Monthly water situation report: North East Area

1 Summary – May 2025

May was another dry month with rainfall totals classed as below normal and very little rainfall until the final week of the month. Monthly mean river flows decreased at six of the eight indicator sites and fell within the exceptionally low or notably low ranges. Groundwater levels stayed consistent across the area in comparison to April. All reservoir stocks in the area have decreased this month and are below average for the time of year, with the North Tynedale Group and Durham group recording their lowest stocks on record for the end of May.

1.1 Rainfall

Monthly rainfall totals were below the long-term average (LTA) for all catchments, with totals falling within the below normal range. Overall, the last five months have recorded below the LTA rainfall and it has been the driest start to the year (January – May) in the North East since 1929. Monthly totals ranged from 54% of the LTA in the Wear catchment to 73% of the LTA in the Tyne catchment.

Analysis of the daily rainfall shows that only 1-2mm of rainfall was recorded until 23 May, with the majority of the months rain falling in the last week of the month.

The 3-month rainfall totals are in the exceptionally low range for the whole area. The Wear, Tyne and Tees catchments have all recorded their driest three-month period up to and including May, since records began in 1871. The 12-month rainfall totals show the Seaham, Tees and Northumberland catchments in the notably low range, with the rest of the area exceptionally low. Only duration totals of 17 months and above are in the normal range for all catchments.

1.2 Soil moisture deficit and recharge

Soil moisture deficits (SMDs) are 41 to 70mm in the Tyne catchment, which is an increase from 11 to 40mm in April. SMDs are between 71 and 100 mm across the rest of the area, which is an increase from 41 to 70mm in April. The exception to this is the Seaham catchment, where SMDs have increased to between 101 and 130. Soils are drier than average for the time of year with a 26 to 50mm difference from the LTA in every catchment except for the Tyne catchment, which shows a 6 to 25mm difference from the LTA.

1.3 River flows

Monthly mean river flows have decreased this month from notably low to exceptionally low at Rothbury and Hartford Bridge. All sites fall within the exceptionally low range with the exception of Haydon Bridge and Middleton in Teesdale, which have increased from the

exceptionally low range to the notably low range. Monthly mean flows ranged from just 10% of the LTA at Rutherford Bridge to 58% of the LTA at Middleton in Teesdale where flows are supported by releases from Cow Green reservoir.

For the second month in a row, Witton Park, Rutherford Bridge and Mitford recorded their lowest monthly mean flows since records began in 1972, 1960 and 1968 respectively. Heaton Mill and Rothbury have also recorded their lowest monthly mean flows since records began in 2001 and 1972 respectively.

Analysis of the daily mean flows shows that flows at Heaton Mill were exceptionally low for the entire month. Witton Park, Mitford and Rutherford Bridge recorded exceptionally low flows for most of the month until the last few days where flows increased following rainfall to notably low and normal flows. Haydon Bridge recorded a similar pattern, though reached notably high flows for two days before falling slightly into the normal range. Rothbury also recorded exceptionally low flows for most of the month until the last week, where it rose to between notably low and below normal. Flows at Hartford Bridge fluctuated between notably low and exceptionally low, until the last week of the month where there are a couple of days of below normal and normal flows. Middleton in Teesdale recorded below normal flows for most of the month until the last week, where it rose to normal flows, with a brief increase to notably high before falling back to normal.

1.4 Groundwater levels

Groundwater levels are fairly consistent 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 has not changed significantly since April and falls within the normal range. 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 May.

1.5 Reservoir stocks

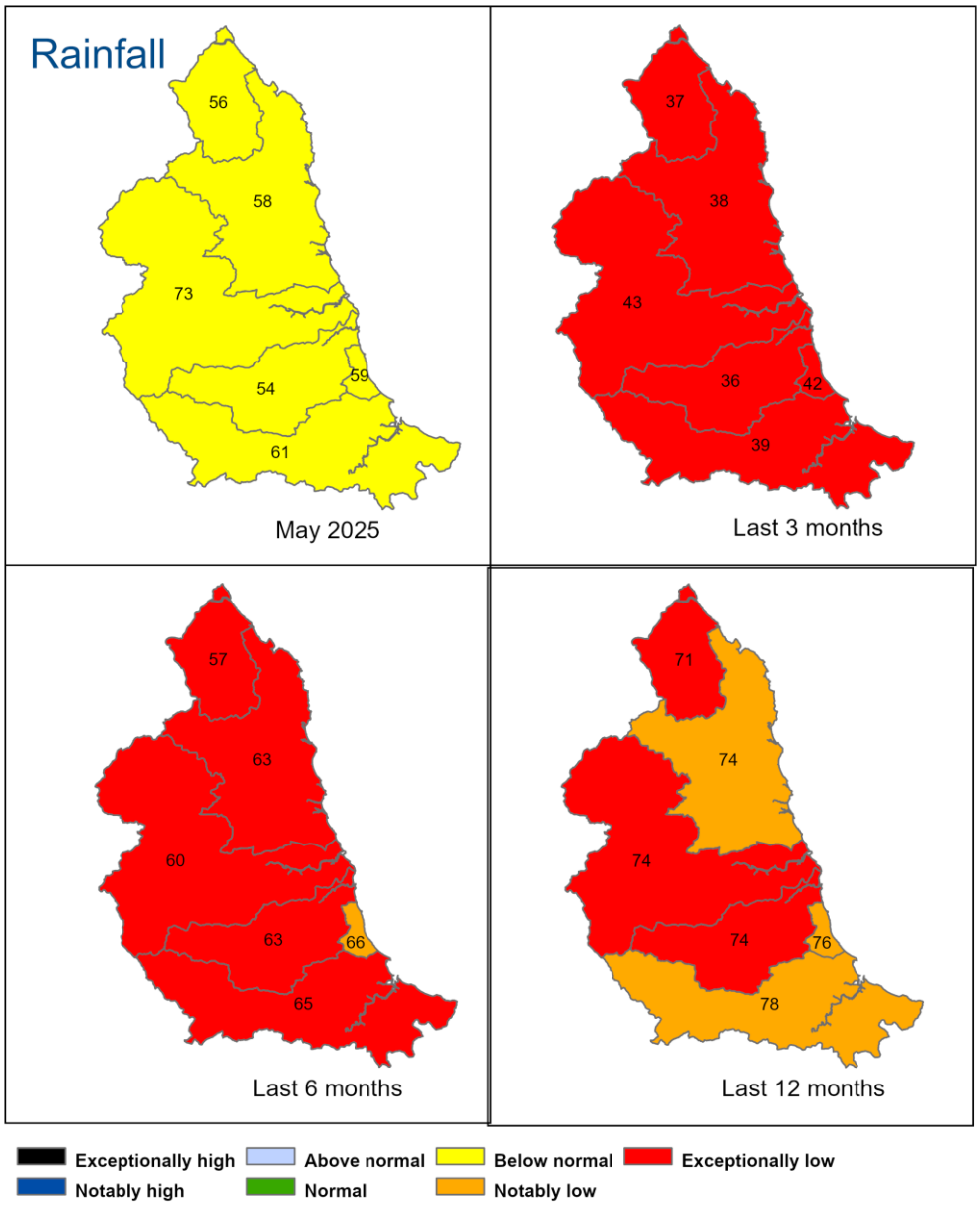
All reservoir stocks decreased across the area this month. The largest decreases were within the Durham Group and Derwent, which recorded a 14.2% and 9.8% decrease in stock respectively. Reservoir stocks across the area are below average. The North Tynedale Group has been below the minimum on record for both April and May. The Durham group dropped below its May minimum during the month, though with the rainfall in the last week it has returned to just above minimum. All reservoir stocks show an increase following the recent rainfall, with the exception of Derwent.

Reservoir or reservoir group	Percentage of current stocks	Percentage of previous month stocks
Kielder	81.0	84.4
North Tynedale group	58.2	65.8
Derwent	72.8	82.6
Durham group	58.4	72.6
Lune and Balder group	72.6	75.7
Cow Green	64.3	75.5

2 Rainfall

2.1 Rainfall map

Figure 2.1: Total rainfall for hydrological areas for the current month (up to 30 May 2025), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. The numbers on the maps refer to the percentage of the 1991 to 2020 LTA. Table available in the appendices with detailed information.

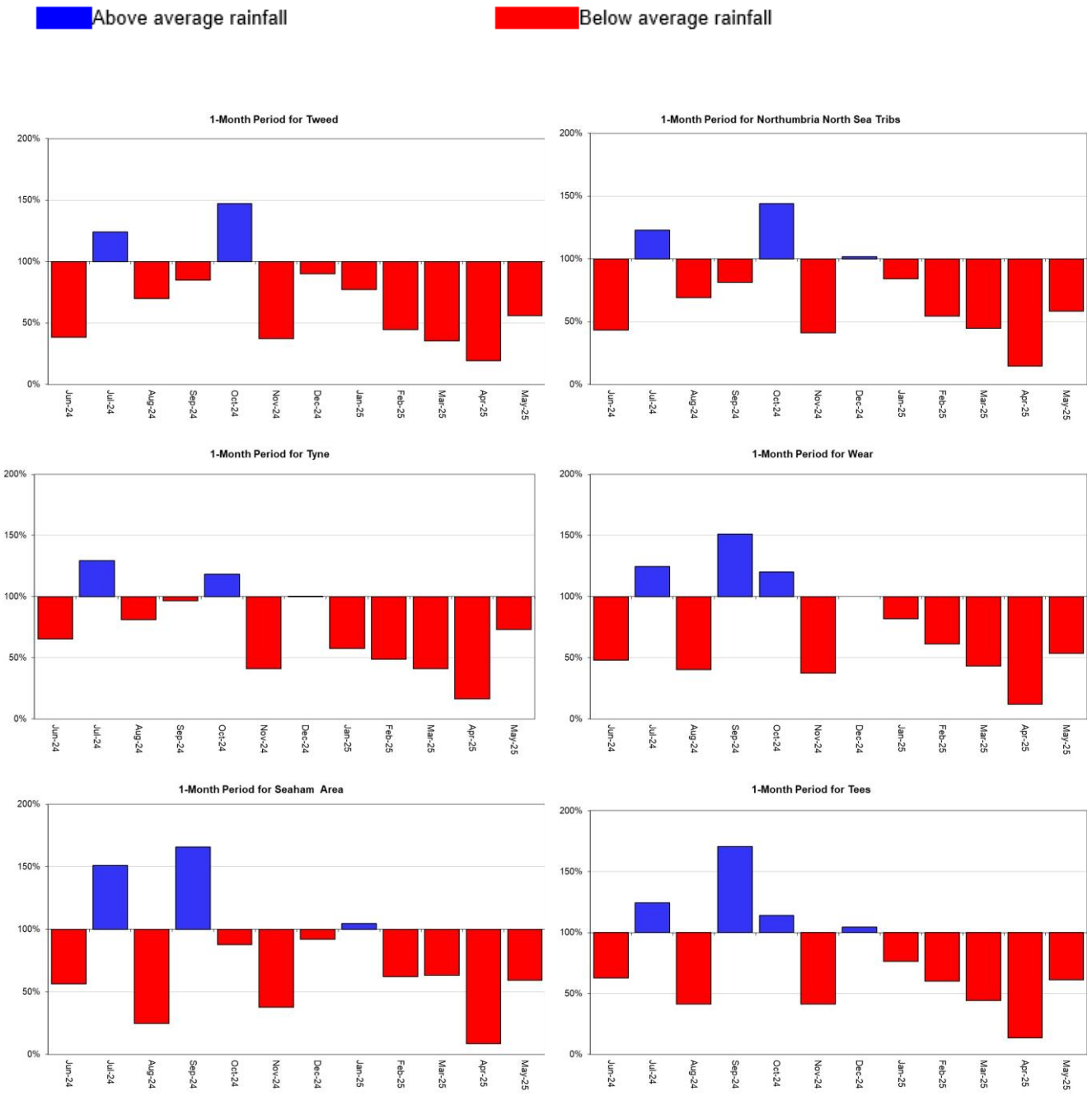


HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2025). Provisional data based on Environment Agency

1km gridded rainfall dataset derived from Environment Agency intensity rain gauges.

2.2 Rainfall charts

Figure 2.2: Monthly rainfall totals for the past 12 months as a percentage of the 1991 to 2020 long term average for each hydrometric area.

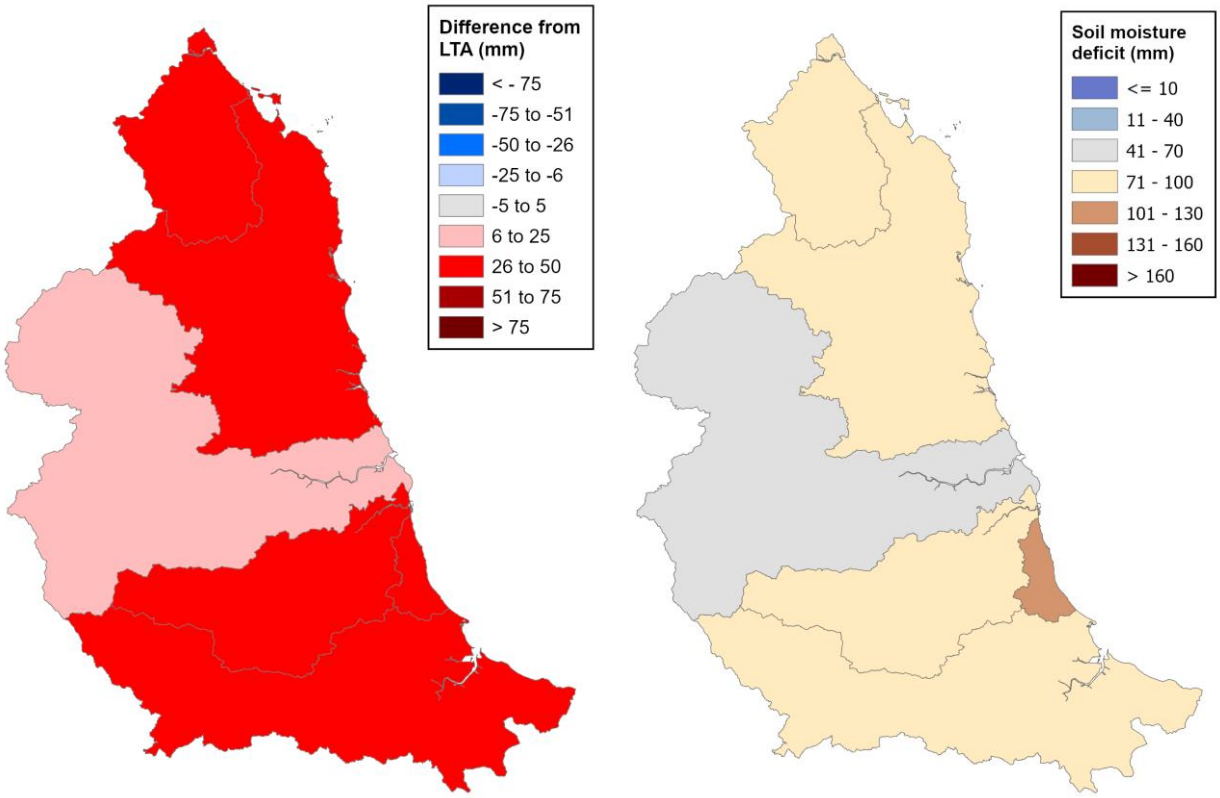


HadUK rainfall data. (Source: Met Office. Crown copyright, 2025).

3 Soil moisture deficit

3.1 Soil moisture deficit map

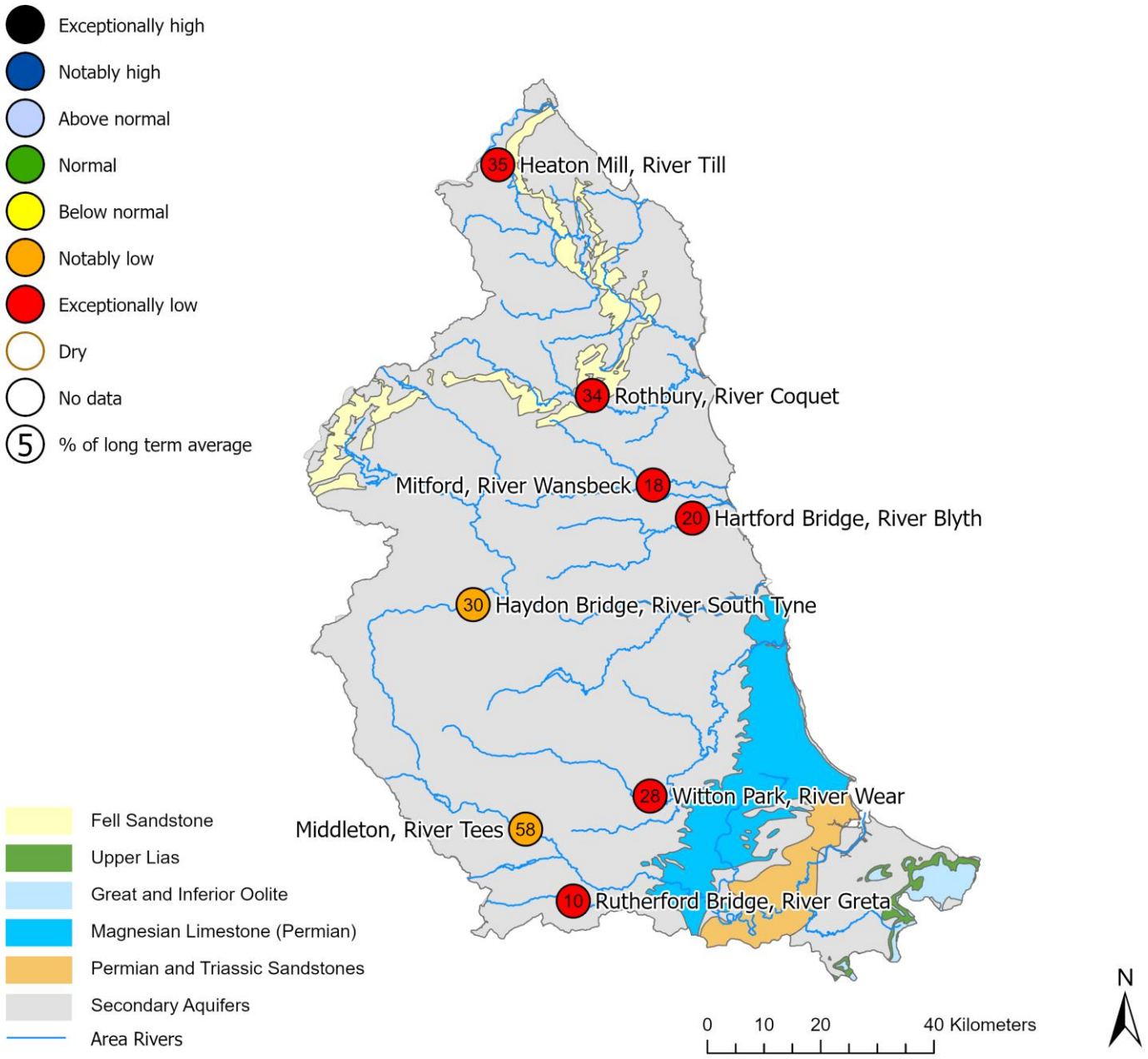
Figure 3.1: Soil moisture deficits for weeks ending 4 June 2025. The map on the left shows the difference (mm) of the actual soil moisture deficit from the 1991 to 2020 long term average soil moisture deficits. MORECS data for real land use.



4 River flows

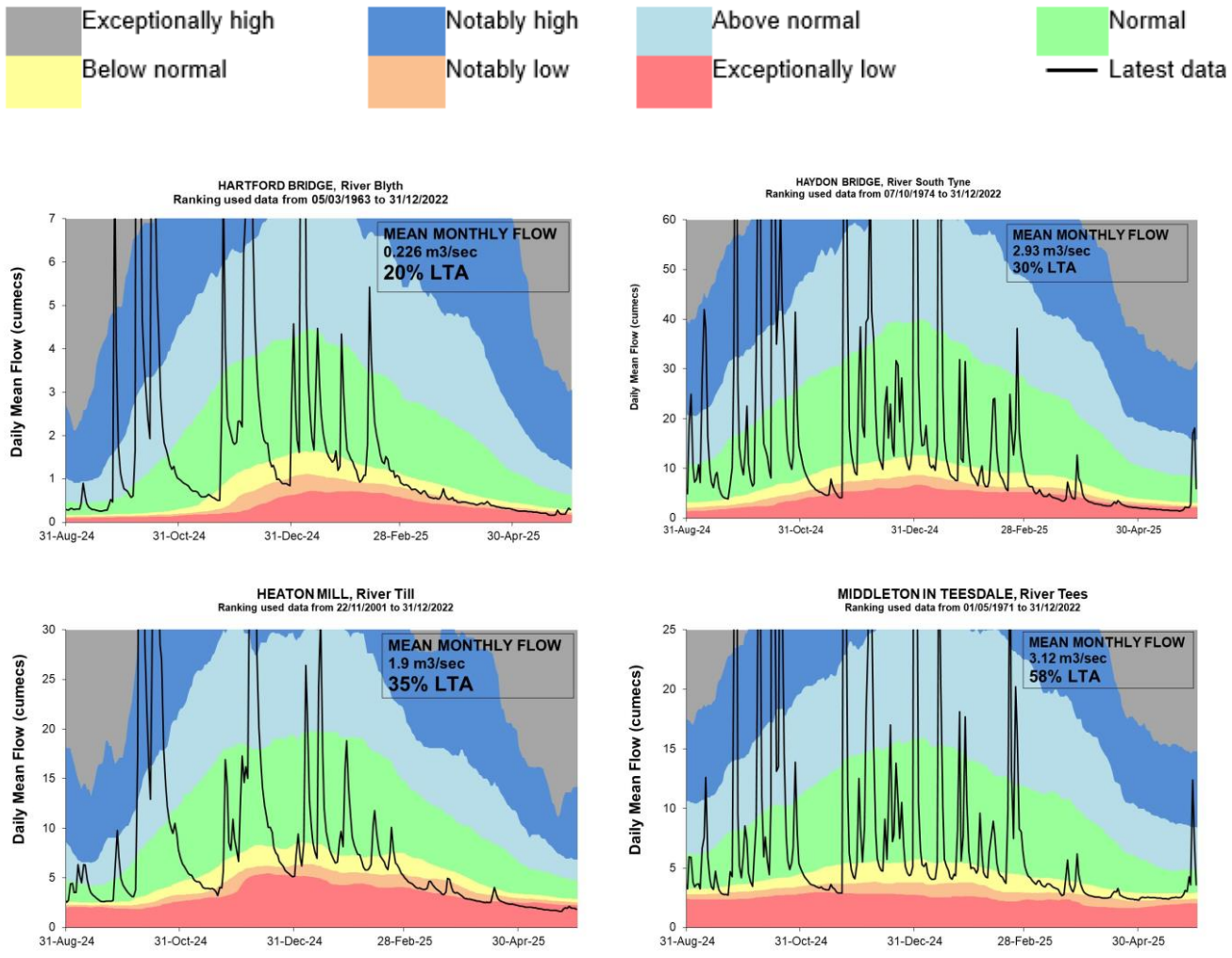
4.1 River flows map

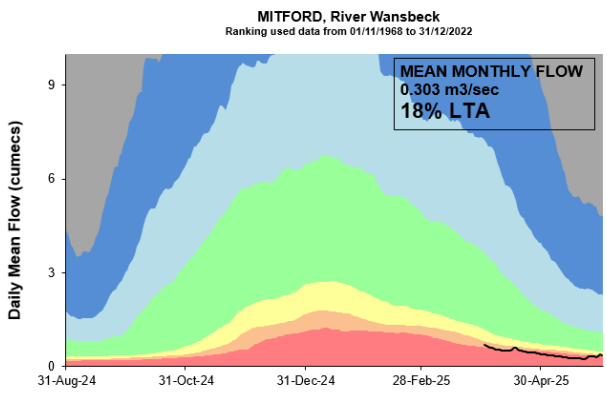
Figure 4.1: Monthly mean river flow for indicator sites for May 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic May monthly means. Table available in the appendices with detailed information.

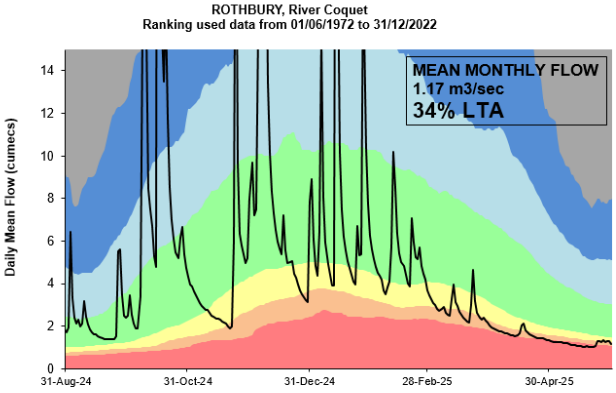


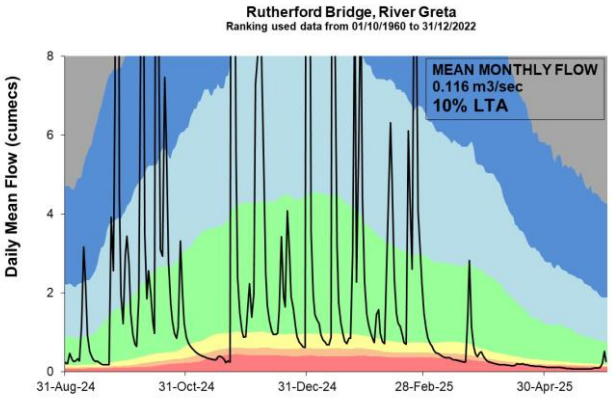
4.2 River flow charts

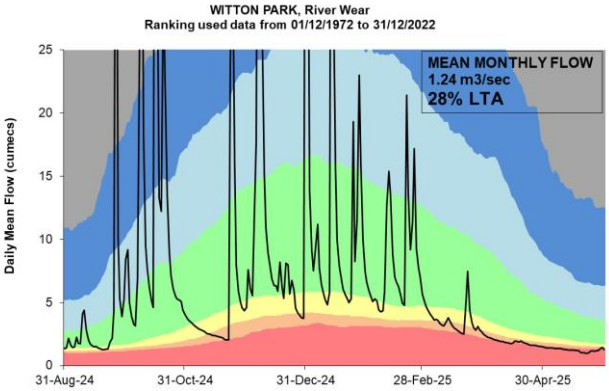
Figure 4.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.









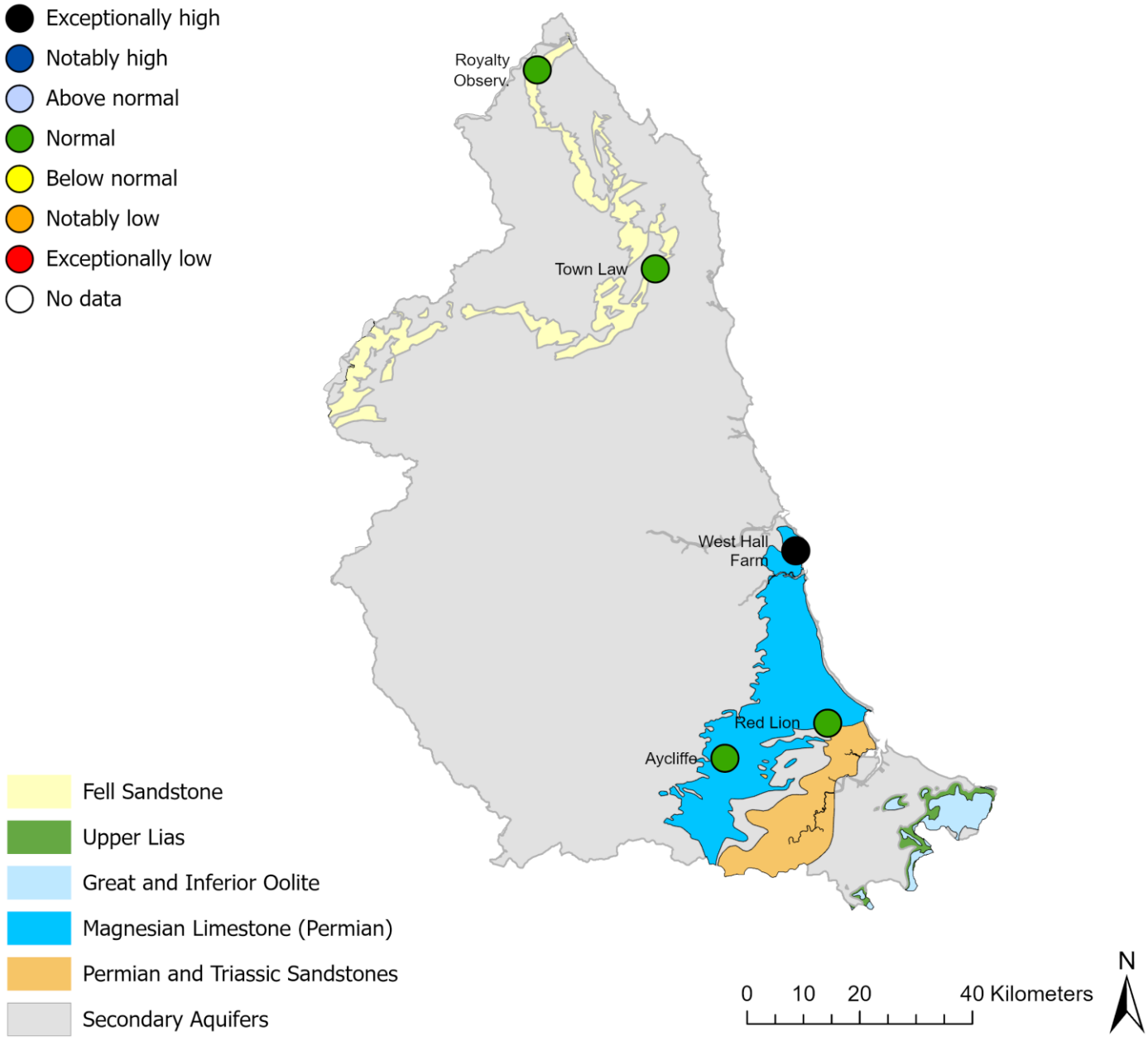


Source: Environment Agency.

5 Groundwater levels

5.1 Groundwater levels map

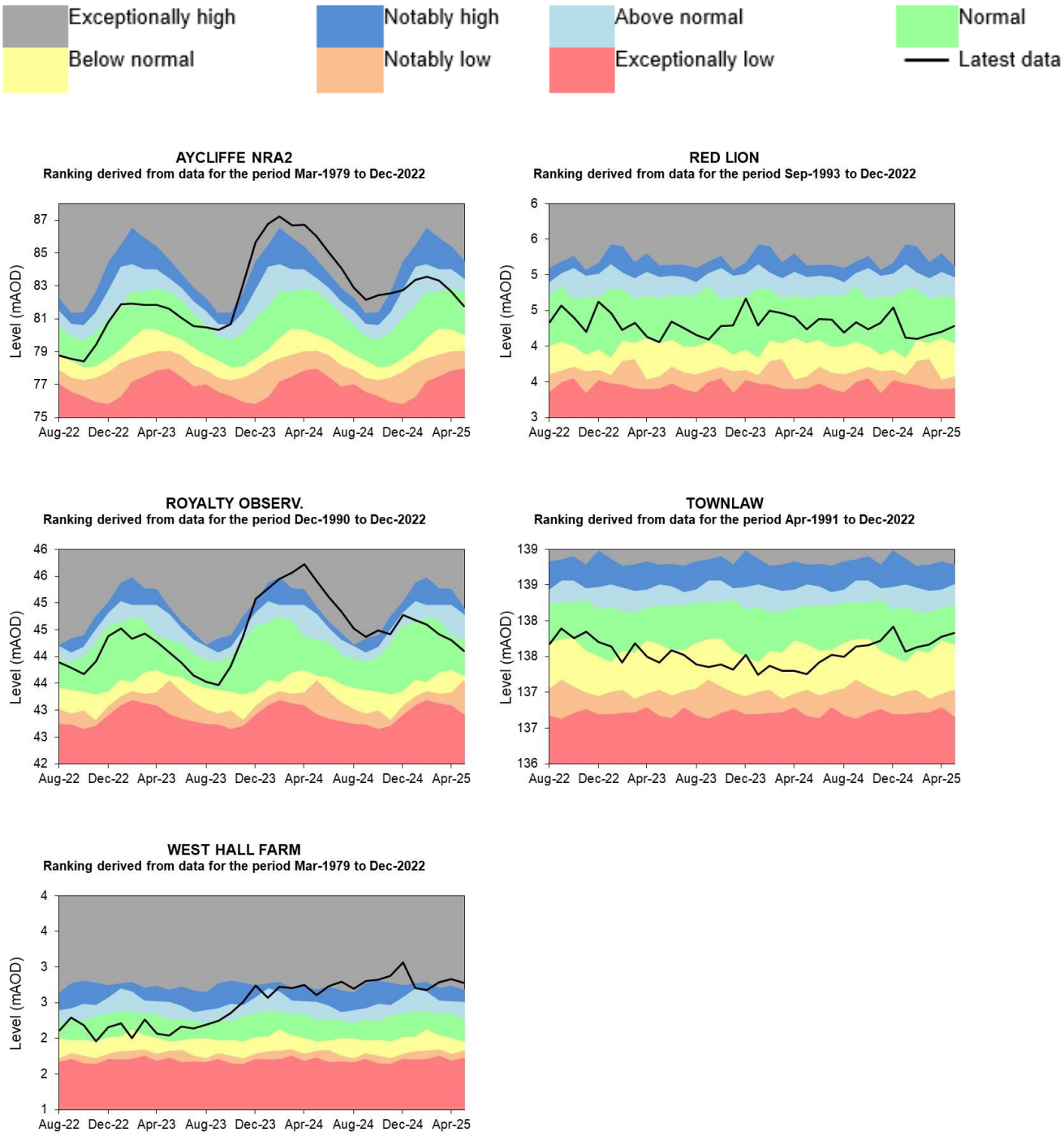
Figure 5.1: Groundwater levels for indicator sites at the end May 2025, classed relative to an analysis of respective historic May levels. Table available in the appendices with detailed information.



(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

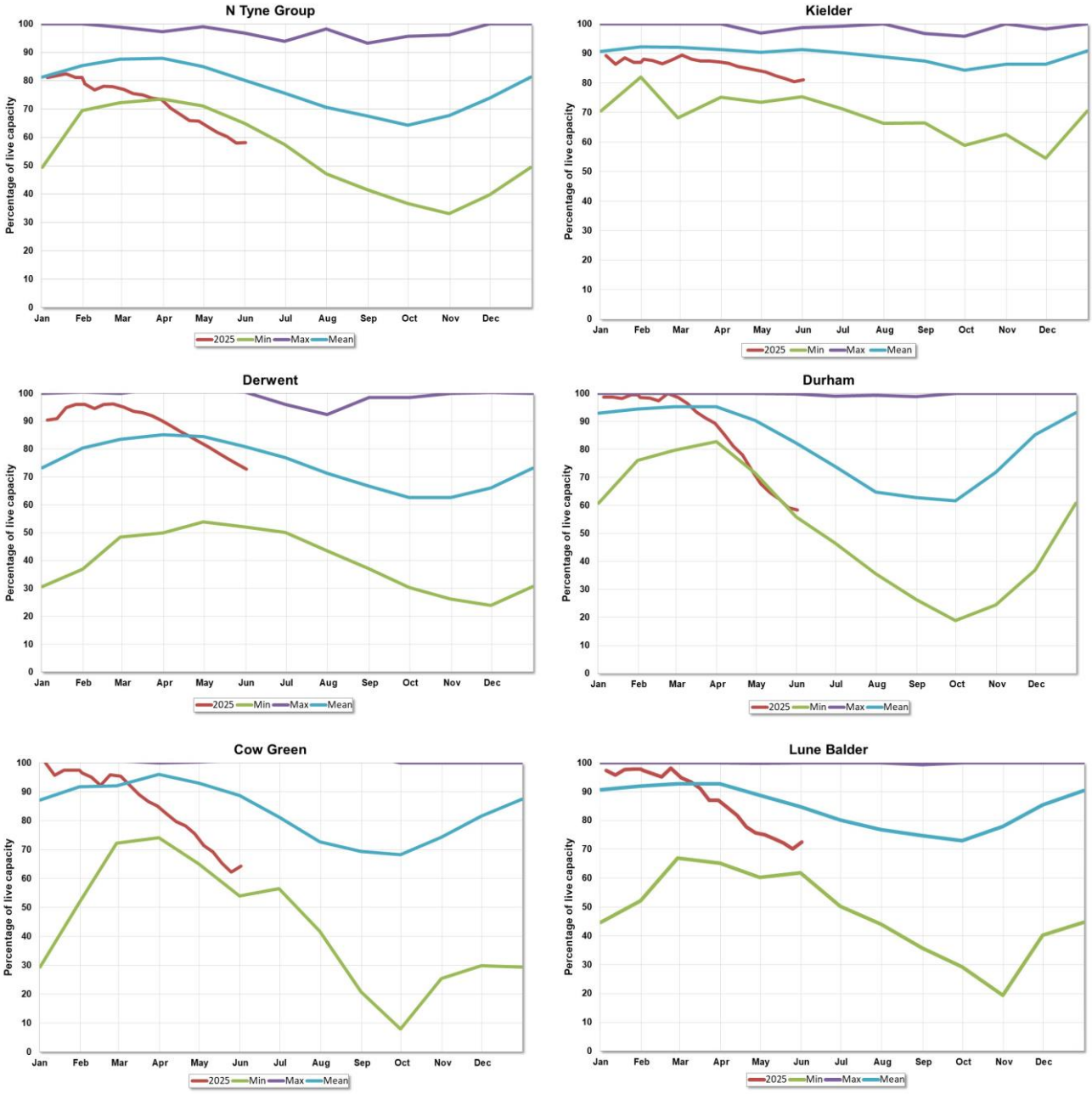
Figure 5.2: End of month groundwater levels at index groundwater level sites for major aquifers. 34 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.



Source: Environment Agency, 2025.

6 Reservoir stocks

Figure 6.1: End of month reservoir stocks compared to long term maximum, minimum and average stocks. Note: Historic records of individual reservoirs and reservoir groups vary in length.



(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 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	May 2025 rainfall % of long term average 1991 to 2020	May 2025 band	Mar 2025 to May 2025 cumulative band	Dec 2024 to May 2025 cumulative band	Jun 2024 to May 2025 cumulative band
Northumbria North Sea Tribs	74	Notably Low	Exceptionally low	Exceptionally low	Notably low
Seaham Area	76	Notably Low	Exceptionally low	Notably low	Notably low
Tees	78	Notably Low	Exceptionally low	Exceptionally low	Notably low
Tweed	71	Exceptionally Low	Exceptionally low	Exceptionally low	Exceptionally low
Tyne	74	Exceptionally Low	Exceptionally low	Exceptionally low	Exceptionally low
Wear	74	Exceptionally Low	Exceptionally low	Exceptionally low	Exceptionally low

8.2 River flows table

Site name	River	Catchment	May 2025 band	April 2025 band
Hartford Bridge	Blyth	Blyth	Exceptionally low	Notably low
Haydon Bridge	South Tyne	South Tyne	Notably low	Exceptionally low
Heaton Mill	Till	Till	Exceptionally low	Exceptionally low
Middleton In Teesdale	Tees	Tees	Notably low	Exceptionally low
Mitford	Wansbeck	Wansbeck	Exceptionally low	Exceptionally low
Rothbury	Coquet	Coquet	Exceptionally low	Notably low
Rutherford Bridge	Greta	Greta	Exceptionally low	Exceptionally low
Witton Park	Wear	Wear	Exceptionally low	Exceptionally low

8.3 Groundwater table

Site name	Aquifer	End of May 2025 band	End of April 2025 band
Aycliffe Nra2	Skerne Magnesian Limestone	Normal	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