

Monthly water situation report: Wessex Area

1 Summary - September 2024

It was the wettest September since records began in 1871 for Wessex, it was the most rainfall received in any month since January 2014 and it was the wettest water year (October to September) on record. Nearly all areas of Wessex received exceptionally high rainfall this month but it was particularly wet in the east where two hydrological areas received over 300% of the long term average (LTA). Soil Moisture Deficit (SMD) started the month close to 100mm and declined as the month went on ending with most of Wessex having an SMD of less than 10mm. Monthly Mean River flows were all above normal across Wessex, with the majority reporting exceptionally high flows. All reporting sites in Wessex reported exceptionally high daily mean flows at the end of September, with the River Tone at Bishops Hull, being the exception reporting notably high flows. At the end of the month groundwater levels across Wessex ranged from exceptionally high at Overcompton to normal at the slower responding Tilshead and Woodyates. Reservoirs were at around 63% and 65% capacity for Bristol Water and Wessex Water respectively, lower than the levels seen this time last year.

1.1 Rainfall

Wessex received an average of 186mm of rainfall during September (257% of the LTA). It has been the wettest September since records began in 1871 and it has been the wettest for any month since January 2014. Despite June and August being drier than average it has still been the wettest 8, 10, 12 and 24 month periods to September since records began. The majority of the total rainfall for the month fell across only 9 days, with 25% of the month's rain falling between 5 and 7 September and 60% of the rainfall occurring on 6 days between the 20 and 30 September.

The River Bourne catchment received 339% of the LTA, and the Upper Hampshire Avon catchment received 337% of the LTA rainfall making it the second wettest of any month on record for this catchment. Rainfall was exceptionally high across all areas of Wessex bar the Poole Harbour and Purbeck area in the south of Wessex, where notably high levels of rain fell in September.

Over the longer term, the last 3 and 6 month periods have seen either exceptionally or notably high rainfall for most of Wessex with some areas recording above normal rainfall. Over the past 12 months all hydrological areas across Wessex received exceptionally high rainfall.

1.2 Soil moisture

The soil moisture deficit (SMD) started the month close to 100mm on average for the Wessex area. It drastically declined throughout the month and ended September with less than 10mm.

SMD was slightly higher in areas to the south and west of Wessex with the value at the end of September ranging between 11-40mm. At the end of the month the SMD was significantly lower than the LTA and the SMD this time last year.

1.3 River flows

All sites in Wessex reported monthly mean flows of above normal or higher. The majority of sites recorded exceptionally high flows, 6 sites reported notably high flows and the 2 most westerly sites, Beggearn Huish monitoring Washford and Bishops Hull monitoring the Tone, recording above normal.

By the last week of September all sites were reporting exceptionally high daily mean flows apart from the River Tone at Bishops Hull, which reported notably high flows. The majority of sites ended the month with increasing daily mean flows.

1.4 Groundwater levels

Groundwater levels ended the month at normal or above across Wessex, with all sites either remaining at the same banding as the previous month or reporting increased levels.

Overcompton (monitoring the Bridport sand formation) reported the highest levels of the Wessex area at exceptionally high. Tilshead and Woodyates monitoring sites were reporting the lowest levels of the area, at normal, by the end of the month. All sites showed rising levels at the end of September, apart from Chittern Down and Tilshead (monitoring the Chalk) which continued decreasing and are yet to show a response to rainfall.

1.5 Reservoir stocks

Wessex Water reservoirs ended the month at around 65% capacity, with Bristol Water reporting similar levels of around 63%. All the reservoir levels increased throughout the month, due to increased rainfall after a drier few previous months. The current combined levels are below those recorded at this time last year for both Bristol Water and Wessex Water, however, they are both significantly higher than the levels seen in September of 1995.

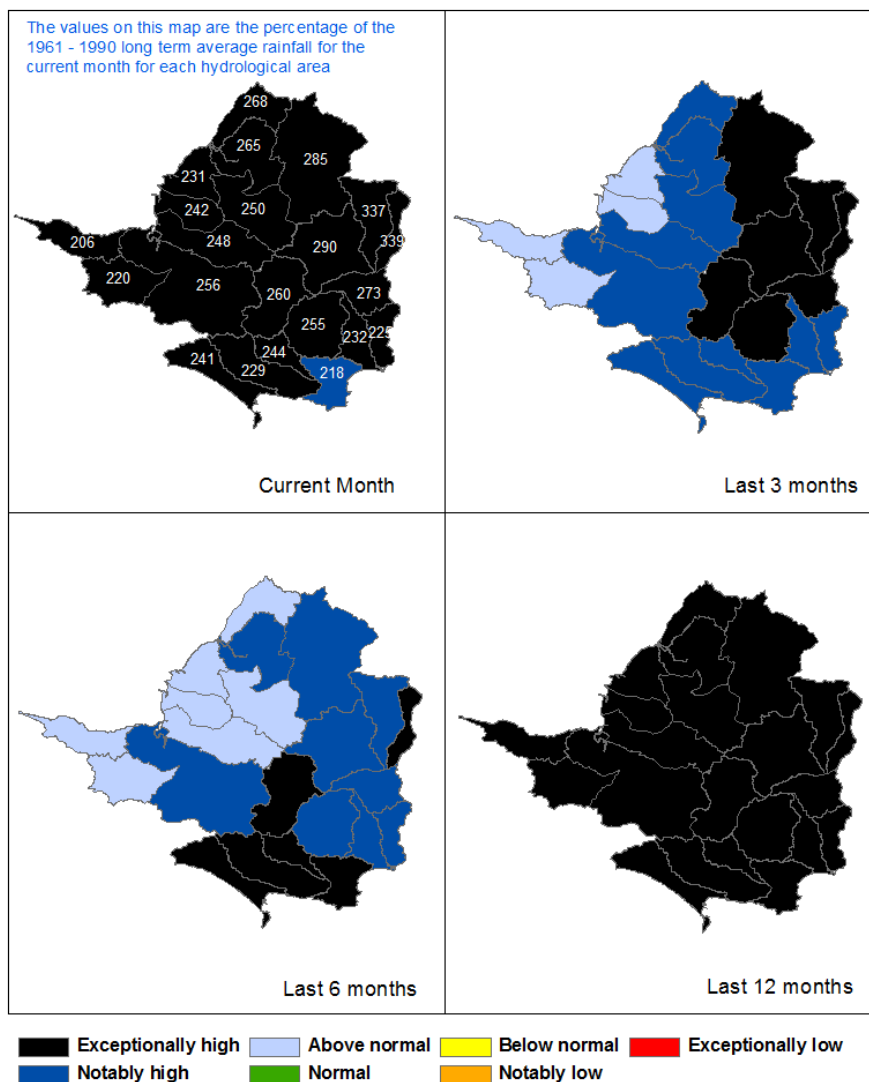
Author: Wessex Hydrology, hydrologywessex@environment-agency.gov.uk

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2 Rainfall

2.1 Rainfall map

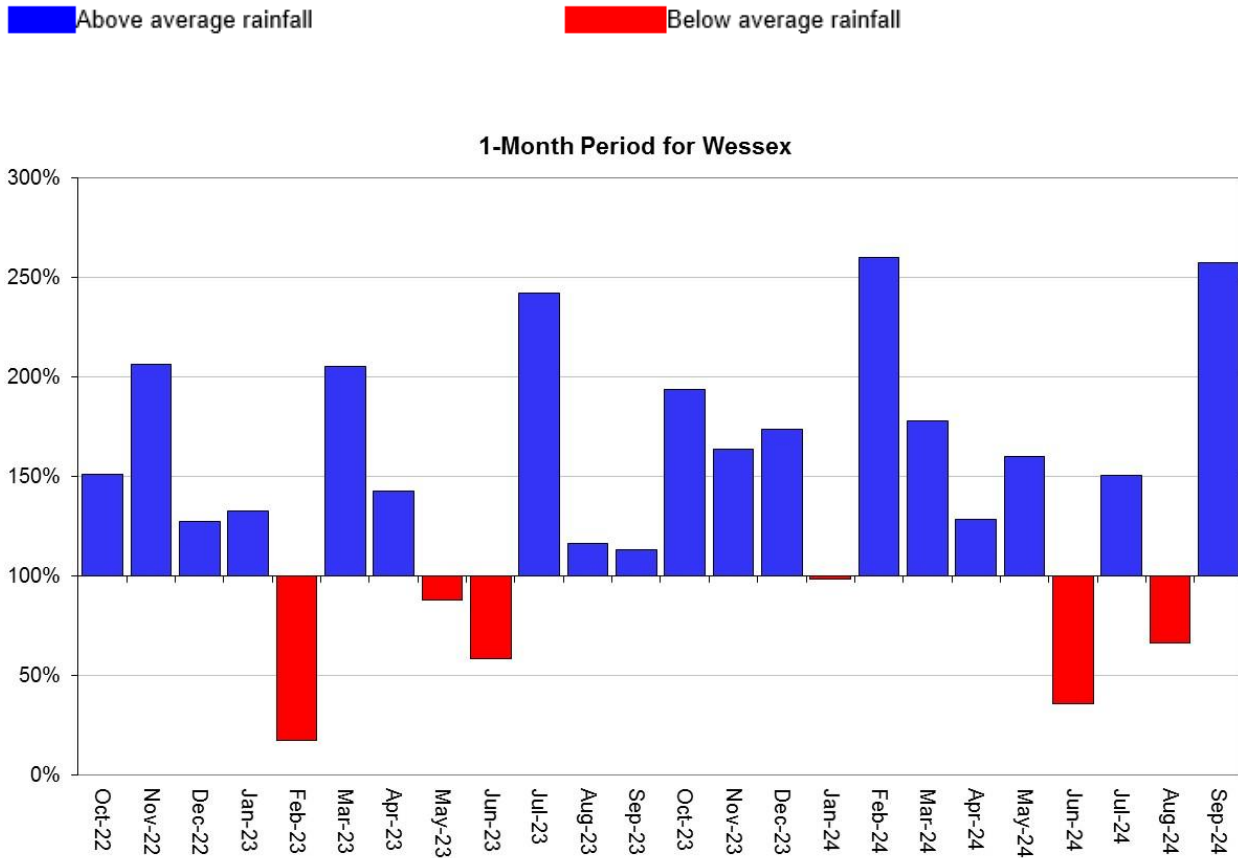
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 30 September 2024), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.



Rainfall data for 2023 and 2024, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2024). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived from registered rain gauges (Source: Met Office. Crown copyright, 2024).

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.

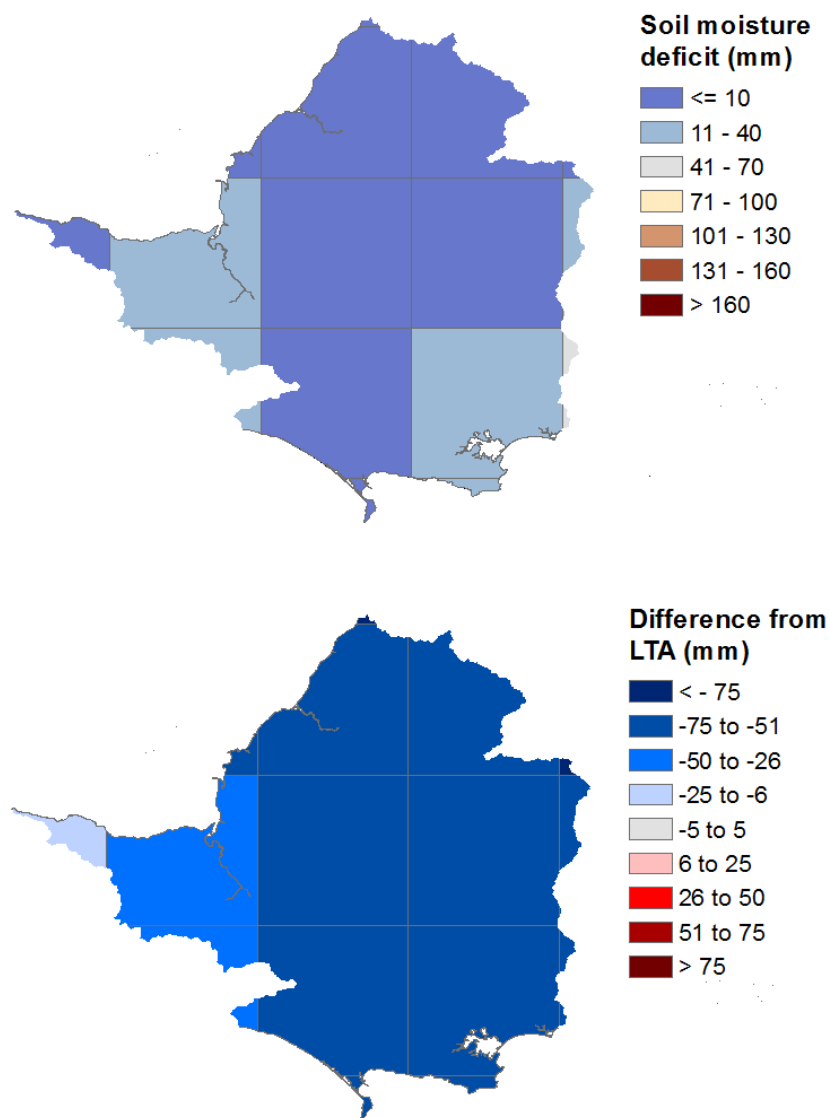


Rainfall data for 2023 and 2024, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2024). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived from registered rain gauges (Source: Met Office. Crown copyright, 2024).

3 Soil moisture deficit

3.1 Soil moisture deficit map

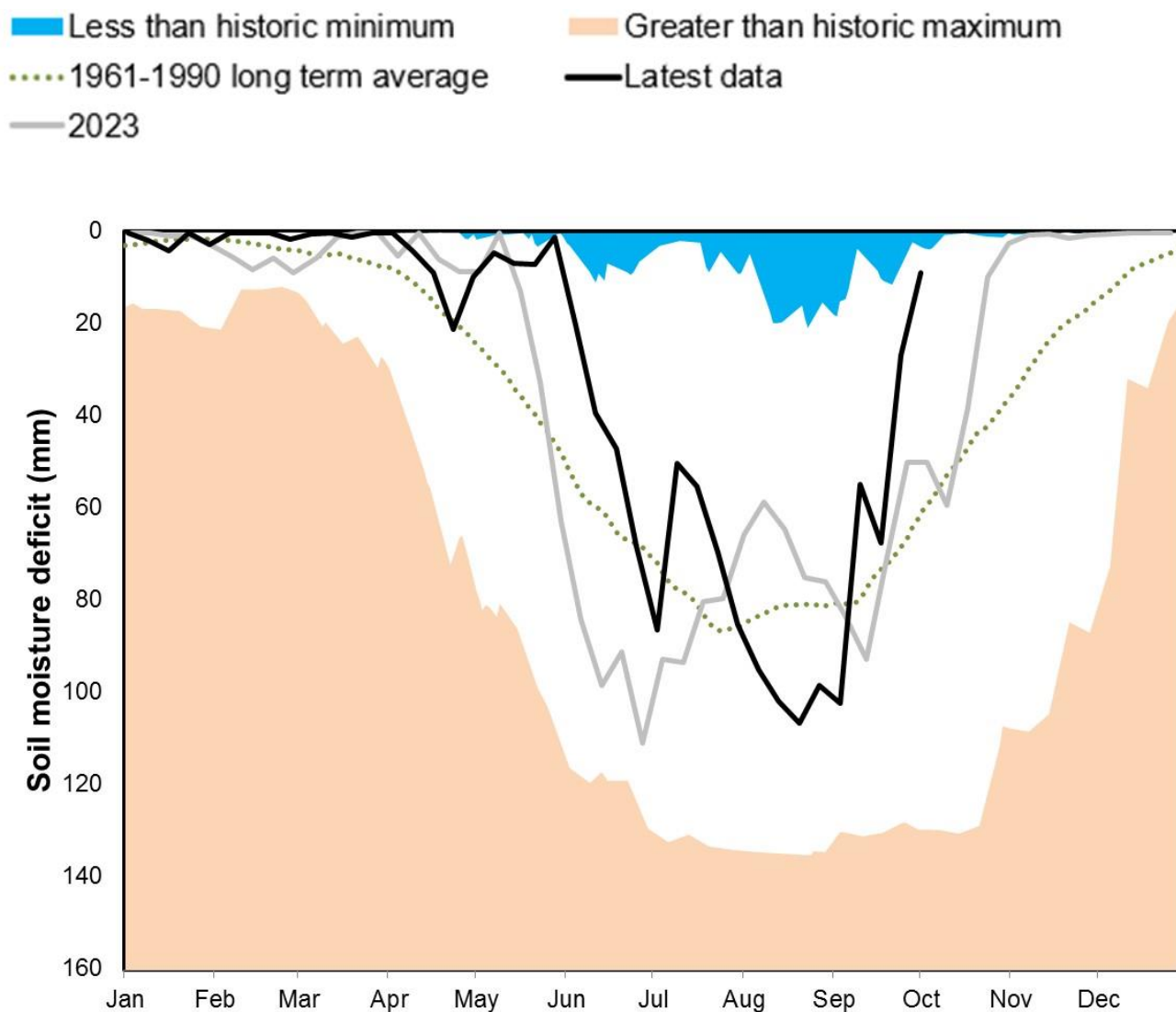
Figure 3.1: Soil moisture deficits for weeks ending 30 September 2024. Shows the difference (mm) of the actual soil moisture deficit from the 1961 to 1990 long term average soil moisture deficits. MORECS data for real land use.



(Source: Met Office. Crown copyright, 2024). All rights reserved. Environment Agency, 100024198, 2024.

3.2 Soil moisture deficit charts

Figure 3.2: Latest soil moisture deficit compared to previous year, maximum, minimum, and 1961 to 1990 long term average. Weekly MORECS data for real land use.

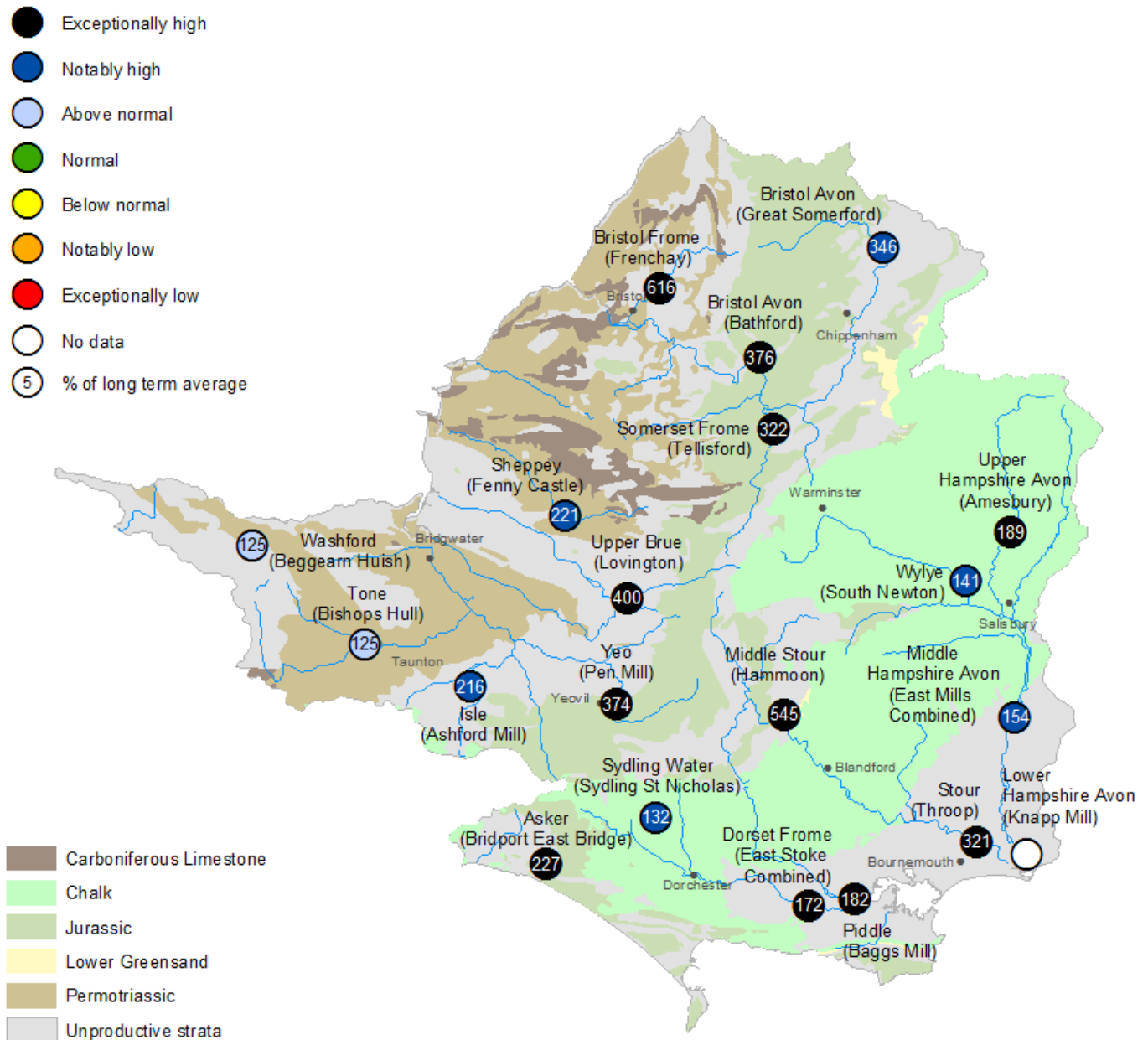


(Source: Met Office. Crown copyright, 2024). All rights reserved. Environment Agency, 100024198, 2024

4 River flows

4.1 River flows map

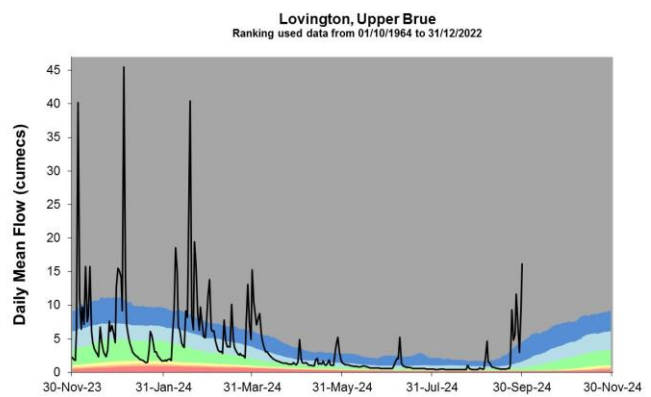
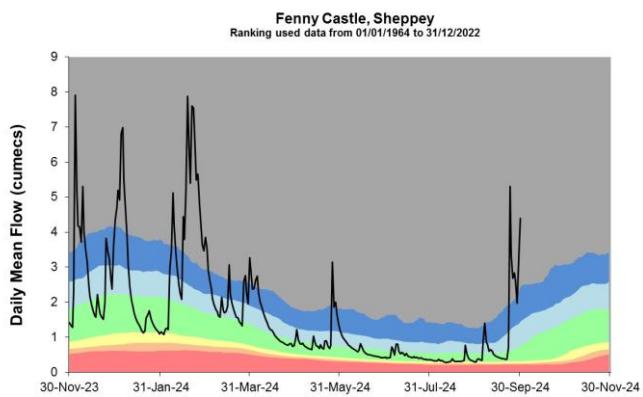
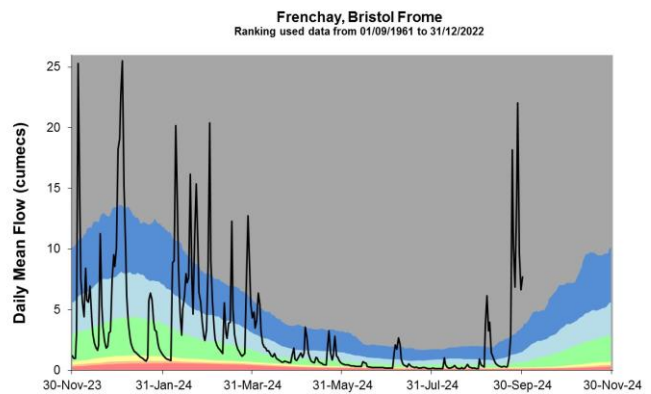
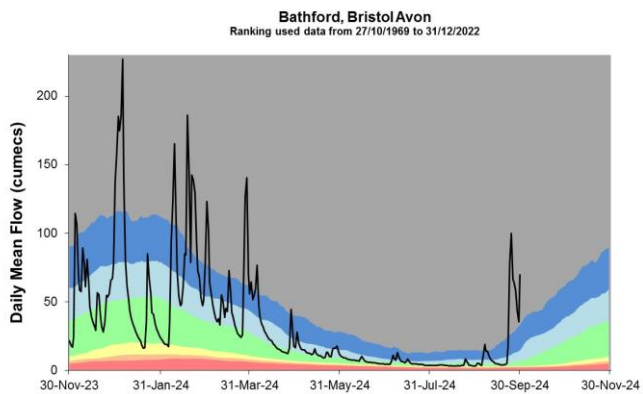
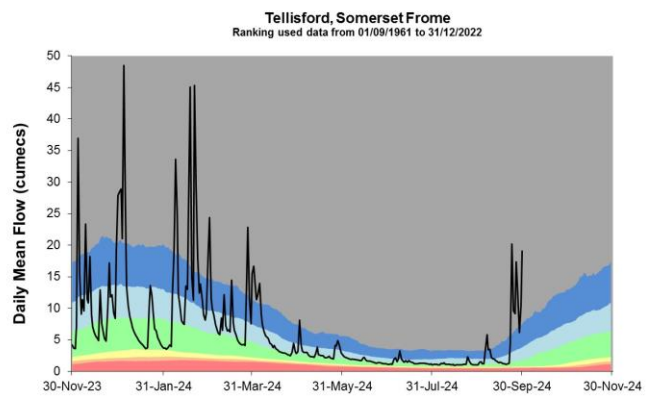
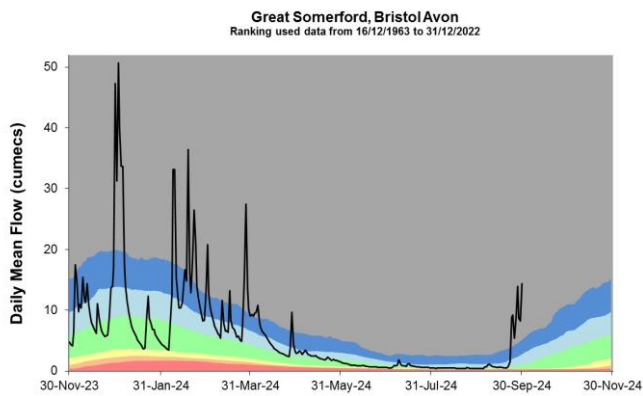
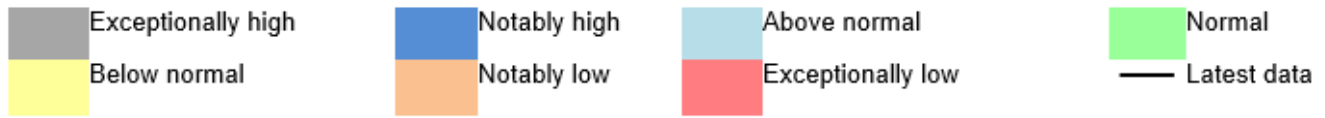
Figure 4.1: Monthly mean river flow for indicator sites for September 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic September monthly means Table available in the appendices with detailed information.



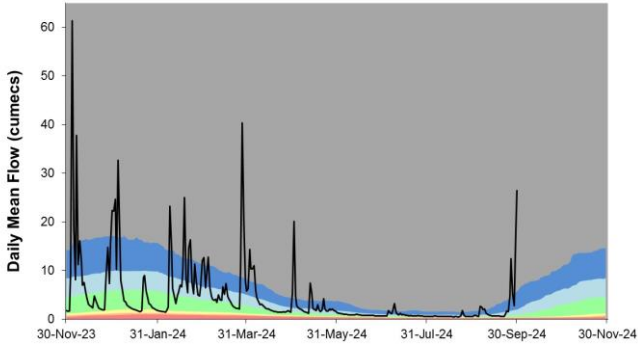
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4.2 River flow charts

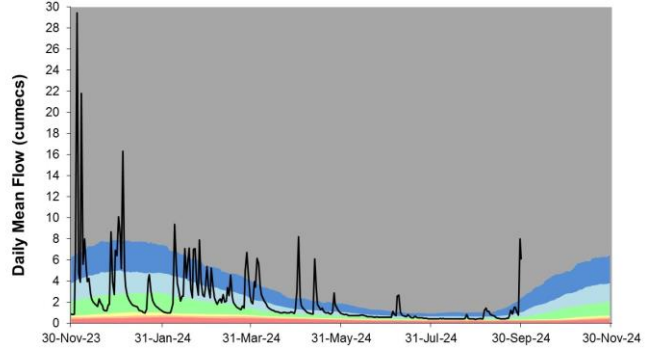
Figure 4.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows.



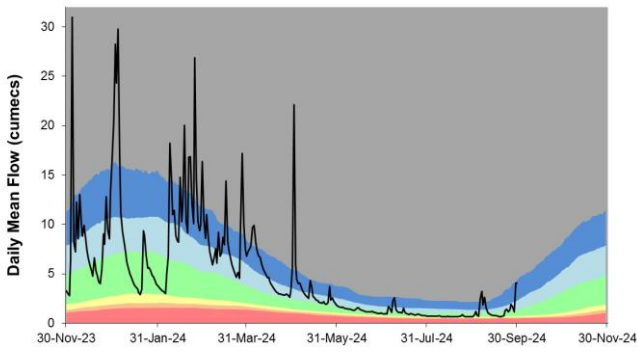
Pen Mill, Somerset Yeo
Ranking used data from 31/10/1963 to 31/12/2022



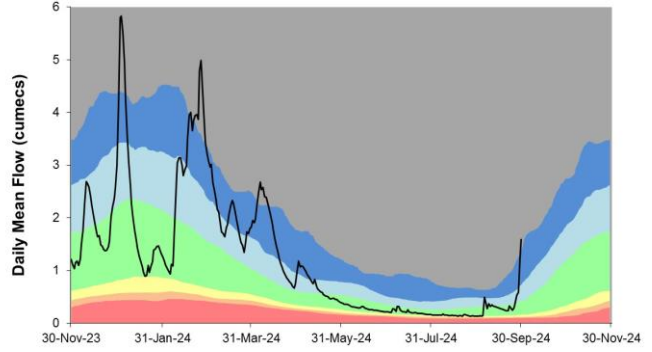
Ashford Mill, River Isle
Ranking used data from 01/10/1962 to 31/12/2022



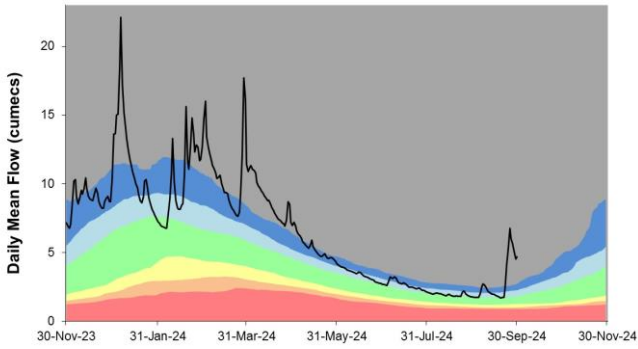
Bishops Hull, River Tone
Ranking used data from 01/02/1961 to 31/12/2022



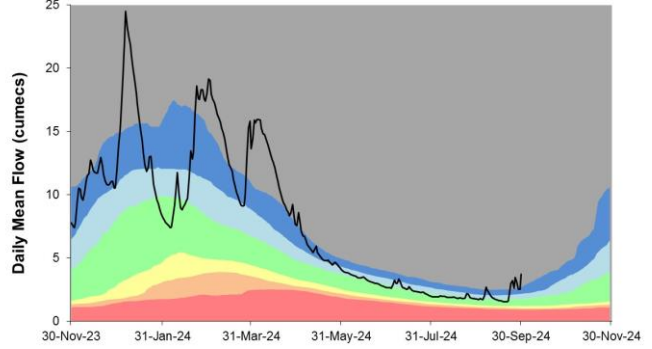
Beggearn Huish, Washford River
Ranking used data from 01/01/1967 to 31/12/2022



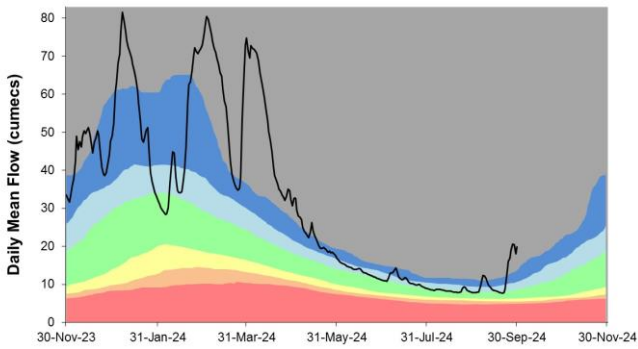
Amesbury, Upper Hampshire Avon
Ranking used data from 01/02/1965 to 31/12/2022



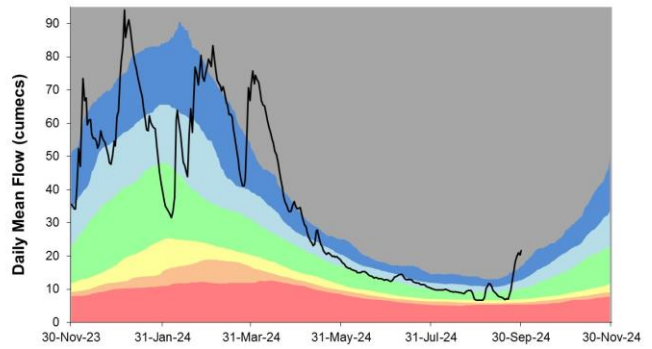
South Newton, River Wylde
Ranking used data from 01/01/1967 to 31/12/2022

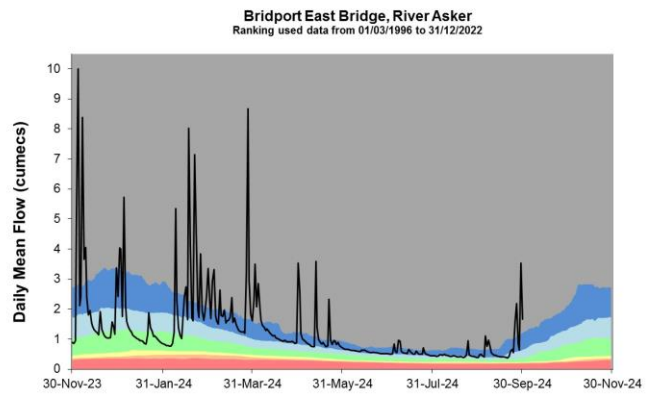
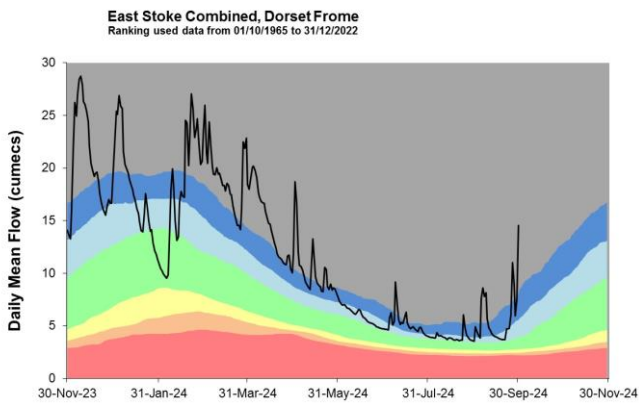
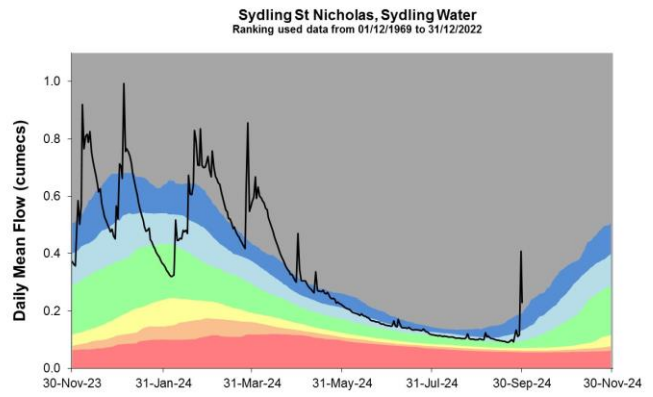
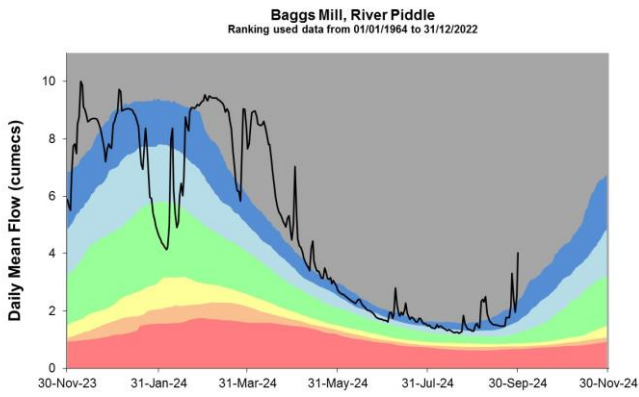
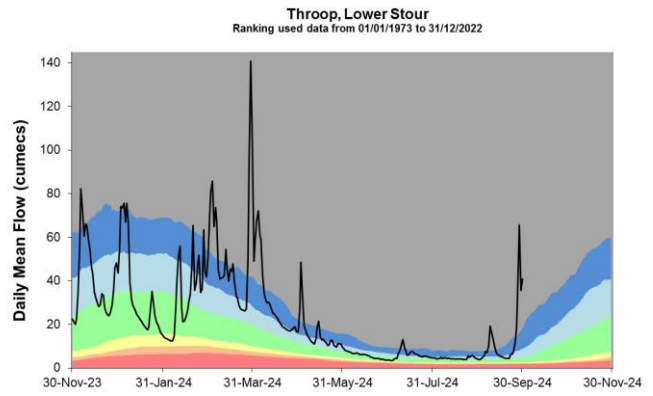
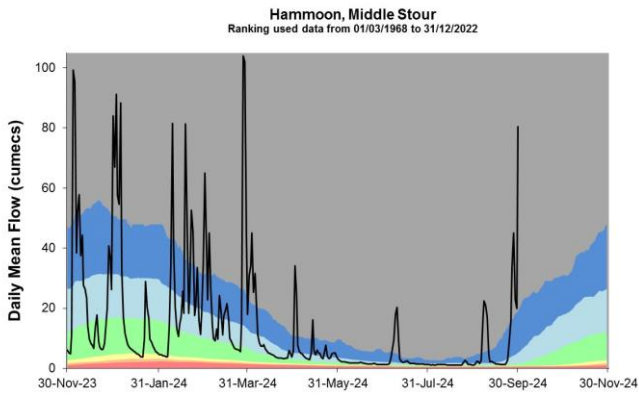


East Mills Combined, Middle Hampshire Avon
Ranking used data from 01/11/1965 to 31/12/2022



Knapp Mill, Upper Hampshire Avon
Ranking used data from 01/01/1975 to 31/12/2022



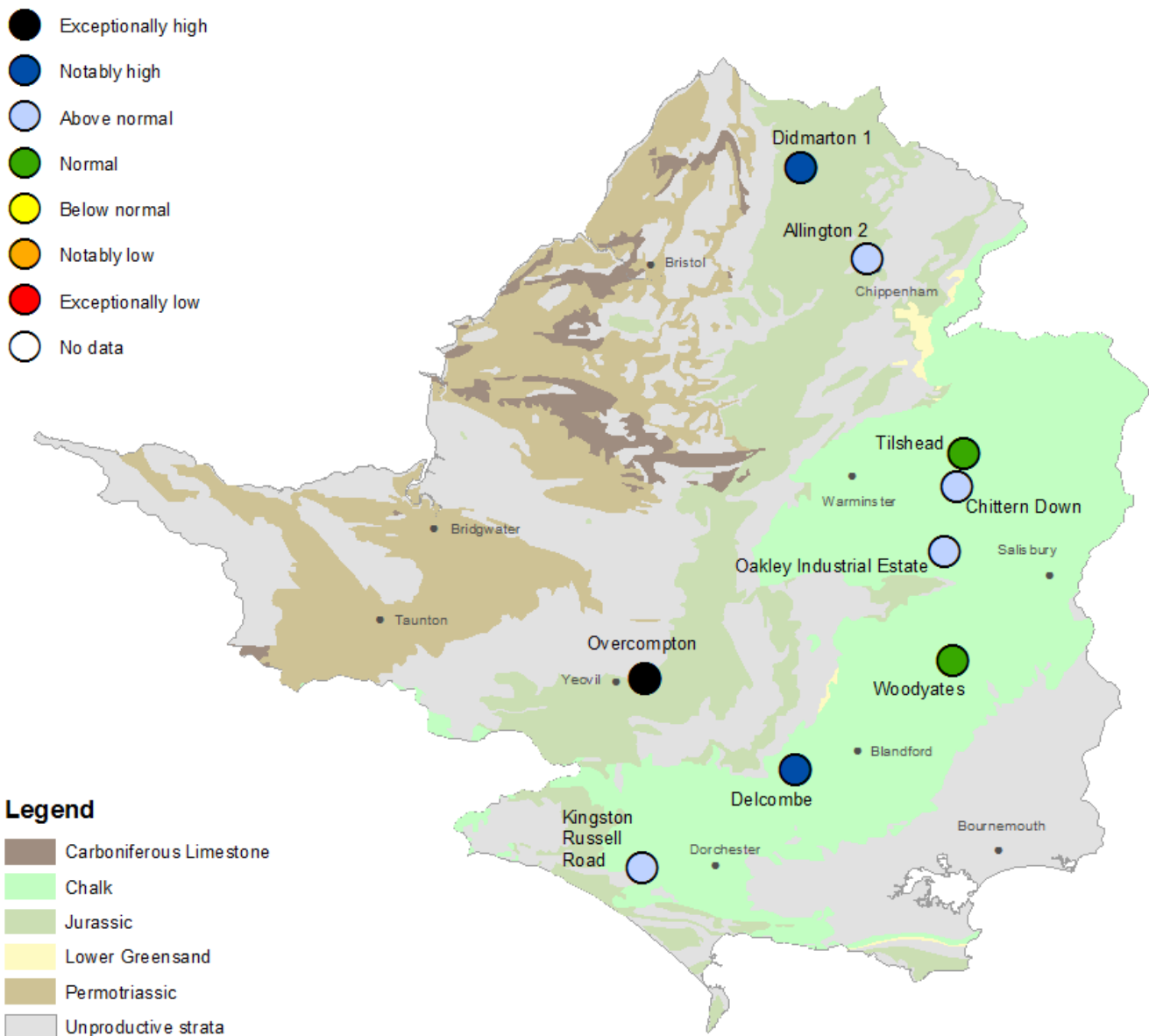


Source: Environment Agency, 2024.

5 Groundwater levels

5.1 Groundwater levels map

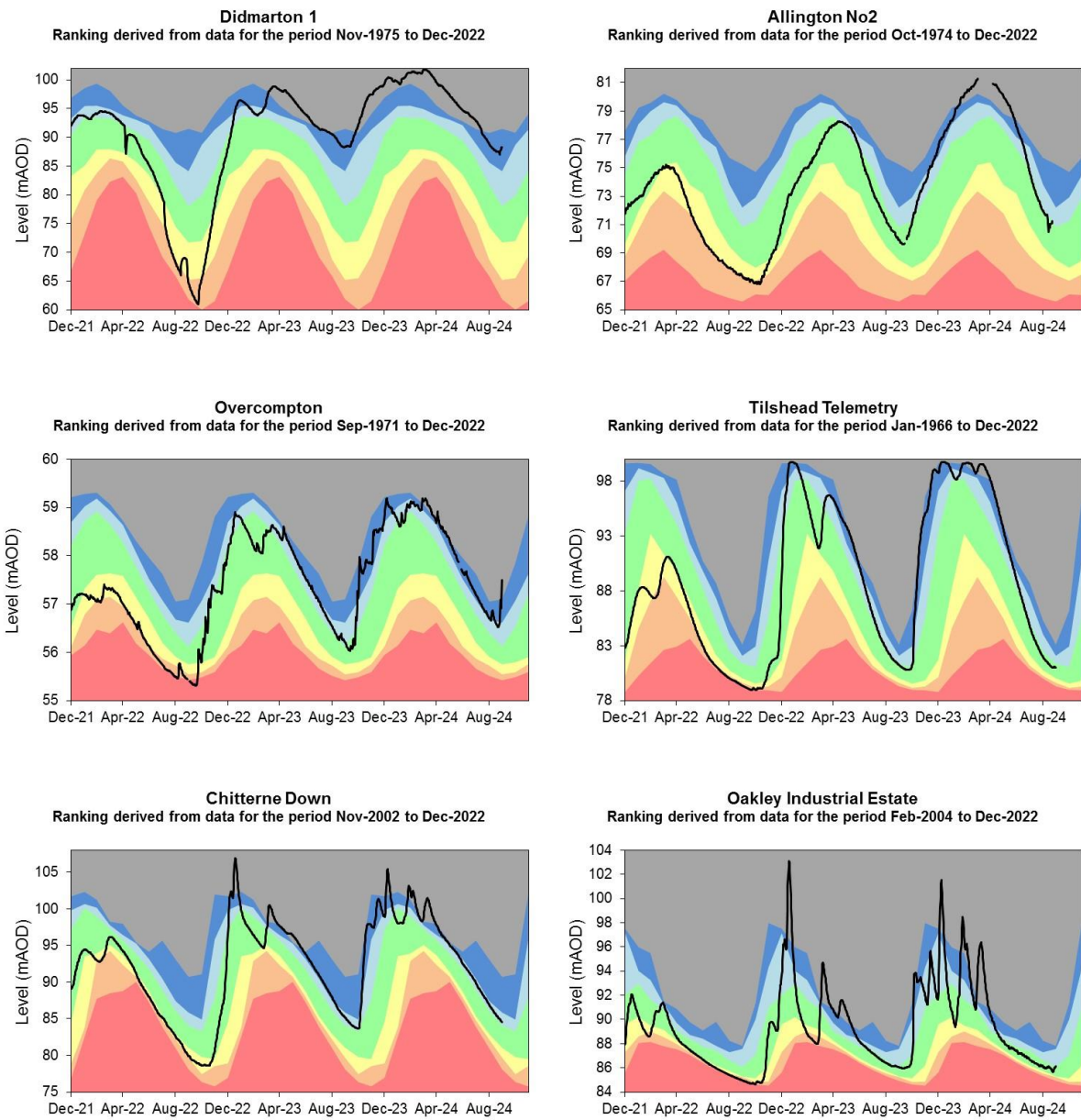
Figure 5.1: Groundwater levels for indicator sites at the end of September 2024, classed relative to an analysis of respective historic September levels. Table available in the appendices with detailed information.

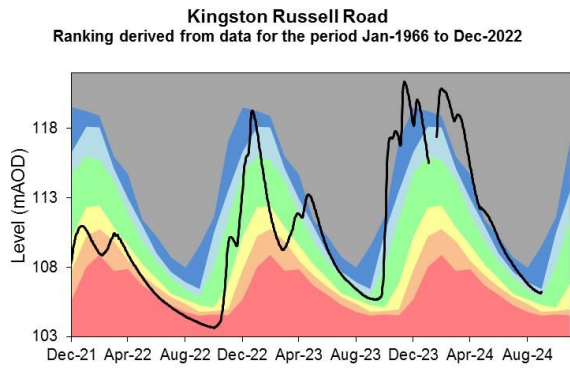
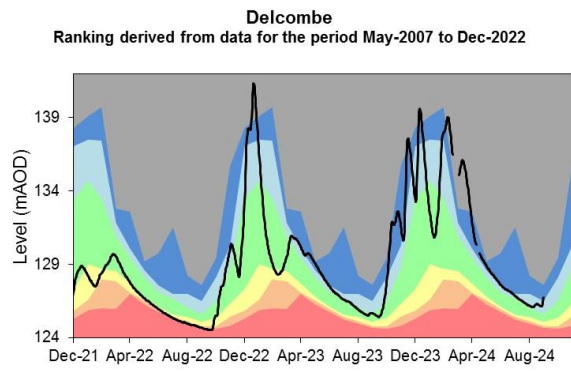
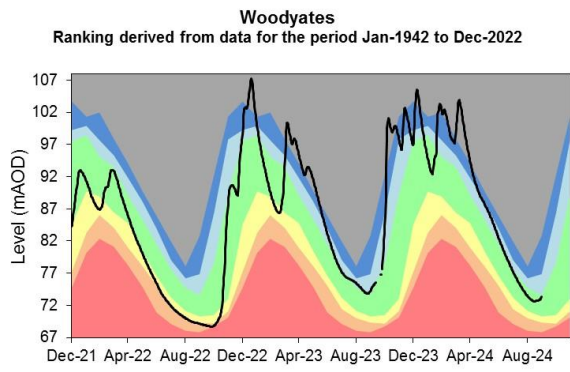


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5.2 Groundwater level charts

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.

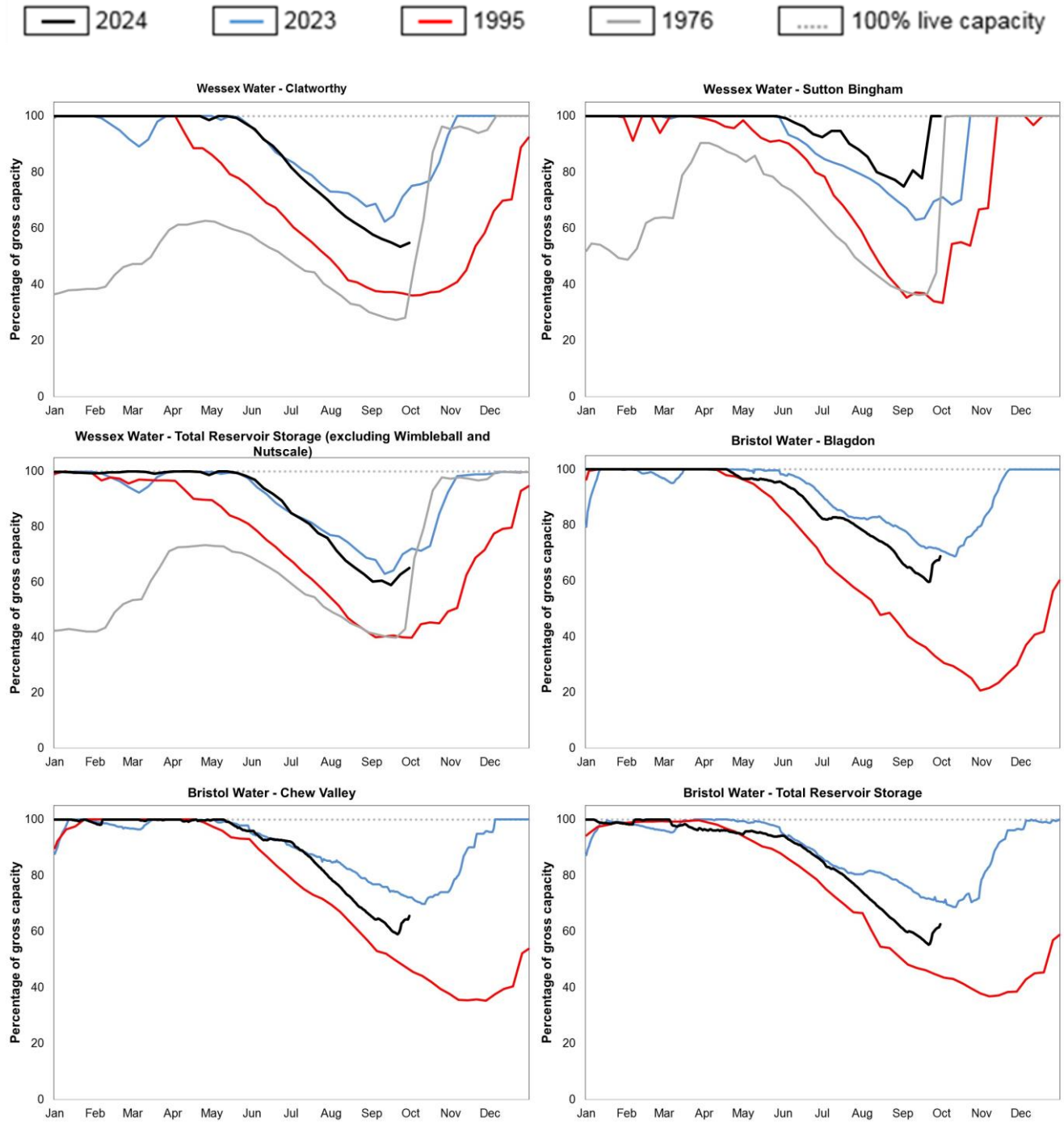




Source: Environment Agency, 2024.

6 Reservoir stocks

Figure 6.1: End of month regional reservoir stocks compared to the previous year, and if available, also a comparison to reservoir stocks in 1995 and 1976.



(Source: Wessex Water and Bristol Water).

7 Flood alerts and warnings

7.1 Flood alerts

Table 1: Fluvial, coastal and groundwater flood alerts issued during September.

Area	Number of fluvial flood alerts in September	Number of coastal flood alerts in September	Number of groundwater flood alerts in September
North Wessex	37	4	0
South Wessex	9	4	3

7.2 Flood warnings

Table 2: Fluvial, coastal and groundwater flood warnings issued during September.

Area	Number of fluvial flood warnings in September	Number of coastal flood warnings in September	Number of groundwater flood warnings in September
North Wessex	14	2	0
South Wessex	16	0	0

7.3 Severe flood warnings

Table 3: Fluvial, coastal and groundwater severe flood warnings issued during September.

Area	Number of fluvial severe flood warnings in September	Number of coastal severe flood warnings in September	Number of groundwater severe flood warnings in September
North Wessex	0	0	0
South Wessex	0	0	0

8 Stream support

8.1 Sites providing stream support

Table 4: End of September status for stream support sites.

Catchment	River	Stream support site	Gauging station	End of September status
Bristol Avon	Chalfield Brook	South Wraxall	Great Chalfield (Wessex Water)	Off
Bristol Avon	Chalfield Brook	Little Chalfield	Great Chalfield (Wessex Water)	Off
Bristol Avon	Charlton Stream	Charlton	Crabb Mill	Off
Bristol Avon	Gauze Brooke	Hullavington	Rodbourne	Off
Bristol Avon	Horscombe Stream	Tucking Mill	No Gauge	Off
Bristol Avon	Luckington Brook	Luckington	Fossway	Off
Bristol Avon	Rodbourne Brook	Lower Stanton St. Quinton	Startley	Off
Bristol Avon	Semington Brook	Easterton	No Gauge	Off
Bristol Avon	Sherston Avon	Stanbridge	Fossway	Off
Bristol Avon	Tetbury Avon	Tetbury	Brokenborough	Off
Dorset Frome	South Winterbourne	Winterbourne Abbas	Winterbourne Steepleton	Off

Dorset Frome	Watergates Stream	Watergates	No Gauge	On
Piddle	Devil's Brook	Dewlish	Dewlish Woodsdown Cross	Off
Piddle	Piddle	Alton Mill	South House & Little Puddle	Off
Piddle	Piddle	Morningwell	South House & Little Puddle	On
Piddle	Piddle	Briantspuddle	Briantspuddle	Off
Dorset Stour	Crichel Stream	Long Crichel	No Gauge	On
Dorset Stour	Gussage Stream	Gussage All Saints	Bowerswain	On
Dorset Stour	Allen	Wyke Down	All Hallows	Off
Dorset Stour	Pimperne Stream	Pimperne	No Gauge	Off
Hampshire Avon	Bourne	Porton	Salisbury Bourne	Off
Hampshire Avon	Chitterne Brook	Codford Road	Codford	On
Hampshire Avon	Wylde	Brixton Deverill	Brixton Deverill & Heytesbury	Off
Hampshire Avon	Wylde	Kingston Deverill	Brixton Deverill & Heytesbury	On

9 Abstraction licences subject to restrict or cease

9.1 Abstraction licences subject to restrict or cease

Table 5: Number of licences at restrict or cease at the end of September.

Catchment	Number of licences at restrict at the end of September	Number of licences at cease at the end of September
Bristol Avon	0	0
Dorset	1	0
Hampshire Avon	1	0
Somerset	0	0

10 Glossary

10.1 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).

10.2 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

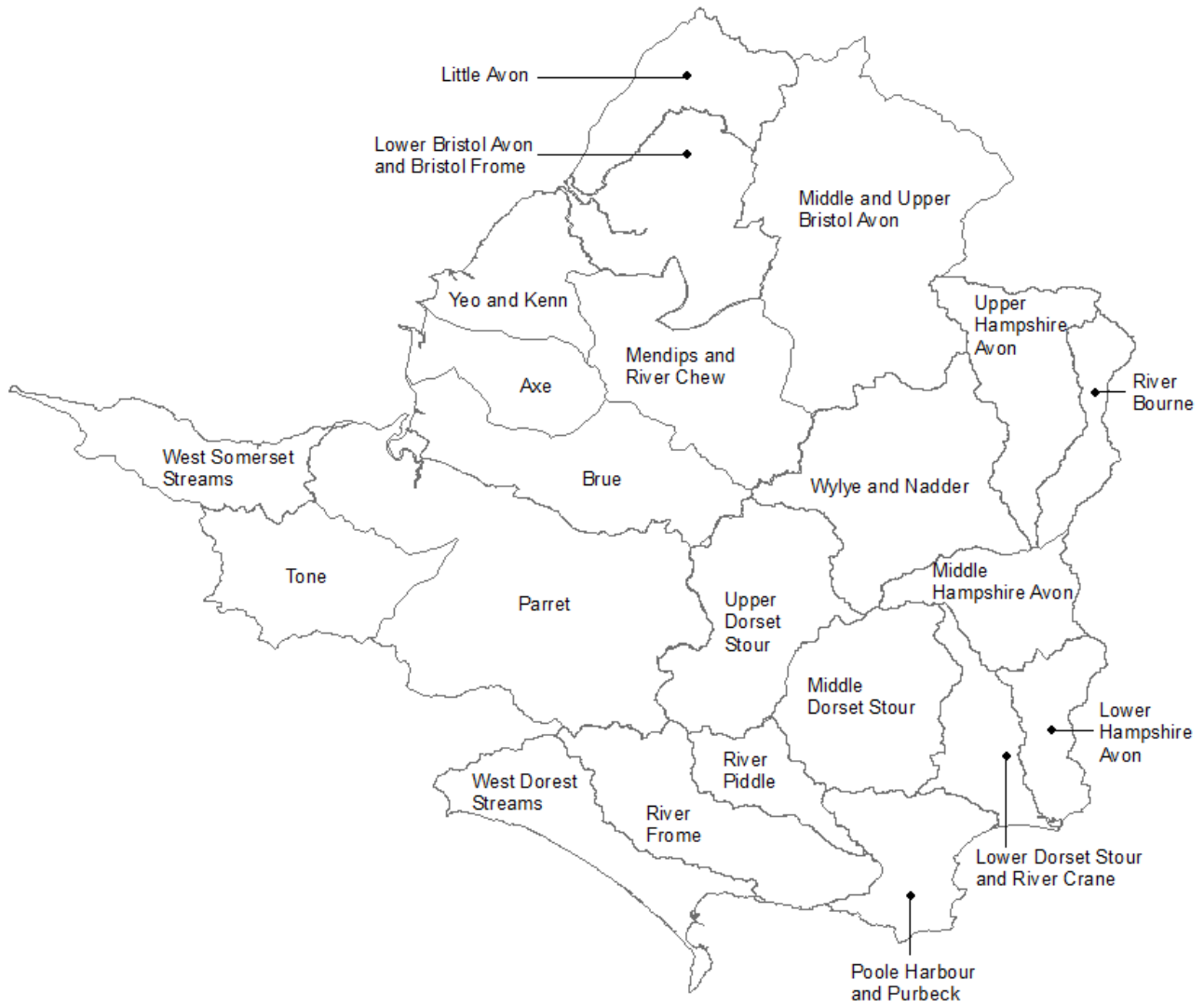
Value likely to fall within this band 8% of the time.

Exceptionally low

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

10.3 Rainfall Areas Map

Figure 6.2 Rainfall catchments in Wessex.



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11 Appendices

11.1 Rainfall table

Hydrological area	Sep 2024 rainfall % of long term average 1961 to 1990	Sep 2024 band	Jul 2024 to September cumulative band	Apr 2024 to September cumulative band	Oct 2023 to September cumulative band
Axe	242	Exceptionally High	Above normal	Above normal	Exceptionally high
Brue	248	Exceptionally High	Notably high	Above normal	Exceptionally high
Little Avon	268	Exceptionally High	Notably high	Above normal	Exceptionally high
Lower Bristol Avon And Bristol Frome	265	Exceptionally High	Notably high	Notably high	Exceptionally high
Lower Dorset Stour And River Crane	232	Exceptionally High	Notably high	Notably high	Exceptionally high
Lower Hampshire Avon	225	Exceptionally High	Notably high	Notably high	Exceptionally high
Mendips And River Chew	250	Exceptionally High	Notably high	Above normal	Exceptionally high
Middle And Upper Bristol Avon	285	Exceptionally High	Exceptionally high	Notably high	Exceptionally high

Middle Dorset Stour	255	Exceptionally High	Exceptionally high	Notably high	Exceptionally high
Middle Hampshire Avon	273	Exceptionally High	Exceptionally high	Notably high	Exceptionally high
Parrett	256	Exceptionally High	Notably high	Notably high	Exceptionally high
Poole Harbour And Purbeck	218	Notably High	Notably high	Exceptionally high	Exceptionally high
River Bourne	339	Exceptionally High	Exceptionally high	Exceptionally high	Exceptionally high
River Frome	229	Exceptionally High	Notably high	Exceptionally high	Exceptionally high
River Piddle	244	Exceptionally High	Notably high	Exceptionally high	Exceptionally high
Tone	220	Exceptionally High	Above normal	Above normal	Exceptionally high
Upper Dorset Stour	260	Exceptionally High	Exceptionally high	Exceptionally high	Exceptionally high
Upper Hampshire Avon	337	Exceptionally High	Exceptionally high	Notably high	Exceptionally high
West Dorset Streams	242	Exceptionally High	Notably high	Exceptionally high	Exceptionally high

West Somerset Streams	206	Exceptionally High	Above normal	Above normal	Exceptionally high
Wylde And Nadder	290	Exceptionally High	Exceptionally high	Notably high	Exceptionally high
Yeo And Kenn	231	Exceptionally High	Above normal	Above normal	Exceptionally high

11.2 River flows table

Site name	River	Catchment	Sep 2024 band	Aug 2024 band
Amesbury	Hampshire Avon	Hampshire Avon	Exceptionally high	Normal
Ashford Mill	Isle	Parrett	Notably high	Normal
Baggs Mill	Piddle	Piddle	Exceptionally high	Notably high
Bathford	Bristol Avon	Bristol Avon	Exceptionally high	Normal
Beggearn Huish	Washford River	Washford River	Above normal	Below normal
Bishops Hull	Tone	Tone	Above normal	Below normal
Bridport East Bridge	Asker	Asker	Exceptionally high	Above normal
Fenny Castle	Sheppey	Brue	Notably high	Below normal
East Mills Combined	Hampshire Avon	Hampshire Avon	Notably high	Normal
East Stoke Combined	Dorset Frome	Dorset Frome	Exceptionally high	Above normal
Frenchay	Bristol Frome	Bristol Frome	Exceptionally high	Notably low
Great Somerford	Bristol Avon	Bristol Avon	Notably high	Normal

Hammoon	Dorset Stour	Dorset Stour	Exceptionally high	Normal
Knapp Mill	Hampshire Avon	Hampshire Avon	Notably high	Normal
Lovington	Brue	Brue	Exceptionally high	Normal
Pen Mill	Somerset Yeo	Parrett	Exceptionally high	Normal
South Newton	Wylde	Hampshire Avon	Notably high	Normal
Sydling St Nicholas	Sydling Water	Dorset Frome	Notably high	Above normal
Tellisford	Somerset Frome	Bristol Avon	Exceptionally high	Normal
Throop	Dorset Stour	Dorset Stour	Exceptionally high	Above normal

11.3 Groundwater table

Site name	Aquifer	End of Sep 2024 band	End of Aug 2024 band
Allington No2	Upper Bristol Avon Great Oolite	Above normal	Normal
Chitterne Down	Upper Hampshire Avon Chalk	Above normal	Above normal
Delcombe	Dorset Frome And Piddle Chalk/upper Greensand	Notably high	Above normal
Didmarton 1	Upper Bristol Avon Inferior Oolite	Notably high	Notably high
Kingston Russell Road	Dorset Frome Chalk	Above normal	Above normal
Overcompton	Somerset Yeo Bridport Sand	Exceptionally high	Notably high
Tilshead	Upper Hampshire Avon Chalk	Normal	Normal
Woodyates	Dorset Stour Chalk	Normal	Normal
Oakley Industrial Estate	Upper Hampshire Avon Chalk	Above normal	Normal