

# Monthly water situation report: Solent and South Downs Area

## Summary - August 2024

Solent and South Downs (SSD) had below average rainfall in August, receiving 80% (48mm) of the long term average (LTA) rainfall (60.0mm). Monthly mean river flows across SSD ranged from normal to exceptionally high. End of month groundwater levels ranged from normal to exceptionally high. Soils across SSD ended the month drier than the average for August. 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 below average rainfall in August, receiving 80% (48mm) of the LTA (60.0mm).

In August the rainfall across the area ranged from 35mm to 61mm (65% to 101% of the LTA). The areal units in West Sussex received lower rainfall, than those in Hampshire and East Sussex. The highest daily total of 34.5mm was recorded at Bishops Sutton and 33.9mm was recorded at Harestock (both on 1 August, East Hampshire Chalk). The first part of the month featured unsettled conditions with days of thunderstorms and heavy localised rainfall, interspersed with drier weather. The most widespread distribution of rain was between 22 and 25 August. SSD had more than 50% of the month total rain fell on these four consecutive days. The end of the month was mostly dry.

The current water year to date, last 11 months (October to August), was the third wettest on record for SSD area, since 1871. All the SSD rainfall units ranked in the top three wettest October to August period on record. The Lymington, Isle of Wight, West Sussex Chalk, Sussex Coast, areal units all ranked as wettest for October to August since 1871.

Over the longer time periods, the 15-month and 18-month running totals remain exceptionally high, and were the second wettest on record for SSD, since 1871.

### 1.2 Soil moisture deficit and recharge

Soils across SSD ended the month drier (92mm) than the average for August (86mm).

### 1.3 River flows

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

Flows were normal:

- River Test at Broadlands
- River Lymington at Brockenhurst
- River Medina at Blackwater
- River Wallington at North Fareham
- River Adur at Sakeham
- River Cuckmere at Cowbeech

Flows were above normal:

- River Test at Chilbolton
- River Meon at Misingford
- River Rother at Iping Mill

Flows were notably high:

- River Ouse at Goldbridge

Flows were exceptionally high:

- River Itchen at Allbrook&Highbridge

There is no monthly mean river flow data for the River Arun gauged at Alfoldean, as the daily mean flows data records are incomplete.

The monthly mean flows for August were the second highest on record at Allbrook&Highbridge (Itchen), since 1959.

## **1.4 Groundwater levels**

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

Groundwater levels were normal at:

- Carisbrooke Castle (Isle of Wight)
- Harting Common (Western Rother Greensand)
- Chilgrove (West Sussex Chalk)
- Beeding Hill (West Sussex Chalk)
- Houndean Bottom (East Sussex Chalk)

Groundwater levels were above normal at:

- Catherington (East Hampshire Chalk)

Groundwater levels were notably high at:

- Clanville Gate (Test Chalk)
- Lopcombe Corner (Test Chalk)
- West Meon (East Hampshire Chalk)
- Cornish Farm (East Sussex Chalk)

Groundwater levels were exceptionally high at:

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

Groundwater levels for August were the third highest on record at Clanville Gate, West Meon, Youngwoods Copse and at Preston Candover since 1966, 1986, 1978 and 1975, respectively.

## **1.5 Reservoir stocks**

End of month reservoir stock was above average at Ardingly Reservoir (Ouse) with 73.7% of total capacity (LTA 73%) and was below average at Arlington Reservoir (Cuckmere) with 57.5% of total capacity (LTA 62.75%).

## **1.6 Environmental impact**

During August there were four licence restrictions in force, three cessations and one reduced abstraction rate restriction.

There were cessations in force, on the Loxwood Stream (Arun), on the River Meon and on the Walkford Brook (New Forest).

There was a reduced abstraction rate restriction in force on Wallers Haven at Hazard's Green (Pevensey catchment).

There were no Flood Alerts or Flood Warnings issued in SSD during August.

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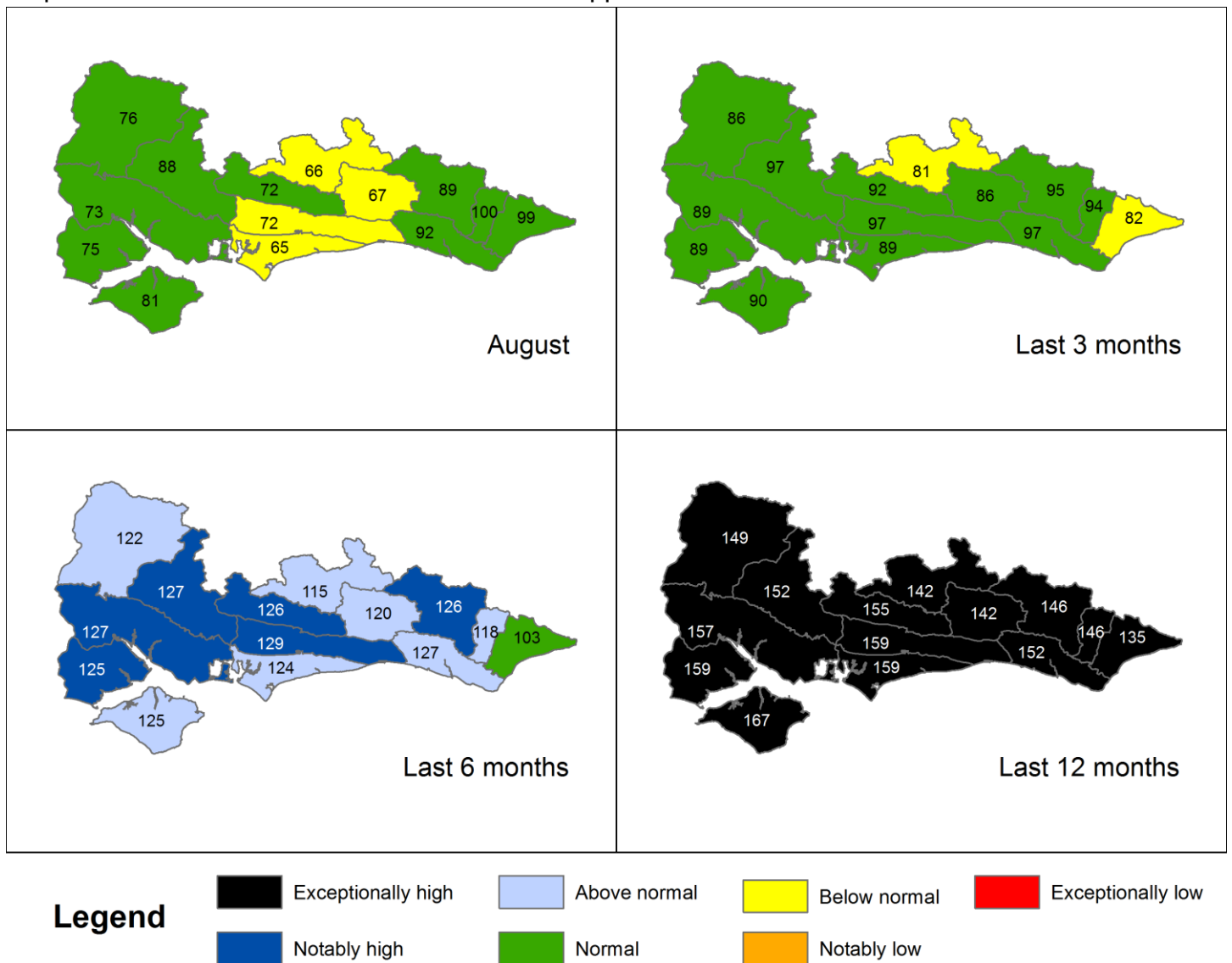
Contact details: 03708 506 506

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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 August 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.

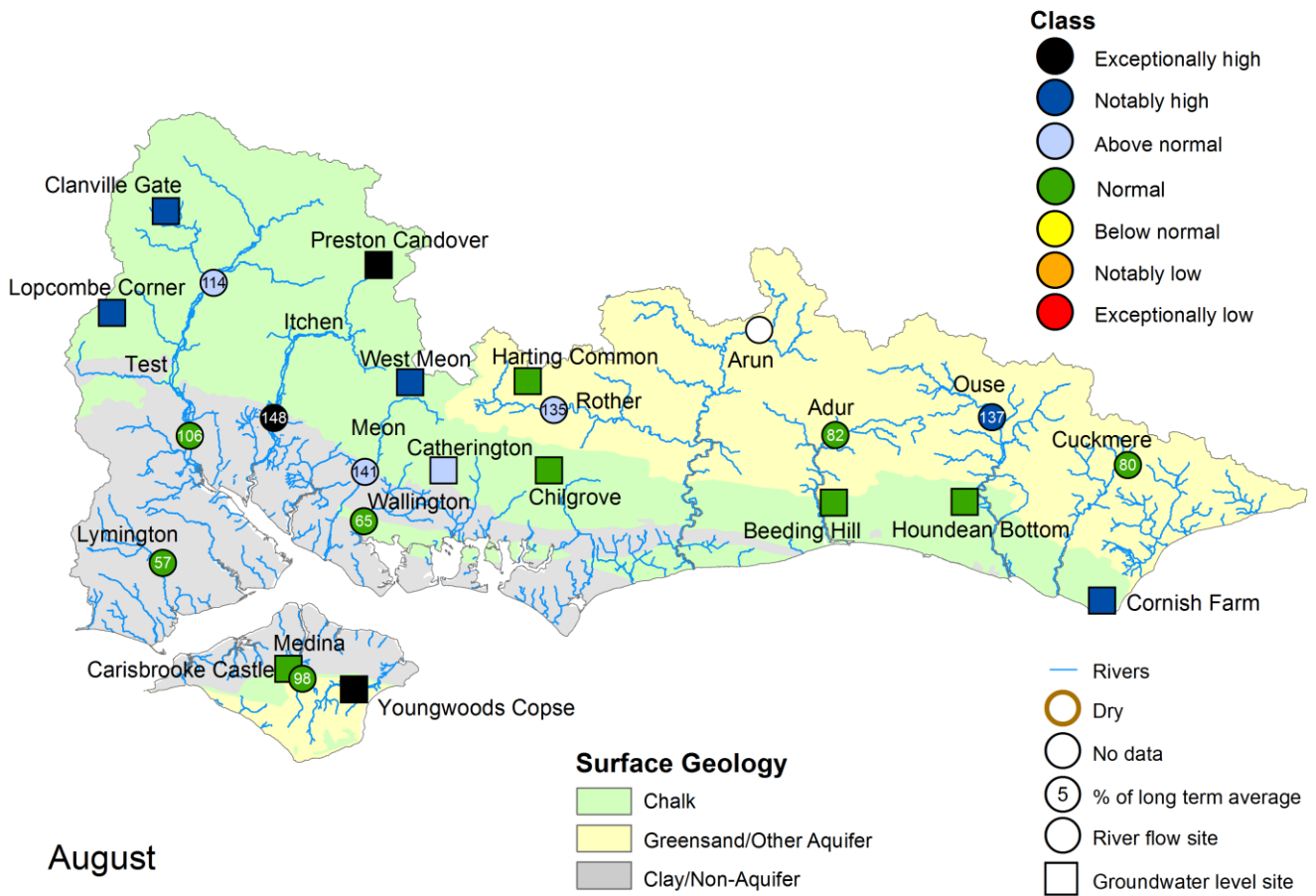


Rainfall data for 2024, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2024). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived 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 August 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic August monthly means. Table available in the appendices with detailed information.



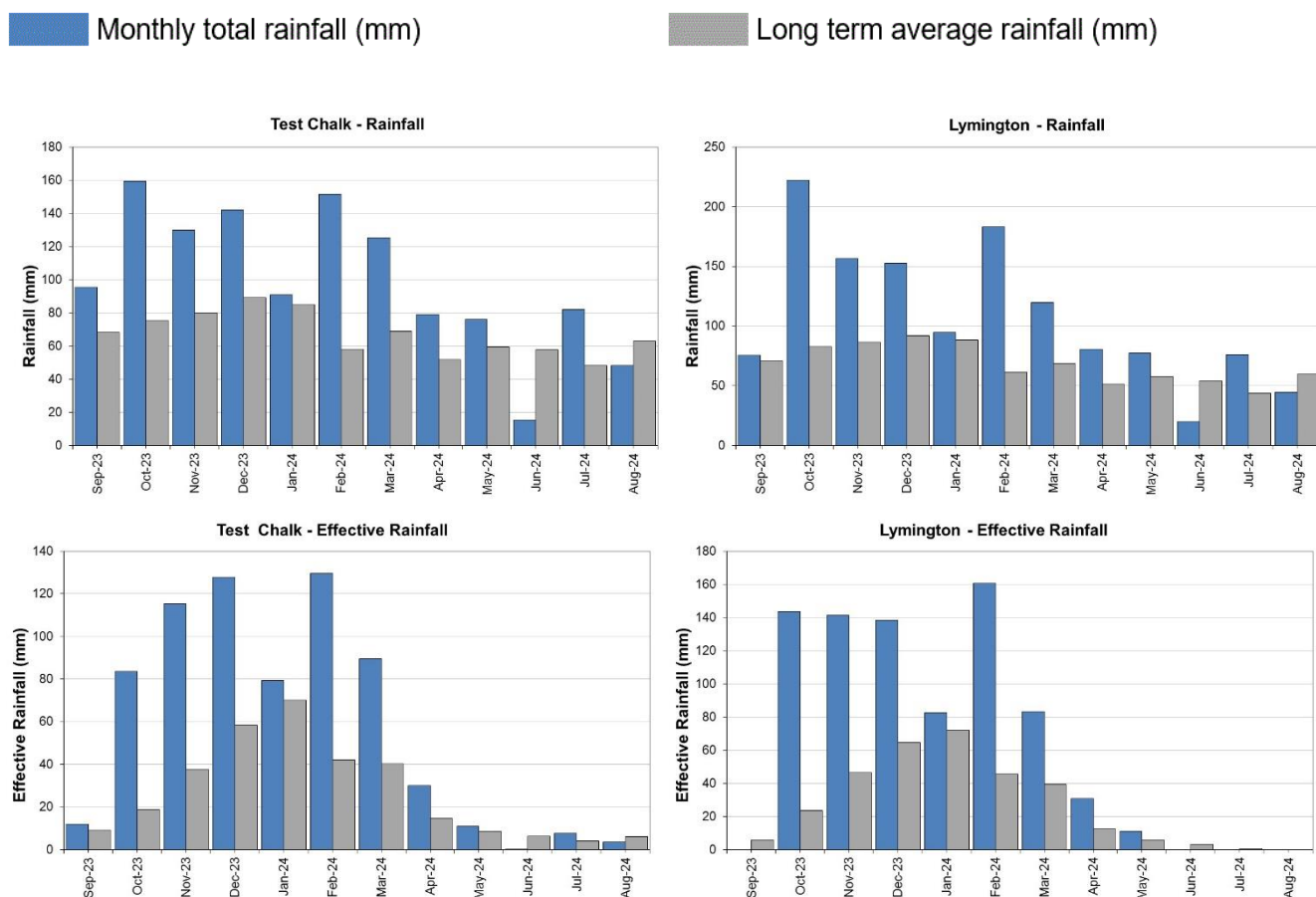
There is no monthly mean river flow data for the River Arun gauged at Alfoldean, as the daily mean flow data records are incomplete.

(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

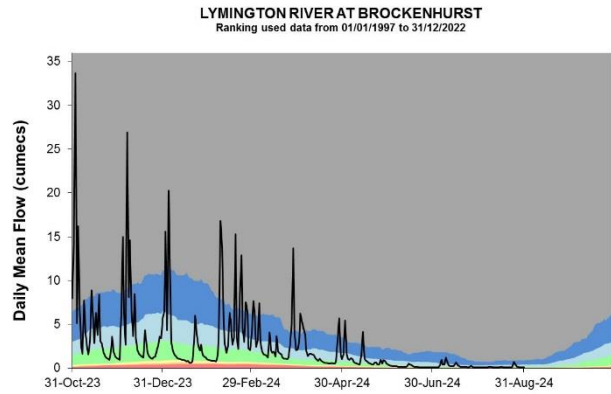
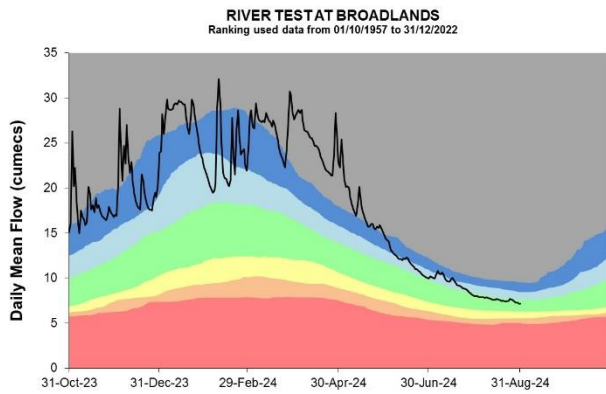
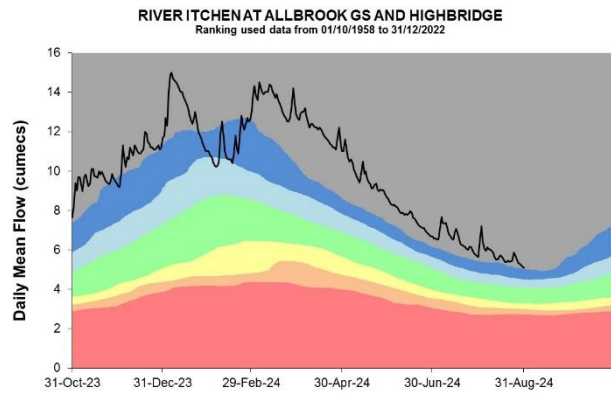
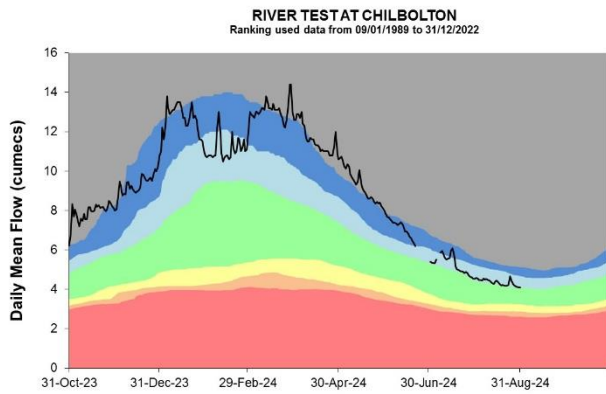
Figure 4.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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.

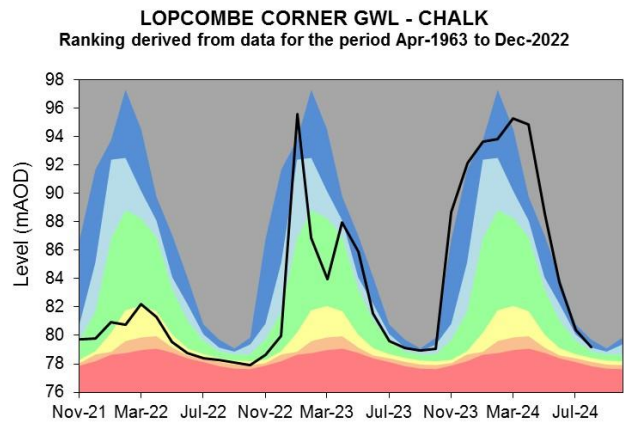
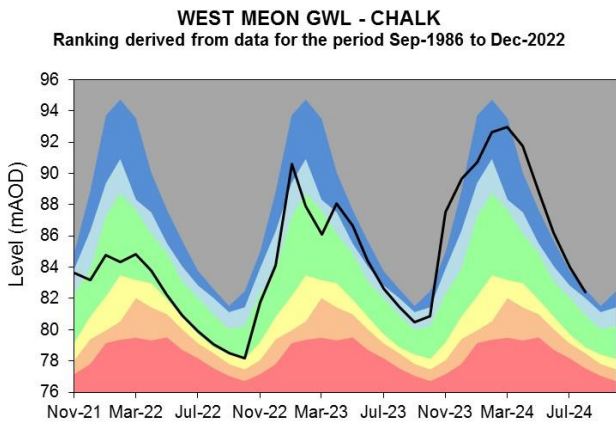
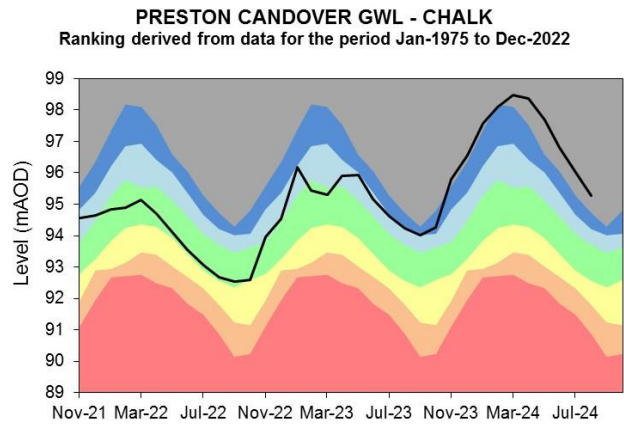
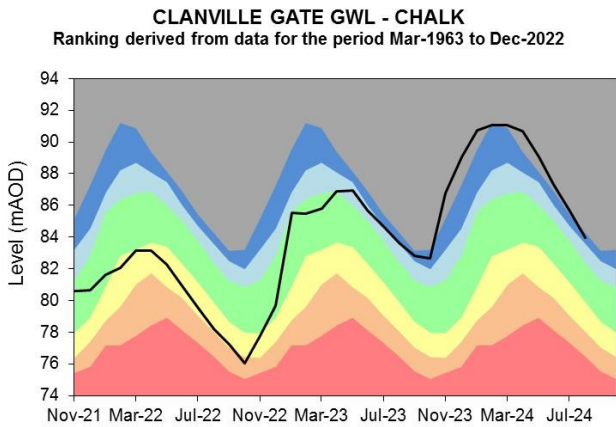


Source: Environment Agency, 2024.



### 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.



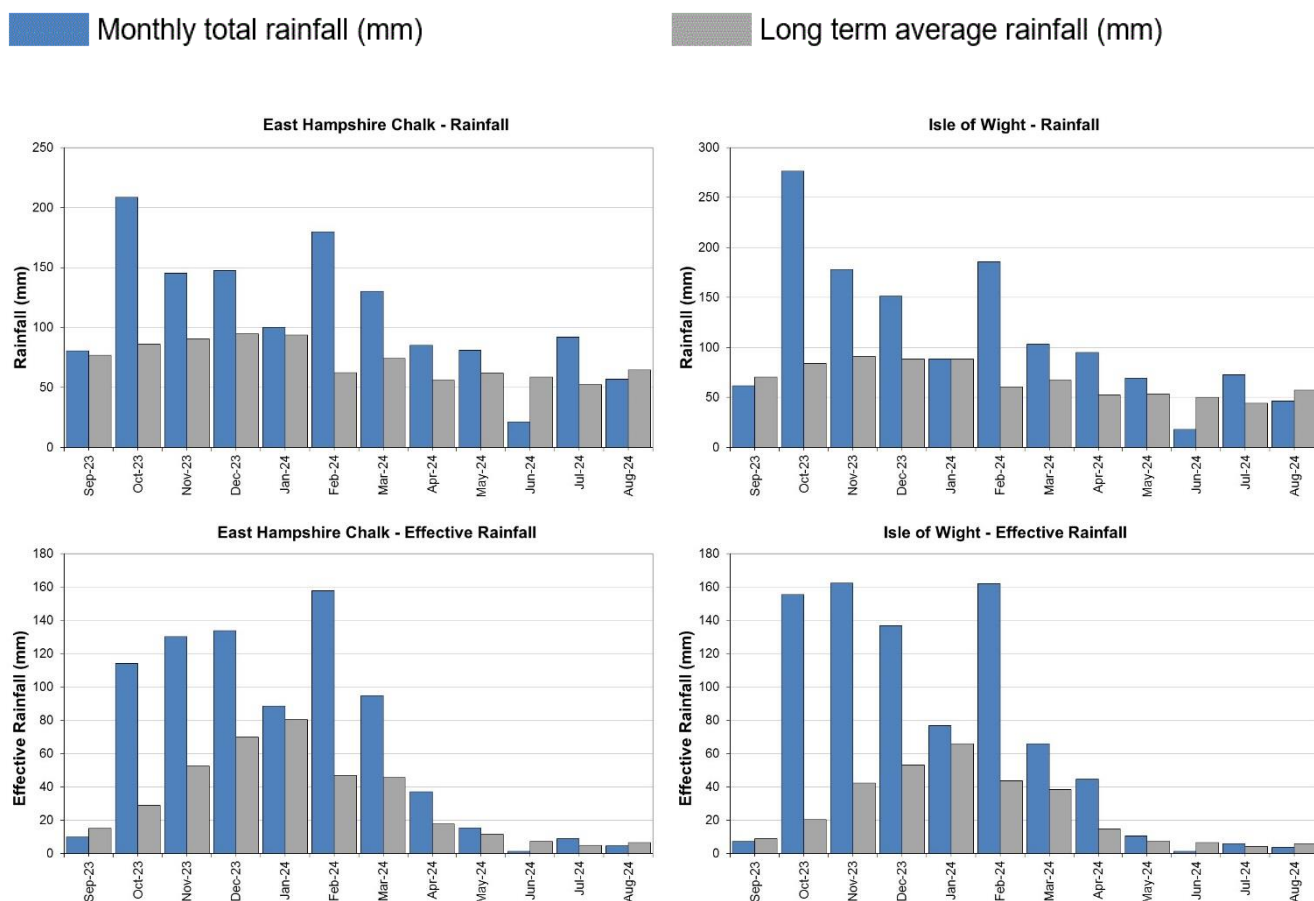
Source: Environment Agency, 2024.



## 5 East Hampshire and Isle of Wight

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

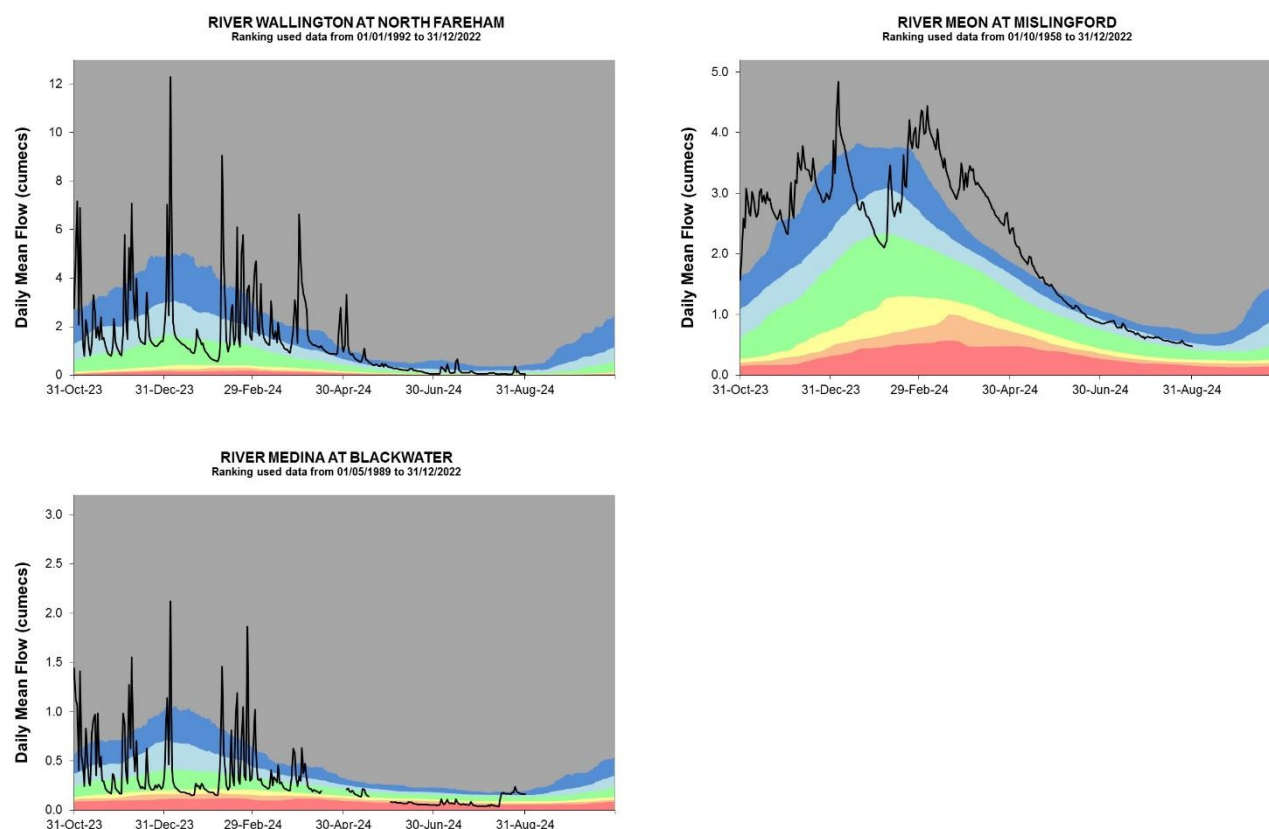
Figure 5.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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.

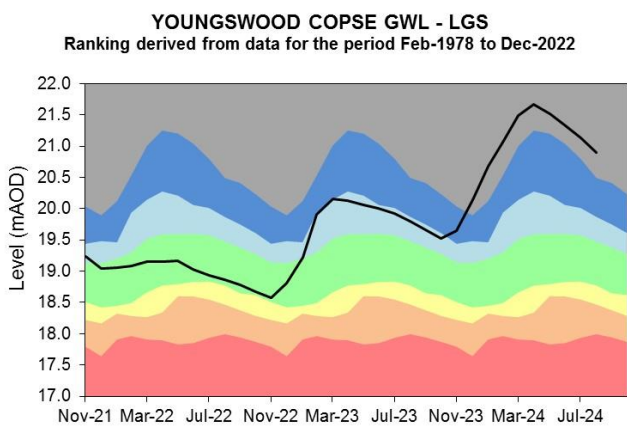
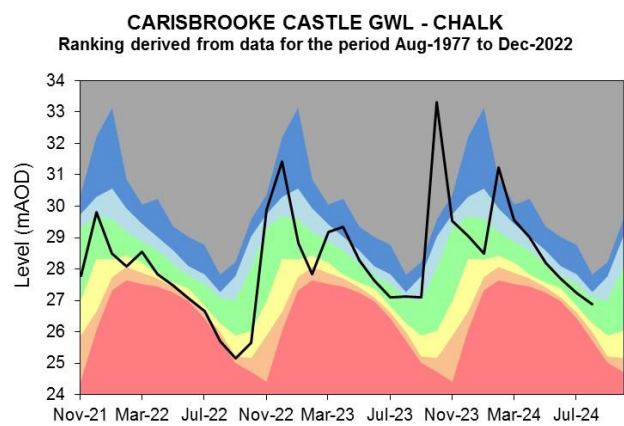
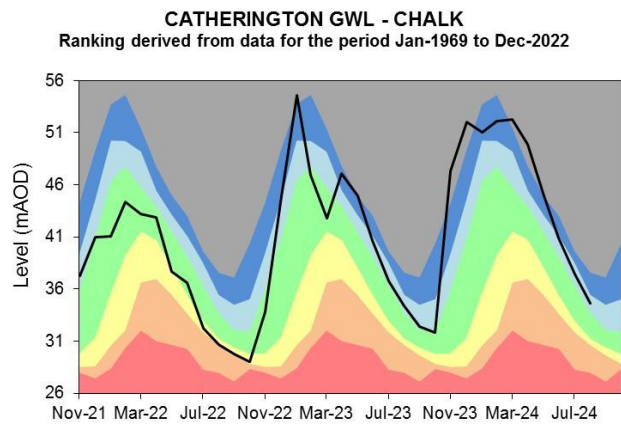


Note: In the first half of the month the data recorded for the River Medina at Blackwater does not reflect the total flow of the river. The recorded flow data has been affected by in-channel works upstream of the gauging station. From the 15 August the data recorded reflect the total flow of the river.

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.

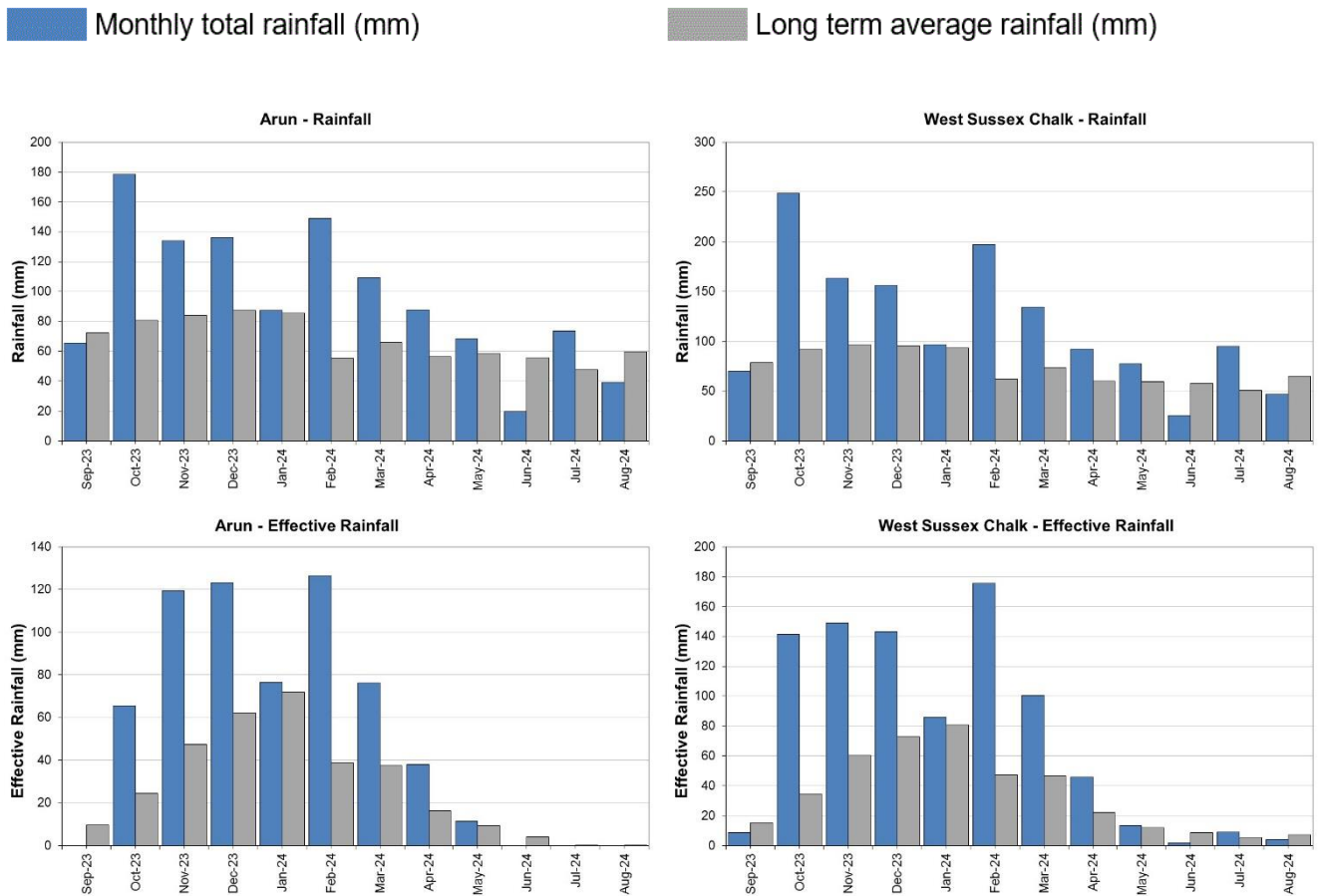


Source: Environment Agency, 2024.

# 6 West Sussex

## 6.1 West Sussex Rainfall and Effective Rainfall charts

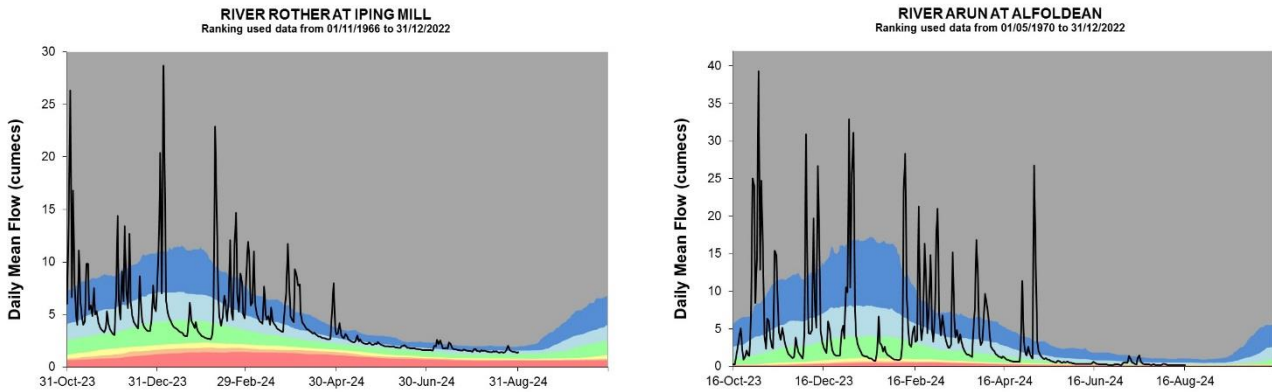
Figure 6.1: Monthly rainfall and effective rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average.



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.

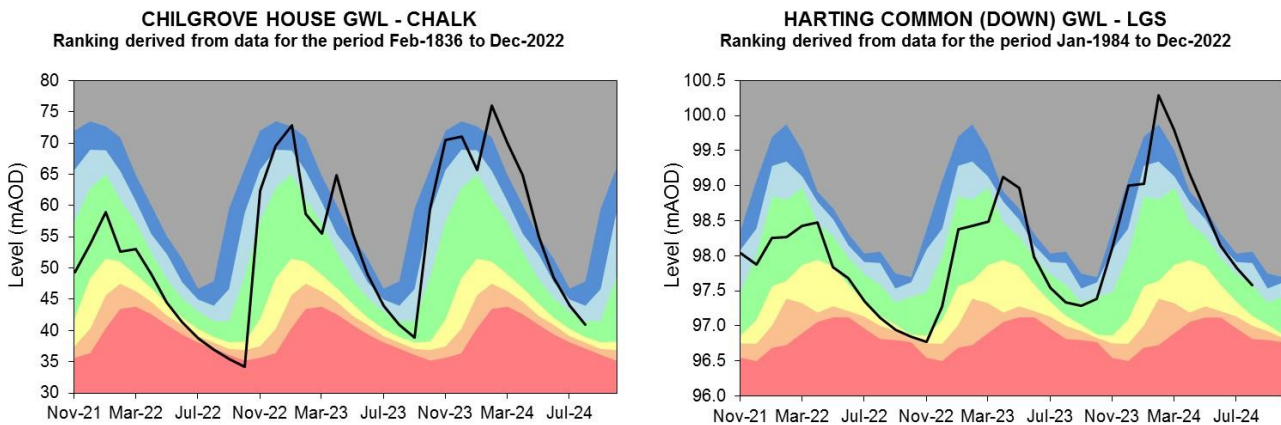


Note: No data were recorded for the River Arun gauged at Alfoldean since 17 August due to issues with the main power at the station.

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.

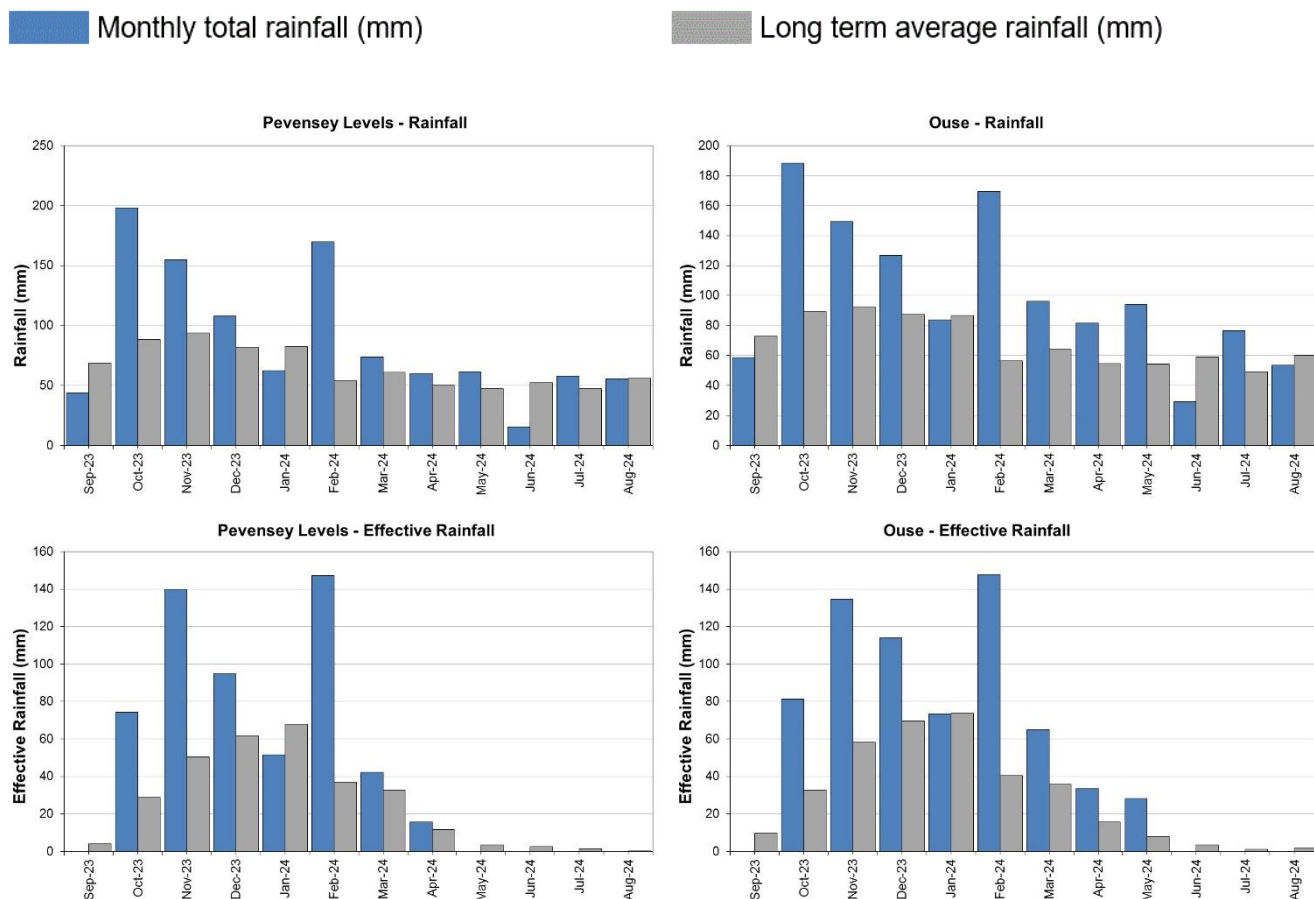


Source: Environment Agency, 2024.

# 7 East Sussex

## 7.1 East Sussex Rainfall and Effective Rainfall charts

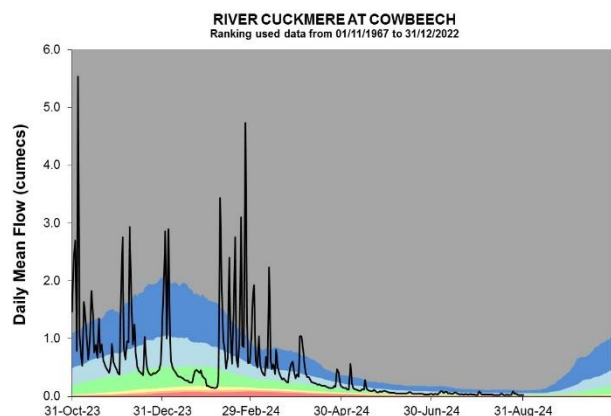
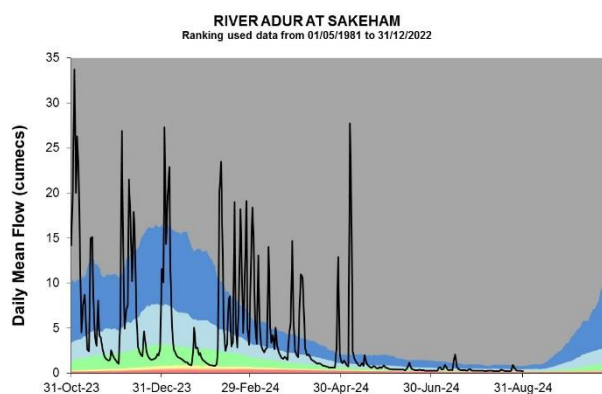
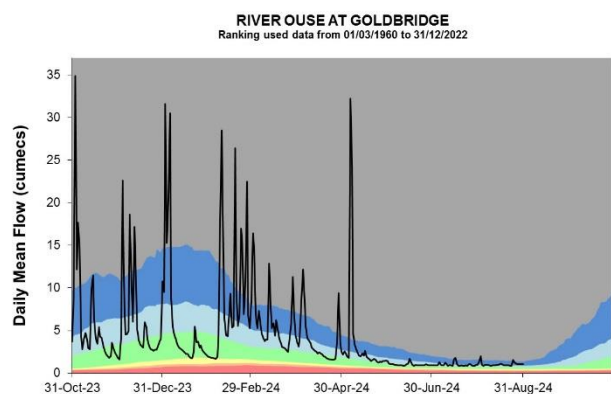
Figure 7.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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.

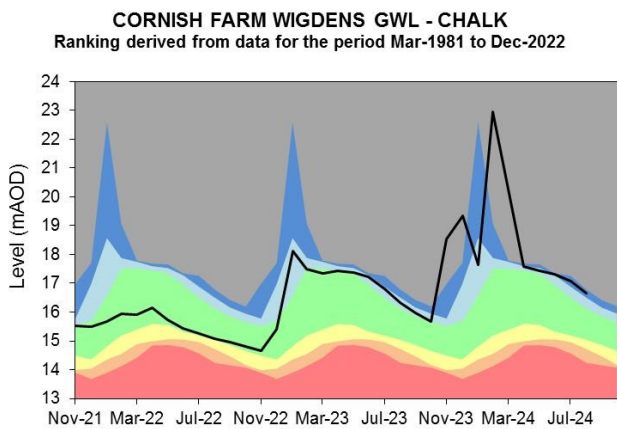
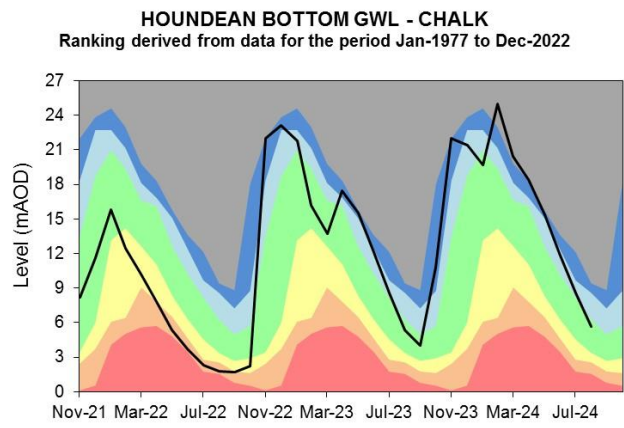
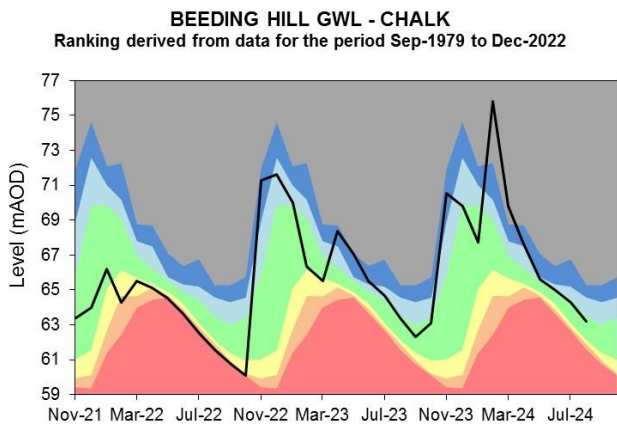


Source: Environment Agency, 2024.



### 7.3 East Sussex Groundwater level charts

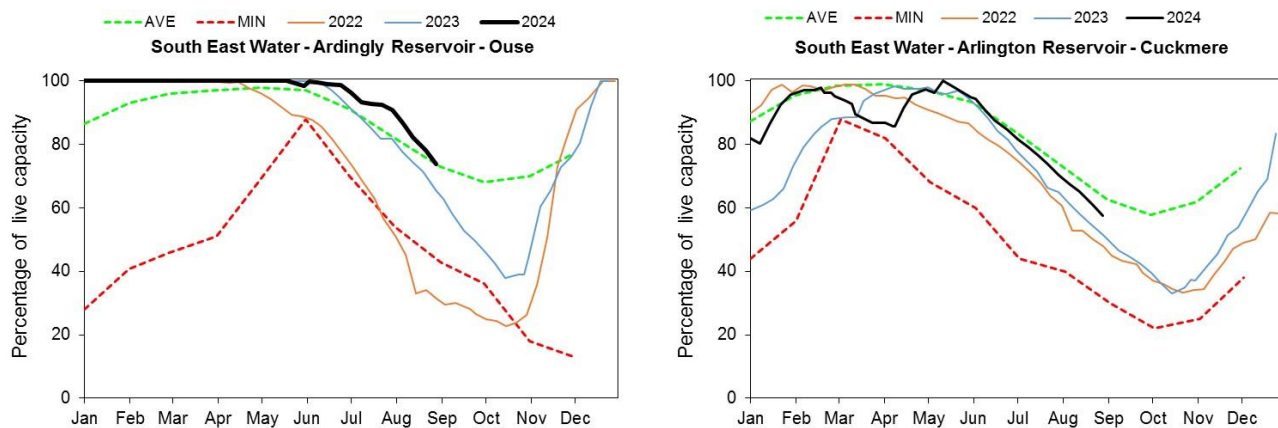
Figure 7.3: End of month groundwater levels at index groundwater level sites for major aquifers. 34 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.



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) 31 day Total	Rainfall August as %LTA	Effective Rainfall (mm) 31 day Total	Effective Rainfall August as %LTA	Soil Moisture Deficit (SMD) Day 31	SMD End of August LTA
Test Chalk	48	77%	4	59%	97	92
East Hampshire Chalk	57	88%	5	71%	89	86
West Sussex Chalk	47	72%	4	56%	85	83
East Sussex Chalk	56	93%	5	85%	84	86
Isle of Wight	46	81%	4	63%	106	98
Western Rother Greensand	47	72%	4	48%	91	85
Hampshire Tertiaries	42	72%	0	0%	101	92
Lymington	44	75%	0	0%	96	86
Sussex Coast	35	65%	0	0%	106	98
Arun	39	65%	0	0%	98	82
Adur	40	67%	0	0%	93	81
Ouse	54	89%	0	0%	79	76
Cuckmere	61	101%	0	0%	75	76
Pevensey Levels	55	99%	0	0%	93	84
SSD Average	48	80%	2	58%	92	86

## 10.2 Seasonal summary table of rainfall and effective rainfall

Summer season: 01/04/2024 to 30/09/2024

Hydrological Area	Seasonal Rainfall (mm) Total	Seasonal Rainfall as % LTA	Seasonal Effective Rainfall (mm) Total	Seasonal Effective Rainfall as % LTA
Test Chalk	300	108%	53	131%
East Hampshire Chalk	337	115%	67	142%
West Sussex Chalk	337	115%	74	134%
East Sussex Chalk	333	122%	68	153%
Isle of Wight	300	117%	66	171%
Western Rother Greensand	336	113%	78	143%
Hampshire Tertiaries	295	112%	40	239%
Lymington	297	112%	42	191%
Sussex Coast	266	110%	31	177%
Arun	288	104%	50	165%
Adur	304	111%	57	192%
Ouse	334	121%	62	210%
Cuckmere	305	114%	29	119%
Pevensey Levels	250	99%	16	82%
SSD Average	306	112%	52	156%



### 10.3 Rainfall banding table

Hydrological area	August 2024 band	June 2024 to August 2024 cumulative band	March 2024 to August 2024 cumulative band	September 2023 to August 2024 cumulative band
Test Chalk	Normal	Normal	Above normal	Exceptionally high
East Hampshire Chalk	Normal	Normal	Notably high	Exceptionally high
West Sussex Chalk	Below normal	Normal	Notably high	Exceptionally high
East Sussex Chalk	Normal	Normal	Above normal	Exceptionally high
Isle of Wight	Normal	Normal	Above normal	Exceptionally high
Western Rother Greensand	Normal	Normal	Notably high	Exceptionally high
Hampshire Tertiaries	Normal	Normal	Notably high	Exceptionally high
Lymington	Normal	Normal	Notably high	Exceptionally high
Sussex Coast	Below normal	Normal	Above normal	Exceptionally high
Arun	Below normal	Below normal	Above normal	Exceptionally high
Adur	Below normal	Normal	Above normal	Exceptionally high
Ouse	Normal	Normal	Notably high	Exceptionally high
Cuckmere	Normal	Normal	Above normal	Exceptionally high
Pevensey Levels	Normal	Below normal	Normal	Exceptionally high

## 10.4 River flows table

Site name	River	Catchment	August 2024 band	July 2024 band
Alfoldean Gs	Arun	Arun	No data	Above normal
Allbrook Gs+ Highbridge	Itchen (so)	Itchen	Exceptionally high	Exceptionally high
Blackwater	Medina	Isle of Wight	Normal	No data
Broadlands	Test	Test Lower	Normal	Above normal
Brockenhurst GS	Lymington	New Forest	Normal	Above normal
Chilbolton GS	Test	Test Upper	Above normal	Above normal
Cowbeech Gs	Cuckmere	Cuckmere	Normal	Normal
Goldbridge Gs	Ouse [so]	Ouse Sussex	Notably high	Notably high
Iping Mill Gs	Rother	West Rother	Above normal	Notably high
Mislingford GS	Meon	Meon	Above normal	Above normal
North Fareham GS	Wallington	Wallington	Normal	Above normal
Sakeham GS	Adur	Adur	Normal	Above normal

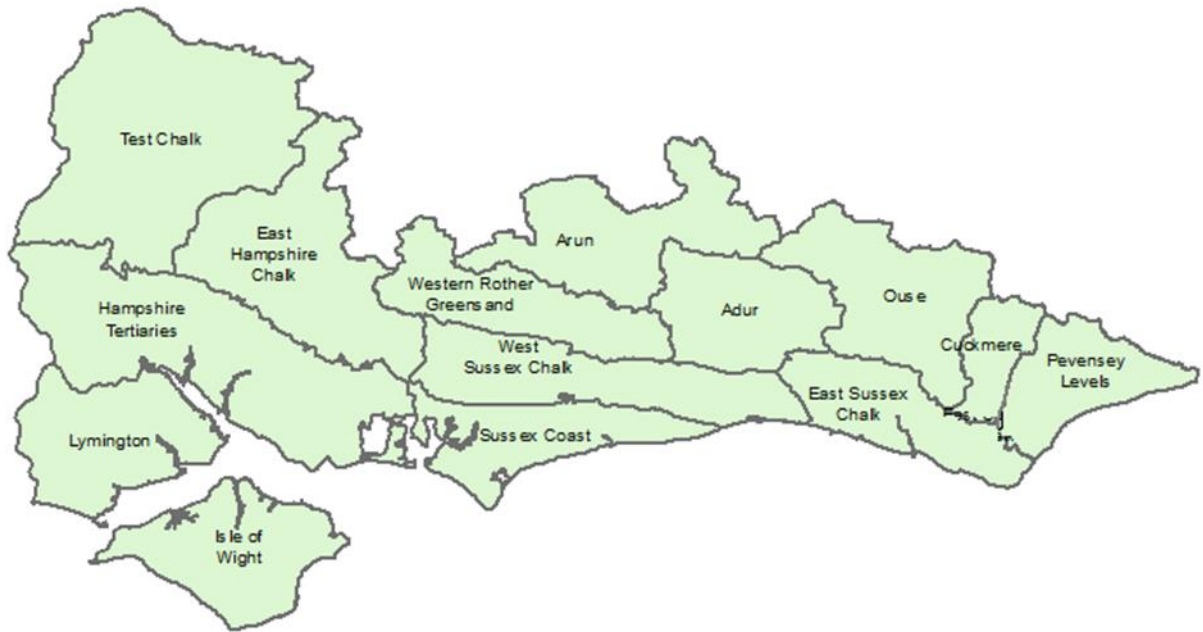
## 10.5 Groundwater table

Site name	Aquifer	End of August 2024 band	End of July 2024 band
Houndean Bottom Gwl	Brighton Chalk Block	Normal	Above normal
Chilgrove House Gwl	Chichester-Worthing-Portsdown Chalk	Normal	Above normal
Carisbrooke Castle	Isle Of Wight Central Downs Chalk	Normal	Normal
West Meon Hut Gwl	River Itchen Chalk	Notably high	Exceptionally high
Clanville Gate Gwl	River Test Chalk	Notably high	Exceptionally high
Lopcombe Corner Gwl	River Test Chalk	Notably 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 5 August 2024</b>	<b>Number of flow constraints in force between 6 to 12 August 2024</b>	<b>Number of flow constraints in force between 13 to 19 August 2024</b>	<b>Number of flow constraints in force between 20 to 26 August 2024</b>	<b>Number of flow constraints in force between 27 to 30 August 2024</b>
4	4	4	4	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>