

# Monthly water situation report: Solent and South Downs Area

## Summary - October 2024

Solent and South Downs (SSD) had average rainfall in October, receiving 121% (104mm) of the long term average (LTA) rainfall (85mm). Monthly mean river flows across SSD ranged from above normal to exceptionally high. End of month groundwater levels ranged from normal to exceptionally high. Soils across SSD ended the month much wetter than the average for October. End of month reservoir stocks at Ardingly Reservoir (Ouse) were above average, and at Arlington Reservoir (Cuckmere) were below average.

### 1.1 Rainfall

SSD had average rainfall in October, receiving 121% (104mm) of the LTA (85mm). The Test Chalk areal unit in the west of SSD received the highest rainfall with 144% (108mm) of LTA. The Ouse areal unit received the lowest rainfall with 111% (99mm) of LTA. All units showed normal rainfall.

The highest daily rainfall totals for the month were recorded on 8 October:

- 34mm was recorded at Angmering RG (West Sussex Coast)
- 33mm at Vines Cross TBR (Cuckmere)
- 33mm at Poverty Bottom RG (East Sussex Chalk)

Half of the rainfall in October fell between the 7 and 14 October. There were 10 completely dry days during October.

This October was not a notable month for rainfall. Instead, rainfall for the 3 month period August to October was:

- the third wettest for Test Chalk unit
- ninth wettest for Ouse and Pevensey Levels units.

SSD had the wettest January to October (8 months) period on record. The West Sussex Chalk, East Sussex Chalk, Ouse and Cuckmere units also had the wettest January to October. The remaining areal units all had the second wettest 8 month period, apart from the Arun which had the third wettest. All these statistics are based on records going back to 1871.

### 1.2 Soil moisture deficit and recharge

Soils across SSD ended the month a lot wetter (2mm) than the average for October (52mm).

### 1.3 River flows

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

Flows were normal on the:

- River Wallington at North Fareham
- River Rother at Iping Mill

Flows were above normal on the:

- River Arun at Alfoldean
- River Ouse at Goldbridge
- River Lymington at Brockenhurst
- River Meon at Misingford

Flows were notably high on the:

- River Adur at Sakeham
- River Medina at Blackwater

Flows were exceptionally high on the:

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

The monthly mean flows for October for the River Test were the highest on record at Chilbolton (1989), and the fourth highest at Broadlands (1958). Flows for Allbrook and Highbridge (Itchen) were the third highest on record for October since 1959.

### 1.4 Groundwater levels

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

Groundwater levels were normal at:

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

Groundwater levels were above normal at:

- Carisbrooke Castle (Isle of Wight)
- Catherington (East Hampshire Chalk)

Groundwater levels were notably high at:

- Houndean Bottom (East Sussex Chalk)
- Cornish Farm (East Sussex Chalk)

- West Meon (East Hampshire Chalk)

Groundwater levels were exceptionally high at:

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

Groundwater levels for October were the highest on record at Youngwoods Copse (1978), Preston Candover (1975) and Clanville Gate (1966). Lopcombe Corner recorded the second highest October groundwater level on record since 1963. West Meon Hut and Cornish Farm recorded their fourth highest levels for the month since 1986 and 1981 respectively.

## 1.5 Reservoir stocks

End of month reservoir stock was above average at Ardingly Reservoir (Ouse) with 83.3% of total capacity (LTA 70%). At Arlington Reservoir (Cuckmere) reservoir stocks ended below average with 47.2% of total capacity (LTA 61.9%).

## 1.6 Environmental impact

During September there were a total of four licence restrictions in force, three cessations and one reduced abstraction rates.

The cessations were in force on the River Meon (East Hampshire) and on the Walkford Brook (New Forest). The reduce abstraction rate was in force on the River Meon (East Hampshire).

During September there were two Flood Warning in Sussex and one in Hampshire all on October 9. There were also 10 Flood Alerts issued, nine in Sussex and one in the Hampshire and the Isle of Wight area.

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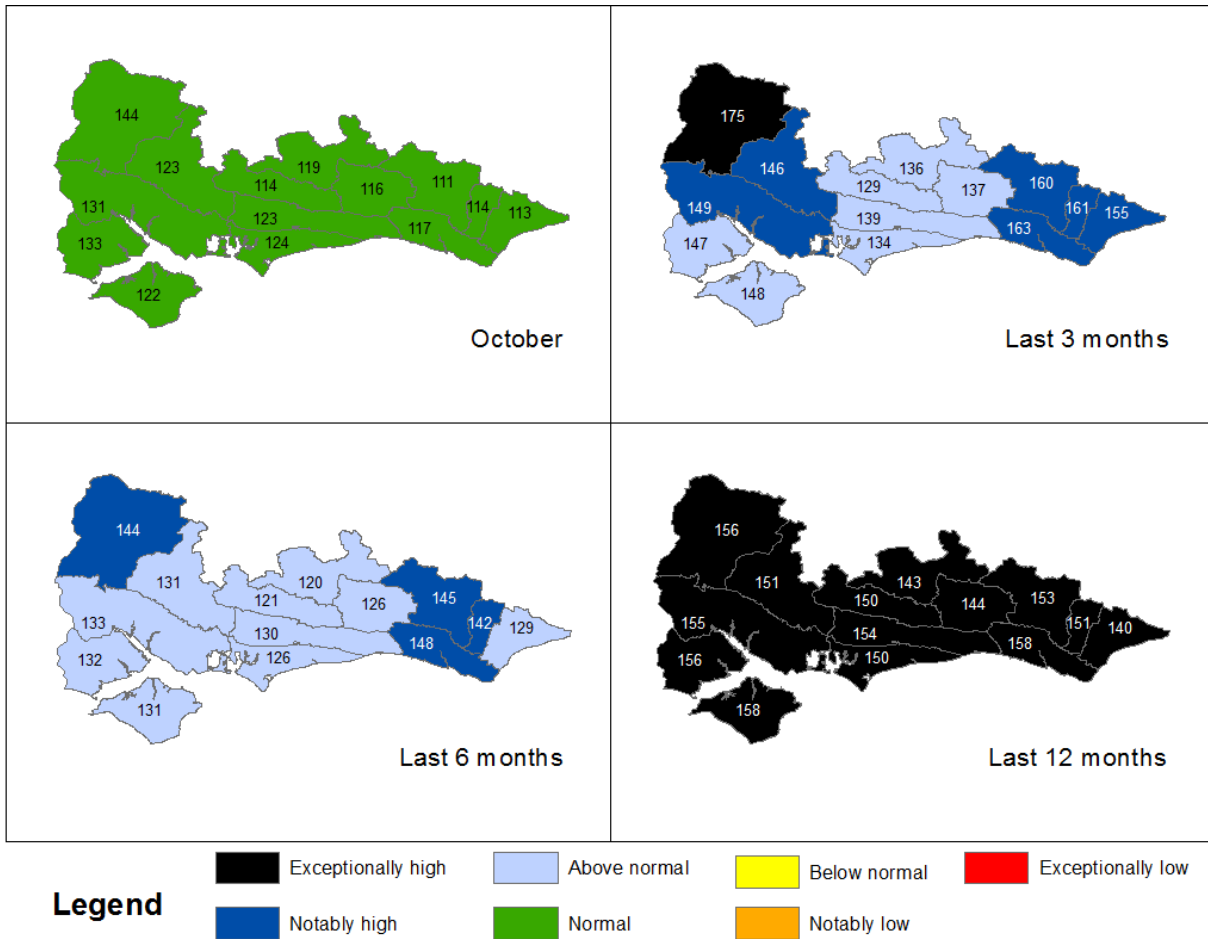
Contact Details: 03708 506506

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## 2. Rainfall

### 2.1 Rainfall map

Figure 2.1: Total rainfall for hydrological areas for the current month (up to 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.

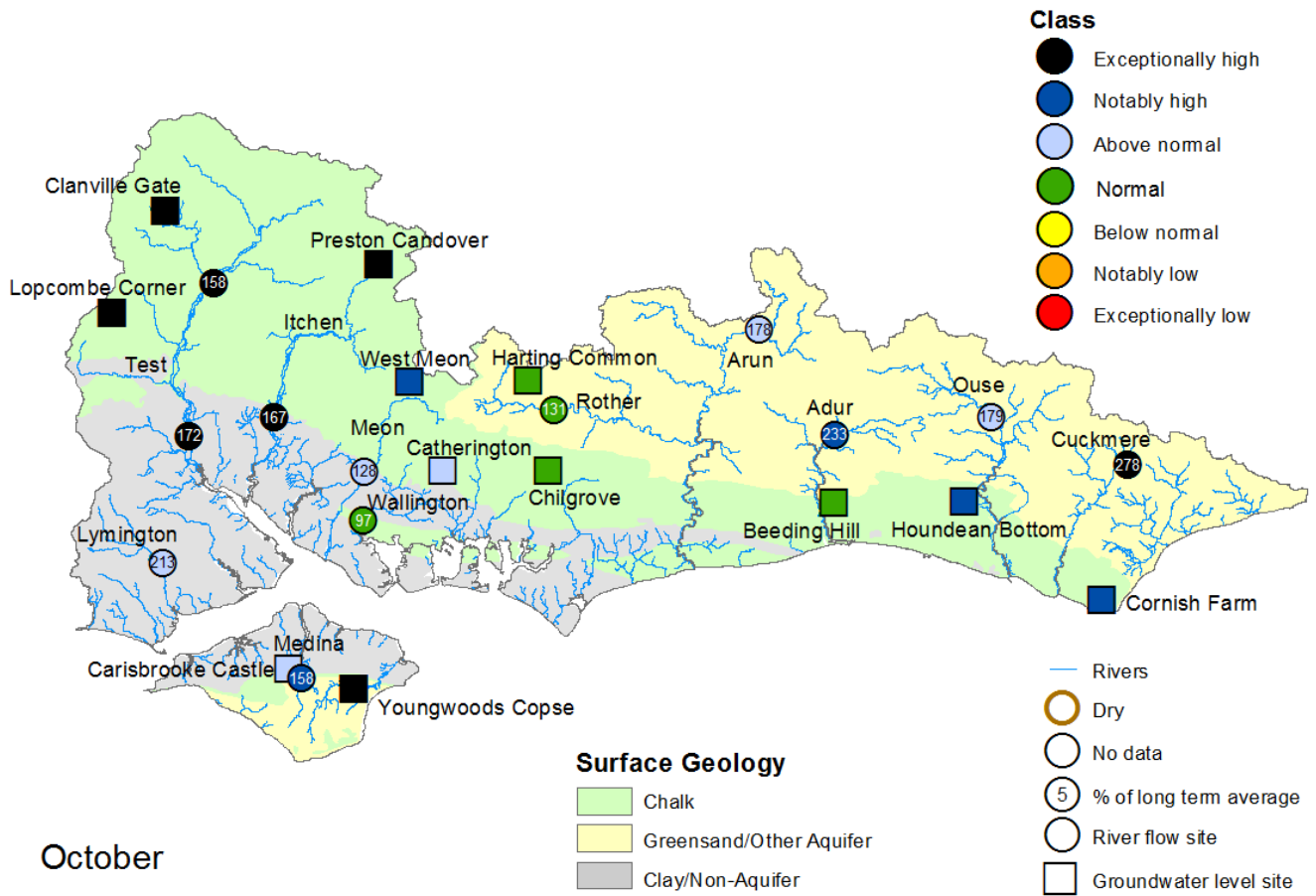


Rainfall data for 2024, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2024). Rainfall data prior to 2024, extracted from Met Office HadUK 1km gridded rainfall dataset derived 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 October 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic October monthly means. Table available in the appendices with detailed information.

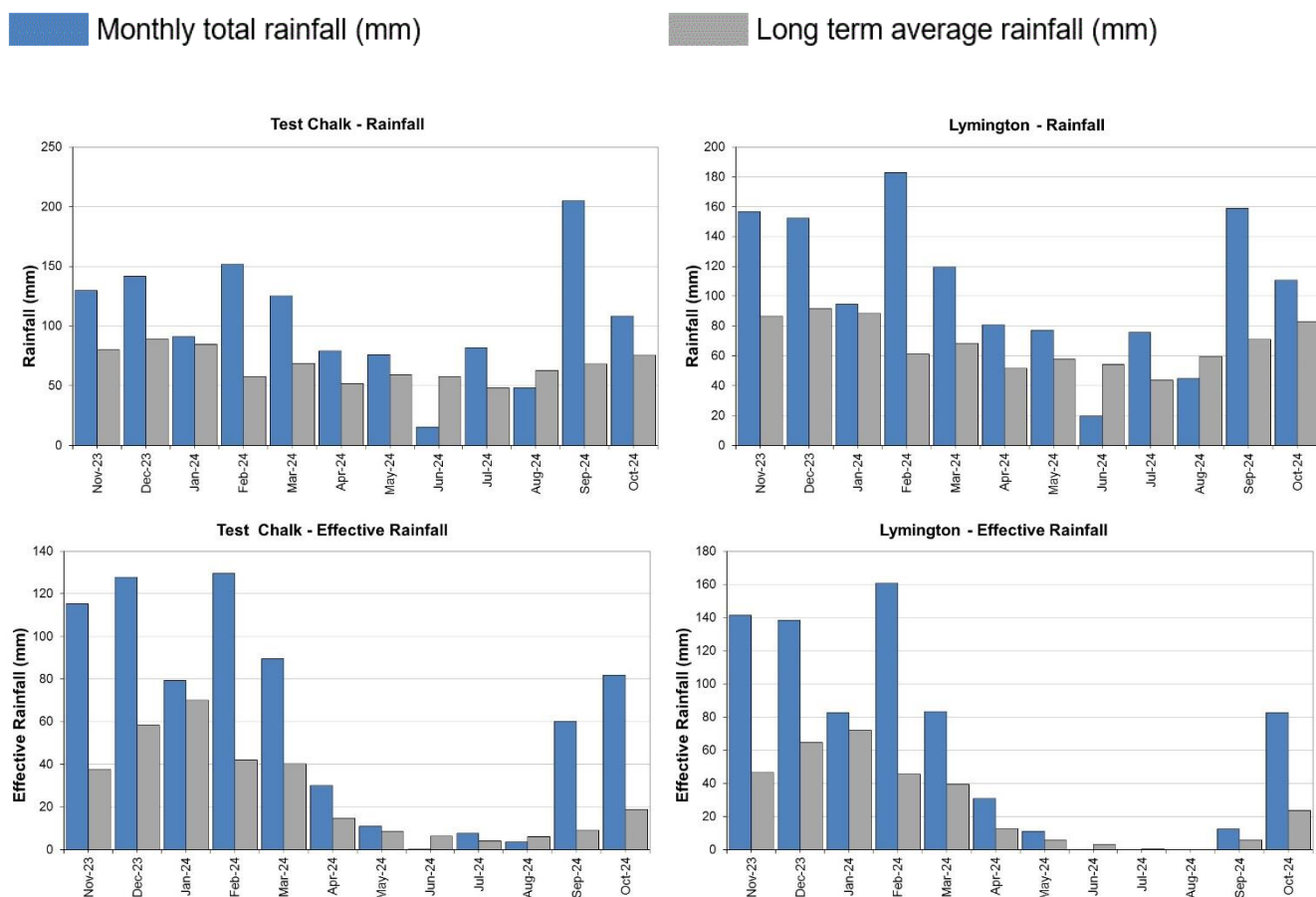


(Source: Environment Agency). Crown copyright. All rights reserved. Environment Agency, 100024198, 2024. Geological map reproduced with kind permission from UK Groundwater Forum, BGS copyright NERC. Crown copyright. All rights reserved. Environment Agency, 100024198, 2024.

# 4 West Hampshire

## 4.1 West Hampshire Rainfall and effective rainfall charts

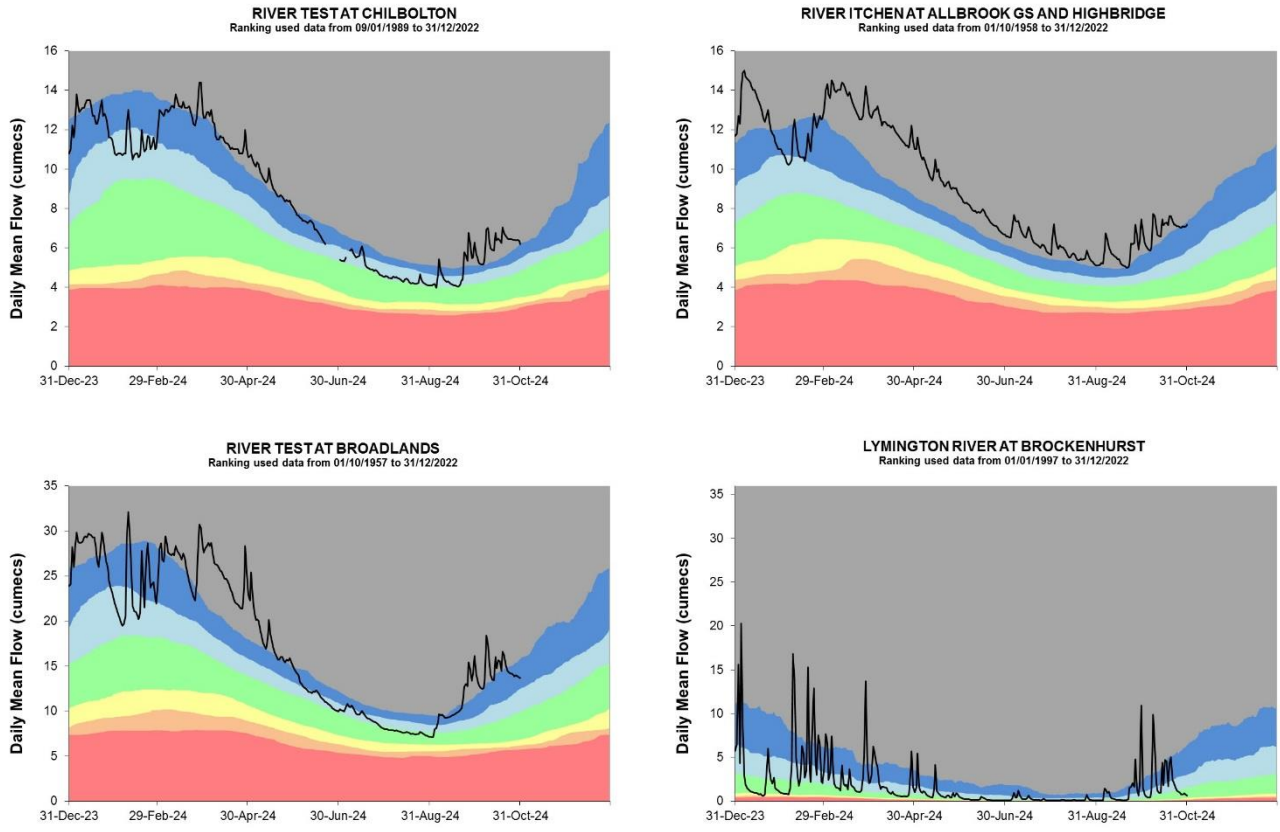
Figure 4.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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

## 4.2 West Hampshire River flow charts

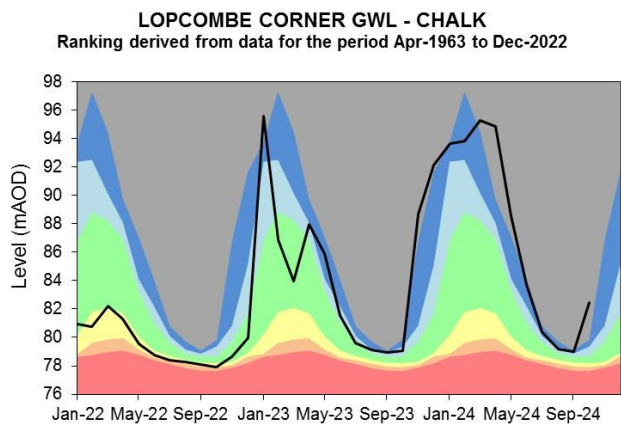
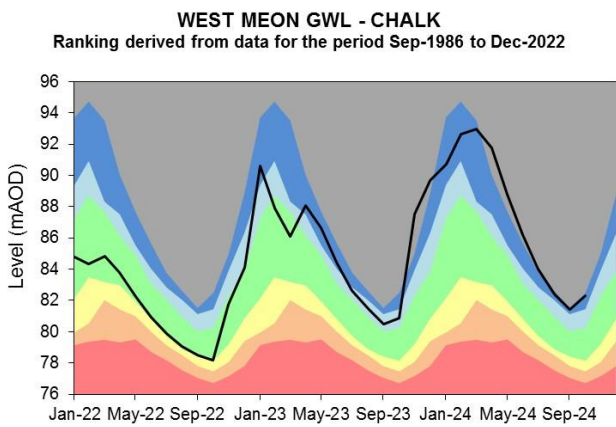
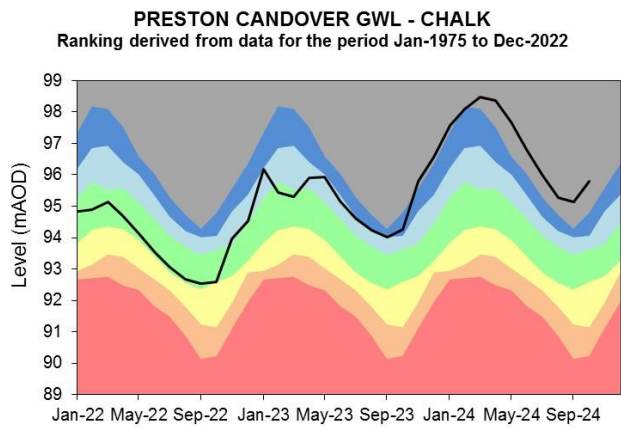
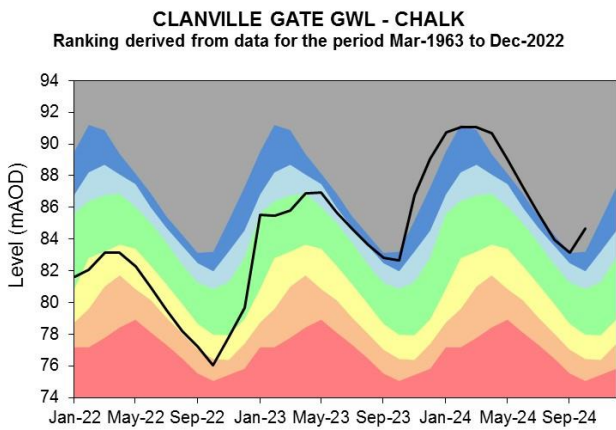
Figure 4.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



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.



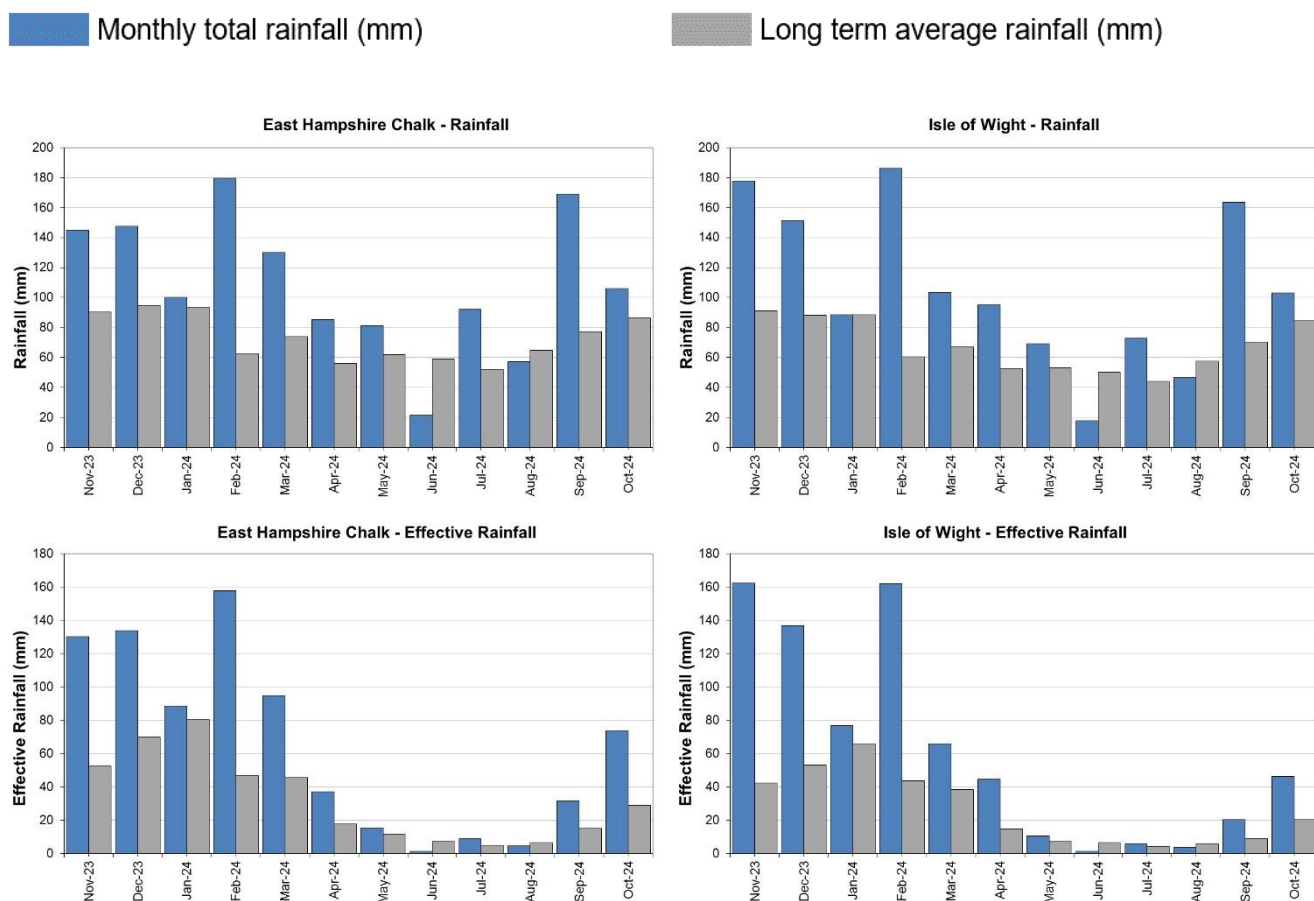
Source: Environment Agency, 2024.



# 5 East Hampshire and Isle of Wight

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

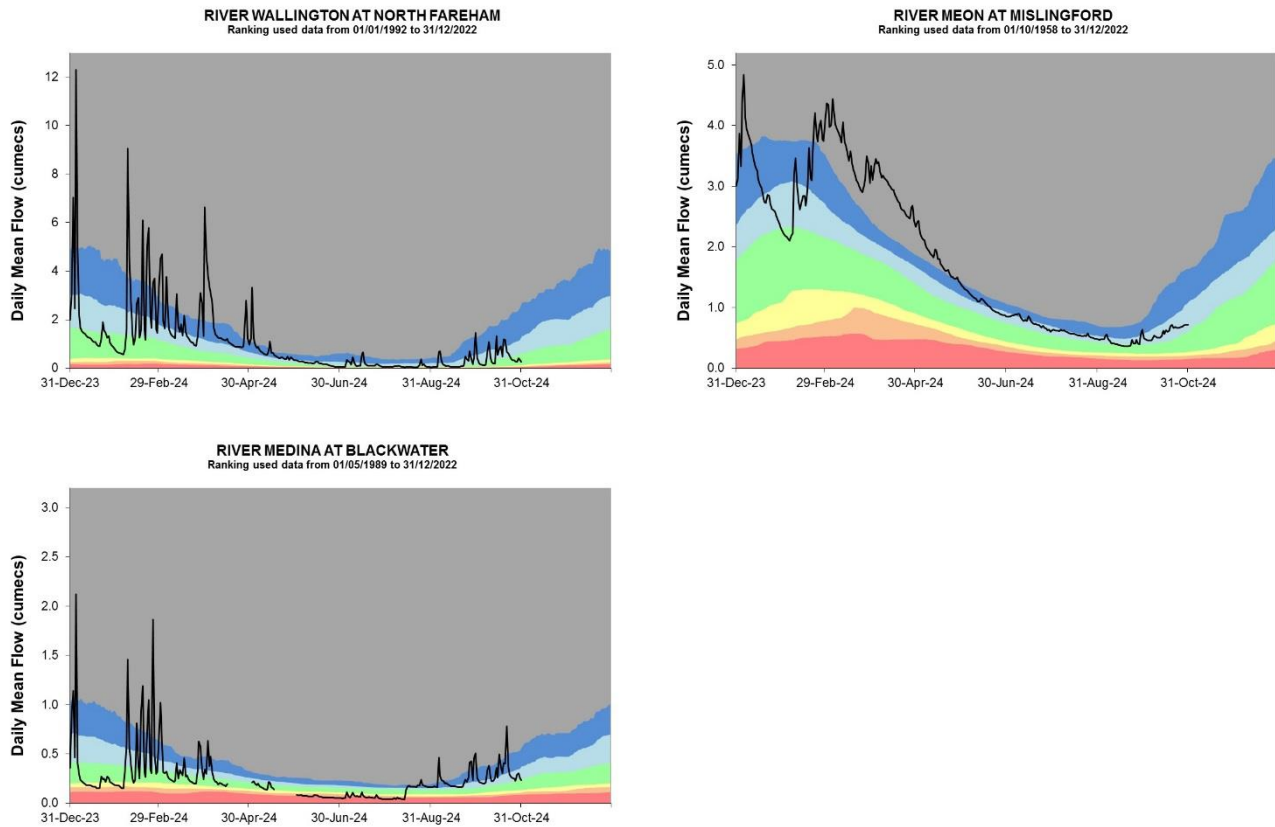
Figure 5.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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

## 5.2 East Hampshire and Isle of Wight River flow charts

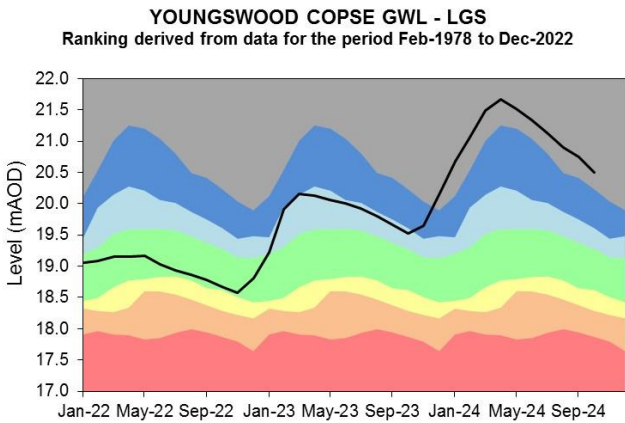
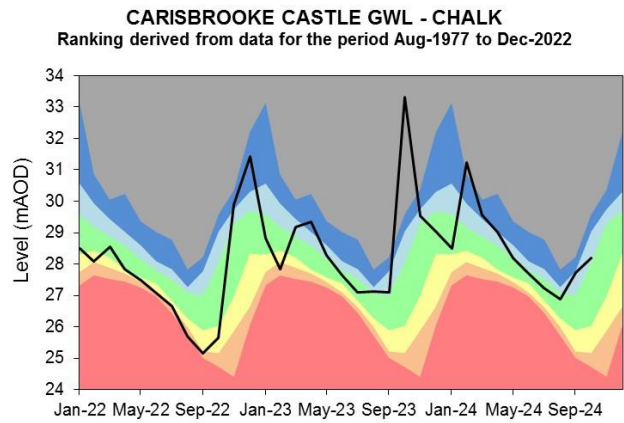
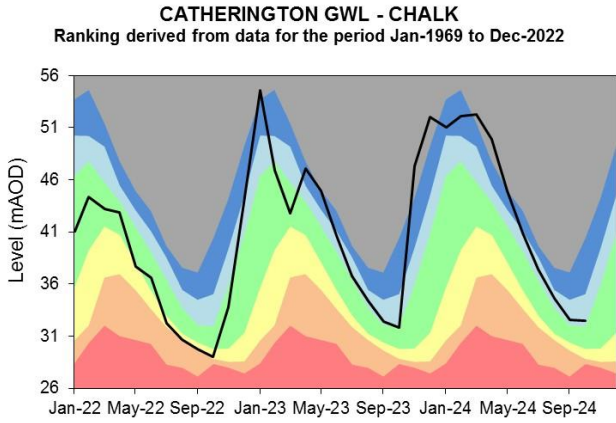
Figure 5.2 Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



Source: Environment Agency, 2024.

### 5.3 East Hampshire and Isle of Wight Groundwater level charts

Figure 5.3: 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.

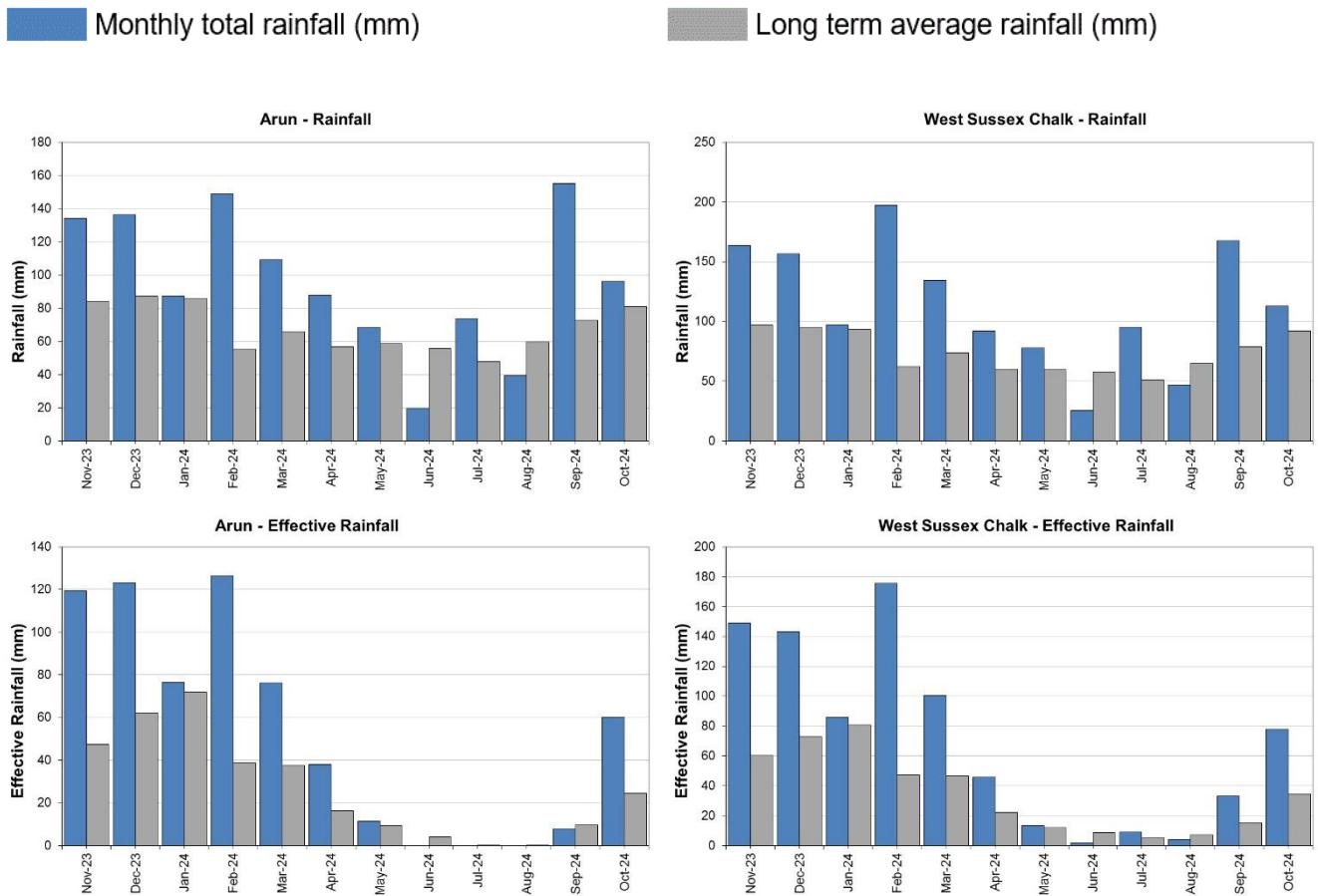


Source: Environment Agency, 2024.

# 6 West Sussex

## 6.1 West Sussex Rainfall and Effective Rainfall charts

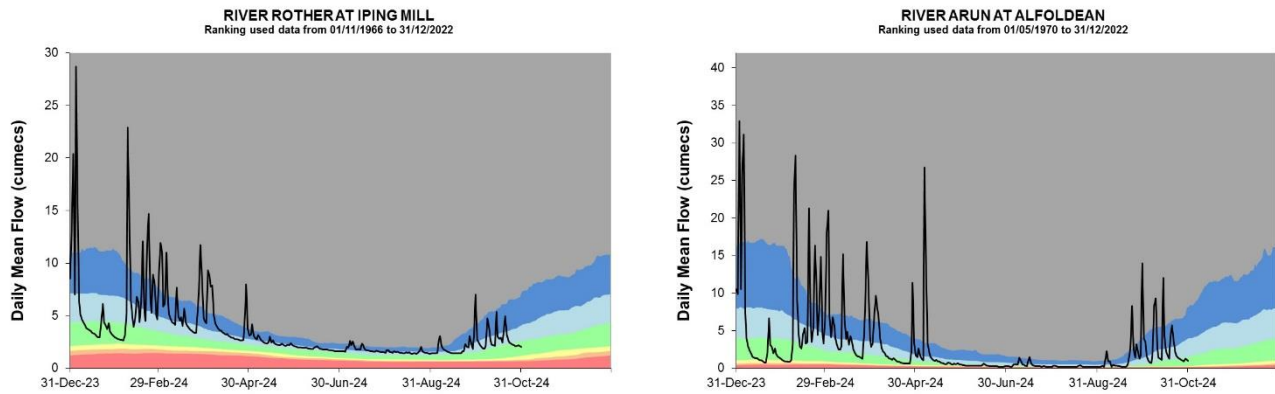
Figure 6.1: Monthly rainfall and effective rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average.



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

## 6.2 West Sussex River flow charts

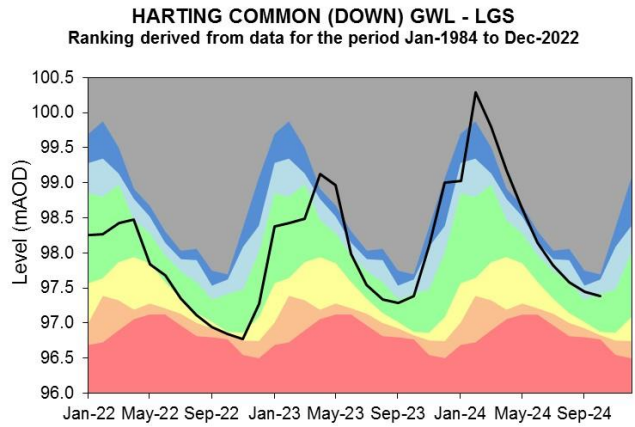
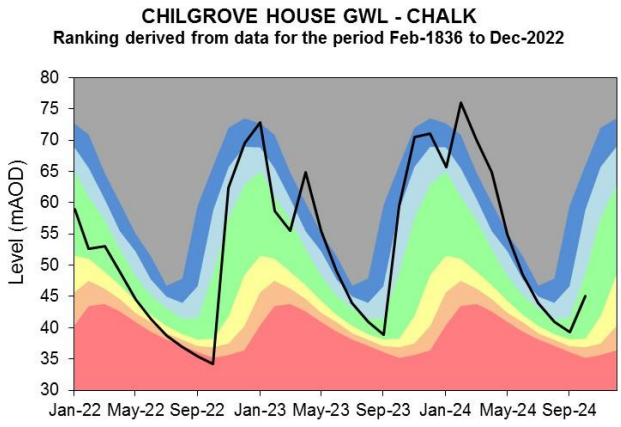
Figure 6.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



Source: Environment Agency, 2024.

### 6.3 West Sussex Groundwater level charts

Figure 6.3: 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.

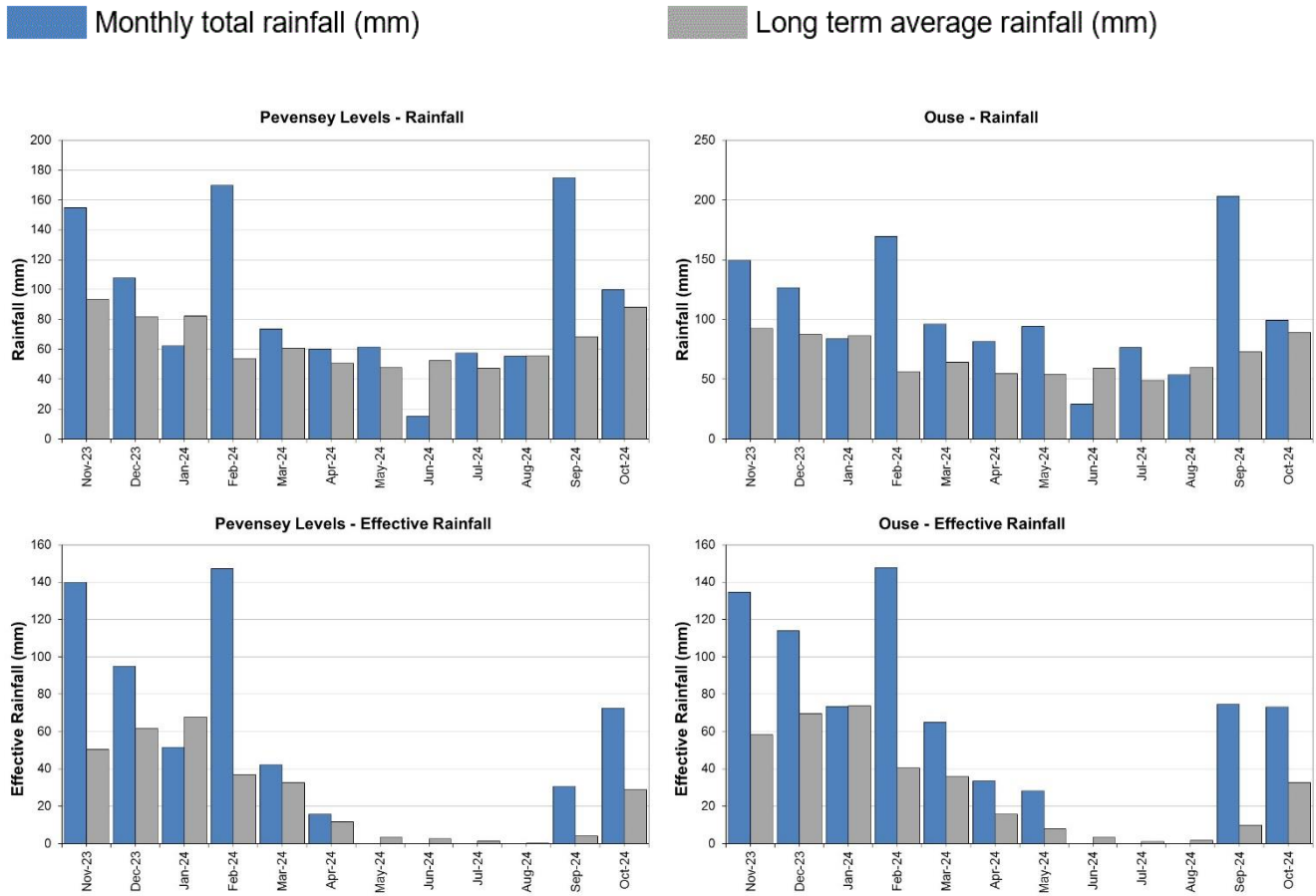


Source: Environment Agency, 2024.

# 7 East Sussex

## 7.1 East Sussex Rainfall and Effective Rainfall charts

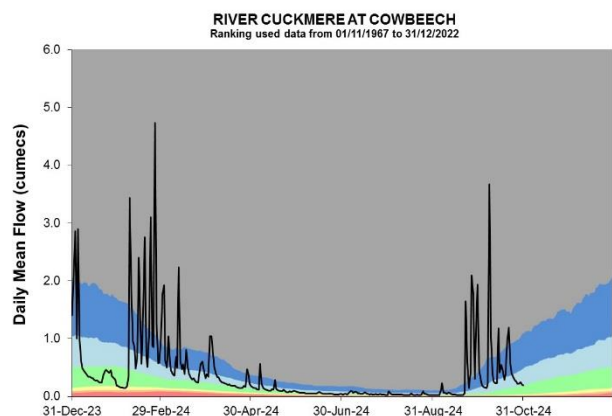
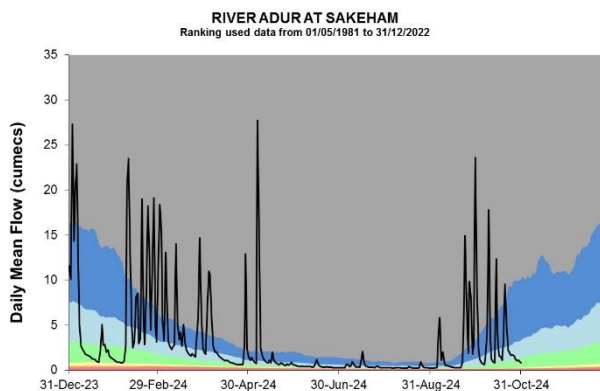
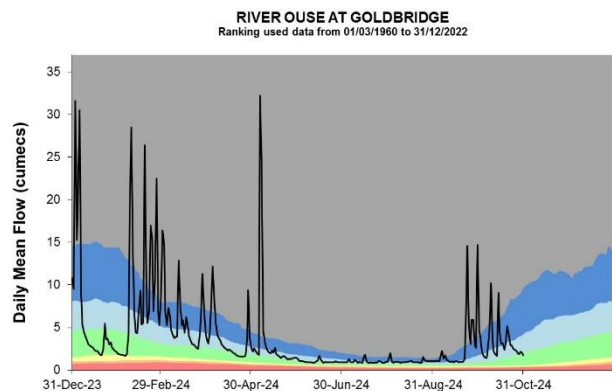
Figure 7.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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

## 7.2 East Sussex River flow charts

Figure 7.2: 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.

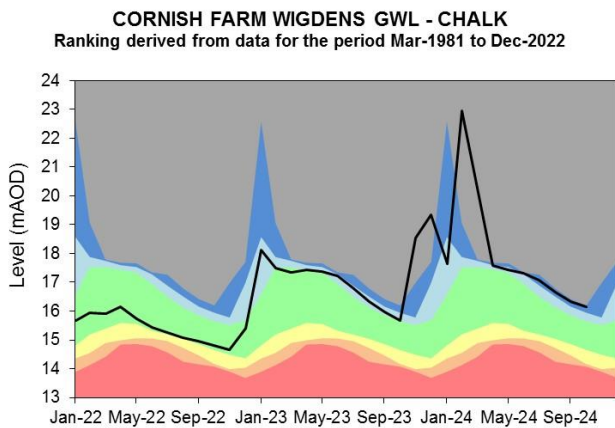
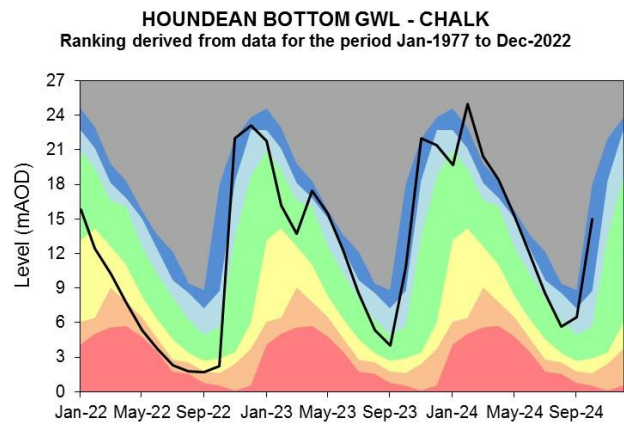
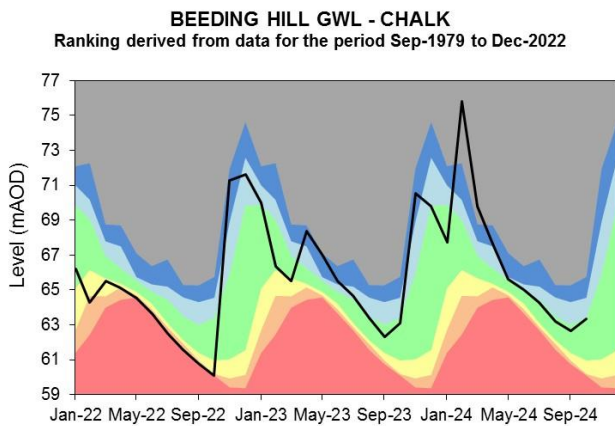


Source: Environment Agency, 2024.



### 7.3 East Sussex Groundwater level charts

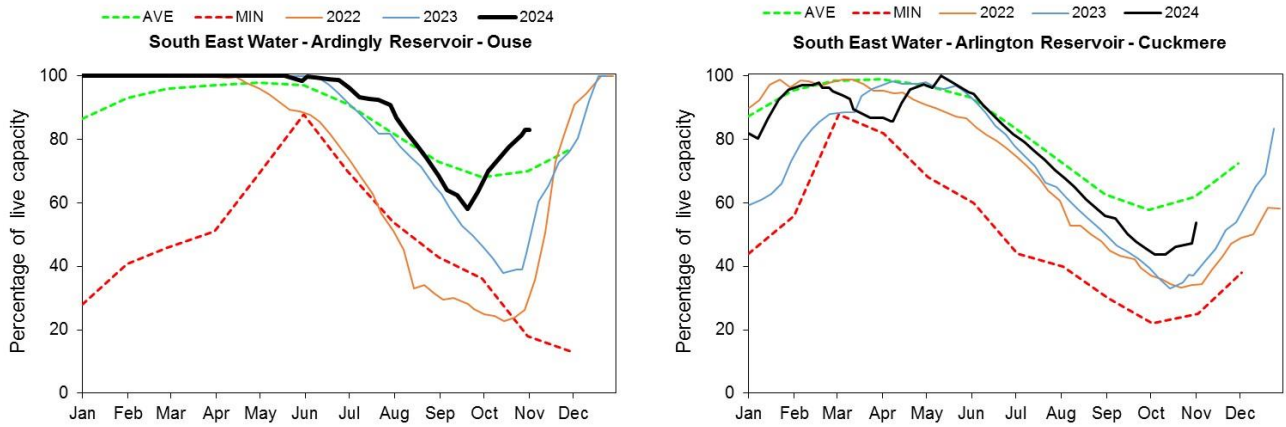
Figure 7.3: End of month groundwater levels at index groundwater level sites for major aquifers. 34 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.



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 ( $\text{m}^3\text{s}^{-1}$ ).

### **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 October as %LTA	Effective Rainfall (mm) 30 day Total	Effective Rainfall October as %LTA	Soil Moisture Deficit (SMD) Day 30	SMD End of October LTA
Test Chalk	108	144%	82	-	3	63
East Hampshire Chalk	106	123%	74	256%	2	51
West Sussex Chalk	113	123%	78	225%	2	48
East Sussex Chalk	109	117%	82	237%	2	55
Isle of Wight	103	122%	46	228%	2	70
Western Rother Greensand	104	114%	55	163%	2	49
Hampshire Tertiaries	103	131%	74	-	2	57
Lymington	111	133%	82	349%	2	51
Sussex Coast	96	124%	23	172%	2	66
Arun	96	119%	60	245%	2	47
Adur	99	116%	73	250%	2	44
Ouse	99	111%	73	224%	2	42
Cuckmere	104	115%	78	224%	2	41
Pevensey Levels	100	113%	72	250%	2	51
SSD Average	104	121%	68	254%	2	52

## 10.2 Seasonal summary table of rainfall and effective rainfall

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

Hydrological Area	Seasonal Rainfall (mm) Total	Seasonal Rainfall as % LTA	Seasonal Effective Rainfall (mm) Total	Seasonal Effective Rainfall as % LTA
Test Chalk	108	144%	82	434%
East Hampshire Chalk	106	123%	74	256%
West Sussex Chalk	113	123%	78	225%
East Sussex Chalk	109	117%	82	237%
Isle of Wight	103	122%	46	228%
Western Rother Greensand	104	114%	55	163%
Hampshire Tertiaries	103	131%	74	420%
Lymington	111	133%	82	349%
Sussex Coast	96	124%	23	172%
Arun	96	119%	60	245%
Adur	99	116%	73	251%
Ouse	99	111%	73	224%
Cuckmere	104	115%	79	224%
Pevensey Levels	100	113%	72	250%
SSD Average	104	121%	68	254%

### 10.3 Rainfall banding table

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



## 10.4 River flows table

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

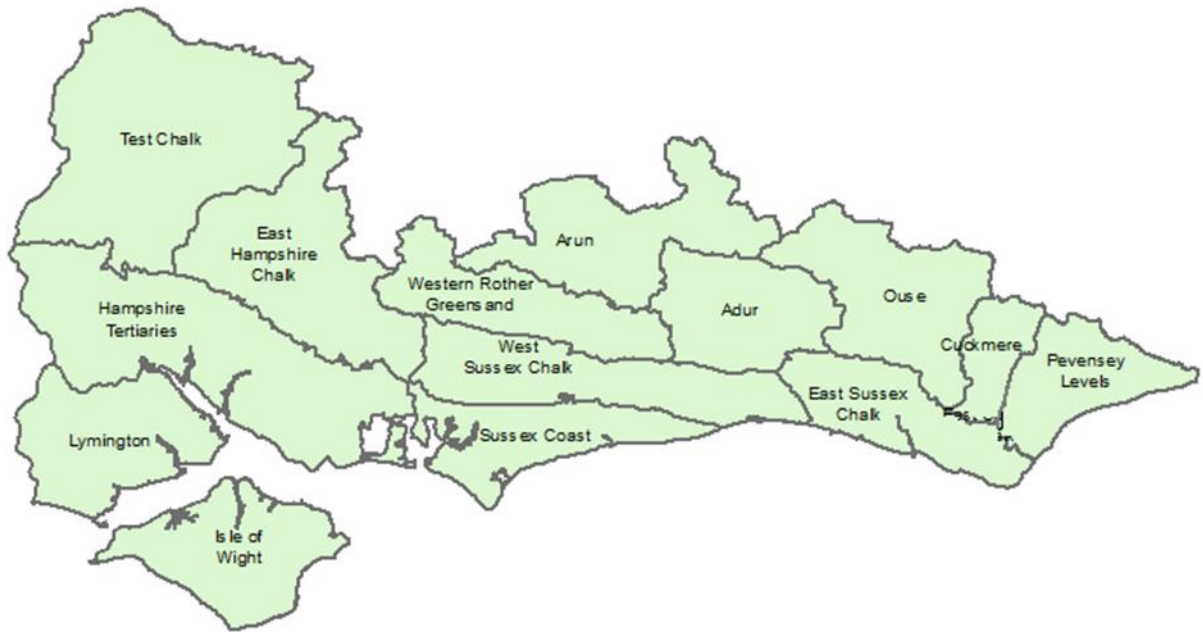
## 10.5 Groundwater table

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

## 10.6 Abstraction licence flow constraints

<b>Number of flow constraints in force between 1 to 8 October 2024</b>	<b>Number of flow constraints in force between 9 to 15 October 2023</b>	<b>Number of flow constraints in force between 16 to 22 October 2024</b>	<b>Number of flow constraints in force between 23 to 31 October 2024</b>
1	1	1	4

## 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
<b>SSD Average</b>	<b>87.3</b>	<b>58.0</b>	<b>66.9</b>	<b>53.9</b>	<b>55.6</b>	<b>55.2</b>	<b>47.2</b>	<b>60.0</b>	<b>71.8</b>	<b>85.3</b>	<b>89.6</b>	<b>88.8</b>