# Monthly water situation report: Yorkshire Area

## 1 Summary - March 2025

Rainfall was below normal for most of March 2025 and continued the pattern of the previous three months. River flows were below normal for the time of year and in a number of Pennine catchments were exceptionally low for the time of year. However, soils remained wet and groundwater levels followed their normal seasonal trend. Reservoir stocks were below average for the time of year.

### 1.1 Rainfall

Rainfall totals for March were lower than normal across Yorkshire which reflected a month in which many locations had a large number of days without any recorded precipitation.

Monthly rainfall totals across Yorkshire were classified as below normal in the Ouse, Rye, upper and lower Derwent, Don, Hull and Humberside catchments. They were notably low in the Swale, Ure, Nidd, Wharfe, Aire and Calder. Monthly rainfall totals across Yorkshire were between 32% and 49% of the long term average (LTA).

During the month many rain gauges recorded more than 17 days without rainfall although in the Don and Rother catchments there were only 6 days without any recorded rainfall. There were two short wet periods during the month. On days 13 and 14 in the Esk and a more widespread event across Yorkshire on days 22 and 23. Larger rainfall totals were recorded on day 22 in the Don and Rother catchments than elsewhere. A rain gauge in the Don catchment recorded 30mm of rain on day 22 which was 62% of the LTA.

### 1.2 Soil moisture deficit

Across Yorkshire soils remained wet but were no longer saturated. This reflected the low evaporation rates normal for late winter and early spring.

### 1.3 River flows

Monthly mean river flows in all catchments across Yorkshire were below normal for the time of year and varied from 24% to 79% of the LTA. In some Pennine catchments, such as the Swale, Ure, Ouse, Wharfe, and Calder, the monthly mean river flows were either exceptionally or notably low with flows less than 40% of the LTA. The southern Pennine catchments of the

Don and Rother had monthly mean flows that were notably low and between 40% to 50% of LTA. Elsewhere the pattern was more mixed with flows that ranged from below normal to notably low and between 50% to 79% of their LTA monthly flow.

In the Pennine catchments flows steadily decreased from the start of the month until day 21, with more than 11 days of continuously notable or exceptional low flows in all catchments. Flows temporarily increased to within normal range on day 22 and 23 in response to a short period of rainfall, but then rapidly declined until the end of the month.

In the Esk, flows remained below normal range for the first 12 days and then, in response to rainfall, briefly increased to above normal range on day 13 and 14. Flows then receded and maintained within normal range for the rest of the month.

In the Derwent and the Rye flows remained within the below normal range for most of the days within the month with very little change.

In the chalk catchments of the West Beck and the upper Hull, spring supported river flows slowly declined from day 1 to 27. Flows reached the below normal range from day 18.

## 1.4 Groundwater levels

**Magnesian Limestone**

The groundwater level within the Magnesian Limestone at Brick House Farm decreased this month but remained notably high for the time of year.

**Millstone Grit**

The groundwater level decreased within the Millstone Grit at Hill Top Farm to notably low for the time of year. However, the groundwater level recorded here may affected by pumping from the borehole for water abstraction.

**Sherwood Sandstone**

The groundwater level in the Sherwood Sandstone at Great Ouseburn decreased to above normal for the time of year. Groundwater levels also decreased at Riccall Approach Farm but remained normal for the time of year.

**Corallian Limestone**

The groundwater level decreased within the Corallian Limestone at Sproxton to below normal for the time of year.

**Chalk**

The groundwater level decreased at Wetwang (northern Yorkshire Wolds chalk) to below normal for the time of year, and at Dalton Estate (central Yorkshire Wolds chalk) levels decreased to normal for the time of year.

## 1.5 Reservoir stocks

Reservoir stocks were near full in the first week and then reduced gradually over the next three weeks. By the second week of the month reservoir stocks had fallen to below the long term average for March.

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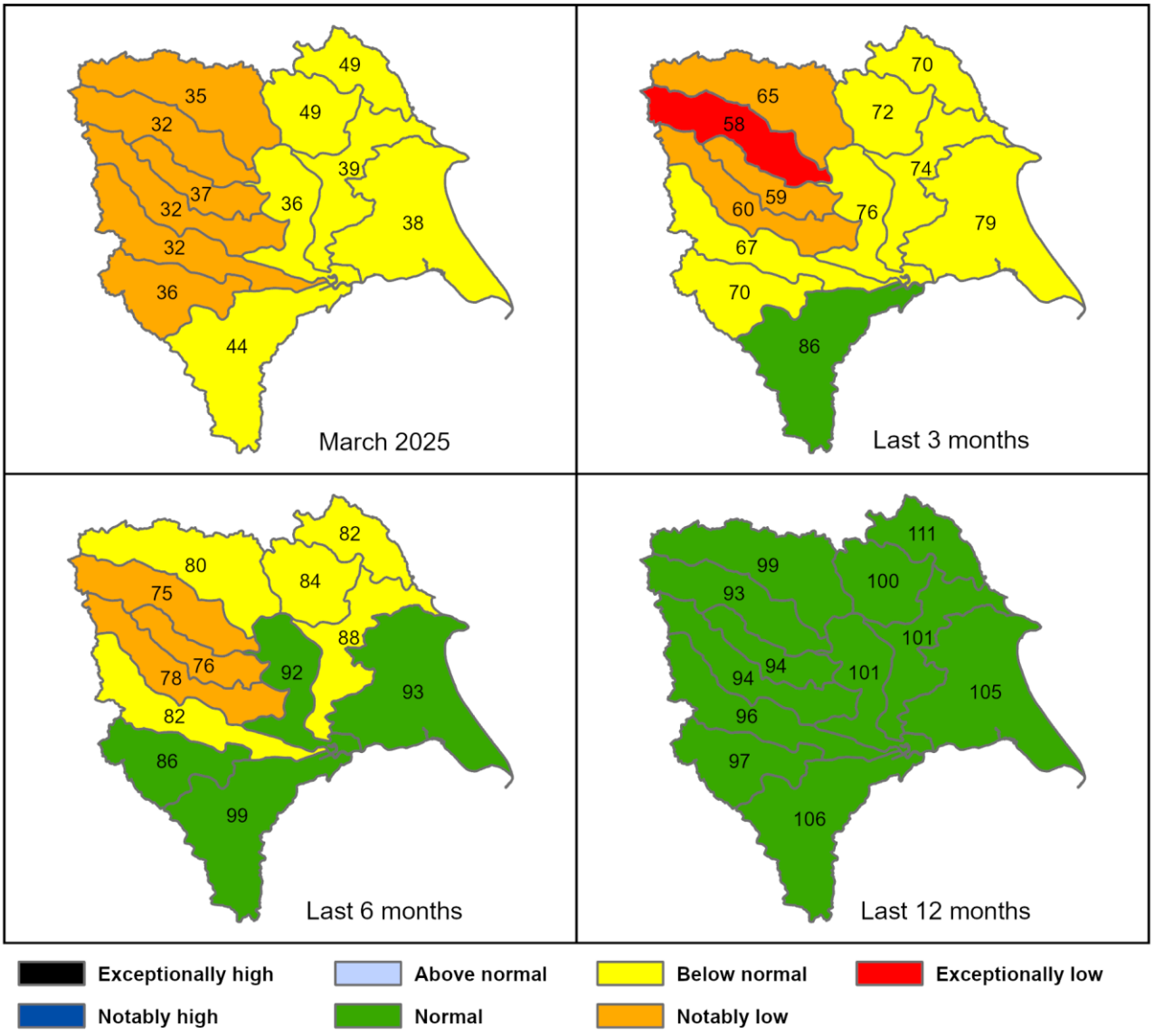
# 2 Rainfall

## 2.1 Rainfall map

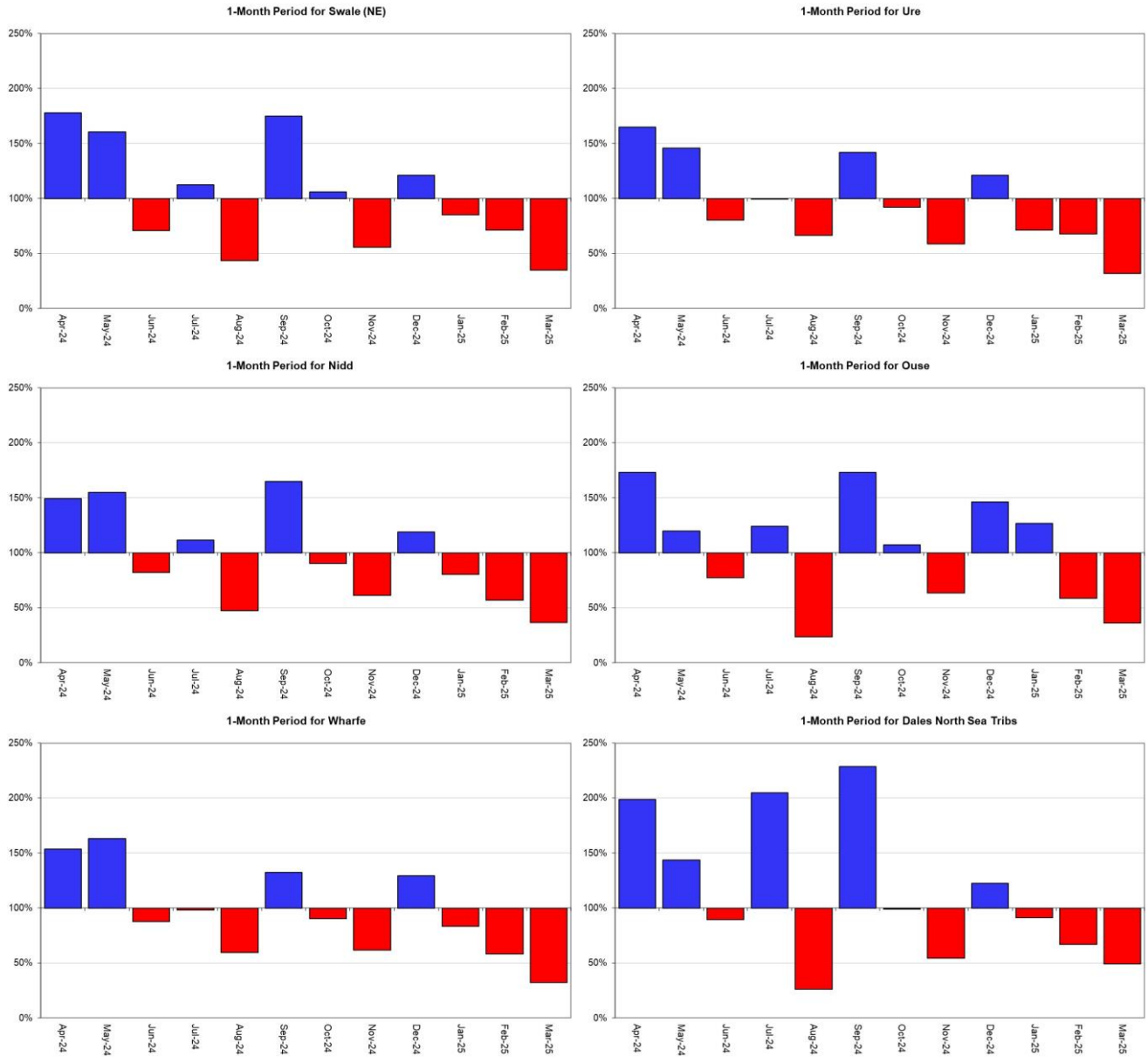
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 31 March 2025), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

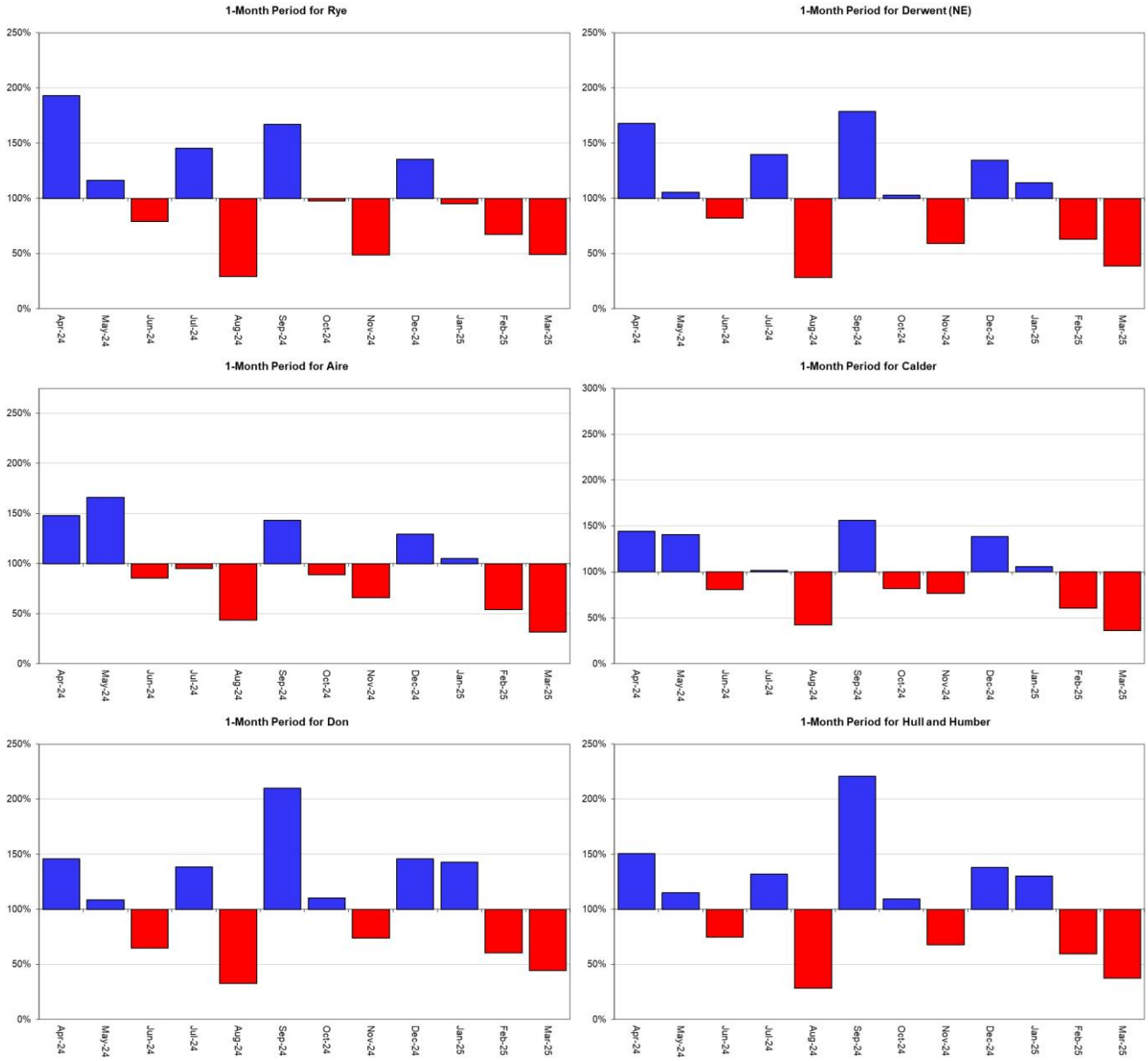



HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2025). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Crown copyright. All rights reserved.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



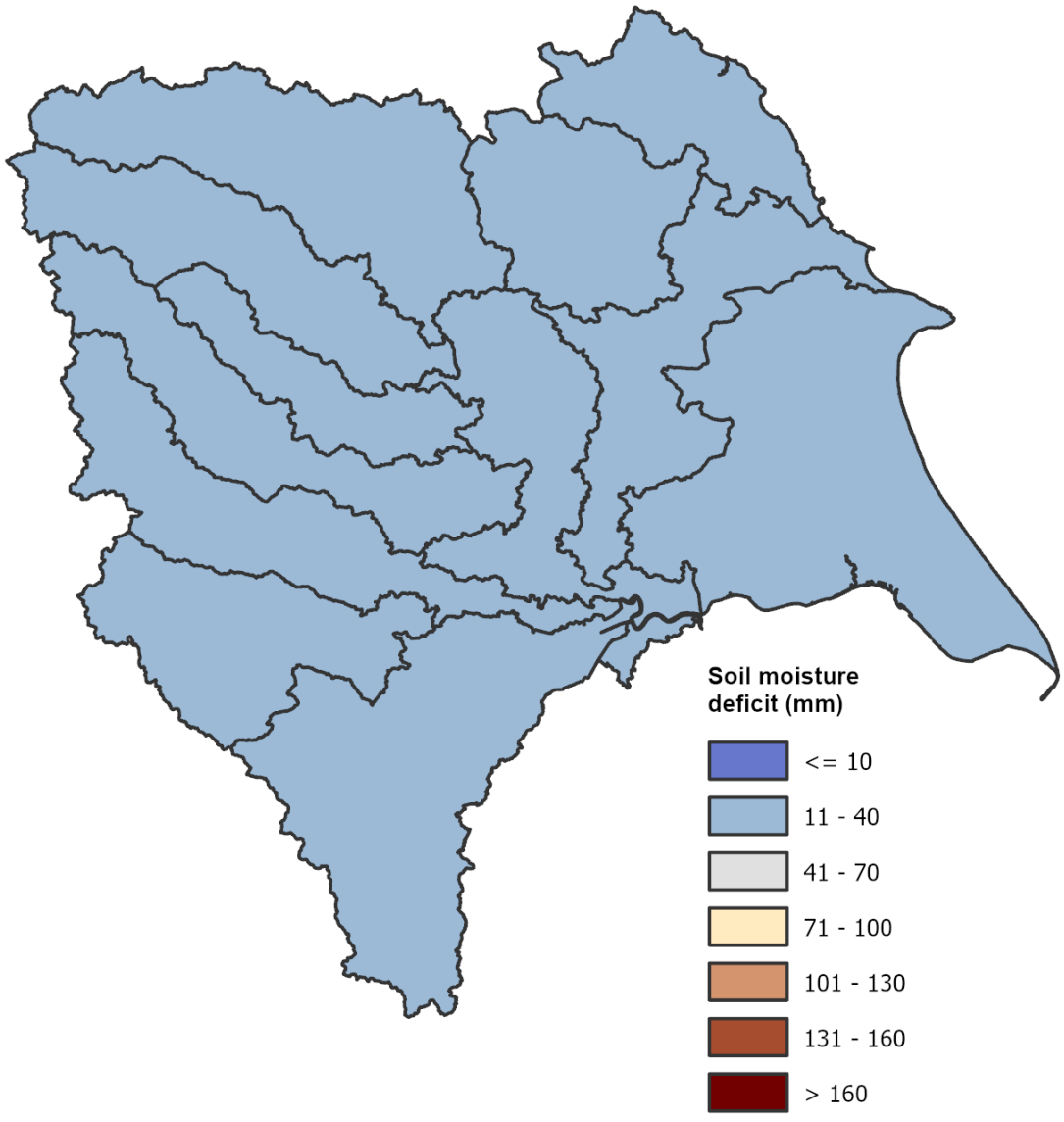



Rainfall data for October 2023 onwards, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to October 2023, extracted from Met Office HadUK 1km gridded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

# 3 Soil moisture deficit

## 3.1 Soil moisture deficit map

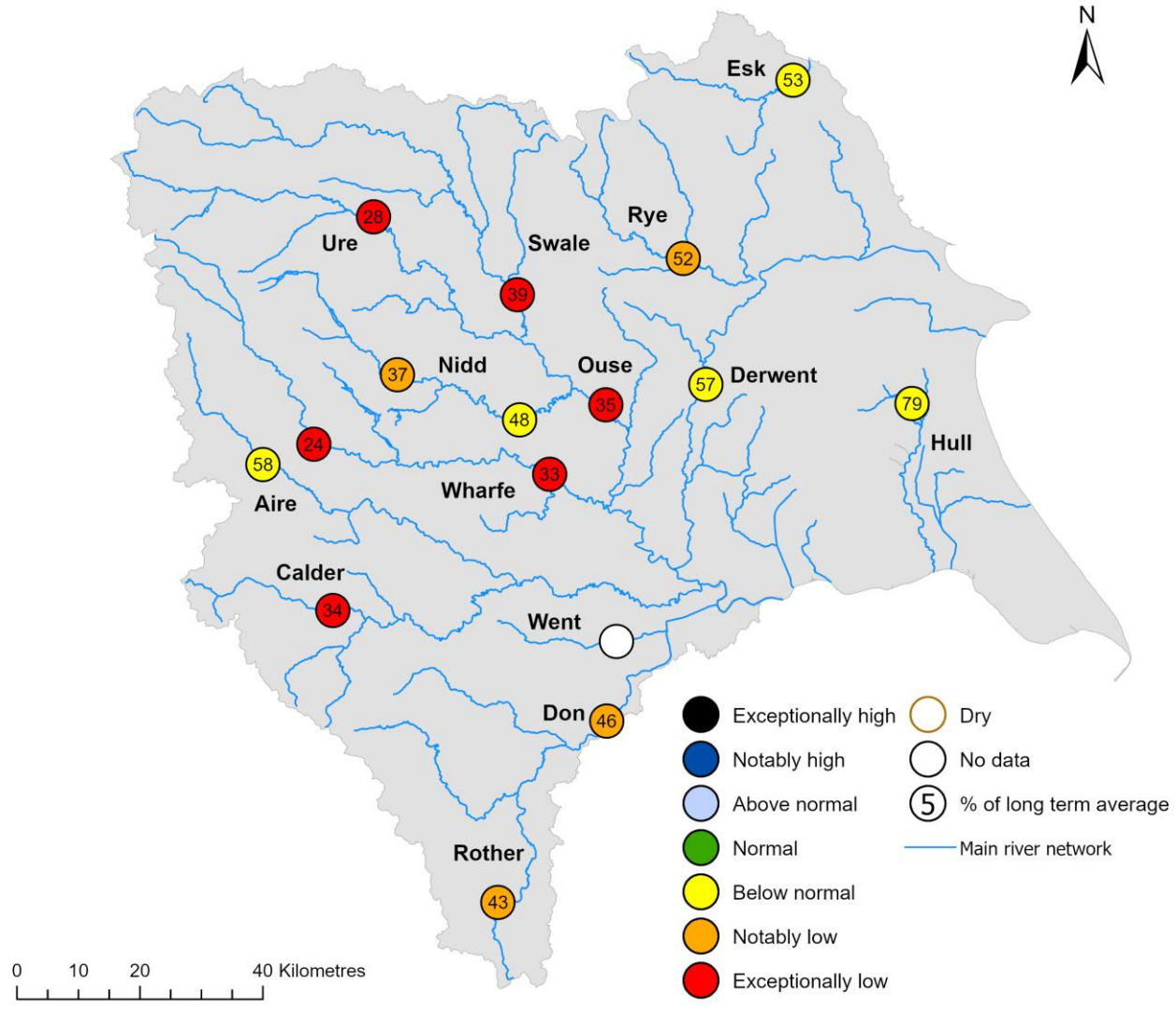
Figure 3.1: Soil moisture deficits for weeks ending 31 March 2025. Shows the difference (mm) of the actual soil moisture deficit from the 1961 to 1990 long term average soil moisture deficits. MORECS data for real land use.



# 4 River flows

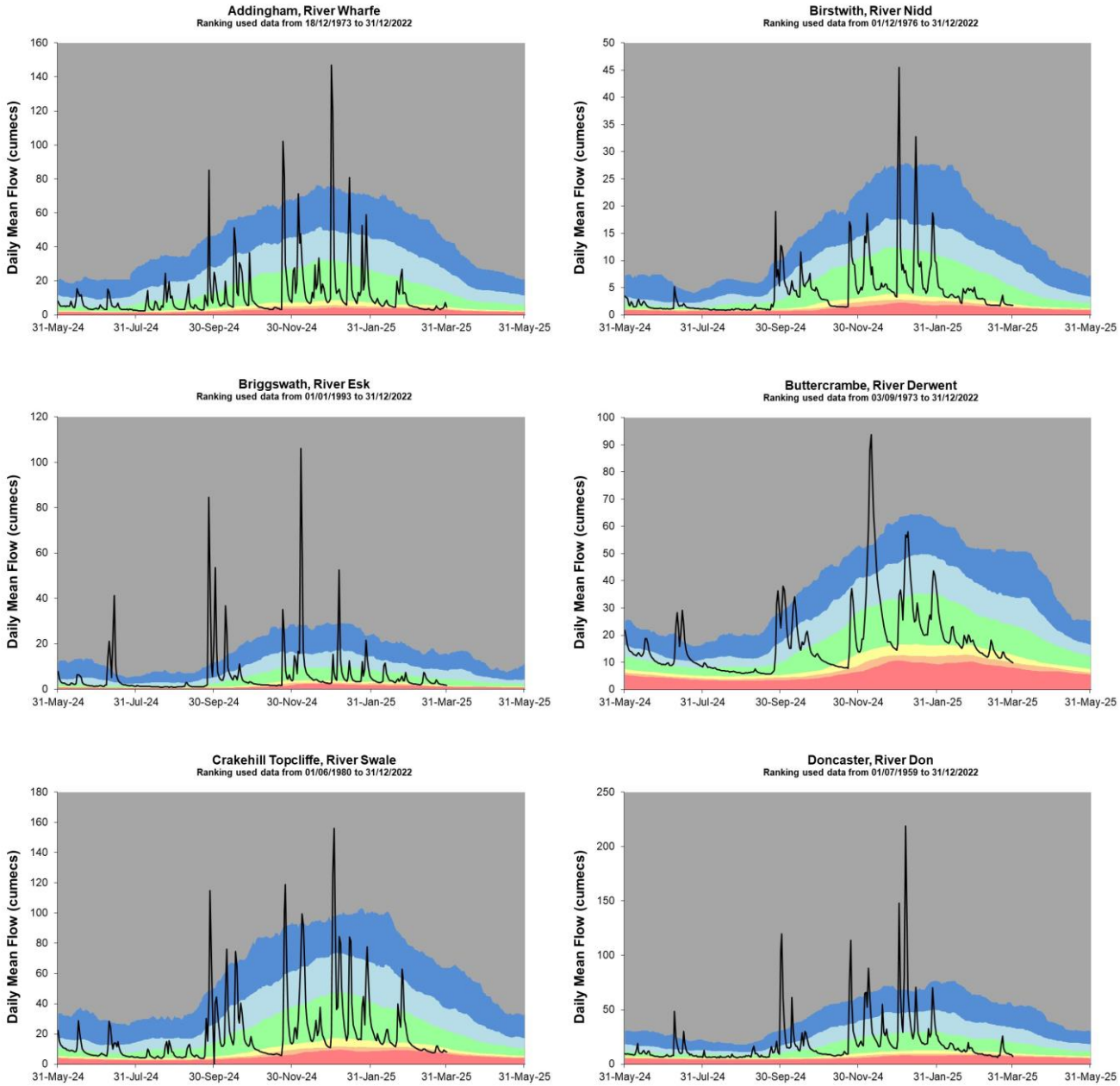
## 4.1 River flows map

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

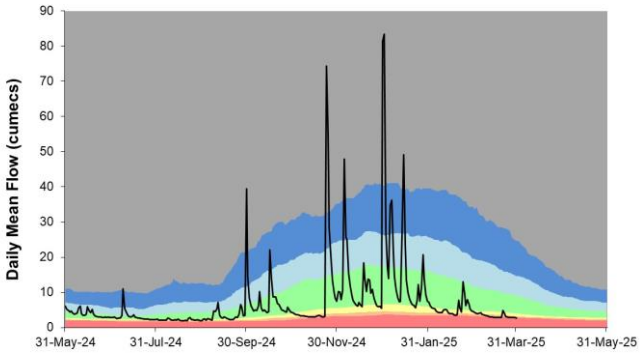


## 4.2 River flow charts

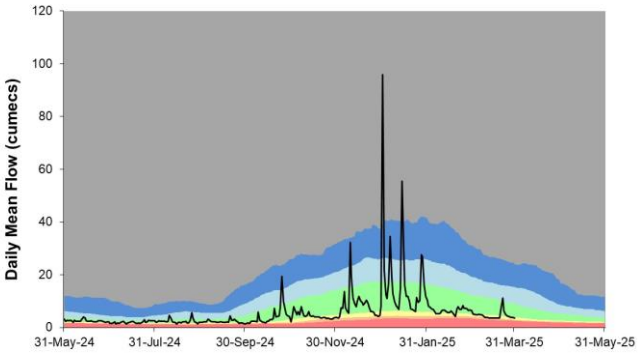
Figure 4.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows.



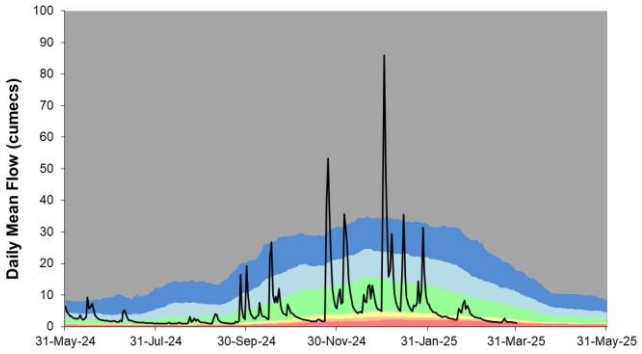
**Elland, River Calder**
Ranking used data from 01/07/1971 to 31/12/2022



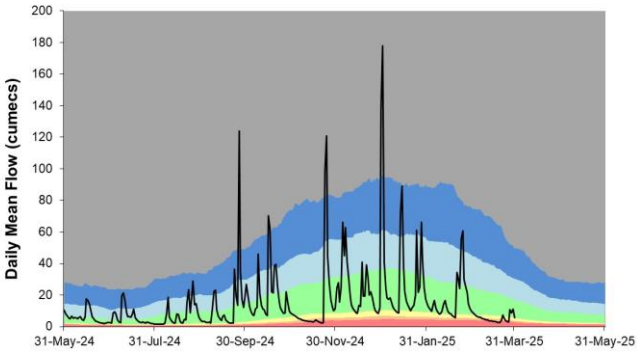

**Hunsingore, River Nidd**
Ranking used data from 01/10/1968 to 31/12/2022



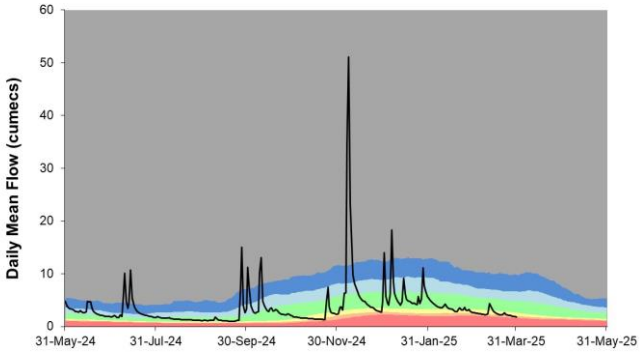

**Kildwick, River Aire**
Ranking used data from 01/08/1971 to 31/12/2022



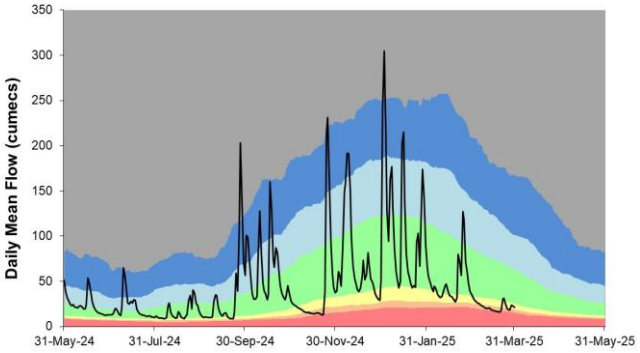

**Kilgram Bridge, River Ure**
Ranking used data from 01/08/1971 to 31/12/2022

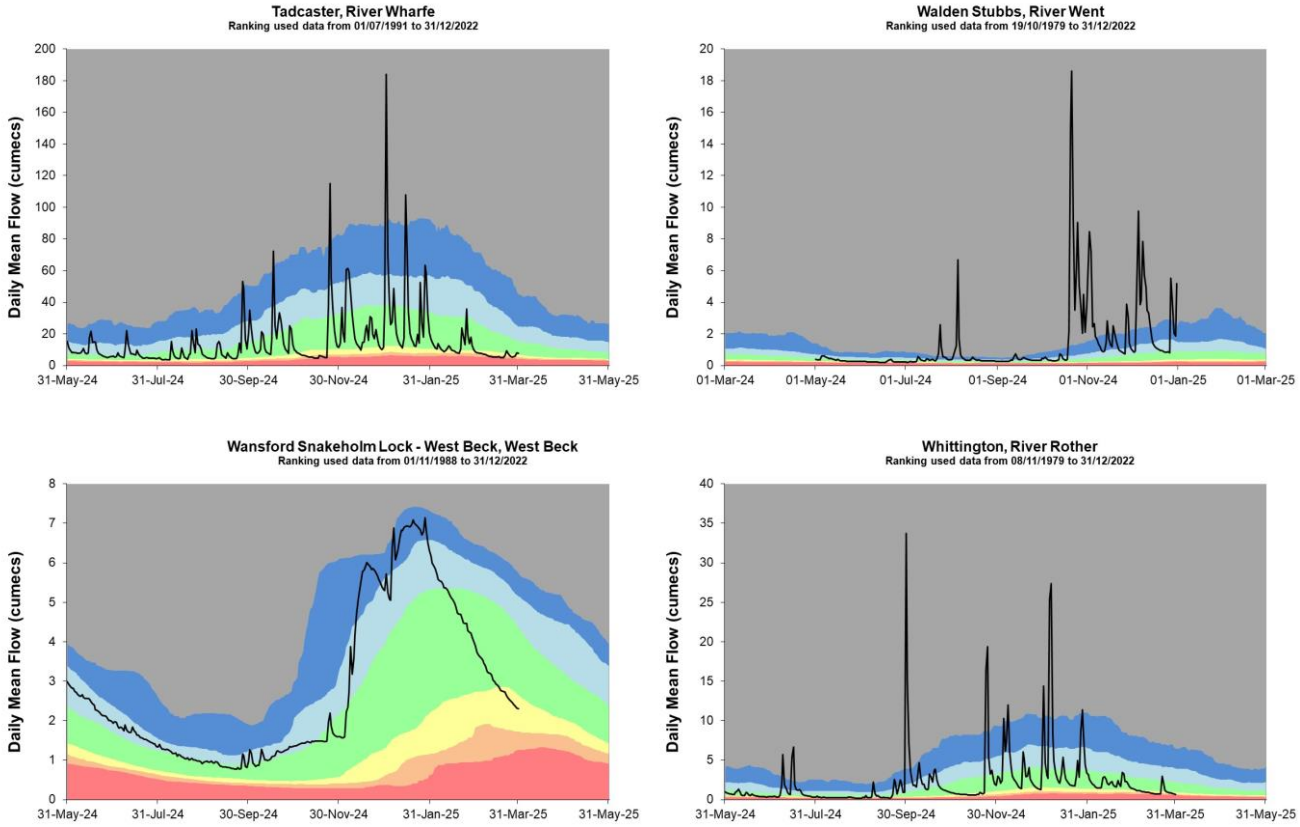



**Ness, River Rye**
Ranking used data from 01/09/1974 to 31/12/2022




**Skelton, River Ouse**
Ranking used data from 18/09/1969 to 31/12/2022

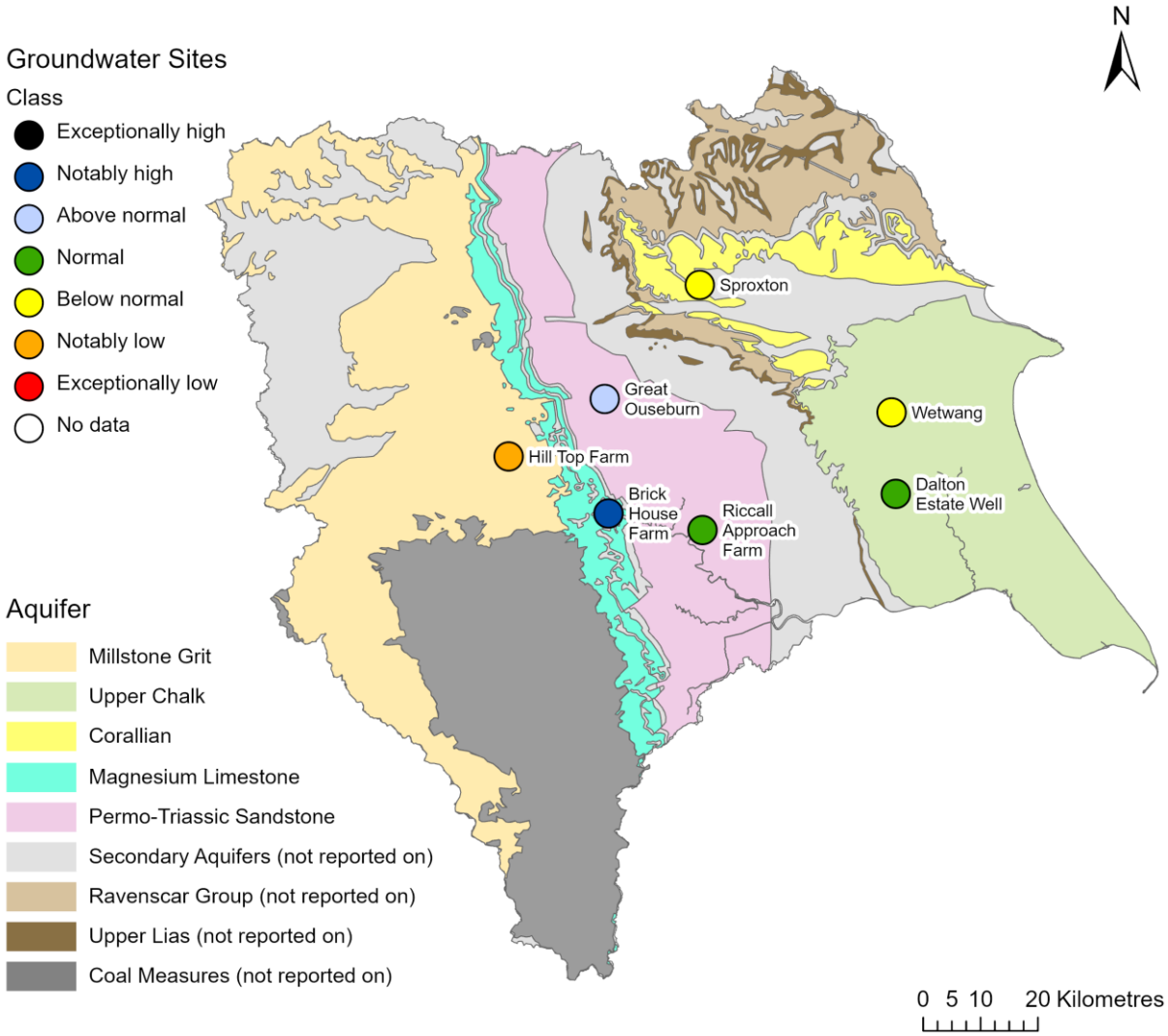




# 5 Groundwater levels

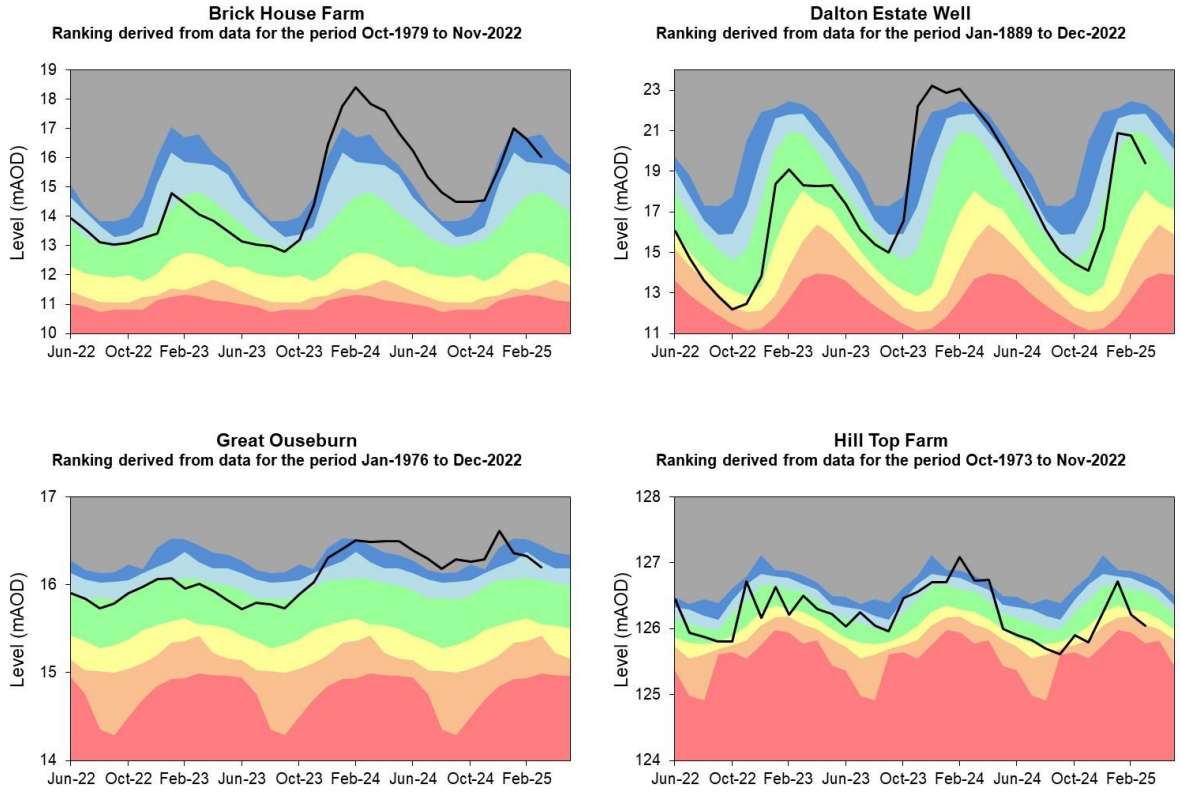
## 5.1 Groundwater levels map

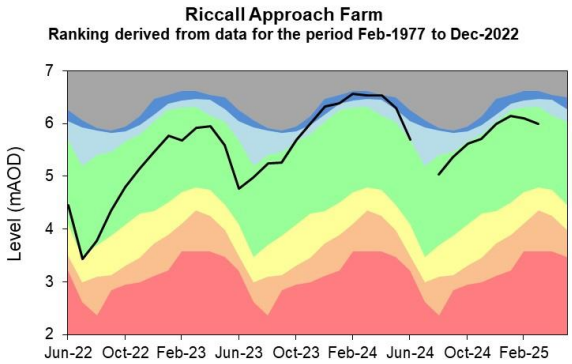
Figure 5.1: Groundwater levels for indicator sites at the end of March 2025, classed relative to an analysis of respective historic March levels. Table available in the appendices with detailed information.

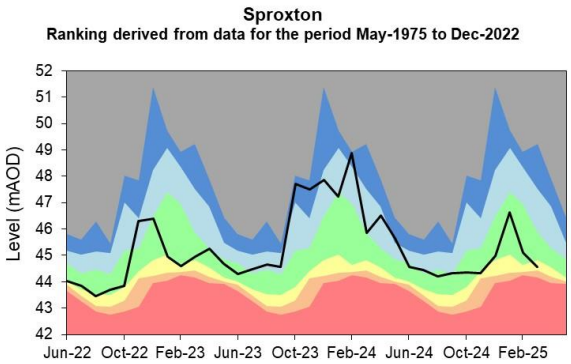


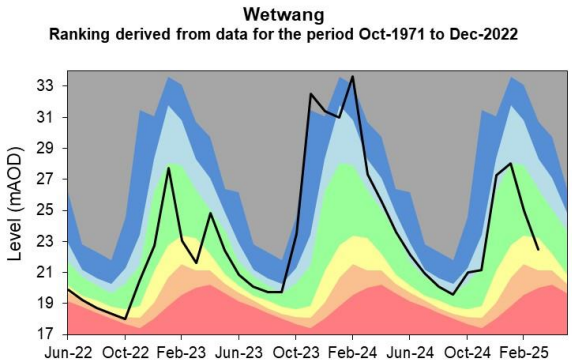
## 5.2 Groundwater level charts

Figure 5.2: End of month groundwater levels at index groundwater level sites for major aquifers. 22 months compared to an analysis of historic end of month.





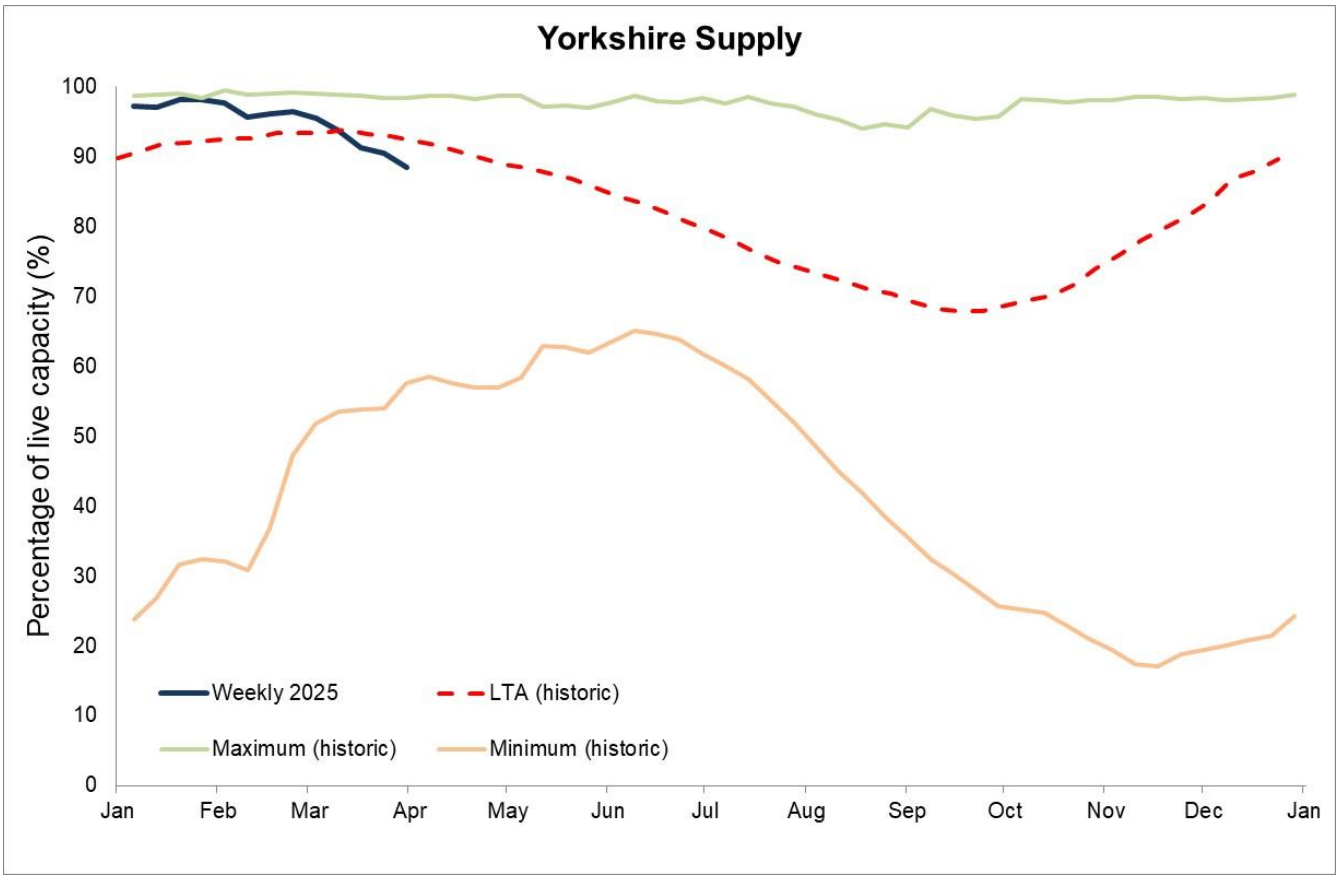




 N.B. Hill Top Farm observation borehole is used for abstraction. Therefore the groundwater level record will be directly affected by pumping

# 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 making up the regional values vary in length.



# 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 |
|---|---|---|---|---|---|
| Aire | 32 | Notably low | Below normal | Below normal | Normal |
| Calder | 36 | Notably low | Below normal | Normal | Normal |
| Dales North Sea Tribs | 49 | Below normal | Below normal | Below normal | Normal |
| Derwent (ne) | 39 | Below normal | Below normal | Below normal | Normal |
| Don | 45 | Below normal | Normal | Normal | Normal |
| Hull And Humber | 38 | Below normal | Below normal | Normal | Normal |
| Nidd | 37 | Notably low | Notably low | Notably low | Normal |
| Ouse | 36 | Below normal | Below normal | Normal | Normal |
| Rye | 49 | Below normal | Below normal | Below normal | Normal |
| Swale (ne) | 35 | Notably low | Notably low | Below normal | Normal |
| Ure | 32 | Notably low | Exceptionally low | Notably low | Normal |

| | | | | | |
|---|---|---|---|---|---|
| Wharfe | 32 | Notably low | Notably low | Notably low | Normal |

## 8.2 River flows table

| Site name | River | Catchment | Mar 2025 band | Feb 2025 band |
|---|---|---|---|---|
| Addingham | Wharfe | Wharfe Middle | Exceptionally low | Below normal |
| Birstwith | Nidd | Nidd Middle | Notably low | Below normal |
| Briggswath | Esk | Esk Yorks | Below normal | Below normal |
| Buttercrambe | Derwent | Derwent Yorks Middle | Below normal | Below normal |
| Crakehill Topcliffe | Swale | Swale Lower | Exceptionally low | Normal |
| Doncaster | Don | Don Lower | Notably low | Normal |
| Elland | Calder | Calder Yorks Upper | Exceptionally low | Notably low |
| Hunsingore | Nidd | Nidd Lower | Below normal | Below normal |
| Kildwick | Aire | Aire Upper | Below normal | Normal |
| Kilgram Bridge | Ure | Ure Middle | Exceptionally low | Normal |
| Ness | Rye | Rye | Notably low | Below normal |
| Skelton | Ouse | Ouse Yorks | Exceptionally low | Normal |
| Tadcaster | Wharfe | Wharfe Lower | Exceptionally low | Below normal |

| | | | | |
|---|---|---|---|---|
| Walden Stubbs | Went | Don Lower | | |
| Wansford Snakeholm Lock | West Beck | Hull Upper | Below normal | Normal |
| Whittington | Rother | Rother Yorks | Notably low | Normal |

## 8.3 Groundwater table

| Site name | Aquifer | End of Mar 2025 band | End of Feb 2025 band |
|---|---|---|---|
| Brick House Farm | Wharfe Magnesian Limestone | Notably high | Notably high |
| Dalton Estate Well | Hull and East Riding Chalk | Normal | Normal |
| Great Ouseburn | Sherwood Sandstone | Above normal | Above normal |
| Hill Top Farm | Millstone Grit and Carboniferous Limestone | Notably low | Below normal |
| Riccall Approach Farm | Sherwood Sandstone | Normal | Normal |
| Sproxton | Sherwood Sandstone | Below normal | Normal |
| Wetwang | Hull and East Riding Chalk | Below normal | Normal |