

Monthly water situation report: Kent and South London Area

1 Summary - August 2024

The whole of the Kent and South London (KSL) area received 68% of the long-term average (LTA) rainfall during August. Rainfall received across catchments in the area ranged from notably low to normal. Soil moisture deficits (SMDs) increased in most catchments in August due to the reduction of the effective rainfall received. Monthly mean flows (MMFs) ranged from below normal to exceptionally high in August. Groundwater levels during August continued to fall consistently across the whole KSL area, ranging from normal to exceptionally high for this time of the year. Levels in all 5 reservoirs in KSL decreased in August.

1.1 Rainfall

The whole of the KSL area received 68% of the LTA rainfall during August. Rainfall received across catchments in the area ranged from notably low to normal. Normal rainfall was recorded across most catchments in the south and in the Lower Mole in the west. Below normal rainfall was recorded in all other rainfall areas except North West Grain in the north, which received notably low rainfall. The percentage of LTA rainfall received across catchments ranged from 91% across Romney Marsh rainfall area to 45% in the North West Grain rainfall area. The highest daily rainfall total of 54.6mm for August was recorded at Eden Vale STW rain gauge in the Medway catchment on the 1 August. The next highest daily rainfall totals were on 24, 15, 23 and 30 August and ranged from 24.8mm to 8.4mm. In August, 5 dry days where less than 0.2mm of rainfall was received were registered.

1.2 Soil moisture deficit and recharge

At the end of August, SMDs in the north and in the east of the patch ranged between 102mm and 134mm. SMDs in rainfall areas in the south-west registered slightly lower values ranging from 93mm and 100mm. SMDs increased in most catchments in August due to the reduction of the effective rainfall received. Across the whole area, on average, effective rainfall received this month was at 59% of the LTA.

1.3 River flows

MMFs ranged from below normal to exceptionally high in August. Five key flow sites saw normal MMFs, one in the south, 2 in the west and 2 in the central east of the patch. Three flow

sites in the centre and one in the far east of the patch saw above normal and notably high MMFs during August. Teise at Stonebridge recorded the highest percentage LTA of 180% for the month of August, in part due to planned works at Bewl Reservoir. Teise was the only flow site that was in the exceptionally high category. Ravensbourne at Catford recorded the lowest percentage LTA of 74%, being the only flow site in the below normal category.

1.4 Groundwater levels

Groundwater levels continued to fall consistently across the whole KSL area, ranging from normal to exceptionally high in August. The Lower Greensand aquifer at Riverhead continues to register notably high groundwater levels for this time of the year. Groundwater levels in the Chalk aquifer are also mostly notably high. An exception are the key monitoring points in the west of the patch registering levels in the Chalk at Chipstead and Sweeps Lane that are assessed as normal and above normal, respectively. This is due to the drier weather seen in that area in August.

1.5 Reservoir stocks

Levels in all 5 reservoirs in KSL decreased in August.

At the end of August, reservoir levels were:

- normal at Bewl at 68% and Powdermill at 62%
- notably high at Weir Wood at 96%, Darwell at 76% and Bough Beech at 70%

1.6 Environmental impact

Hands off flow (HoF) constraints were applied to certain licensed abstractions within the Rother catchment and Little Stour/Wingham River during August. HoF constraints continue to apply to certain licensed abstractions within the Upper Stour and Medway catchments. Seven fluvial flood alerts and one flood warning were issued in the first 2 days of August.

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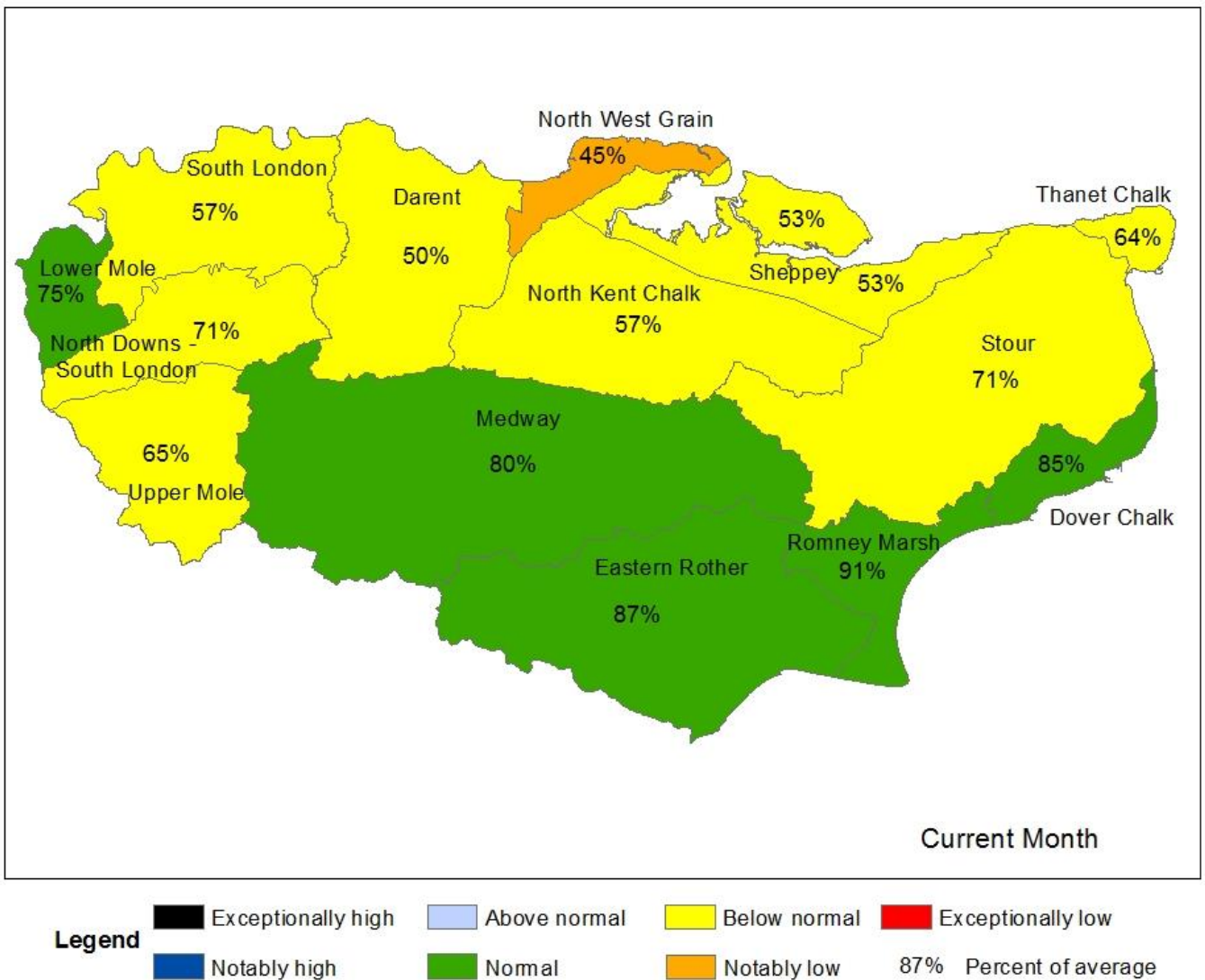
Contact Details: 03708 506 506

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2 Rainfall

2.1 Rainfall map one

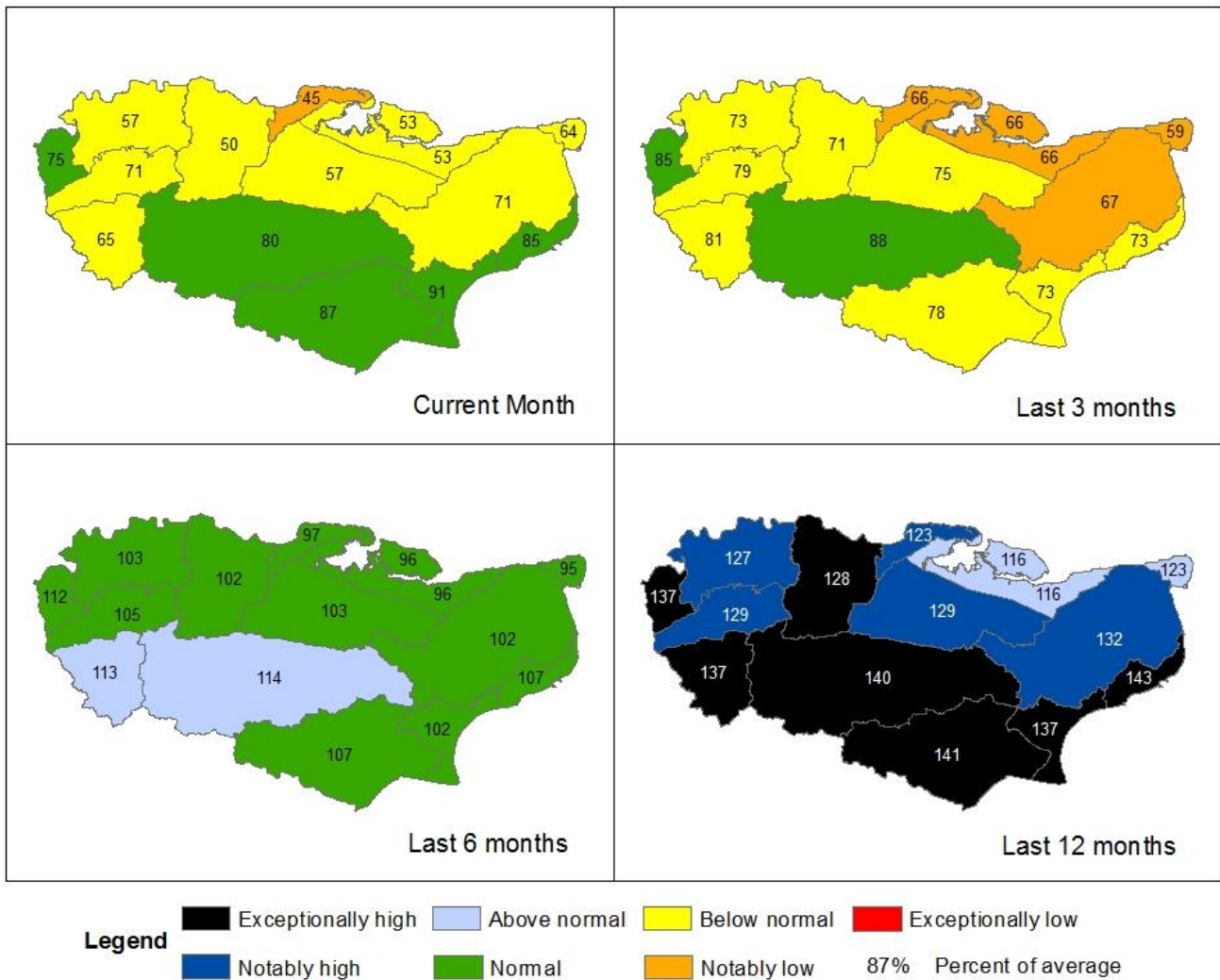
Figure 2.1: Total rainfall for hydrological areas across Kent and South London for the current month (up to 31 August 2024), classed relative to an analysis of respective historic totals. Table available in the appendices with more detailed information.



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

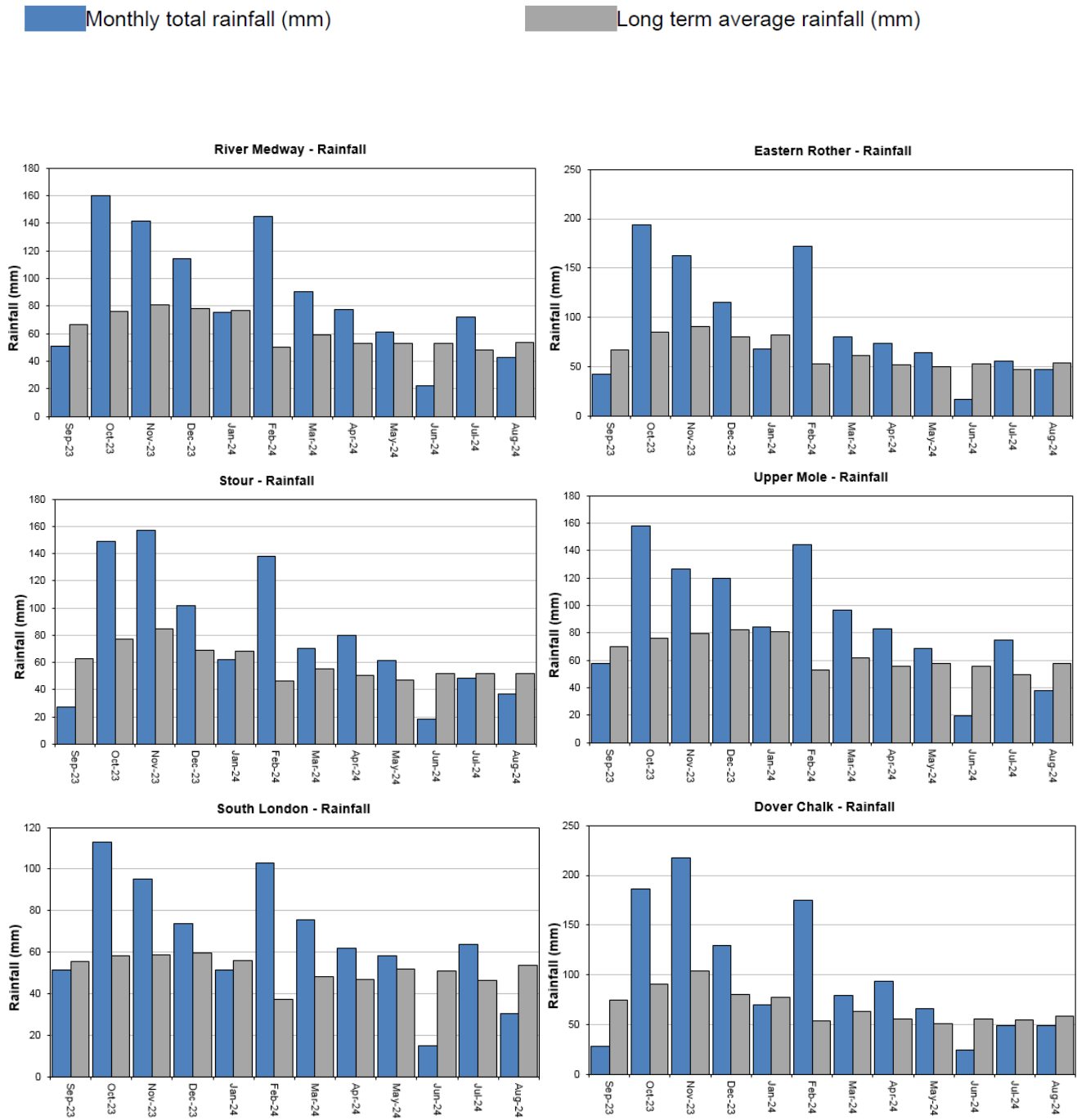
Figure 2.2: Total rainfall for hydrological areas for the current month (up to 31 August 2024), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

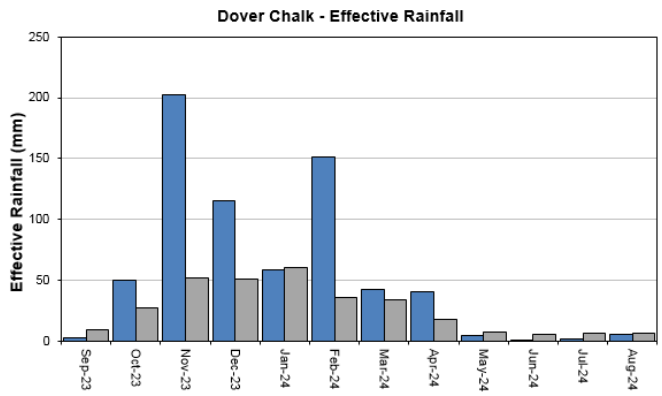
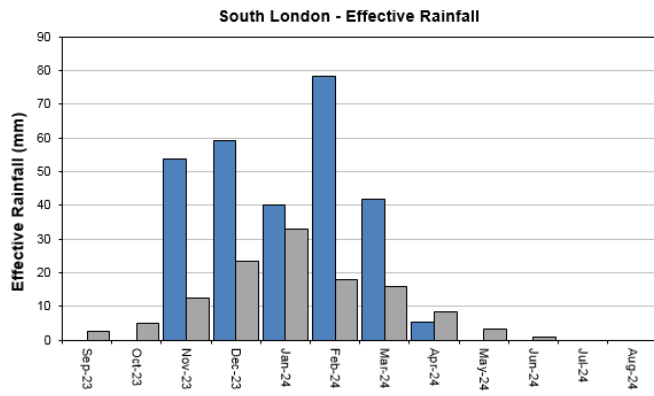
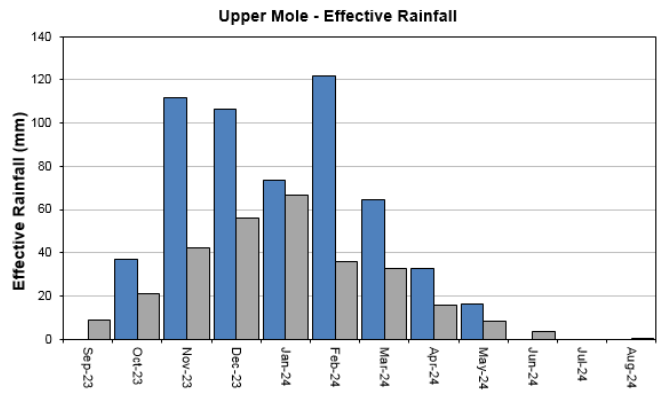
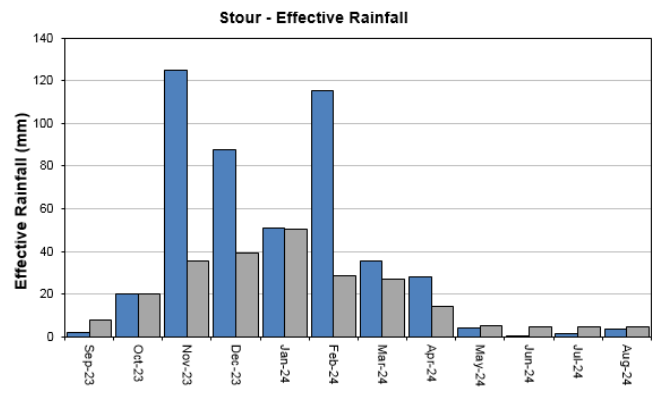
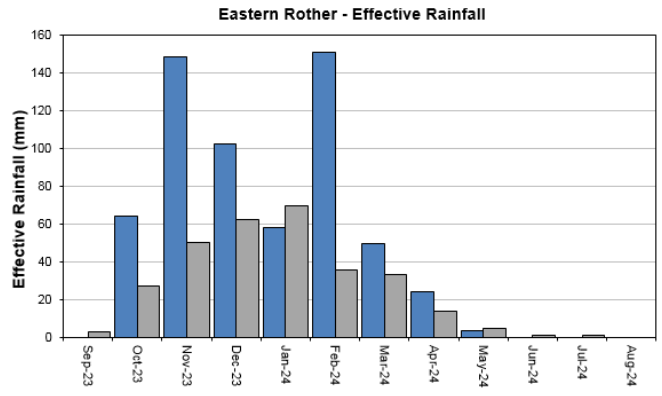
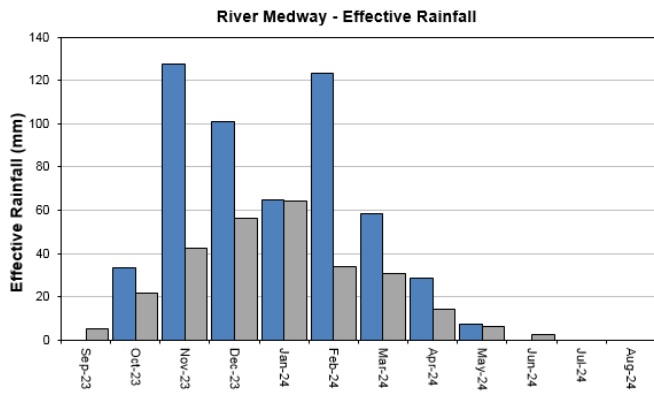


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2.3 Rainfall and effective rainfall charts

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).





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) 31 day Total | August % LTA | Effective Rainfall (mm) 31 day Total | August % LTA |
|--------|--------------------------------|----------------------------|--------------|--------------------------------------|--------------|
| 6230TH | North Downs - South London (W) | 43 | 71% | 3 | 58% |
| 6505TH | Upper Mole | 38 | 65% | 0 | 0% |
| 6508TH | South London | 31 | 57% | 0 | - |
| 6706So | Darent | 26 | 50% | 2 | 35% |
| 6707So | North Kent Chalk | 31 | 57% | 2 | 49% |
| 6708So | Stour | 37 | 71% | 3 | 71% |
| 6709So | Dover Chalk | 49 | 85% | 5 | 83% |
| 6710So | Thanet Chalk | 29 | 64% | 3 | 58% |
| 6809So | Medway | 43 | 80% | 0 | - |
| 6810So | Eastern Rother | 47 | 87% | 0 | - |

| | | | | | |
|--------|-----------------------------|----|-----|---|-----|
| 6811So | Romney Marsh | 44 | 91% | 0 | - |
| 6812So | North West Grain | 20 | 45% | 0 | - |
| 6813So | Sheppey | 24 | 53% | 0 | - |
| | Kent & South London Average | 35 | 68% | 1 | 59% |

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.

Summer period 01/04/2024 to 31/08/2024

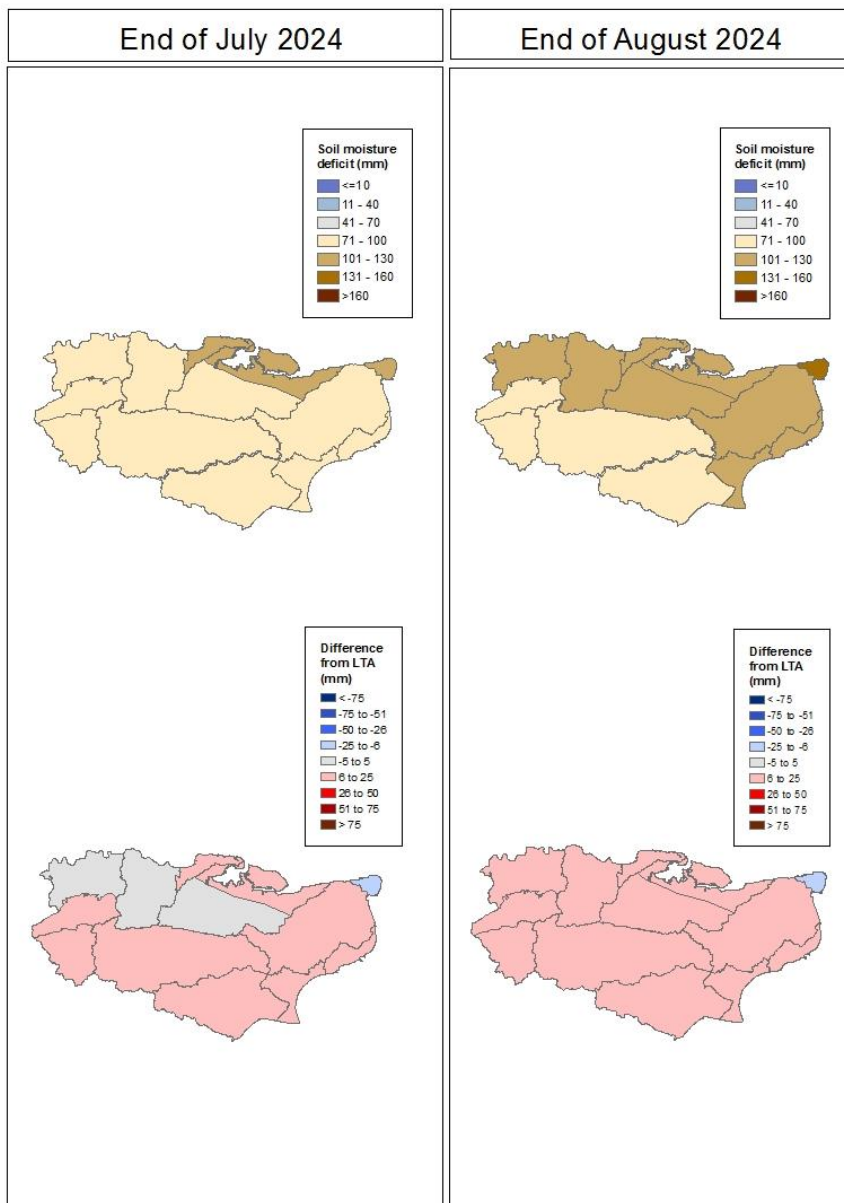
| Number | Hydrological Area | Seasonal Rainfall (mm) Total | % LTA | Seasonal Effective Rainfall (mm) Total | % LTA |
|--------|--------------------------------|------------------------------|-------|--|-------|
| 6230TH | North Downs - South London (W) | 273 | 95% | 47 | 97% |
| 6505TH | Upper Mole | 283 | 103% | 49 | 177% |
| 6508TH | South London | 230 | 92% | 5 | 41% |
| 6706So | Darent | 238 | 92% | 35 | 93% |
| 6707So | North Kent Chalk | 241 | 93% | 31 | 81% |
| 6708So | Stour | 245 | 97% | 38 | 112% |
| 6709So | Dover Chalk | 281 | 103% | 52 | 123% |
| 6710So | Thanet Chalk | 204 | 91% | 13 | 61% |
| 6809So | Medway | 275 | 105% | 36 | 154% |
| 6810So | Eastern Rother | 258 | 101% | 28 | 135% |

| | | | | | |
|--------|-----------------------------|-----|-----|----|------|
| 6811So | Romney Marsh | 230 | 97% | 21 | 166% |
| 6812So | North West Grain | 194 | 88% | 6 | 66% |
| 6813So | Sheppey | 203 | 90% | 6 | 81% |
| | Kent & South London Average | 243 | 96% | 28 | 109% |

3 Soil moisture deficit

3.1 Soil moisture deficit map

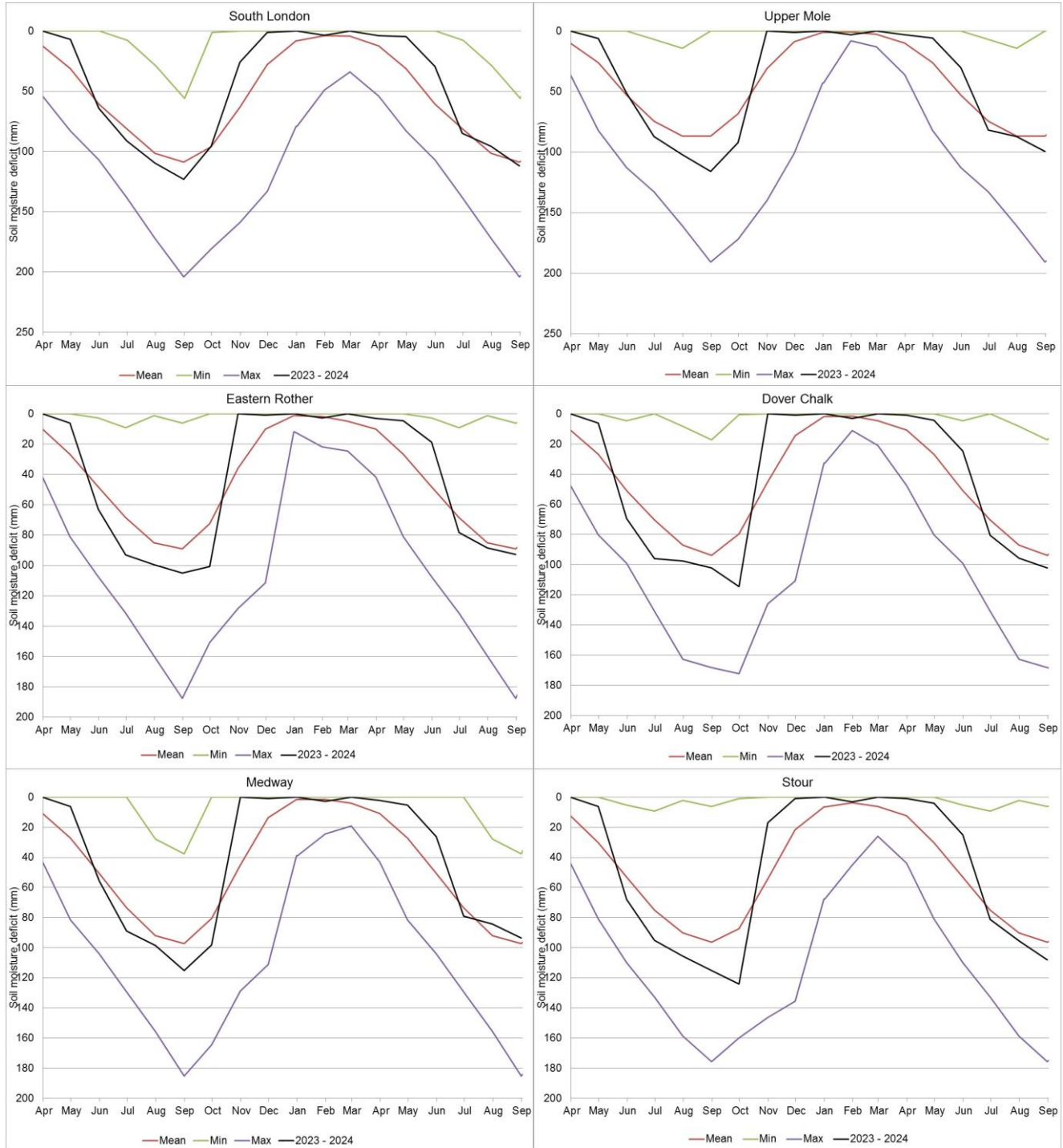
Figure 3.1: Soil moisture deficits for weeks ending 31 July (left panel) and 31 August 2024 (right panel). Top row shows actual soil moisture deficits (mm) and bottom row shows the difference (mm) of the actual from the 1961 to 90 long term average soil moisture deficits. EA Soil Moisture Deficit data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

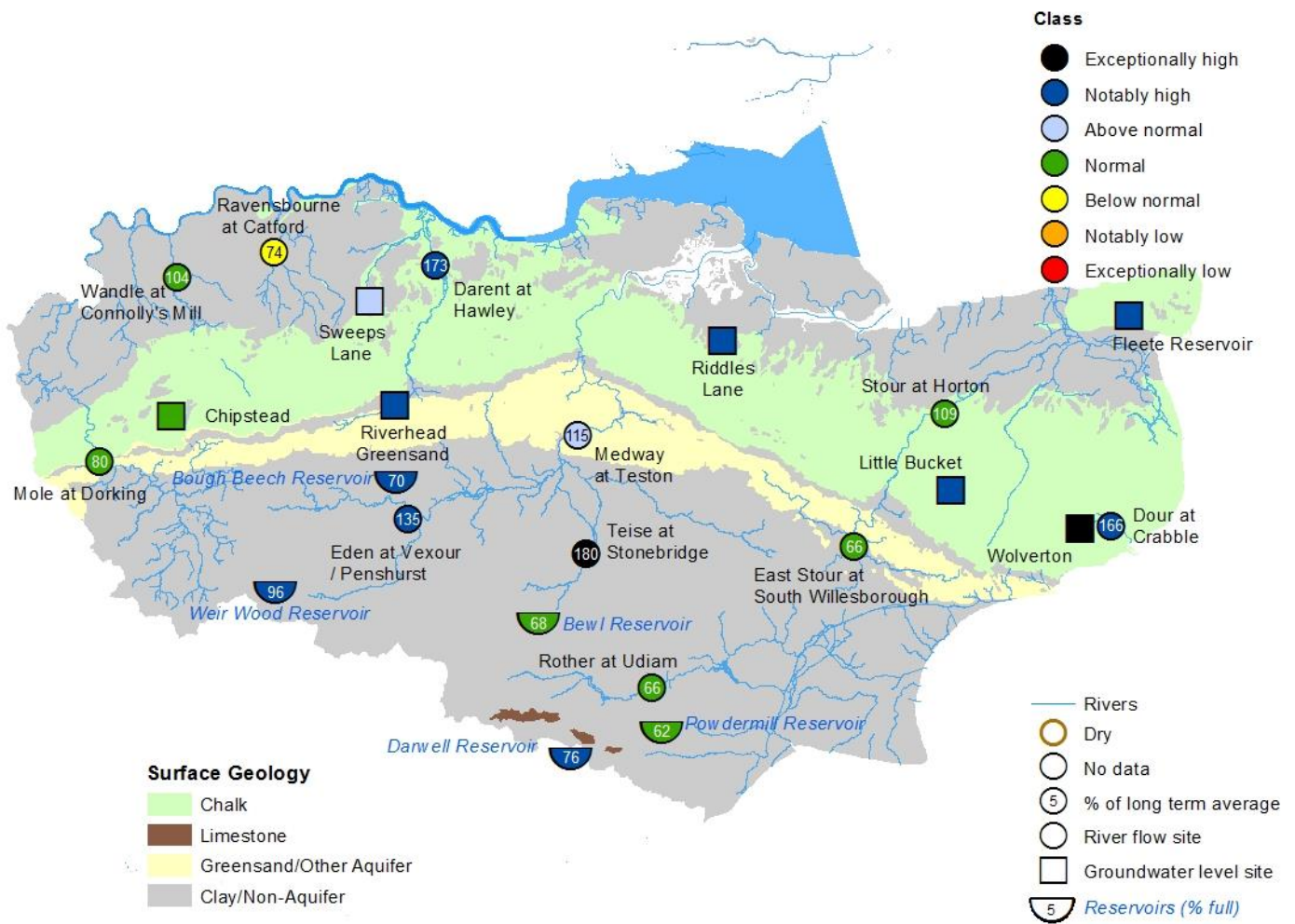
Figure 3.3: This is a second estimate of soil moisture deficit for the hydrological areas across the Kent and South London area. There may be significant variation within each area which must be considered when interpreting these data. EA soil moisture deficit data (Source EA Soil Moisture Model).

| Number | Hydrological Area | SMD (mm) Day 31 | End August LTA |
|--------|--------------------------------|-----------------|----------------|
| 6230TH | North Downs - South London (W) | 100 | 87 |
| 6505TH | Upper Mole | 100 | 82 |
| 6508TH | South London | 112 | 101 |
| 6706So | Darent | 109 | 97 |
| 6707So | North Kent Chalk | 106 | 94 |
| 6708So | Stour | 108 | 94 |
| 6709So | Dover Chalk | 102 | 91 |
| 6710So | Thanet Chalk | 134 | 142 |
| 6809So | Medway | 94 | 83 |
| 6810So | Eastern Rother | 93 | 83 |
| 6811So | Romney Marsh | 103 | 90 |
| 6812So | North West Grain | 121 | 107 |
| 6813So | Sheppey | 122 | 105 |
| | Kent & South London Average | 108 | 97 |

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 August 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic August monthly means. End of month groundwater levels for indicator sites for August 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic August levels. Tables available in the appendices with detailed information. End of month levels for reservoirs for August 2024, expressed as percent full. (Source: Water Companies).



*Flows at some sites might be affected by overestimation due to weed growth at this time of year

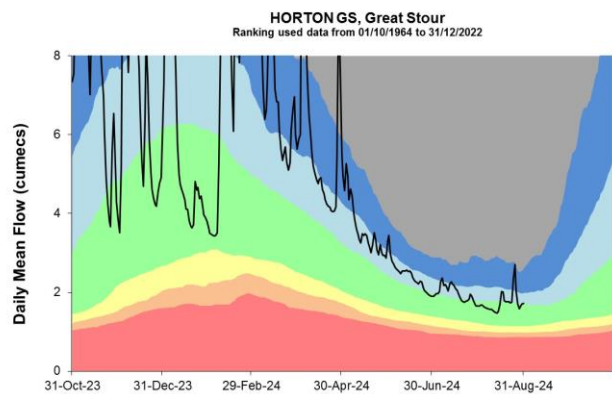
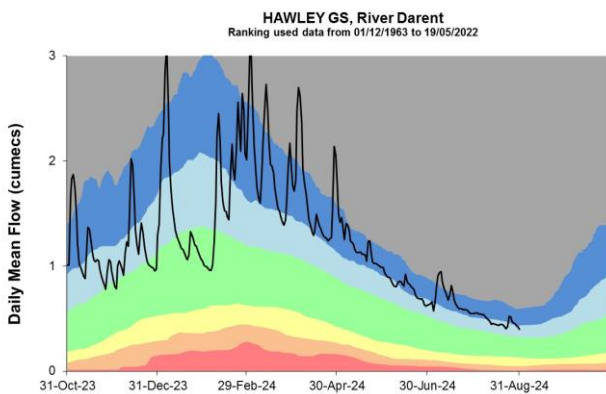
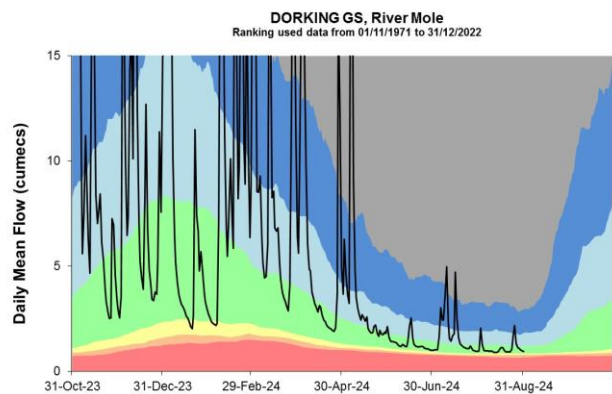
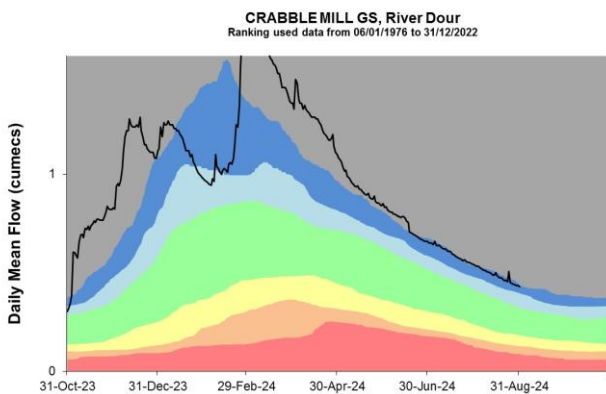
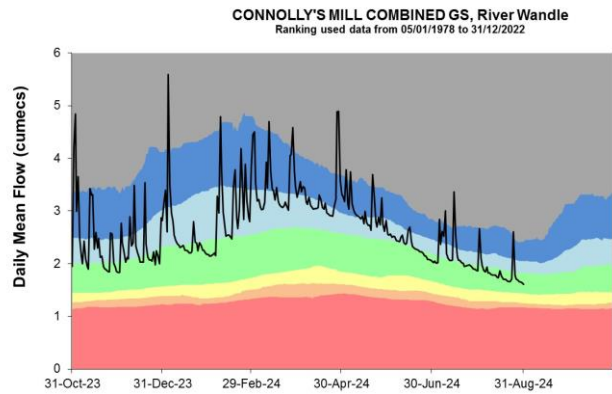
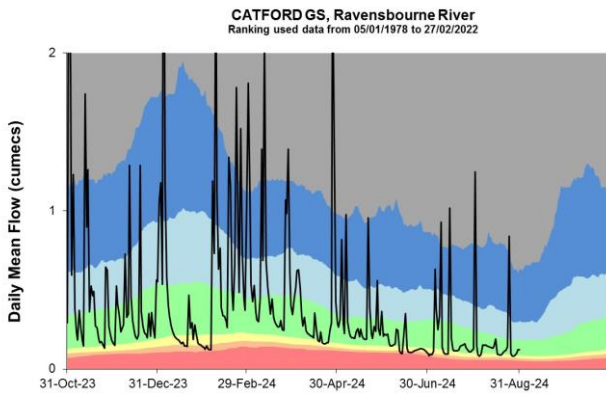
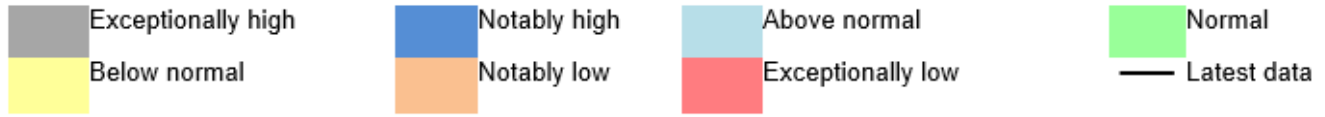
**Weir Wood Reservoir is currently offline

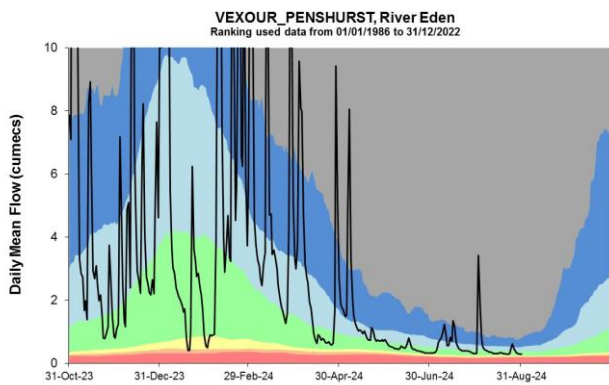
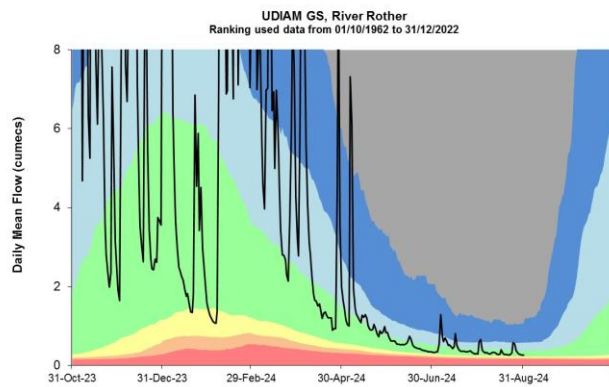
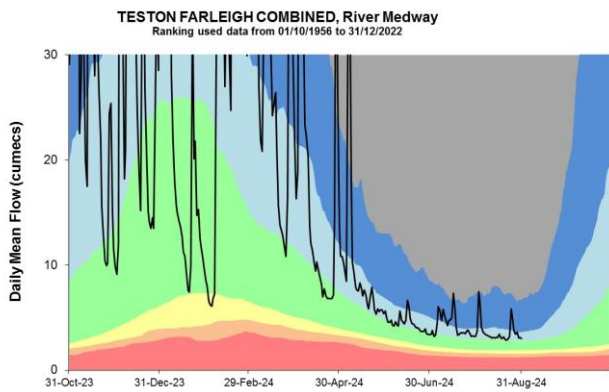
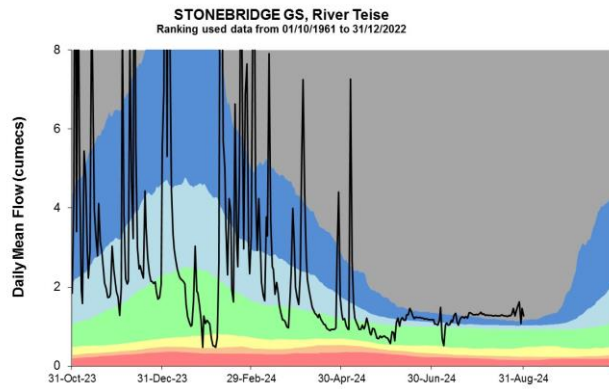
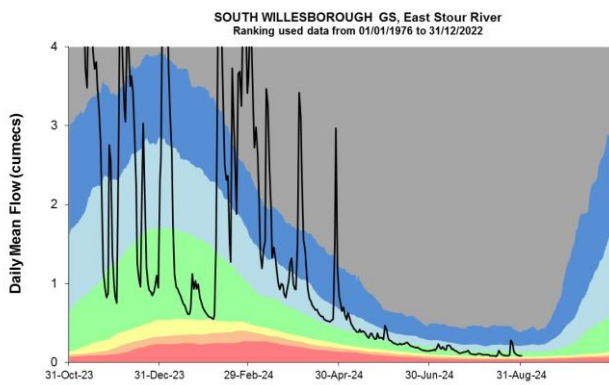
***Flows at gauging stations in the Medway catchment might be affected by upstream reservoir releases

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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.



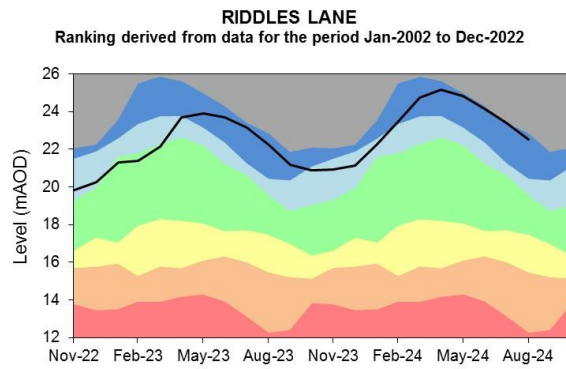
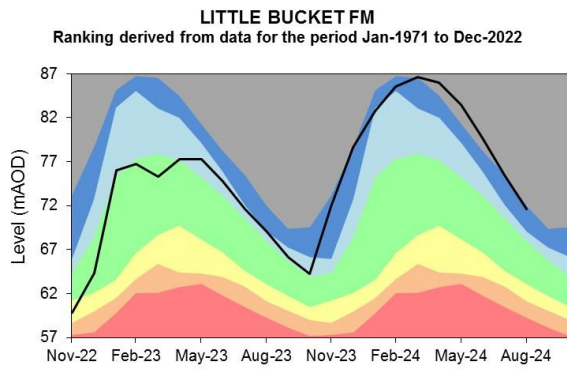
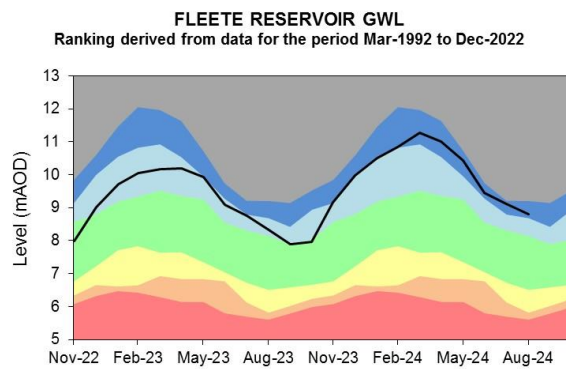
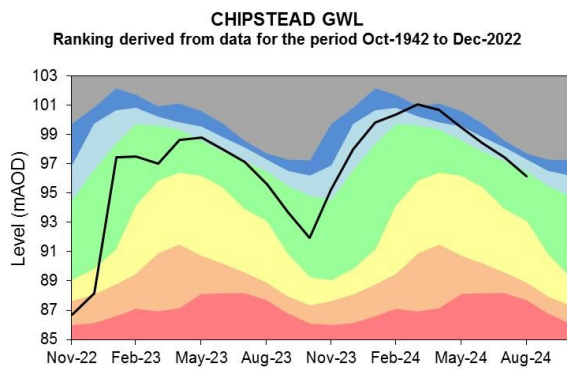
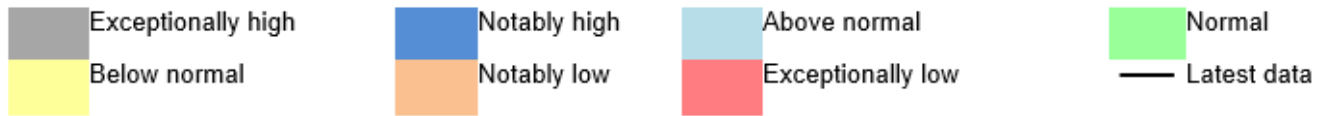


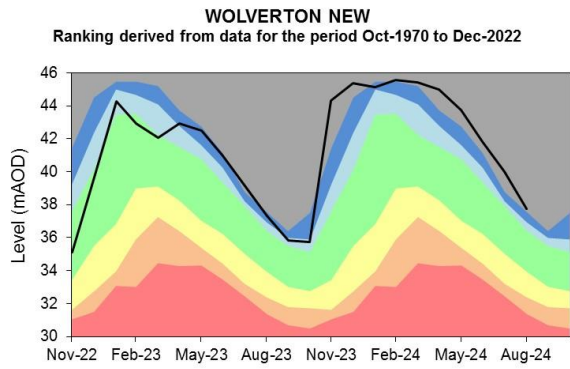
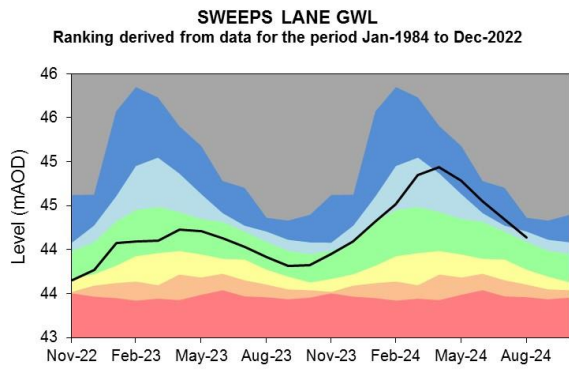
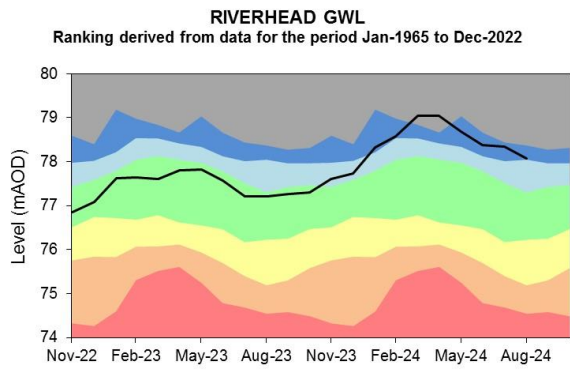
Source: Environment Agency.

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.



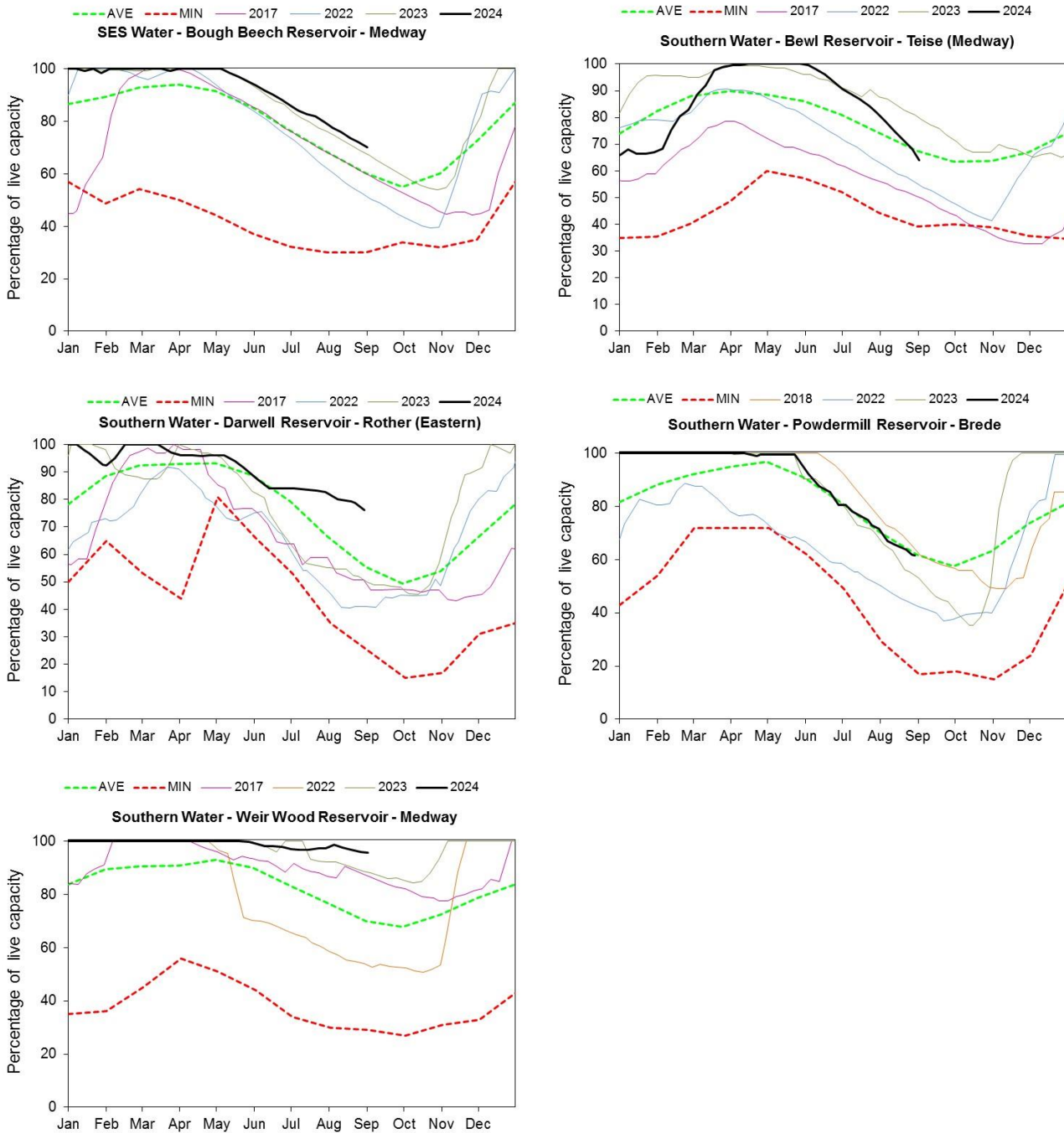


Source: Environment Agency, 2024.

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 | Aug 2024 rainfall % of long term average 1961 to 1990 | Aug 2024 band | Jun 2024 to August cumulative band | Mar 2024 to August cumulative band | Sep 2023 to August cumulative band |
|----------------------------|---|---------------|------------------------------------|------------------------------------|------------------------------------|
| North Downs - South London | 71 | Below Normal | Below normal | Normal | Notably high |
| Upper Mole | 65 | Below Normal | Below normal | Above normal | Exceptionally high |
| South London | 57 | Below Normal | Below normal | Normal | Notably high |
| River Darent | 50 | Below Normal | Below normal | Normal | Exceptionally high |
| North Kent Chalk | 57 | Below Normal | Below normal | Normal | Notably high |
| Stour | 71 | Below Normal | Notably low | Normal | Notably high |
| Dover Chalk | 85 | Normal | Below normal | Normal | Exceptionally high |
| Thanet Chalk | 64 | Below Normal | Notably low | Normal | Above normal |
| River Medway | 80 | Normal | Normal | Above normal | Exceptionally high |

| | | | | | |
|------------------|----|--------------|--------------|--------|--------------------|
| Eastern Rother | 87 | Normal | Below normal | Normal | Exceptionally high |
| Romney Marsh | 91 | Normal | Below normal | Normal | Exceptionally high |
| North West Grain | 45 | Notably Low | Notably low | Normal | Notably high |
| Sheppy | 53 | Below Normal | Notably low | Normal | Above normal |

8.2 River flows table

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

8.3 Groundwater table

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