

# Monthly water situation report: Solent and South Downs Area

## Summary - May 2024

Solent and South Downs (SSD) had above average rainfall in May, receiving 138% (77mm) of the long term average (LTA) rainfall (55.6mm). Monthly mean river flows across SSD ranged from normal to exceptionally high. End of month groundwater levels ranged from above normal to exceptionally high. Soils across SSD ended the month wetter than the average for May. End of month reservoir stocks at Ardingly Reservoir (Ouse) and at Arlington Reservoir (Cuckmere) were both above average.

### 1.1 Rainfall

SSD had above average rainfall in May, receiving 138% (77mm) of the LTA (55.6mm).

The highest rainfall, 36.6mm, was measured at Ringmer (Ouse) on 5 May. The most wide spread distribution of rain of the month was on 13 May with about 18% of the month total across the area. Five days (1, 5, 6, 13 and 25 May) accounted for over 60% of the month total rainfall. There was a dry period between 7 and 12 of May, when less than 1% of the month total rainfall was recorded.

During the last 4 month period, between February and May, SSD area and 13 of our 14 areal rainfall units received record amount of rainfall:

- Test Chalk
- East Hampshire Chalk
- West Sussex Chalk
- East Sussex Chalk
- Isle of Wight
- Western Rother Greensand
- Hampshire Tertiaries
- Lymington
- Sussex Coast
- Arun
- Adur
- Ouse
- Cuckmere

While Pevensey Level recorded the third highest rainfall totals in the last 4 month.

The last 12 months and 17 months periods were also the wettest on record for SSD area, since 1871.

The last 6 months, 9 months, 15 months and 18 months periods were the second wettest on record for SSD area, since 1871.

## 1.2 Soil moisture deficit and recharge

Soils across SSD ended the month wetter than the average for May.

## 1.3 River flows

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

Flows were normal:

- River Cuckmere at Cowbeech

Flows were above normal:

- River Lymington at Brockenhurst

Flows were notably high:

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

Flows were exceptionally high:

- River Test at Chilbolton
- River Test at Broadlands
- River Itchen at Allbrook&Highbridge
- River Meon at Misingford
- River Adur at Sakeham
- River Ouse at Goldbridge

The recorded data for River Medina at Blackwater were incomplete.

The monthly mean flows were the highest on record at Allbrook&Highbridge (Itchen), at Chilbolton (Test), at Sakeham (Adur) and at Goldbridge (Ouse) since 1959,1960,1989,1967, respectively.

The monthly mean flows for May were the second highest for River Meon at Misingford since 1958. Also, the monthly mean flows were the third highest for River Test at Broadlands and for river Wallington at North Fareham, since 1958 and 1976.

## 1.4 Groundwater levels

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

Groundwater levels were above normal at:

- Carisbrooke Castle (Isle of Wight)
- Beeding Hill (West Sussex Chalk)
- Cornish Farm (East Sussex Chalk)

Groundwater levels were notably high at:

- Harting Common (Western Rother Greensand)
- Chilgrove (West Sussex Chalk)
- Houndean Bottom (East Sussex Chalk)

Groundwater levels were exceptionally high at:

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

Groundwater levels for May were the second highest on record at Clanville Gate, Lopcombe Corner and West Meon, since 1966, 1963 and 1986, respectively. The groundwater levels were the third highest on record at Youngwoods Copse and at Preston Candover since 1978 and 1975.

## **1.5 Reservoir stocks**

End of month reservoir stocks were both above average. Ardingly Reservoir (Ouse) was at 98.5% of total capacity (LTA 97%) and Arlington Reservoir (Cuckmere) was at 94.9% of total capacity (LTA 93.21%).

## **1.6 Environmental impact**

In the middle of May one licence restrictions came into force on the river Meon, this is a reduced abstraction rates restriction, not a hands off flow.

There were 7 Flood Alerts issued in May. All in Sussex and all fluvial.

There were 3 Flood Warnings issued in May. All in Sussex and all fluvial.

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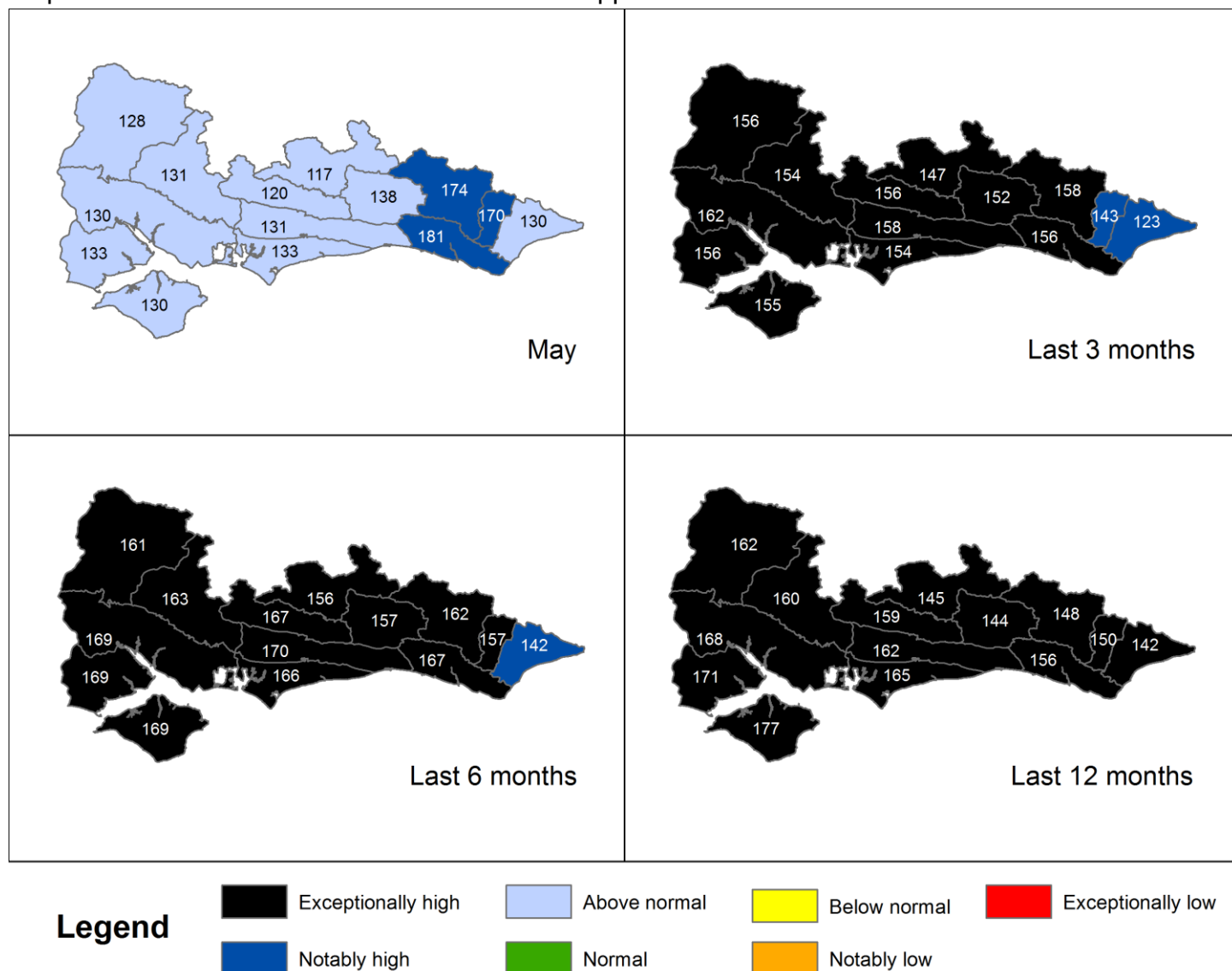
Contact Details: 03708 506 506

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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 May 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.

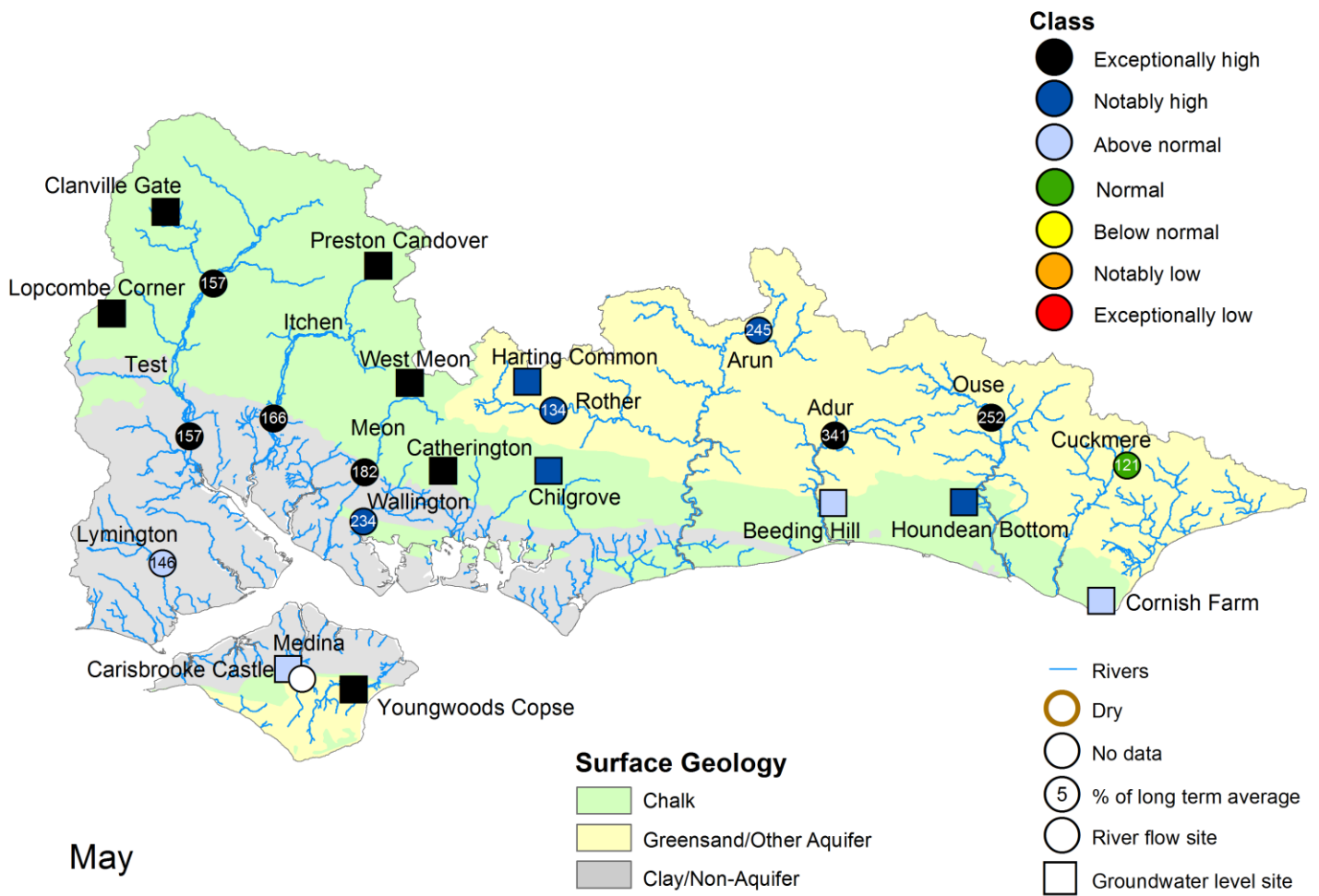


Rainfall data for 2024, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2024). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived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



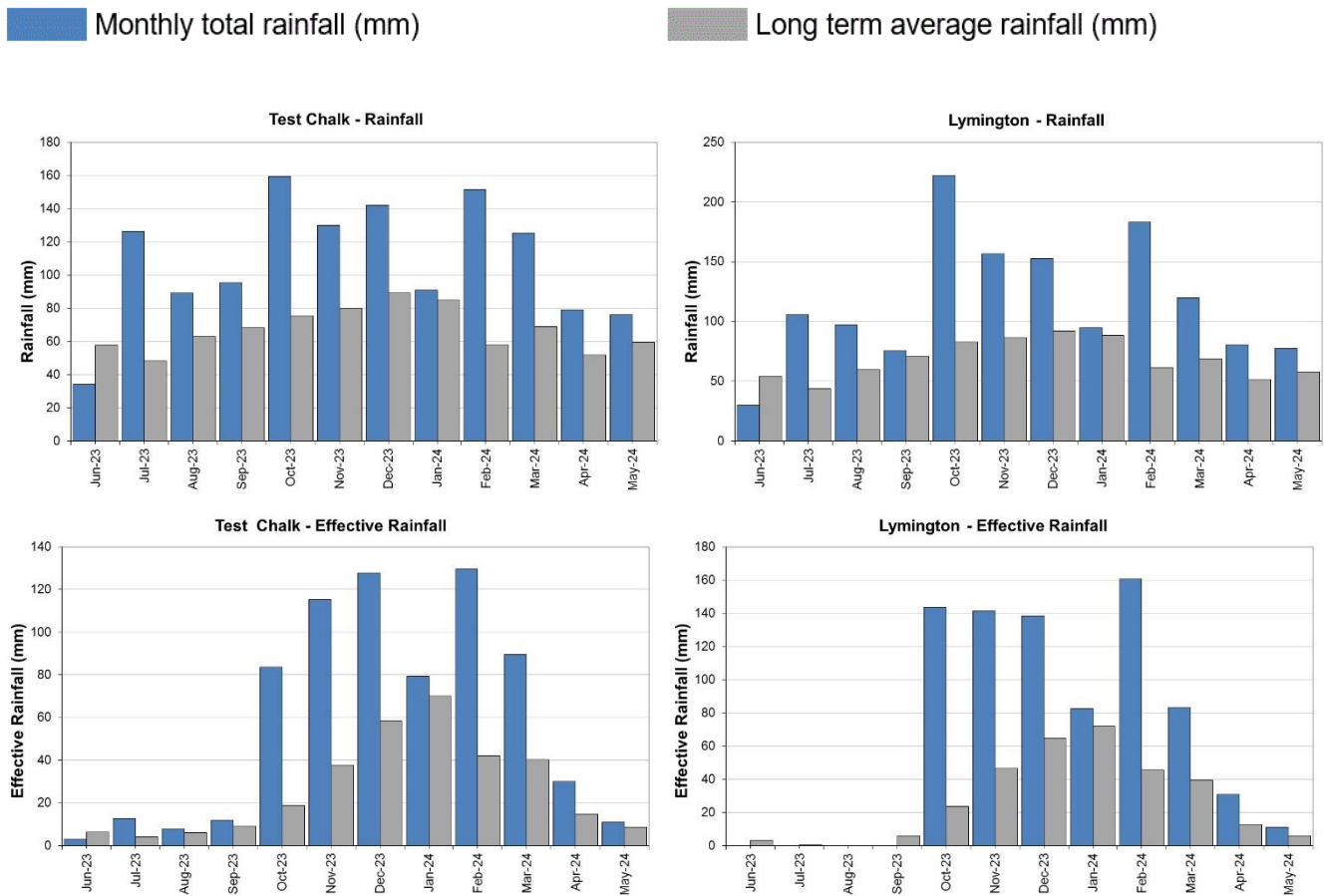
There was no data available for River Medina at Blackwater.

(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

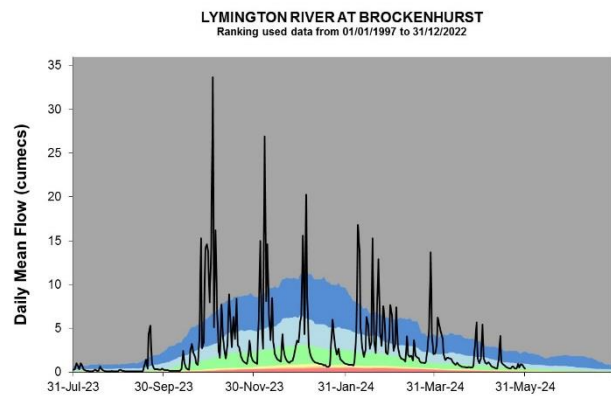
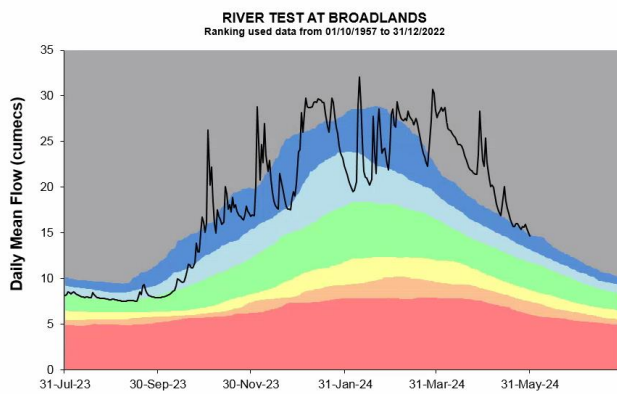
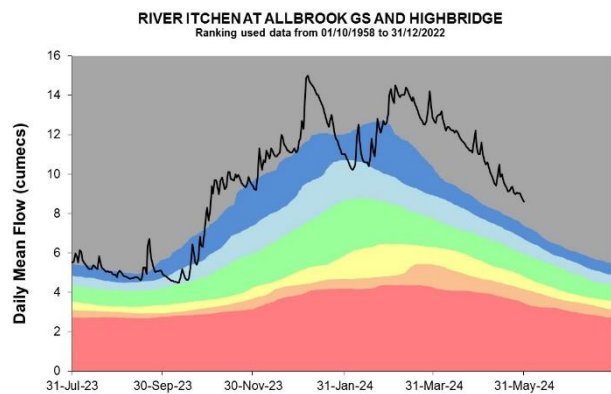
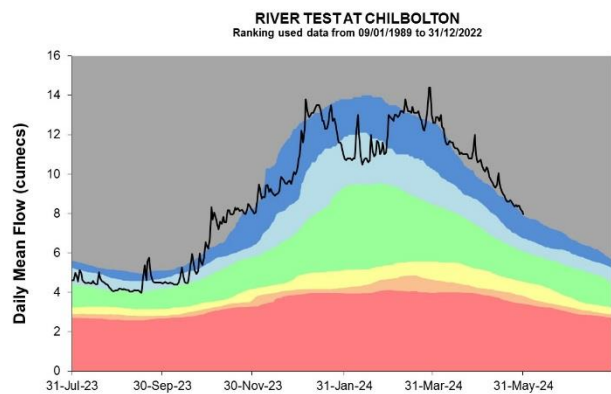
Figure 4.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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

## 4.2 West Hampshire River flow charts

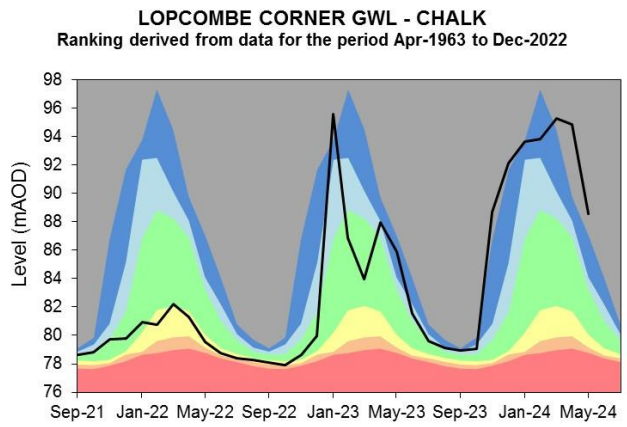
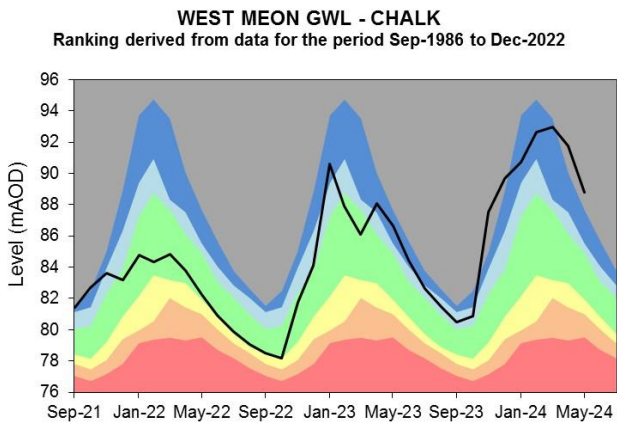
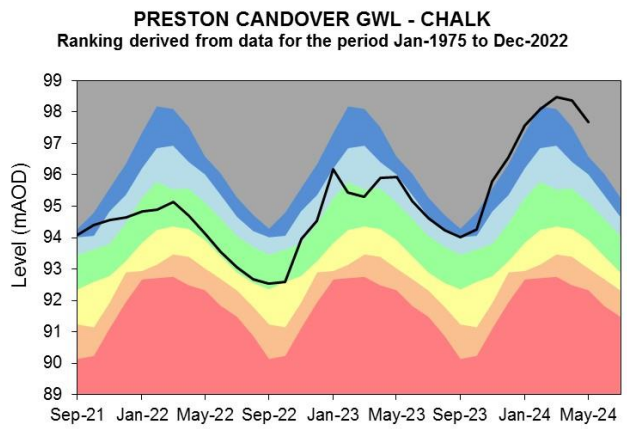
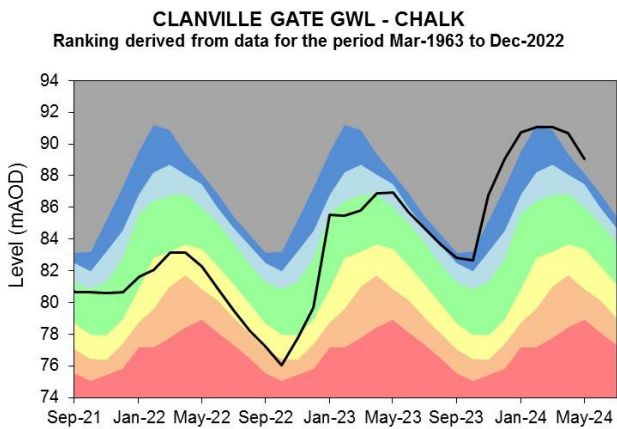
Figure 4.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



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.



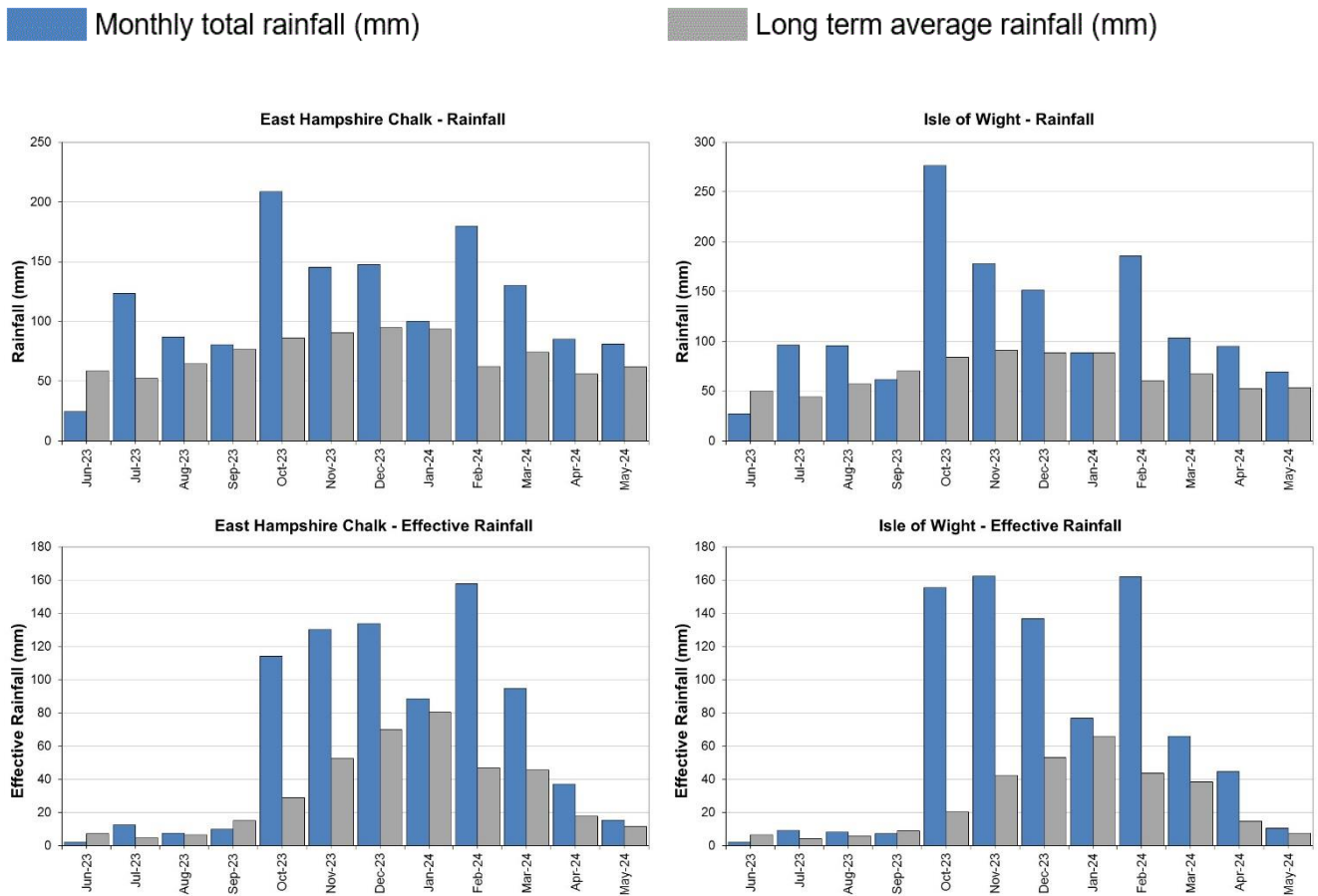
Source: Environment Agency, 2024.



# 5 East Hampshire and Isle of Wight

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

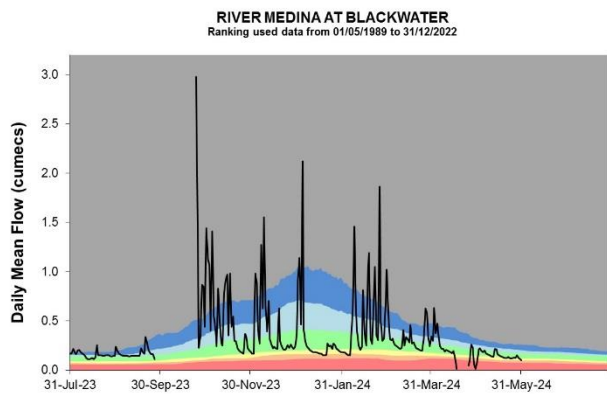
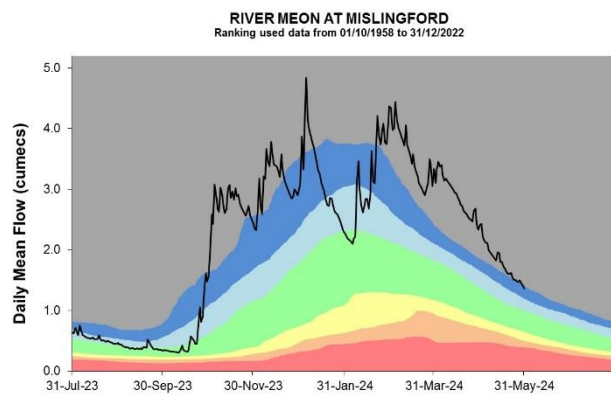
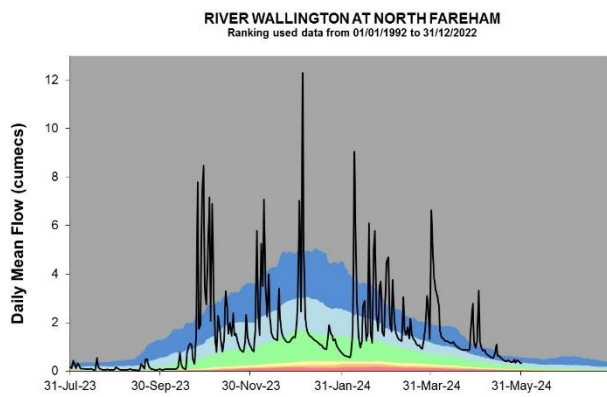
Figure 5.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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

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

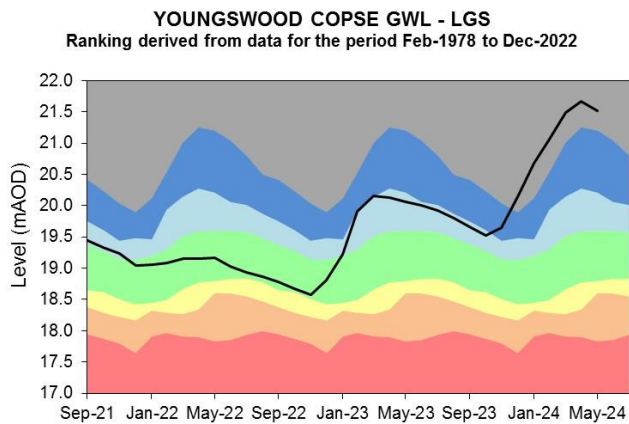
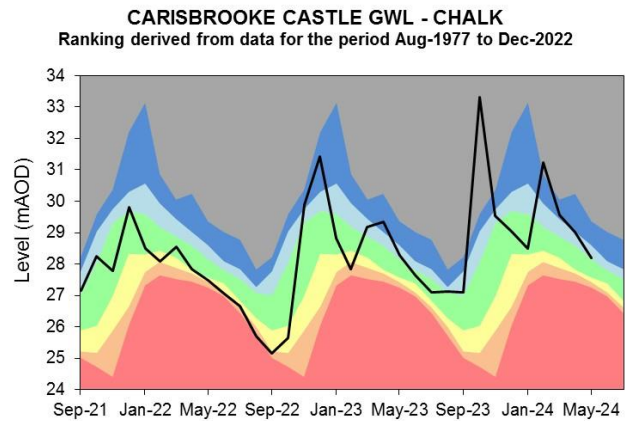
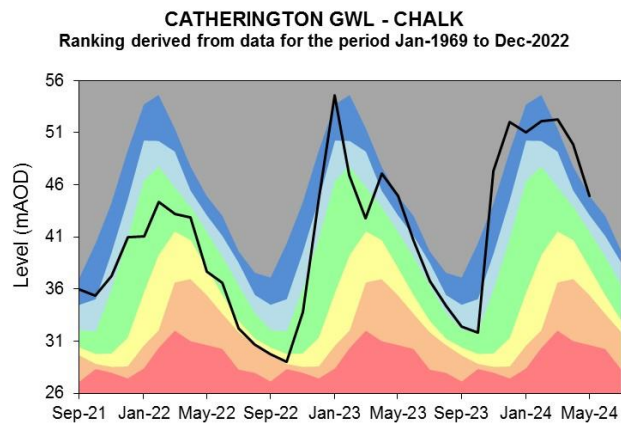
Figure 5.2 Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



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.

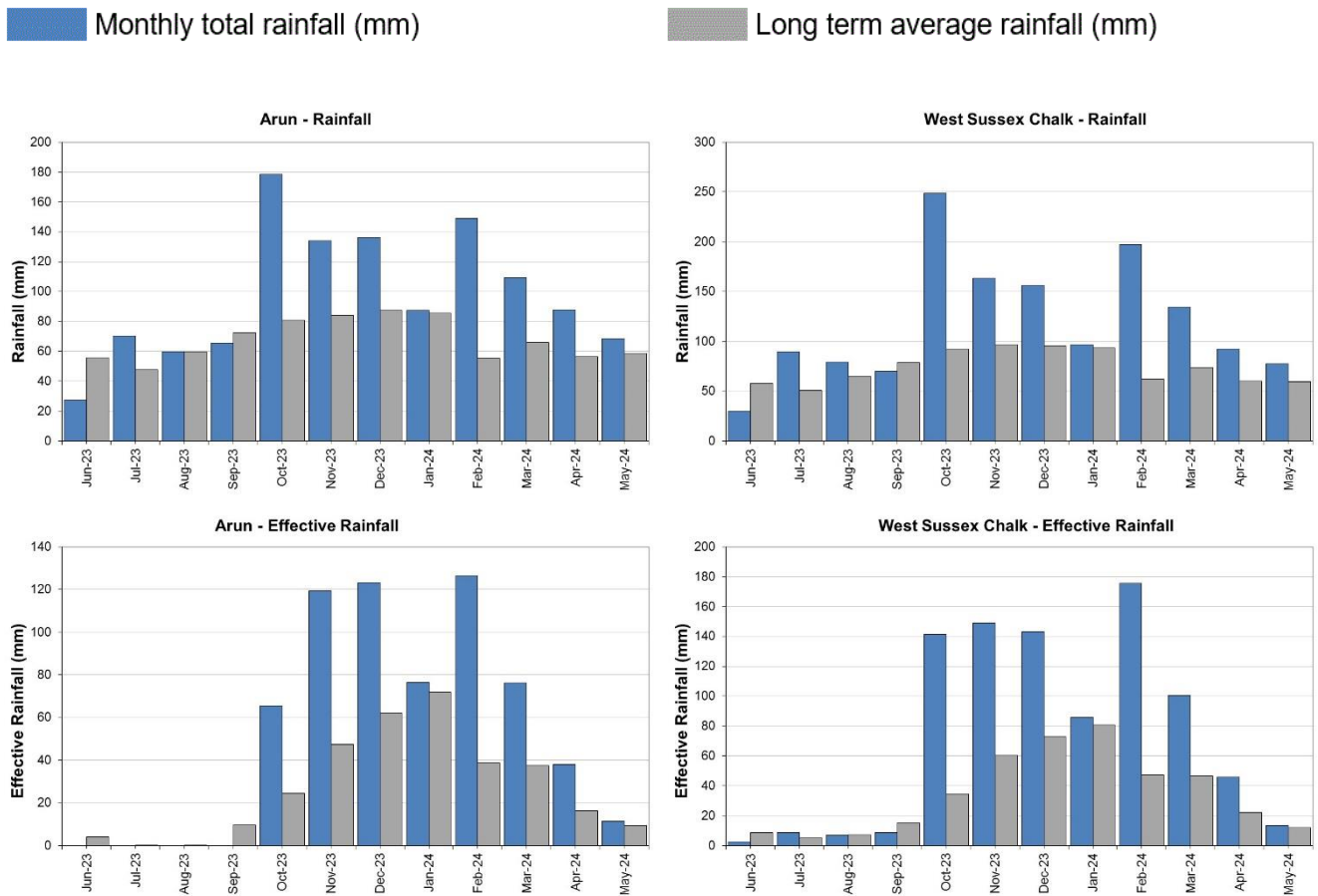


Source: Environment Agency, 2024.

# 6 West Sussex

## 6.1 West Sussex Rainfall and Effective Rainfall charts

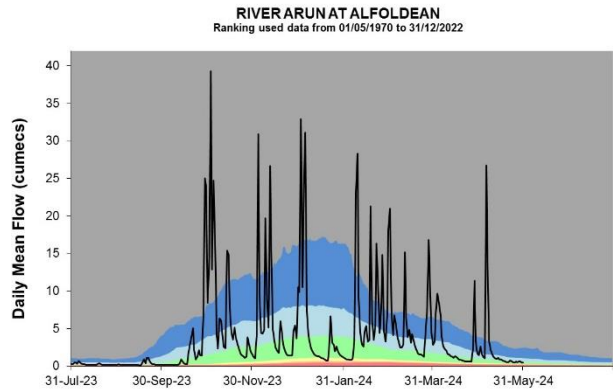
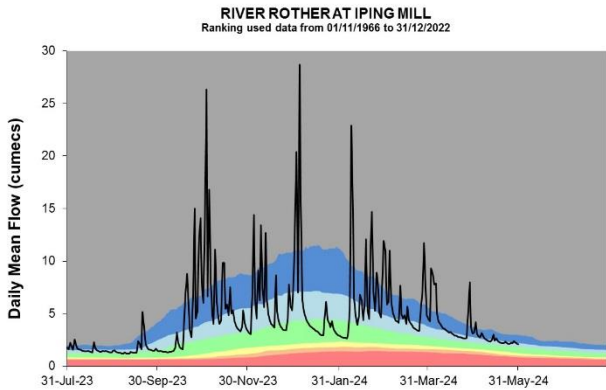
Figure 6.1: Monthly rainfall and effective rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average.



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

## 6.2 West Sussex River flow charts

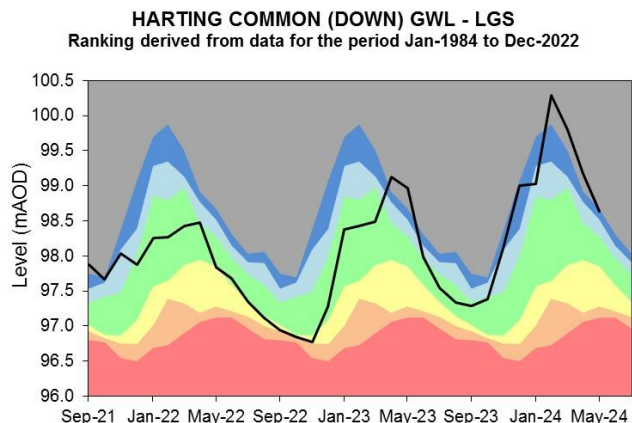
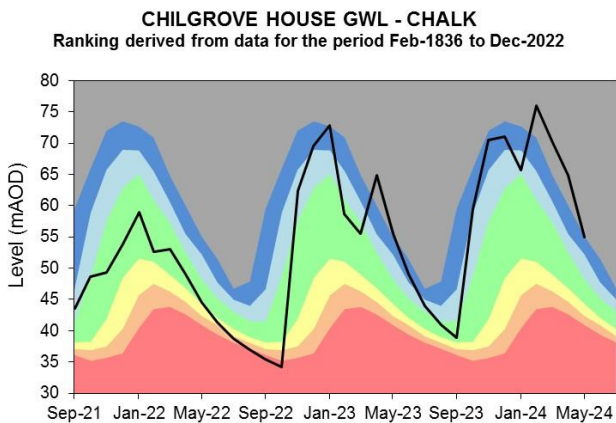
Figure 6.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



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.

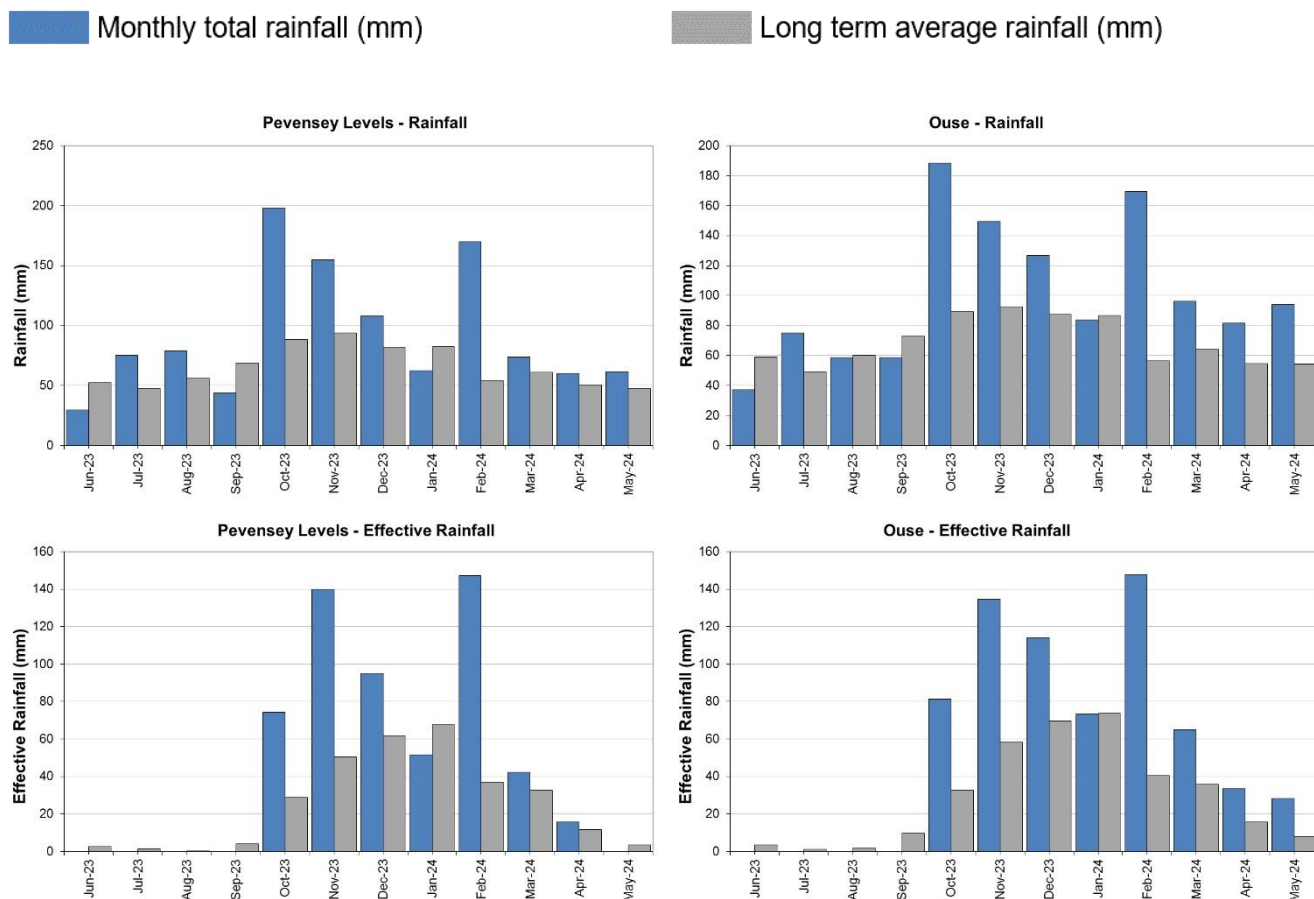


Source: Environment Agency, 2024.

# 7 East Sussex

## 7.1 East Sussex Rainfall and Effective Rainfall charts

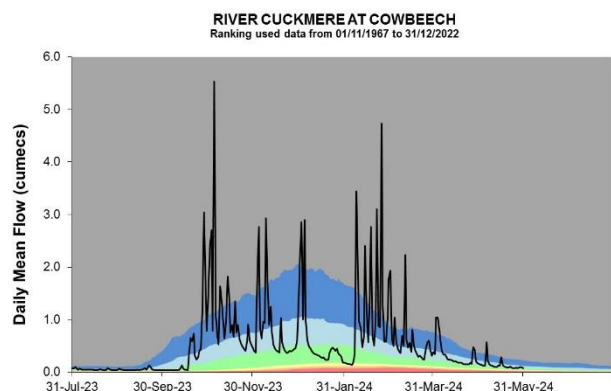
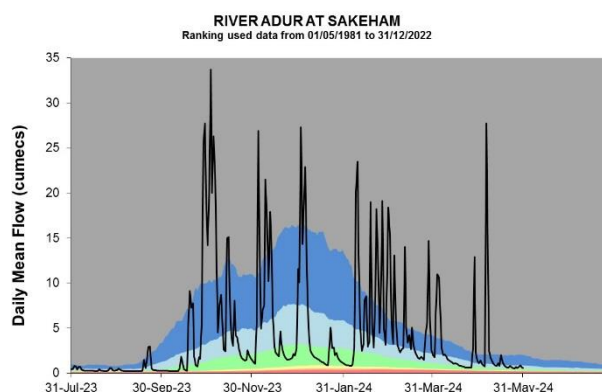
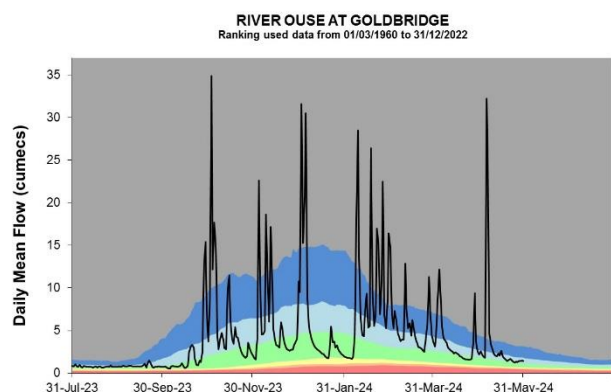
Figure 7.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



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

## 7.2 East Sussex River flow charts

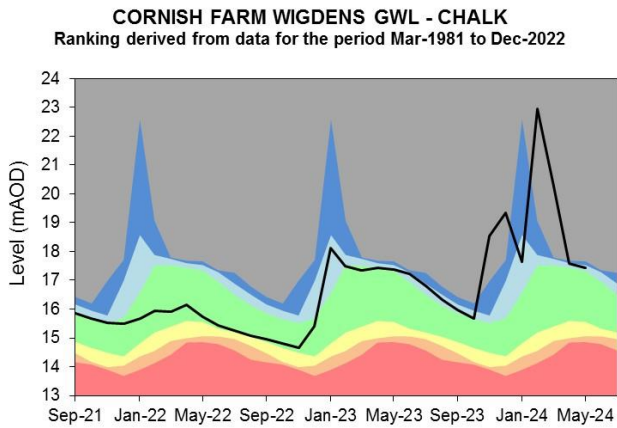
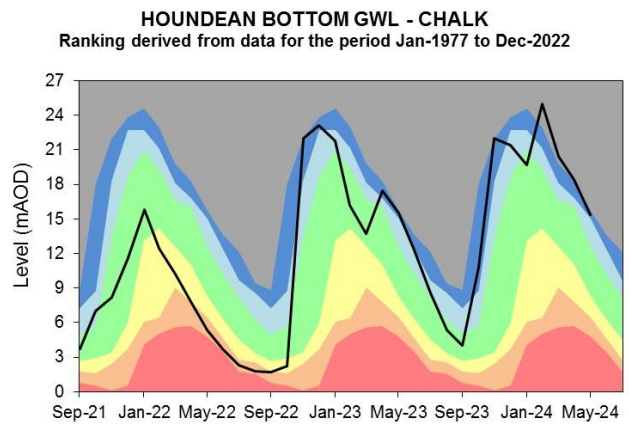
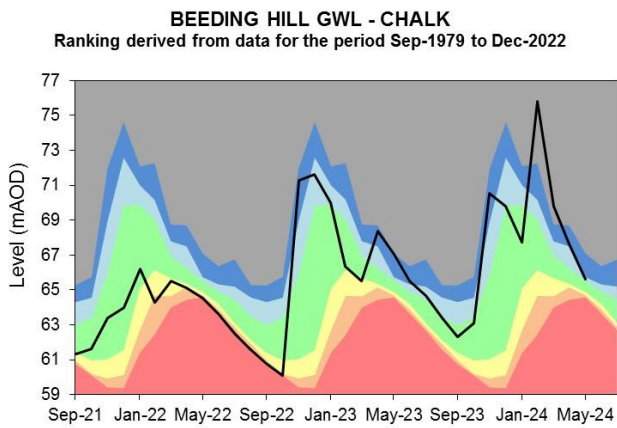
Figure 7.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



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.

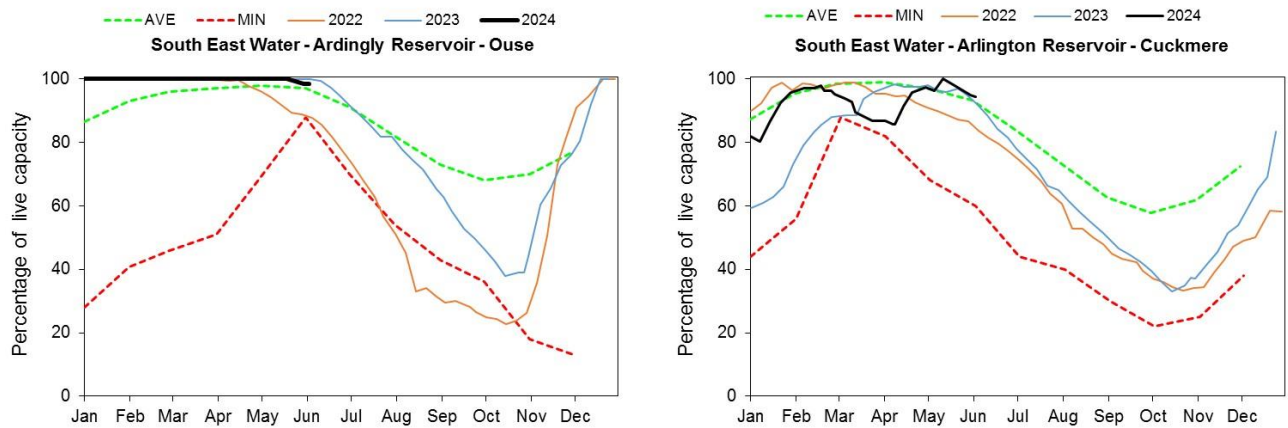


Source: Environment Agency, 2024.



## 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 May as %LTA	Effective Rainfall (mm) 30 day Total	Effective Rainfall May as %LTA	Soil Moisture Deficit (SMD) Day 30	SMD End of May LTA
Test Chalk	75.9	129%	10.9	125%	19	39
East Hampshire Chalk	81.2	131%	15.4	137%	17	37
West Sussex Chalk	77.7	131%	13.5	112%	17	34
East Sussex Chalk	93.6	182%	28.4	344%	17	37
Isle of Wight	69.3	130%	10.4	142%	30	42
Western Rother Greensand	75.4	120%	10.7	80%	18	35
Hampshire Tertiaries	73.9	130%	9.7	232%	24	40
Lymington	77.2	133%	11.1	192%	19	37
Sussex Coast	66.8	133%	9.1	280%	31	41
Arun	68.4	117%	11.4	121%	26	34
Adur	77.8	138%	17.7	203%	21	34
Ouse	94.0	174%	28.1	366%	14	34
Cuckmere	85.4	170%	12.1	229%	8	34
Pevensey Levels	61.5	130%	0.0	0%	28	37
SSD Average	77.0	138%	13.5	173%	21	37

## 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	154.8	140%	41.0	174%
East Hampshire Chalk	166.6	141%	52.3	182%
West Sussex Chalk	169.6	142%	59.2	173%
East Sussex Chalk	169.4	161%	55.0	222%
Isle of Wight	164.3	156%	54.9	249%
Western Rother Greensand	176.8	143%	64.8	187%
Hampshire Tertiaries	155.8	145%	39.7	268%
Lymington	157.9	144%	41.8	228%
Sussex Coast	138.7	138%	30.8	202%
Arun	155.9	136%	49.5	193%
Adur	165.2	148%	56.9	228%
Ouse	175.5	162%	61.5	265%
Cuckmere	148.4	147%	29.4	161%
Pevensy Levels	121.7	124%	15.8	104%
SSD Average	158.6	145%	46.6	202%

### 10.3 Rainfall banding table

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

## 10.4 River flows table

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



## 10.5 Groundwater table

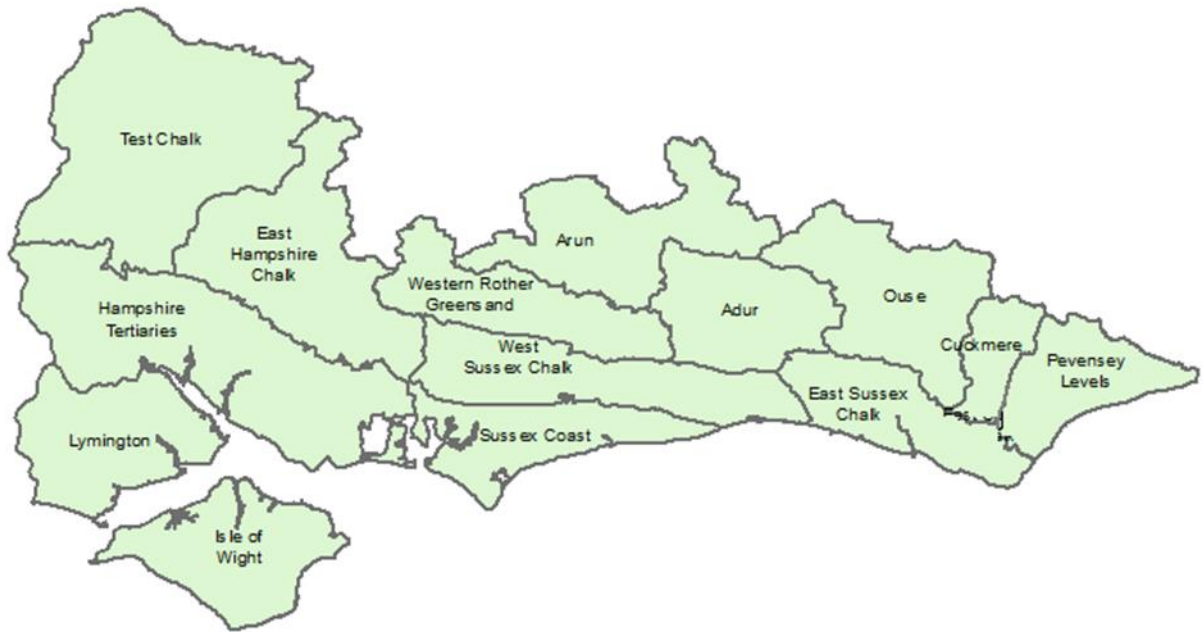
Site name	Aquifer	End of May 2024 band	End of April 2024 band
Houndean Bottom Gwl	Brighton Chalk Block	Exceptionally high	Below normal
Chilgrove House Gwl	Chichester-Worthing-Portsdown Chalk	Above normal	Exceptionally low
Carisbrooke Castle	Isle Of Wight Central Downs Chalk	Notably high	Below normal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

## 10.6 Abstraction licence flow constraints

Number of flow constraints in force between 1 to 6 May 2024	Number of flow constraints in force between 7 to 13 May 2024	Number of flow constraints in force between 14 to 20 May 2024	Number of flow constraints in force between 21 to 27 May 2024	Number of flow constraints in force between 28 to 31 May 2024
0	0	1	1	1

This is a reduced abstraction rates restriction, not a hands off flow.

## 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>