

Monthly water situation report: Thames Area

1 Summary - October 2024

Thames area received 80mm of rainfall in October which was 123% of the long term average (LTA). Soil moisture deficits (SMDs) at the end of the month was 5mm with an effective rainfall of 53mm. Monthly mean flows increased at majority of our indicator sites and more than half of the sites measured their highest ever October flows since site records began. Groundwater levels continued to increase at majority of our indicator sites with almost all the indicator sites recording exceptionally high groundwater levels. There were 26 flood alerts issued on rivers during October.

1.1 Rainfall

In October, Thames area received a total rainfall of 80mm which was 123% of the LTA. The rainfall amount across the area was consistent with no particular spatial trends and all the areal units were classed as normal for the time of the year. Total accumulated rainfall over the past 12 months remains exceptionally high across the entire area and it was the wettest 12 months since records began in 1871.

1.2 Soil moisture deficit and recharge

Despite a normal rainfall in October, the soils remain saturated due to exceptionally high rainfall in September. As a result, SMDs at the end of the month was 5mm which was below the LTA of 64mm. This allowed an effective rainfall of 53mm for the month of October, which was higher than 400% of the LTA (12mm).

1.3 River flows

Monthly mean river flows increased at the majority (87%) of our indicator sites in October. Exceptionally high river flows were recorded at all our indicator sites with the exception of 3; Swallowfield (River Blackwater), Weybridge (River Wey) and Tilford (River Wey) which were notably high for the time of year. More than half of our indicator sites recorded their highest flow since record began.

1.4 Groundwater levels

Groundwater levels increased at the majority of our sites due to recharge from heavy rainfall received over the past couple of months which was expected for the start of the winter period. These resulted in all the sites recording exceptionally high groundwater levels with the exception of 2 (Ampney Crucis in the Great Oolites and Frith Cottage in the Lower Greensand) which recorded a notably high levels for the time of the year.

1.5 Reservoir stocks

Reservoir stocks in the Farmoor reservoir increased to 98.8% at the end of October, which is above average for the time of year. Stocks in Lower Thames were 79.2% at the end of October, a slight decrease from 79.8% at the end of September and remains above the LTA for the time of year.

1.6 Environmental impact

During October, there were 26 flood alerts and 0 flood warnings issued on rivers in Thames area. At the end of the month, 0 abstraction licences were being constrained in the area to protect water resources and the environment.

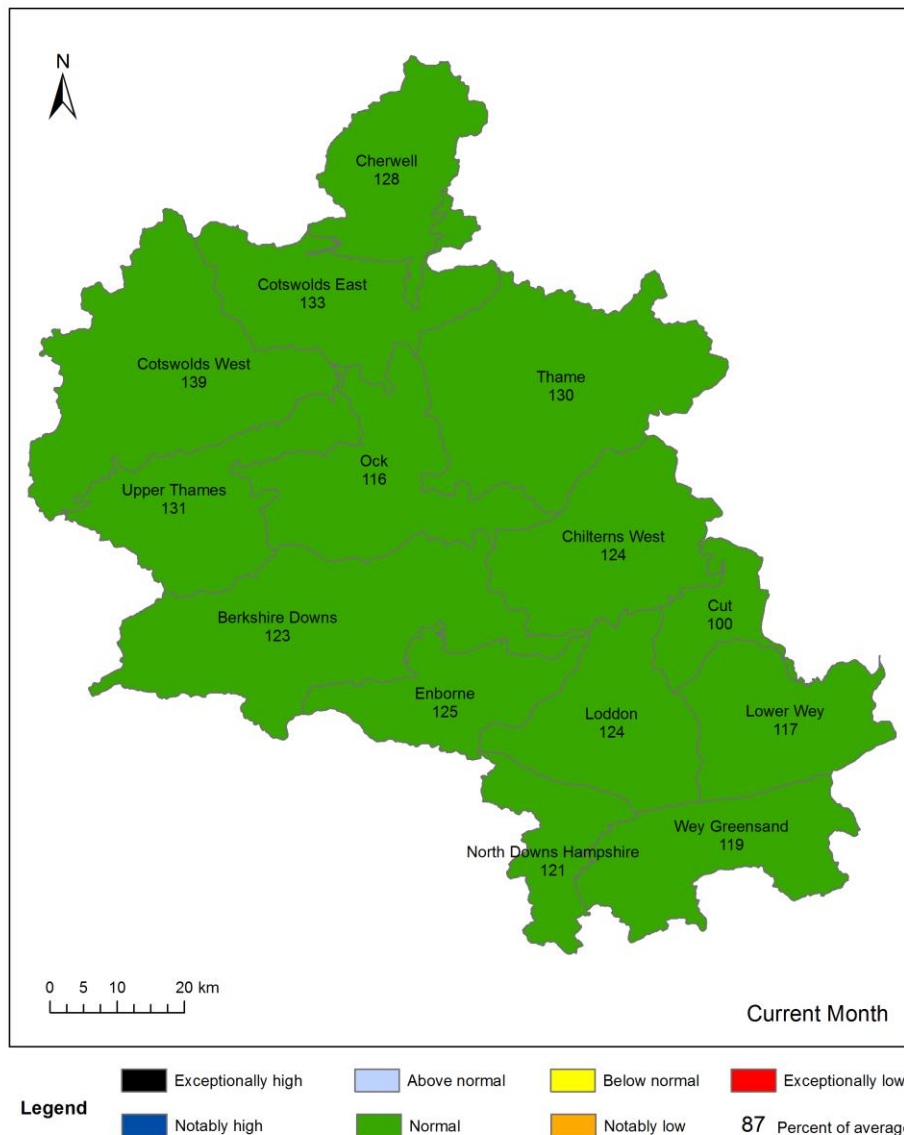
Author: Thames Area Groundwater Resources and Hydrology, enquiriesWT@environment-agency.gov.uk

Contact Details: 030708 506 506

2 Rainfall

2.1 Rainfall map

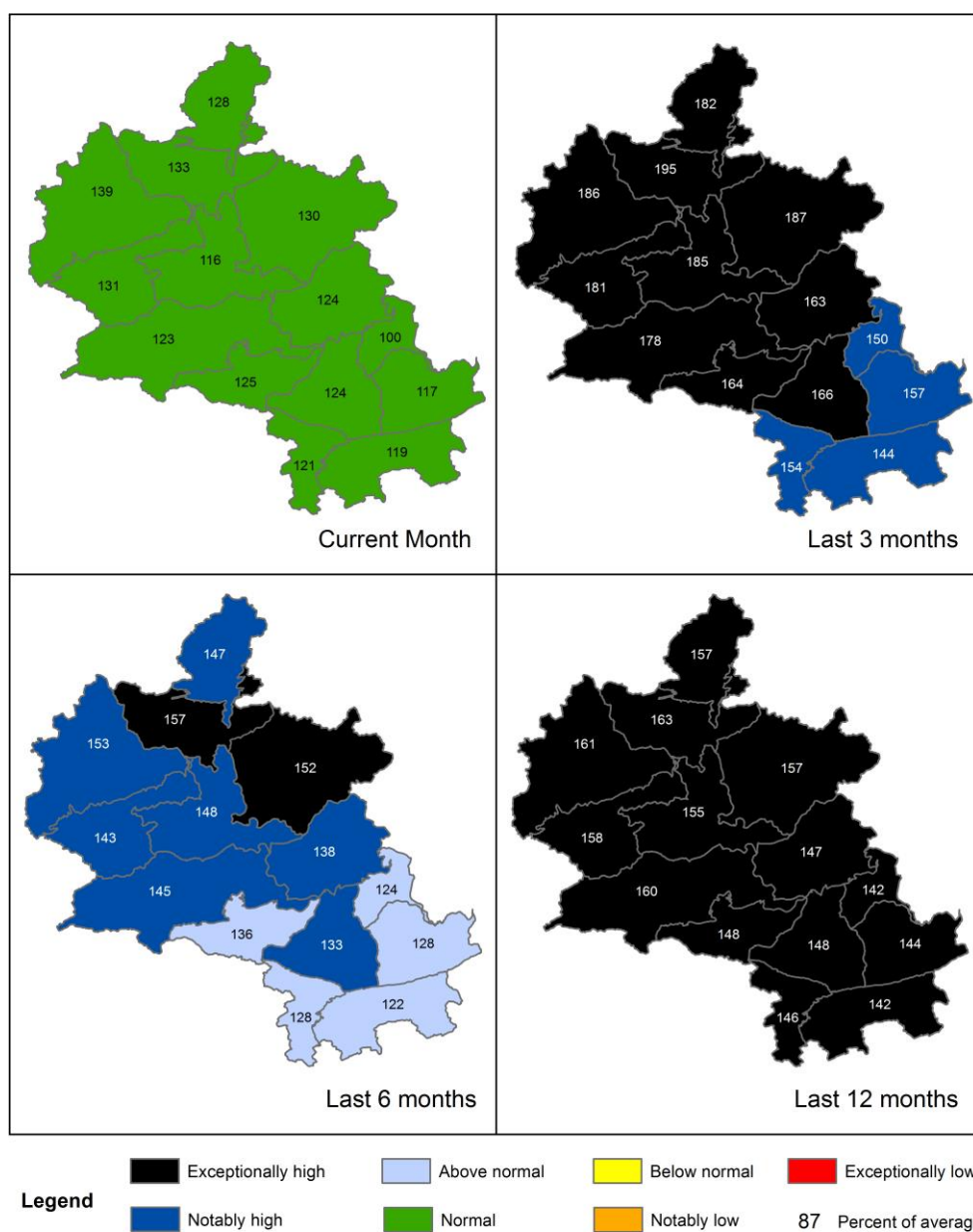
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 31 October 2024), classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.



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, 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 map (2)

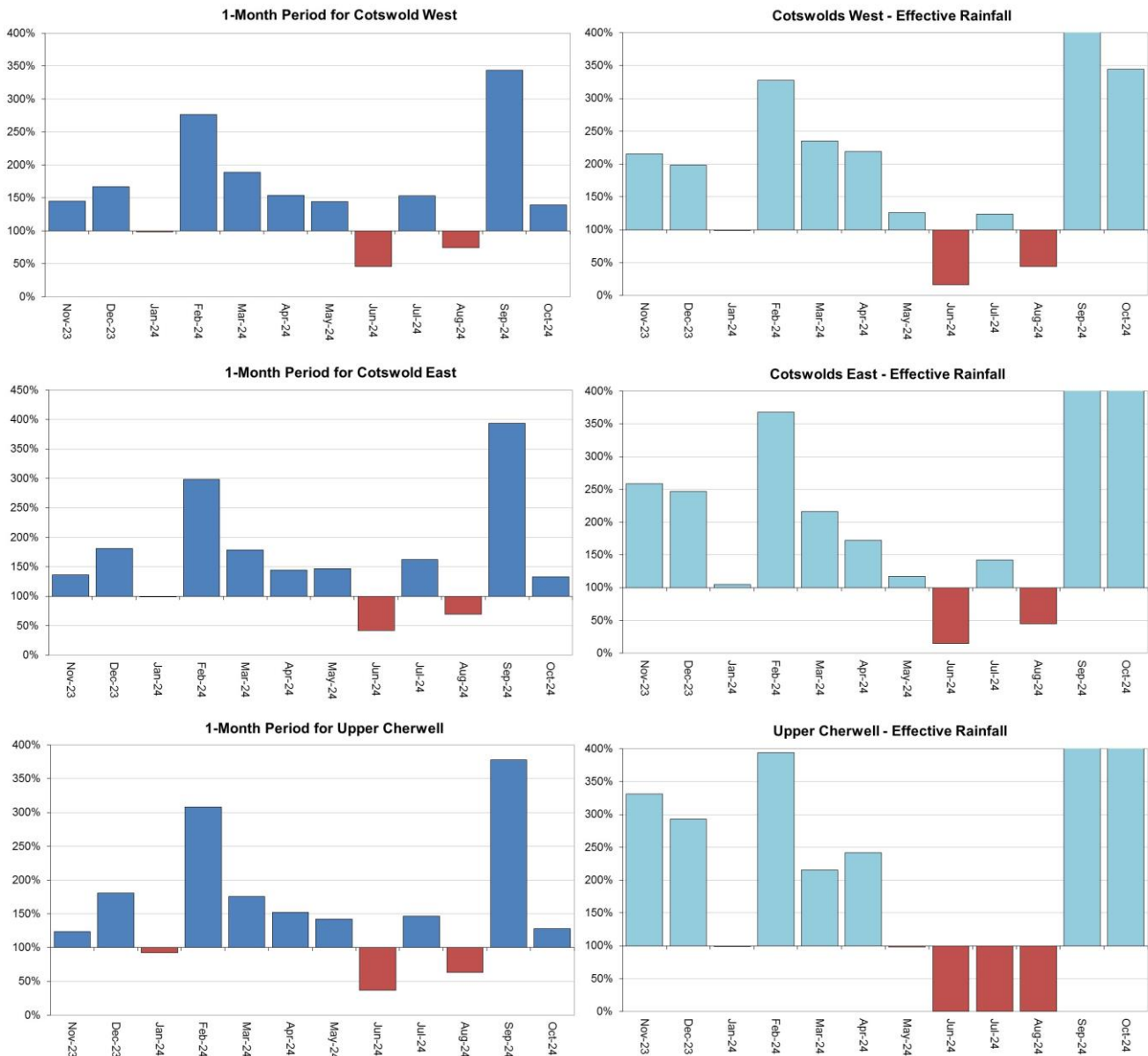
Figure 2.2: Total rainfall for hydrological areas for the current month (up to 31 October 2024), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.



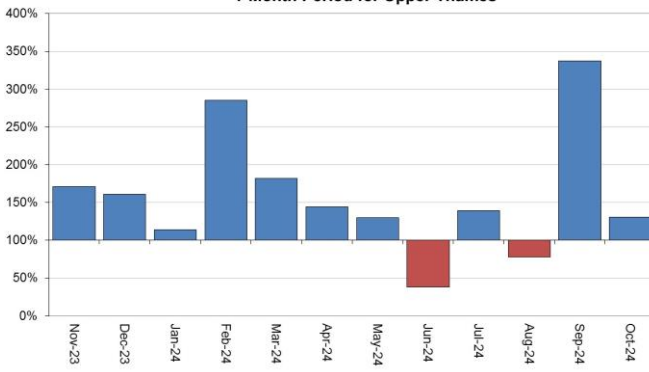
HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2024). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Crown copyright. All rights reserved. Environment Agency, 100024198, 2024.

2.3 Rainfall charts

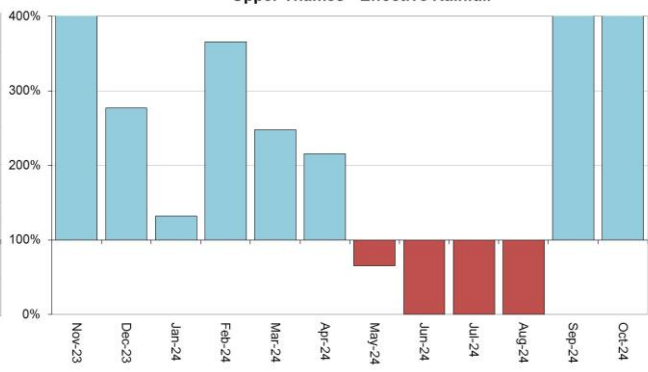
Figure 2.3: Monthly rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average for each areal unit.



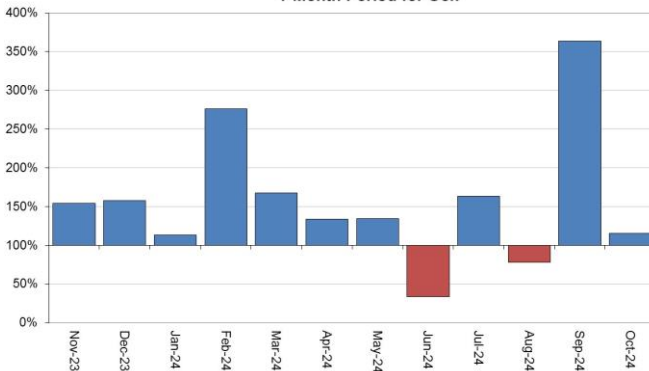
1-Month Period for Upper Thames



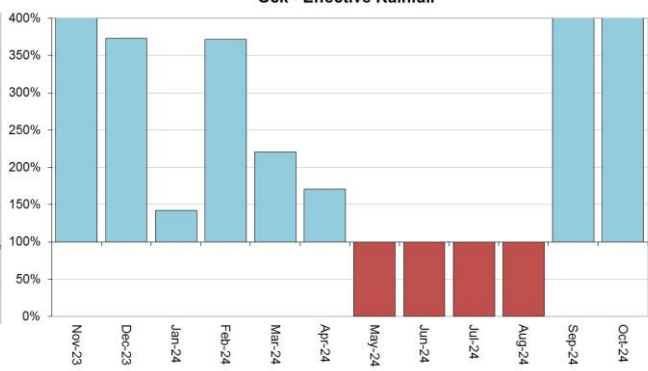
Upper Thames - Effective Rainfall



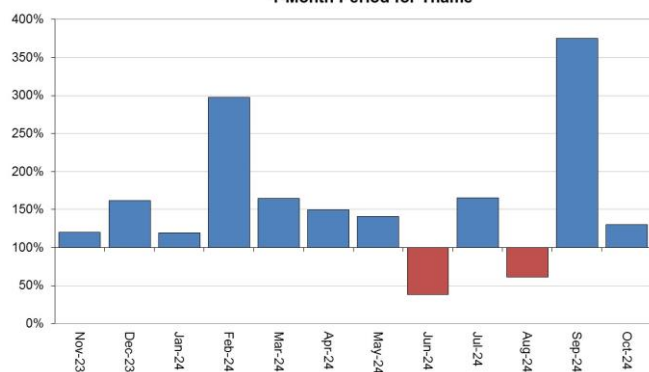
1-Month Period for Ock



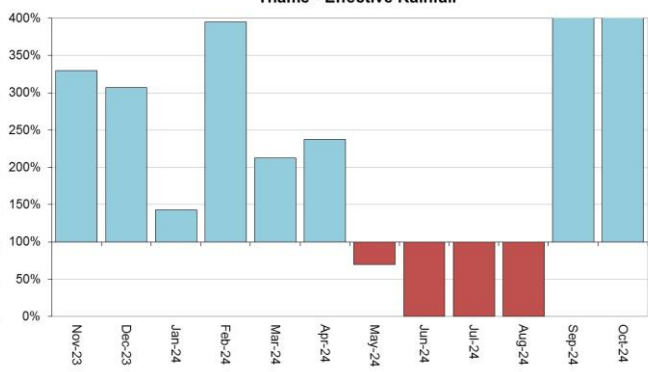
Ock - Effective Rainfall



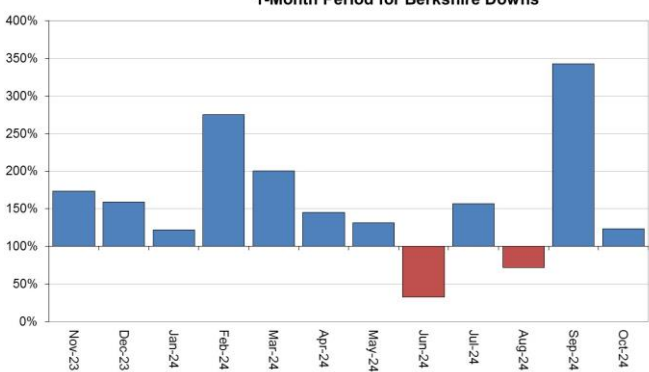
1-Month Period for Thame



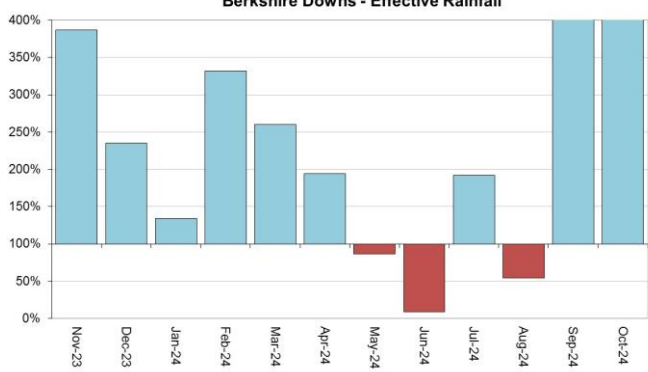
Thame - Effective Rainfall



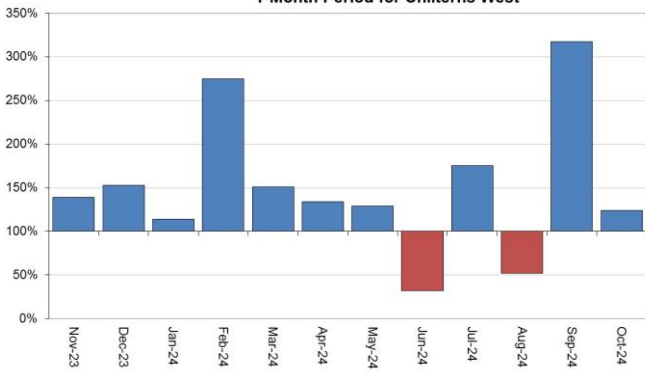
1-Month Period for Berkshire Downs



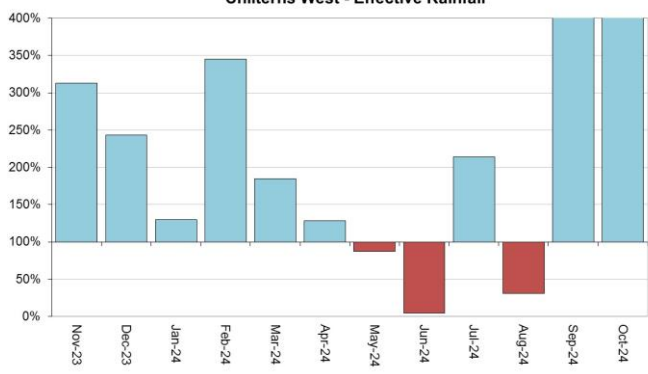
Berkshire Downs - Effective Rainfall



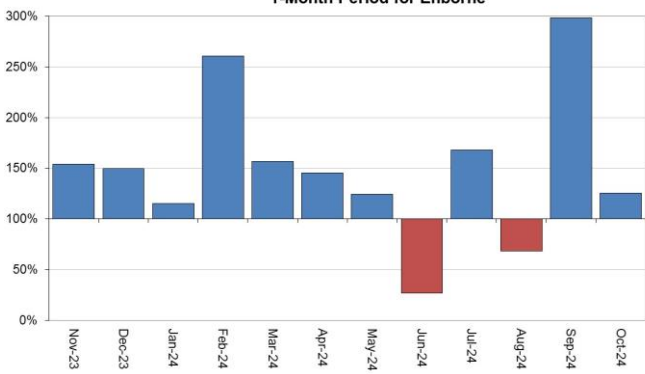
1-Month Period for Chilterns West



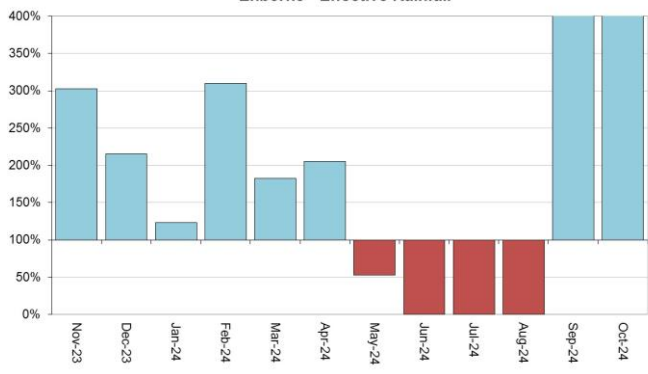
Chilterns West - Effective Rainfall



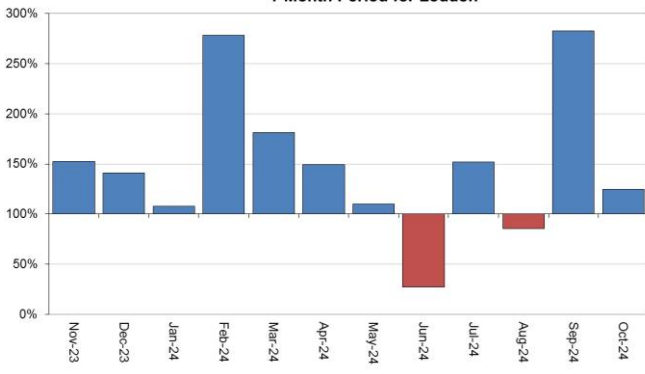
1-Month Period for Enborne



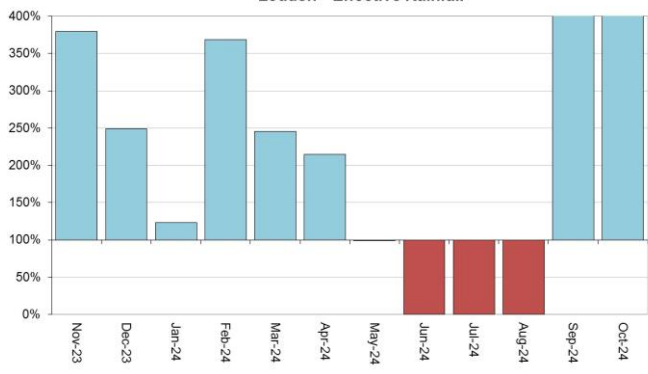
Enborne - Effective Rainfall



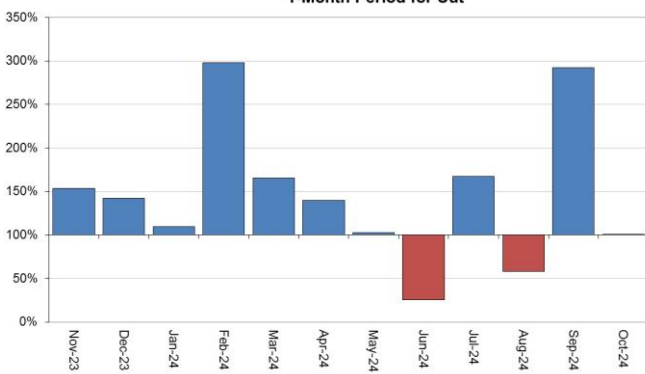
1-Month Period for Loddon



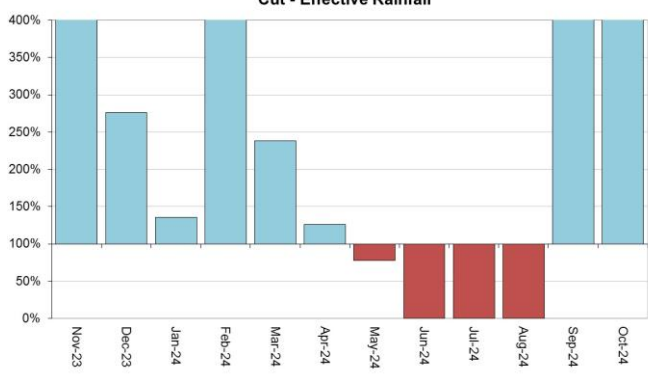
Loddon - Effective Rainfall

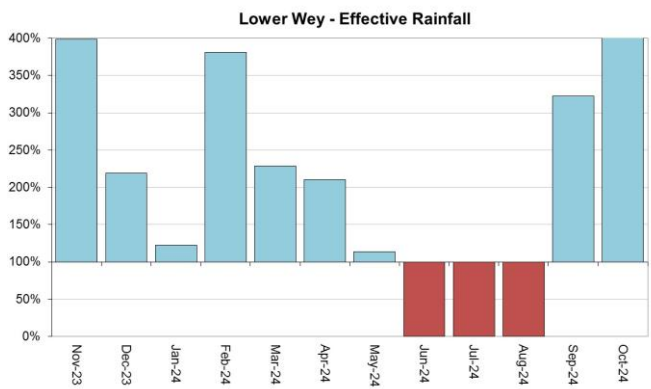
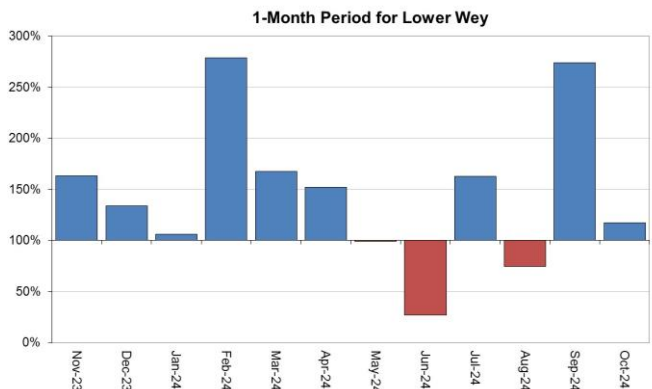
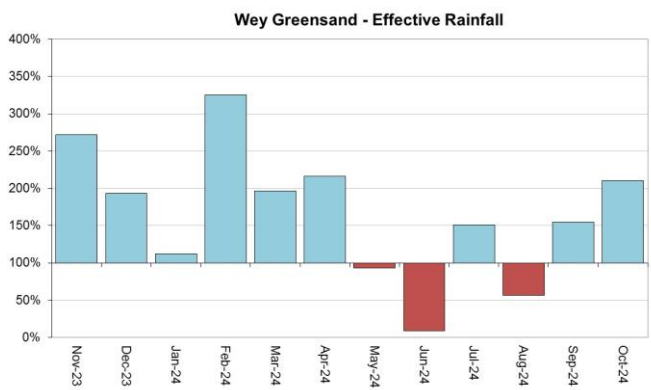
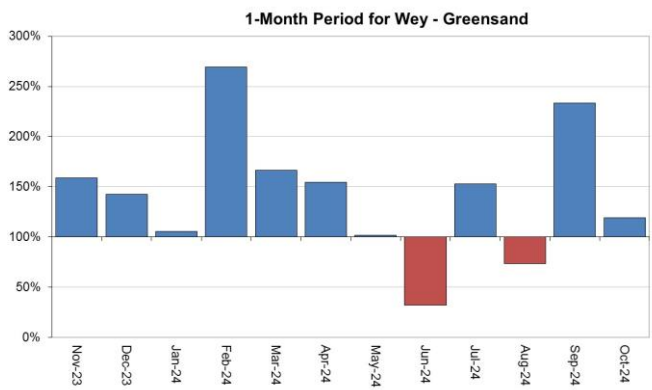
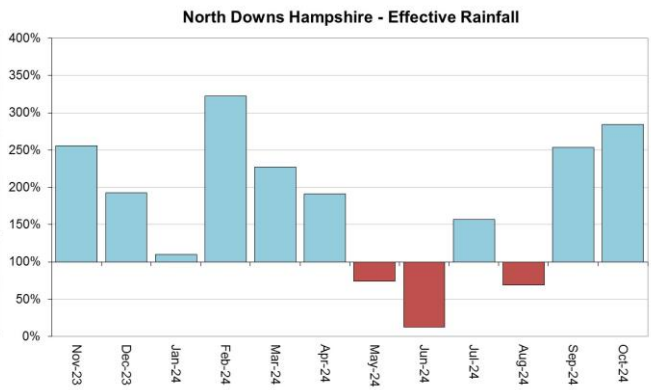
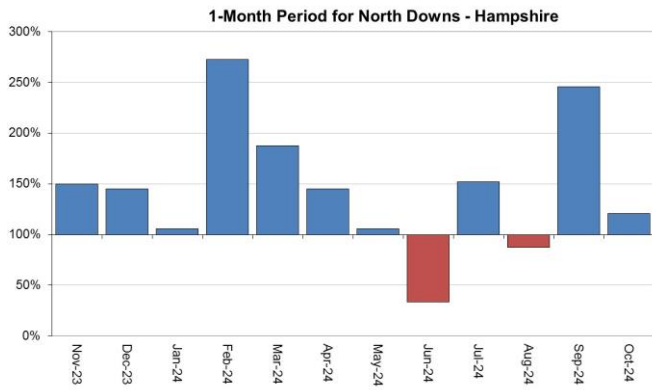


1-Month Period for Cut



Cut - Effective Rainfall





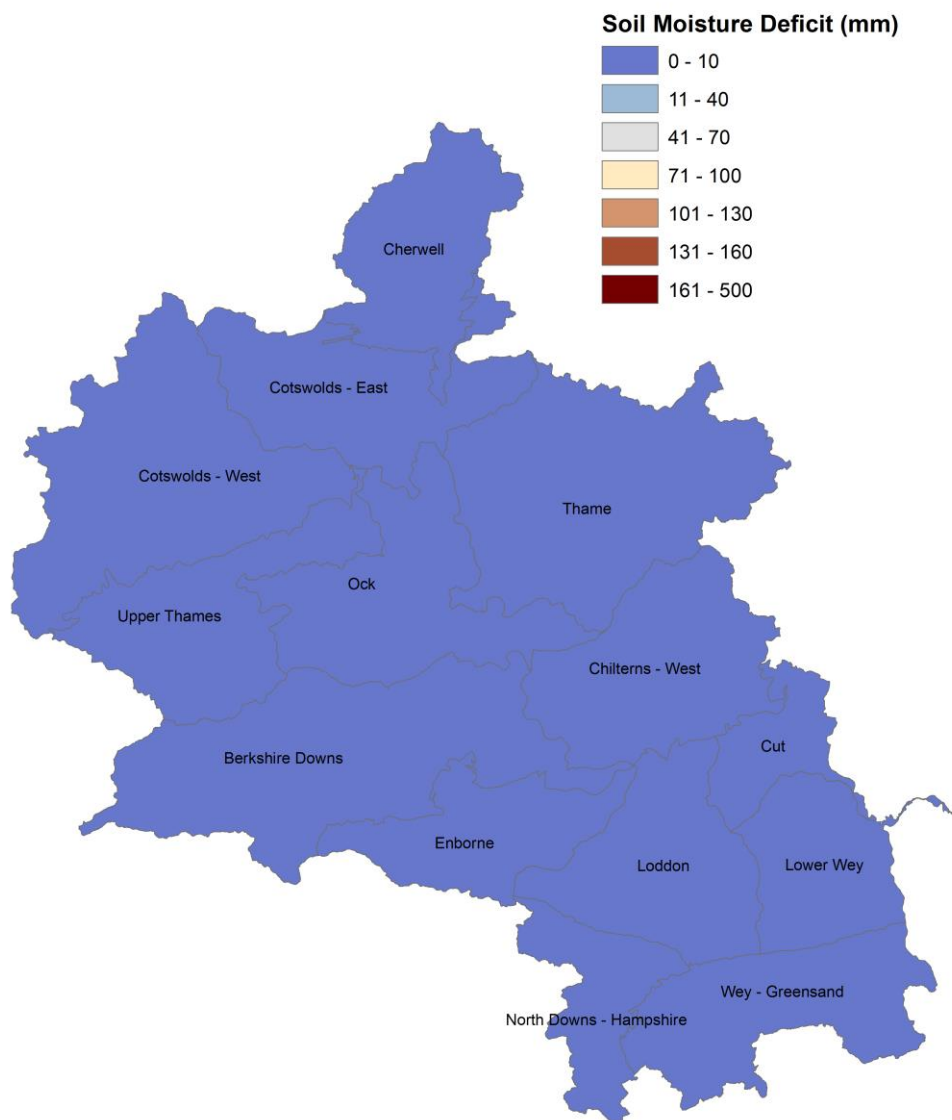
HadUK rainfall data. (Source: Met Office. Crown copyright, 2024).

EA effective rainfall data (Source: EA Soil Moisture Model)

3 Soil moisture deficit

3.1 Soil moisture deficit map

Figure 3.1: Soil moisture deficits for the week ending 31 October 2024. Shows the areal SMD estimate in millimetres.

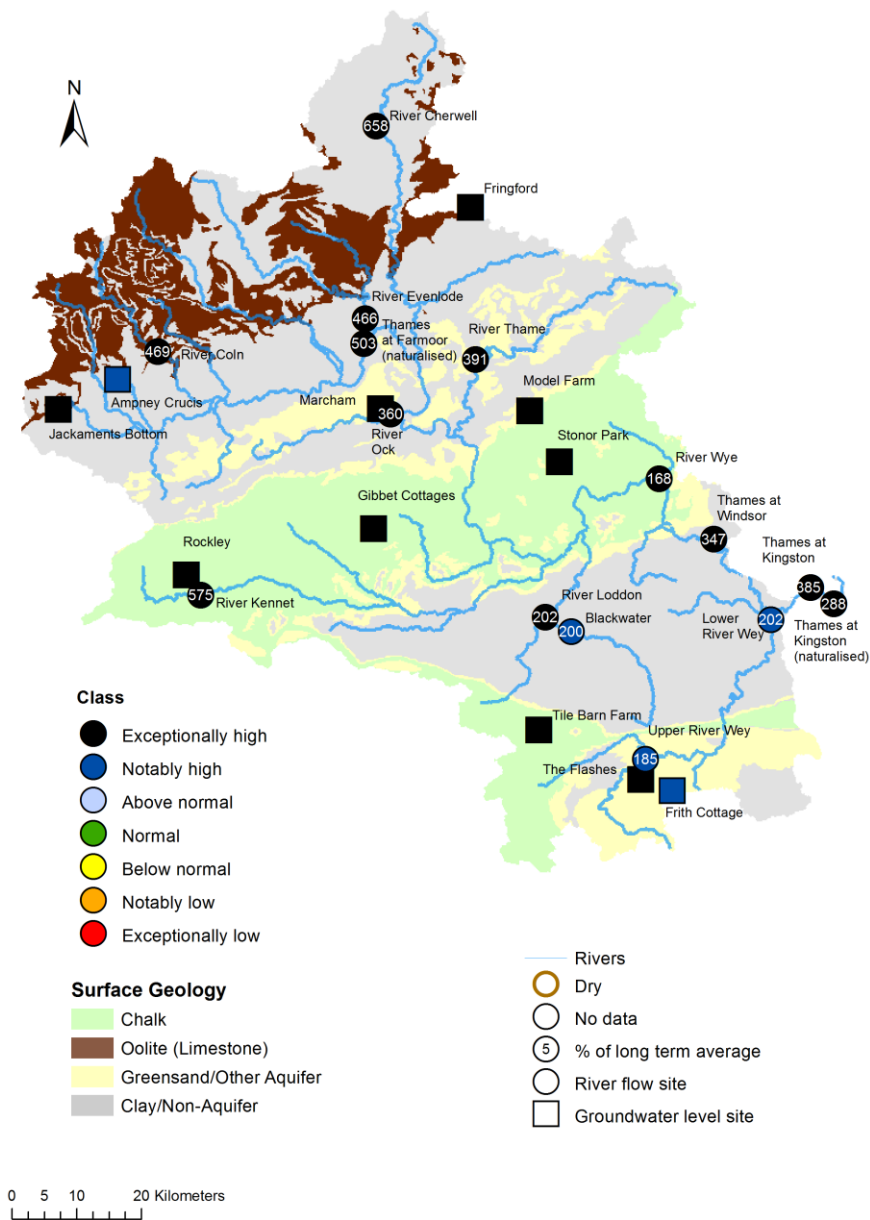


(Source: Met Office. Crown copyright, 2024). All rights reserved. Environment Agency, 100024198, 2024.

4 River Flow and Groundwater Status

4.1 River flow and groundwater level map

Figure 4.1: Monthly mean river flow for indicator sites and end of month groundwater levels for indicator sites for October 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic October means.

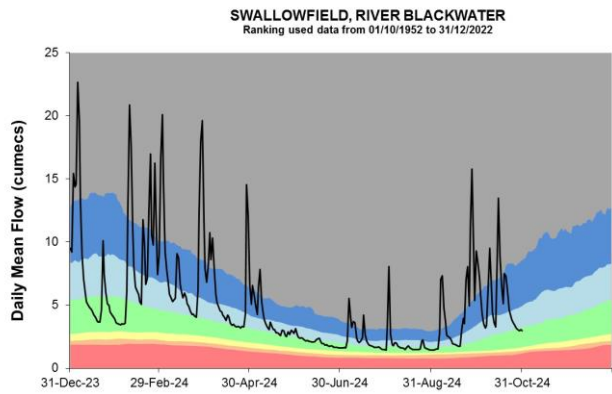
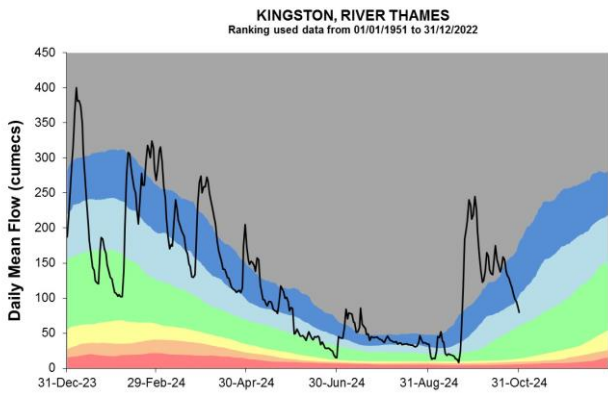
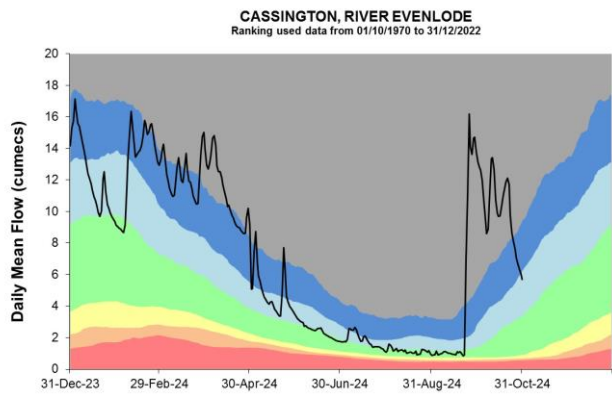
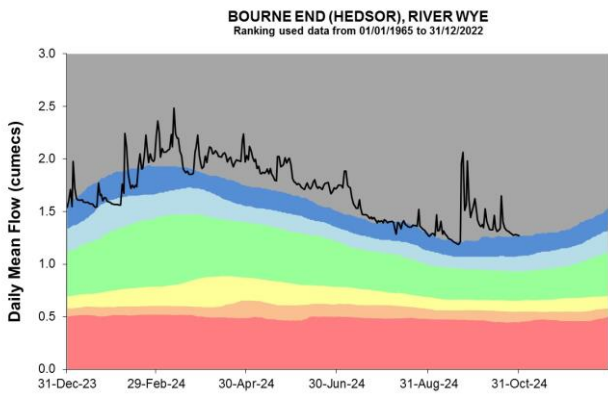
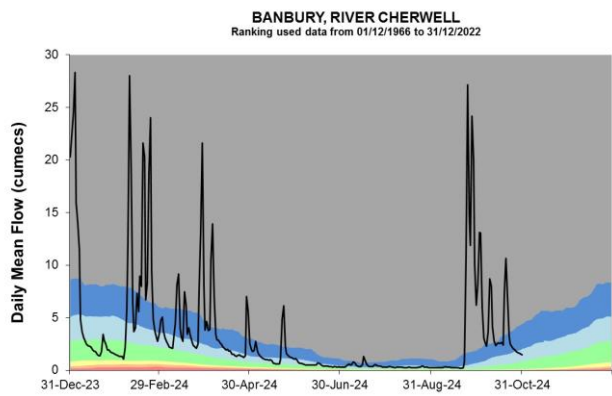
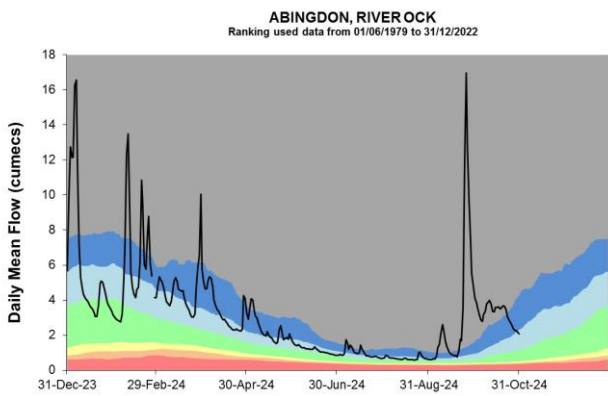
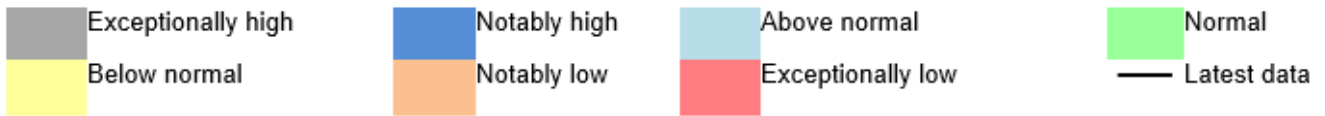


(Source: Environment Agency). Crown copyright. All rights reserved. Environment Agency, 100024198, 2024.

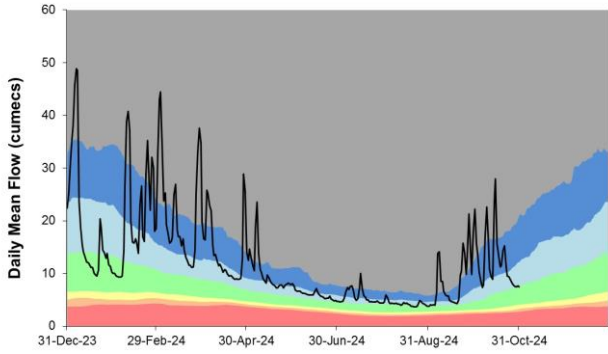
5 River flows

5.1 River flow charts

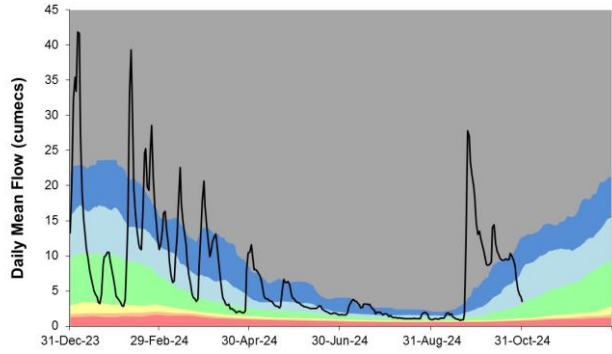
Figure 5.1: Daily mean river flows for indicator sites compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



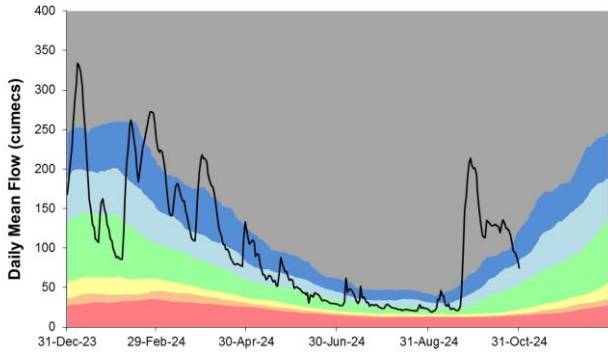
WEYBRIDGE, RIVER WEY
Ranking used data from 01/04/1979 to 31/12/2022



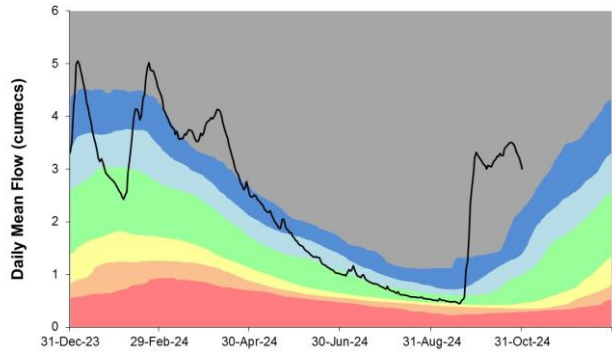
WHEATLEY, RIVER THAME
Ranking used data from 01/01/1990 to 31/12/2022



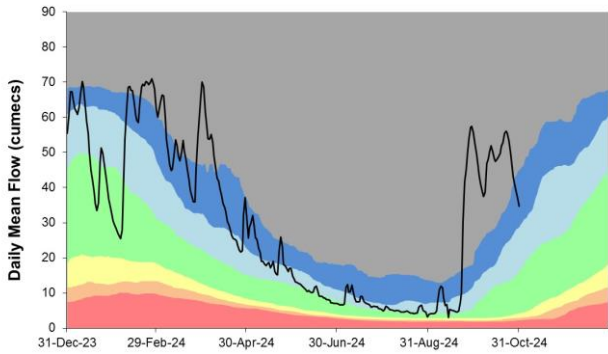
WINDSOR, RIVER THAMES
Ranking used data from 01/08/1979 to 31/12/2022



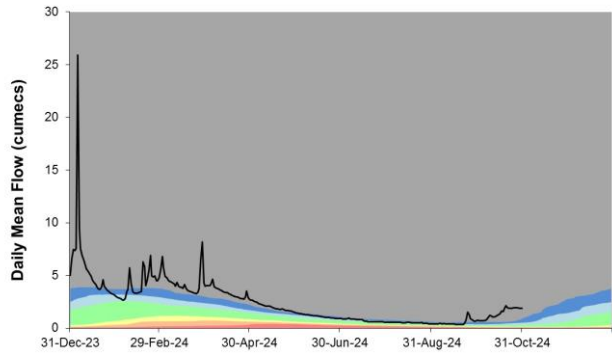
BIBURY, RIVER COLN
Ranking used data from 01/10/1963 to 31/12/2022

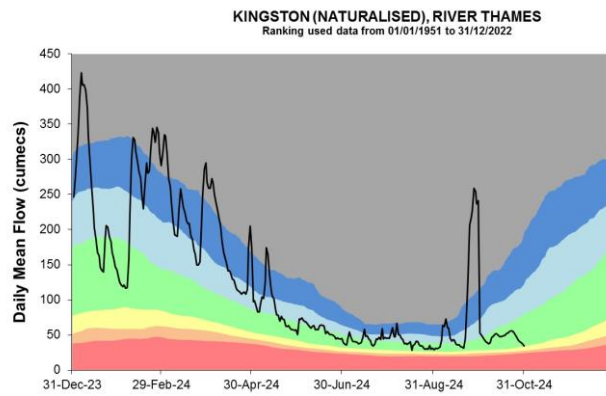
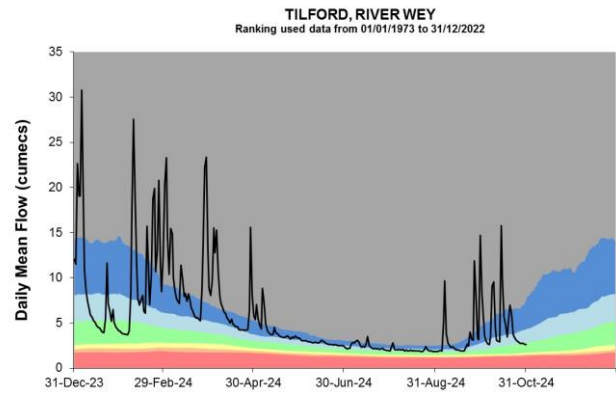
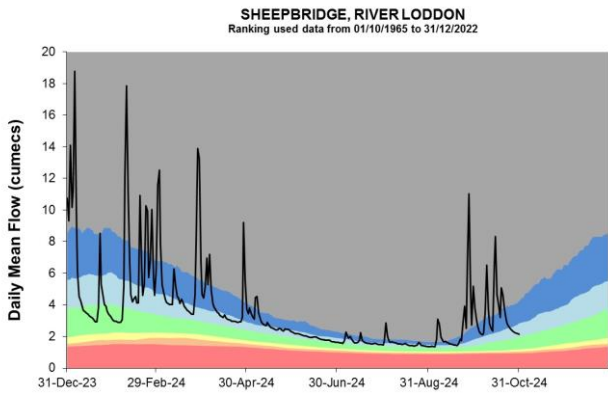


FARMOOR (NATURALISED), RIVER THAMES
Ranking used data from 01/10/1992 to 31/12/2022



MARLBOROUGH, RIVER KENNET
Ranking used data from 01/02/1972 to 31/12/2022



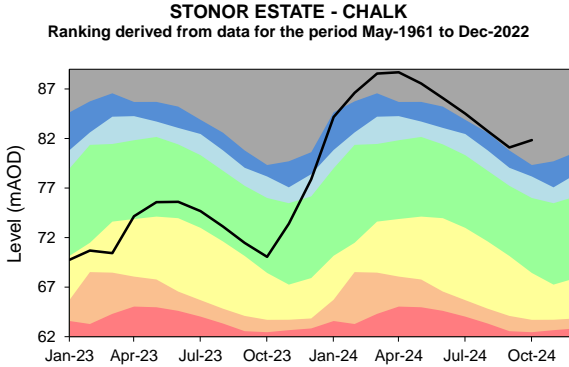
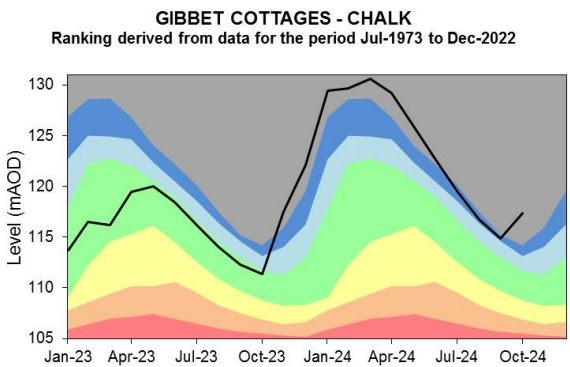
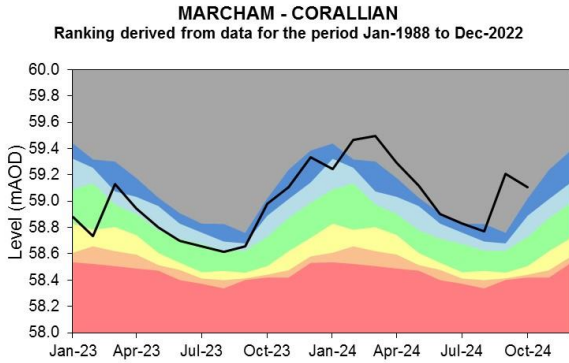
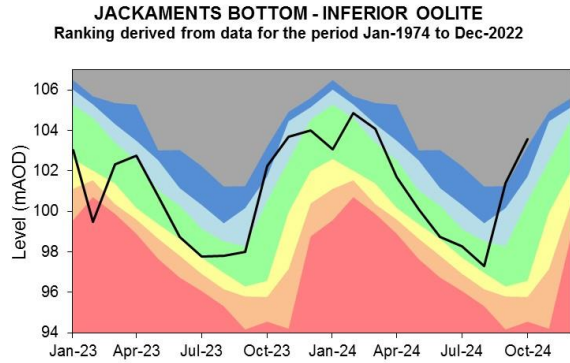
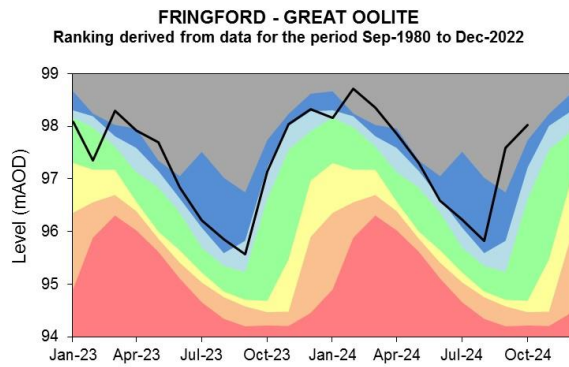
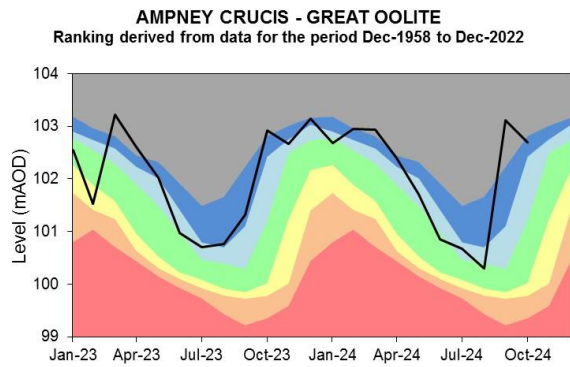
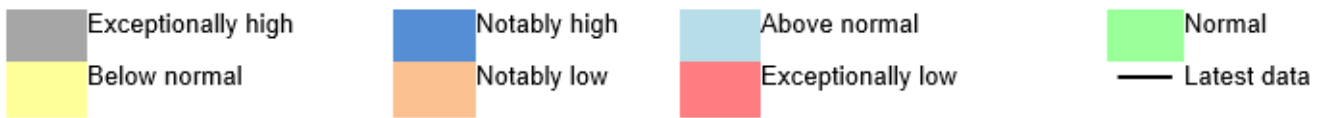


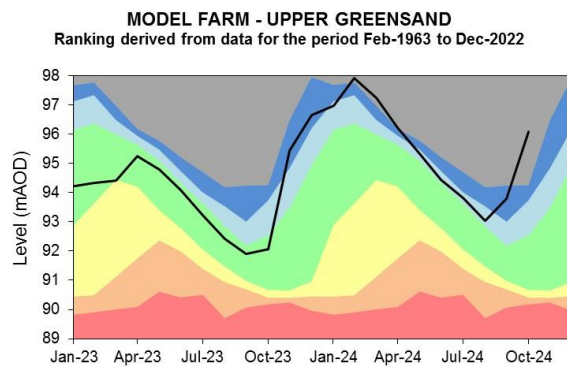
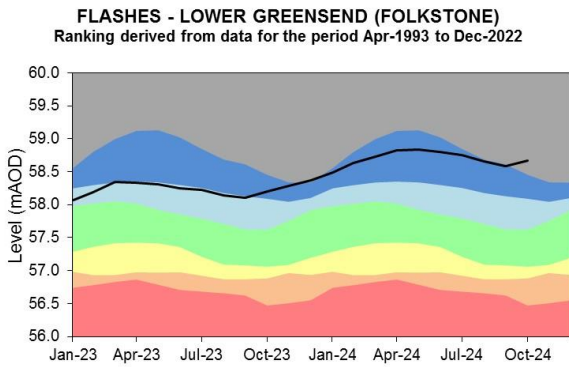
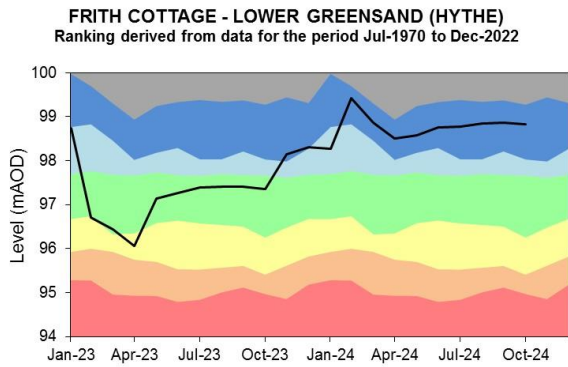
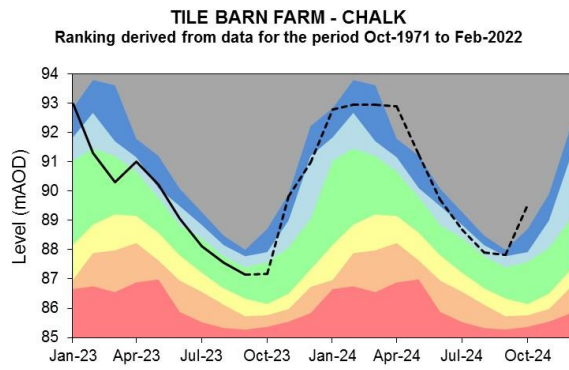
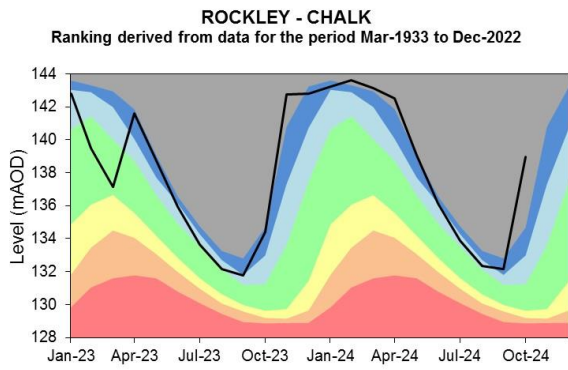
Source: Environment Agency.

6 Groundwater levels

6.1 Groundwater level charts

Figure 6.1: End of month groundwater levels for indicator sites, compared to an analysis of historic end of month levels, and long term maximum and minimum levels.



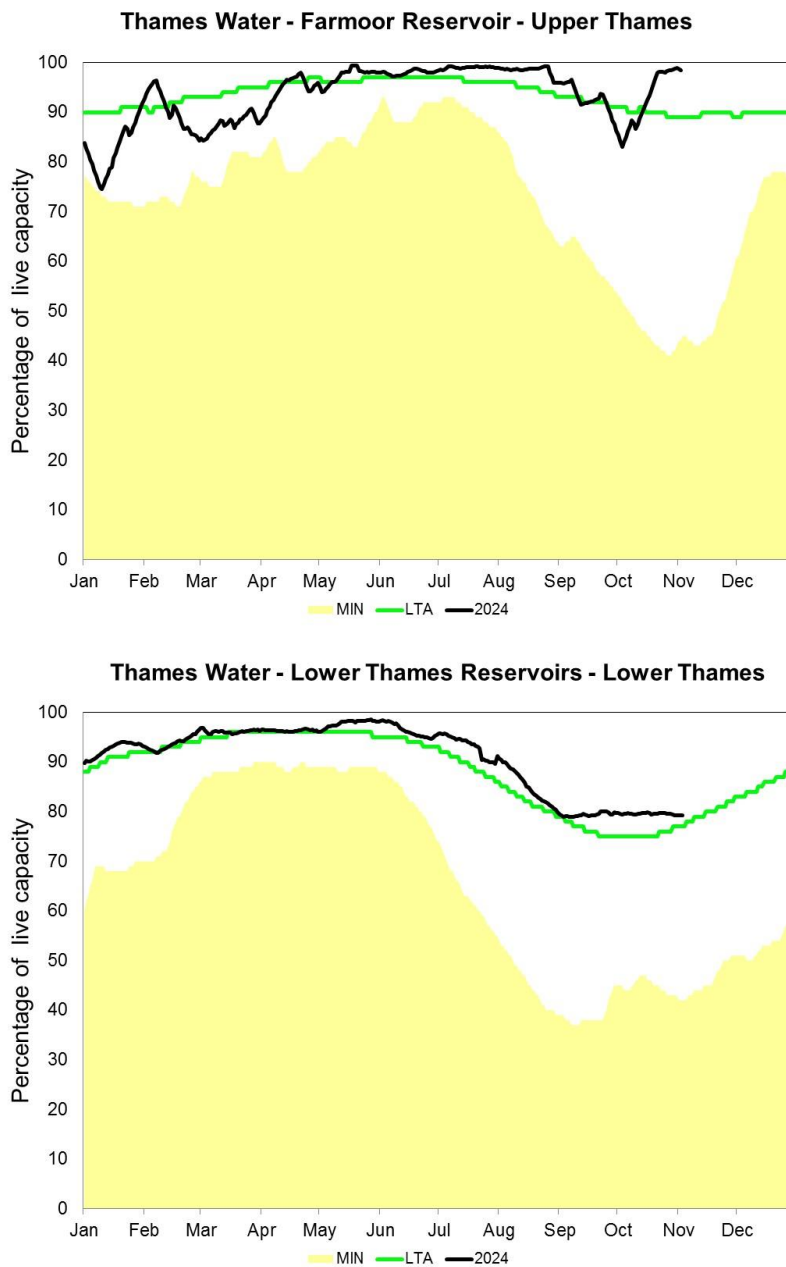


*Tile Barn Farm data has been estimated from two local sites since April 2022. A replacement is planned

Source: Environment Agency, 2024.

7 Reservoir stocks

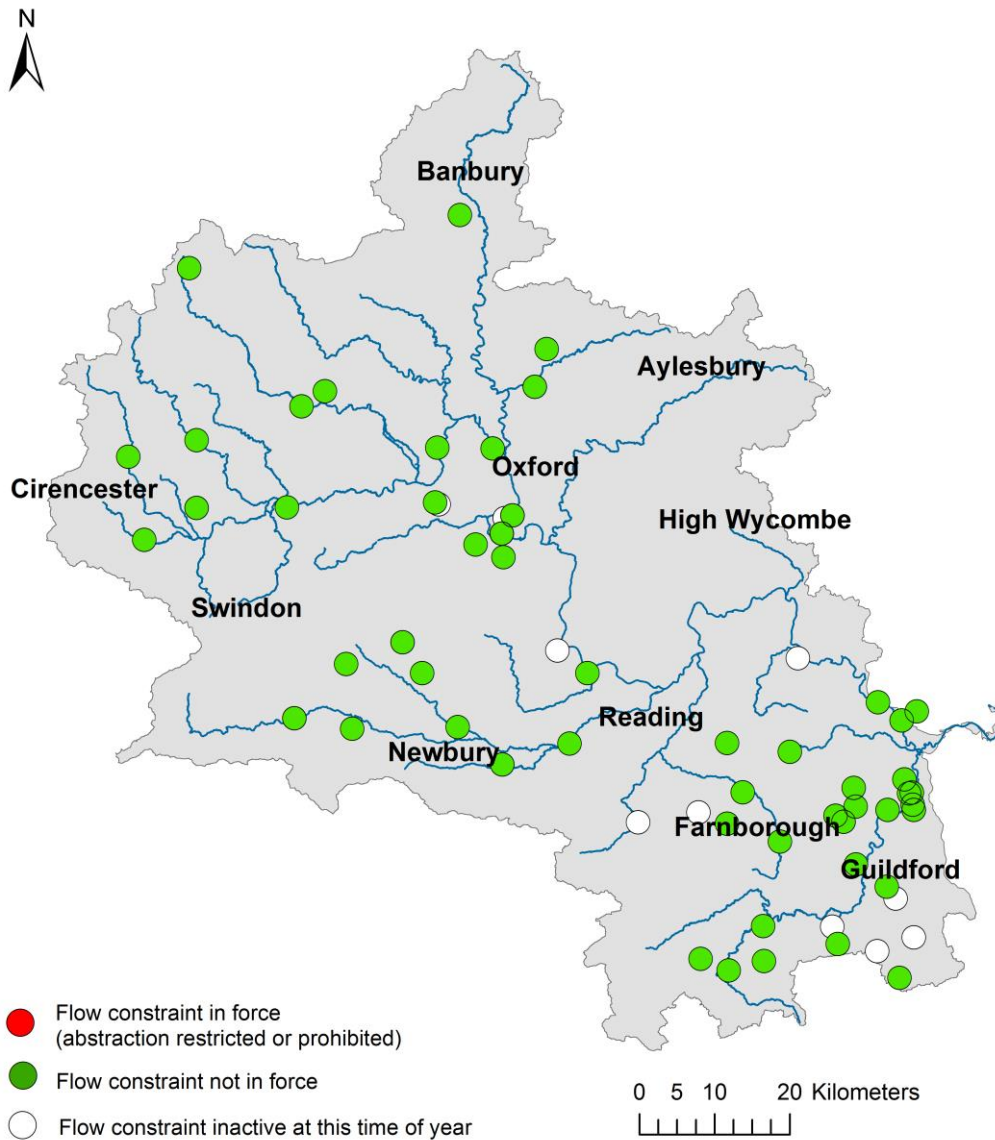
Figure 7.1: End of month regional reservoir stocks compared to minimum and average stocks.



(Source: water companies).

8 Flow Constraints

8.1 Figure 8.1: End of month flow constraints in Thames Area.



8.2 Summary of flow constraints

Week ending	06/10/24	13/10/24	20/10/24	27/10/24
	1	0	0	0

9 Summary of rainfall, effective rainfall and soil moisture deficit

9.1 Rainfall and effective rainfall

Area	Rainfall (mm) 31 day Total	Rainfall (mm) October LTA	Rainfall (mm) % LTA	Effective Rainfall (mm) 31 day total	Effective Rainfall (mm) October LTA	Effective Rainfall (mm) % LTA
Cotswolds - West	97	70	138	73	21	345
Cotswolds - East	80	60	133	56	14	400+
Berkshire Downs	84	68	123	59	15	400+
Chilterns - West	81	65	124	57	14	400+
North Downs - Hampshire	97	80	121	67	23	284
Wey - Greensand	95	79	119	50	24	210
Upper Thames	78	60	131	54	4	400+
Cherwell	74	58	128	50	7	400+
Thame	74	56	130	50	6	400+
Loddon	79	63	125	53	8	400+
Lower Wey	74	63	117	45	9	400+
Ock	63	55	115	39	3	400+
Enborne	84	67	124	58	10	400+
Cut	61	61	100	29	6	400+
Thames Area	80	65	123	53	12	400+

HadUK rainfall data (Source: Met Office Crown copyright 2024)

EA effective rainfall data (Source: EA Soil Moisture Model)

9.2 Soil moisture deficit

Area	SMD (mm) Day 31	SMD (mm) LTA
Cotswolds - West	6	35
Cotswolds - East	6	47
Berkshire Downs	5	67
Chilterns - West	6	70
North Downs - Hampshire	3	59
Wey - Greensand	2	58
Upper Thames	7	73
Cherwell	5	62
Thame	6	70
Loddon	5	69
Lower Wey	6	65
Ock	7	82
Enborne	5	60
Cut	6	75
Thames Area	5	64

HadUK rainfall data (Source: Met Office Crown copyright 2024)

EA effective rainfall data (Source: EA Soil Moisture Model)

9.3 Winter rainfall and effective rainfall

Winter period: 01/10/2024 to 31/10/2024						
Area	Rainfall (mm) Total	Rainfall (mm) LTA	Rainfall (mm) % LTA	Effective Rainfall (mm) Total	Effective Rainfall (mm) LTA	Effective Rainfall (mm) % LTA
Cotswolds - West	97	70	138	73	21	345
Cotswolds - East	80	60	133	56	14	404
Berkshire Downs	84	68	123	59	15	404
Chilterns - West	81	65	124	57	14	416
North Downs - Hampshire	97	80	121	67	23	284
Wey - Greensand	95	79	119	50	24	210
Upper Thames	78	60	131	54	4	1224
Cherwell	74	58	128	50	7	722
Thame	74	56	130	50	6	857
Loddon	79	63	125	53	8	672
Lower Wey	74	63	117	45	9	487
Ock	63	55	115	39	3	1274
Enborne	84	67	124	58	10	580
Cut	61	61	100	29	6	521
Thames Area	80	65	123	53	12	452

HadUK rainfall data (Source: Met Office Crown copyright 2024)

EA effective rainfall data (Source: EA Soil Moisture Model)

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.

11 Appendices

11.1 Rainfall table

Hydrological area	Oct 2024 rainfall % of long term average 1961 to 1990	Oct 2024 band	Aug 2024 to October cumulative band	May 2024 to October cumulative band	Nov 2023 to October cumulative band
Berkshire Downs	123	Normal	Exceptionally high	Notably high	Exceptionally high
Chilterns West	124	Normal	Exceptionally high	Notably high	Exceptionally high
Cotswold East	133	Normal	Exceptionally high	Exceptionally high	Exceptionally high
Cotswold West	139	Normal	Exceptionally high	Notably high	Exceptionally high
Cut	100	Normal	Notably high	Above normal	Exceptionally high
Enborne	125	Normal	Exceptionally high	Above normal	Exceptionally high
Loddon	124	Normal	Exceptionally high	Notably high	Exceptionally high
Lower Wey	118	Normal	Notably high	Above normal	Exceptionally high
North Downs - Hampshire	121	Normal	Notably high	Above normal	Exceptionally high

Ock	116	Normal	Exceptionally high	Notably high	Exceptionally high
Thame	130	Normal	Exceptionally high	Exceptionally high	Exceptionally high
Upper Cherwell	128	Normal	Exceptionally high	Notably high	Exceptionally high
Upper Thames	131	Normal	Exceptionally high	Notably high	Exceptionally high
Wey - Greensand	119	Normal	Notably high	Above normal	Exceptionally high

11.2 River flows table

Site name	River	Catchment	Oct 2024 band	Sep 2024 band
Abingdon	River Ock	Ock	Exceptionally high	Exceptionally high
Banbury	River Cherwell	Cherwell Upper	Exceptionally high	Exceptionally high
Bibury	River Coln	Cotswolds West	Exceptionally high	Notably high
Bourne End (hedsor)	River Wye	Wye Bucks	Exceptionally high	Exceptionally high
Cassington	River Evenlode	Evenlode	Exceptionally high	Exceptionally high
Farmoor (naturalised)	River Thames	Thames	Exceptionally high	Exceptionally high
Kingston	River Thames	Thames North Bank	Exceptionally high	Exceptionally high
Marlborough	River Kennet	Kennet	Exceptionally high	Notably high
Sheepbridge	River Loddon	Loddon	Exceptionally high	Exceptionally high
Swallowfield	River Blackwater	Loddon	Notably high	Exceptionally high
Tilford	River Wey	Wey Addleston Bourne	Notably high	Exceptionally high

Weybridge	River Wey	Wey Addleston Bourne	Notably high	Exceptionally high
Wheatley	River Thame	Thame	Exceptionally high	Exceptionally high
Windsor	River Thames	Thames	Exceptionally high	Exceptionally high
Kingston (naturalised)	River Thames	Thames North Bank	Exceptionally high	Exceptionally high

11.3 Groundwater table

Site name	Aquifer	End of Oct 2024 band	End of Sep 2024 band
Ampney Crucis Obh	Burford Oolitic Limestone (great)	Notably high	Exceptionally high
Frith Cottage	Godalming Lower Greensand	Notably high	Notably high
Gibbet Cottages Obh	Berkshire Downs Chalk	Exceptionally high	Notably high
Jackaments Bottom Obh	Burford Oolitic Limestone (inferior)	Exceptionally high	Exceptionally high
Marcham Obh	Shrivenham Corallian	Exceptionally high	Exceptionally high
Model Farm	Chiltern Upper Greensand	Exceptionally high	Notably high
Rockley Obh	Berkshire Downs Chalk	Exceptionally high	Notably high
Stonor Estate	South-west Chilterns Chalk	Exceptionally high	Exceptionally high
The Flashes Obh	Godalming Lower Greensand	Exceptionally high	Notably high
Tile Barn Farm	Basingstoke Chalk	Exceptionally high	Notably high

Fringford P.s.	Upper Bedford Ouse Oolitic Limestone (great)	Exceptionally high	Exceptionally high
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