

Monthly water situation report: North East

1 Summary – January 2025

January rainfall totals were classed as below average. The highest totals were recorded on the 5 January. Monthly river flows decreased this month at three of the indicator sites (Rothbury, Haydon Bridge, and Middleton) and fall within the below normal and normal ranges. Groundwater levels vary across the area and generally remain above normal due to high rainfall recorded in previous months. Soil moisture deficit (SMD) data still shows wet soils across the area. Reservoirs in the area have either seen an increase, or very minor decrease in stocks this month and remain healthy for the time of year.

1.1 Rainfall

Monthly rainfall totals were classed as below the long term average (LTA) for all catchments across the area, with totals in all catchments falling within normal or below normal categories. Monthly totals ranged from 61% of the LTA in the Tyne catchment to 94% of the LTA in the Seaham catchment.

Analysis of the daily rainfall shows higher rainfall totals at the start and end of the month for most of the North East area, with the highest totals recorded on 5 January with a peak of 39mm recorded in the Northumbria North Sea Tribs catchment. Much of this fell as snow across the area, which melted quickly at the coast but lingered over higher ground for several days. The Tyne catchment recorded a slightly different rainfall pattern, with the highest totals recorded in the middle of the month. This may have been a result of snowmelt.

The cumulative 3-month rainfall totals are in the below normal range for all catchments.

1.2 Soil moisture deficit and recharge

Soils are classed as wet with less than 10mm of soil moisture deficit across the area.

1.3 River flows

Monthly mean river flows have decreased this month at three indicator sites (Rothbury, Haydon Bridge, and Middleton) and all fall within the normal or below normal ranges. Monthly mean flows ranged from 66% of the LTA at Middleton in Teesdale on the River Tees and

Heaton Mill on the River Tweed, and 90% of the LTA at Rutherford Bridge on the River Greta and Hartford bridge on the River Blyth.

Analysis of the daily mean flows shows that flows at the beginning of the month were in the higher ranges, following the large rainfall totals recorded at the end of December. The rainfall at the start of January didn't impact most rivers, with normal and below normal recorded until the middle of the month. This was likely due to the precipitation falling as snow. On the 12 and 13 January notably and exceptionally high flows were recorded at most indicator sites, with the exception of Hartford Bridge. This was likely due to snow melt over high ground. Flows went back to normal and below normal until the end of the month where higher totals were recorded at Hartford bridge, Rothbury, Rutherford bridge, and Witton Park.

1.4 Groundwater levels

Groundwater levels vary across the area. Levels in the West Hall Farm borehole in the Wear Magnesian Limestone decreased and are now in the notably high range. Royal Observation in the Fell sandstone and Aycliffe NRA2 in the Skerne Magnesian Limestone fall within the above normal range. Red Lion in the Skerne Magnesian Limestone and Town Law in the Fell Sandstone fall within the normal ranges for January.

1.5 Reservoir stocks

Reservoirs in the area have either seen an increase, or very minor decrease in stocks this month. Stocks in the Durham group, Lune and Balder Group and Cow Green reservoir ended the month above 90% full. All reservoirs ended the month above 80% full. Overall, reservoir stocks remain healthy for the time of year.

Reservoir or reservoir group	Percentage of current stocks	Percentage of previous month stocks
Kielder	87	87.3
North Tynedale group	81	80
Derwent	96	87.2

Durham group	99.6	96.6
Lune and Balder group	97.8	97.4
Cow Green	97.4	98.1

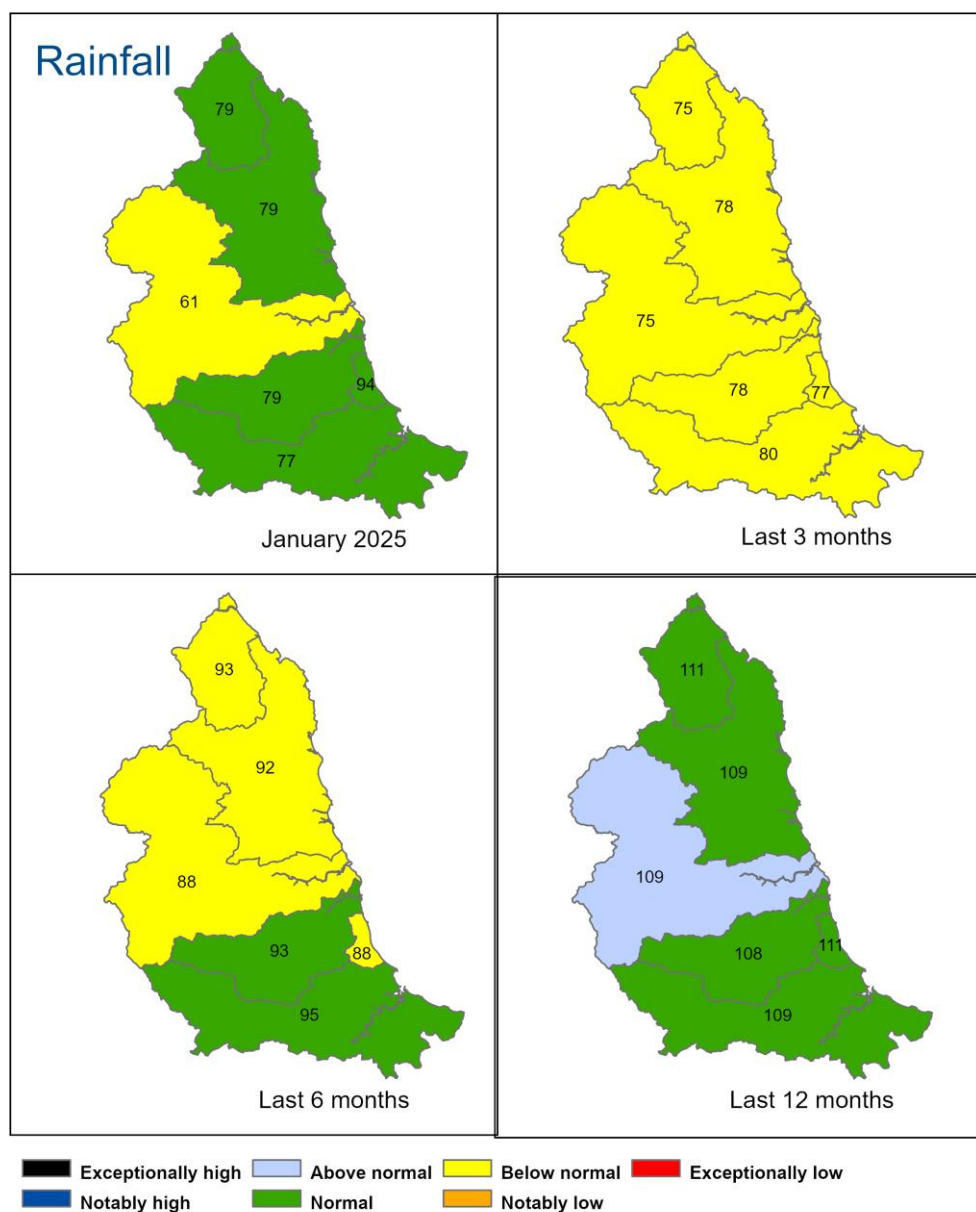
Author: GWHCL North East, hydrology.northeast@environment-agency.gov.uk

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2 Rainfall

2.1 Rainfall map

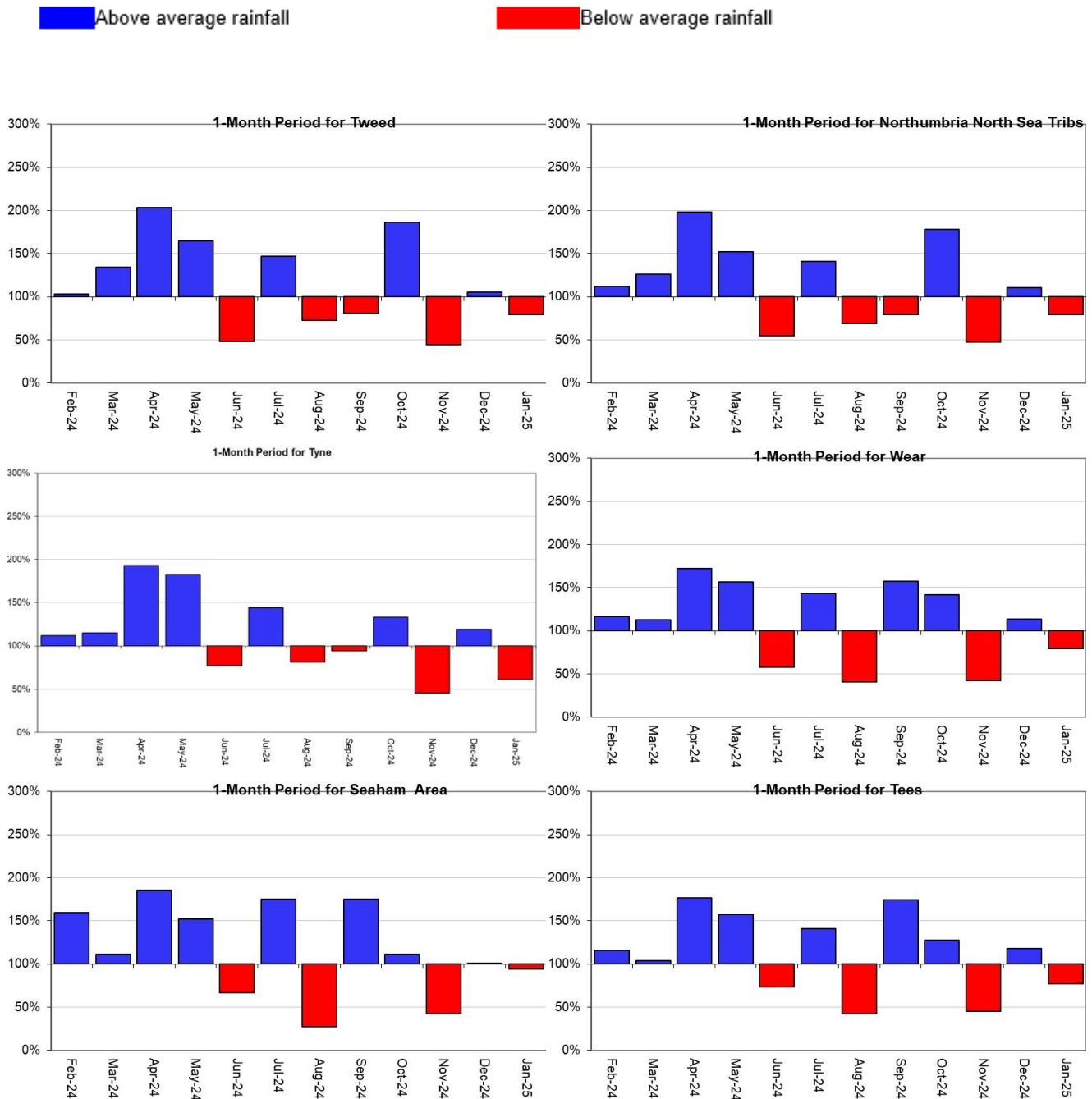
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 31 January 2025), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. January rainfall totals were classed as normal for the majority of the area. The exception is the Tyne catchment which was classed as below normal. 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. Monthly totals are classed as below average for all catchments for January.



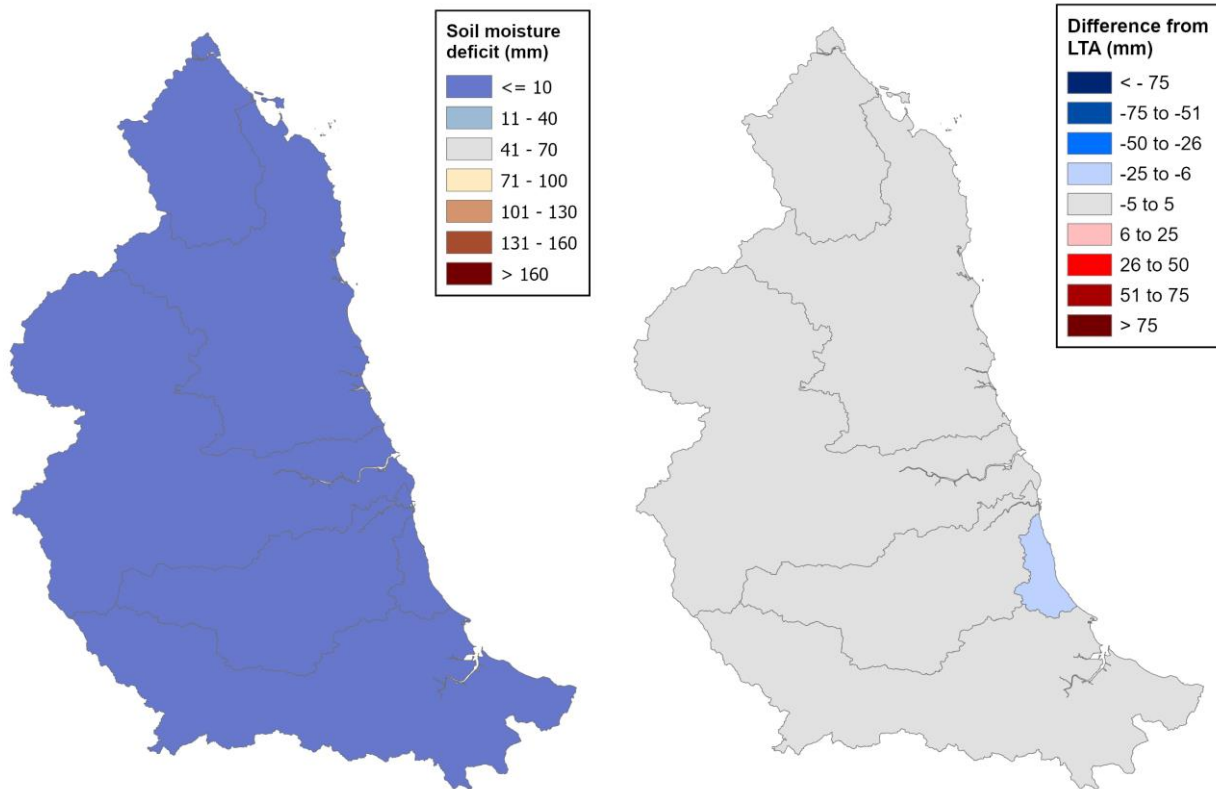
Rainfall data for 2025, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown

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: Map to the left shows soil moisture deficits for week ending 31 January. 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 soil moisture deficit across the area.

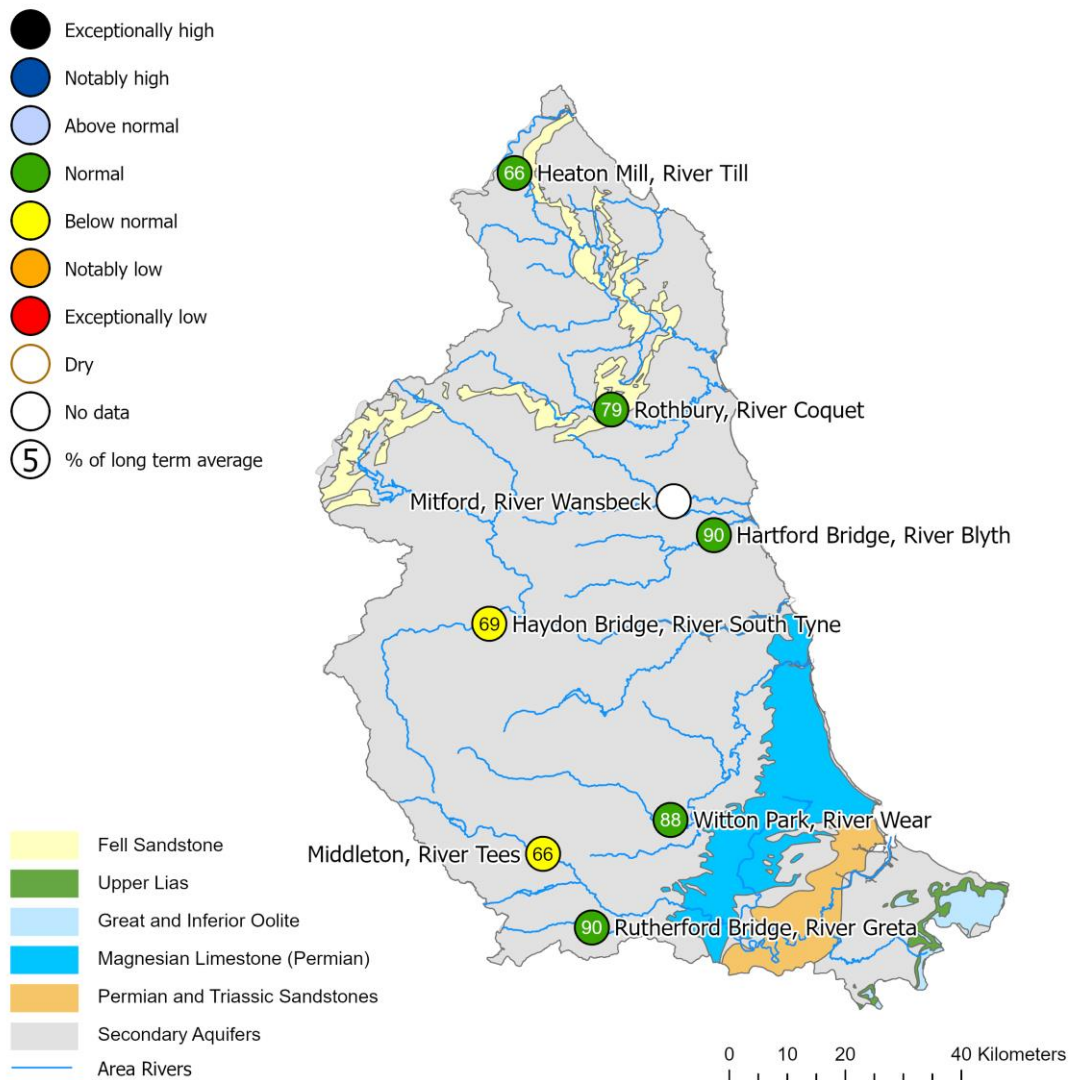


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4 River flows

4.1 River flows map

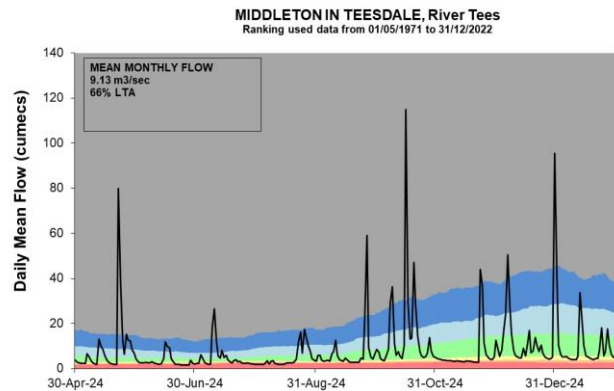
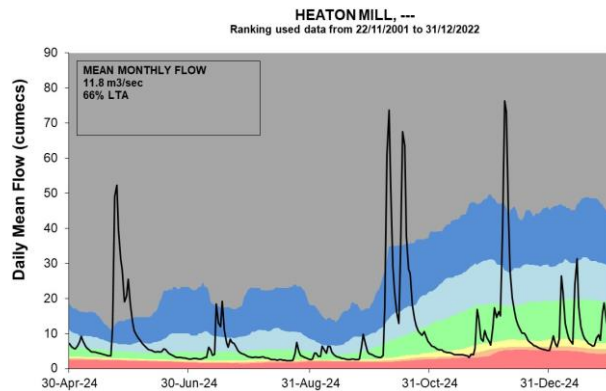
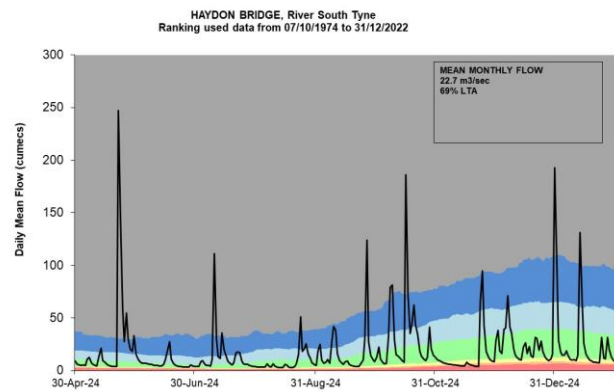
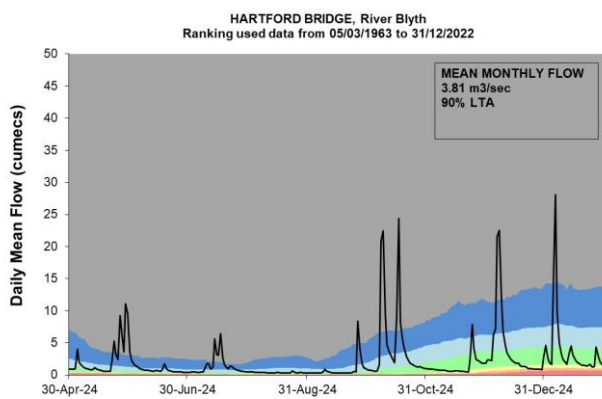
Figure 4.1: Monthly mean river flow for indicator sites for January 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic January monthly means. Monthly means are classed as normal at all indicator sites across the area with the exception of Haydon Bridge on the South Tyne and Middleton on the River Tees which are classed as below normal. 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.

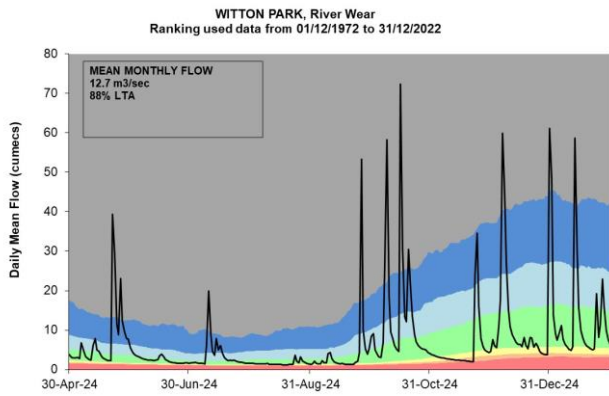
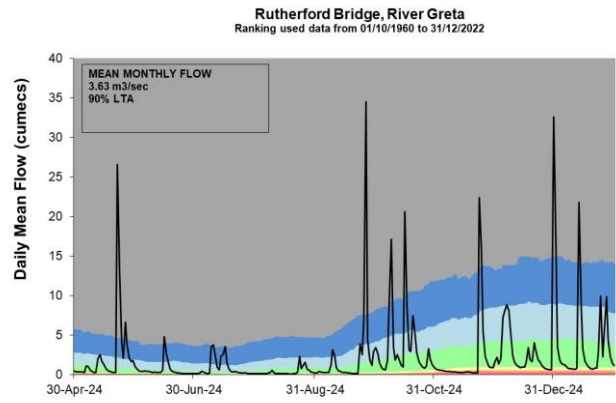
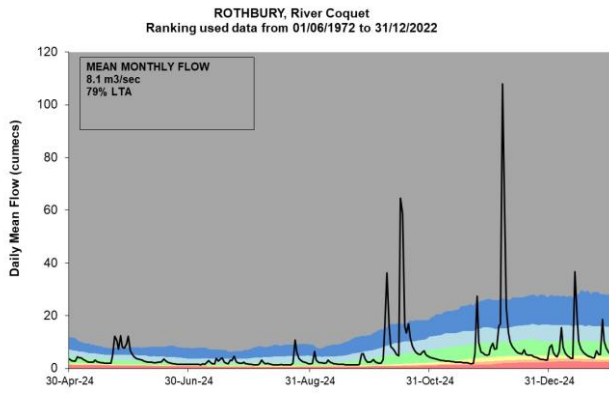


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4.2 River flow charts

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. There are ongoing data quality issues at Mitford on the River Wansbeck with no data from October 2023 onwards, as such the graph is excluded below.



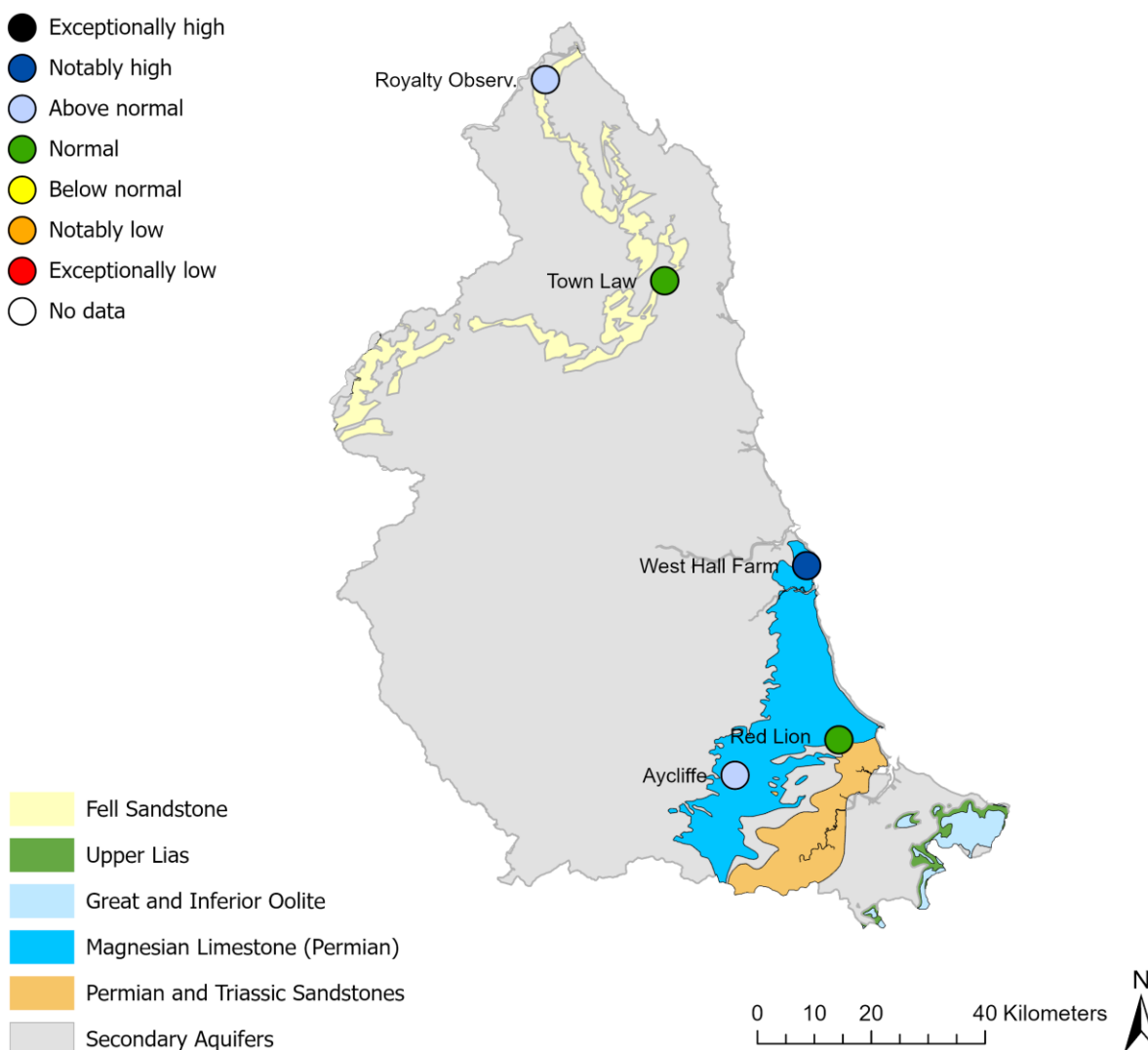


Source: Environment Agency, 2025.

5 Groundwater levels

5.1 Groundwater levels map

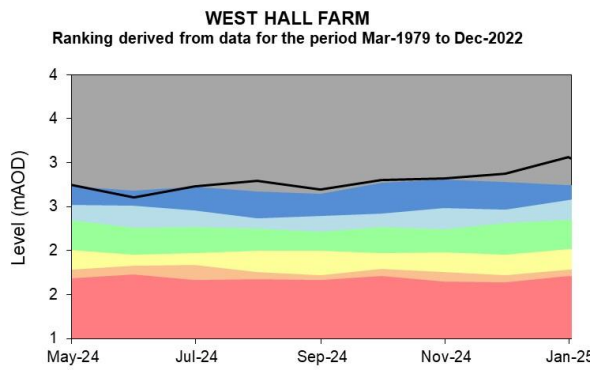
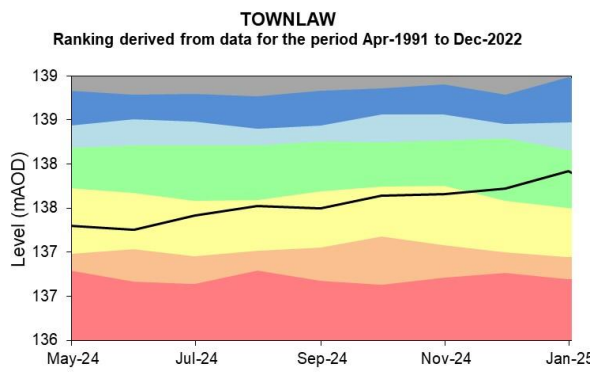
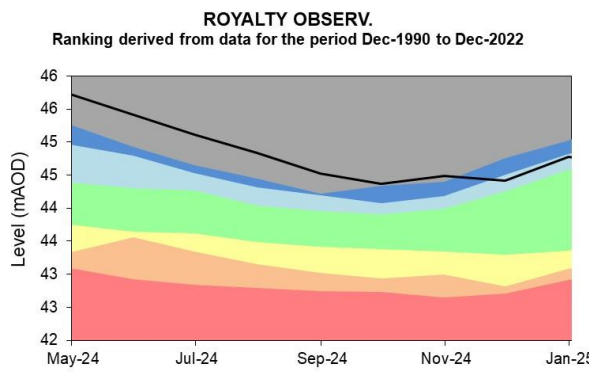
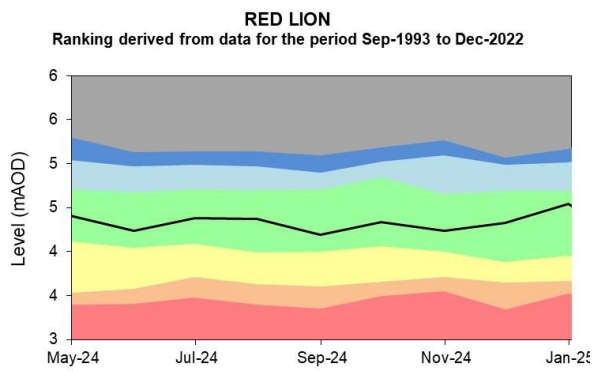
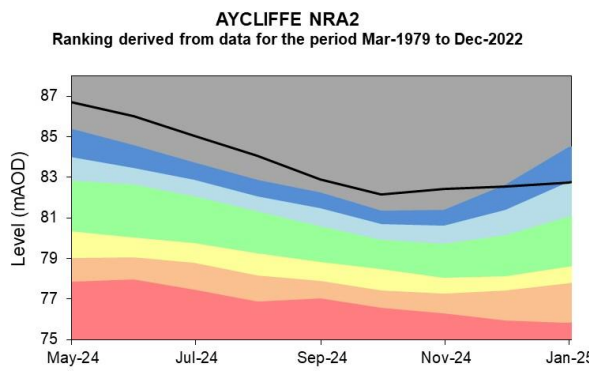
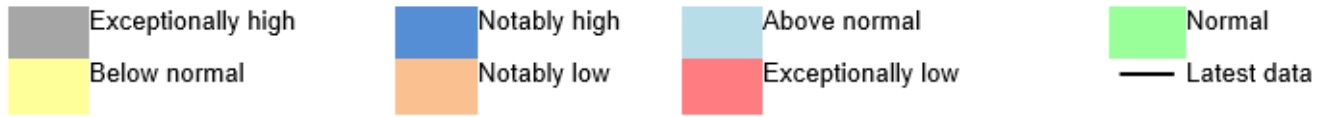
Figure 5.1: Groundwater levels for indicator sites at the end of January 2025, classed relative to an analysis of respective historic January levels. Groundwater levels are classed as notably high at West Hall Farm on the Magnesian Limestone, as above normal at Aycliffe and normal at Red lion. In the north of the area Town Law is classed as normal and Royalty Observation is classed as above normal on the Fell Sandstone. 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

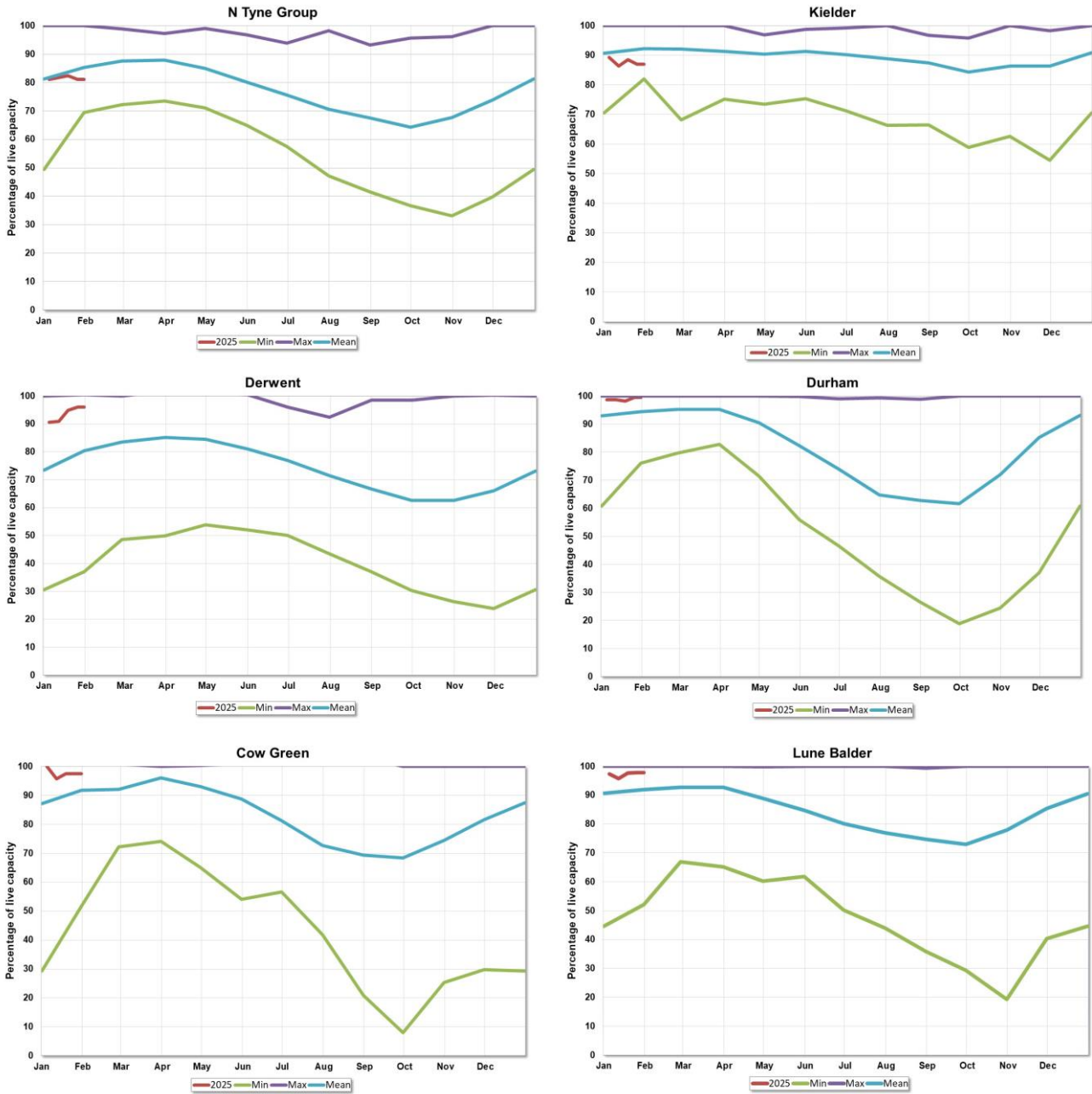
Figure 5.2: End of month groundwater levels at index groundwater level sites for major aquifers in the North East. 12 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.



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 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	January 2025 rainfall % of long term average 1961 to 1990	January 2025 band	November 2024 to January 2025 cumulative band	August 2024 to January 2025 cumulative band	February 2024 to January 2025 cumulative band
Northumbria North Sea Tribs	79	Normal	Below normal	Below normal	Normal
Seaham Area	94	Normal	Below normal	Below normal	Normal
Tees	77	Normal	Below normal	Normal	Normal
Tweed	79	Normal	Below normal	Below normal	Normal
Tyne	61	Below Normal	Below normal	Below normal	Above normal
Wear	79	Normal	Below normal	Normal	Normal

8.2 River flows table

Site name	River	Catchment	January 2025 band	December 2024 band
Hartford Bridge		Blyth	Normal	Normal
Haydon Bridge		South Tyne	Below normal	Normal
Heaton Mill		Till	Normal	Normal
Middleton In Teesdale		Tees	Below normal	Normal
Mitford		Wansbeck		
Rothbury		Coquet	Normal	Above normal
Rutherford Bridge		Greta	Normal	Normal
Witton Park		Wear	Normal	Normal

8.3 Groundwater table

Site name	Aquifer	End of January 2025 band	End of November 2024 band
Aycliffe Nra2	Skerne Magnesian Limestone	Above normal	Above normal
Red Lion	Skerne Magnesian Limestone	Normal	Normal
Royalty Observ.	Till Fell Sandstone	Above normal	Above normal
Townlaw	Till Fell Sandstone	Normal	Normal
West Hall Farm	Wear Magnesian Limestone	Notably high	Exceptionally high