

Monthly water situation report: Kent and South London Area

1 Summary - November 2024

The whole of the Kent and South London (KSL) area received 87% of the long-term average (LTA) rainfall during November. Rainfall received across all catchments was normal for this time of year. At the end of November, Soil Moisture Deficits (SMDs) were one millimetre or less in most catchments, except for three catchments in the northeast of KSL. Monthly mean flows (MMFs) ranged from normal to notably high in November. Groundwater levels in the Chalk at most locations across the KSL area continued to slowly fall or have now stabilised. The Lower Greensand aquifer at Riverhead continued to register groundwater levels that are notably high for this of the year. Levels at the end of the month at the five water company reservoirs in the area ranged from normal to exceptionally high. Levels increased in most KSL reservoirs in November.

1.1 Rainfall

The whole of the KSL area received 87% of the LTA rainfall during November. Rainfall received across all catchments was normal for this time of year. The percentage of LTA rainfall received across catchments ranged from 119% across Lower Wey rainfall area to 70% in the Thanet Chalk rainfall area. The highest daily rainfall total of 37mm for November was recorded at Westerham PS rain gauge in the Darent catchment on 26 November. The next highest daily rainfall totals were on 23, 18, 24 and 17 November and ranged from 20.8mm to 10.6mm. Only one dry day, where less than 0.2mm of rainfall was received, was registered at the beginning of the month.

1.2 Soil moisture deficit and recharge

At the end of November, SMDs were one millimetre or less in most catchments, except for three catchments in the northeast of KSL. North West Grain recorded forty-one millimetres, Sheppey recorded forty-seven millimetres, and Thanet Chalk registered the highest SMDs this month at eighty-six millimetres. SMDs decreased in most catchments in November due to the increase in the effective rainfall received. Across the whole area, on average, effective rainfall received this month was at 112% of the LTA. In November, the difference from LTA decreased in all catchments in the south and North Kent Chalk.

1.3 River flows

MMFs ranged from normal to notably high in November. Eight out of the eleven key flow sites saw normal MMFs. Two key flow sites located in the centre of the patch saw above normal MMFs, and one key flow site, located in the east of the area, saw notably high MMFs. Dour at Crabble recorded the highest MMF highest percentage LTA of 144% for the month of November. East Stour at South Willesborough recorded the lowest percentage LTA of 85%.

1.4 Groundwater levels

At the end of November, groundwater levels in the Chalk are predominantly above normal for this time of year. Levels at Wolverton in the east of the patch are now normal. The Lower Greensand aquifer at Riverhead continued to register groundwater levels that are notably high. Groundwater levels in the Chalk at most locations across the KSL area continued to slowly fall or have now stabilised. A slight rise was observed at the end of the month at Wolverton and at Chipstead, in the west. The slowdown or slight rise in groundwater levels is consistent with the effective rainfall of 112% of the LTA. It is also consistent with the depletion of SMDs seen in most areas by the end of November.

1.5 Reservoir stocks

Levels increased in most KSL reservoirs in November. Only Darwell reservoir had a marginal decrease in levels this month. At the end of November, reservoir levels were:

- normal at Darwell at 79% and Bewl at 64%
- above normal at Bough Beech at 92%

Weir Wood and Powdermill reservoirs were full at the end of this month. Weir Wood reservoir remained offline during November.

1.6 Environmental impact

Twenty fluvial flood alerts and three flood warnings were issued from 25 to 27 November.

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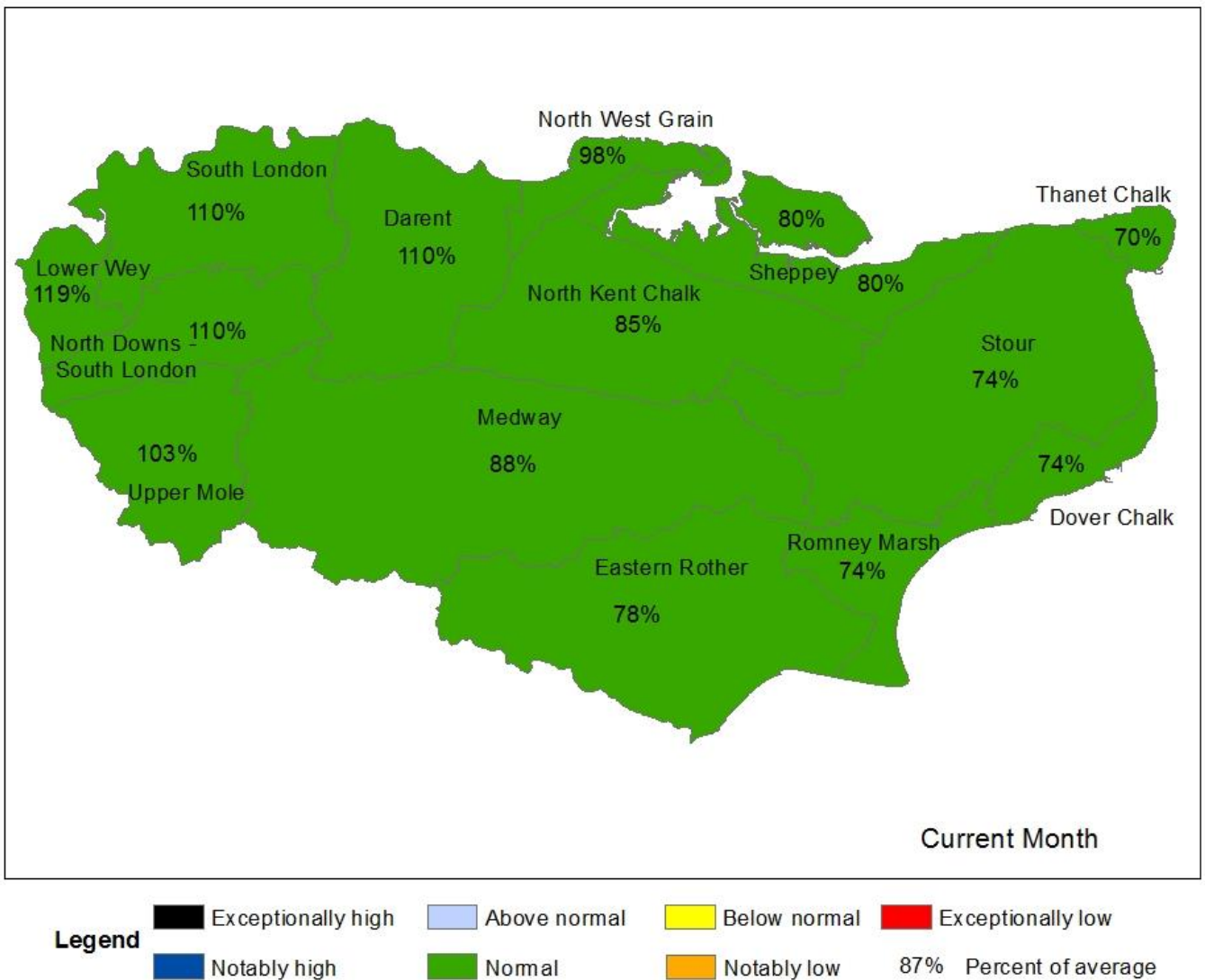
Contact Details: 03708 506 506

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2 Rainfall

2.1 Rainfall map one

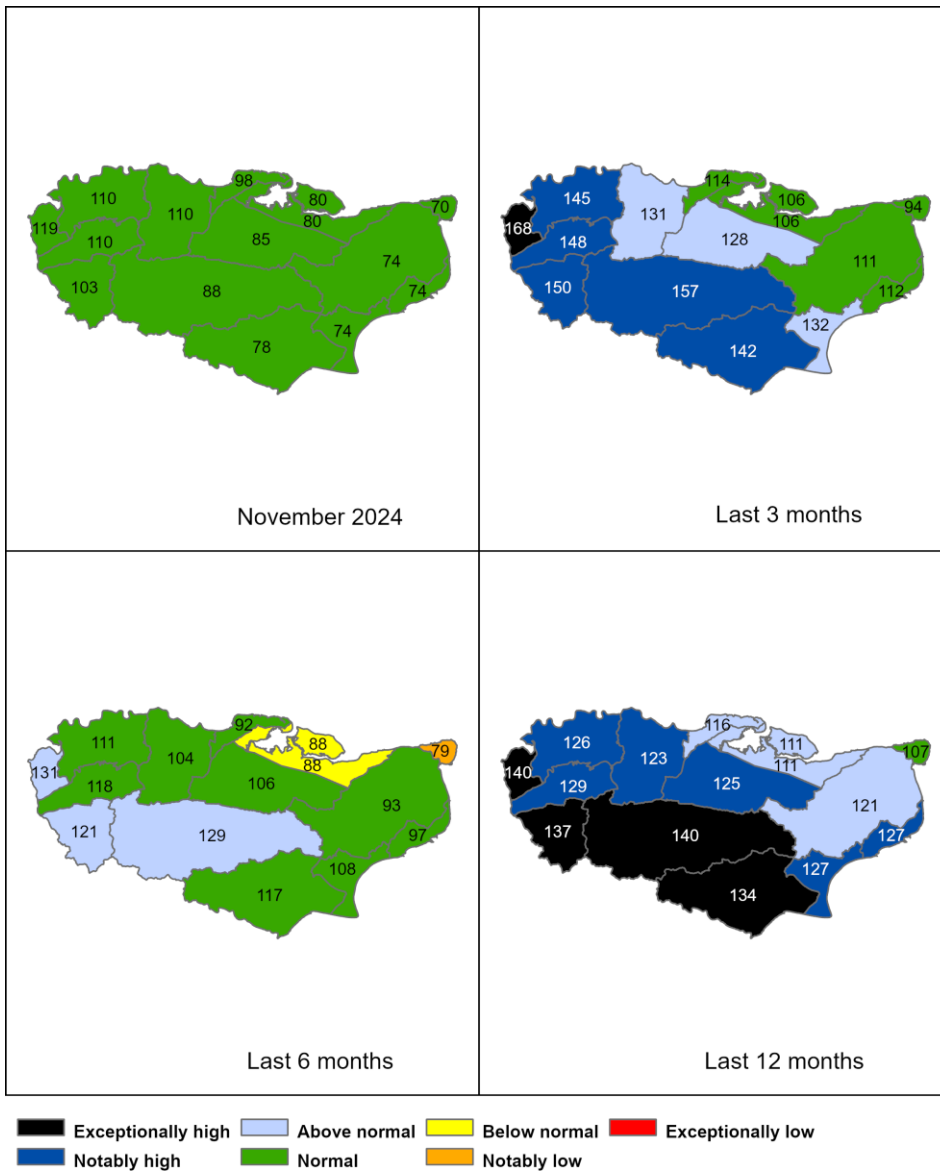
Figure 2.1: Total rainfall for hydrological areas across Kent and South London for the current month (up to 30 November 2024), classed relative to an analysis of respective historic totals. Table available in the appendices with more detailed information.



HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2024). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Includes material based on Ordnance Survey 1:50 000 maps with the permission of the controller of His Majesty's Stationery Office © Crown copyright. All rights reserved. Environment Agency, 100026380, 2024.

2.2 Rainfall map two

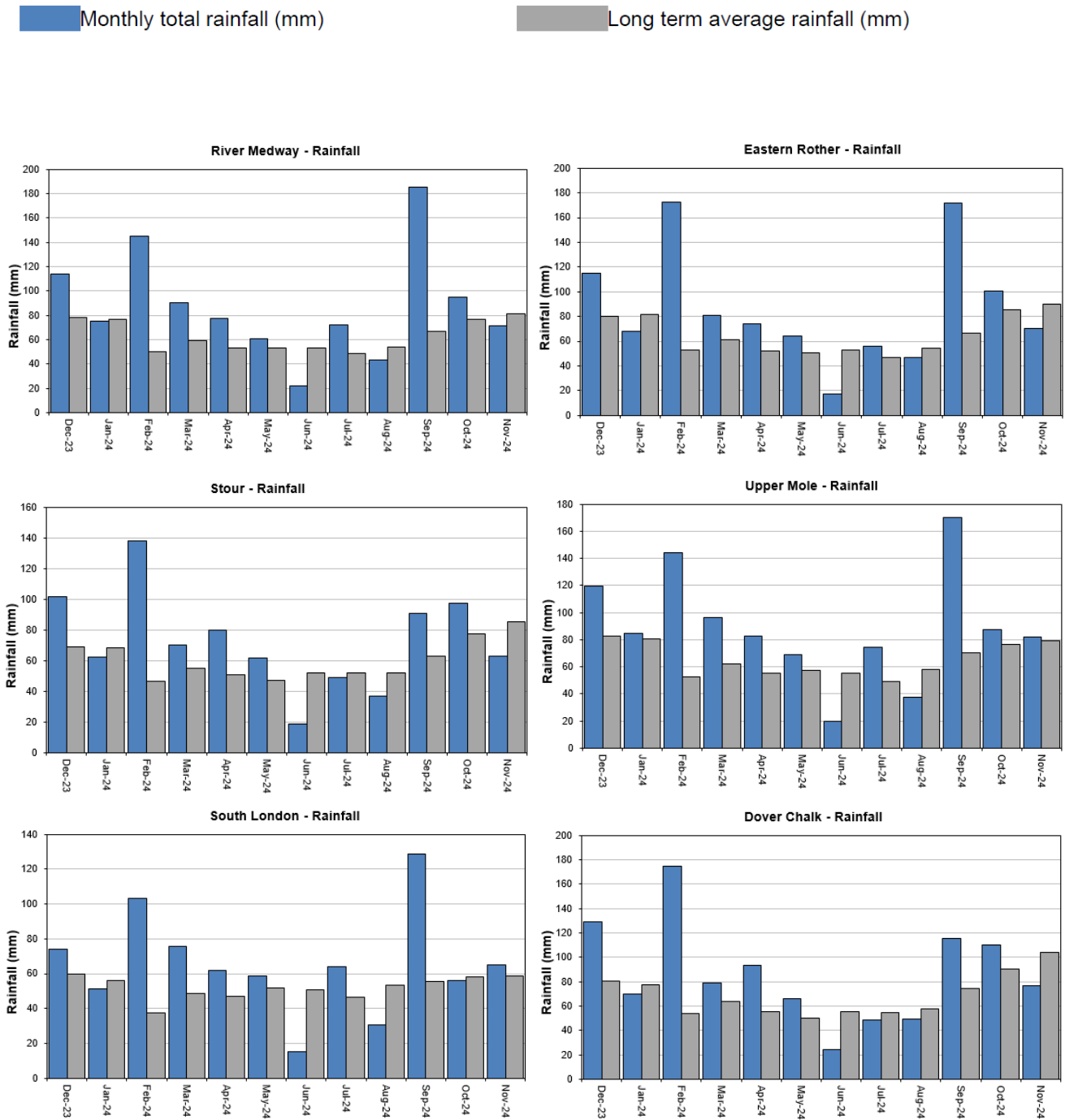
Figure 2.2: Total rainfall for hydrological areas for the current month (up to 30 November 2024), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.



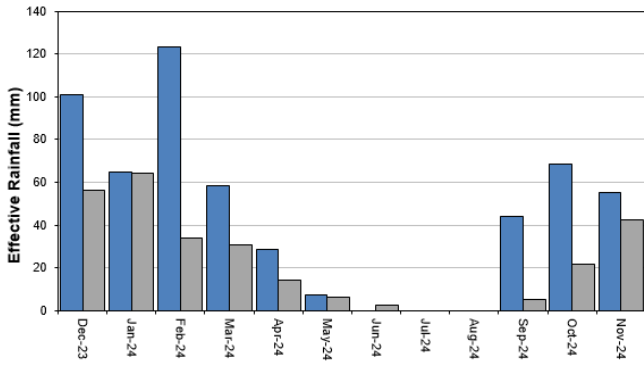
HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2024). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Includes material based on Ordnance Survey 1:50 000 maps with the permission of the controller of His Majesty’s Stationery Office © Crown copyright. All rights reserved. Environment Agency, 100026380, 2024.

2.3 Rainfall and effective rainfall charts

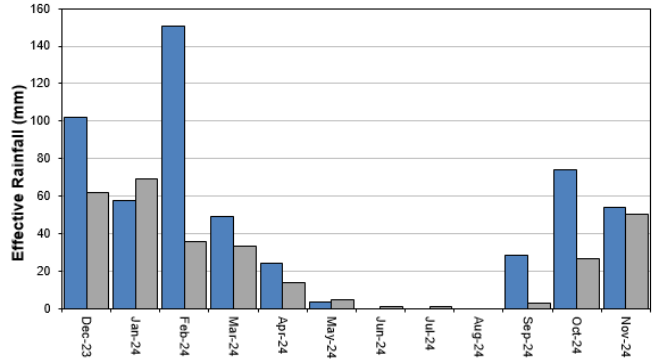
Figure 2.3: Monthly rainfall and effective rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average (LTA) for a selection of areal units. HadUK rainfall data. (Source: Met Office. Crown copyright, 2024). EA effective rainfall data (Source EA Soil Moisture Model).



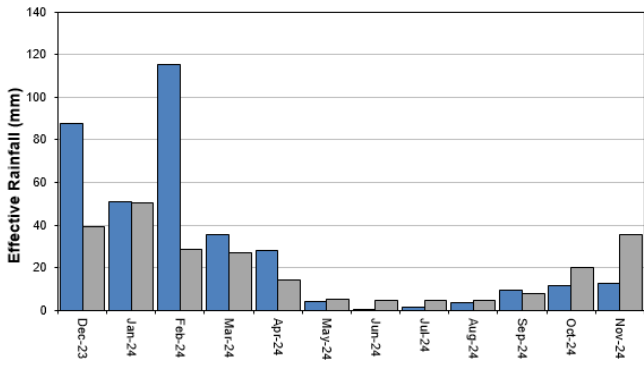
River Medway - Effective Rainfall



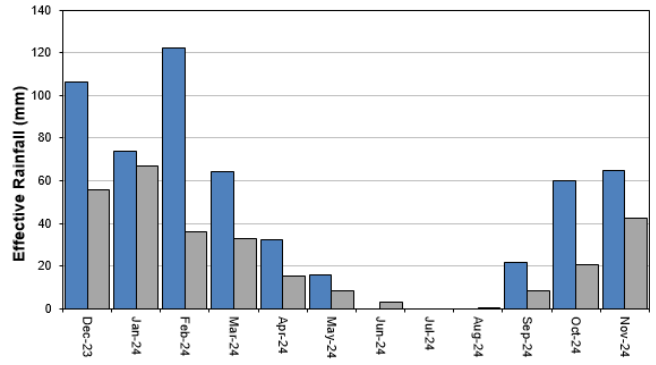
Eastern Rother - Effective Rainfall



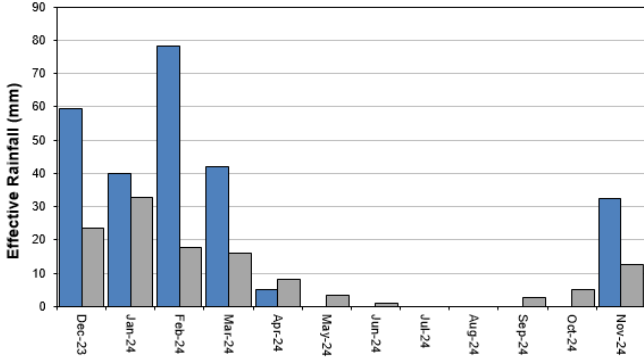
Stour - Effective Rainfall



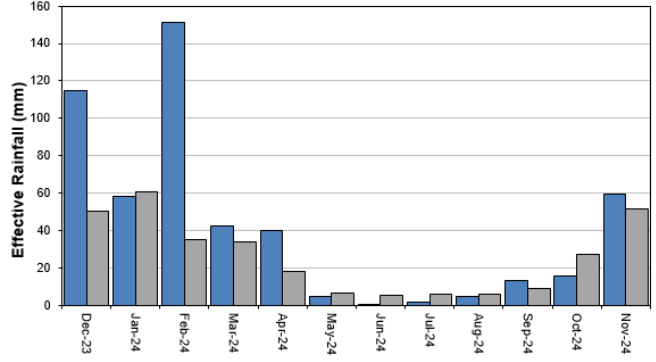
Upper Mole - Effective Rainfall



South London - Effective Rainfall



Dover Chalk - Effective Rainfall



2.4 Rainfall and effective rainfall table

Figure 2.4: This is a second estimate of areal rainfall and effective rainfall (percolation or runoff) for a selection of the hydrological areas across the Kent and South London area. 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 2.5.

Number	Hydrological Area	Rainfall (mm) 30 day Total	November % LTA	Effective Rainfall (mm) 30 day Total	November % LTA
6230TH	North Downs - South London (W)	83	109%	63	173%
6505TH	Upper Mole	82	103%	65	153%
6508TH	South London	65	110%	33	259%
6706So	Darent	73	110%	15	62%
6707So	North Kent Chalk	63	85%	29	100%
6708So	Stour	63	74%	12	35%
6709So	Dover Chalk	77	74%	59	115%
6710So	Thanet Chalk	49	70%	6	46%
6809So	Medway	72	88%	55	131%
6810So	Eastern Rother	71	78%	54	108%

6811So	Romney Marsh	61	74%	45	118%
6812So	North West Grain	54	98%	0	0%
6813So	Sheppey	47	80%	0	0%
	Kent & South London Average	66	87%	34	112%

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

EA effective rainfall data (Source EA Soil Moisture Model)

2.5 Seasonal summary table of rainfall and effective rainfall

Figure 2.5: This is a seasonal estimate of areal rainfall and effective rainfall (percolation or runoff) for a selection of the hydrological areas across the Kent and South London area, expressed as totals and as a percentage of the LTA. 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.

Winter period 01/10/2024 to 30/11/2024

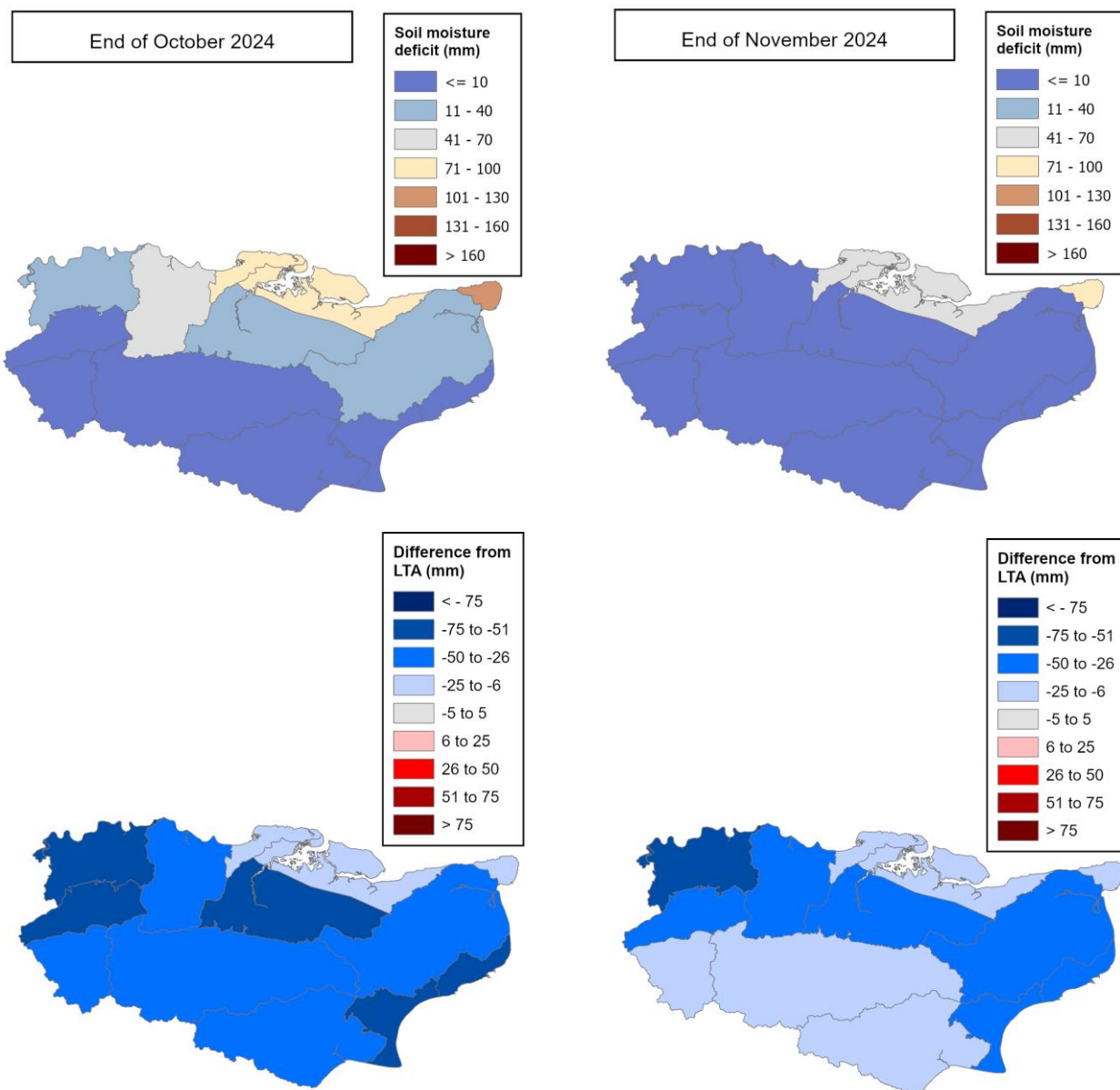
Number	Hydrological Area	Seasonal Rainfall (mm) Total	% LTA	Seasonal Effective Rainfall (mm) Total	% LTA
6230TH	North Downs - South London (W)	162	108%	97	166%
6505TH	Upper Mole	170	109%	125	198%
6508TH	South London	121	103%	33	184%
6706So	Darent	130	99%	21	55%
6707So	North Kent Chalk	153	108%	40	86%
6708So	Stour	160	99%	24	43%
6709So	Dover Chalk	187	97%	76	95%
6710So	Thanet Chalk	127	94%	15	65%
6809So	Medway	167	106%	124	194%
6810So	Eastern Rother	171	98%	128	166%

6811So	Romney Marsh	157	99%	72	139%
6812So	North West Grain	111	103%	0	0%
6813So	Sheppey	117	101%	0	0%
	Kent & South London Average	149	102%	58	127%

3 Soil moisture deficit

3.1 Soil moisture deficit map

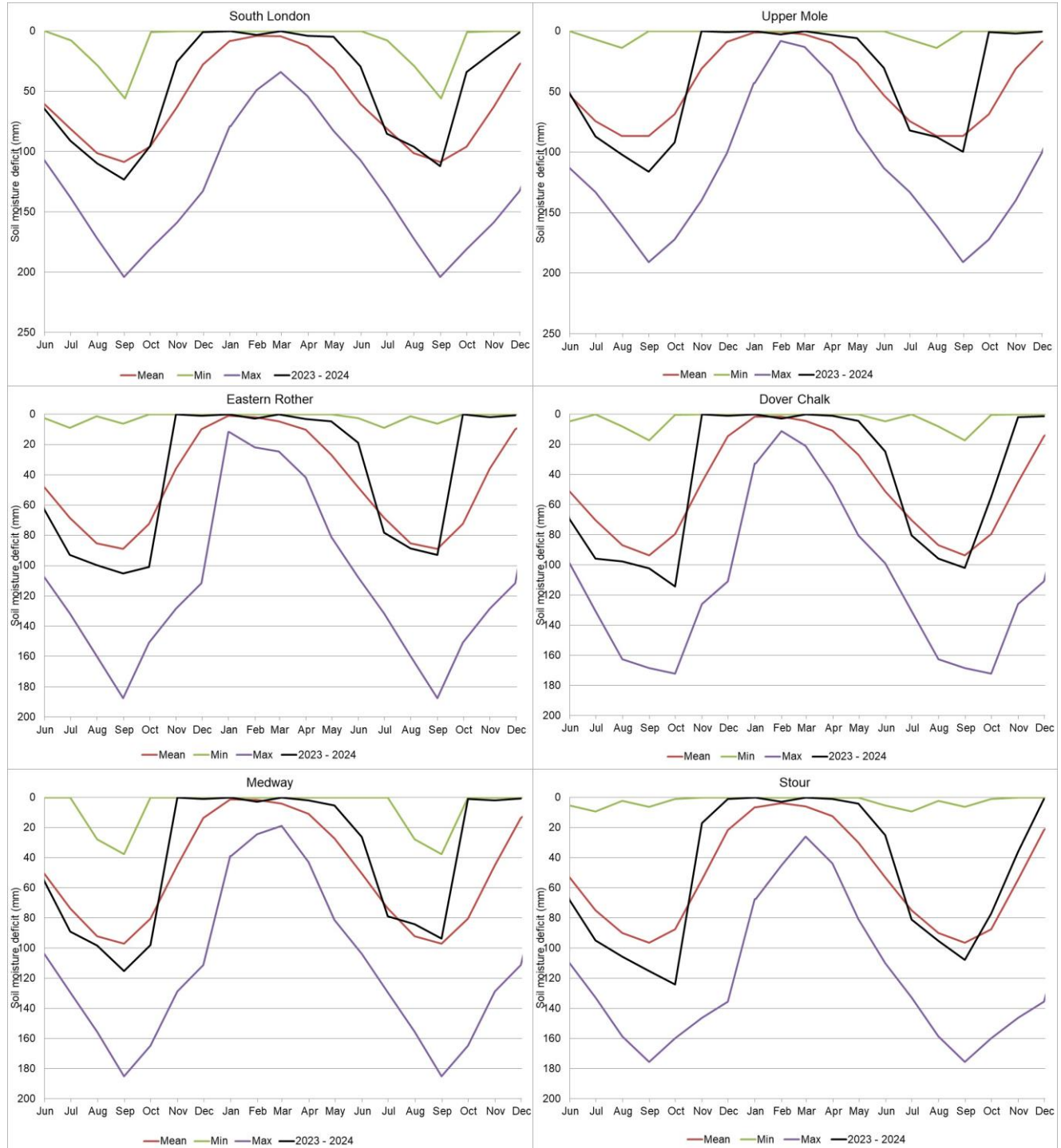
Figure 3.1: Soil moisture deficits for weeks ending 31 October (left panel) and 30 November 2024 (right panel). Top row shows actual soil moisture deficits (mm) and bottom row shows the difference (mm) of the actual from the 1961 to 90 long term average soil moisture deficits. EA Soil Moisture Deficit data (Source EA Soil Moisture Model).



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

3.2 Soil moisture deficit charts

Figure 3.2: Latest soil moisture deficit compared to maximum, minimum, and 1961 to 1990 long term average. EA soil moisture deficit data (Source EA Soil Moisture Model).



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

3.3 Soil moisture deficit table

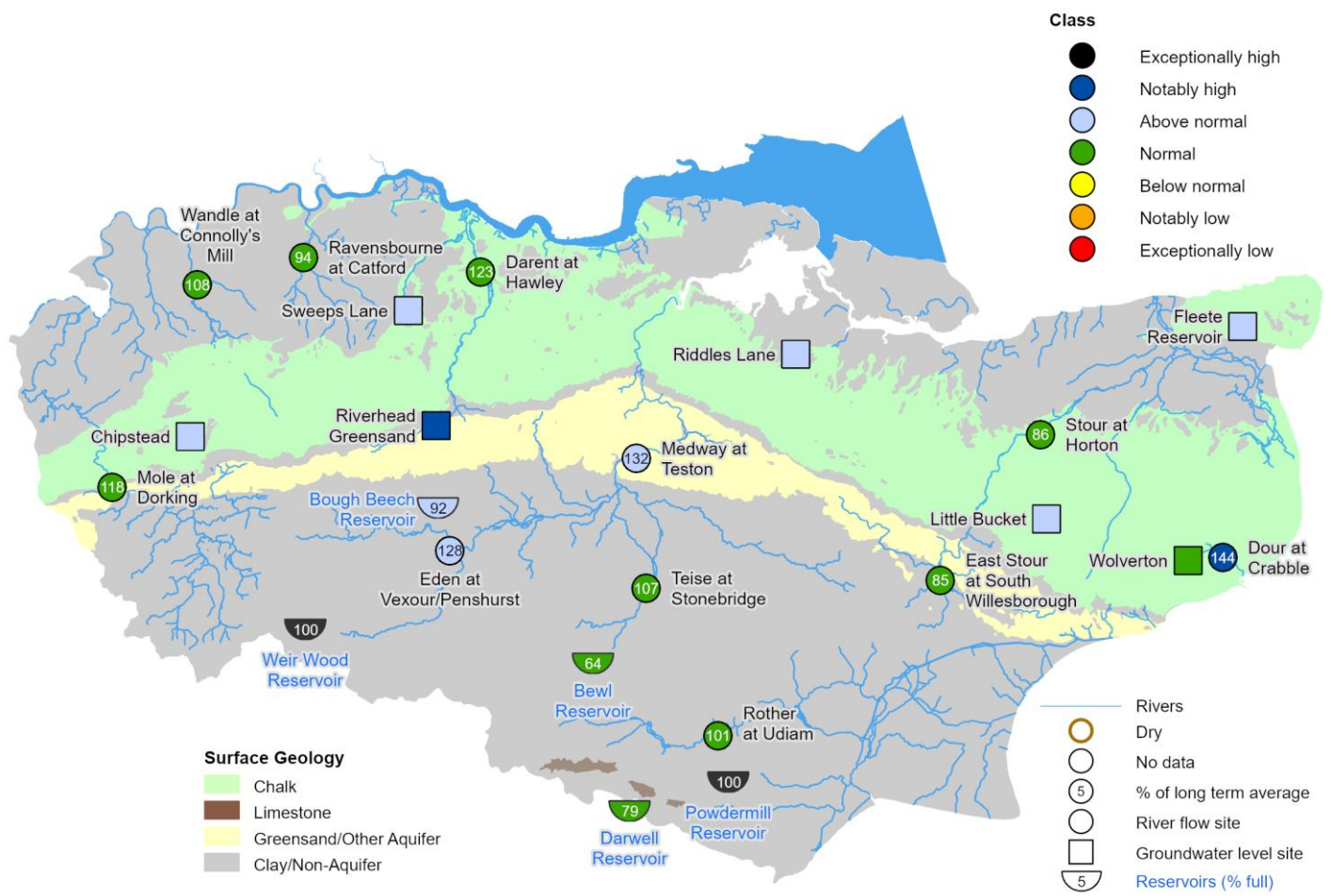
Figure 3.3: This is a second estimate of soil moisture deficit for the hydrological areas across the Kent and South London area. There may be significant variation within each area which must be considered when interpreting these data. EA soil moisture deficit data (Source EA Soil Moisture Model).

Number	Hydrological Area	SMD (mm) Day 30	End November LTA
6230TH	North Downs - South London (W)	1	34
6505TH	Upper Mole	0	25
6508TH	South London	1	53
6706So	Darent	1	47
6707So	North Kent Chalk	1	41
6708So	Stour	1	39
6709So	Dover Chalk	1	32
6710So	Thanet Chalk	86	107
6809So	Medway	1	22
6810So	Eastern Rother	1	18
6811So	Romney Marsh	1	31
6812So	North West Grain	41	66
6813So	Sheppey	47	62
	Kent & South London Average	14	44

4 River flows, groundwater levels and reservoir stocks

4.1 River flows, groundwater levels and reservoir stocks map

Figure 4.1: Monthly mean river flows* ** *** for 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. End of month groundwater levels for indicator sites for November 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic November levels. Tables available in the appendices with detailed information. End of month levels for reservoirs for November 2024, expressed as percent full. (Source: Water Companies).



*Weir Wood Reservoir is currently offline

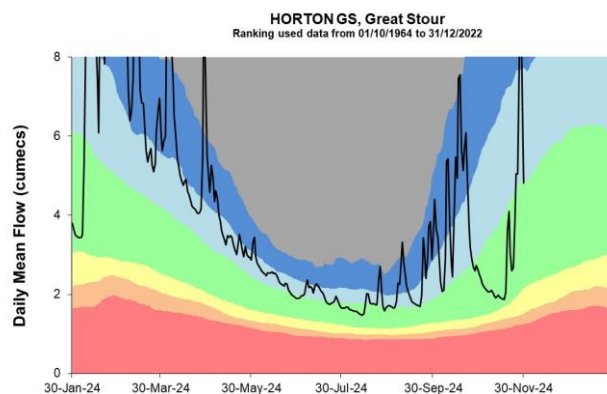
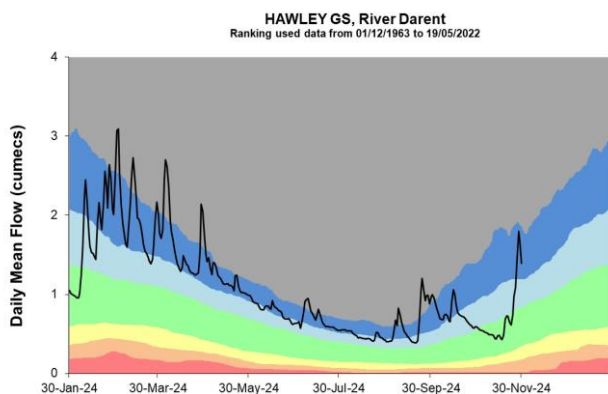
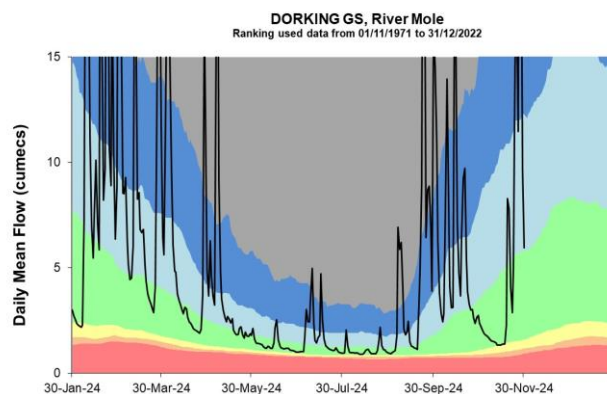
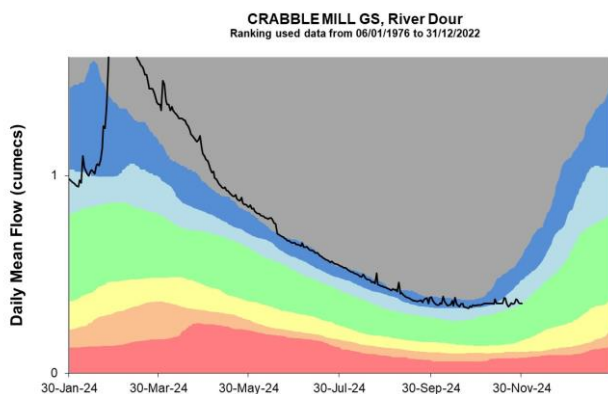
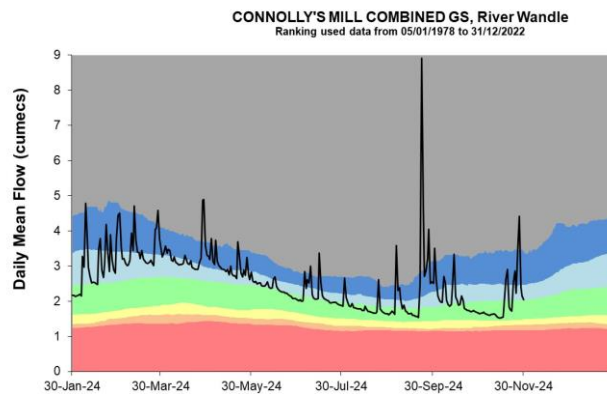
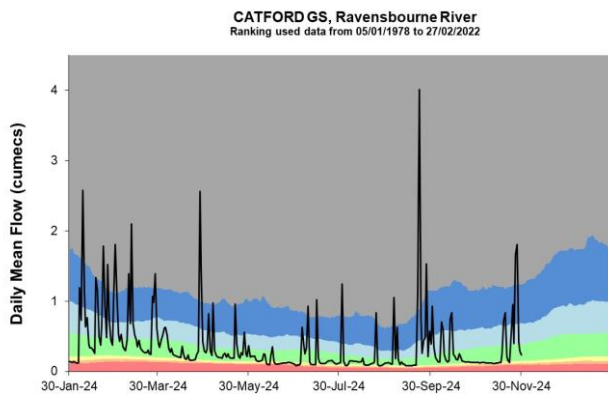
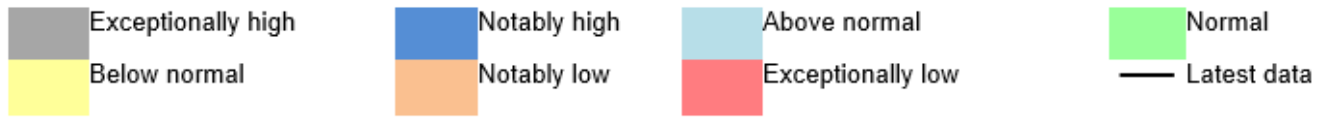
**Flows at gauging stations in the Medway catchment might be affected by upstream reservoir releases

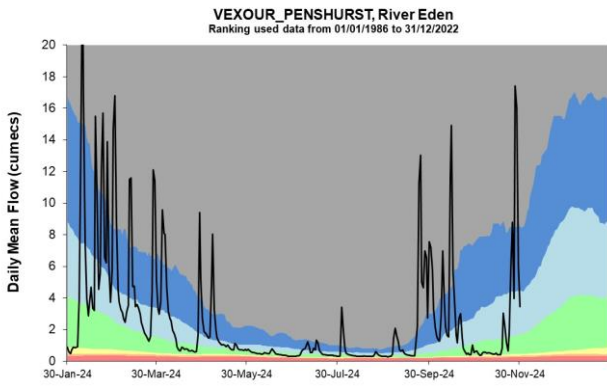
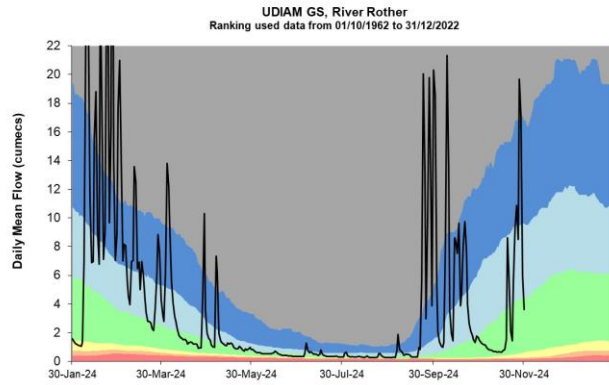
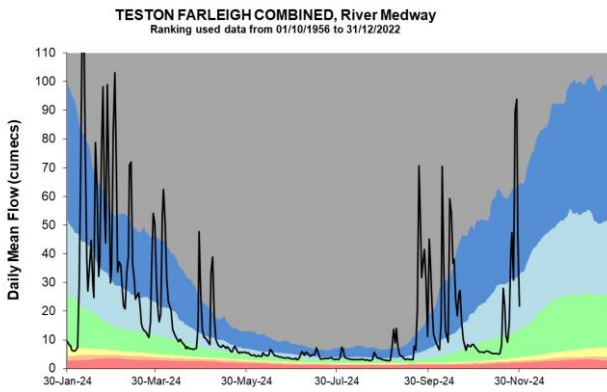
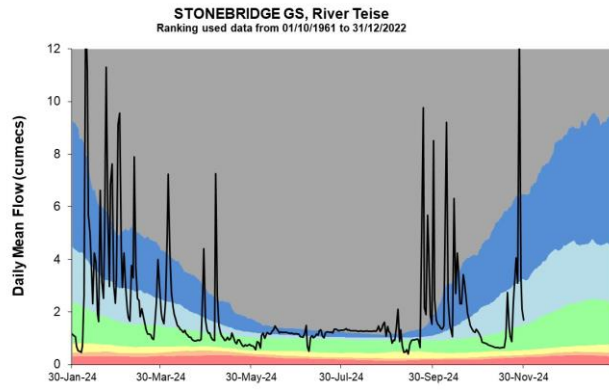
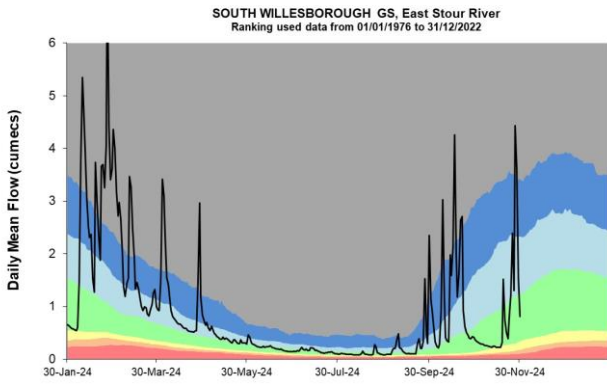
***Bands above 10 cumecs for Udiam are under review following ultrasonic modifications

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4.2 River flow charts

Figure 4.1: 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.



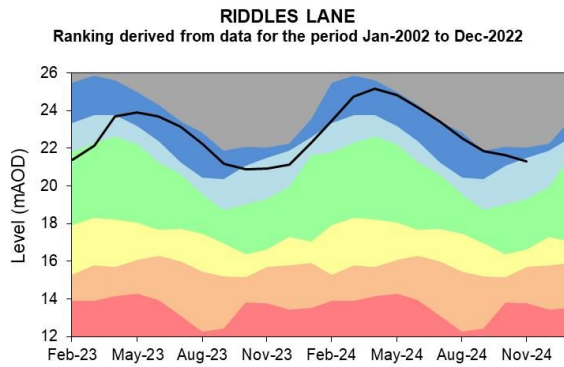
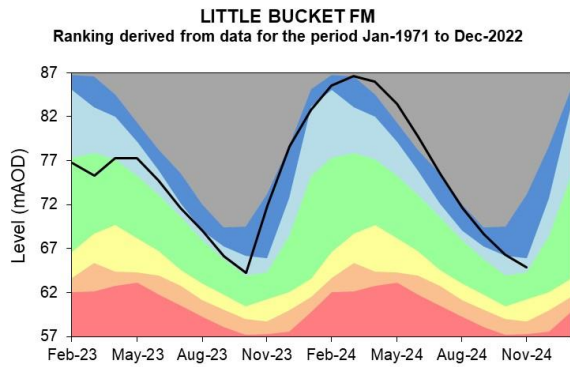
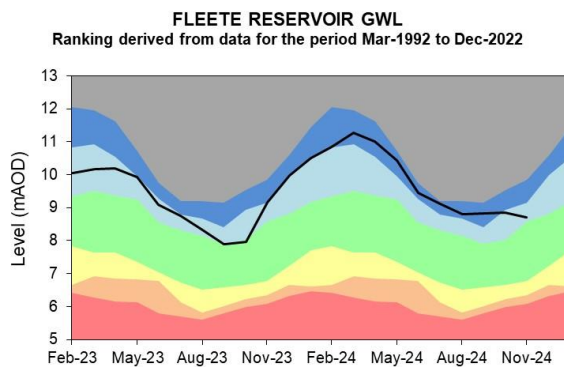
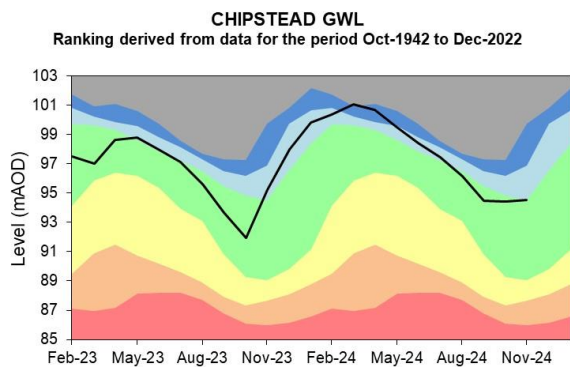
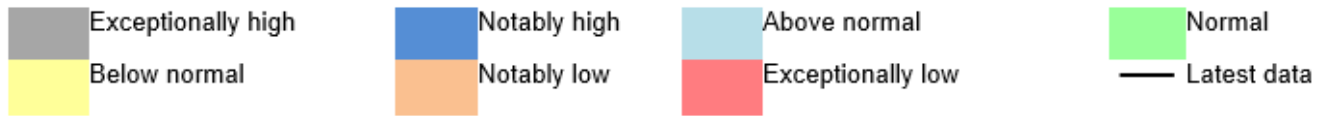


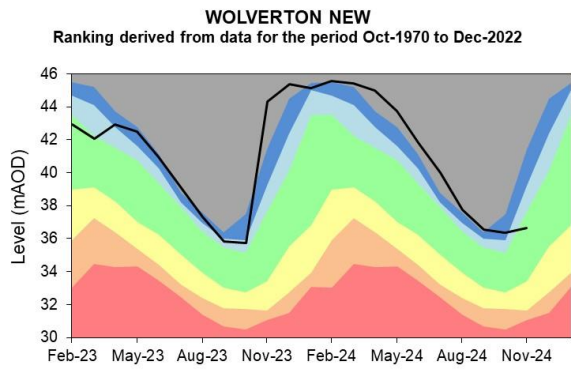
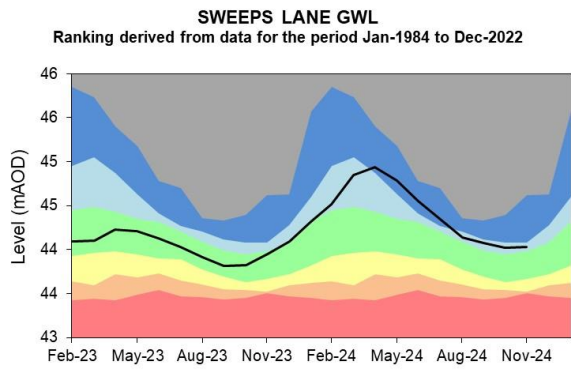
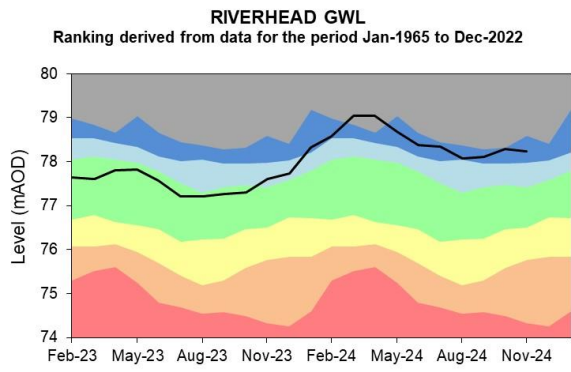
Source: Environment Agency.

5 Groundwater levels

5.1 Groundwater level charts

Figure 5.1: End of month groundwater levels at index groundwater level sites for major aquifers. 22 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.



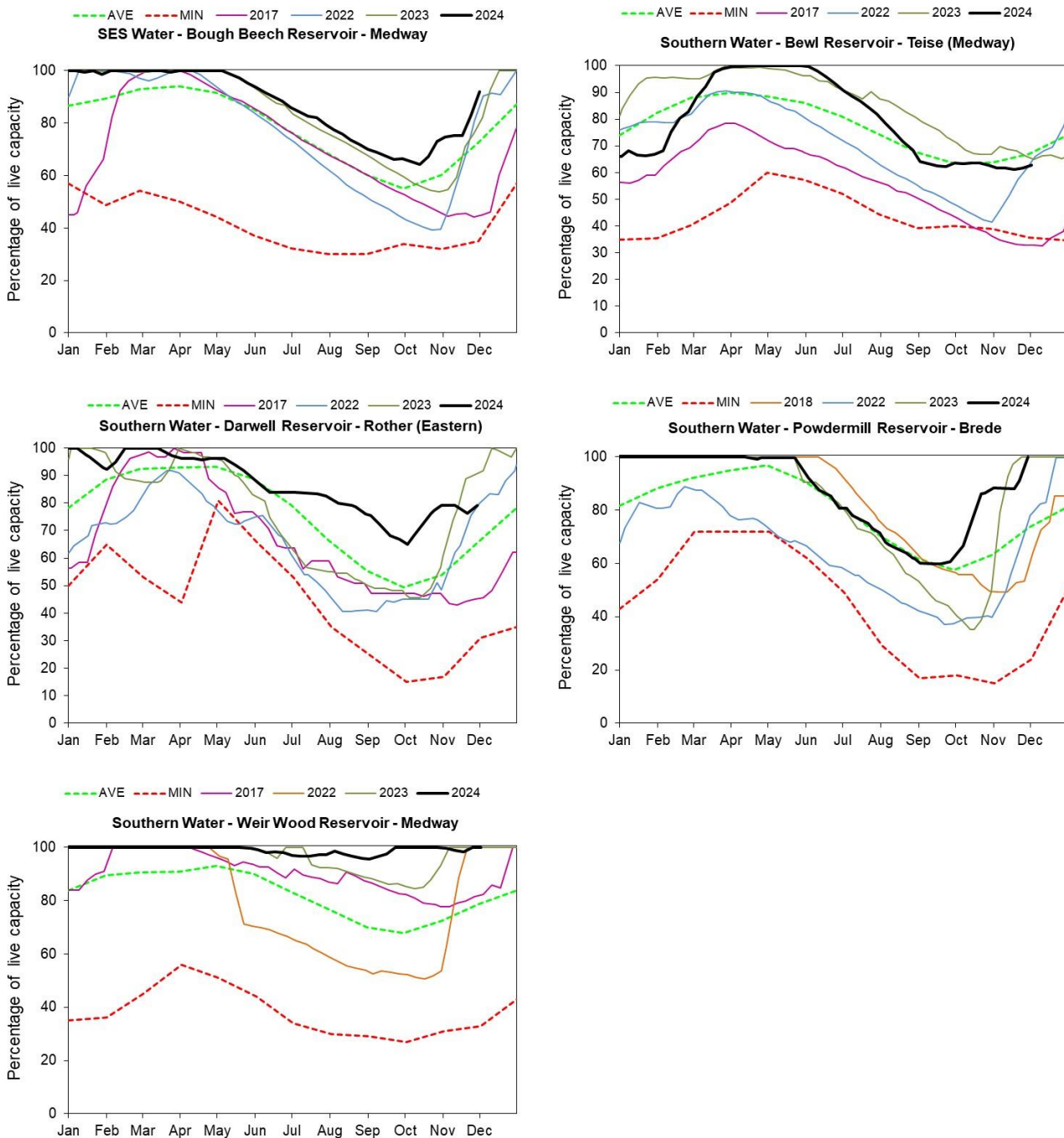


Source: Environment Agency, 2024.

6 Reservoir stocks

6.1 Reservoir stocks charts

Figure 7.1: End of month regional reservoir stocks compared to long term maximum, minimum and average stocks. (Source: Water Companies). Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in length.



7 Glossary

7.1 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).

7.2 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.

8 Appendices

8.1 Rainfall table

Hydrological area	Nov 2024 rainfall % of long term average 1961 to 1990	Nov 2024 band	Sep 2024 to November cumulative band	Jun 2024 to November cumulative band	Dec 2023 to November cumulative band
North Downs - South London	110	Normal	Notably high	Normal	Notably high
Upper Mole	103	Normal	Notably high	Above normal	Exceptionally high
South London	110	Normal	Notably high	Normal	Notably high
River Darent	110	Normal	Above normal	Normal	Notably high
North Kent Chalk	85	Normal	Above normal	Normal	Notably high
Stour	74	Normal	Normal	Normal	Above normal
Dover Chalk	74	Normal	Normal	Normal	Notably high
Thanet Chalk	70	Normal	Normal	Notably low	Normal
River Medway	88	Normal	Notably high	Above normal	Exceptionally high
Eastern Rother	78	Normal	Notably high	Normal	Exceptionally high

Romney Marsh	74	Normal	Above normal	Normal	Notably high
North West Grain	98	Normal	Normal	Normal	Above normal
Lower Wey	119	Normal	Exceptionally high	Above normal	Exceptionally high
Sheppey	80	Normal	Normal	Below normal	Above normal

8.2 River flows table

Site name	River	Catchment	Nov 2024 band	Oct 2024 band
Catford Gs	River Ravensbourne	Ravensbourne	Normal	Normal
Connolly's Mill Combined Gs	River Wandle	Wandle	Normal	Above normal
Crabble Mill Gs	River Dour	Dour	Notably high	Notably high
Dorking Gs	River Mole	Mole Surrey	Normal	Above normal
Hawley Gs	River Darent and Cray	Darent and Cray	Normal	Notably high
Horton Gs	Great Stour River	Great Stour	Normal	Notably high
South Willesborough Gs	East Stour River	East Stour	Normal	Notably high
Stonebridge Gs	River Teise	Teise	Normal	Notably high
Teston Farleigh Combined	River Medway	Medway (Middle)	Above normal	Notably high
Udiam Gs	River Rother	Rother (Kent)	Normal	Notably high
Vexour_penshurst	River Eden	Eden (Kent)	Above normal	Notably high

8.3 Groundwater table

Site name	Aquifer	End of Nov 2024 band	End of Oct 2024 band
Fleete Reservoir Gwl	Isle Of Thanet Chalk	Above normal	Above normal
Chipstead Gwl	Epsom North Downs Chalk	Above normal	Normal
Little Bucket Fm	East Kent Chalk - Stour	Above normal	Notably high
Riddles Lane	North Kent Swale Chalk	Above normal	Notably high
Riverhead Gwl	Kent Greensand	Notably high	Notably high
Sweeps Lane Gwl	West Kent Chalk	Above normal	Above normal
Wolverton New	East Kent Chalk - Stour	Normal	Notably high