Monthly water situation report: North East Area

1 Summary - March 2025

Overall, March was a dry month with rainfall totals classed as below average 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 decreased across the area with the exception of West Hall Farm borehole. All reservoir stocks in the area have decreased this month and are just below average for the time of year.

1.1 Rainfall

Monthly rainfall totals were below the long term average (LTA) for all catchments, with totals falling within normal, notably low or exceptionally low ranges. Overall 7 of the last 10 months have been below the LTA. Monthly totals ranged from 33% of the LTA in the Tweed catchment to 53% of the LTA in the Seaham catchment.

Analysis of the daily rainfall shows very little rainfall was recorded in the first 3 weeks of March. The area recorded small rainfall totals on 22 March. The last week of March was also dry with very little rainfall recorded across the area.

The 3-month rainfall totals are in the exceptionally low range for the Tyne catchment and in the notably low range for the rest of the area, with the exception of the Seaham catchment. The Tyne catchment has recorded the fifth driest start to the year since records began in 1871 and the driest since 1973. Only the longer duration totals (11 months and above) are in the normal range for all catchments.

1.2 Soil moisture deficit and recharge

Soil moisture deficits are less than 10mm in the Tyne catchment and between 11 and 40 mm across the rest of the area. SMD increased from 1mm at the end of February to 15-25mm by the end of March and soils in many areas are drier than average for the time of year, especially along the coast.

1.3 River flows

Monthly mean river flows have seen a large decrease this month at all indicator sites and fall within the notably low or exceptionally low ranges. Monthly mean flows ranged from just 18% of the LTA at Hartford Bridge on the River Blyth to 36% of the LTA at Rothbury on the River Coquet. Middleton in Teesdale on the River Tees and Haydon Bridge on the River South Tyne both recorded their lowest monthly mean flows for March since records began in 1972 and 1974.

Analysis of the daily mean flows shows that flows were in the normal, below normal or notably low ranges at the start of the month. Daily mean flows decreased at all indicator sites following a very dry first 3 weeks of the month, and increased slightly following a period of rainfall on 22 March. Mean daily flows decreased towards the end of the month with indicator sites falling within the below normal or notably low ranges by the end of the month.

1.4 Groundwater levels

Groundwater levels vary across the area. Levels in West Hall Farm borehole in the Wear Magnesian Limestone have recorded a small increase this month and fall within the exceptionally high range. The level in Aycliffe NRA2 in the Skerne Magnesian Limestone decreased slightly and falls within the above 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 March.

1.5 Reservoir stocks

All reservoirs stocks decreased across the area this month. The largest decreases were within the Durham Group, Lune and Balder group and at Cow Green reservoir, which all recorded a 10 percent decrease in stock. Reservoir stocks are just below average for the time of year.

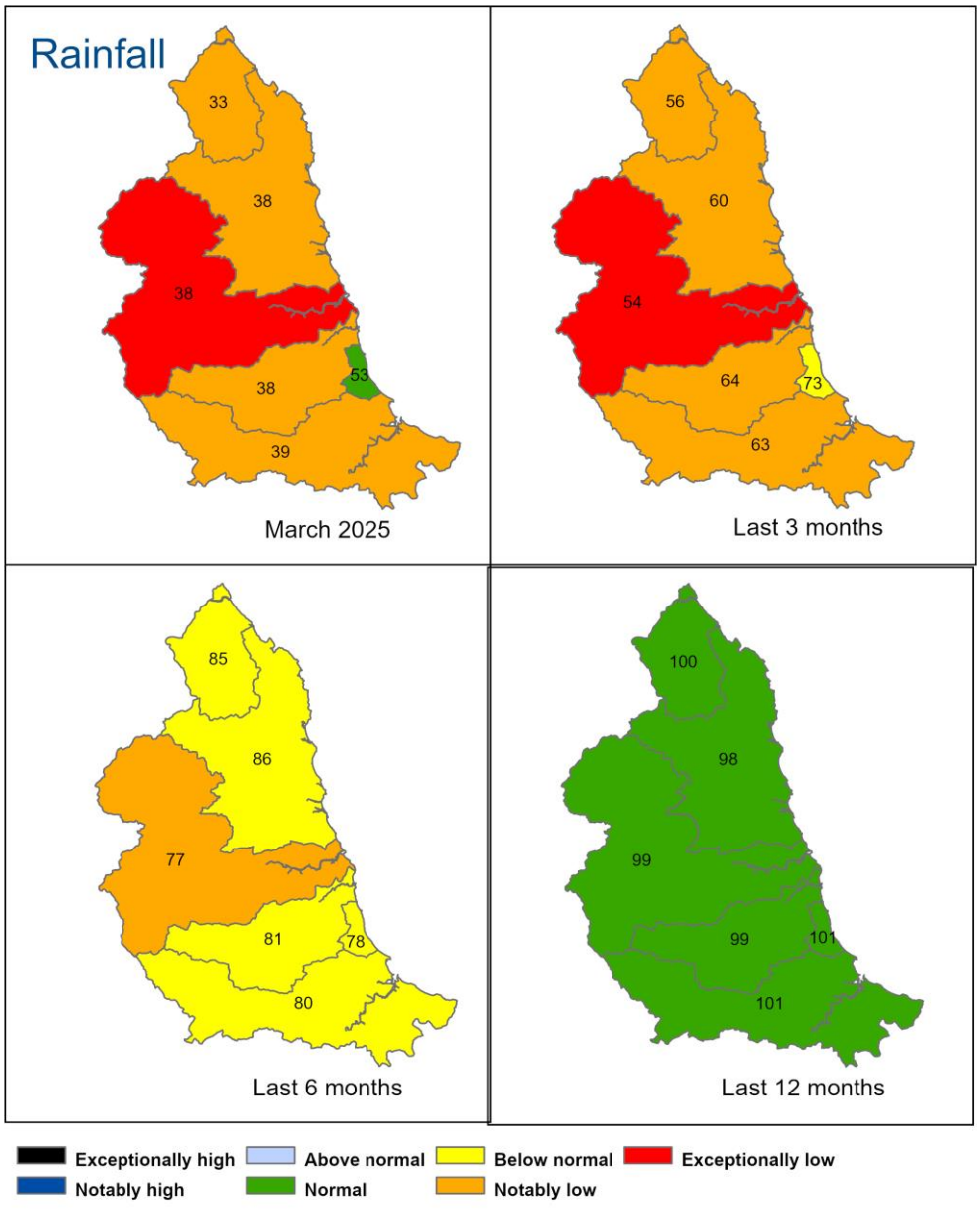
Reservoir or reservoir group	Percentage of current stocks	Percentage of previous month stocks
Kielder	87.1	87.8
North Tynedale group	73.4	77.8
Derwent	90.3	96.2
Durham group	89.4	100
Lune and Balder group	87	98.1
Cow Green	85	95.9

Author: Environment Agency, hydrology.northeast@environment-agency.gov.uk

2 Rainfall

2.1 Rainfall map

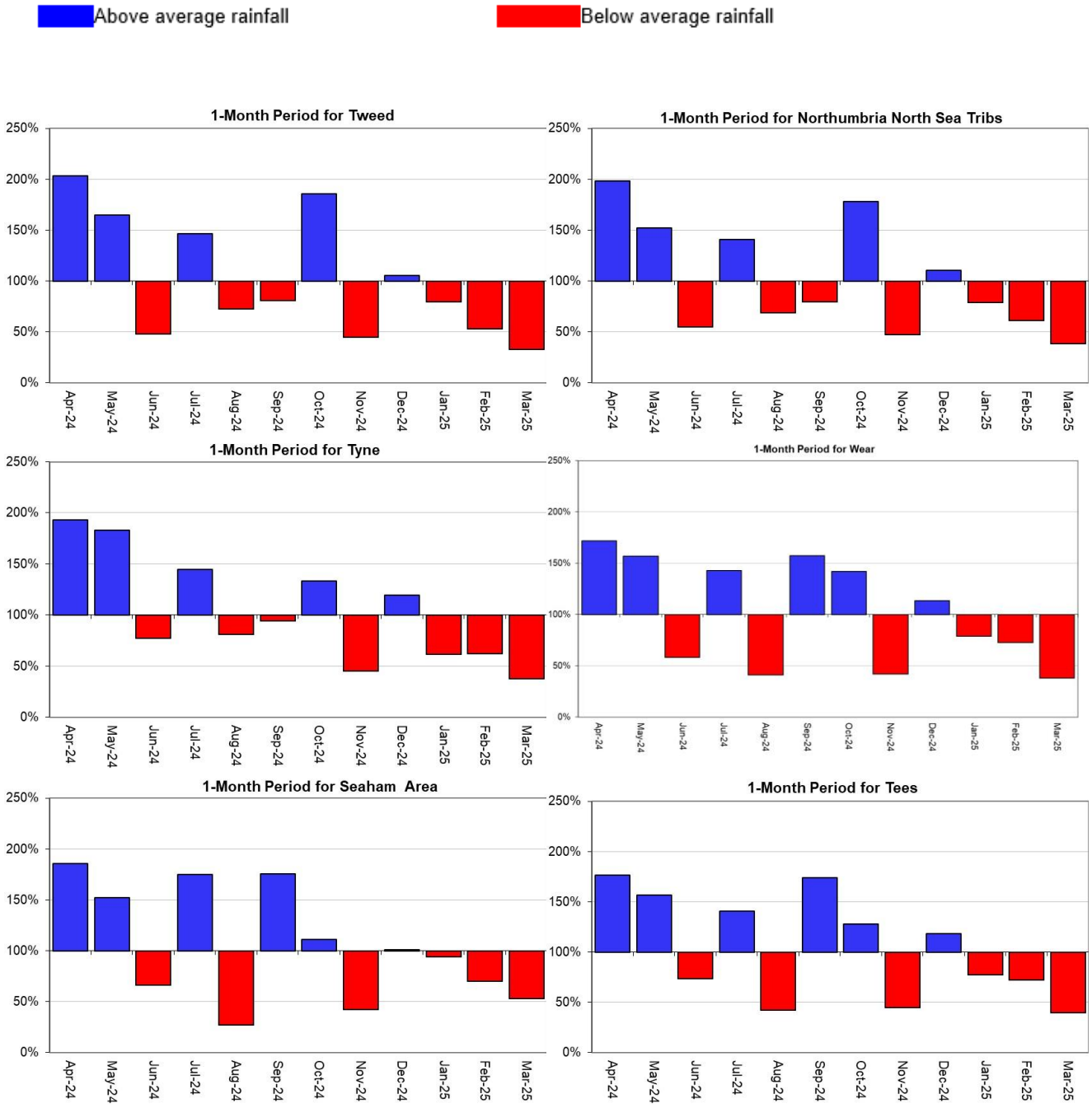
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 31 March 2025), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. March rainfall totals were classed as normal for the Seaham catchment and exceptionally low for the Tyne catchment. Rainfall totals were classed as notably low for the rest of the area. Table available in the appendices with detailed information.



Rainfall data for 2025, 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 as a percentage of the 1961 to 1990 long term average for each hydrometric area in the North East.



Rainfall data for 2025, 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 weeks ending 31 March 2025. Map on the right 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 are classed as wet with less than 10mm of soil moisture deficit in the Tyne catchment and between 11 and 40 mm soil moisture deficit across the rest of the area.

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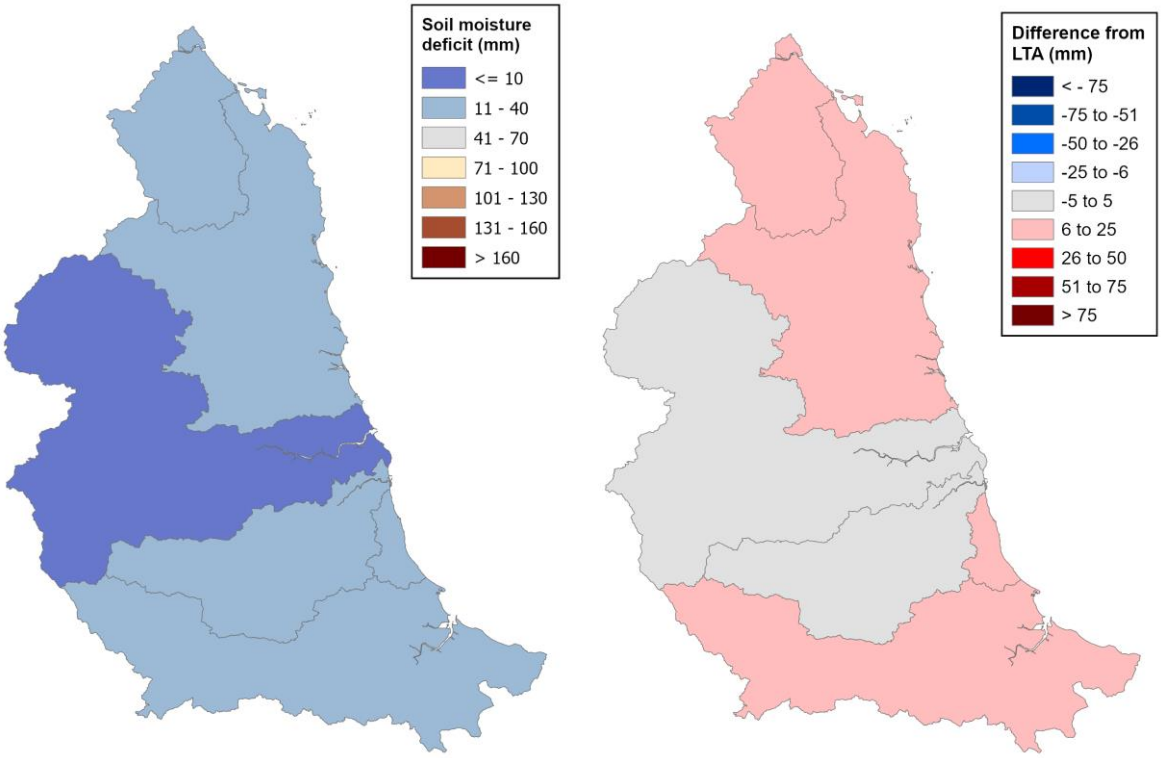
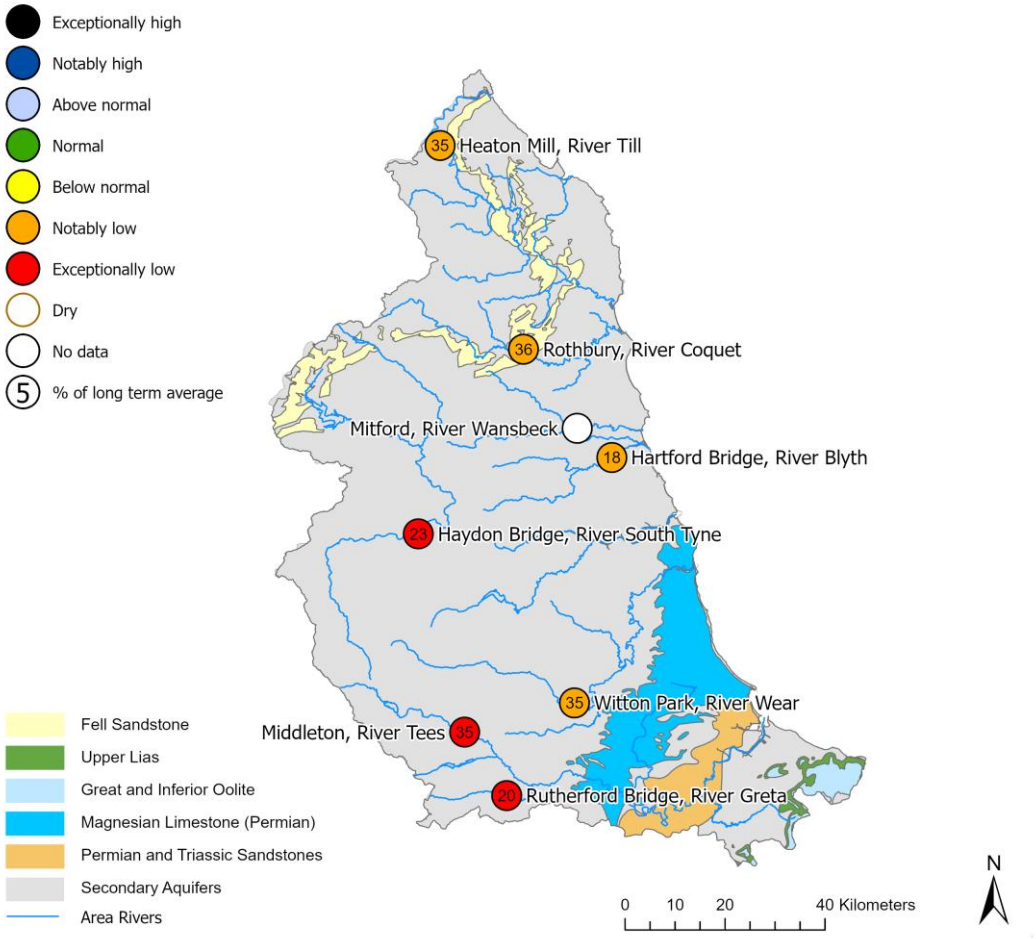


4 River flows

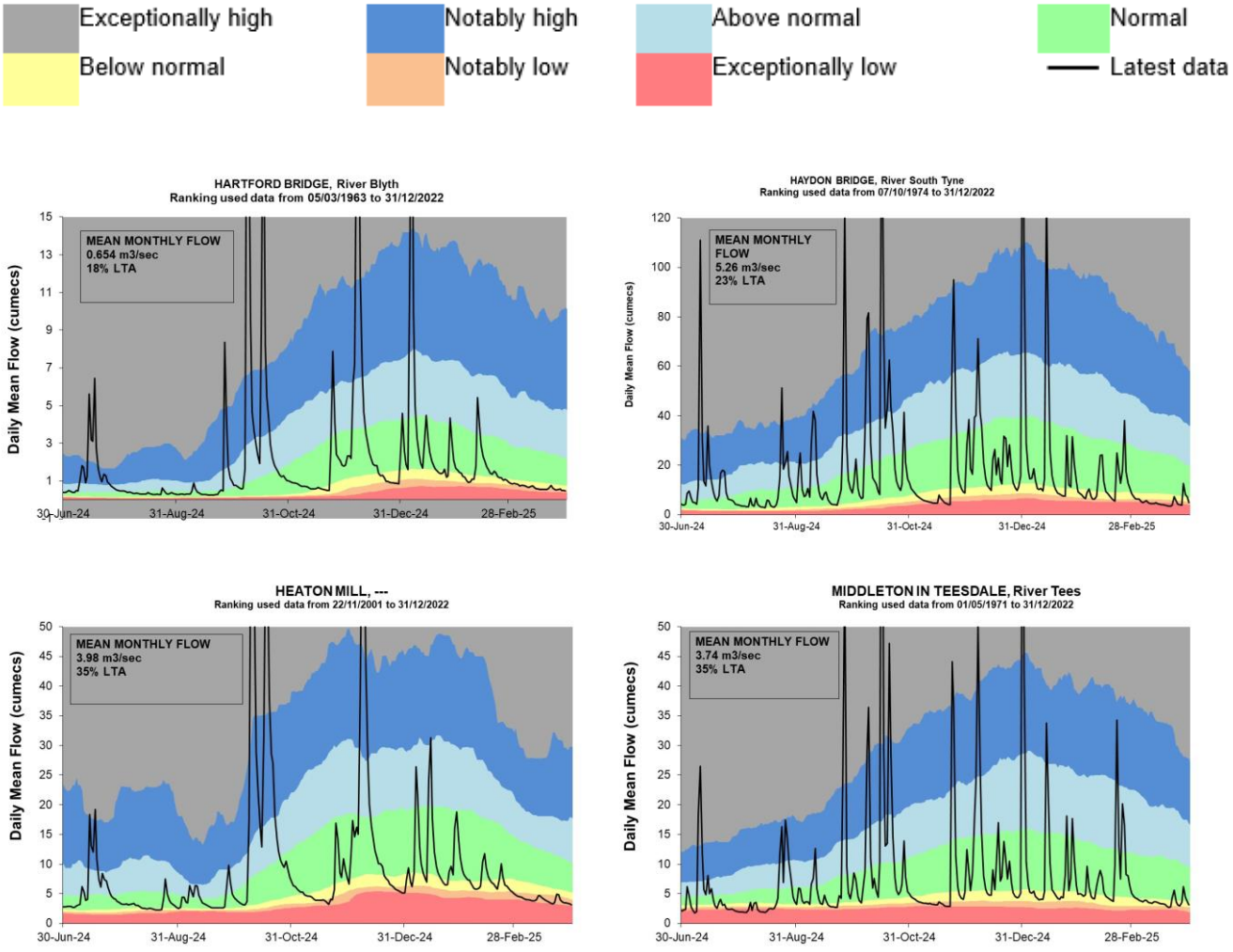
4.1 River flows map

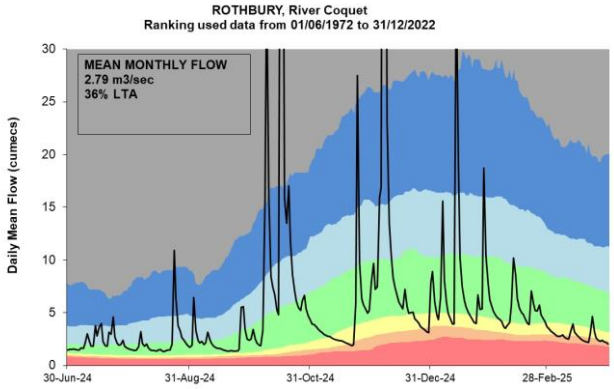
Figure 4.1: Monthly mean river flow for indicator sites for March 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic March monthly means. Monthly means are classed as notably low at Heaton Mill, Rothbury, Hartford Bridge and Witton Park. Monthly means are classed as exceptionally low at Haydon Bridge, Middleton and Rutherford Bridge. There are ongoing data quality issues at Mitford on the River Wansbeck and therefore the site is marked as no data for the month. Table available in the appendices with detailed information.

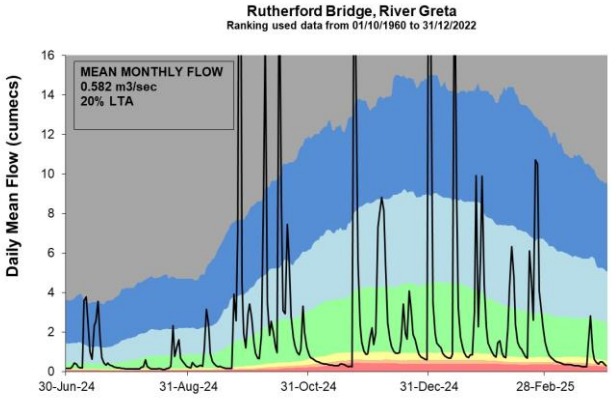


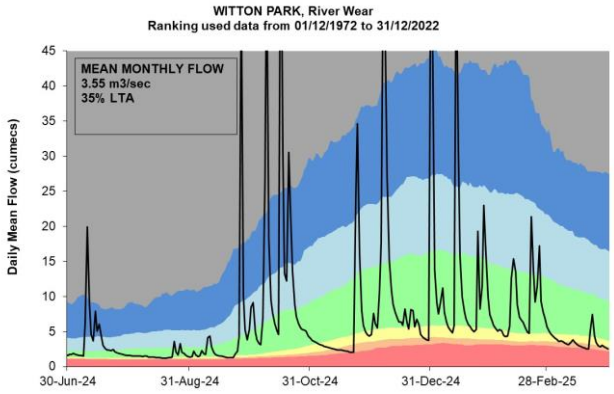
4.2 River flow charts

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







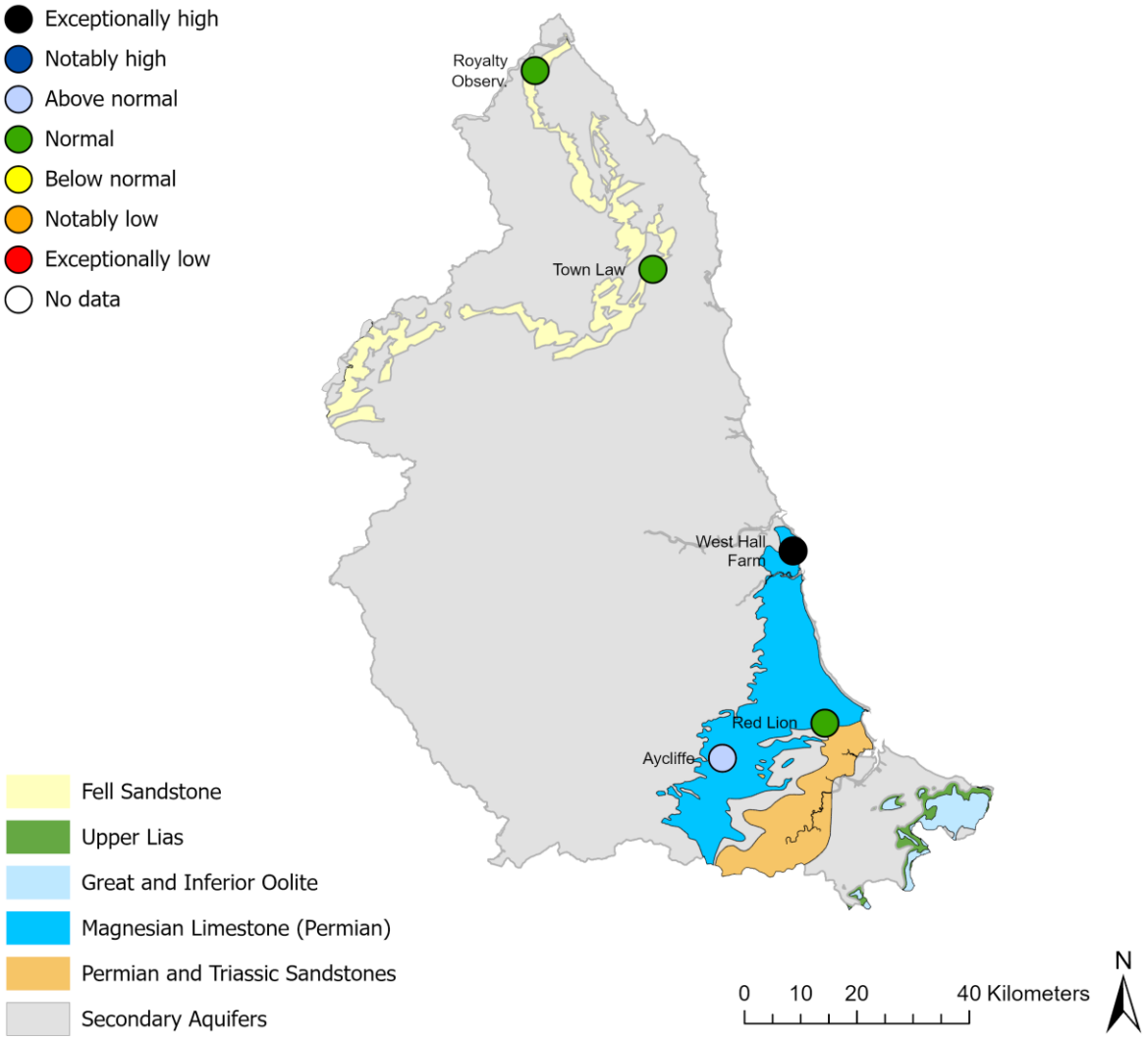


Source: Environment Agency, 2025.

5 Groundwater levels

5.1 Groundwater levels map

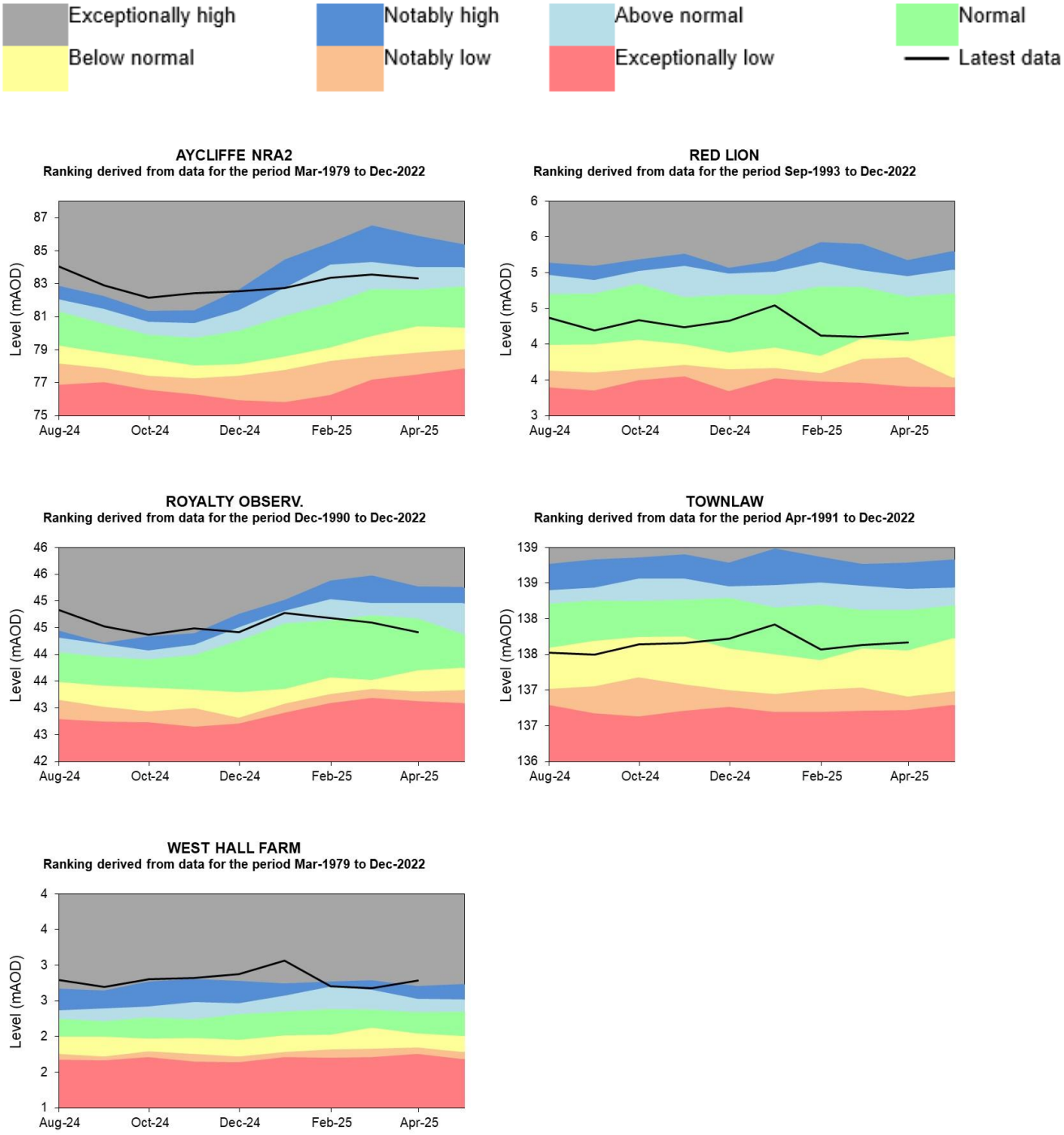
Figure 5.1: Groundwater levels for indicator sites at the end of March 2025, classed relative to an analysis of respective historic March levels. Groundwater levels are classed as exceptionally high at West Hall Farm on the Magnesian Limestone and as above normal at Aycliffe on the Skerne Magnesian Limestone. Royalty Observation, Town Law and Red Lion are classed as normal. 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

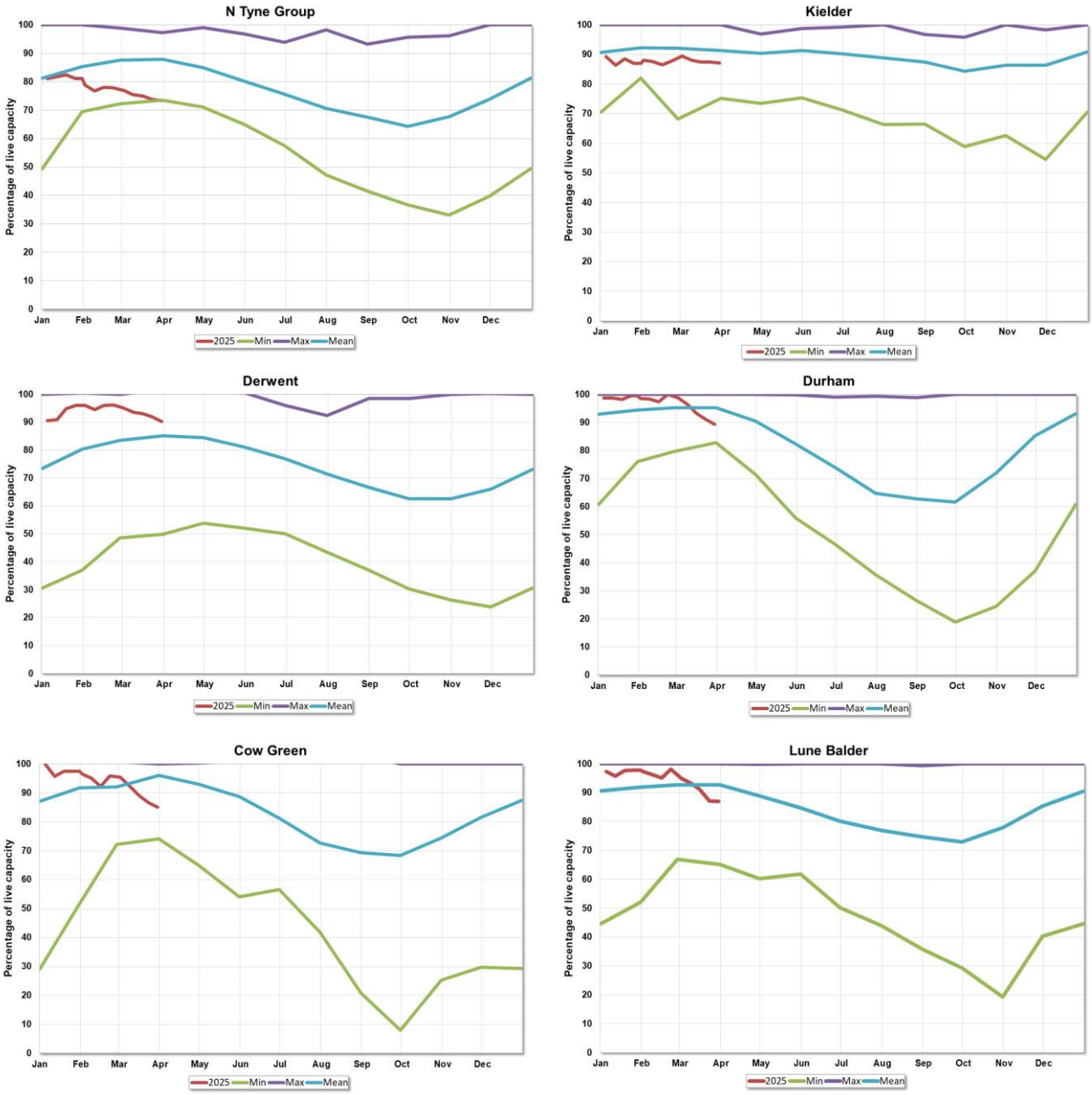
Figure 5.2: End of month groundwater levels at index groundwater level sites for major aquifers in the North East. 12 months compared to an analysis of historic end of month levels.



Source: Environment Agency, 2025.

6 Reservoir stocks

Figure 6.1: End of month 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 March this is partly due to drawdown for reservoir safety works.



(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	Mar 2025 rainfall % of long term average 1961 to 1990	Mar 2025 band	Jan 2025 to March cumulative band	Oct 2024 to March cumulative band	Apr 2024 to March cumulative band
Northumbria North Sea Tribs	38	Notably Low	Notably low	Below normal	Normal
Seaham Area	53	Normal	Below normal	Below normal	Normal
Tees	39	Notably Low	Notably low	Below normal	Normal
Tweed	33	Notably Low	Notably low	Below normal	Normal
Tyne	38	Exceptionally Low	Exceptionally low	Notably low	Normal
Wear	38	Notably Low	Notably low	Below normal	Normal

8.2 River flows table

Site name	River	Catchment	Mar 2025 band	Feb 2025 band
Hartford Bridge	Blyth	Blyth	Below normal	Normal
Haydon Bridge	South Tyne	South Tyne	Notably low	Below normal
Heaton Mill	Till	Till	Below normal	Normal
Middleton In Teesdale	Tees	Tees	Normal	Below normal
Mitford	Wansbeck	Wansbeck		
Rothbury	Coquet	Coquet	Below normal	Normal
Rutherford Bridge	Greta	Greta	Normal	Normal
Witton Park	Wear	Wear	Normal	Normal

8.3 Groundwater table

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