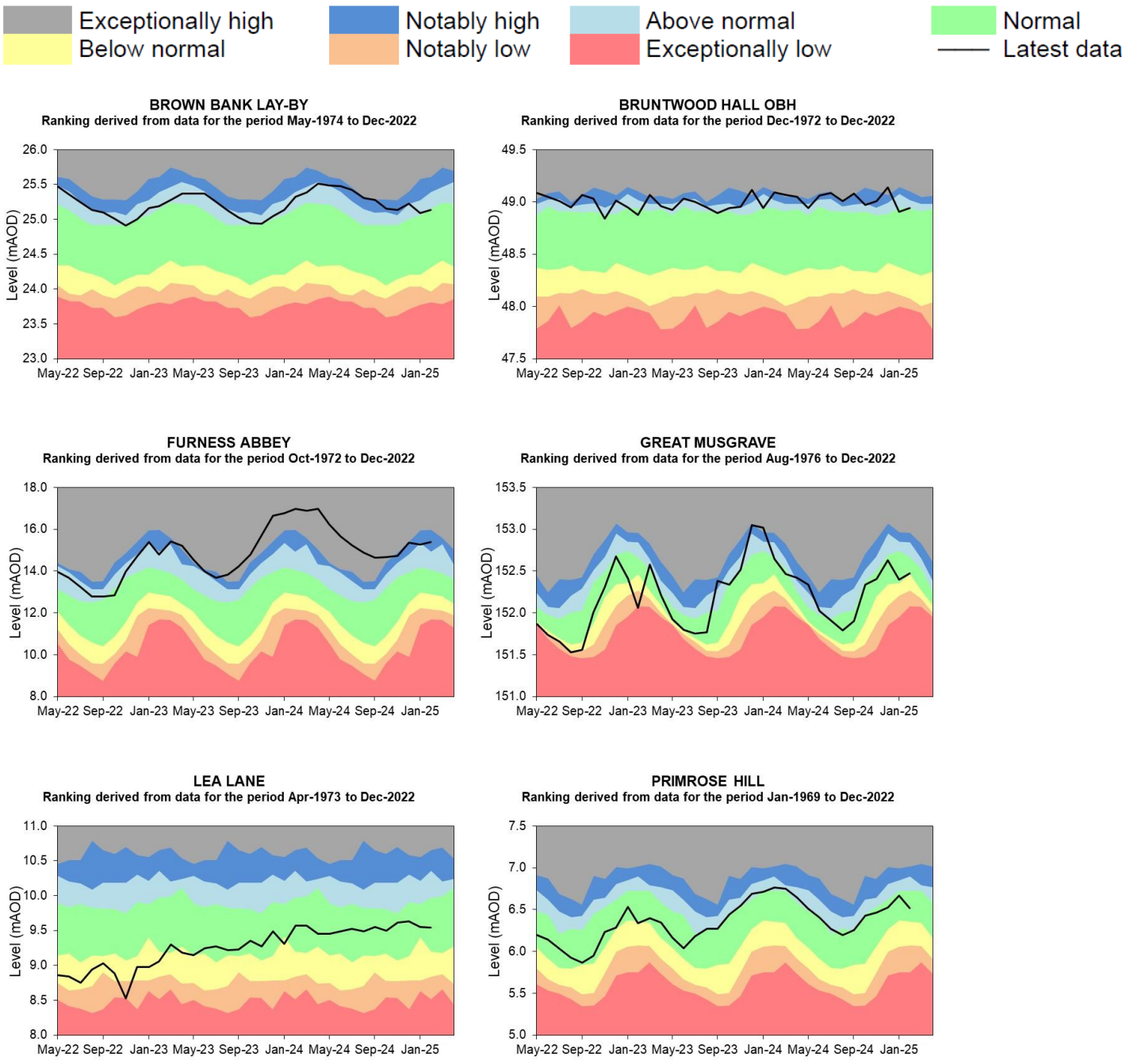
Figure 5.1: Groundwater levels for indicator sites at the end of February 2025, classed relative to an analysis of respective historic February levels. Table available in the appendices with detailed information. Please note Victoria Road Borehole sits within a superficial deposit as opposed to a bedrock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

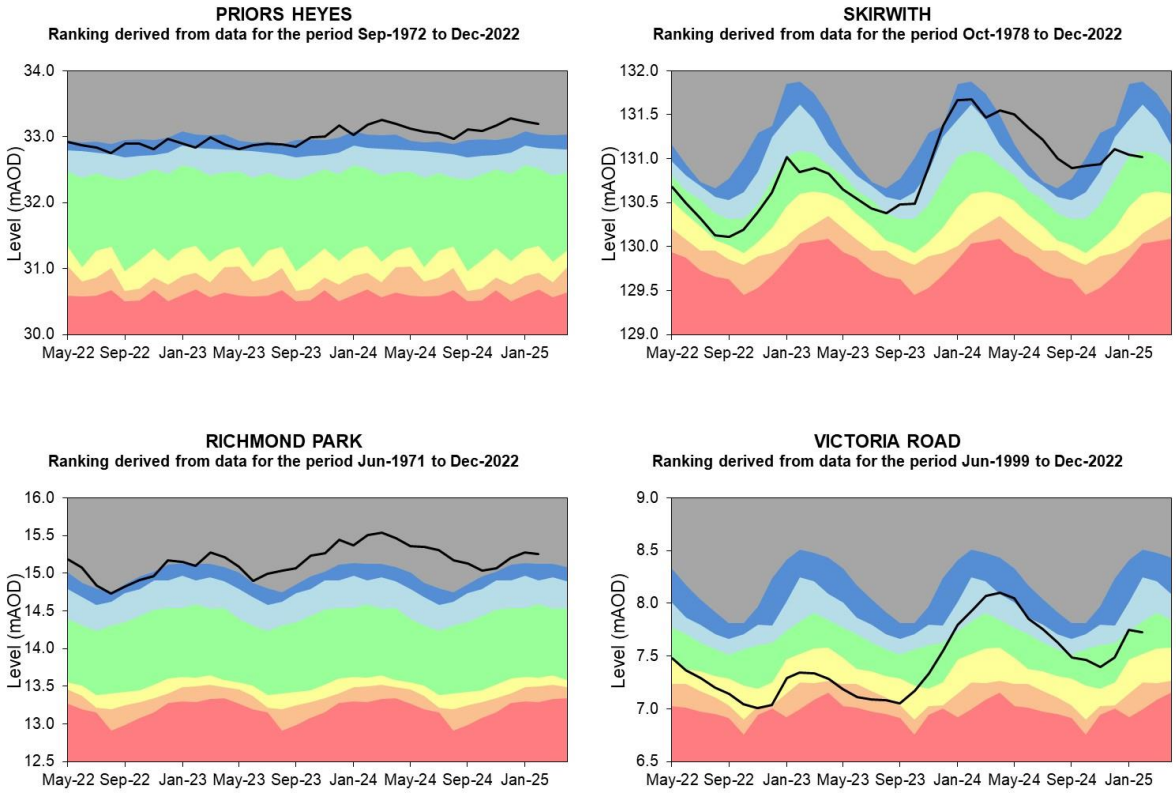


(Source: Environment Agency). Geological map reproduced with kind permission from UK Groundwater Forum, BGS copyright NERC. Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

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.

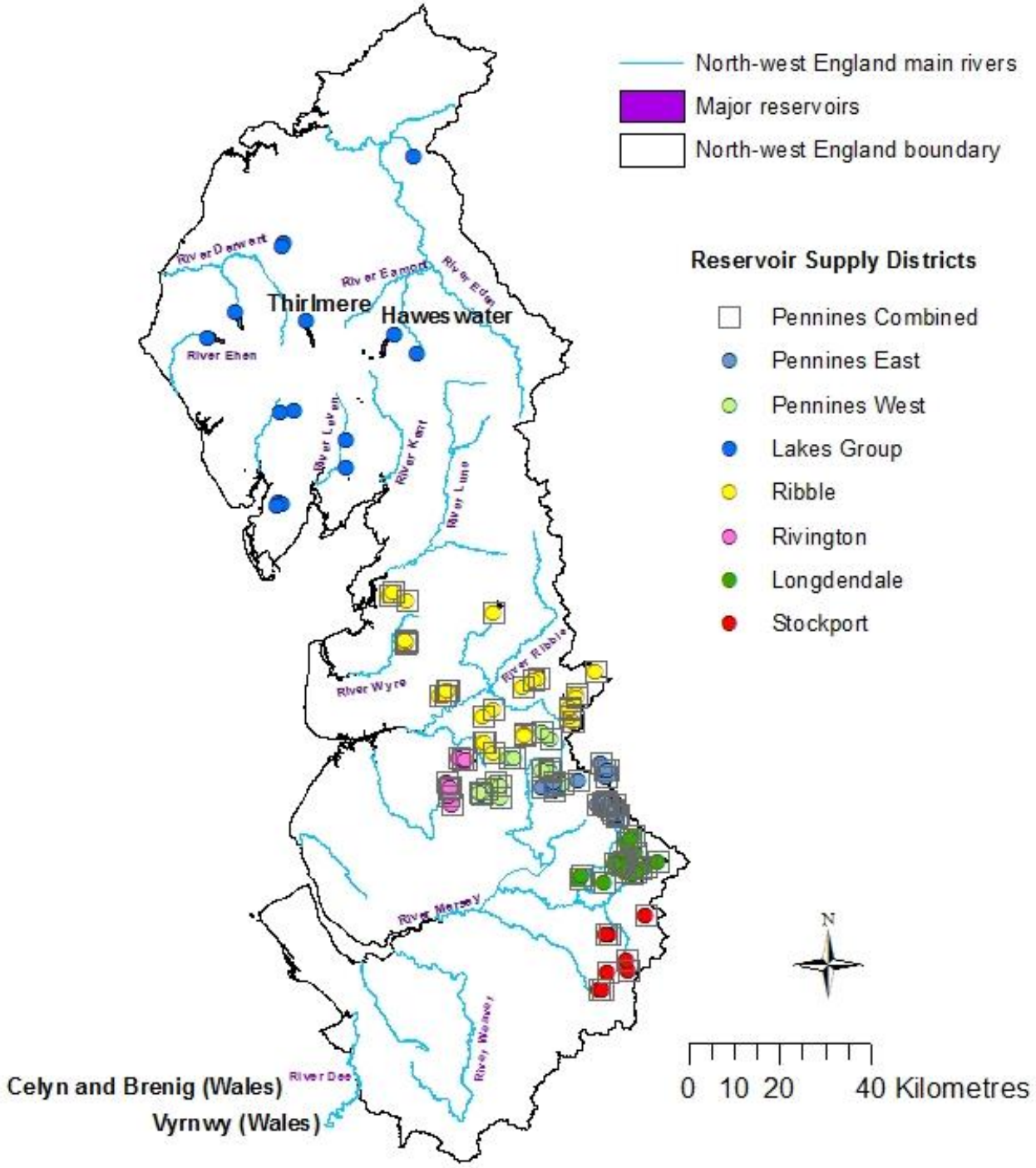
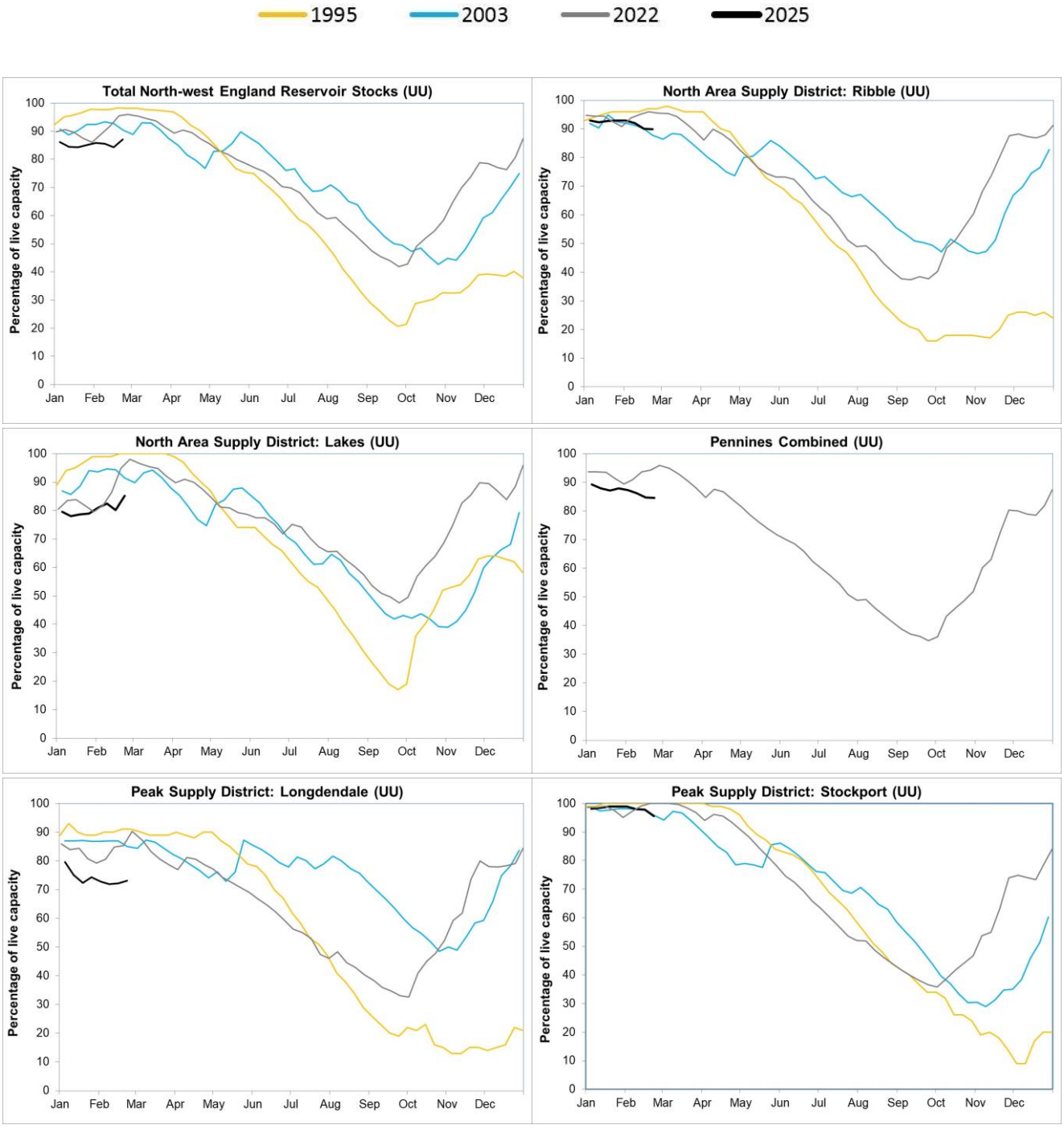
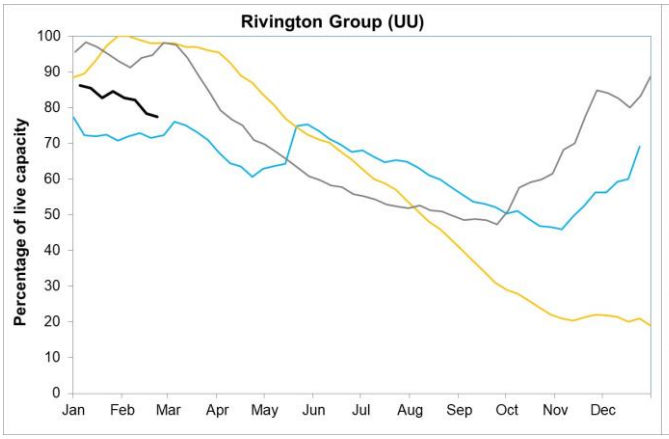
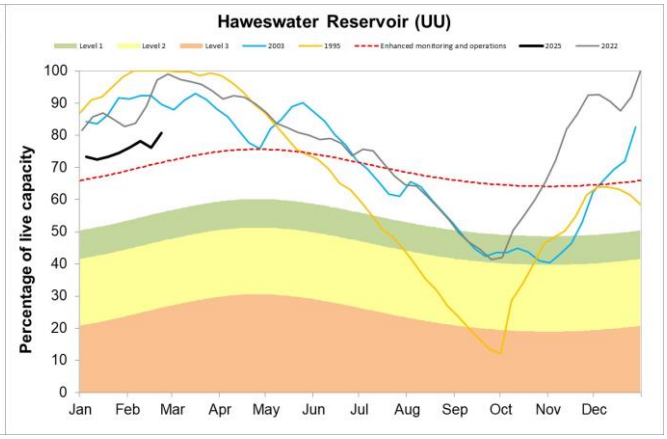
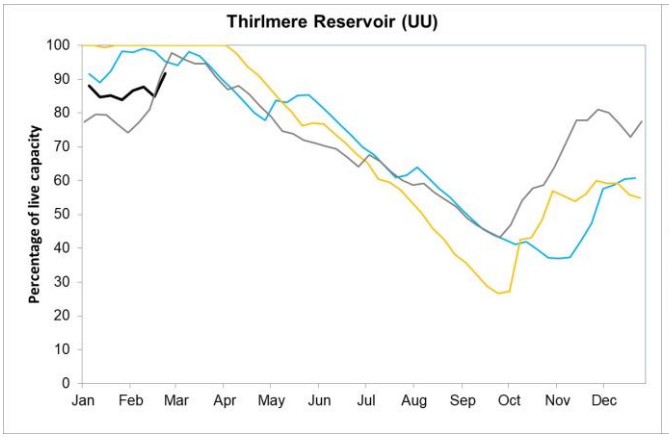


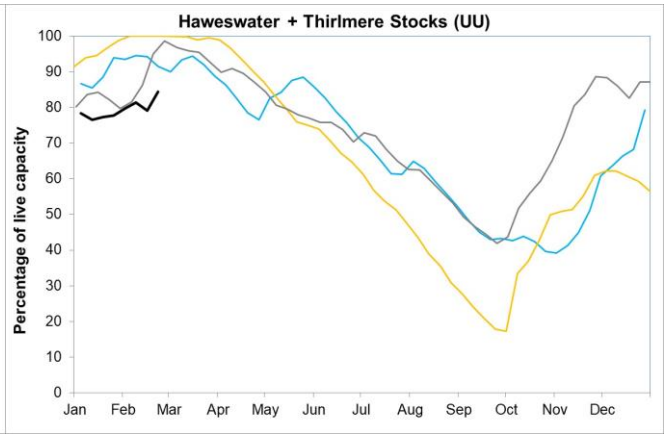
Figure 6.2: End of month reservoir storage for supply districts across North-west England and selected individual reservoirs for current year (2025) and representative years: 1995, 2003 and 2022. Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in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

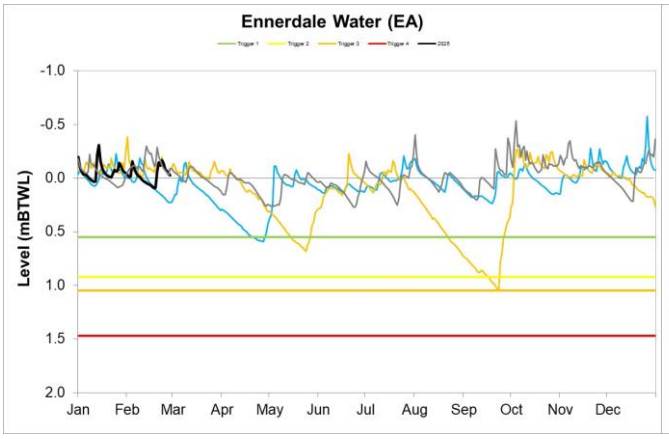


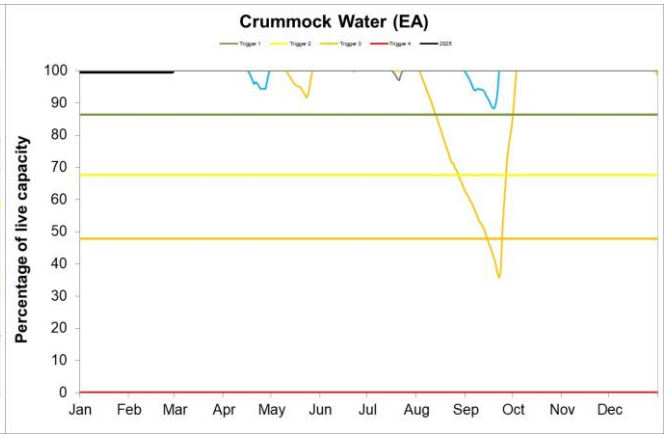

Rivington Group (UU)
Percentage of live capacity
100
90
80
70
60
50
40
30
20
10
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

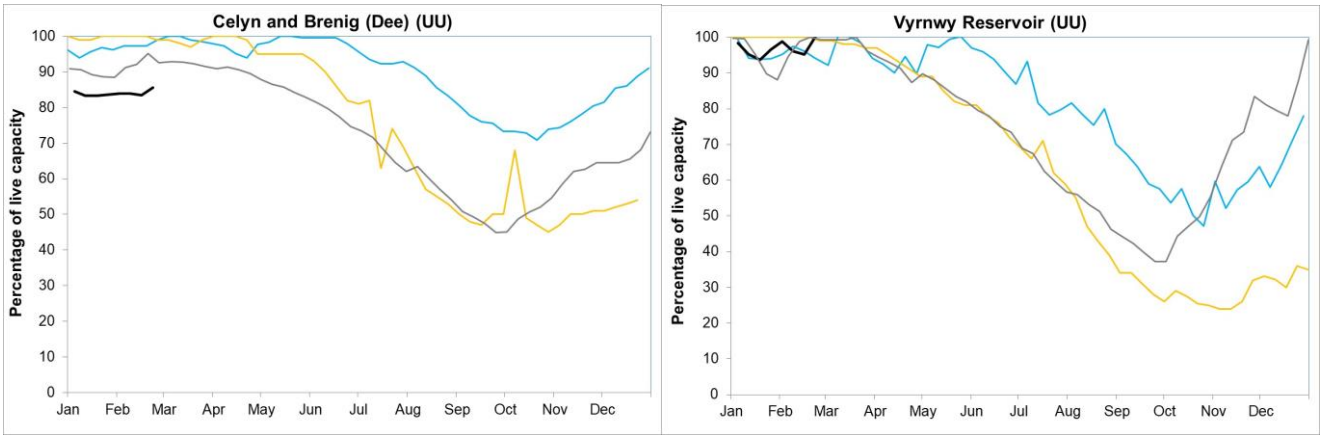

Haweswater Reservoir (UU)
Level 1
Level 2
Level 3
2003
1995
Enhanced monitoring and operations
2025
2022
Percentage of live capacity
100
90
80
70
60
50
40
30
20
10
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


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	Feb 2025 rainfall % of long term average 1961 to 1990	Feb 2025 band	Dec 2024 to February cumulative band	Sep 2024 to February cumulative band	Mar 2024 to February cumulative band
Cheshire Rivers Group	51	Below Normal	Above normal	Exceptionally high	Exceptionally high
Derwent (North West)	99	Normal	Normal	Below normal	Above normal
Douglas	66	Below Normal	Above normal	Above normal	Notably high
Eden	92	Normal	Normal	Below normal	Above normal
Esk (Cumbria)	104	Normal	Normal	Normal	Notably high
Esk (Dumfries)	83	Normal	Normal	Below normal	Above normal
Kent	91	Normal	Normal	Normal	Notably high
Mersey And Irwell	57	Below Normal	Above normal	Above normal	Above normal
Ribble	57	Below Normal	Normal	Normal	Normal
Wyre And Lune	73	Normal	Normal	Normal	Above normal

North West	78	Normal	Normal	Normal	Above normal

8.2 River flows table

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

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

8.3 Groundwater table

Site name	Aquifer	End of Feb 2025 band	End of Jan 2025 band
Brown Bank Lay-by	West Cumbria Permo-triassic Sandstone	Normal	Above normal
Bruntwood Hall OBH	East Cheshire Permo-triassic Sandstone	Above normal	Normal
Furness Abbey	Furness Permo-triassic Sandstone	Notably high	Above normal
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	Normal	Above normal
Victoria Road Entrance	West Lancashire Quarternary Sand And Gravel Superficial Deposits	Normal	Above normal