Monthly water situation report: Thames Area

1 Summary - December 2024

In December, Thames area received 50mm of rainfall, 68% of the long term average (LTA). River flows increased at 9 of our key indicator sites. Bourne End (Hedsor) continued to have exceptionally high flows for the time of year, recording it's second highest December flow since 1964. Bibury recorded its fourth highest December flow since 1961, and Windsor recorded its fifth highest flow since 1979. Groundwater levels of the relatively quicker responding Oolites declined following lower than average rainfall in December; whilst groundwater levels of the Chalk aquifer continued their seasonal increase. Reservoir levels increased in December, remaining above average for the time of year. There were 13 fluvial flood alerts, and 3 groundwater flood alerts issued during December.

1.1 Rainfall

In December, Thames area received 50mm of rainfall, 68% of the LTA. The majority of areal units towards the south and west of Thames area had below normal rainfall, while the north of Thames area, and North Downs Hampshire in the south, was normal for the time of year. Two-thirds of December's rain occurred in the first 9 days of the month, with the wettest day being 4 December.

1.2 Soil moisture deficit and recharge

With lower than average rainfall, soil moisture deficits across most of Thames area did increase slightly, however they still remained well below the LTA for the time of year. In December, SMD's on average were 2mm, which was below the 16mm LTA. Effective rainfall this month was close to the December average (92%), however during winter so far (October to December), Thames area has had double the usually expected (204%).

1.3 River flows

Monthly mean flows increased at 9 of our key indicator sites, while 6 decreased. However, all were above normal or higher, apart from 3; Swallowfield (Blackwater), Weybridge (Wey), and Sheepbridge (Loddon), which were normal. Bourne End Hedsor (Wye), recorded exceptionally high flow for the time of year and its second highest December flow since 1964. Bibury recorded its fourth highest December flow since 1961 and Windsor recorded its fifth highest December flow since 1979.

1.4 Groundwater levels

Groundwater levels decreased at 7 of our indicator sites in December, while 4, all found in the Chalk, continued to rise. Groundwater levels of the relatively quicker responding Oolites

declined following lower than average rainfall in December; whilst groundwater levels of the Chalk aquifer continued their seasonal increase. Most of the indicator sites were above normal or higher, apart from Ampney Crucis, and Jackaments Bottom, in the Great Oolites, and Inferior Oolites respectively, which were normal. Three sites; Gibbet Cottages, Stonor Estate, both in the Chalk, and The Flashes in the Lower Greensand, were exceptionally high for the time of year.

1.5 Reservoir stocks

Reservoir stocks rose in the Lower Thames reservoir reservoirs and ended the month at 95%, compared to 82.1% at the end of November. Stocks in Farmoor reservoir also increased from 90.9% to 97% during December. Both are above average for the time of year.

1.6 Environmental impact

During November, there were 13 fluvial and 3 groundwater flood alerts issued in Thames area. At the end of the month, 1 abstraction licence was being constrained in the area to protect water resources and the environment.

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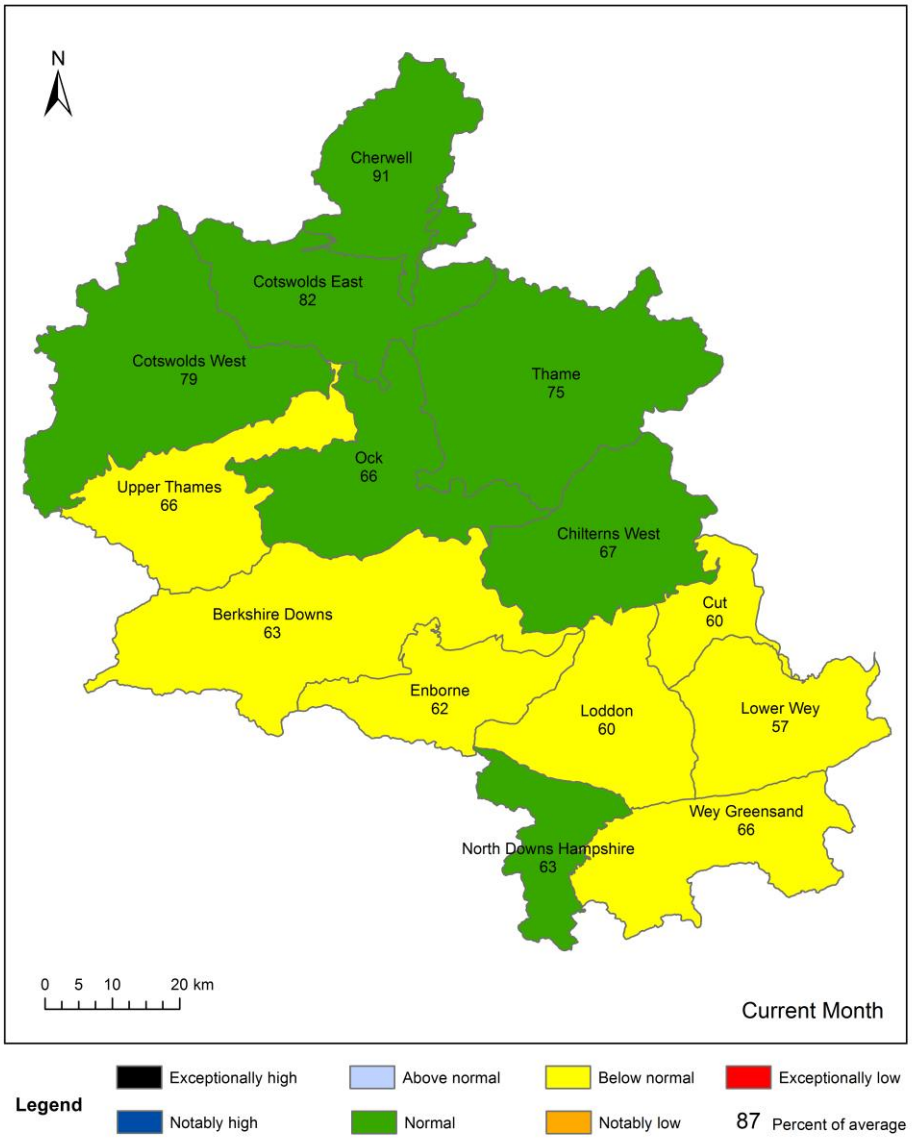
2 Rainfall

2.1 Rainfall map

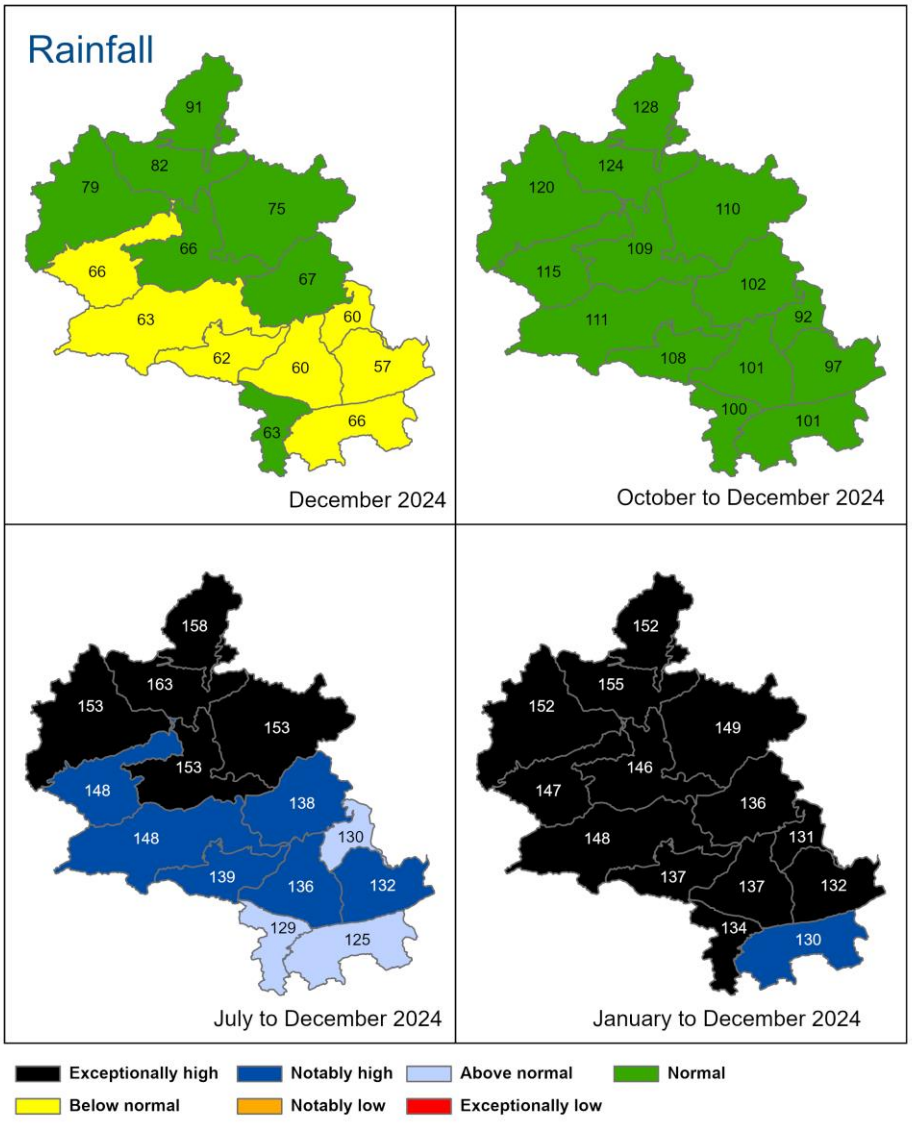
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 31 December 2024), classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.



Rainfall data for 2024, 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 2024, extracted from Met Office HadUK 1km gridded rainfall dataset derived from registered rain gauges (Source: Met Office. Crown copyright, 2025).

2.2 Rainfall map (2)

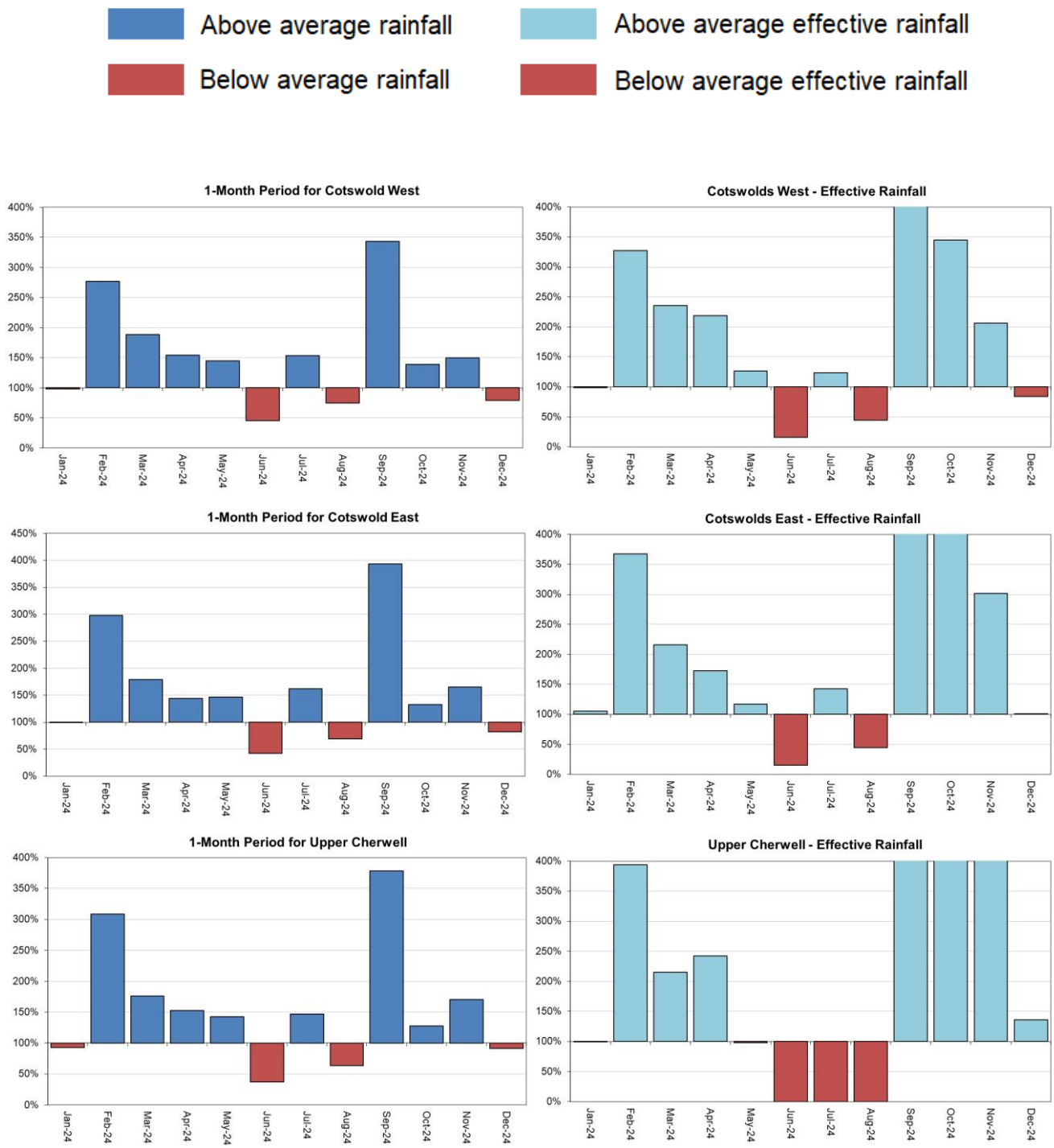
Figure 2.2: Total rainfall for hydrological areas for the current month (up to 31 December 2024), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

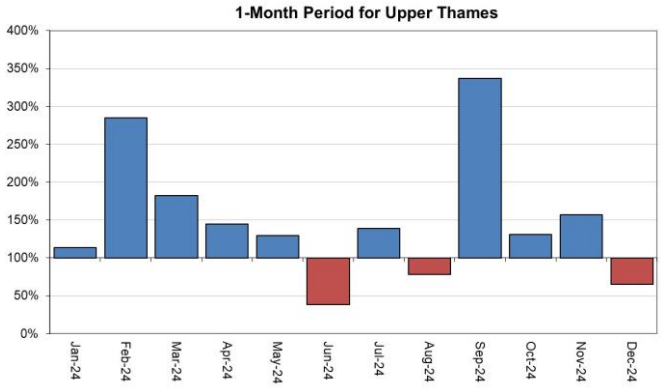


HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2025). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

2.3 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
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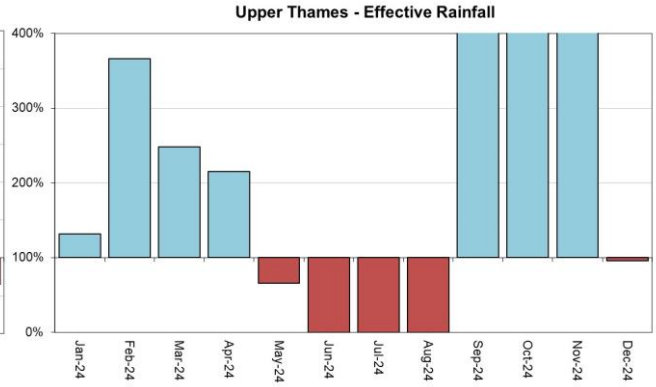
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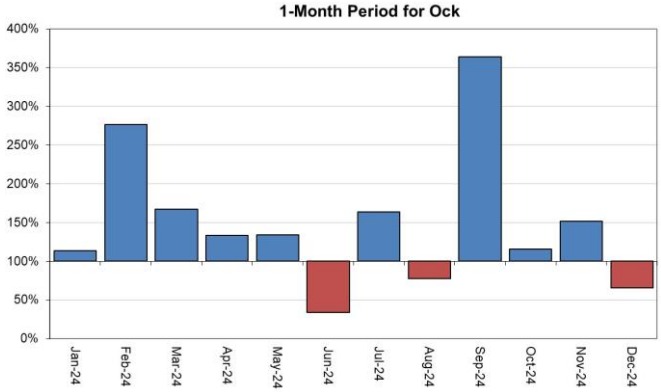
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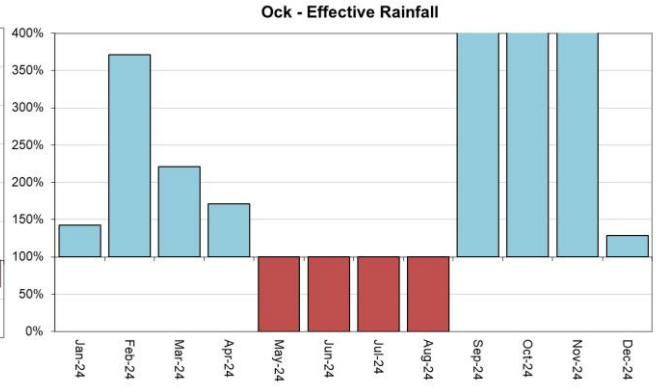
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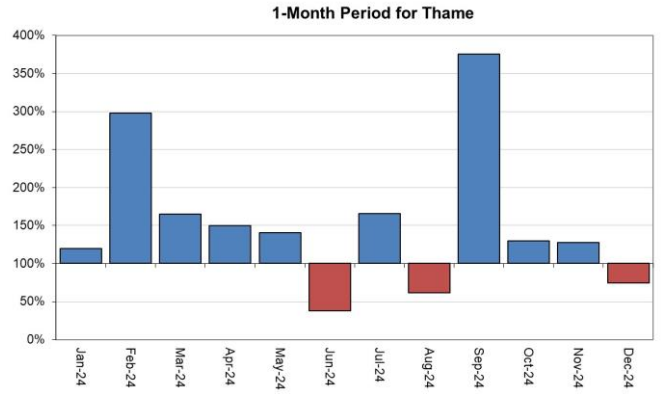
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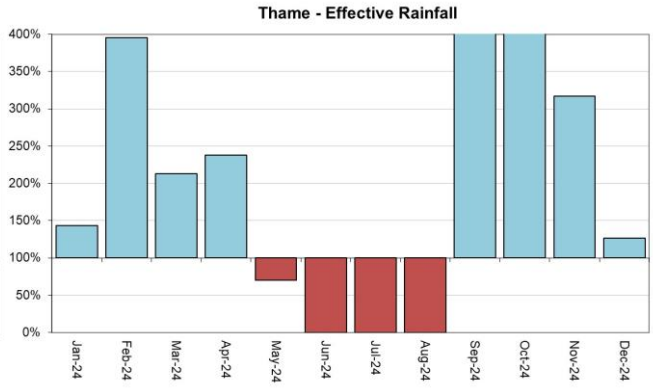
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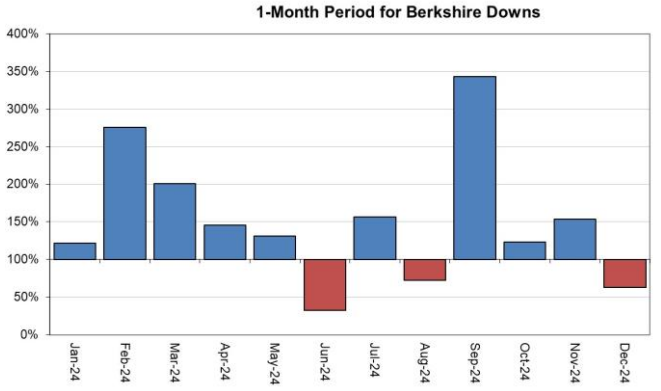
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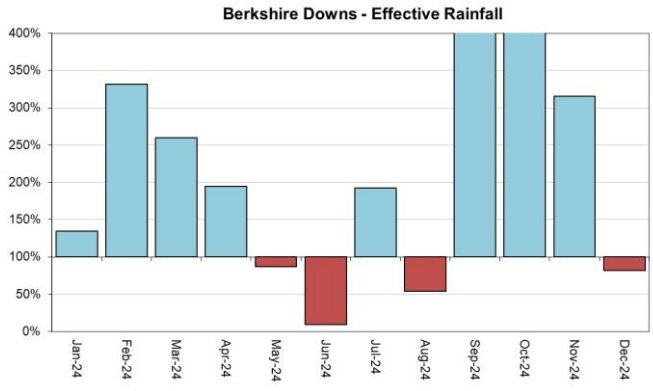
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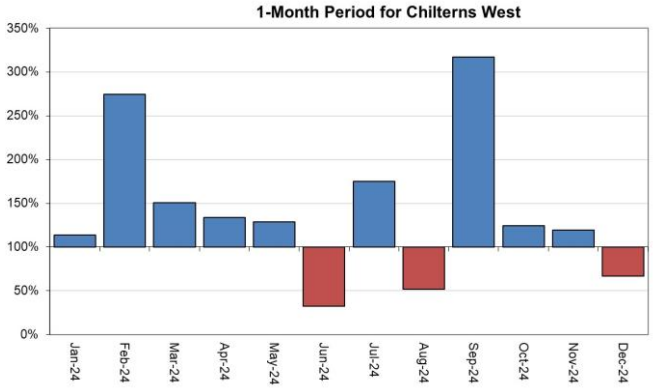
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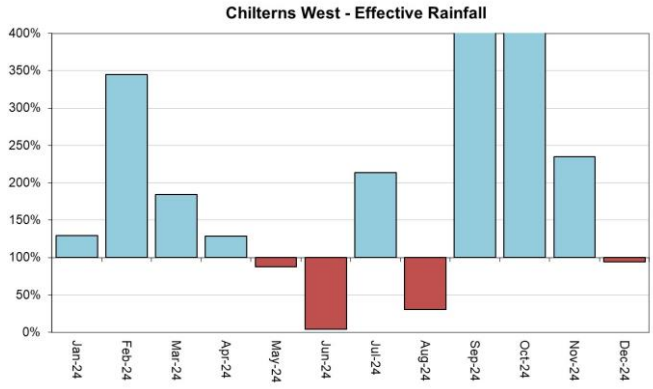
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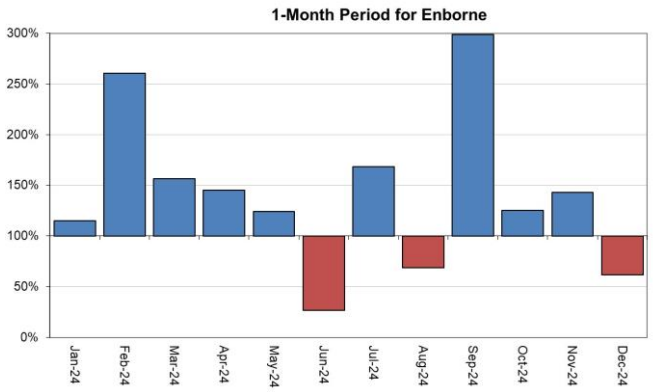
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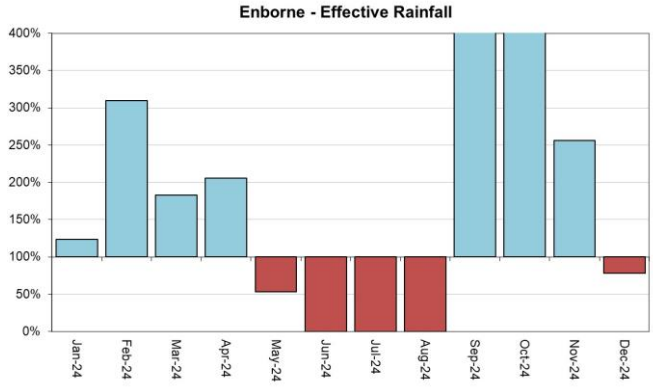
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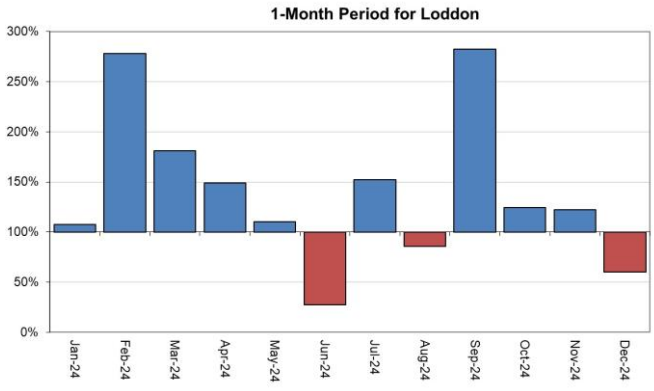
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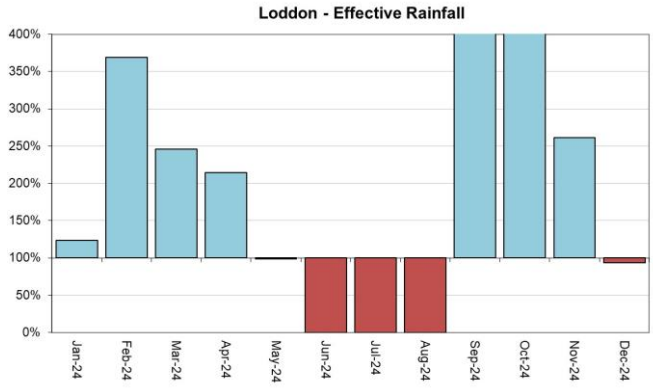
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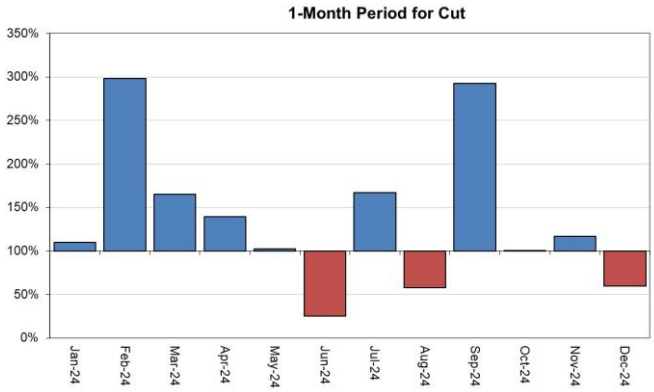
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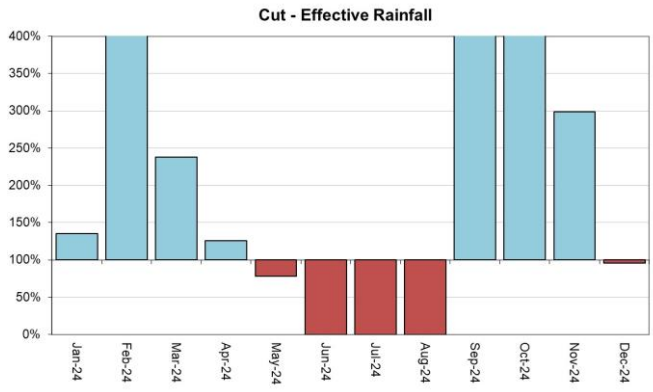
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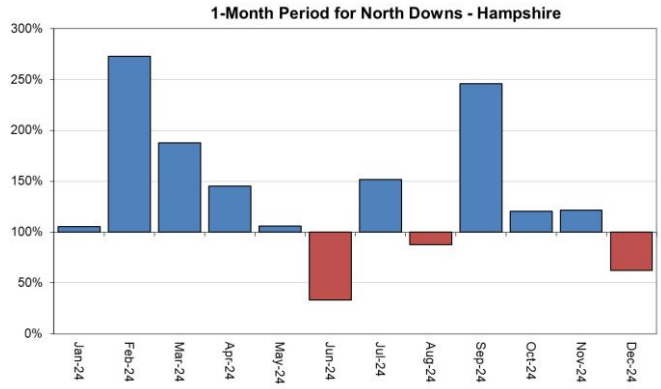
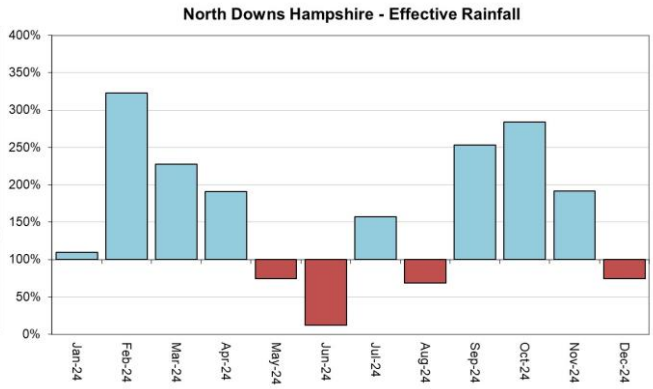
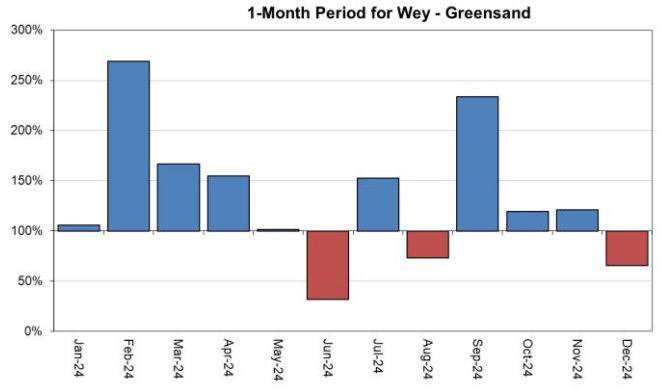
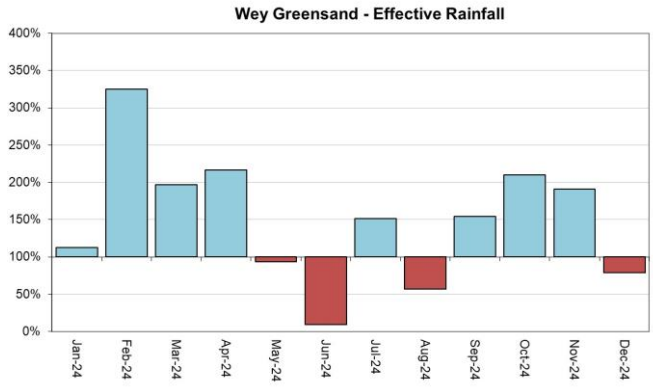
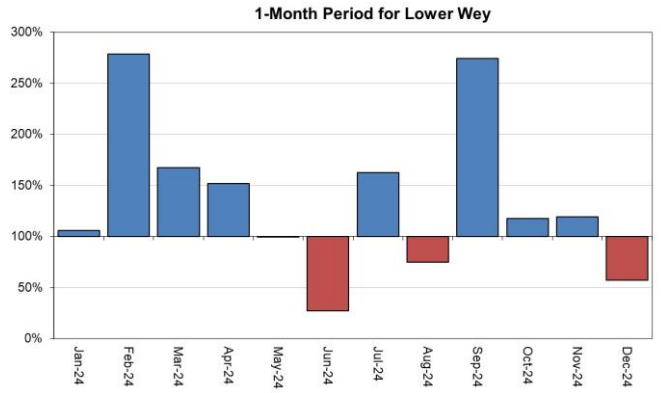
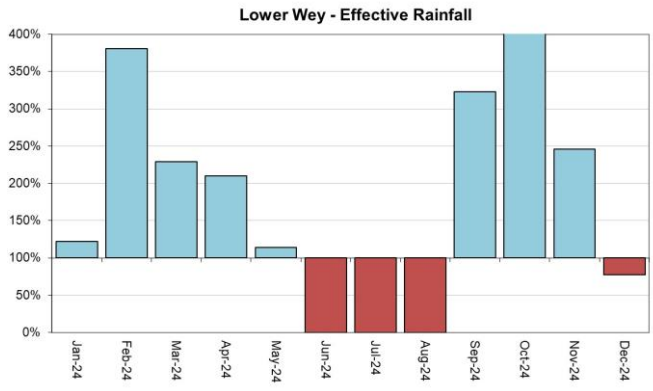












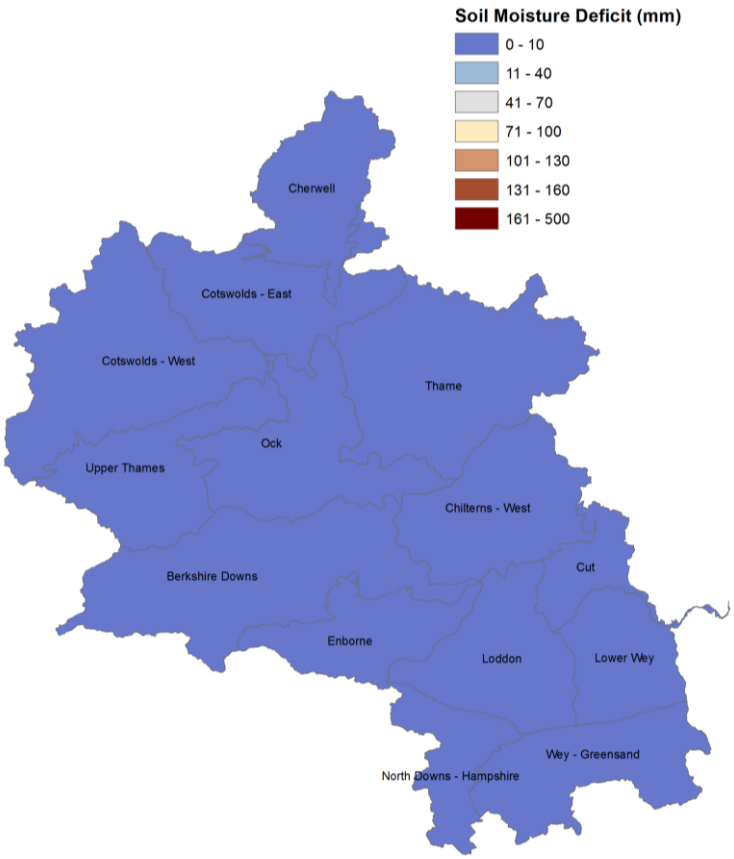
HadUK rainfall data. (Source: Met Office. Crown copyright, 2025).

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

3 Soil moisture deficit

3.1 Soil moisture deficit map

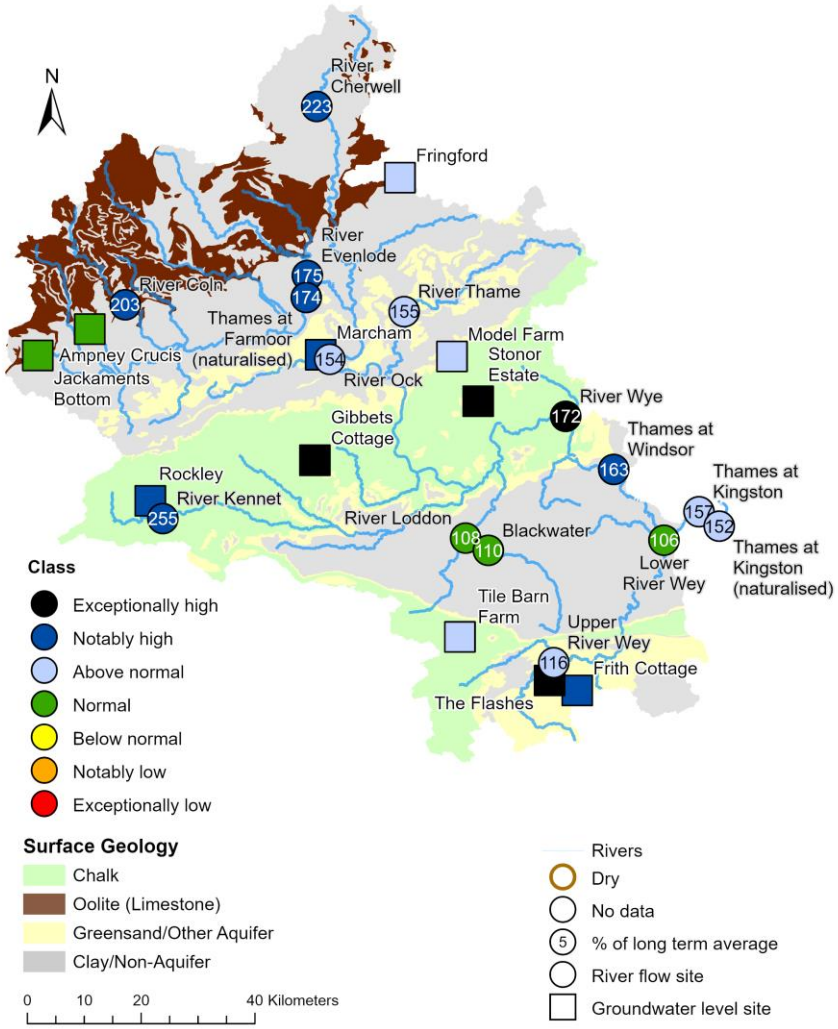
Figure 3.1: Soil moisture deficits for the week ending 31 December 2024. Shows the areal SMD estimate in millimetres.



4 River Flow and Groundwater Status

4.1 River flow and groundwater level map

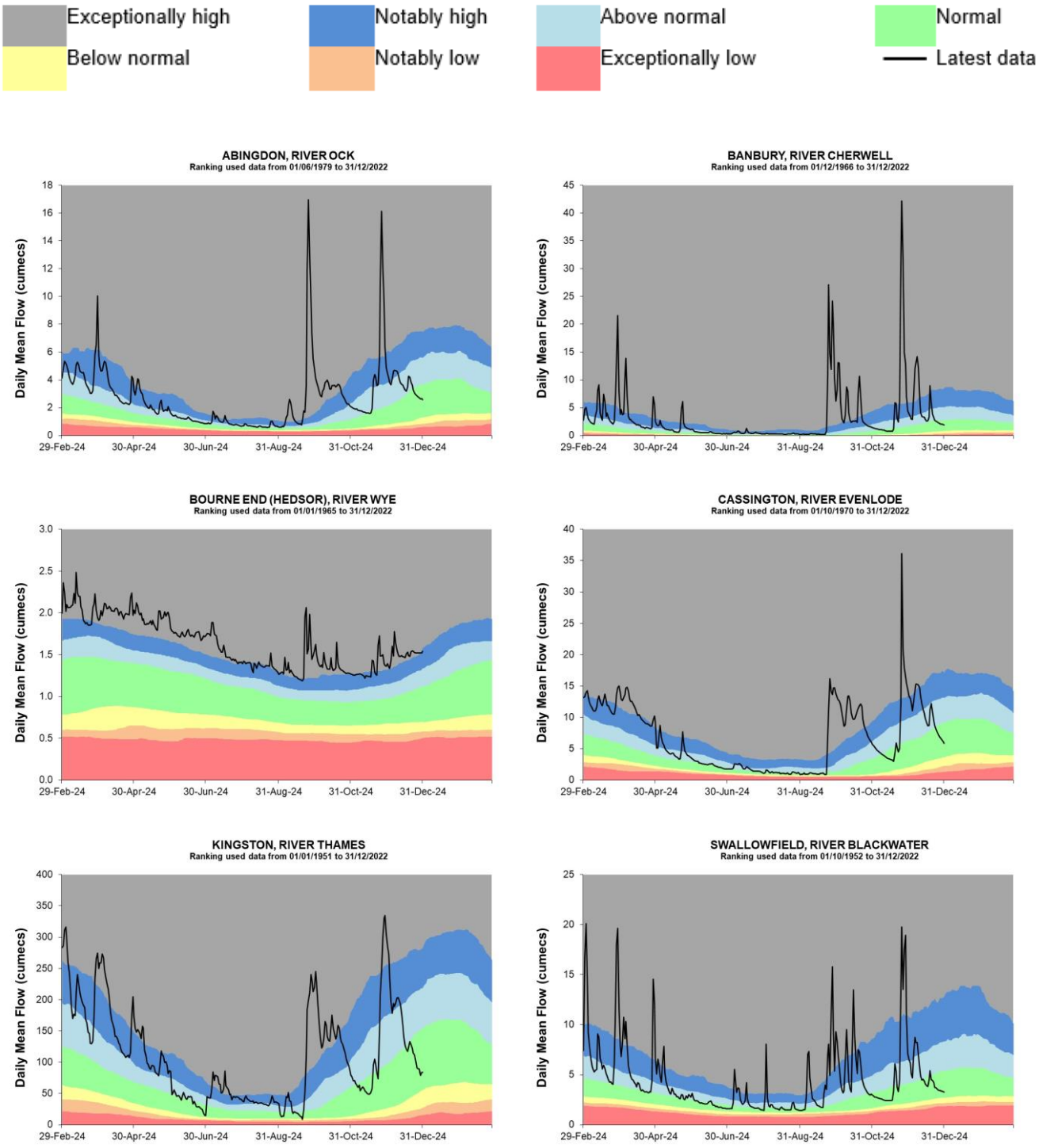
Figure 4.1: Monthly mean river flow for indicator sites and end of month groundwater levels for indicator sites for December 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic December means.



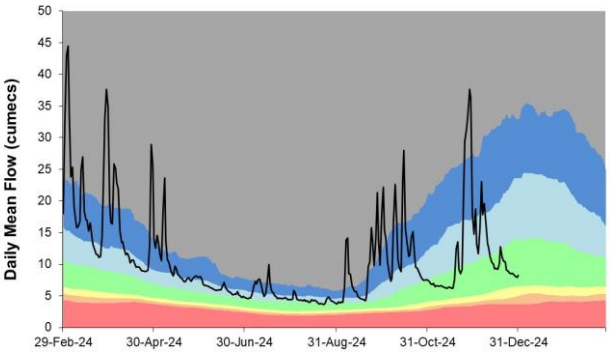
5 River flows

5.1 River flow charts

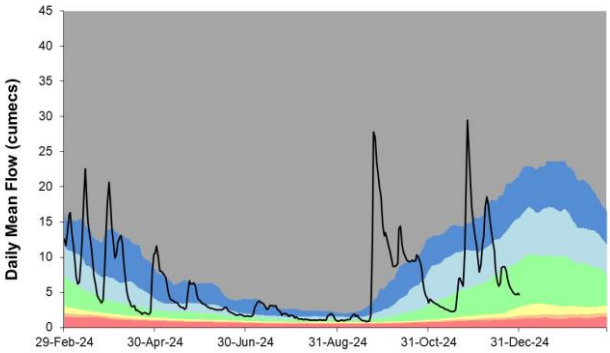
Figure 5.1: Daily mean river flows for indicator sites compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



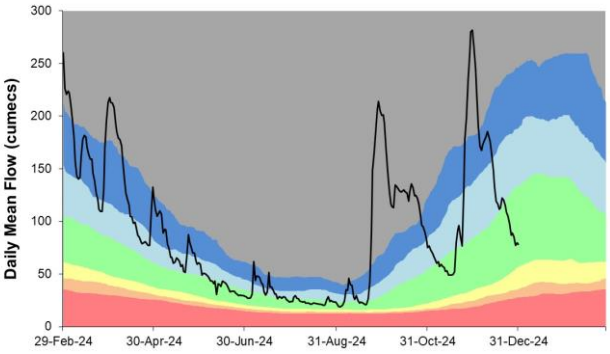
WEYBRIDGE, RIVER WEY
Ranking used data from 01/04/1979 to 31/12/2022



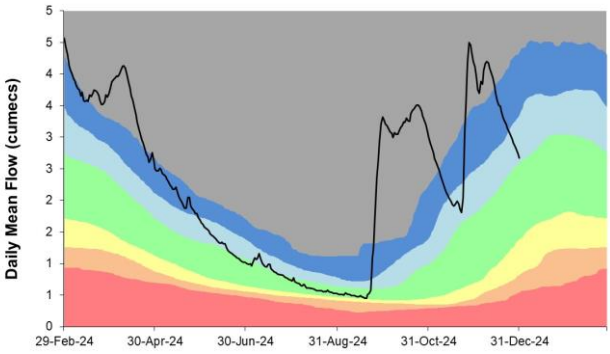
WHEATLEY, RIVER THAME
Ranking used data from 01/01/1990 to 31/12/2022



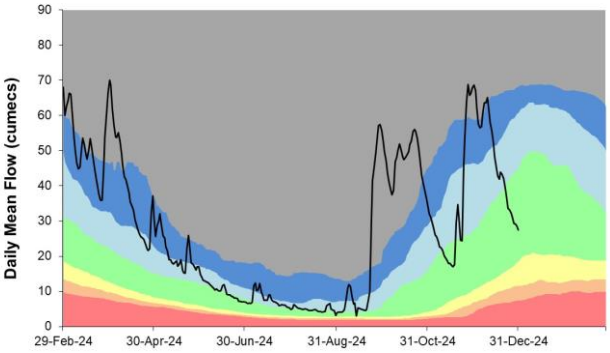
WINDSOR, RIVER THAMES
Ranking used data from 01/08/1979 to 31/12/2022



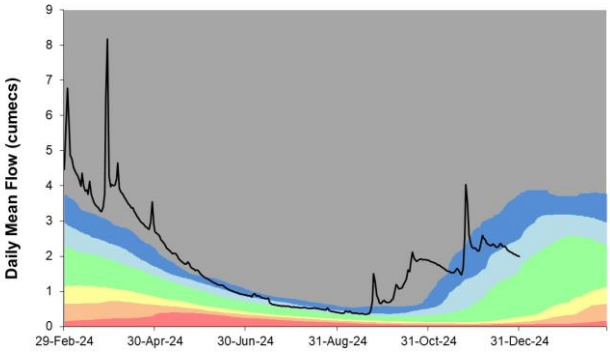
BIBURY, RIVER COLN
Ranking used data from 01/10/1963 to 31/12/2022

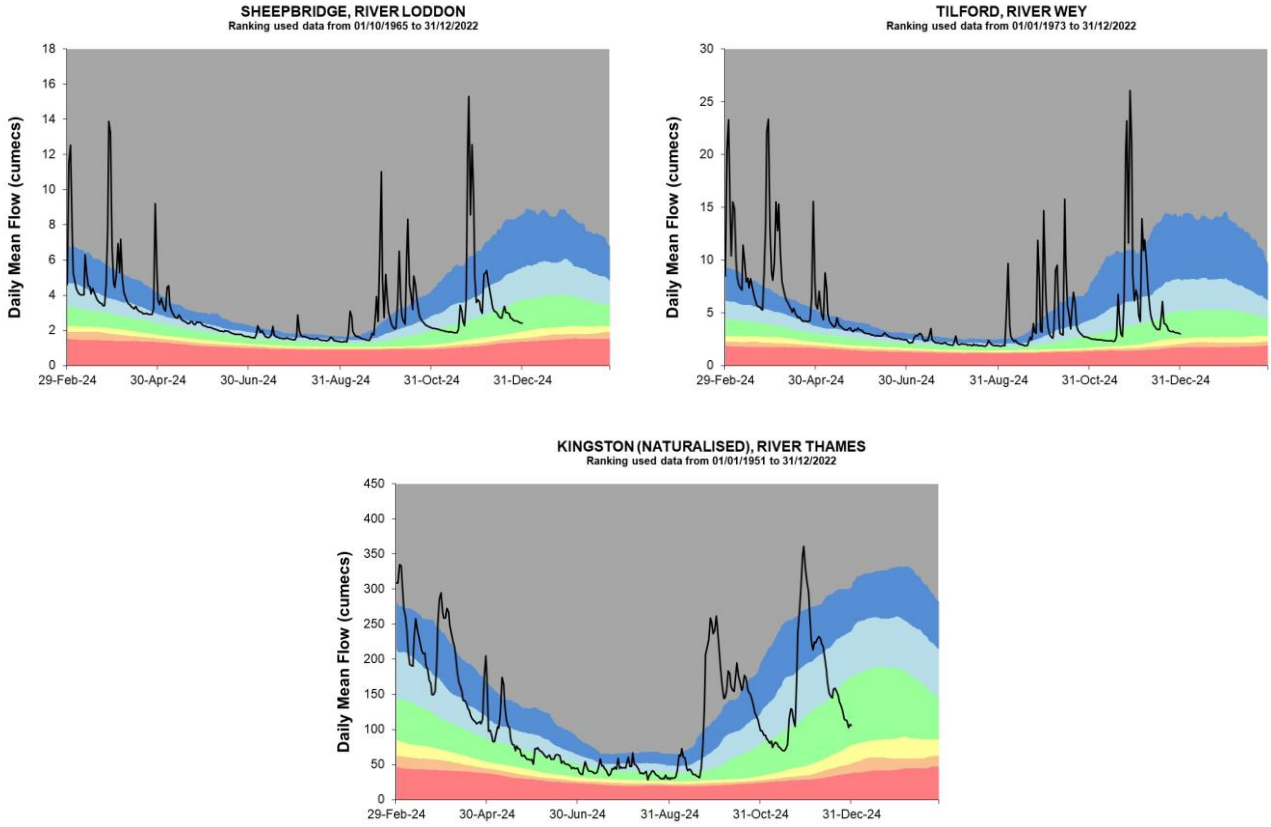


FARMOOR (NATURALISED), RIVER THAMES
Ranking used data from 01/10/1992 to 31/12/2022



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



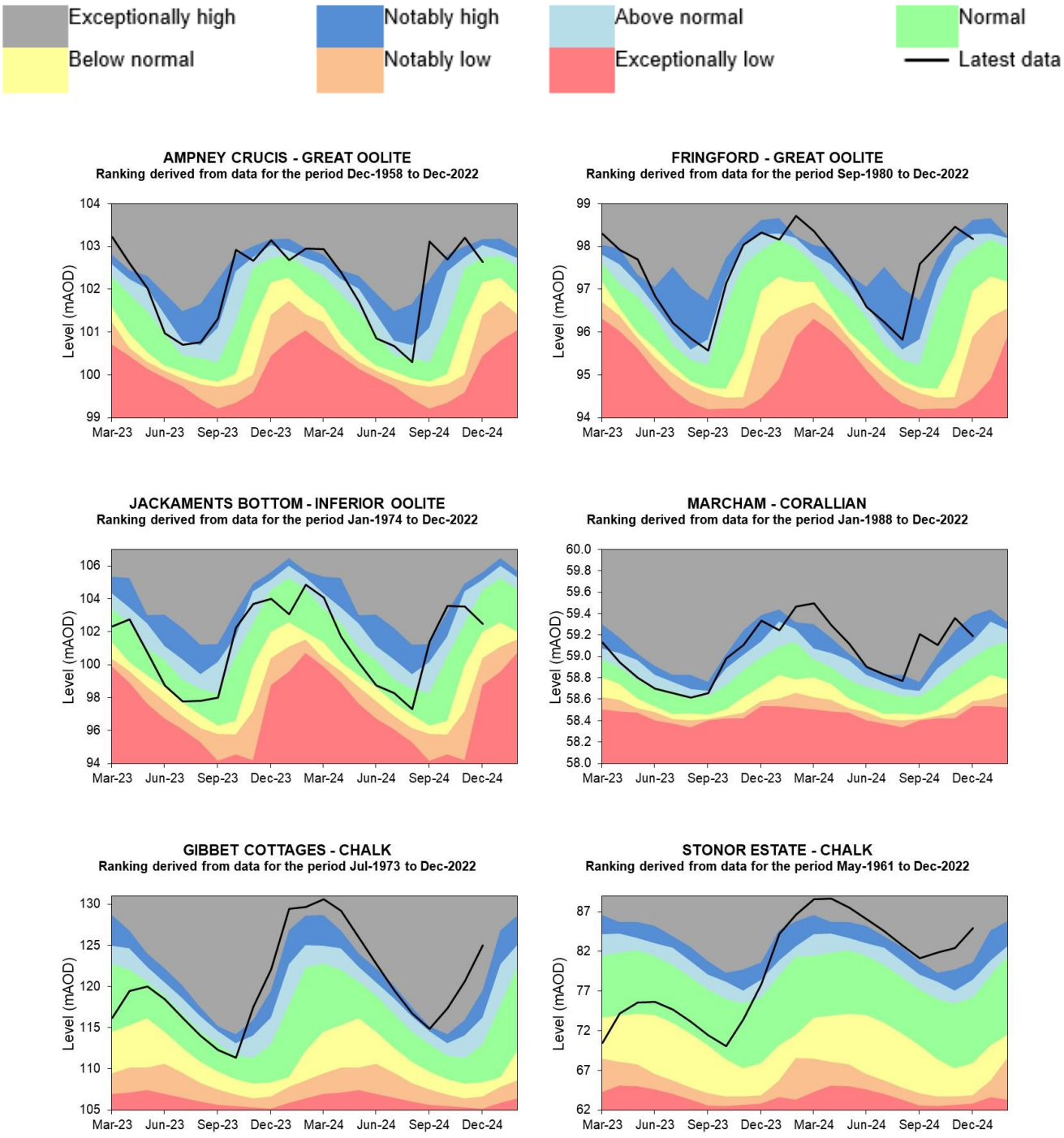


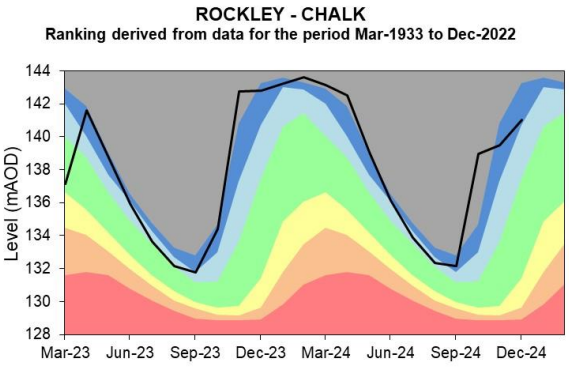
Source: Environment Agency.

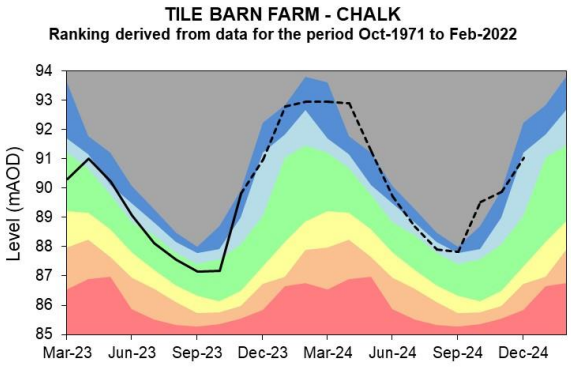
6 Groundwater levels

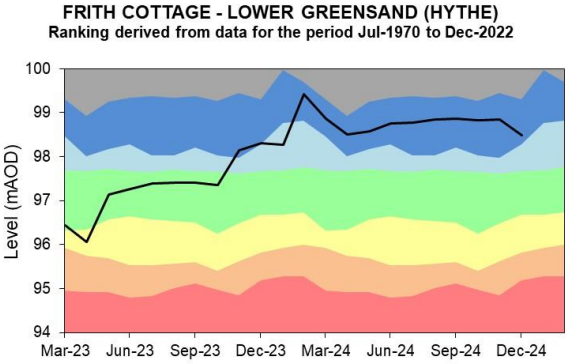
6.1 Groundwater level charts

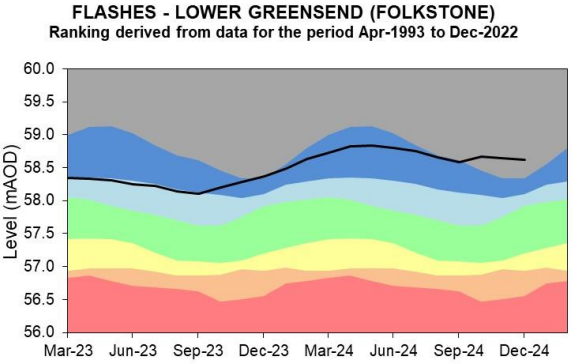
Figure 6.1: End of month groundwater levels for indicator sites, compared to an analysis of historic end of month levels, and long term maximum and minimum levels.

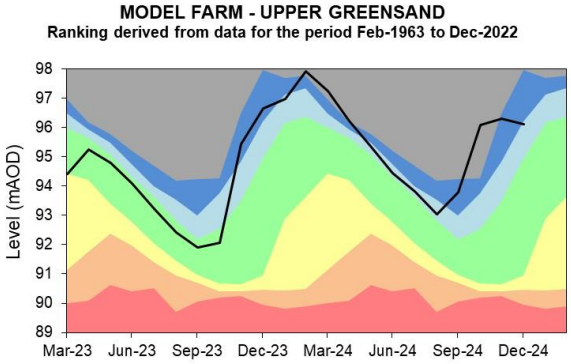










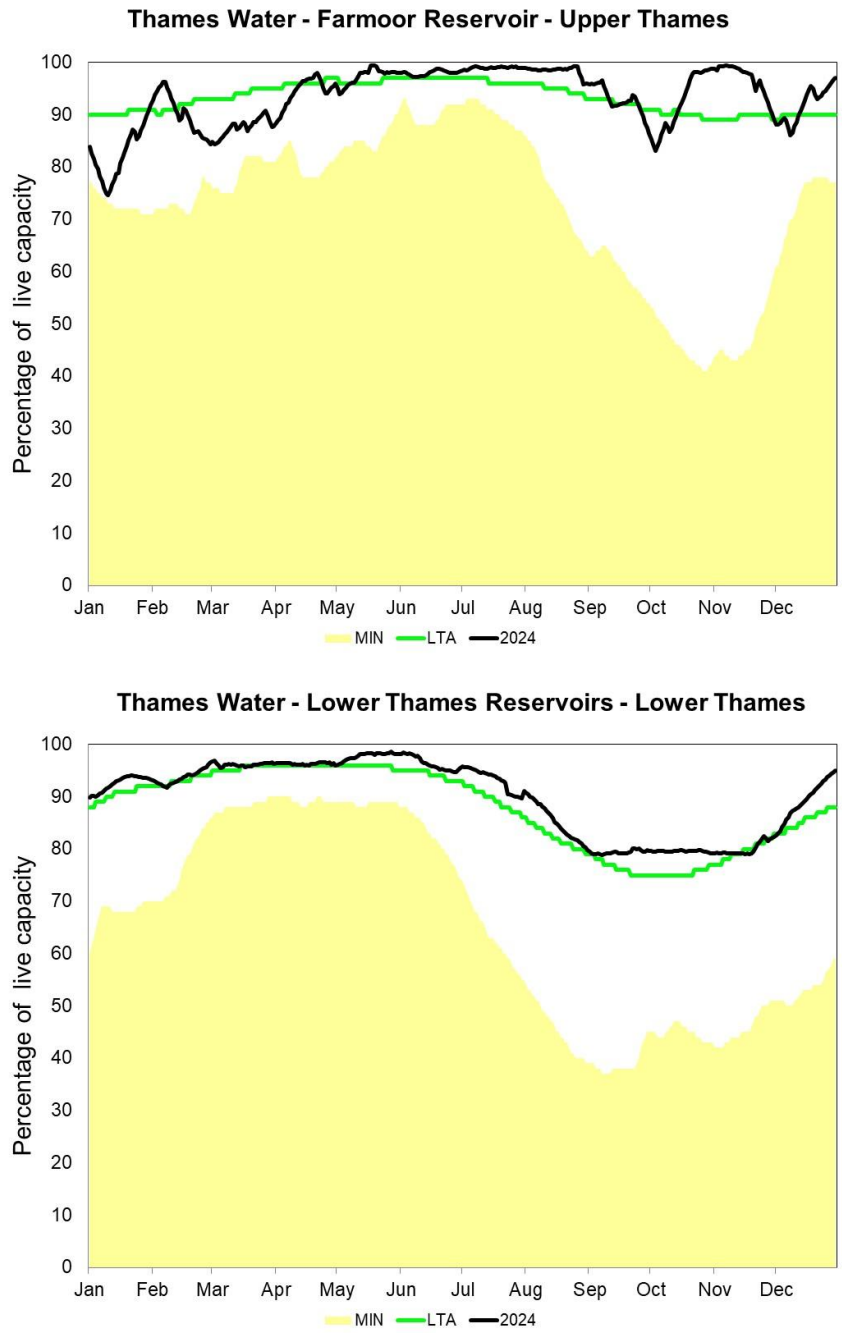


*Tile Barn Farm data has been estimated from two local sites since April 2022. A replacement is planned

Source: Environment Agency, 2025.

7 Reservoir stocks

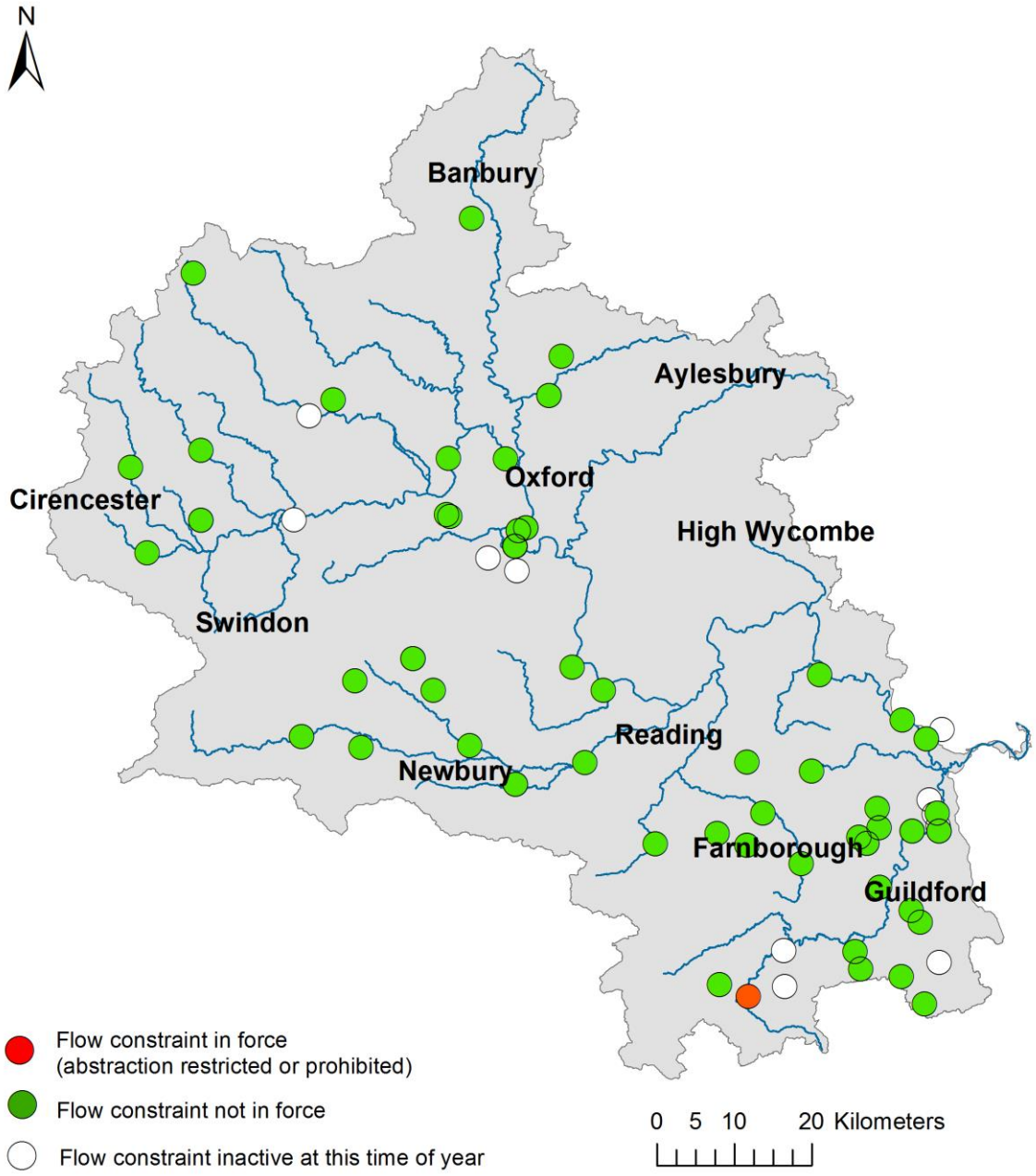
Figure 7.1: End of month regional reservoir stocks compared to minimum and average stocks.



(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

Date	01/12/2024	08/12/2024	15/12/2024	22/12/2024	31/12/2024
Constraint	1	0	1	1	1

9 Summary of rainfall, effective rainfall and soil moisture deficit

9.1 Rainfall and effective rainfall

Area	Rainfall (mm) 31 day Total	Rainfall (mm) December LTA	Rainfall (mm) % LTA	Effective Rainfall (mm) 31 day total	Effective Rainfall (mm) December LTA	Effective Rainfall (mm) % LTA
Cotswolds - West	66	84	79	54	64	84
Cotswolds - East	59	72	82	48	47	101
Berkshire Downs	51	81	63	40	49	82
Chilterns - West	49	73	67	38	40	94
North Downs - Hampshire	57	91	62	46	61	74
Wey - Greensand	57	87	65	45	57	79
Upper Thames	47	71	66	34	36	95
Cherwell	62	68	91	50	37	136
Thame	47	63	75	36	29	127
Loddon	42	70	60	31	33	93
Lower Wey	37	66	57	26	34	77
Ock	42	64	65	30	23	128
Enborne	48	79	60	37	48	78
Cut	38	63	59	26	27	96
Thames Area	**50**	**74**	**68**	**39**	**42**	**92**

HadUK rainfall data (Source: Met Office Crown copyright 2023)
EA effective rainfall data (Source: EA Soil Moisture Model)

9.2 Soil moisture deficit

Area	SMD (mm) Day 31	SMD (mm) LTA
Cotswolds - West	0	6
Cotswolds - East	1	11
Berkshire Downs	2	15
Chilterns - West	2	19
North Downs - Hampshire	2	10
Wey - Greensand	1	11
Upper Thames	2	18
Cherwell	1	14
Thame	2	20
Loddon	3	17
Lower Wey	3	16
Ock	2	27
Enborne	2	12
Cut	3	23
Thames Area	**2**	**16**

HadUK rainfall data (Source: Met Office Crown copyright 2023)
EA effective rainfall data (Source: EA Soil Moisture Model)

9.3 Winter rainfall and effective rainfall

Winter period: 01/10/2024 to 31/12/2024						
Area	Rainfall (mm) Total	Rainfall (mm) LTA	Rainfall (mm) % LTA	Effective Rainfall (mm) Total	Effective Rainfall (mm) LTA	Effective Rainfall (mm) % LTA
Cotswolds - West	271	226	120	212	126	168
Cotswolds - East	241	194	124	184	88	209
Berkshire Downs	246	221	111	189	92	205
Chilterns - West	211	207	102	155	79	194
North Downs - Hampshire	258	258	100	198	129	153
Wey - Greensand	251	249	101	177	124	143
Upper Thames	221	192	115	162	57	286
Cherwell	234	183	128	178	61	292
Thame	194	177	110	138	51	271
Loddon	201	199	101	143	64	224
Lower Wey	186	192	97	126	65	193
Ock	188	174	108	130	36	362
Enborne	232	218	106	174	89	197
Cut	169	185	92	104	49	211
Thames Area	**222**	**205**	**108**	**162**	**79**	**204**

HadUK rainfall data (Source: Met Office Crown copyright 2023)
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	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
Berkshire Downs	63	Below Normal	Normal	Notably high	Exceptionally high
Chilterns West	67	Normal	Normal	Notably high	Exceptionally high
Cotswold East	82	Normal	Normal	Exceptionally high	Exceptionally high
Cotswold West	79	Normal	Normal	Exceptionally high	Exceptionally high
Cut	60	Below Normal	Normal	Above normal	Exceptionally high
Enborne	62	Below Normal	Normal	Notably high	Exceptionally high
Loddon	60	Below Normal	Normal	Notably high	Exceptionally high
Lower Wey	57	Below Normal	Normal	Notably high	Exceptionally high
North Downs - Hampshire	63	Normal	Normal	Above normal	Exceptionally high

Ock	66	Normal	Normal	Exceptionally high	Exceptionally high
Thame	75	Normal	Normal	Exceptionally high	Exceptionally high
Upper Cherwell	91	Normal	Normal	Exceptionally high	Exceptionally high
Upper Thames	66	Below Normal	Normal	Notably high	Exceptionally high
Wey - Greensand	66	Below Normal	Normal	Above normal	Notably high

11.2 River flows table

Site name	River	Catchment	Dec 2024 band	Nov 2024 band
Abingdon	River Ock	Ock	Above normal	Notably high
Banbury	River Cherwell	Cherwell Upper	Notably high	Exceptionally high
Bibury	River Coln	Cotswolds West	Notably high	Notably high
Bourne End (Hedsor)	River Wye	Wye Bucks	Exceptionally high	Exceptionally high
Cassington	River Evenlode	Evenlode	Notably high	Above normal
Farmoor (naturalised)	River Thames	Thames	Notably high	Above normal
Kingston	River Thames	Thames North Bank	Above normal	Above normal
Marlborough	River Kennet	Kennet	Notably high	Notably high
Sheepbridge	River Loddon	Loddon	Normal	Notably high
Swallowfield	River Blackwater	Loddon	Normal	Notably high
Tilford	River Wey	Wey Addleston Bourne	Above normal	Notably high
Weybridge	River Wey	Wey Addleston Bourne	Normal	Above normal
Wheatley	River Thame	Thame	Above normal	Above normal

Windsor	River Thames	Thames	Notably high	Above normal
Kingston (naturalised)	River Thames	Thames North Bank	Above normal	Above normal

11.3 Groundwater table

Site name	Aquifer	End of Dec 2024 band	End of Nov 2024 band
Ampney Crucis OBH	Burford Oolitic Limestone (great)	Normal	Exceptionally high
Frith Cottage	Godalming Lower Greensand	Notably high	Notably high
Gibbet Cottages OBH	Berkshire Downs Chalk	Exceptionally high	Exceptionally high
Jackaments Bottom OBH	Burford Oolitic Limestone (inferior)	Normal	Above normal
Marcham OBH	Shrivenham Corallian	Notably high	Exceptionally high
Model Farm	Chiltern Upper Greensand	Above normal	Notably high
Rockley OBH	Berkshire Downs Chalk	Notably high	Notably high
Stonor Estate	South-west Chilterns Chalk	Exceptionally high	Exceptionally high
The Flashes OBH	Godalming Lower Greensand	Exceptionally high	Exceptionally high
Tile Barn Farm	Basingstoke Chalk	Above normal	Notably high
Fringford P.S.	Upper Bedford Ouse Oolitic Limestone (great)	Above normal	Exceptionally high