Monthly water situation report: North East Area

1 Summary – April 2025

April was another dry month with rainfall totals classed as exceptionally low and very little rainfall recorded across the area. Monthly mean river flows decreased at all indicator sites and fell within the notably low or exceptionally low ranges. Groundwater levels stayed consistent across the area in comparison to March, with the exception of Aycliffe which decreased from above normal to normal levels. All reservoir stocks in the area have decreased this month and are below average for the time of year.

1.1 Rainfall

Monthly rainfall totals were significantly below the long-term average (LTA) for all catchments, with totals falling within the exceptionally low range. Overall, 8 of the last 10 months have recorded below the LTA rainfall and it has been the driest start to the year in the North East since 1929. Monthly totals ranged from just 9% of the LTA in the Seaham catchment to 21% of the LTA in the Tweed catchment.

Analysis of the daily rainfall shows very little rainfall was recorded in April, with only low rainfall totals on even the wettest day: 16 April.

The 1-month, 3-month and 6-month rainfall totals are in the exceptionally low range for the whole area. Only duration totals of 13 months and above are in the normal range for all catchments. The Tyne catchment has recorded the driest two and three months (up to and including April) on record since records began in 1871.

1.2 Soil moisture deficit and recharge

Soil moisture deficits (SMDs) are 11 to 40mm in the Tyne catchment, which is an increase from below 10mm in March. SMDs are between 41 and 70 mm across the rest of the area, which is an increase from 11 to 40mm in March. Soils are much drier than average for the time of year with a 26 to 50mm difference from the LTA.

1.3 River flows

Monthly mean river flows have decreased this month from notably low to exceptionally low at Heaton Mill and Witton Park. All sites fall within the exceptionally low range with the exception of Rothbury and Hartford Bridge, which remain in the notably low range. Monthly mean flows ranged from just 10% of the LTA at Rutherford Bridge to 36% of the LTA at Middleton in Teesdale where flows are supported by releases from Cow Green reservoir.

For the second month in a row, Middleton in Teesdale and Haydon Bridge recorded their lowest monthly mean flow since records began in 1972 and 1974. Mitford, Rutherford Bridge, and Witton Park recorded their lowest April mean flows since records began in 1968, 1960 and 1972 respectively.

Analysis of the daily mean flows shows that flows were in exceptionally low, notably low and below normal ranges for the entire month. There were two exceptions with Middleton in Teesdale recording within the normal range on the 19 April, and Heaton Mill recording within the normal range on the 17 April. This followed the small amount of rainfall in the middle of the month.

1.4 Groundwater levels

Groundwater levels vary across the area. Levels in West Hall Farm borehole in the Wear Magnesian Limestone fall within the exceptionally high range. West Hall Farm appears to be subject to longer term recovery following significant reduction of abstraction within the vicinity. The level in Aycliffe NRA2 in the Skerne Magnesian Limestone decreased slightly and falls within the normal range, down from above normal in March. Royalty Observation is classed as normal in the Fell Sandstone. Red Lion in the Skerne Magnesian Limestone and Town Law in the Fell Sandstone fall within the normal ranges for March.

1.5 Reservoir stocks

All reservoir stocks decreased across the area this month. The largest decreases were within the Durham Group, Lune and Balder group, and Cow Green, which recorded between a 9.5% and 16.8% percent decrease in stock. Reservoir stocks across the area are below average for the time of year and the Durham group is very close to it's April minimum.

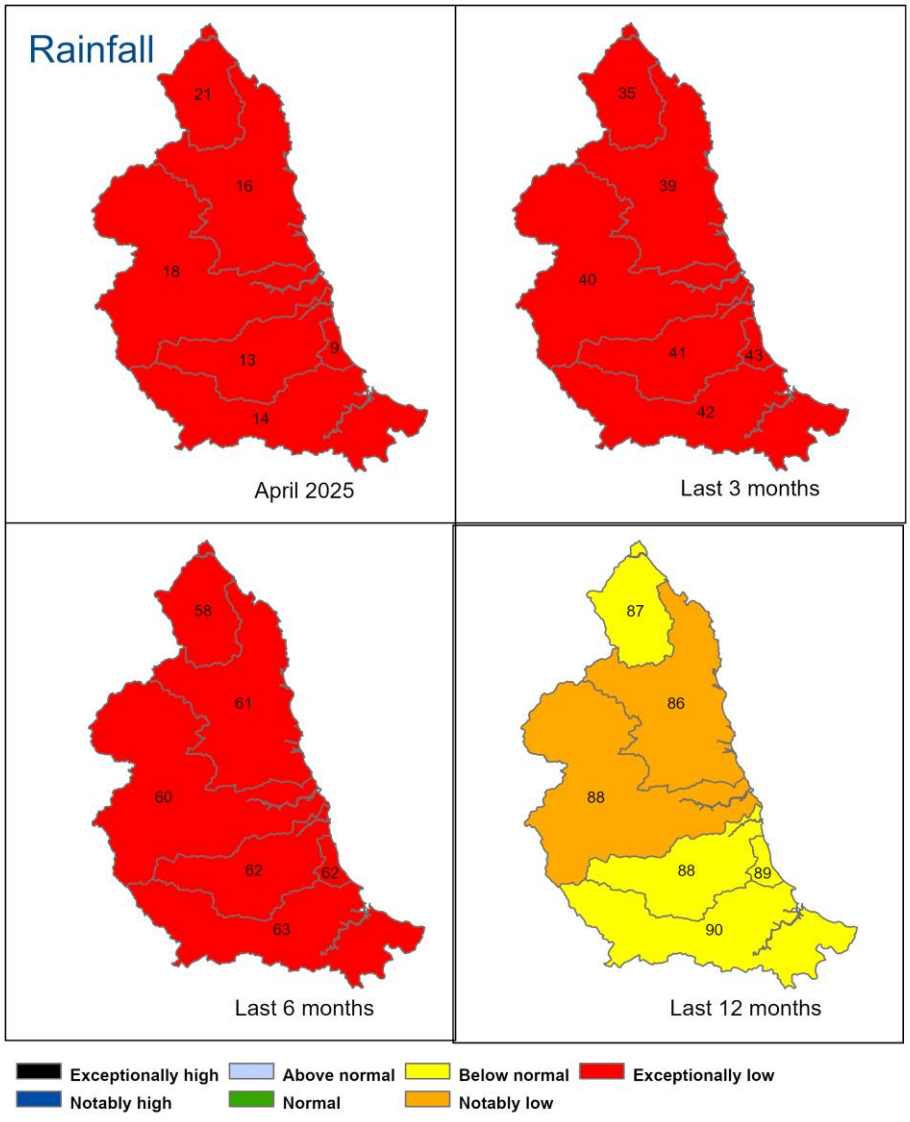
Reservoir or reservoir group	Percentage of current stocks	Percentage of previous month stocks
Kielder	84.4	87.1
North Tynedale group	65.8	73.4
Derwent	82.6	90.3
Durham group	72.6	89.4
Lune and Balder group	75.7	87

Cow Green	75.5	85

2 Rainfall

2.1 Rainfall map

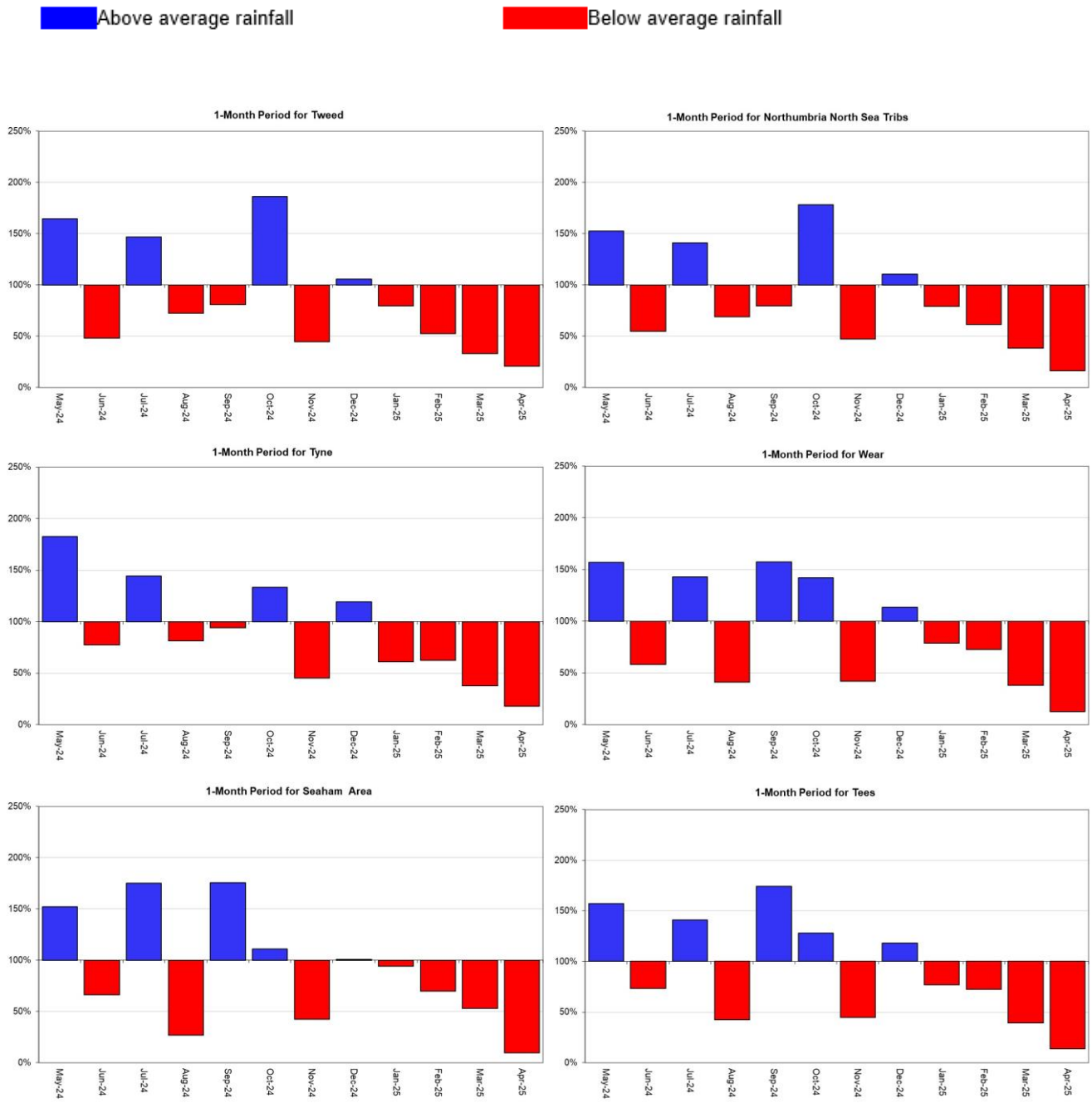
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 30 April 2025), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. April rainfall totals were classed as exceptionally low for all catchments in the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



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

2.2 Rainfall charts

Figure 2.2: Monthly rainfall totals for the past 24 months as a percentage of the 1961 to 1990 long term average for each region and for England.



HadUK rainfall data. (Source: Met Office. Crown copyright, 2025).

3 Soil moisture deficit

3.1 Soil moisture deficit map

3.1: Soil moisture deficits for weeks ending 30 April 2025. Map on the left shows the difference (mm) between the actual soil moisture deficit and the 1961 to 1990 long term average soil moisture deficits MORECS data for real land use. Soils fall within the 11-40mm SMD category in the Tyne catchment and within the 41-70mm category across the rest of the area.

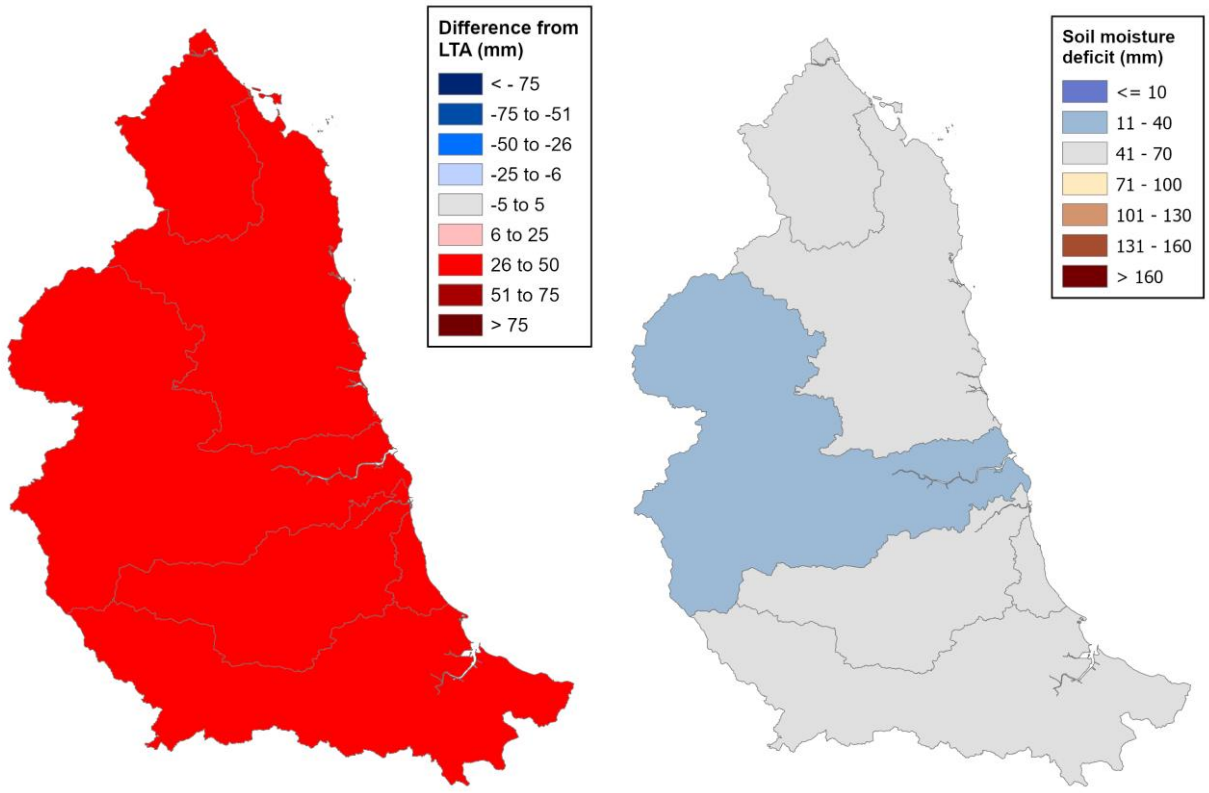
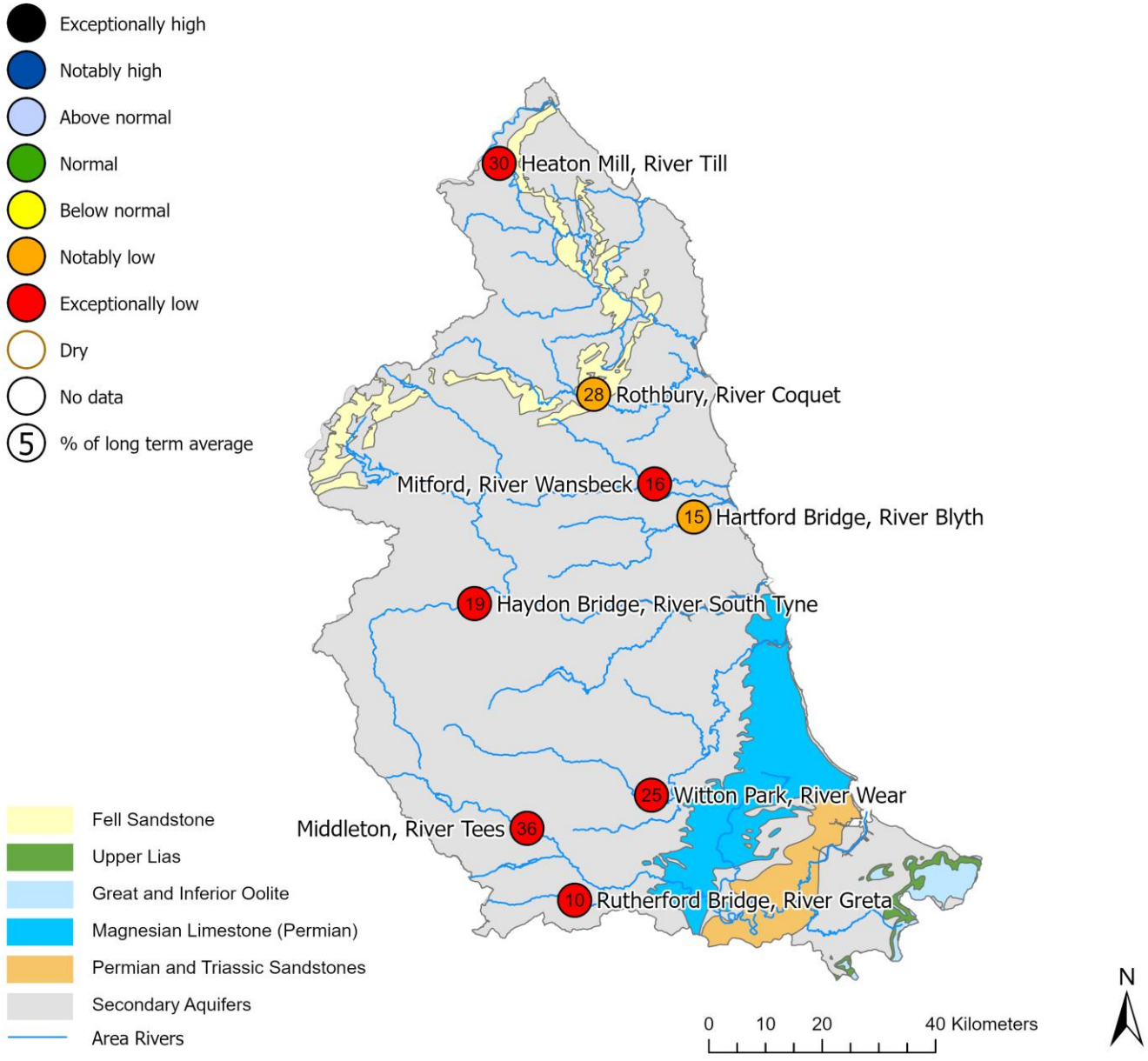


Figure (Source: Met Office. Crown copyright, 2025). All rights reserved. Environment Agency, 100024198, 2025.

4 River flows

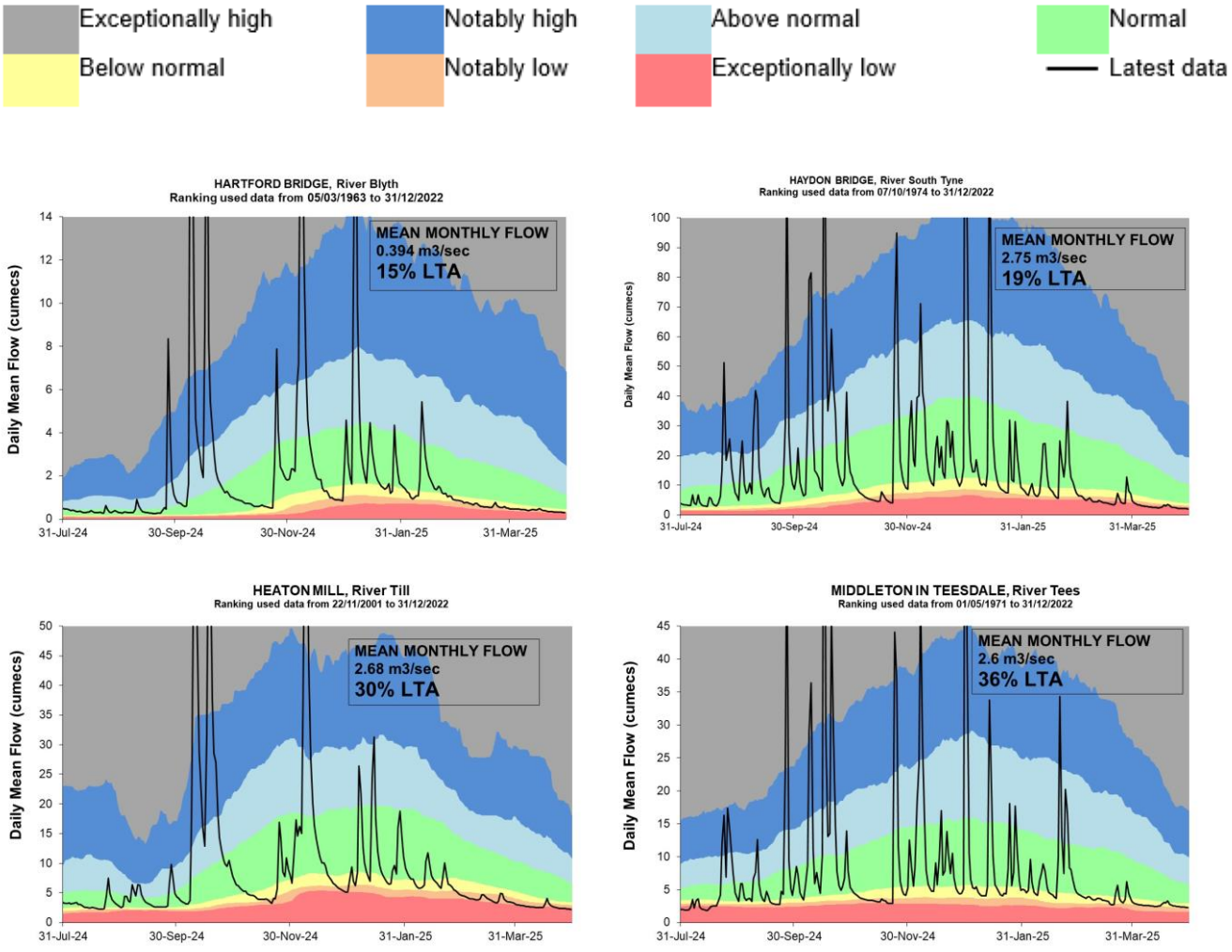
4.1 River flows map

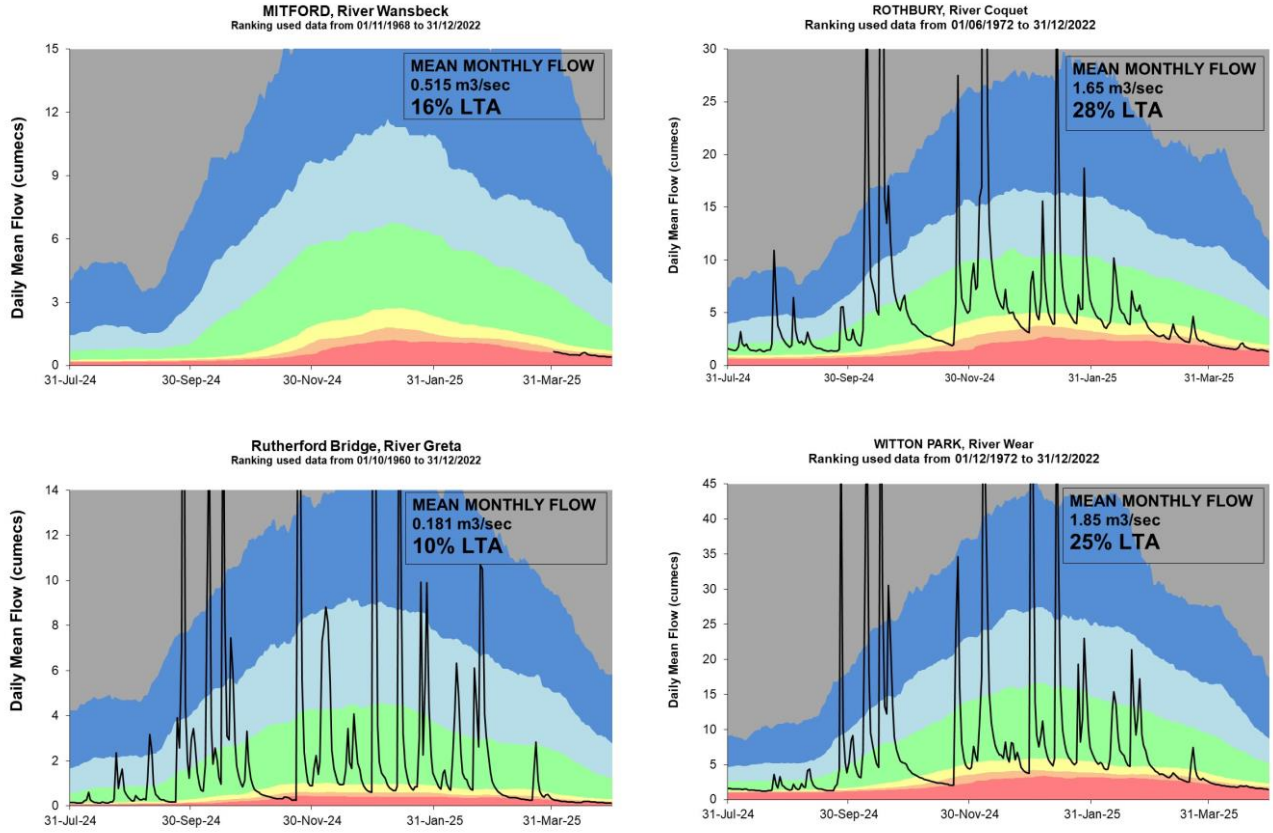
Figure 4.1: Monthly mean river flow for indicator sites for April 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic April monthly means. Monthly means are classed as exceptionally low at all sites except for Rothbury and Hartford Bridge.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



4.2 River flow charts

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



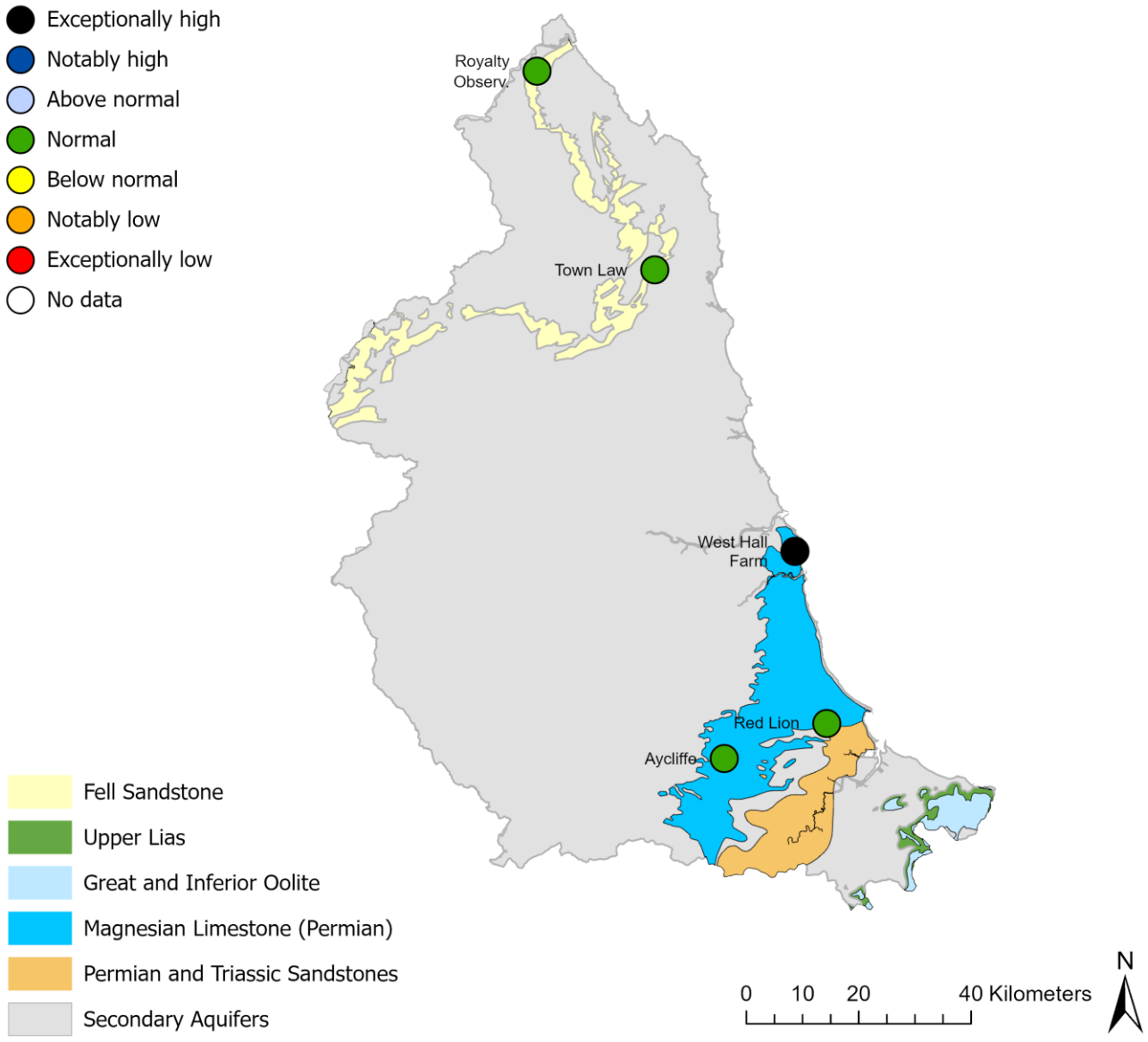


Source: Environment Agency, 2025.

5 Groundwater levels

5.1 Groundwater levels map

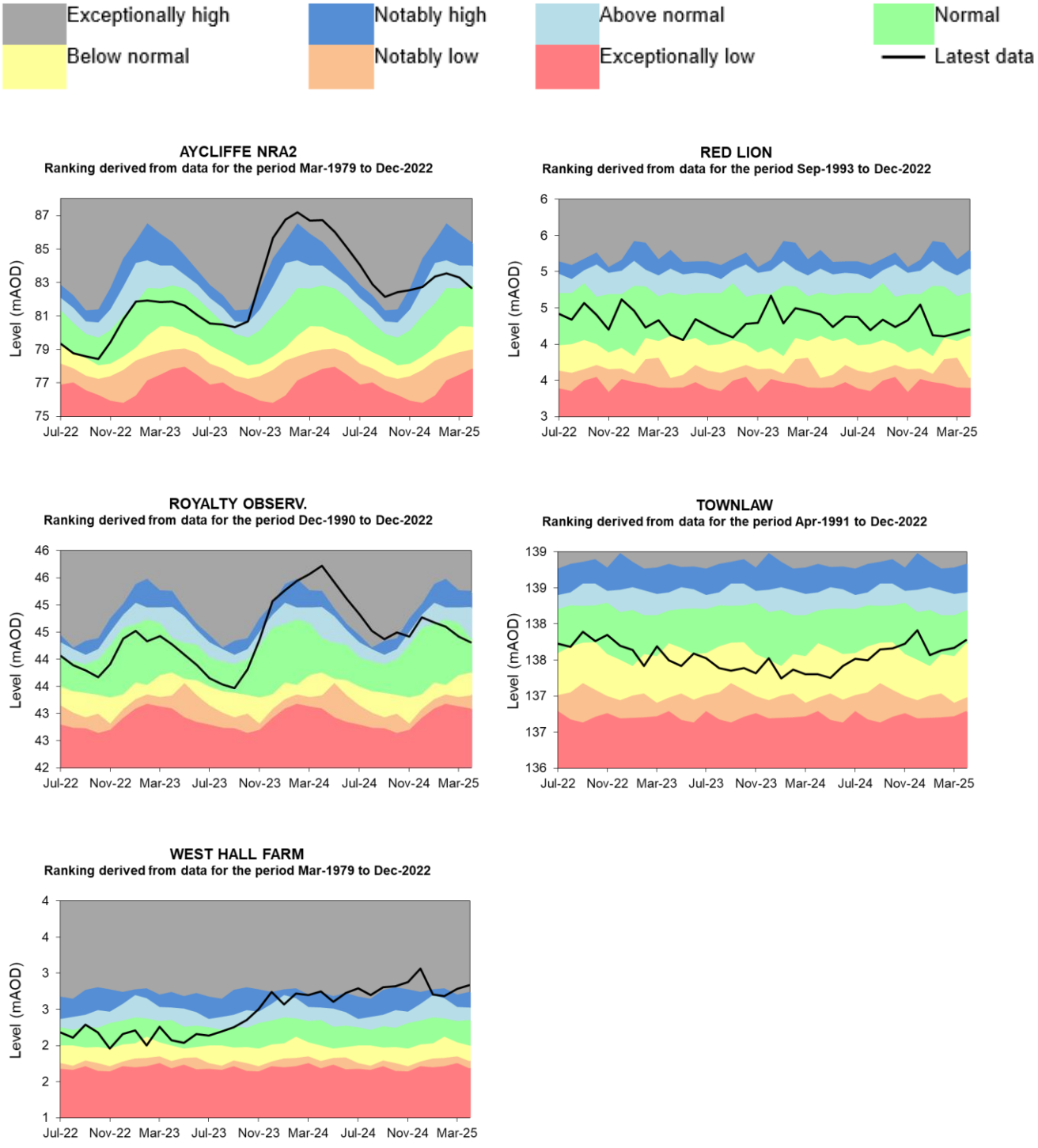
Figure 5.1: Groundwater levels for indicator sites at the end of April 2025, classed relative to an analysis of respective historic April levels. Groundwater levels are classed as normal at all sites except for West Hall Farm on the Magnesian Limestone. Table available in the appendices with detailed information.



(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

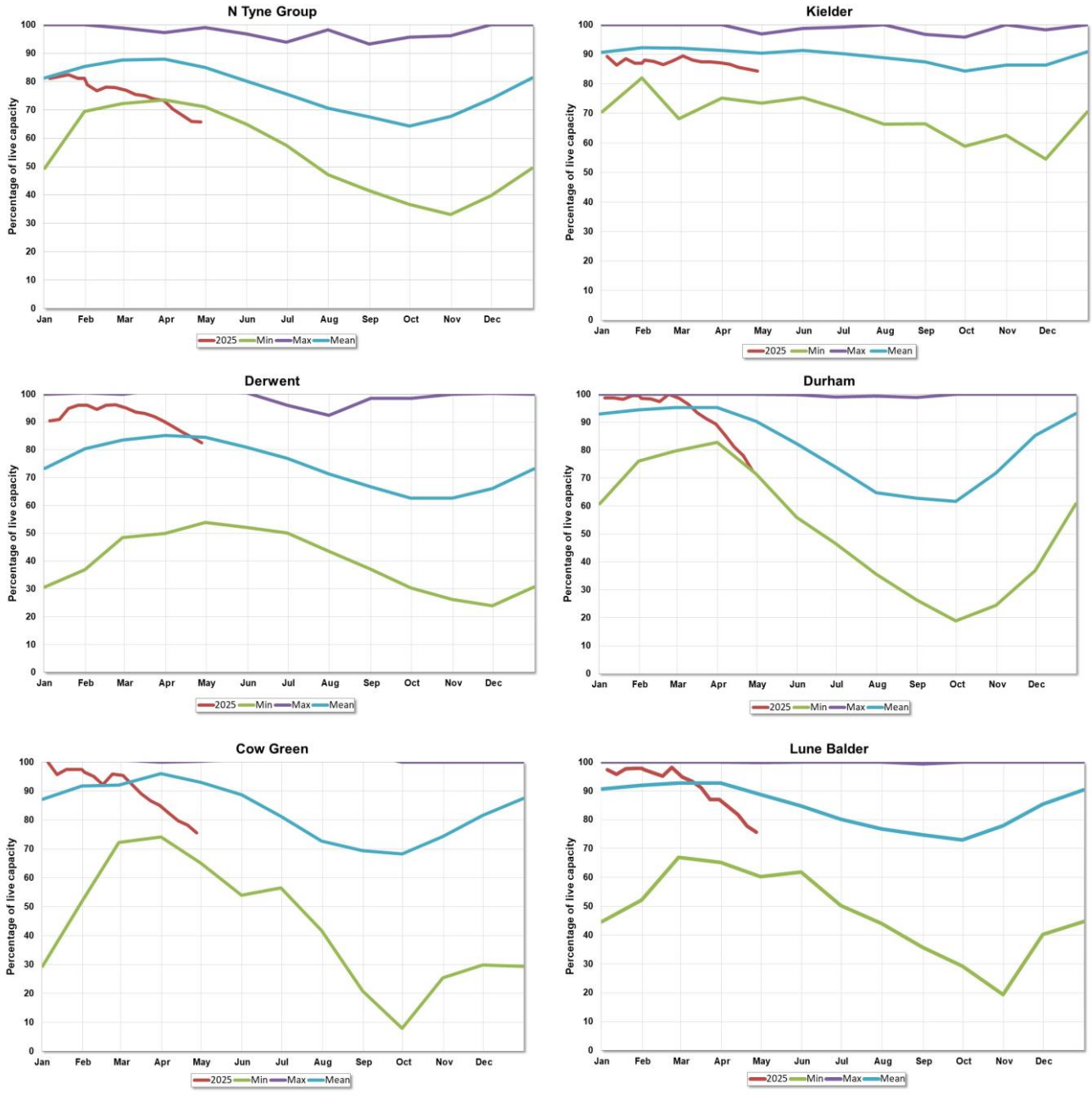
Figure 5.2: End of month groundwater levels at index groundwater level sites for major aquifers in the North East. 12 months compared to an analysis of historic end of month levels.



Source: Environment Agency, 2025.

6 Reservoir stocks

Figure 6.1: End of month regional reservoir stocks compared to long term maximum, minimum and average stocks. Note: Historic records of individual reservoirs and reservoir groups vary in length. The North Tyne Group has recorded a new minimum for April, this is partly due to lack of refill following reservoir safety works. Note the steep rate of drawdown in the Durham and Lune Balder groups and Cow Green reservoir.



(Source: water company).

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	April 2025 rainfall % of long term average 1961 to 1990	April 2025 band	February 2025 to April 2025 cumulative band	November 2024 to April 2025 cumulative band	May 2024 to April 2025 cumulative band
Northumbria North Sea Tribs	16	Exceptionally Low	Exceptionally low	Exceptionally low	Notably low
Seaham Area	9	Exceptionally Low	Exceptionally low	Exceptionally low	Below normal
Tees	14	Exceptionally Low	Exceptionally low	Exceptionally low	Below normal
Tweed	21	Exceptionally Low	Exceptionally low	Exceptionally low	Below normal
Tyne	18	Exceptionally Low	Exceptionally low	Exceptionally low	Notably low
Wear	13	Exceptionally Low	Exceptionally low	Exceptionally low	Below normal

8.2 River flows table

Site name	River	Catchment	April 2025 band	March 2025 band
Hartford Bridge	Blyth	Blyth	Notably low	Notably low
Haydon Bridge	South Tyne	South Tyne	Exceptionally low	Exceptionally low
Heaton Mill	Till	Till	Exceptionally low	Notably low
Middleton In Teesdale	Tees	Tees	Exceptionally low	Exceptionally low
Mitford	Wansbeck	Wansbeck	Exceptionally low	No data available
Rothbury	Coquet	Coquet	Notably low	Notably low
Rutherford Bridge	Greta	Greta	Exceptionally low	Exceptionally low
Witton Park	Wear	Wear	Exceptionally low	Notably low

8.3 Groundwater table

Site name	Aquifer	End of April 2025 band	End of March 2025 band
Aycliffe Nra2	Skerne Magnesian Limestone	Normal	Above normal
Red Lion	Skerne Magnesian Limestone	Normal	Normal
Royalty Observ.	Till Fell Sandstone	Normal	Normal
Townlaw	Till Fell Sandstone	Normal	Normal
West Hall Farm	Wear Magnesian Limestone	Exceptionally high	Exceptionally high