Monthly water situation report: Midlands

1 Summary - December 2024

Please see Section 7.3 for a map detailing the Midlands regional coverage of this report.

Rainfall - During December, half of the hydrological catchments in the Midlands received normal rainfall totals, ranging from 84% to 123% of the long term average (LTA). The other half received above normal rainfall totals compared to the LTA, ranging from 130% to 135%.

Soil moisture deficit (SMD) - By the end of December, all hydrological catchments in the Midlands recorded a SMD of less than or equal to 10mm. This means that soils are at field capacity. Compared to the LTA, the majority of hydrological catchments in December are slightly wetter than expected for the time of year.

River flows - In December, 11 flow monitoring sites in the Midlands recorded above normal monthly mean flows. Five flow monitoring sites recorded notably high monthly mean flows and a further 4 flow monitoring sites recorded normal monthly mean flows. Wedderburn Bridge has been excluded from this report due to possible issues with the flow data available.

Groundwater levels - As of the end of December four monitoring sites recorded exceptionally high groundwater levels, two sites recorded above normal levels, and then one groundwater site recorded notably high levels and one site recorded normal levels compared to the LTA.

Reservoir stocks - As of the end of December, the majority of the Midlands' reservoirs recorded above average storage for the time of year. Since November, storage levels for the majority of reservoirs have increased.

1.1 Rainfall

During December, half of the hydrological catchments in the Midlands received normal rainfall totals, ranging from 84% to 123% of the LTA. The other half received above normal rainfall totals compared to the LTA, ranging from 130% to 135%. As shown on the map in Section 2.1, it was the southern half of the Midlands that received normal rainfall totals, while the northern half received above normal rainfall totals.

During the last 3 months, the majority of hydrological catchments in the Midlands have received normal rainfall totals ranging from 106% to 122% of the LTA. Only 3 hydrological catchments received above normal rainfall totals. These were Shropshire Plains, Lower Wye and Lower Severn, which received rainfall totals between 129% and 131% of the LTA.

Over the last 6 months, hydrological catchments in the Midlands received a variable amount of

rainfall relative to the LTA. Five hydrological catchments received notably high rainfall totals ranging from 137% to 146% of the LTA. These were the Shropshire Plains, Soar, Avon, Lower Wye and Lower Severn. Four hydrological catchments received above normal rainfall totals compared to the LTA. These were the Lower Trent, Tame, Upper Trent and Middle Severn hydrological catchments, and ranged from 123% to 129% of the LTA. The remaining 3 hydrological catchments received normal rainfall totals ranging from 112% to 116% of the LTA.

Over the last 12 months, half of the hydrological catchments in the Midlands received notably high rainfall totals, ranging from 117% to 134% of the LTA. The other half received exceptionally high rainfall totals compared to the LTA, ranging between 125% and 144%.

1.2 Soil moisture deficit and recharge

By the end of December, all hydrological catchments in the Midlands recorded a SMD of less than or equal to 10mm. This means that soils are at field capacity. This was also the situation at the end of November, meaning there has been no change in SMD over this time.

Compared to the LTA, the majority of hydrological catchments in December are slightly wetter than expected for the time of year, with a SMD of between 6mm and 25mm less than the LTA. Four hydrological catchments have a SMD that is within 5mm more or less than the LTA. These are the Derwent, Dove, Welsh Mountains and Shropshire Plains catchments.

1.3 River flows

In December, 11 flow monitoring sites in the Midlands recorded above normal monthly mean flows ranging between 124% and 163% of the LTA. These were Auckley, Worksop, North Muskham, Kegworth, Marston on Dove, Clifton Hall, Llanyblodwel, Bewdley, Tenbury, Evesham and Deerhurst. Five flow monitoring sites recorded notably high monthly mean flows ranging from 161% to 175% of the LTA. These were Ebley Mill, Stareton, Great Bridgeford, Yoxall and Walcot. A further 4 flow monitoring sites recorded normal monthly mean flows ranging from 97% to 124% of the LTA. These were Whatstandwell, Derby St. Marys, Butts Bridge, and Redbrook. Due to possible issues with recorded flows at Wedderburn Bridge, this site has been removed from the report for the foreseeable future, whilst the issues are investigated.

1.4 Groundwater levels

As of the end of December, groundwater levels recorded at monitoring sites were normal or

above compared to the LTA. Four monitoring sites, Coxmoor, Weir Farm, Four Crosses and Anthony's Cross, recorded exceptionally high groundwater levels compared to the LTA. Crossley Hill in the north of the Midlands recorded notably high groundwater levels for December. Ram Hall in south-east of the Midlands and Southards Lane in the north of the Midlands recorded above normal groundwater levels, and Rider Point in the north of the Midlands recorded normal groundwater levels compared to the LTA.

1.5 Reservoir stocks

As of the end of December, nearly all of the Midlands' reservoirs recorded above average storage for the time of year. The exception is Clywedog reservoir, which recorded average storage for the time of year. Since November, storage levels for the majority of reservoirs have increased. Clywedog reservoir recorded a decrease in storage levels and Tittesworth, Blithfield and the Dove reservoir storage levels remained approximately the same since November.

1.6 River Severn operations

The River Severn is regulated to maintain a minimum flow at Bewdley gauging station. This ensures sufficient water flows along the river to support environmental and water supply requirements. Regulation is instigated when flows drop below a threshold. The 2024 regulation season only saw 7 days of river regulation, which commenced on 28 June 2024. The last day of regulation was 9 September 2024. The 2025 regulation season has not yet started.

1.7 River Wye operations

For all of December, storage in the Elan Valley reservoirs was above the release control line and the flows at Redbrook gauging station were above the regulation threshold. Therefore, regulation releases were not in operation.

As of the 9 December 2024, Caban Coch reservoir was full and spilling so no additional environmental releases have been made since this date.

As of 8 January 2025, storage in the Elan Valley reservoirs remains full and above the release control line. Flows at Redbrook gauging station also remain above the regulation threshold. Therefore, regulation releases are still not in operation.

1.8 Water abstraction restrictions

As of 7 January 2025 there are 0 water abstraction licence restrictions in place across the Midlands affecting 0 licences in total.

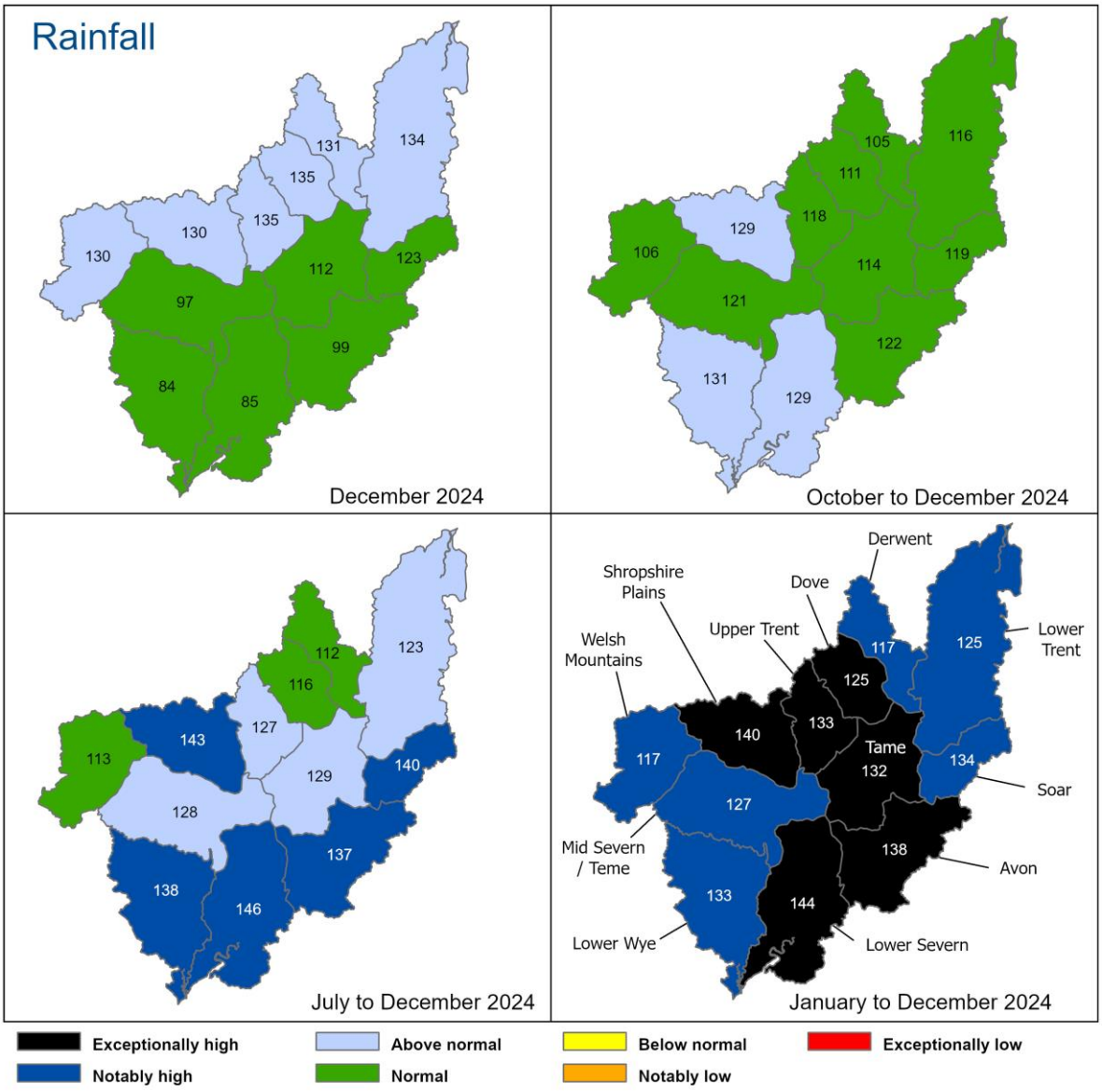
Author: Midlands Hydrology, midlandshydrology@environment-agency.gov.uk

Contact Details: 03708 506 506

2 Rainfall

2.1 Rainfall map

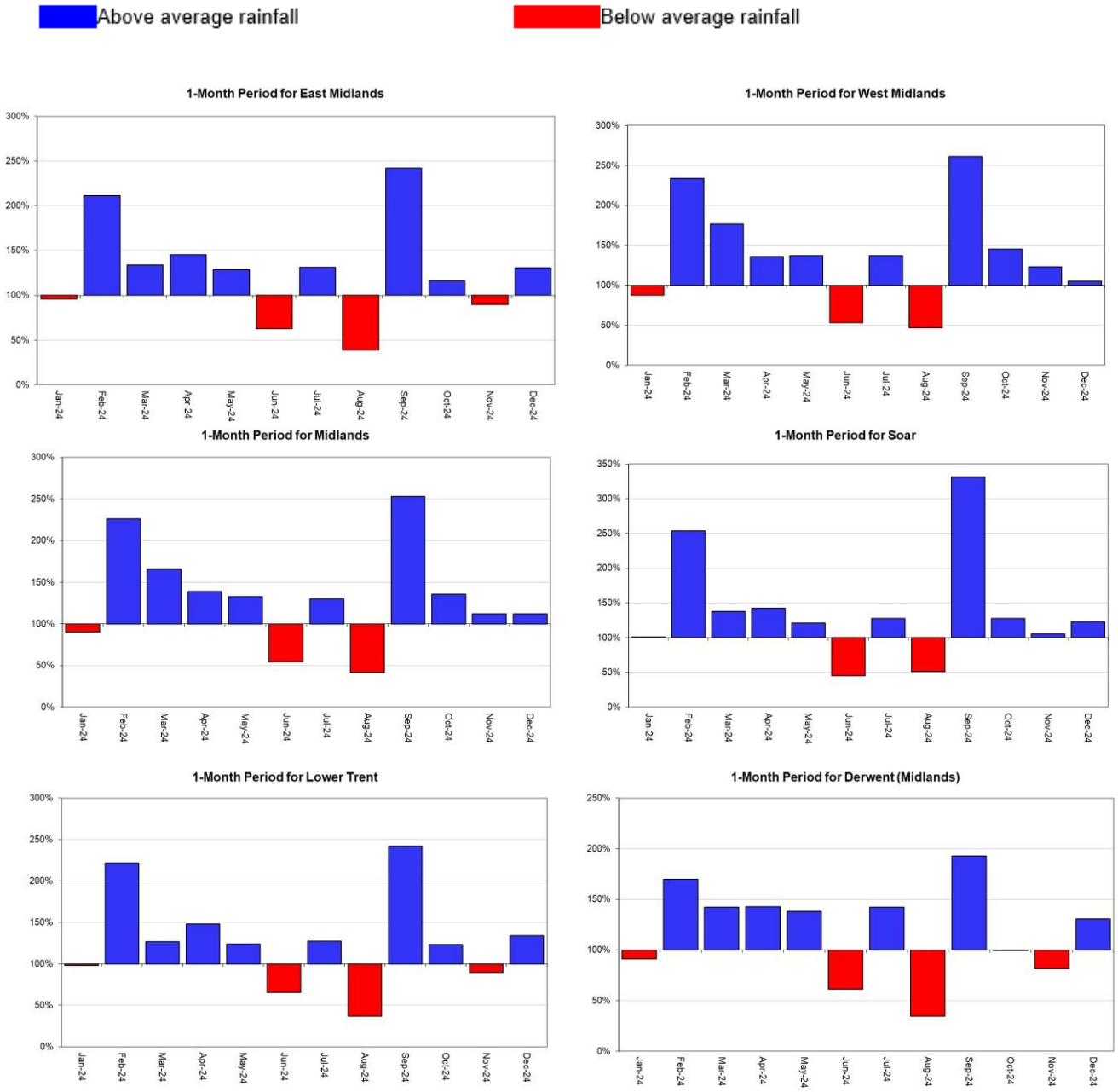
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 31 December 2024), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

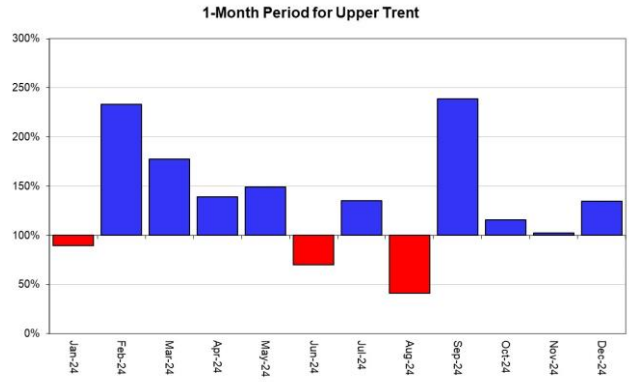


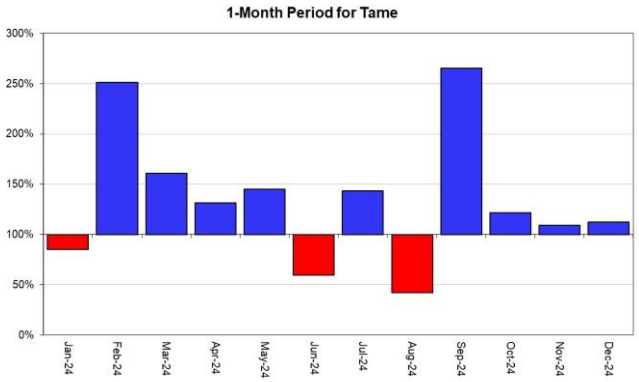
Rainfall data for 2023, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2025). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived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

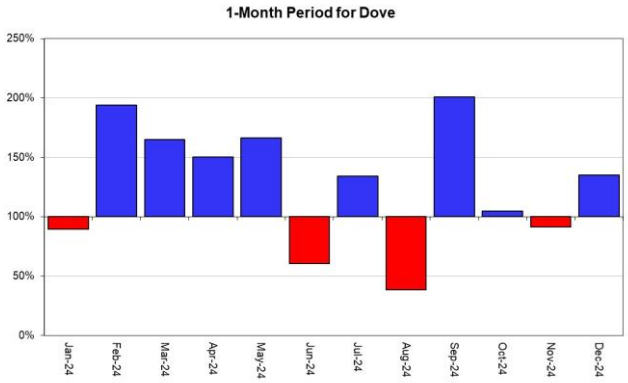
2.2 Rainfall charts

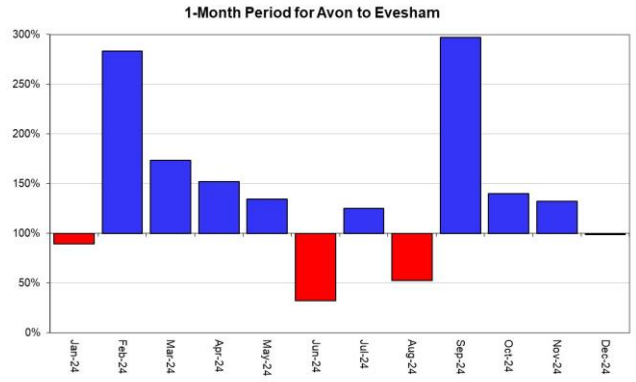
Figure 2.2: Monthly rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average for hydrological areas across the Midlands region.

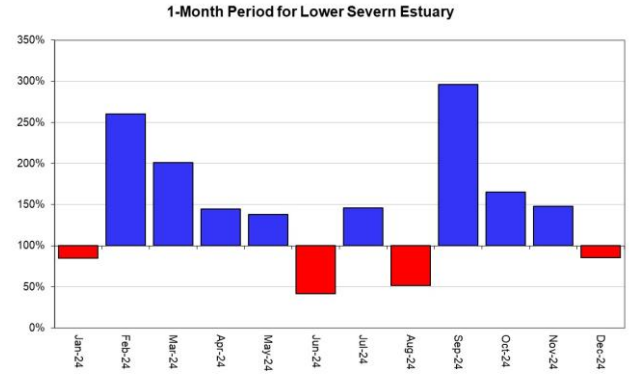


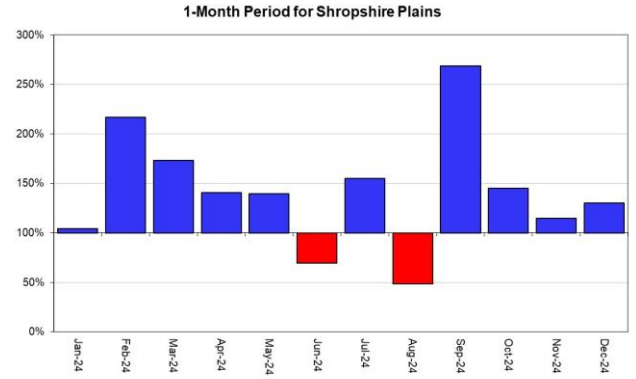

1-Month Period for Upper Trent
300%
250%
200%
150%
100%
50%
0%
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24

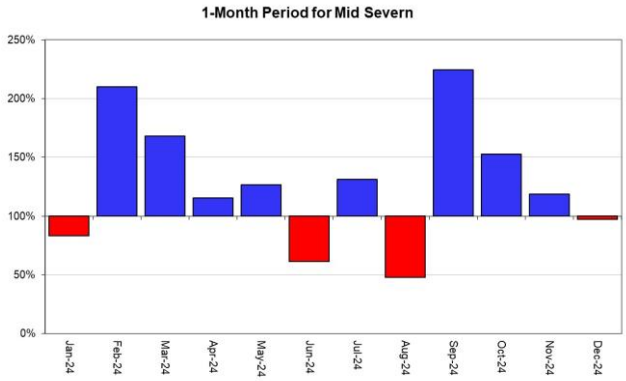

1-Month Period for Tame
300%
250%
200%
150%
100%
50%
0%
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24

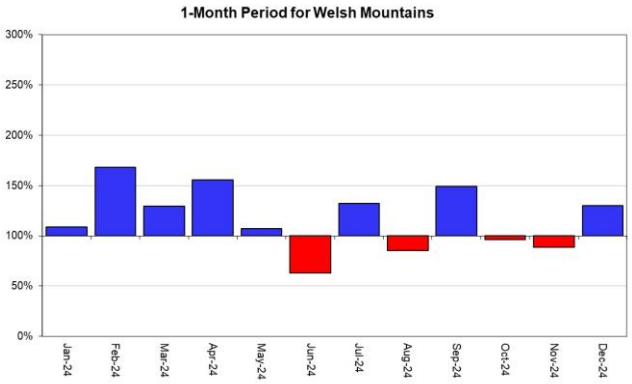

1-Month Period for Dove
250%
200%
150%
100%
50%
0%
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24

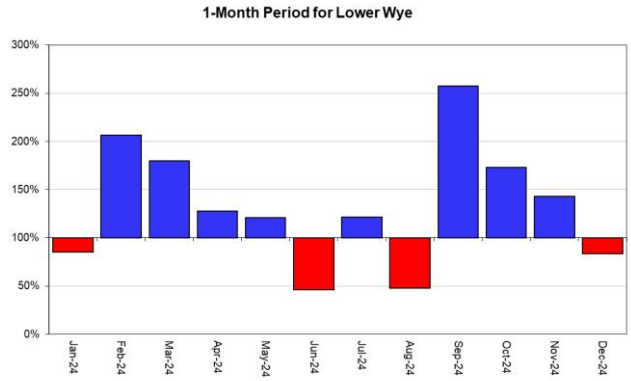

1-Month Period for Avon to Evesham
300%
250%
200%
150%
100%
50%
0%
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24


1-Month Period for Lower Severn Estuary
350%
300%
250%
200%
150%
100%
50%
0%
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24


1-Month Period for Shropshire Plains
300%
250%
200%
150%
100%
50%
0%
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24





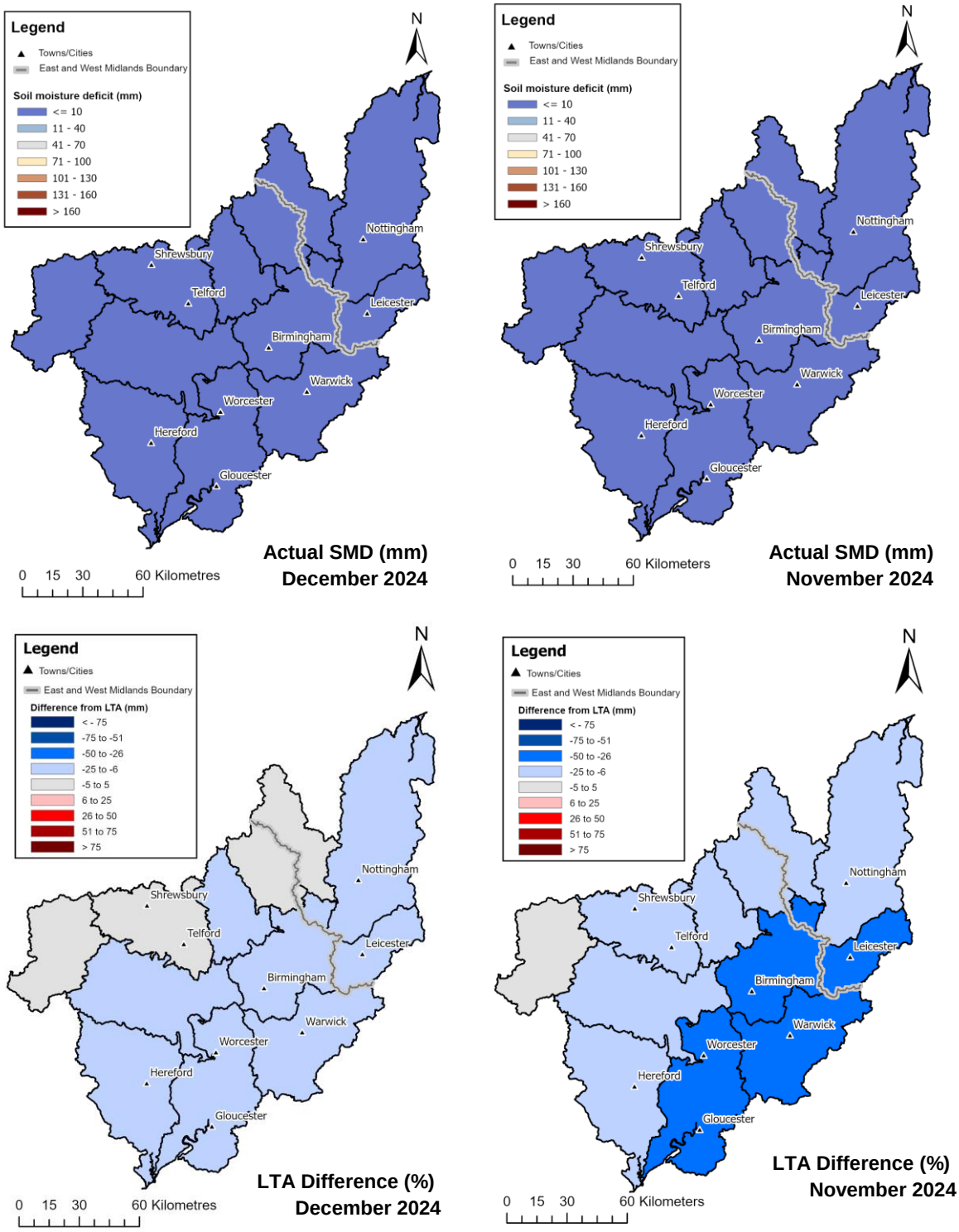


Daily Rainfall Tool data (from January 2023), final HadUK rainfall data until December 2022 (Source: Environment Agency/Met Office, Crown Copyright, 2024).

3 Soil moisture deficit

3.1 Soil moisture deficit map

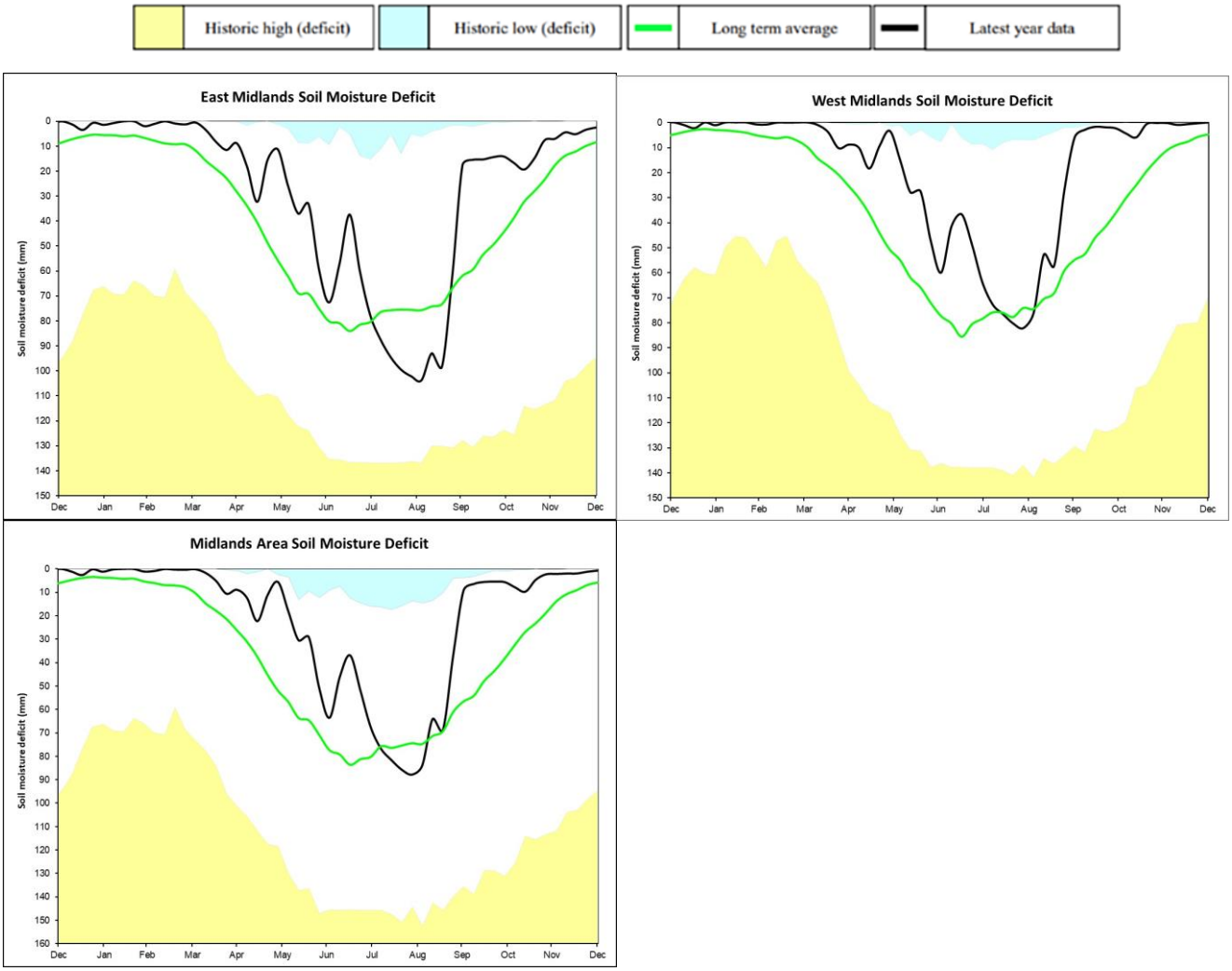
Figure 3.1: Soil moisture deficits for weeks ending 31 December 2024. Shows the difference (mm) of the actual soil moisture deficit from the 1961 to 1990 long term average soil moisture deficits. MORECS data for real land use.



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

3.2 Soil moisture deficit charts

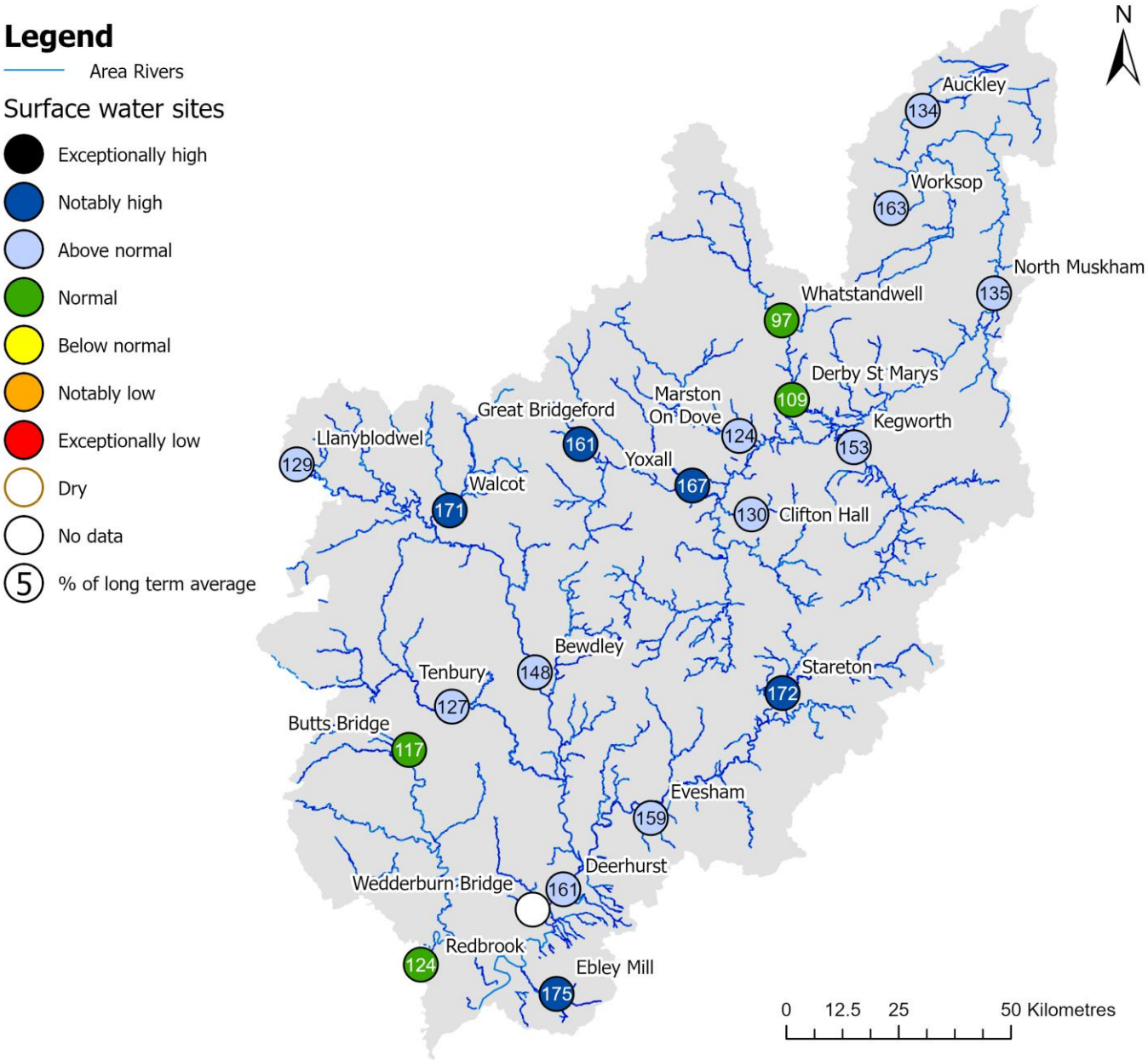
Figure 3.2: Latest soil moisture deficit charts for selected areas across the Midlands.



4 River flows

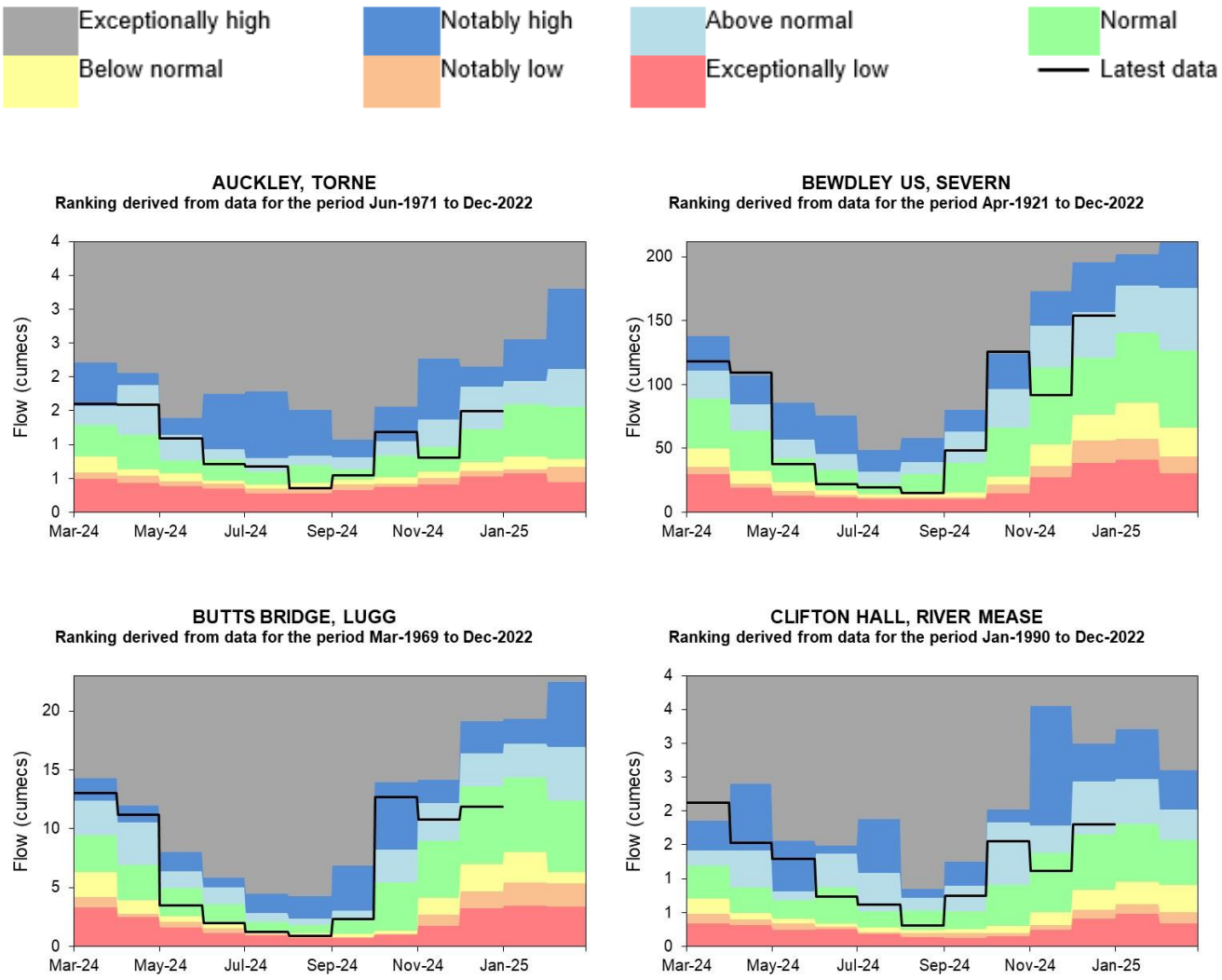
4.1 River flows map

Figure 4.1: Monthly mean river flow for indicator sites for December 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic December monthly means. Table available in the appendices with detailed information.

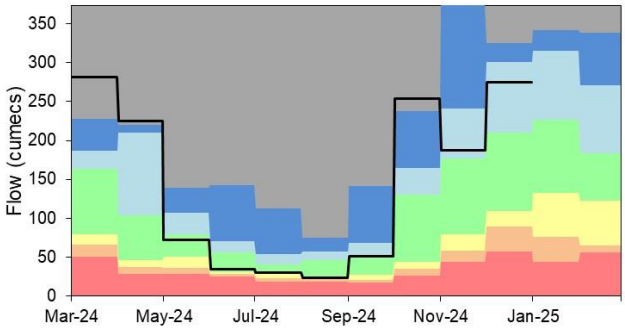


4.2 River flow charts

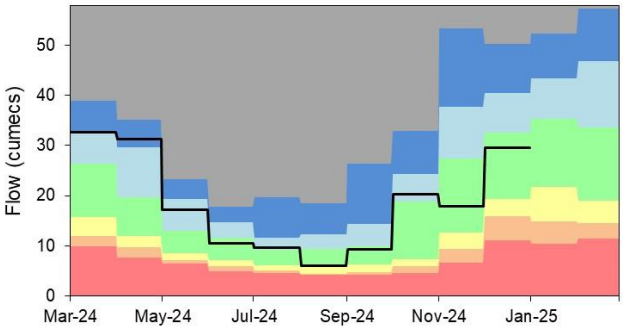
Figure 4.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



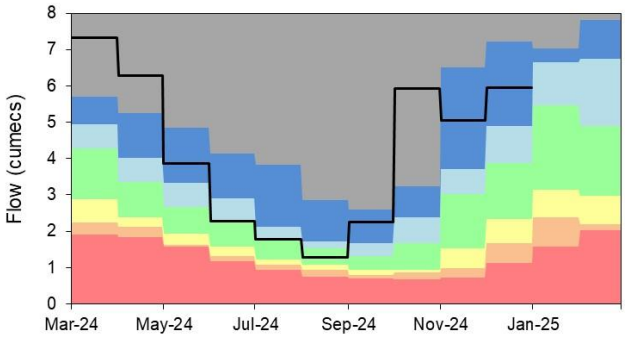
DEERHURST, SEVERN
Ranking derived from data for the period Dec-1995 to Dec-2022



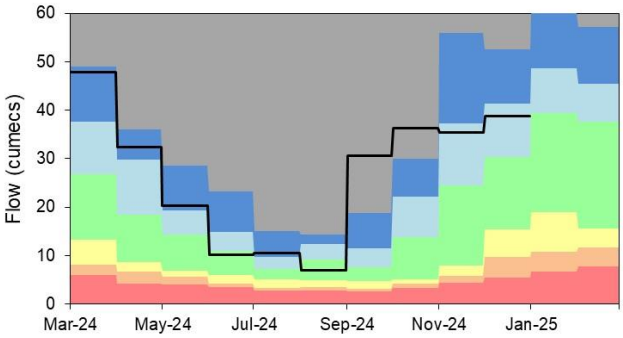
DERBY ST.MARYS US, DERWENT
Ranking derived from data for the period Oct-1935 to Dec-2022



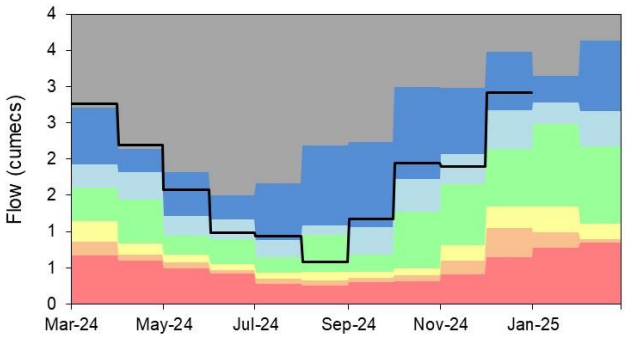
EBLEY MILL, FROME (GLOS)
Ranking derived from data for the period Apr-1969 to Dec-2022



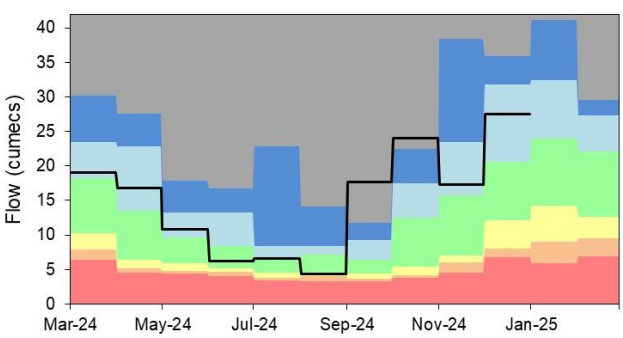
EVESHAM, AVON (MI)
Ranking derived from data for the period Dec-1936 to Dec-2022



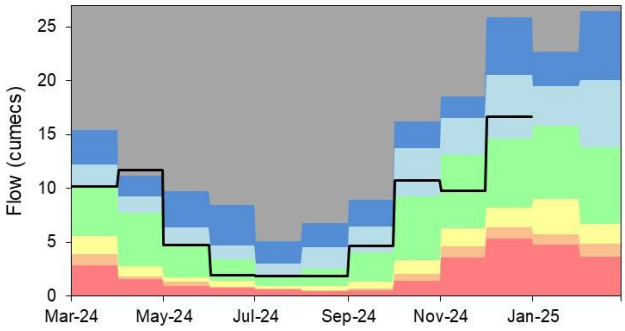
GREAT BRIDGFORD, SOW
Ranking derived from data for the period Feb-1971 to Dec-2022



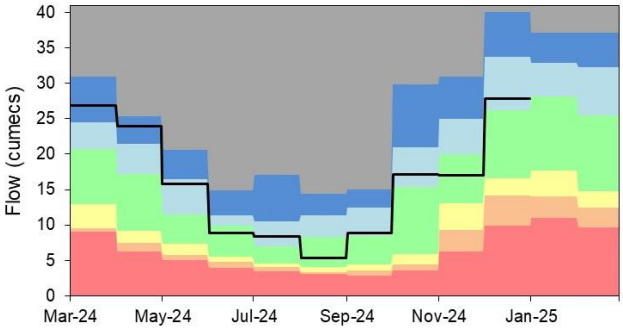
KEGWORTH US, SOAR
Ranking derived from data for the period Dec-1978 to Dec-2022



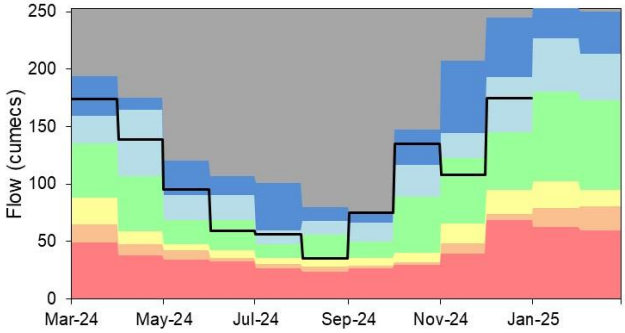
LLANYBLODWEL, TANAT
Ranking derived from data for the period Jun-1973 to Dec-2022



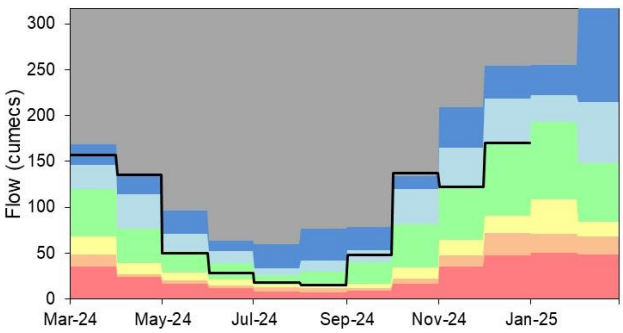
MARSTON ON DOVE, DOVE (MI)
Ranking derived from data for the period Jul-1965 to Dec-2022



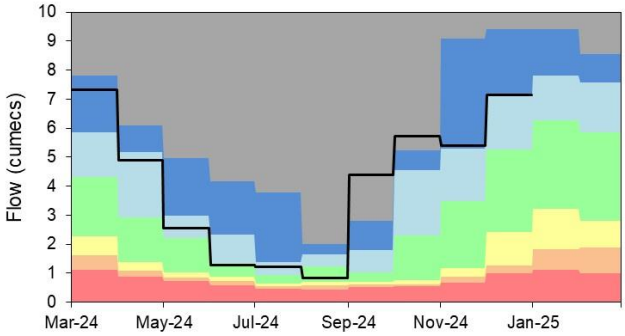
NORTH MUSKHAM, TRENT
Ranking derived from data for the period Oct-1969 to Dec-2022



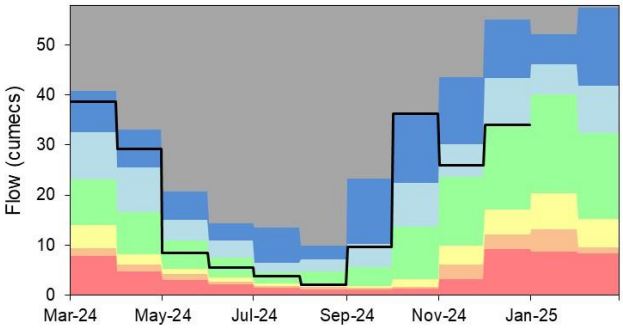
REDBROOK, WYE (HEREFORDSHIRE)
Ranking derived from data for the period Oct-1969 to Dec-2022



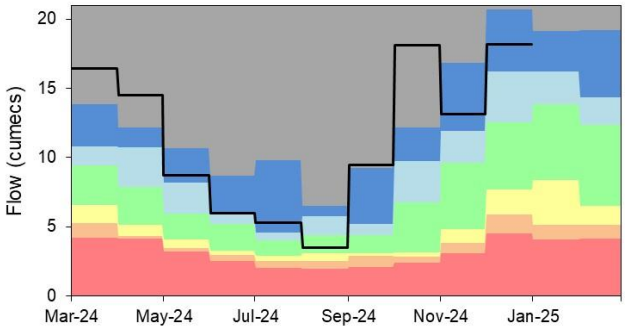
STARETON, AVON (MI)
Ranking derived from data for the period Oct-1962 to Dec-2022



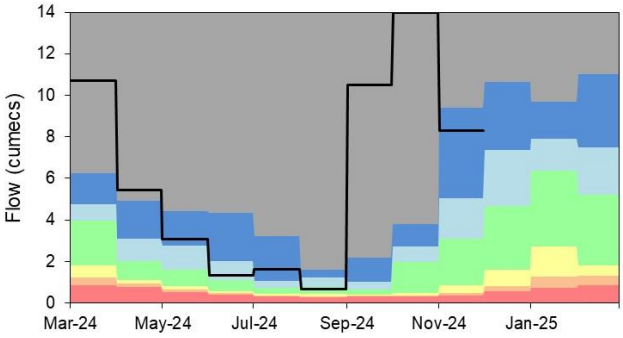
TENBURY, TEME
Ranking derived from data for the period Oct-1956 to Dec-2022



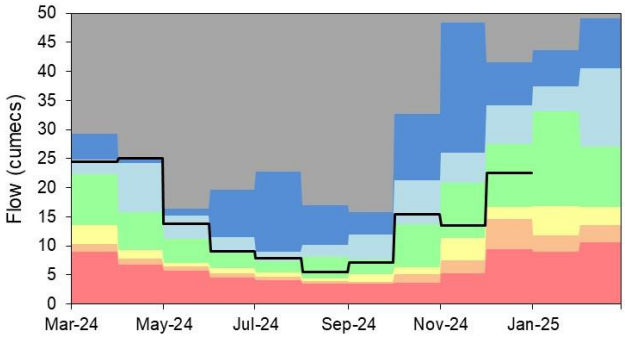
WALCOT, TERN
Ranking derived from data for the period Oct-1960 to Dec-2022



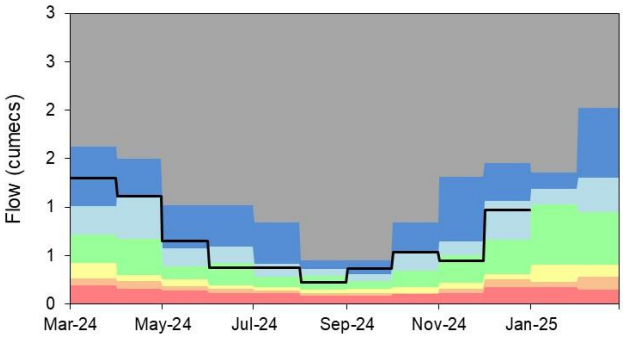
WEDDERBURN BRIDGE, LEADON
Ranking derived from data for the period Jul-1961 to Dec-2022



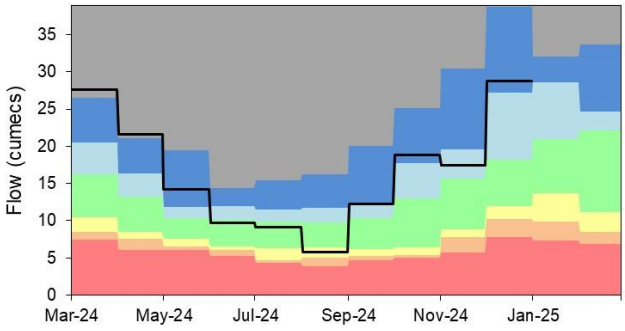
WHATSTANDWELL, DERWENT
Ranking derived from data for the period Oct-1992 to Dec-2022



WORKSOP, RYTON
Ranking derived from data for the period Jun-1970 to Dec-2020



YOXALL, TRENT
Ranking derived from data for the period Oct-1959 to Dec-2022

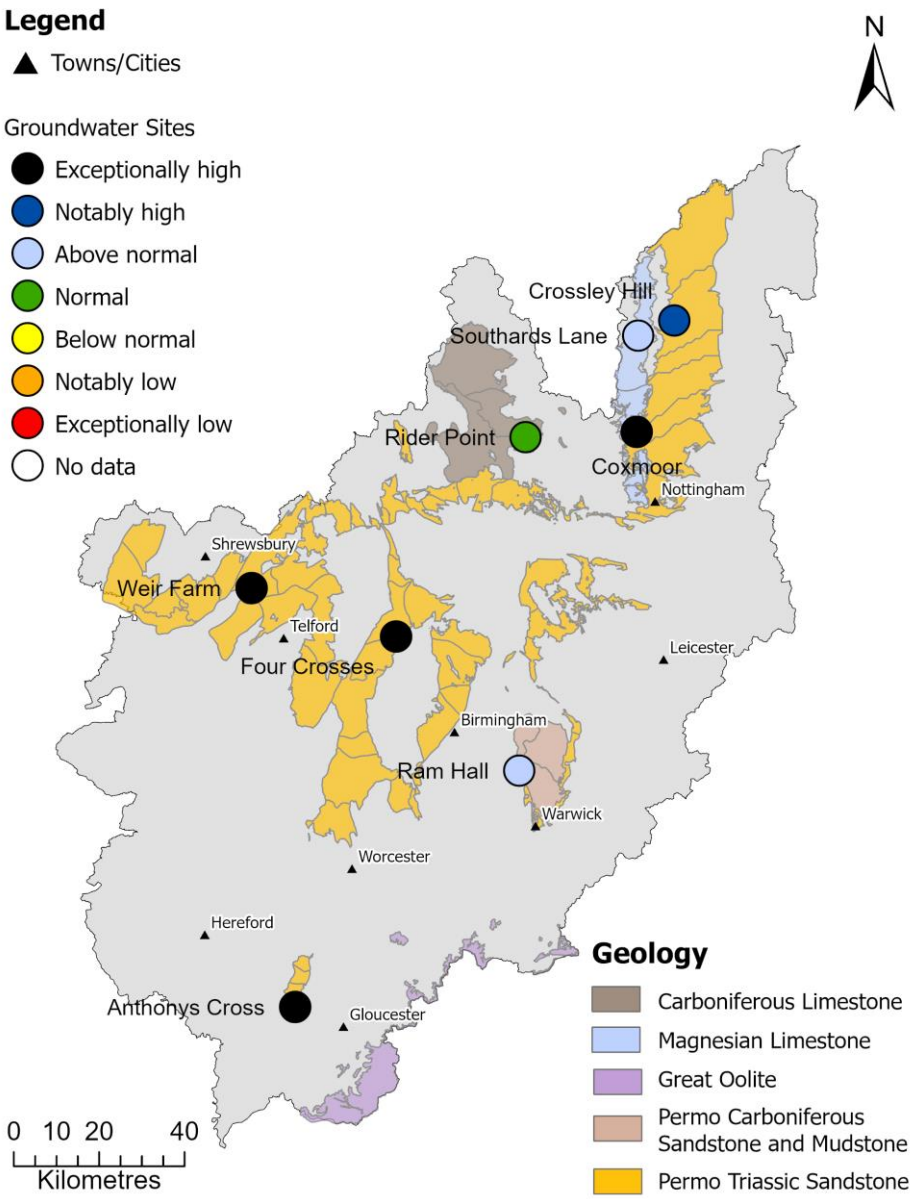


Source: Environment Agency.

5 Groundwater levels

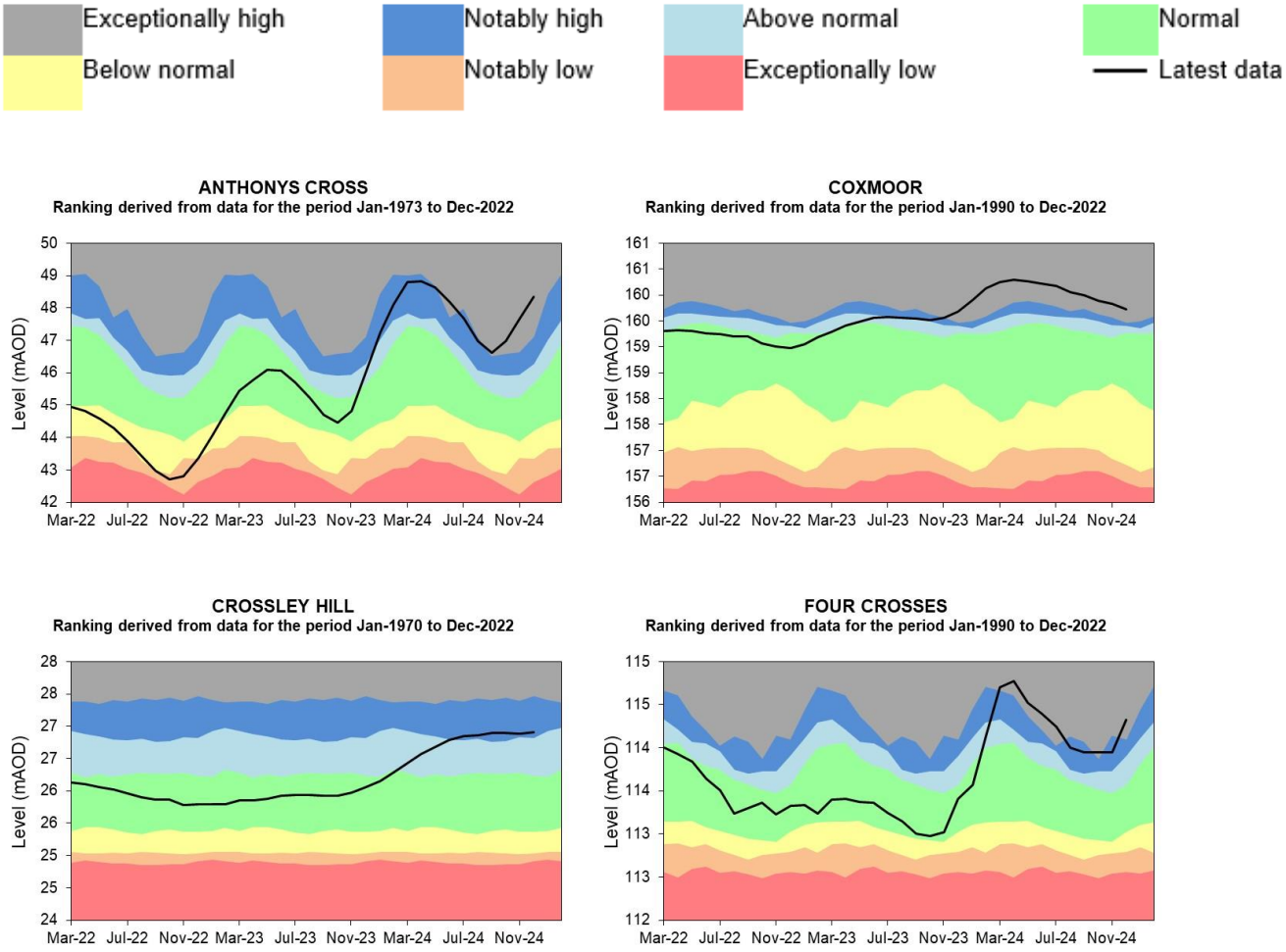
5.1 Groundwater levels map

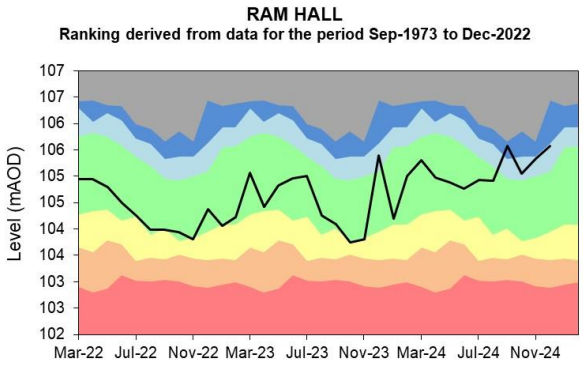
Figure 5.1: Groundwater levels for indicator sites at the end of December 2024, classed relative to an analysis of respective historic December levels. Table available in the appendices with detailed information, including aquifer type.

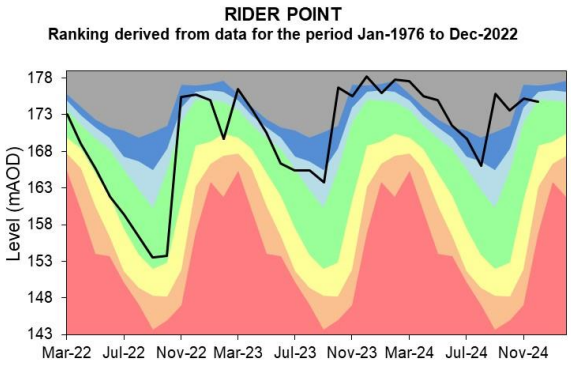


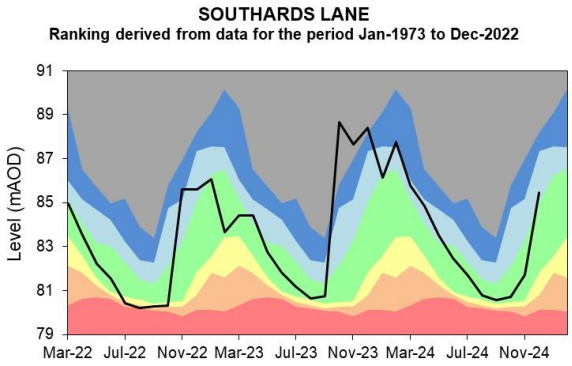
5.2 Groundwater level charts

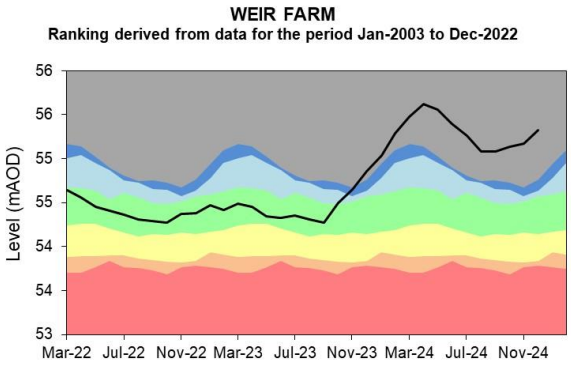
Figure 5.2: End of month groundwater levels at index groundwater level sites for major aquifers. 34 months compared to an analysis of historic end of month levels.







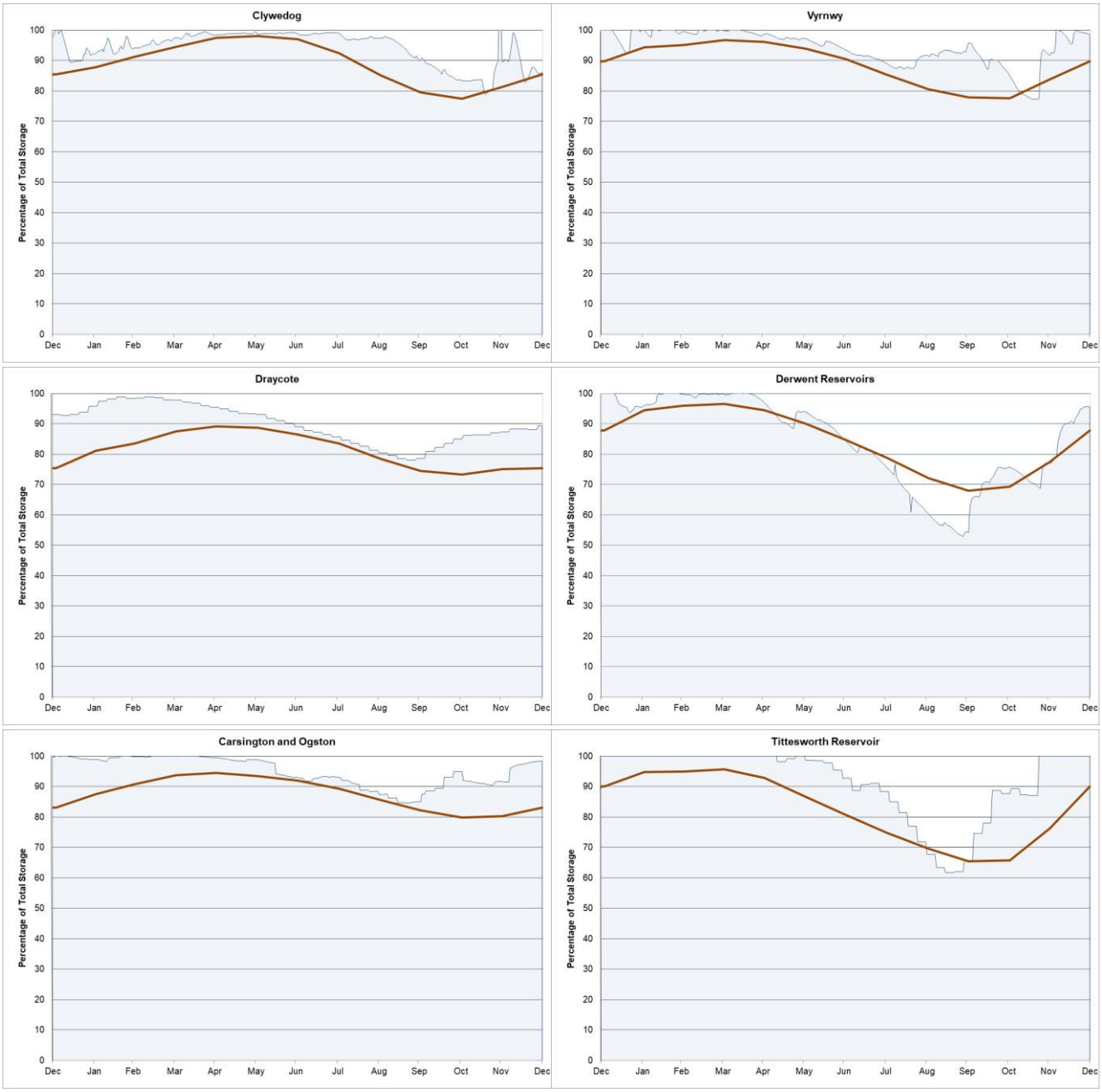


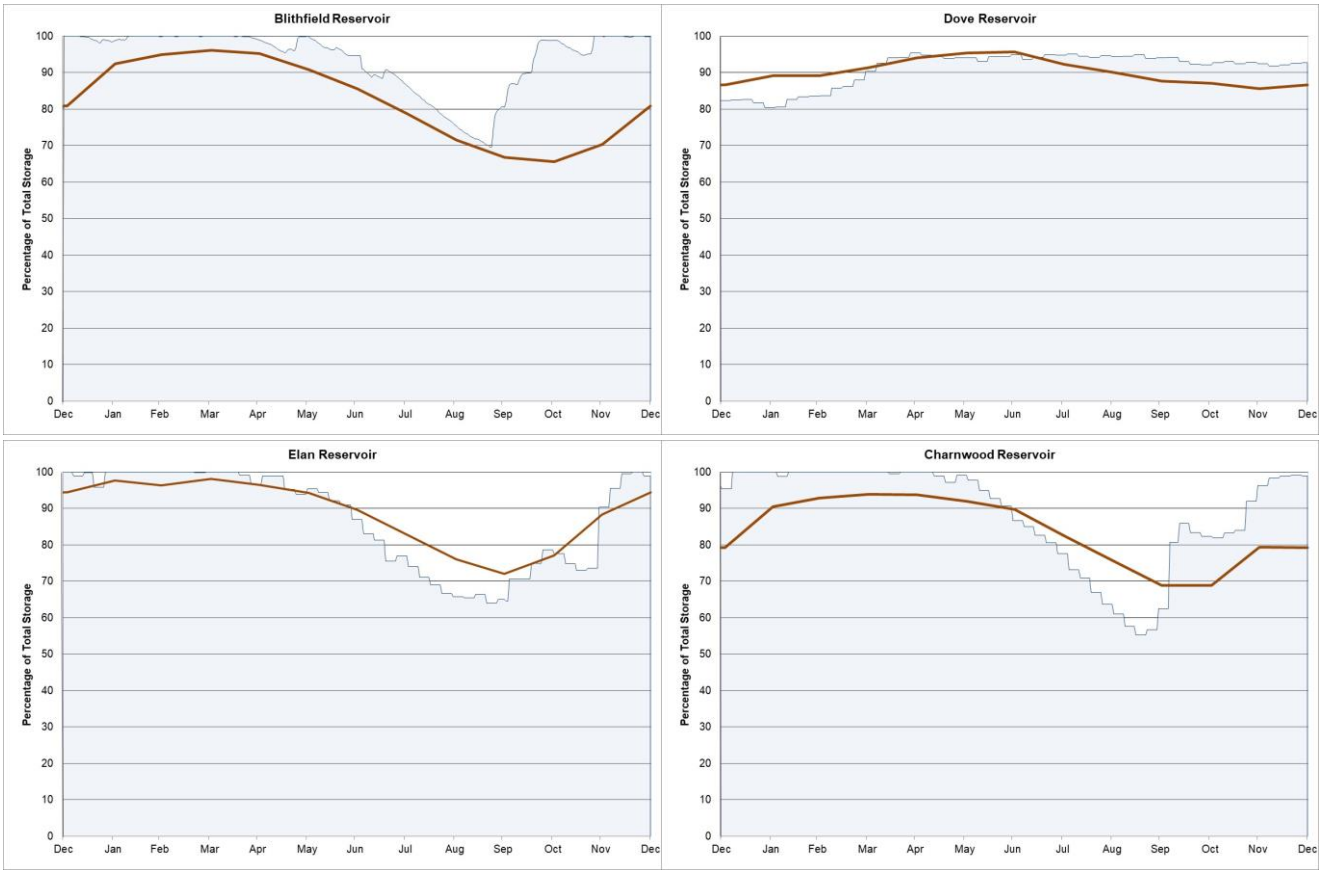


Source: Environment Agency, 2025.

6 Reservoir stocks

Figure 6.1: End of month regional reservoir stocks compared to long term average stocks. Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in length. Please see Section 7.4 for a map showing the locality of the Midlands reservoirs reported on.





(Source: water companies).

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

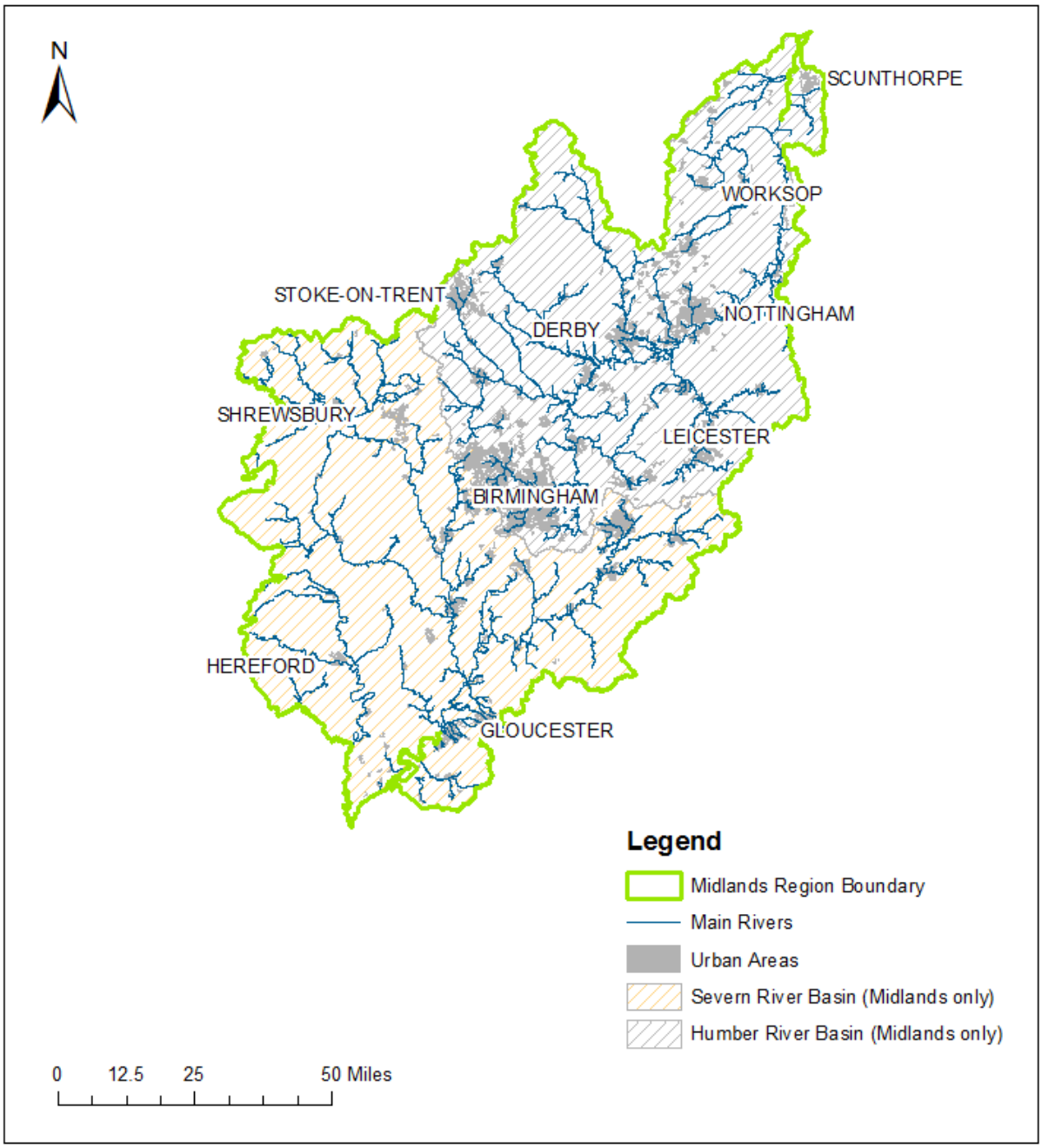
Value likely to fall within this band 8% of the time.

Exceptionally low

Value likely to fall within this band 5% of the time.

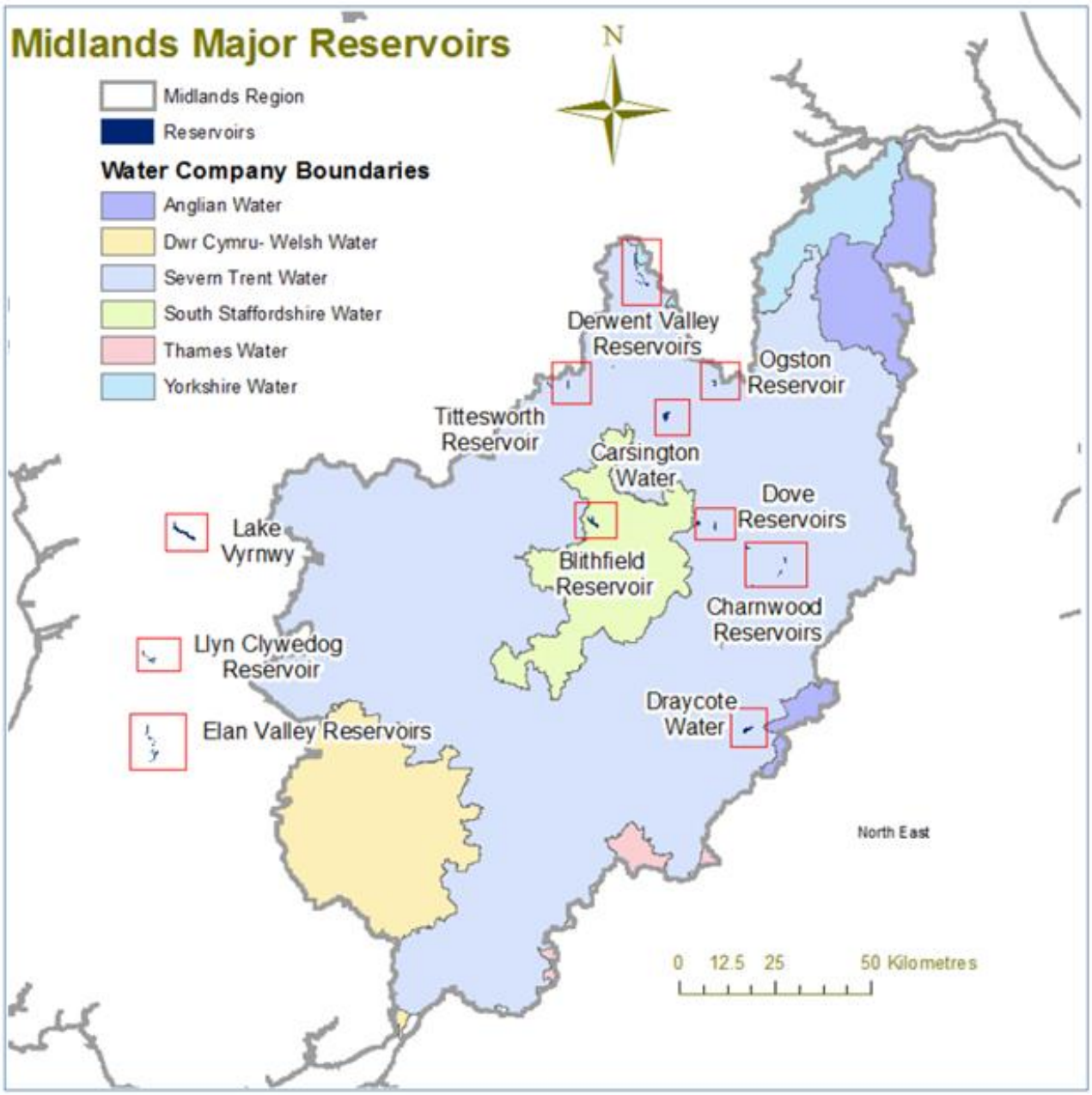
7.3 Midlands regional coverage

Figure 7.1: The Midlands regional boundary and the hydrological boundaries of the River Severn and River Trent.



7.4 Midlands major reservoirs

Figure 7.2: Location of major reservoirs in the Midlands.



8 Appendices

8.1 Rainfall table

Hydrological area	Dec 2024 rainfall % of long term average 1961 to 1990	Dec 2024 band	Oct 2024 to December cumulative band	Jul 2024 to December cumulative band	Jan 2024 to December cumulative band
Avon To Evesham	99	Normal	Normal	Notably high	Exceptionally high
Derwent (Midlands)	131	Above Normal	Normal	Normal	Notably high
Dove	135	Above Normal	Normal	Normal	Exceptionally high
Lower Severn Estuary	85	Normal	Above normal	Notably high	Exceptionally high
Lower Trent	134	Above Normal	Normal	Above normal	Notably high
Lower Wye	84	Normal	Above normal	Notably high	Notably high
Mid Severn	97	Normal	Normal	Above normal	Notably high
Shropshire Plains	130	Above Normal	Above normal	Notably high	Exceptionally high
Soar	123	Normal	Normal	Notably high	Notably high
Tame	113	Normal	Normal	Above normal	Exceptionally high

Upper Trent	135	Above Normal	Normal	Above normal	Exceptionally high
Welsh Mountains	130	Above Normal	Normal	Normal	Notably high

8.2 River flows table

Site name	River	Catchment	Dec 2024 band	Nov 2024 band
Auckley	Torne	Torne	Above normal	Normal
Bewdley	Severn	Severn Lower Mid	Above normal	Normal
Butts Bridge	Lugg	Lugg	Normal	Above normal
Clifton Hall	River Mease	Mease	Above normal	Normal
Deerhurst	Severn	Severn Lower	Above normal	Above normal
Derby St. Marys	Derwent	Derwent Der to Markeaton con	Normal	Normal
Ebley Mill	Frome (Gloucs)	Frome Gloucs	Notably high	Notably high
Evesham	Avon (Midlands)	Avon Warwks Lower	Above normal	Above normal
Great Bridgford	Sow	Sow Upper	Notably high	Above normal
Kegworth	Soar	Soar to Kingston Brook confl	Above normal	Above normal
Llanyblodwel	Tanat	Severn Upper River Tanat	Above normal	Normal
Marston On Dove	Dove (Midlands)	Dove Derb to Hilton Br confl.	Above normal	Normal
North Muskham	Trent	Trent to Cromwell	Above normal	Normal

Redbrook	Wye (Herefordshire)	Wye H and W d s Lugg	Normal	Normal
Stareton	Avon (Midlands)	Avon Warwks Upper	Notably high	Notably high
Tenbury	Teme	Teme	Above normal	Above normal
Walcot	Tern	Tern	Notably high	Notably high
Wedderburn Bridge	Leadon	Leadon	No data	Notably high
Whatstandwell	Derwent	Derwent Derb to Amber conf	Normal	Normal
Worksop	Ryton	Ryton Upper to Oldcoates Dyke	Above normal	Normal
Yoxall	Trent	Trent to Tame Mease confl	Notably high	Above normal

8.3 Groundwater table

Site name	Aquifer	End of Dec 2024 band	End of Nov 2024 band
Anthony's Cross	Severn Vale Permo Triassic Sandstone	Exceptionally high	Exceptionally high
Coxmoor	Permo Triassic Sandstone	Exceptionally high	Exceptionally high
Crossley Hill	Permo Triassic Sandstone	Notably high	Notably high
Four Crosses	Grimsby Ancholme Louth Limestone	Exceptionally high	Notably high
Ram Hall, Meriden	Grimsby Ancholme Louth Limestone	Above normal	Above normal
Rider Point Via Gellia	Carboniferous Limestone	Normal	Notably high
Southards Lane, Bolsover	Magnesian Limestone	Above normal	Normal
Weir Farm	Bridgnorth Sandstone Formation	Exceptionally high	Exceptionally high