

Monthly water situation report: Solent and South Downs Area

Summary - November 2024

Solent and South Downs (SSD) had average rainfall in November, receiving 102% (91mm) of the LTA (89.6mm). Monthly mean river flows across SSD ranged from normal to notably high. End of month groundwater levels ranged from normal to exceptionally high. Soils across SSD ended the month wetter than the average for November. End of month reservoir stock was above average at Ardingly Reservoir (Ouse) and was below average at Arlington Reservoir (Cuckmere).

1.1 Rainfall

SSD had average rainfall in November, receiving 102% (91mm) of the LTA (89.6mm). The areal units in Hampshire received higher rainfall, than those in Sussex. The Pevensey Levels areal unit received the lowest rainfall with 76% (72mm) of LTA. The Test Chalk areal unit in the west of SSD received the highest rainfall with 140% (112mm) of LTA.

Between the 17 and 26 November, there were two named storms: Bert and Conall. About 95% of the rainfall in November fell in these 10 consecutive days. The rest of the month was mostly dry, except the 30 November which was a wet day.

Over 30% of the rainfall fell on 26 November, when the highest daily rainfall totals of the month were recorded:

- 45.7mm at Calbourne RG (Isle of Wight)
- 40.9mm at Chilgrove House RG (West Sussex Chalk)
- 40.8mm at Chiddingfold RG (Arun)
- 40.5mm at Duncton RG (Western Rother Greensand)
- 40.1mm at Carisbrooke RG (Isle of Wight)

For Test Chalk areal unit, the current year to date, last 11 months (January to November), was the wettest on record. Also, the last 3-months period, September to November, was the second wettest on record for Test Chalk areal unit.

Over the longer time periods, the 14-month, 18-month and 24 month running totals remain exceptionally high and were the wettest on record for SSD. These periods were also the wettest for: Test Chalk, East Hampshire Chalk, West Sussex Chalk, Isle of Wight, Hampshire Tertiaries, Lyminster and Sussex Coast areal units.

All these statistics are based on records going back to 1871.

1.2 Soil moisture deficit and recharge

Soils across SSD ended the month wetter (0mm) than the average for November (25mm).

1.3 River flows

Monthly mean river flows across SSD ranged from normal to notably high.

Flows were normal on the:

- River Meon at Misingford
- River Wallington at North Fareham
- River Arun at Alfoldean
- River Ouse at Goldbridge
- River Cuckmere at Cowbeech

Flows were above normal on the:

- River Lymington at Brockenhurst
- River Medina at Blackwater
- River Rother at Iping Mill
- River Adur at Sakeham

Flows were notably high on the:

- River Test at Chilbolton
- River Test at Broadlands
- River Itchen at Allbrook and Highbridge

The monthly mean flows for November for the River Test were the fifth highest on record at Chilbolton (1989), and the sixth highest at Broadlands (1958).

1.4 Groundwater levels

End of month groundwater levels for November ranged from normal to exceptionally high.

Groundwater levels were normal at:

- Catherington (East Hampshire Chalk)
- Harting Common (Western Rother Greensand)
- Chilgrove (West Sussex Chalk)
- Beeding Hill (West Sussex Chalk)

Groundwater levels were above normal at:

- Carisbrooke Castle (Isle of Wight)
- West Meon (East Hampshire Chalk)
- Houndean Bottom (East Sussex Chalk)

Groundwater levels were notably high at:

- Lopcombe Corner (Test Chalk)
- Cornish Farm (East Sussex Chalk)

Groundwater levels were exceptionally high at:

- Clanville Gate (Test Chalk)
- Preston Candover (East Hampshire Chalk)
- Youngwoods Copse (Isle of Wight)

Groundwater levels for November were the highest on record at Youngwoods Copse (1978), second highest at Preston Candover (1975) and third highest at Clanville Gate (1966).

1.5 Reservoir stocks

End of month reservoir stocks was above average at Ardingly Reservoir (Ouse) and was below average at Arlington Reservoir (Cuckmere). Ardingly Reservoir (Ouse) was at 100% of total capacity (LTA 77%) and Arlington Reservoir (Cuckmere) was at 57.2% of total capacity (LTA 72.36%).

1.6 Environmental impact

During November there were a total of five licence restrictions in force, four cessations and one reduced abstraction rate.

The cessations were in force:

- on the River Rother (Arun and Western Streams),
- on the River Lymington (New Forest),
- on the River Hamble (East Hants) and
- on the river Ouse (Adur and Ouse)

The reduced abstraction rate was in force on the River Meon (East Hampshire).

During November there were 29 Flood Alerts issued. In Hampshire 13, on the Isle of Wight 4, and in Sussex 12 Flood Alerts; all fluvial.

During November there were 13 Flood Warnings issued. In Hampshire 6, on the Isle of Wight 2 and in Sussex 5 Flood Warnings; all fluvial.

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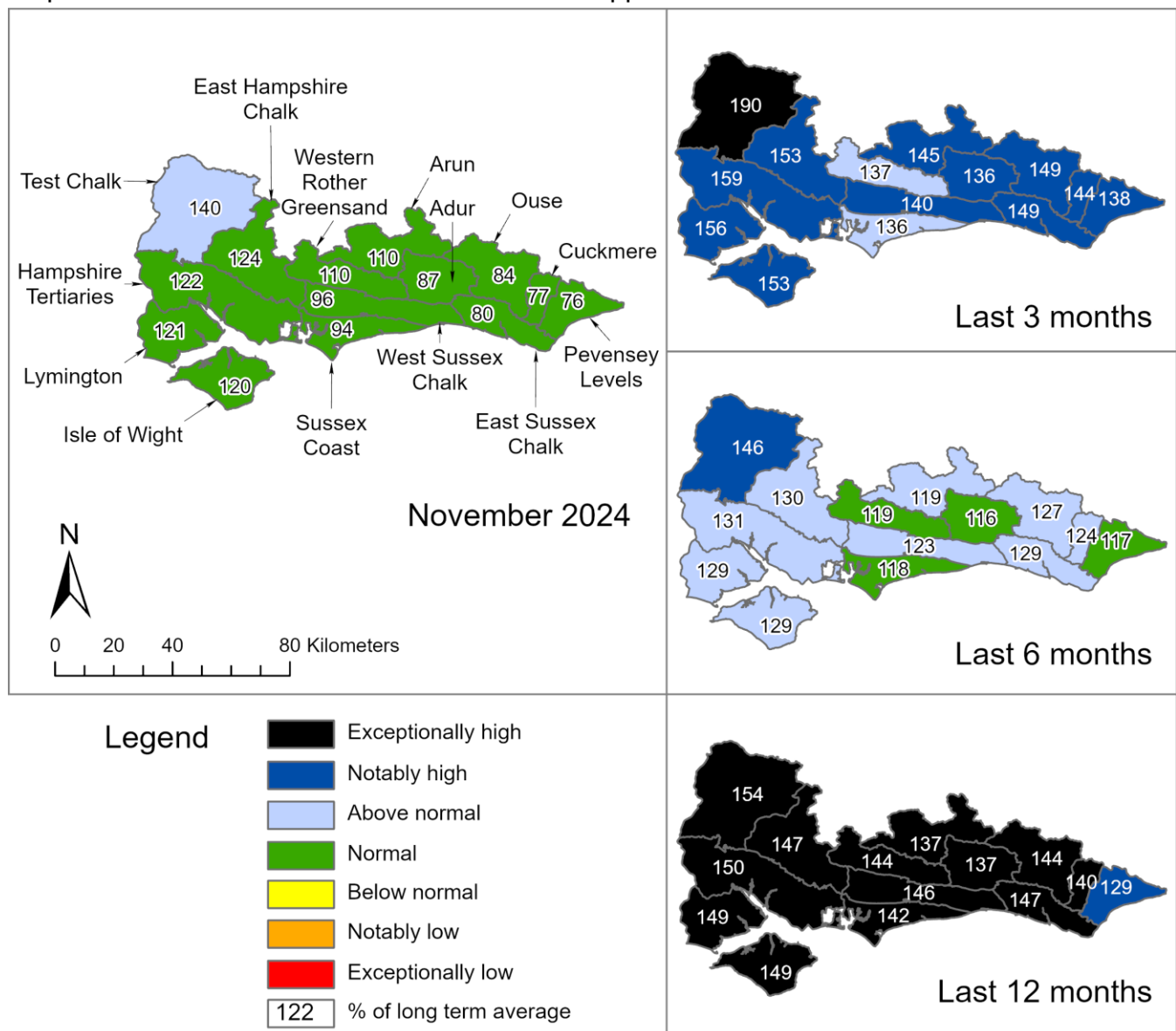
Contact Details: 03708 506506

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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 November 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.

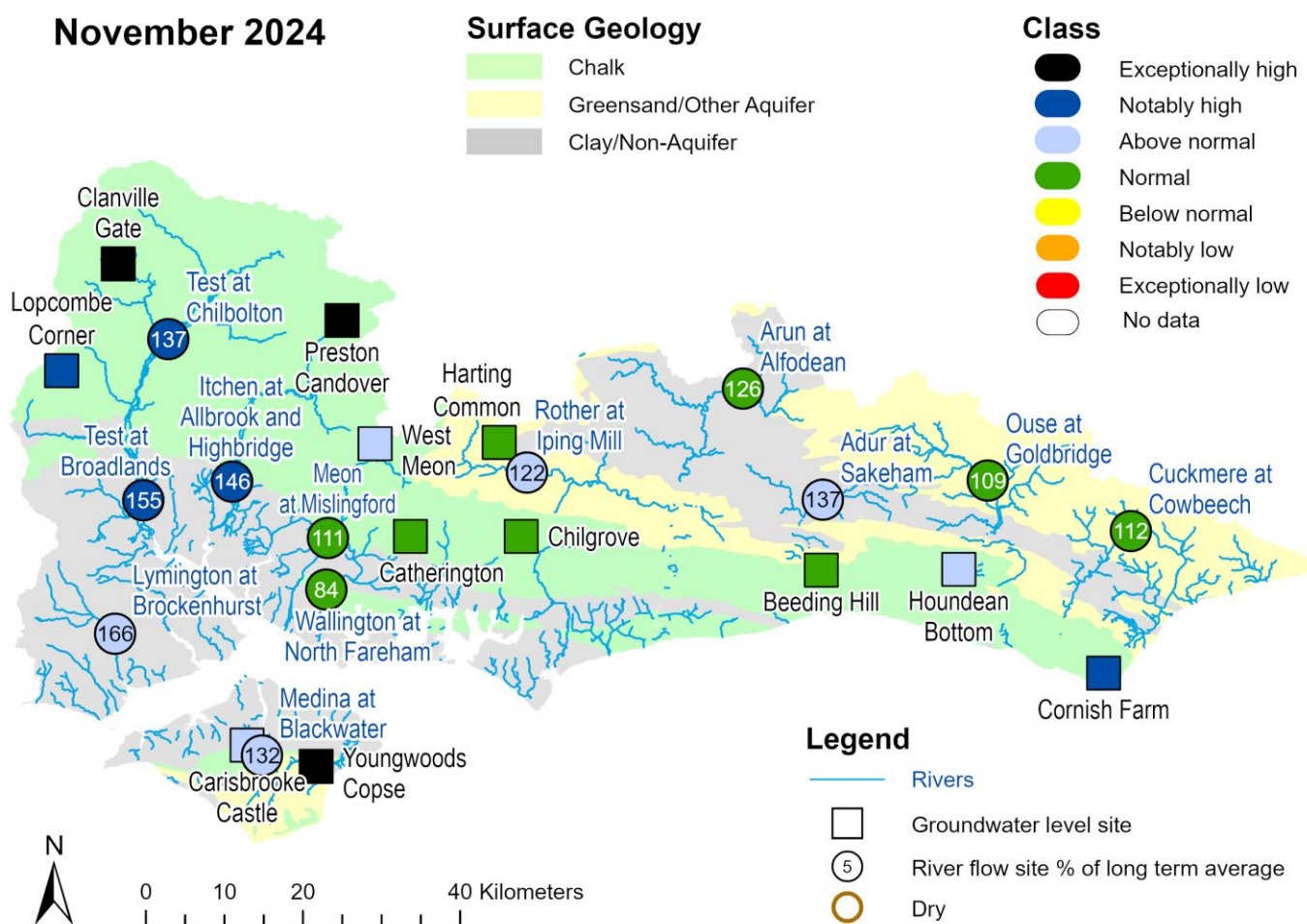


Rainfall data for 2024, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2024). Rainfall data prior to 2024, extracted from Met Office HadUK 1km gridded rainfall dataset derived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

3 River flows and Groundwater levels

3.1 River flows and Groundwater level map

Figure 3.1: Monthly mean river flow and groundwater levels at our indicator sites for November 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic November monthly means. Table available in the appendices with detailed information.

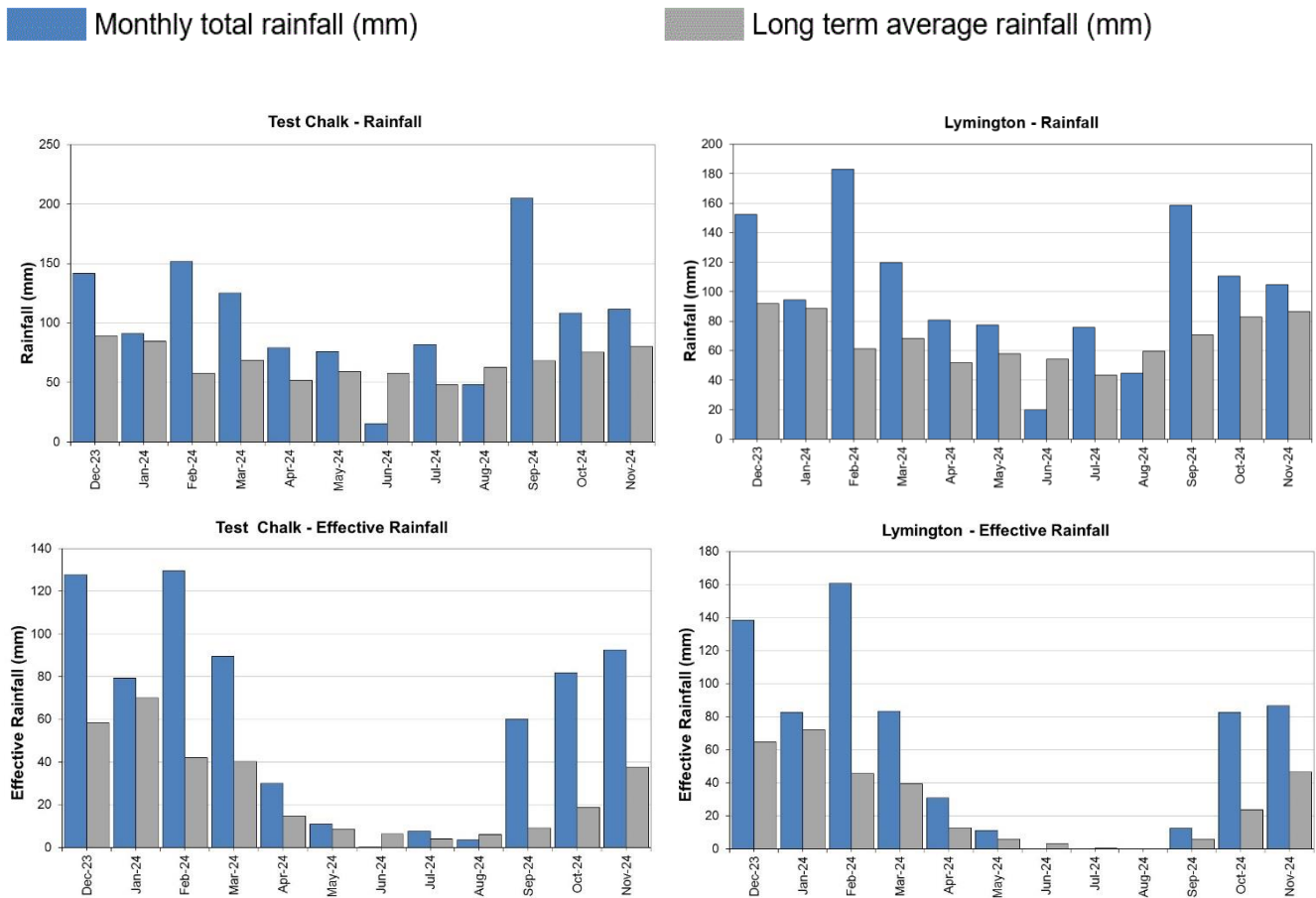


(Source: Environment Agency). Crown copyright. All rights reserved. Environment Agency, 100024198, 2024. Geological map reproduced with kind permission from UK Groundwater Forum, BGS copyright NERC. Crown copyright. All rights reserved. Environment Agency, 100024198, 2024.

4 West Hampshire

4.1 West Hampshire Rainfall and effective rainfall charts

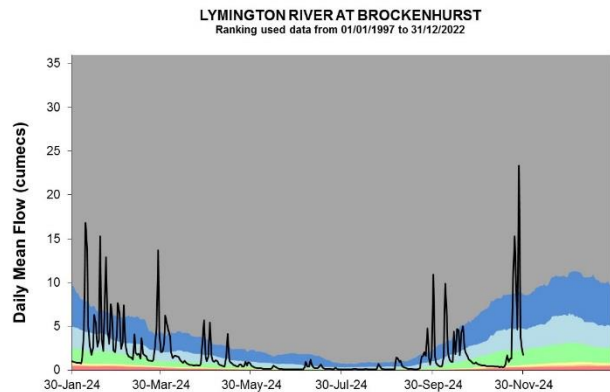
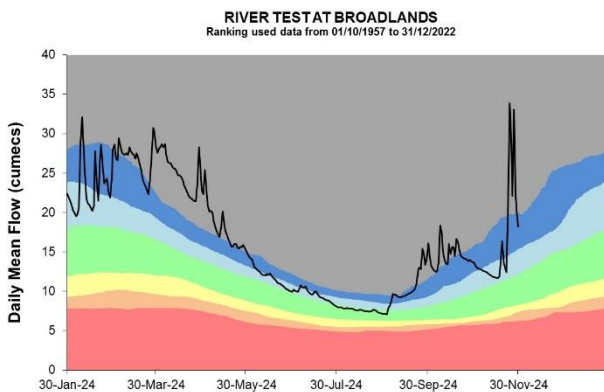
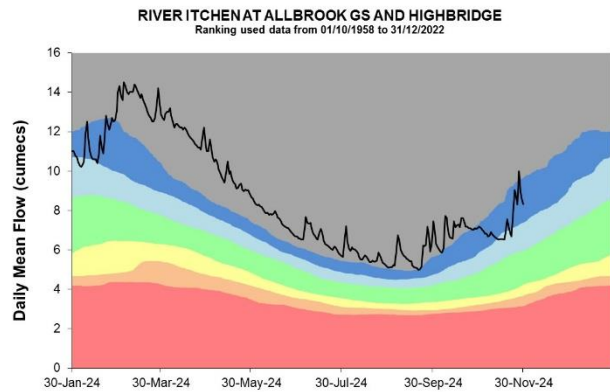
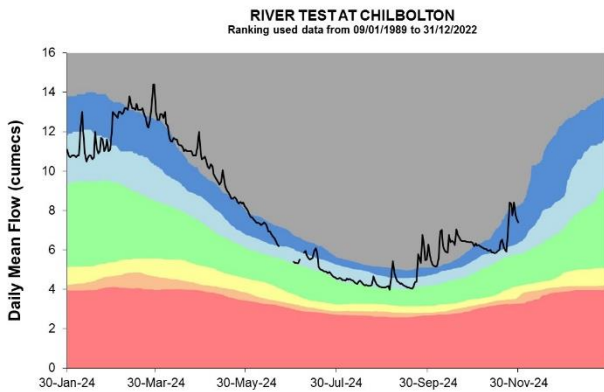
Figure 4.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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

4.2 West Hampshire River flow charts

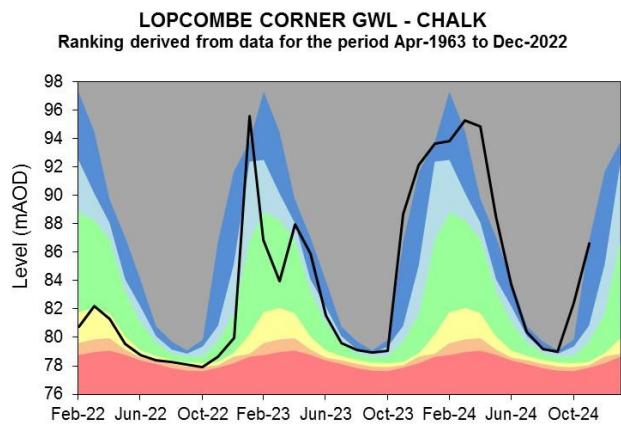
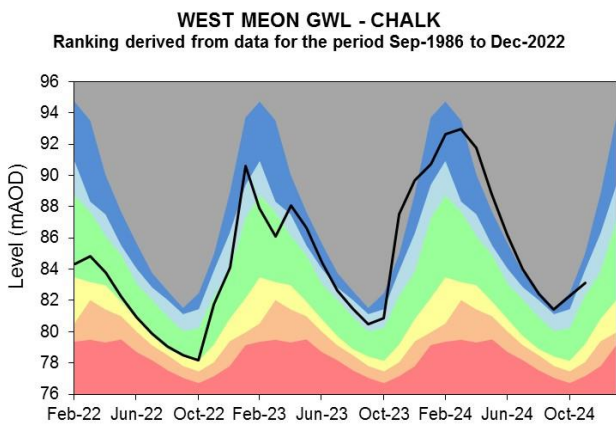
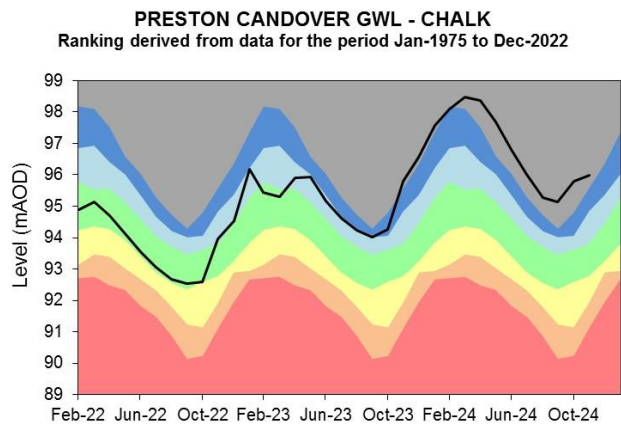
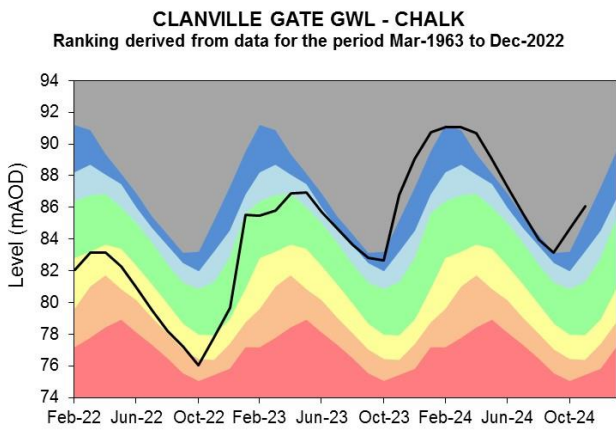
Figure 4.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



Source: Environment Agency, 2024.

4.3 West Hampshire Groundwater level charts

Figure 4.3: 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 and long term maximum and minimum levels.

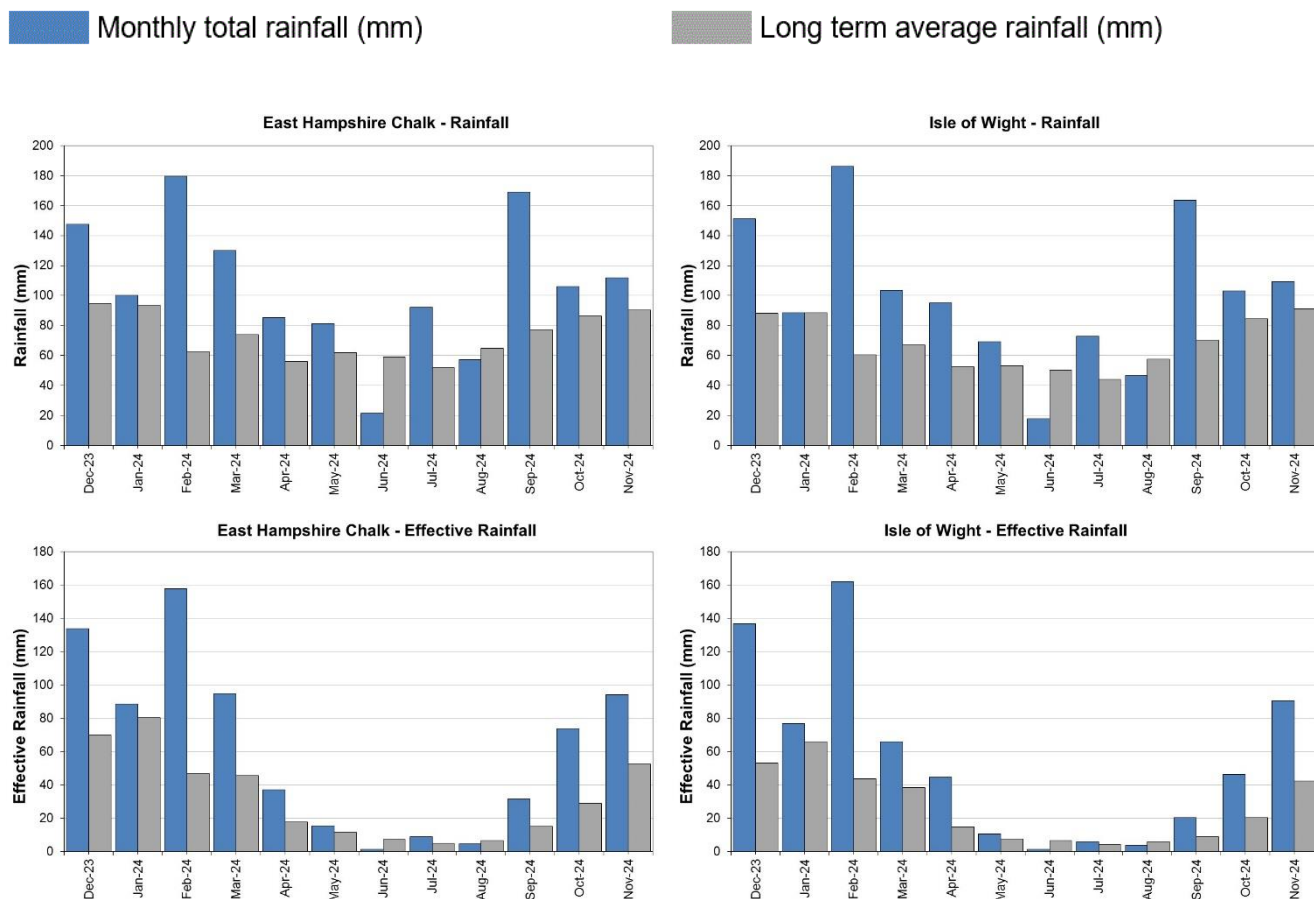


Source: Environment Agency, 2024.

5 East Hampshire and Isle of Wight

5.1 East Hampshire and Isle of Wight Rainfall and Effective rainfall charts

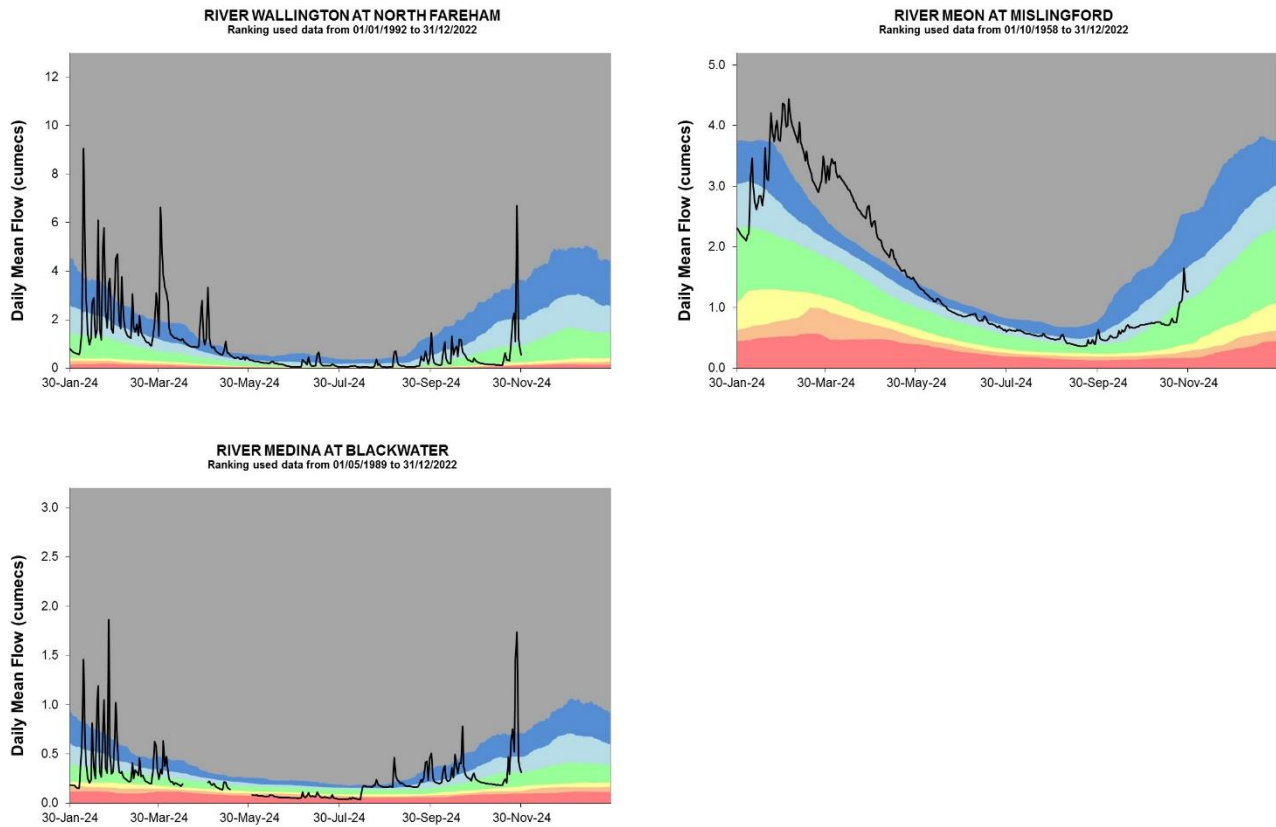
Figure 5.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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

5.2 East Hampshire and Isle of Wight River flow charts

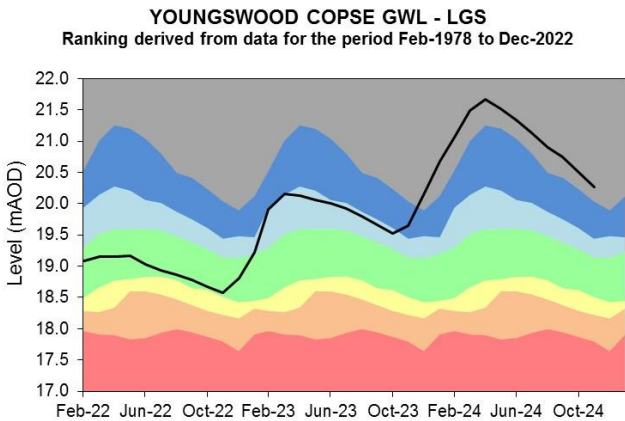
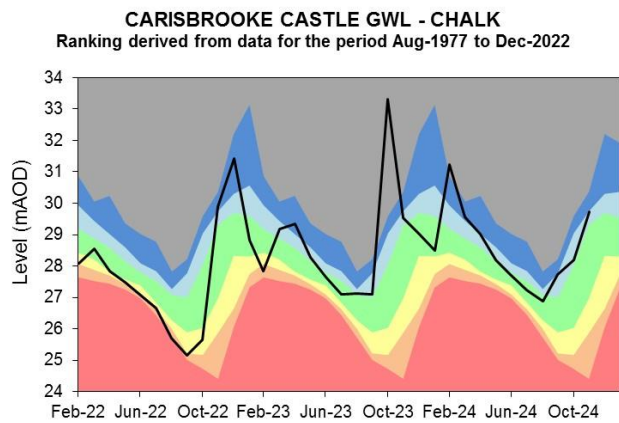
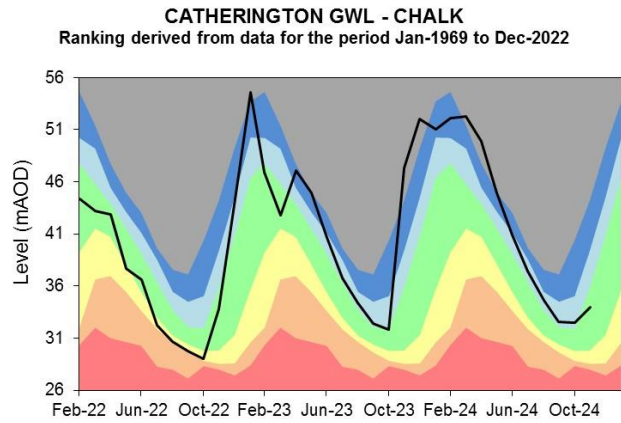
Figure 5.2 Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



Source: Environment Agency, 2024.

5.3 East Hampshire and Isle of Wight Groundwater level charts

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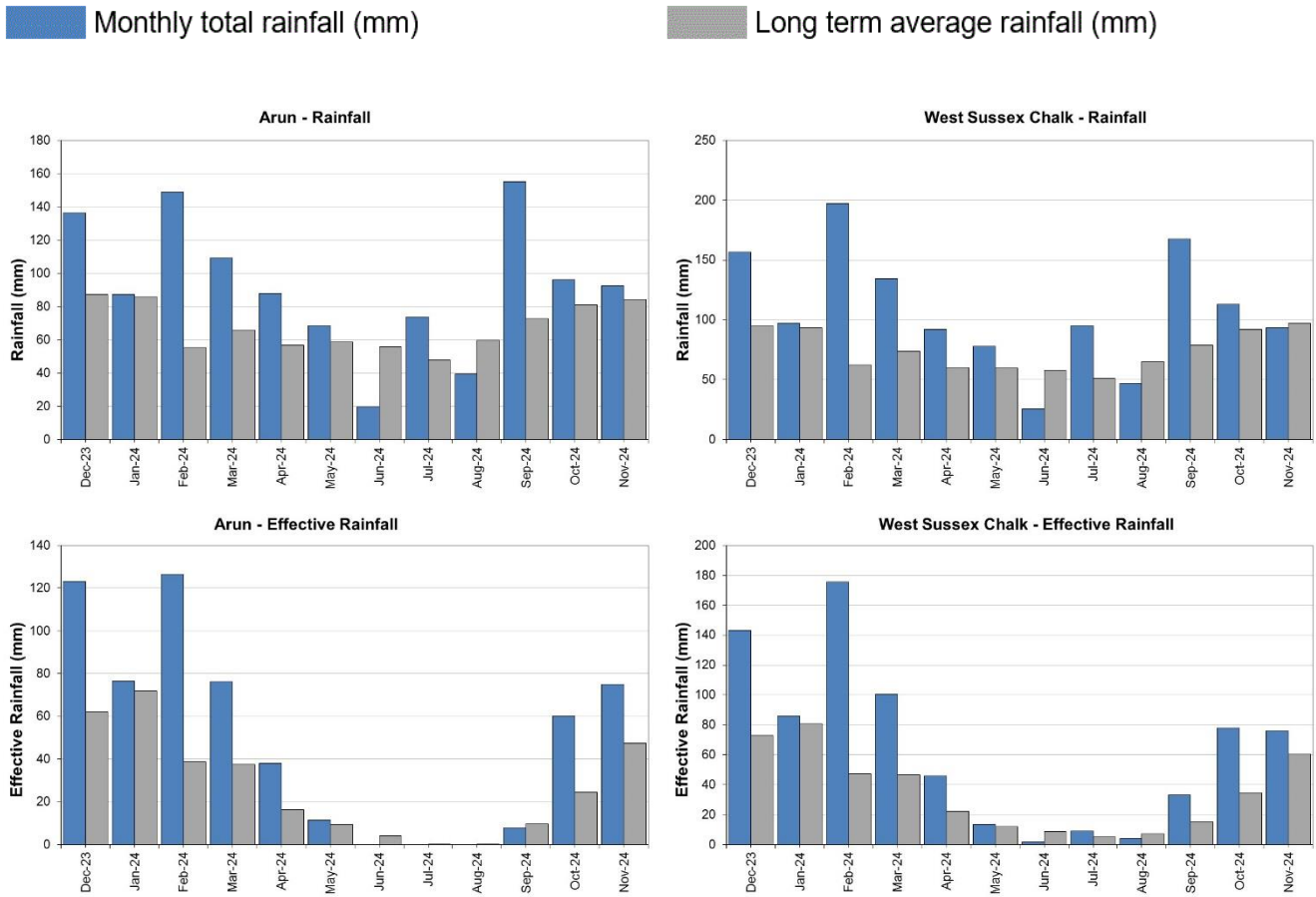


Source: Environment Agency, 2024.

6 West Sussex

6.1 West Sussex Rainfall and Effective Rainfall charts

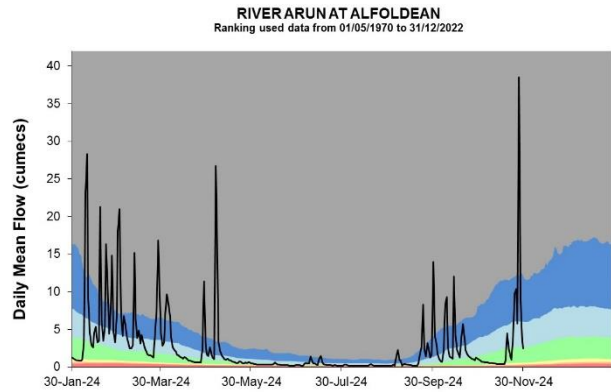
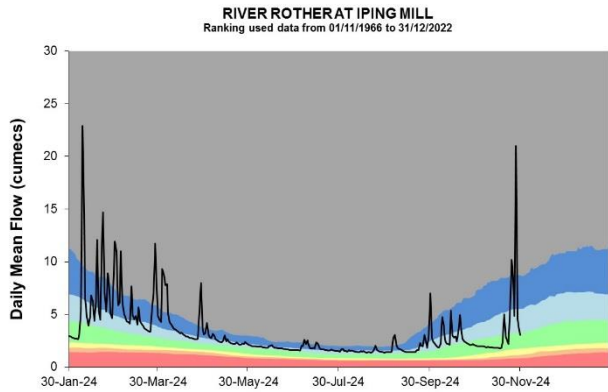
Figure 6.1: Monthly rainfall and effective rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average.



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

6.2 West Sussex River flow charts

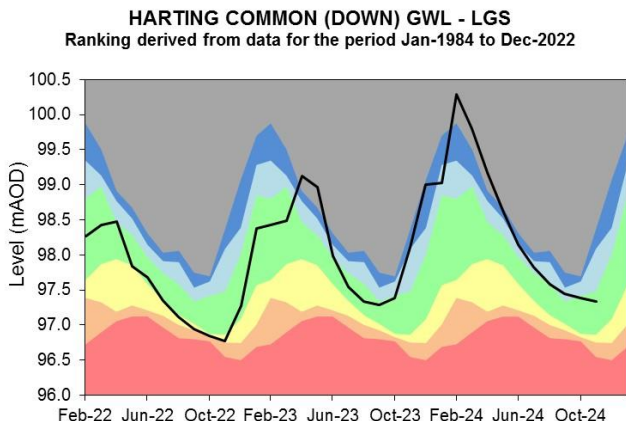
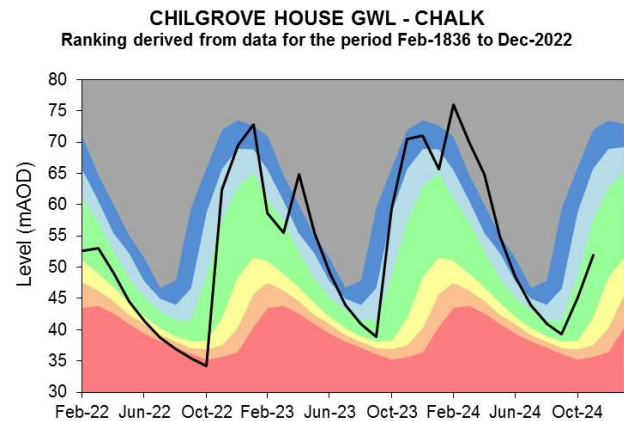
Figure 6.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



Source: Environment Agency, 2024.

6.3 West Sussex Groundwater level charts

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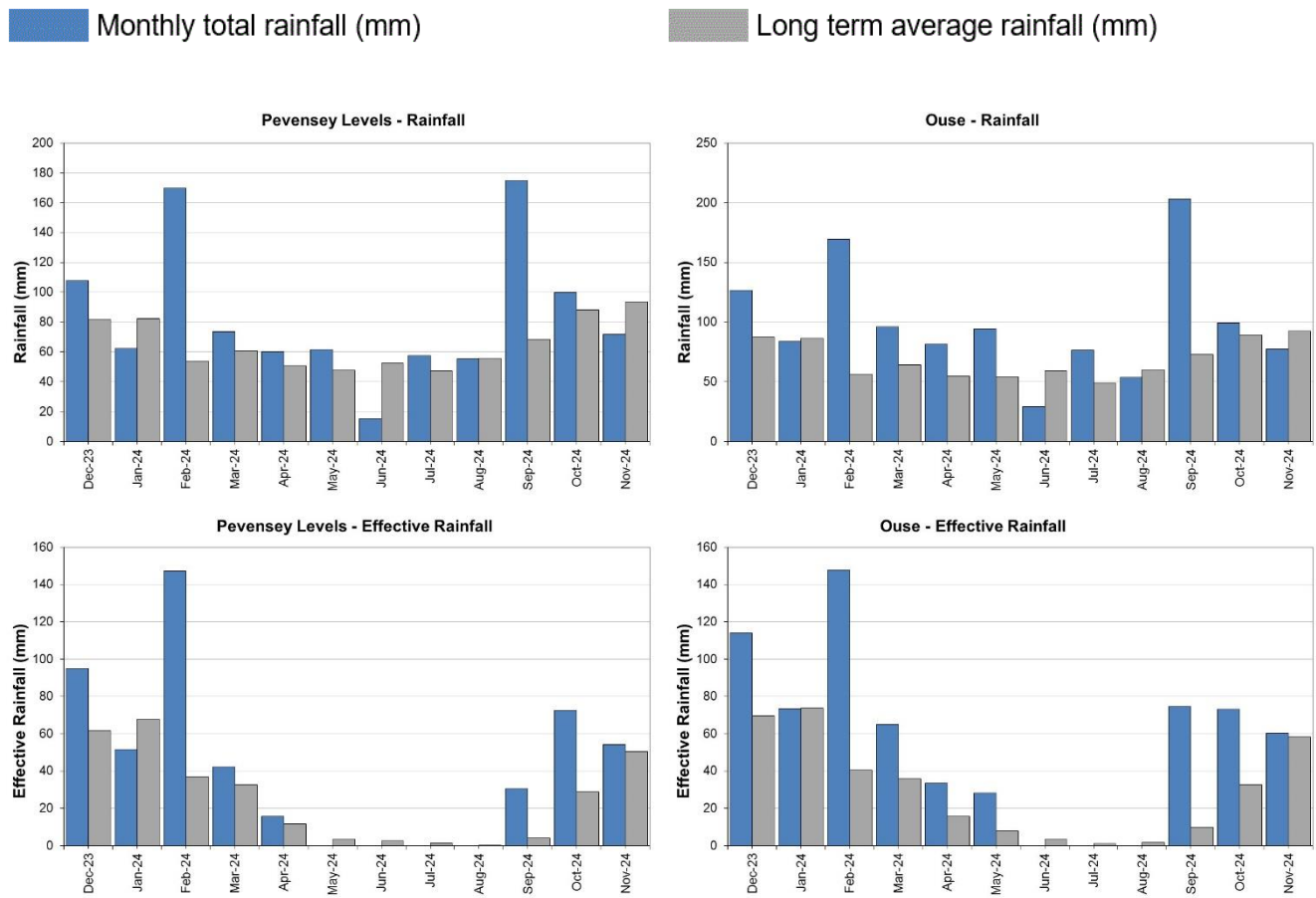


Source: Environment Agency, 2024.

7 East Sussex

7.1 East Sussex Rainfall and Effective Rainfall charts

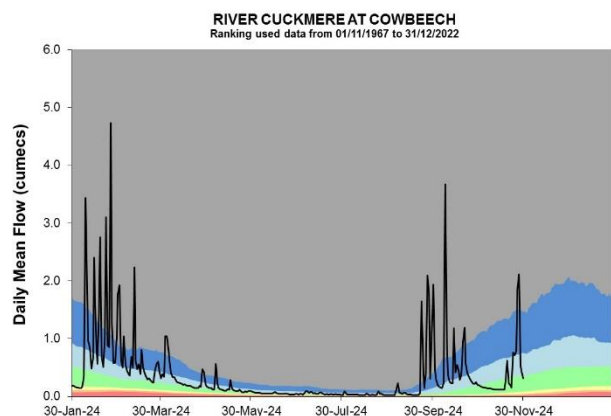
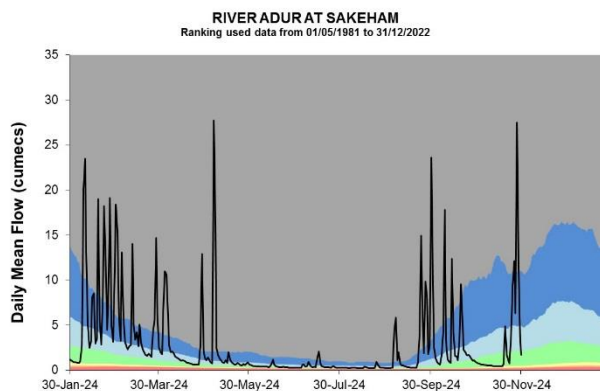
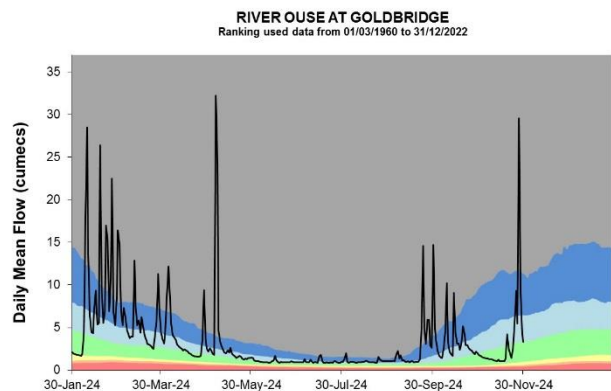
Figure 7.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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

7.2 East Sussex River flow charts

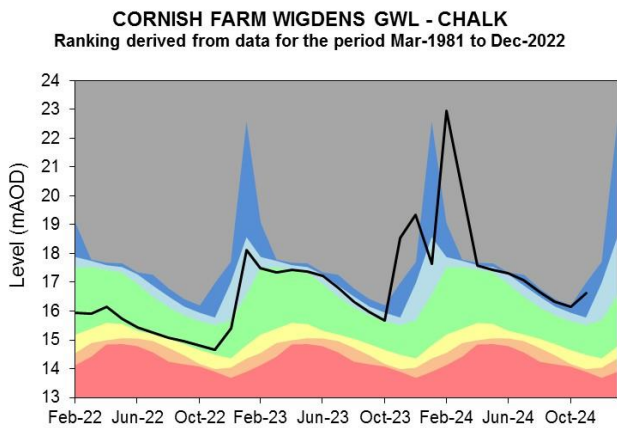
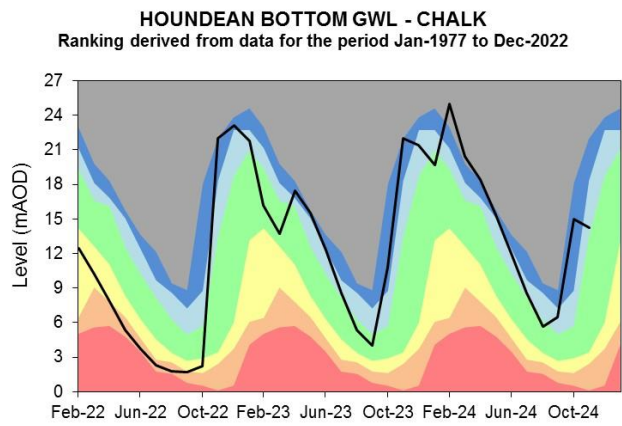
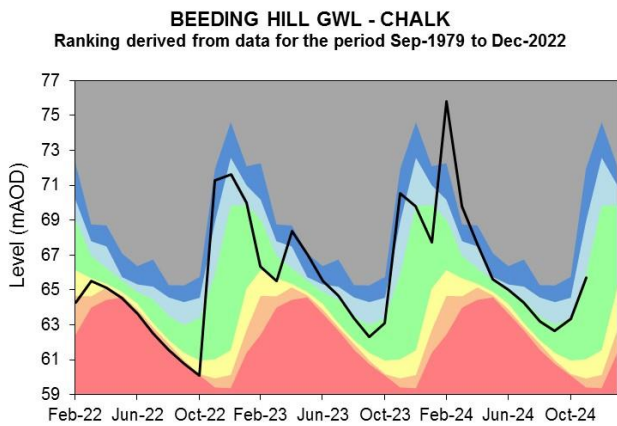
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Source: Environment Agency, 2024.

7.3 East Sussex Groundwater level charts

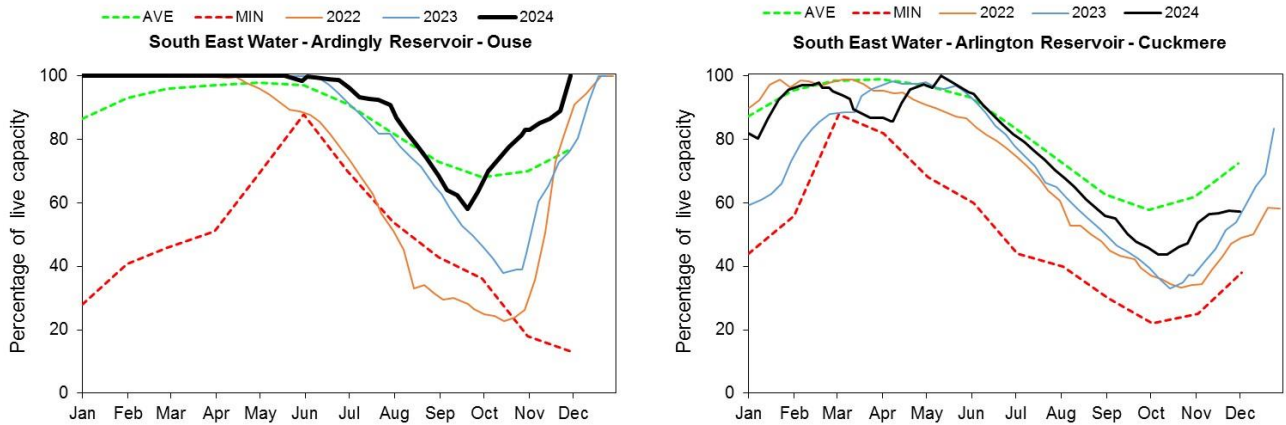
Figure 7.3: End of month groundwater levels at index groundwater level sites for major aquifers. 34 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.



Source: Environment Agency, 2024.

8 Reservoir stocks

Figure 8.1: End of month reservoir stocks compared to long term maximum, minimum and average stocks. Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in length.



(Source: water companies).

9 Glossary

9.1 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).

9.2 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 Appendices

10.1 Rainfall, effective rainfall and soil moisture deficit table

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

Figure 10.1: This is areal rainfall, effective rainfall (percolation or runoff) and soil moisture deficit for the hydrological areas across the SSD. There may be significant variation within each area which must be considered when interpreting these data. When additional meteorological data is available estimates are revised which will affect the period totals in section 10.2

Hydrological Area	Rainfall (mm) 30 day Total	Rainfall November as %LTA	Effective Rainfall (mm) 30 day Total	Effective Rainfall November as %LTA	Soil Moisture Deficit (SMD) Day 30	SMD End of November LTA
Test Chalk	112	140%	92	245%	0	33
East Hampshire Chalk	112	124%	94	180%	0	25
West Sussex Chalk	93	96%	76	126%	0	22
East Sussex Chalk	78	80%	61	111%	0	25
Isle of Wight	109	120%	90	214%	0	40
Western Rother Greensand	105	110%	87	150%	0	23
Hampshire Tertiaries	101	121%	82	202%	0	28
Lymington	105	120%	86	186%	0	25
Sussex Coast	75	93%	57	166%	0	34
Arun	93	110%	75	158%	0	23
Adur	77	87%	60	112%	0	19
Ouse	77	83%	60	104%	0	15
Cuckmere	72	77%	55	92%	0	13
Pevensey Levels	72	76%	54	107%	0	19
SSD Average	91	102%	74	148%	0	25

10.2 Seasonal summary table of rainfall and effective rainfall

Winter season: 01/10/2024 to 31/03/2025

Hydrological Area	Seasonal Rainfall (mm) Total	Seasonal Rainfall as % LTA	Seasonal Effective Rainfall (mm) Total	Seasonal Effective Rainfall as % LTA
Test Chalk	220	142%	174	308%
East Hampshire Chalk	218	123%	168	207%
West Sussex Chalk	206	109%	154	162%
East Sussex Chalk	187	98%	143	160%
Isle of Wight	212	121%	137	219%
Western Rother Greensand	208	112%	142	155%
Hampshire Tertiaries	205	126%	156	268%
Lymington	215	127%	169	241%
Sussex Coast	171	109%	80	168%
Arun	188	114%	135	188%
Adur	176	101%	133	161%
Ouse	177	97%	134	147%
Cuckmere	176	95%	134	141%
Pevensey Levels	171	94%	127	159%
SSD Average	195	111%	142	185%

10.3 Rainfall banding table

Hydrological area	Nov 2024 band	Sep 2024 to Nov 2024 cumulative band	Jun 2024 to Nov 2024 cumulative band	Dec 2023 to Nov 2024 cumulative band
Test Chalk	Above normal	Exceptionally high	Notably high	Exceptionally high
East Hampshire Chalk	Normal	Notably high	Above normal	Exceptionally high
West Sussex Chalk	Normal	Notably high	Above normal	Exceptionally high
East Sussex Chalk	Normal	Notably high	Above normal	Exceptionally high
Isle of Wight	Normal	Notably high	Above normal	Exceptionally high
Western Rother Greensand	Normal	Above normal	Normal	Exceptionally high
Hampshire Tertiaries	Normal	Notably high	Above normal	Exceptionally high
Lymington	Normal	Notably high	Above normal	Exceptionally high
Sussex Coast	Normal	Above normal	Normal	Exceptionally high
Arun	Normal	Notably high	Above normal	Exceptionally high
Adur	Normal	Notably high	Normal	Exceptionally high
Ouse	Normal	Notably high	Above normal	Exceptionally high
Cuckmere	Normal	Notably high	Above normal	Exceptionally high
Pevensey Levels	Normal	Notably high	Normal	Notably high

10.4 River flows table

Site name	River	Catchment	Nov 2024 band	Oct 2024 band
Alfoldean Gs	Arun	Arun	Normal	Above normal
Allbrook Gs+ Highbridge	Itchen (so)	Itchen	Notably high	Exceptionally high
Blackwater	Medina	Isle of Wight	Above normal	Notably high
Broadlands	Test	Test Lower	Notably high	Exceptionally high
Brockenhurst GS	Lymington	New Forest	Above normal	Above normal
Chilbolton GS	Test	Test Upper	Notably high	Exceptionally high
Cowbeech Gs	Cuckmere	Cuckmere	Normal	Exceptionally high
Goldbridge Gs	Ouse [so]	Ouse Sussex	Normal	Above normal
Iping Mill Gs	Rother	West Rother	Above normal	Normal
Mislingford GS	Meon	Meon	Normal	Above normal
North Fareham GS	Wallington	Wallington	Normal	Normal
Sakeham GS	Adur	Adur	Above normal	Notably high

10.5 Groundwater table

Site name	Aquifer	End of Nov 2024 band	End of Oct 2024 band
Carisbrooke Castle	Isle Of Wight Central Downs Chalk	Normal	Notably high
Youngwoods Copse	Isle of Wight Lower Greensand	Normal	Normal
Clanville Gate Gwl	River Test Chalk	Normal	Above normal
Lopcombe Corner Gwl	River Test Chalk	Notably high	Notably high
Preston Candover	River Itchen Chalk	Notably high	Exceptionally high
West Meon Hut Gwl	River Itchen Chalk	Notably high	Exceptionally high
Catherington	River Meon Chalk	Normal	Normal
Chilgrove House Gwl	Chichester-Worthing-Portsdown Chalk	Above normal	Above normal
Beeding Hill Gwl	Brighton Chalk Block	Notably high	Notably high
Houndean Bottom Gwl	Brighton Chalk Block	Normal	Normal
Harting Common Down	Western Rother Lower Greensand	Exceptionally high	Exceptionally high
Cornish Wigdens Gwtr	Eastbourne Chalk Block	Exceptionally high	Exceptionally high

10.6 Abstraction licence flow constraints

Number of flow constraints in force between 1 to 4 November 2024	Number of flow constraints in force between 5 to 11 November 2024	Number of flow constraints in force between 12 to 18 November 2024	Number of flow constraints in force between 19 to 25 November 2024	Number of flow constraints in force between 26 to 30 November 2024
1	4	5	2	1

10.7 Solent and South Downs Areal Rainfall Units Map



10.8 SSD Areal Rainfall Monthly Long Term Averages

Hydrological Area	Jan LTA mm	Feb LTA mm	Mar LTA mm	Apr LTA mm	May LTA mm	Jun LTA mm	Jul LTA mm	Aug LTA mm	Sep LTA mm	Oct LTA mm	Nov LTA mm	Dec LTA mm
Test Chalk	84.8	57.9	68.7	51.7	59.0	57.3	47.9	62.5	67.9	75.4	79.9	89.1
East Hampshire Chalk	93.8	62.5	73.9	56.2	61.9	58.7	51.7	64.6	77.0	86.2	90.5	94.8
West Sussex Chalk	93.5	62.5	73.9	60.2	59.5	57.6	50.7	64.8	78.5	92.0	97.0	95.5
East Sussex Chalk	87.1	56.9	65.1	53.5	51.5	57.4	48.9	60.3	72.7	92.9	97.9	88.7
Isle of Wight	88.2	60.4	67.0	52.3	53.2	50.2	44.1	57.4	70.2	84.3	91.2	88.1
Western Rother Greensand	99.5	64.5	75.5	60.6	62.6	57.3	50.4	65.6	78.8	90.8	94.7	99.7
Hampshire Tertiaries	86.1	59.2	67.0	50.4	56.8	52.8	44.5	58.7	69.6	78.8	83.4	88.7
Lymington	88.5	61.2	68.5	51.5	57.9	54.3	43.4	59.3	71.0	83.0	86.8	91.8
Sussex Coast	76.6	51.3	60.7	50.2	50.2	47.7	41.9	53.0	63.7	77.2	80.8	78.9
Arun	85.5	55.1	65.5	56.5	58.5	55.6	47.2	59.4	72.4	80.5	83.9	86.9
Adur	84.8	55.1	63.8	55.3	56.2	55.6	46.0	59.6	71.5	85.7	88.8	86.0
Ouse	86.6	56.4	64.0	54.4	54.0	58.6	48.7	60.0	72.5	89.1	92.9	87.6
Cuckmere	84.8	55.2	61.8	51.2	50.1	57.5	48.5	59.8	71.5	90.8	93.7	85.0
Pevensey Levels	82.2	54.0	60.9	50.6	47.5	52.2	47.3	55.6	68.5	88.1	93.6	82.0
SSD Average	87.3	58.0	66.9	53.9	55.6	55.2	47.2	60.0	71.8	85.3	89.6	88.8