# Monthly water situation report: Kent and South London Area

## 1 Summary - July 2024

The whole of the Kent and South London (KSL) area received 119% of the long-term average (LTA) rainfall during July. Rainfall received across catchments in the area ranged from normal to above normal. Soil moisture deficits (SMDs) within all rainfall areas in KSL increased slightly throughout the month of July. The key flow sites saw ranged from normal to exceptionally high MMFs during July. Groundwater levels in the Chalk in July 2024 ranged from exceptionally high to above normal for this time of the year. Groundwater levels continue to fall consistently across Kent and South London aquifers. Levels in 4 out of 5 reservoirs in KSL decreased in July.

### 1.1 Rainfall

The whole of the KSL area received slightly above average rainfall with 119% of the LTA during July. Rainfall received across catchments in the area ranged from normal to above normal. The above normal rainfall was received in the Medway and Upper Mole areas. The percentage of LTA rainfall received across catchments ranged from 81% across Thanet Chalk rainfall area to 163% in the Lower Mole. The highest daily rainfall total of 33.0mm for July was recorded at Hockers Lane PS RG in the North Kent Chalk catchment on the 15 July. The next highest daily rainfall totals were on 5, 7, 9 and 13 July and ranged from 17.8mm to 28.6mm. In July, there was only one day where less than 0.2mm of rainfall fell, this was the 19 July.

### 1.2 Soil moisture deficit and recharge

Soil moisture deficits (SMDs) continue to fall as expected for this time of year. SMDs within all rainfall areas in KSL increased slightly throughout the month of July compared to June. At the end of the month SMDs were, on average, slightly higher than the end of month LTA. This is in line with the average and higher-than-average rainfall totals observed during July. The whole KSL area received 71% of the LTA effective rainfall in July, which resulted in the only slight increase in soil moisture deficits seen in July.

### 1.3 River flows

In July the MMFs ranged from normal to exceptionally high. Exceptionally high flows were observed at the River Dour at Crabble in the east, the Teise at Stonebridge and the Darent at Hawley which had the highest percentage LTA of 210%. Above normal flows were seen at the

Stour at Horton, the Medway at Teston, Eden at Vexhour, Wandle at Connollys Mill and the Mole at Dorking. Flows were normal in the Rother at Udiam, East Stour at South Willesborough and the Ravensbourne at Catford which had the lowest percentage LTA of 77%. Many sites experienced exceptionally high peaks in response to rainfall at the beginning of the month, as the daily mean charts show.

## 1.4 Groundwater levels

Groundwater levels ranged from exceptionally high to above normal across the KSL area. Many of the groundwater sites recorded notably high levels of groundwater for July. While Chipstead in the west of the catchment recorded above normal levels and Wolverton in the east saw exceptionally high levels reaching 40.02 mAOD, which is the highest water level recorded at Wolverton in July since records began in 1971. Although levels in the Chalk remain exceptionally high in the east of the patch, and notably high in most of the west, levels continue to fall consistently across the area. This also applies to groundwater levels in the Greensand aquifer at Riverhead.

## 1.5 Reservoir stocks

At the end of July, reservoir levels were:

- normal at Bewl at 82%, and Powdermill at 72%
- notably high at Weir Wood at 97%, Darwell at 83% and Bough Beech at 80%

Levels in 4 reservoirs in KSL decreased in July, although levels at Weir Wood slightly increased as this reservoir is currently offline.

## 1.6 Environmental impact

Hands off flow constraints continue to apply to certain licensed abstractions within the Upper Stour and Medway catchments.

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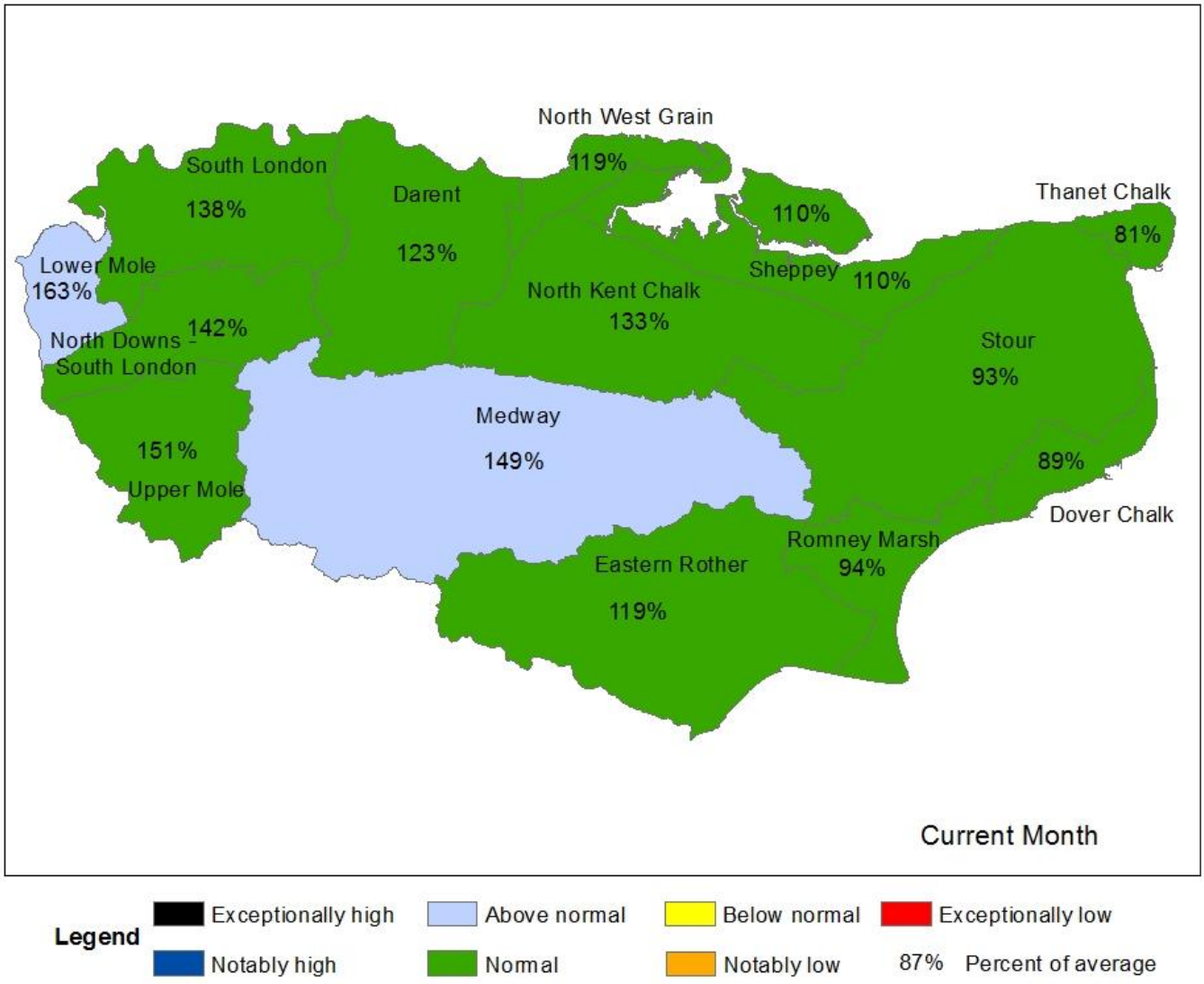
# 2 Rainfall

## 2.1 Rainfall map one

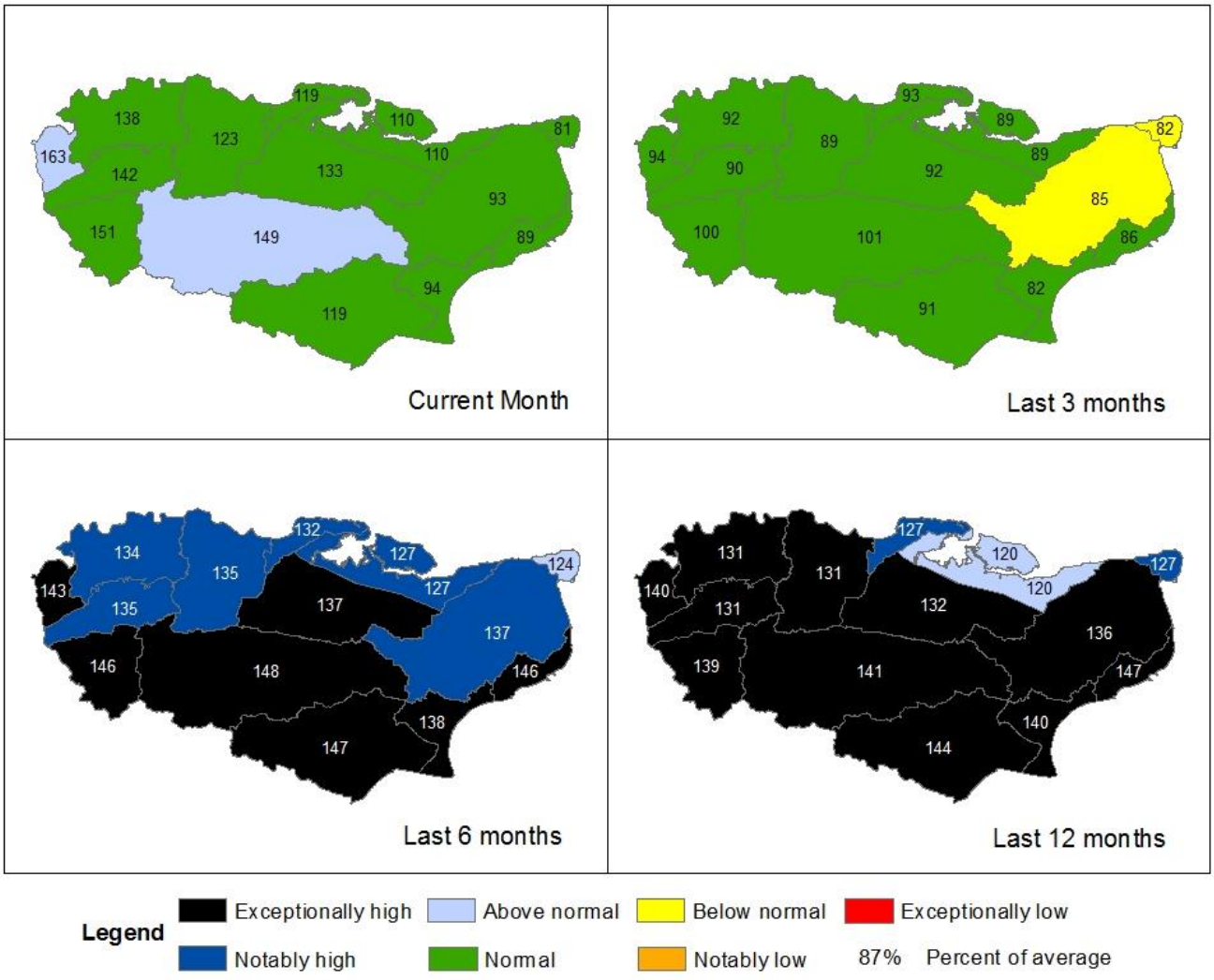
Figure 2.1: Total rainfall for hydrological areas across Kent and South London for the current month (up to 31 July 2024), classed relative to an analysis of respective historic totals. Table available in the appendices with more detailed information.




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

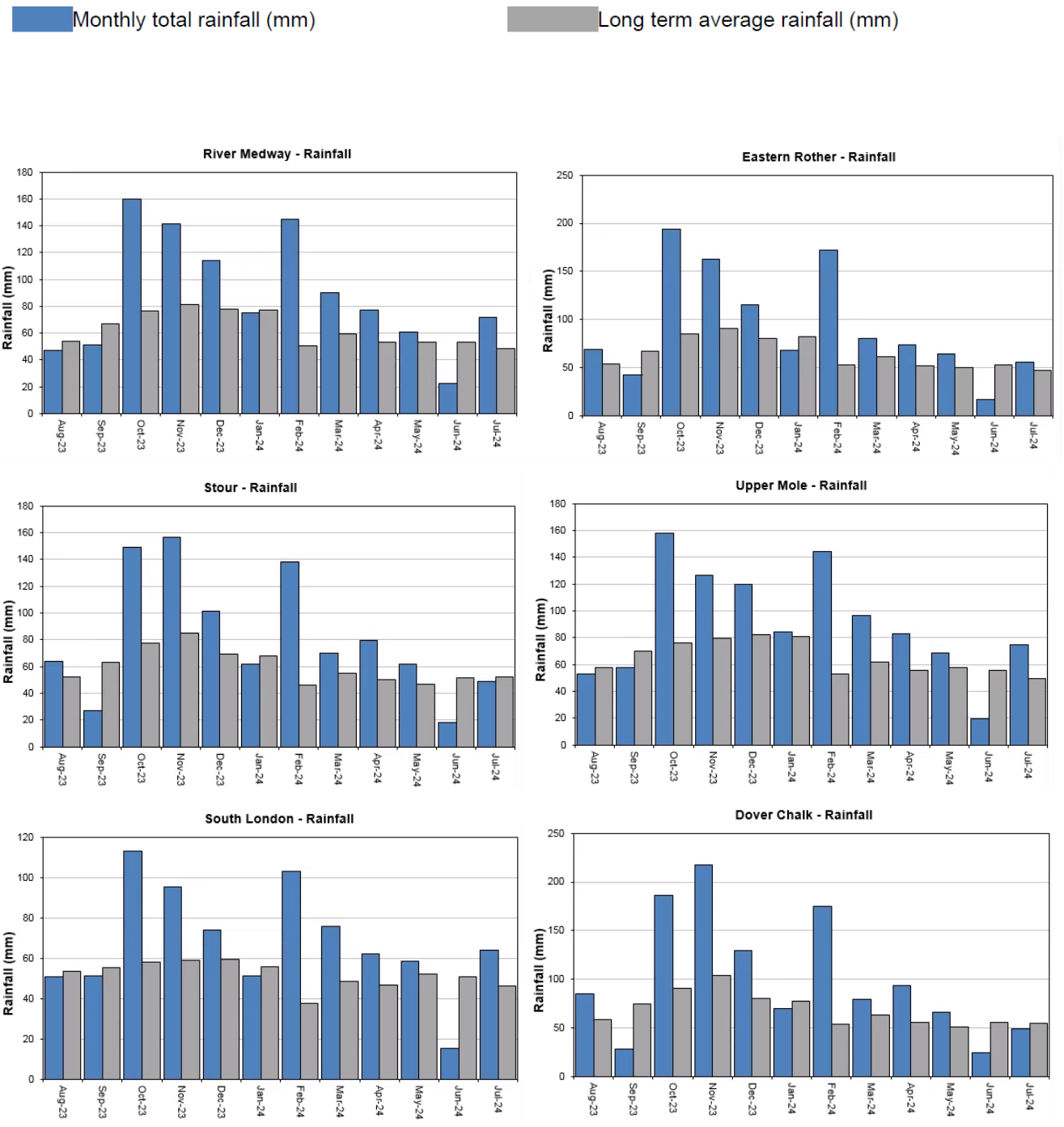
Figure 2.2: Total rainfall for hydrological areas for the current month (up to 31 July 2024), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

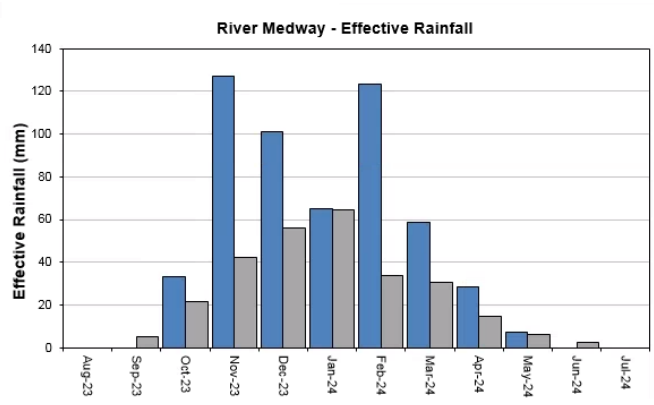


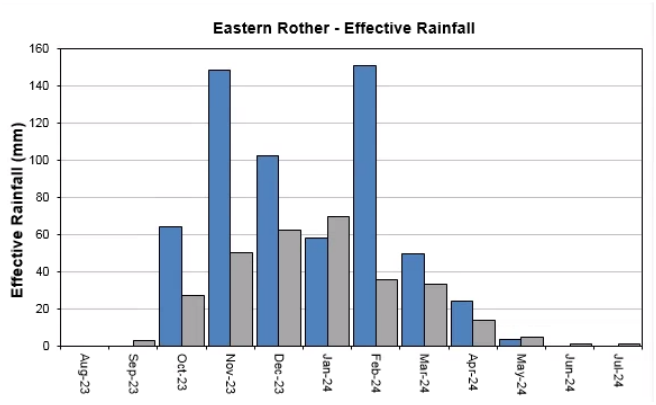

HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2024). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Includes material based on Ordnance Survey 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.

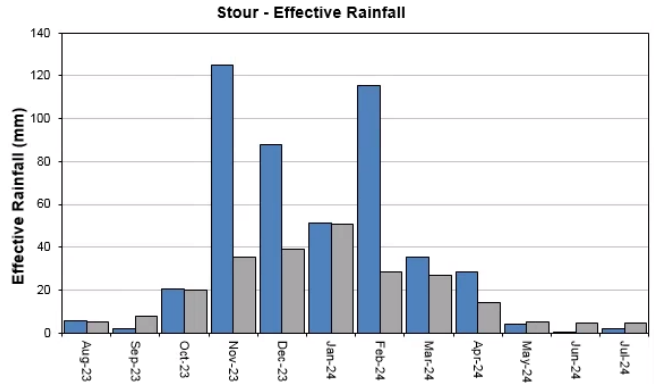
## 2.3 Rainfall and effective rainfall charts

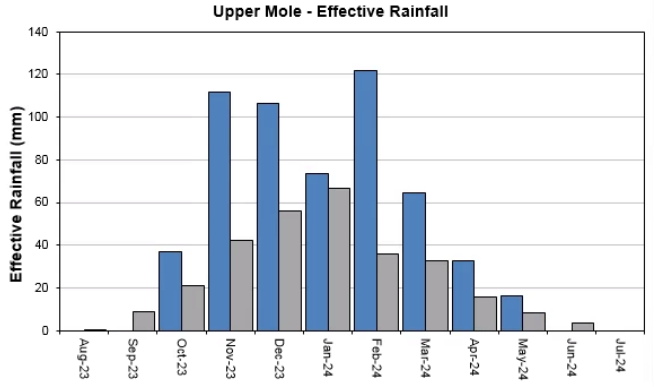
Figure 2.3: Monthly rainfall and effective rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average (LTA) for a selection of areal units. HadUK rainfall data. (Source: Met Office. Crown copyright, 2024). EA effective rainfall data (Source EA Soil Moisture Model).

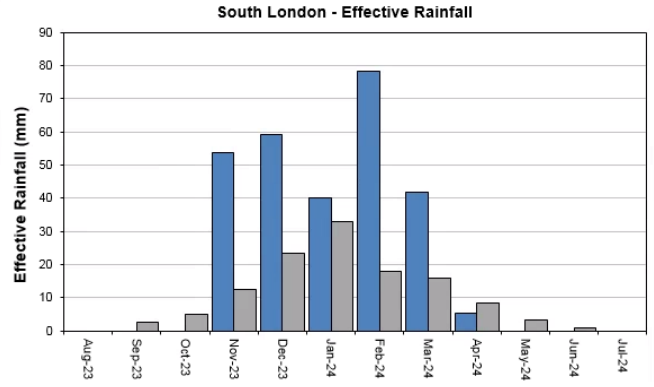


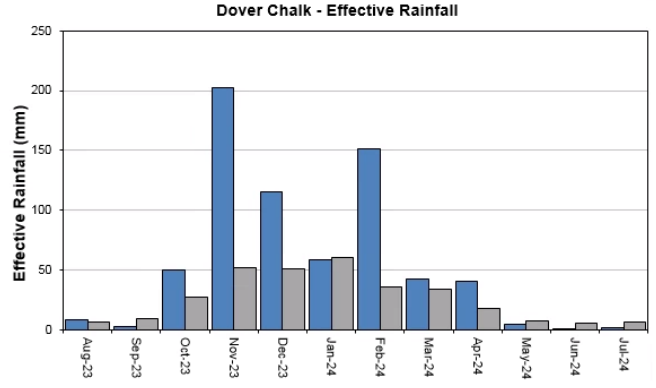

River Medway - Effective Rainfall
Effective Rainfall (mm)
0
20
40
60
80
100
120
140
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24


Eastern Rother - Effective Rainfall
Effective Rainfall (mm)
0
20
40
60
80
100
120
140
160
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24


Stour - Effective Rainfall
Effective Rainfall (mm)
0
20
40
60
80
100
120
140
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24


Upper Mole - Effective Rainfall
Effective Rainfall (mm)
0
20
40
60
80
100
120
140
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24


South London - Effective Rainfall
Effective Rainfall (mm)
0
10
20
30
40
50
60
70
80
90
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24


Dover Chalk - Effective Rainfall
Effective Rainfall (mm)
0
50
100
150
200
250
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24

## 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 | July% LTA | Effective Rainfall (mm) 31 day Total | July % LTA |
|---|---|---|---|---|---|
| 6230TH | North Downs - South London (W) | 73 | 142% | 7 | 145% |
| 6505TH | Upper Mole | 74 | 151% | 0 | 0% |
| 6508TH | South London | 64 | 139% | 0 | 0% |
| 6706So | Darent | 61 | 124% | 5 | 120% |
| 6707So | North Kent Chalk | 67 | 134% | 5 | 115% |
| 6708So | Stour | 49 | 94% | 2 | 38% |
| 6709So | Dover Chalk | 49 | 90% | 2 | 29% |
| 6710So | Thanet Chalk | 39 | 81% | 0 | 11% |
| 6809So | Medway | 72 | 149% | 0 | 0% |
| 6810So | Eastern Rother | 56 | 118% | 0 | 0% |

| | | | | | |
|---|---|---|---|---|---|
| 6811So | Romney Marsh | 46 | 95% | 0 | 0% |
| 6812So | North West Grain | 52 | 119% | 0 | 0% |
| 6813So | Sheppey | 52 | 110% | 0 | 0% |
| | Kent & South London Average | 58 | 119% | 2 | 71% |

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 31/07/2024

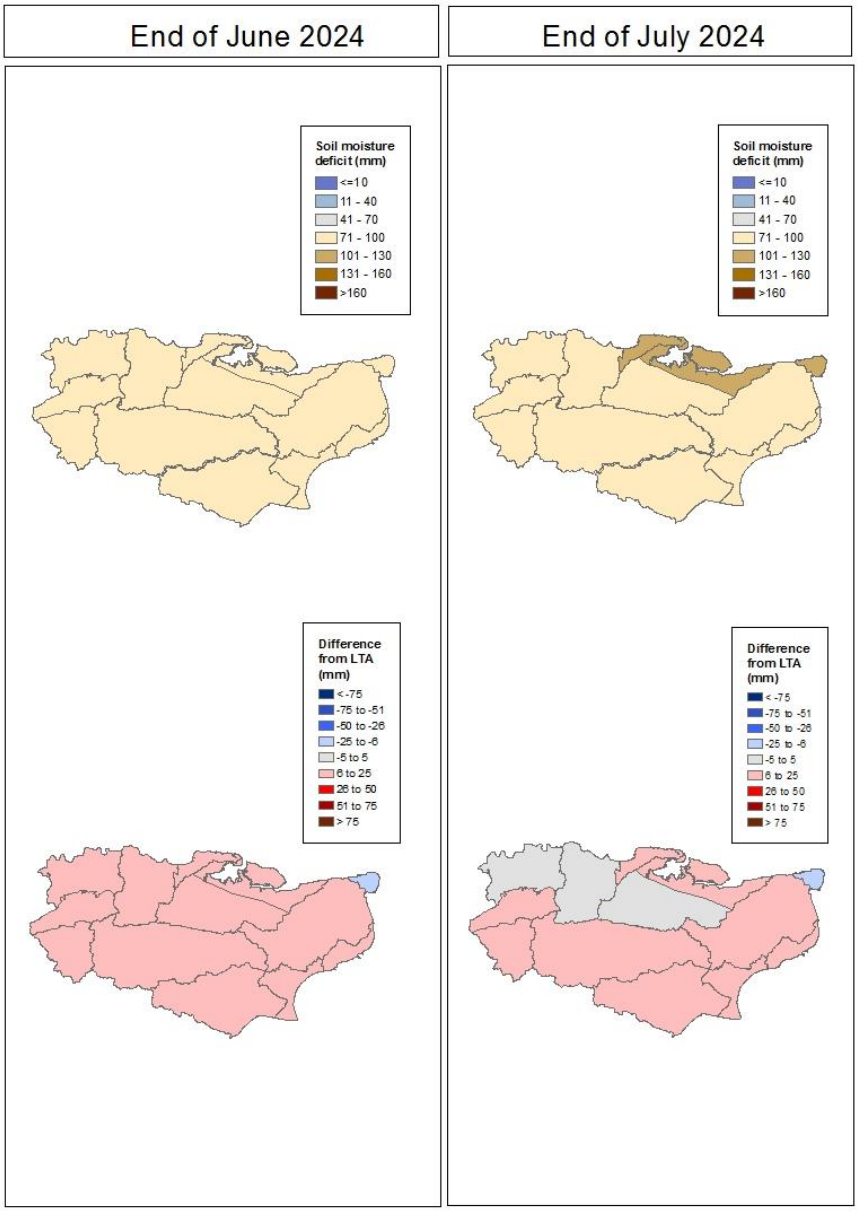
| Number | Hydrological Area | Seasonal Rainfall (mm) Total | % LTA | Seasonal Effective Rainfall (mm) Total | % LTA |
|---|---|---|---|---|---|
| 6230TH | North Downs - South London (W) | 230 | 102% | 43 | 102% |
| 6505TH | Upper Mole | 246 | 113% | 49 | 180% |
| 6508TH | South London | 199 | 102% | 5 | 41% |
| 6706So | Darent | 212 | 103% | 33 | 102% |
| 6707So | North Kent Chalk | 210 | 102% | 29 | 85% |
| 6708So | Stour | 208 | 103% | 34 | 119% |
| 6709So | Dover Chalk | 232 | 108% | 47 | 129% |
| 6710So | Thanet Chalk | 175 | 98% | 11 | 62% |
| 6809So | Medway | 232 | 112% | 36 | 154% |
| 6810So | Eastern Rother | 211 | 105% | 28 | 135% |

| | | | | | |
|---|---|---|---|---|---|
| 6811So | Romney Marsh | 186 | 98% | 21 | 166% |
| 6812So | North West Grain | 174 | 99% | 6 | 66% |
| 6813So | Sheppey | 179 | 100% | 6 | 81% |
| | Kent & South London Average | 207 | 104% | 27 | 115% |

# 3 Soil moisture deficit

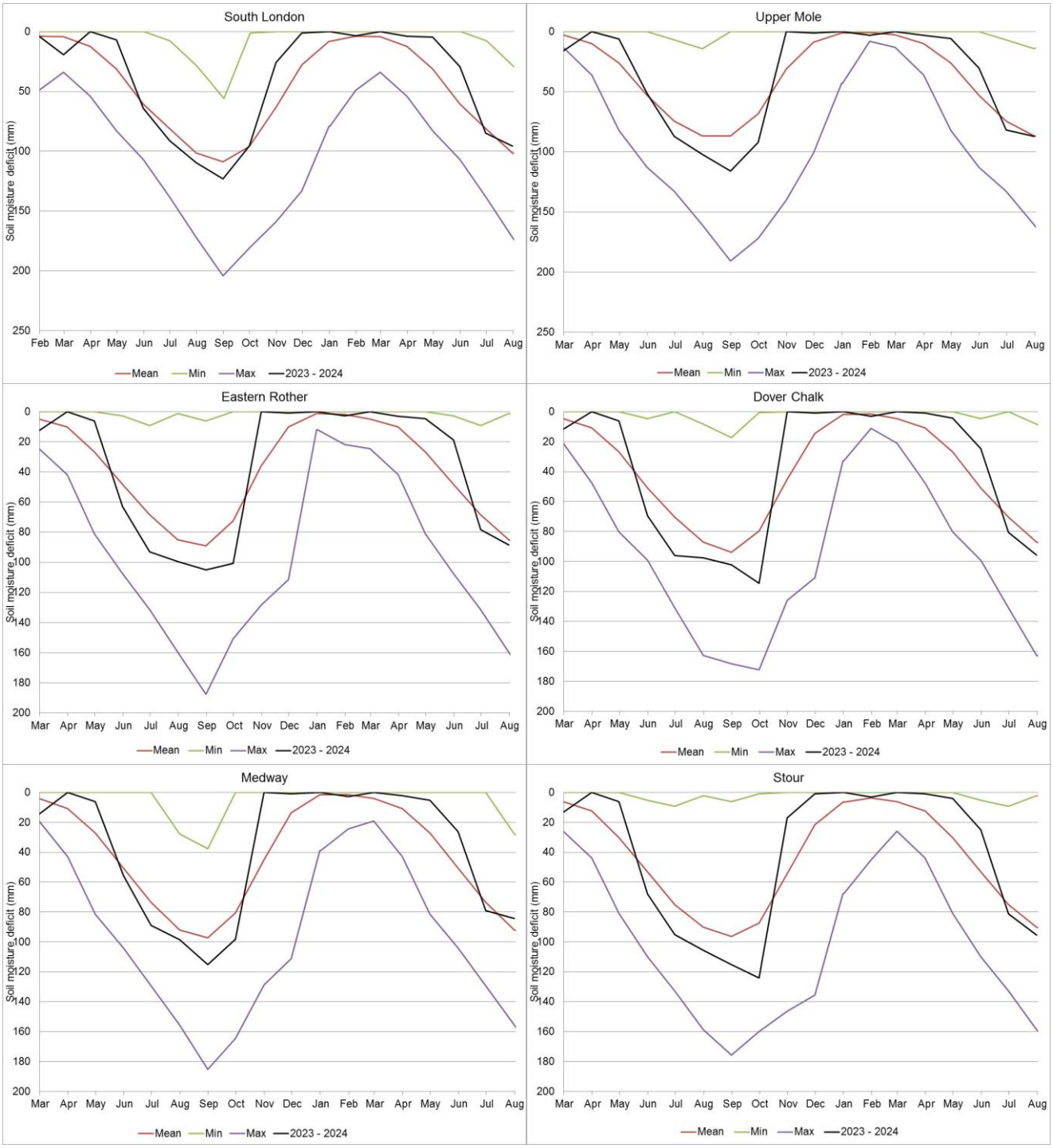
## 3.1 Soil moisture deficit map

Figure 3.1: Soil moisture deficits for weeks ending 30 June (left panel) and 31 July 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).



## 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).



## 3.3 Soil moisture deficit table

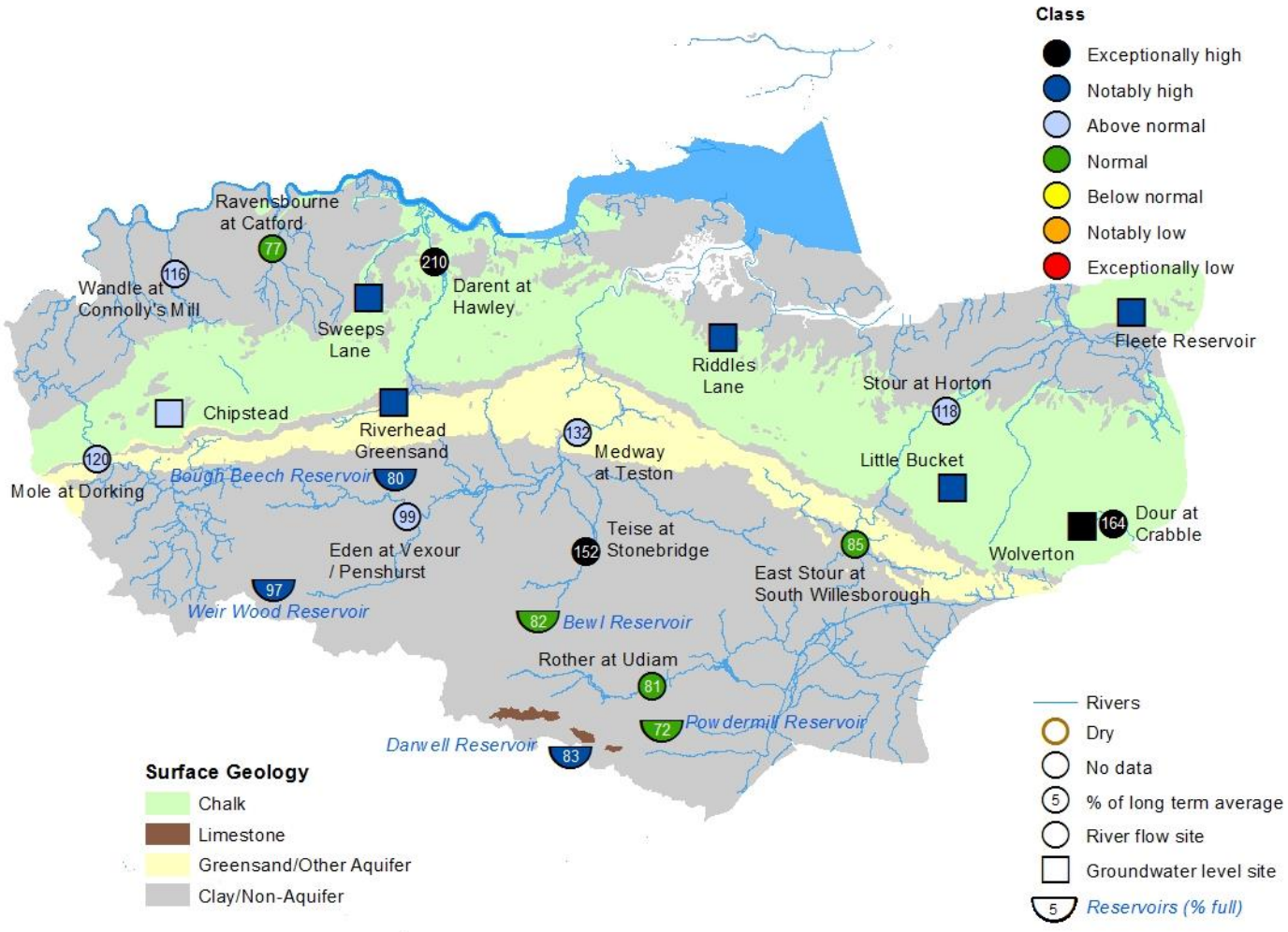
Figure 3.3: This is a second estimate of soil moisture deficit for the hydrological areas across the Kent and South London area. There may be significant variation within each area which must be considered when interpreting these data. EA soil moisture deficit data (Source EA Soil Moisture Model).

| Number | Hydrological Area | SMD (mm) Day 31 | End July LTA |
|---|---|---|---|
| 6230TH | North Downs - South London (W) | 89 | 80 |
| 6505TH | Upper Mole | 87 | 78 |
| 6508TH | South London | 96 | 93 |
| 6706So | Darent | 93 | 88 |
| 6707So | North Kent Chalk | 91 | 86 |
| 6708So | Stour | 95 | 86 |
| 6709So | Dover Chalk | 96 | 83 |
| 6710So | Thanet Chalk | 114 | 126 |
| 6809So | Medway | 84 | 78 |
| 6810So | Eastern Rother | 89 | 78 |
| 6811So | Romney Marsh | 97 | 84 |
| 6812So | North West Grain | 102 | 96 |
| 6813So | Sheppey | 103 | 95 |
| | Kent & South London Average | 95 | 89 |

# 4 River flows, groundwater levels and reservoir stocks

## 4.1 River flows, groundwater levels and reservoir stocks map

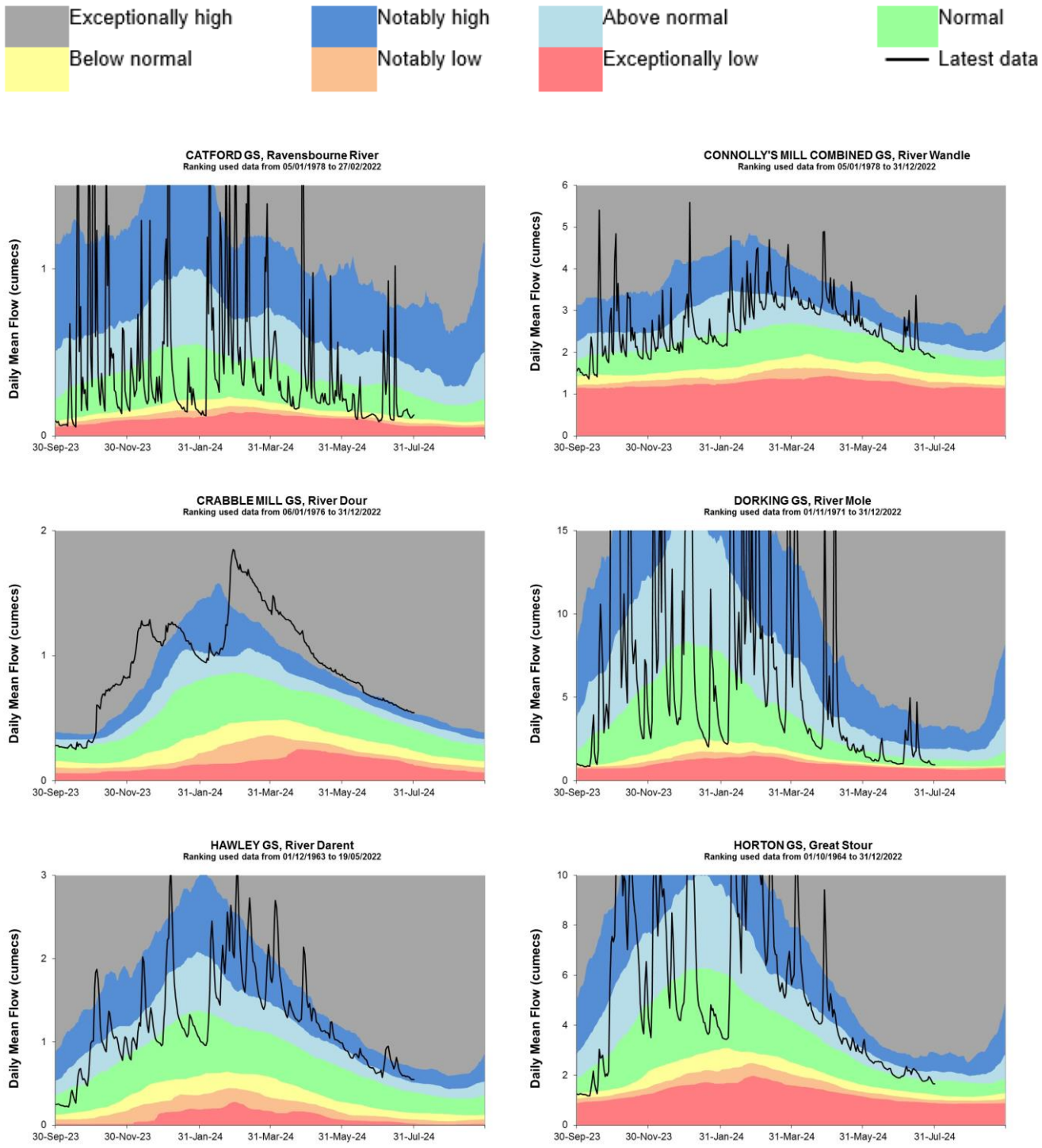
Figure 4.1: Monthly mean river flows* ** *** for indicator sites for July 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic July monthly means. End of month groundwater levels for indicator sites for July 2024, expressed as a percentage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

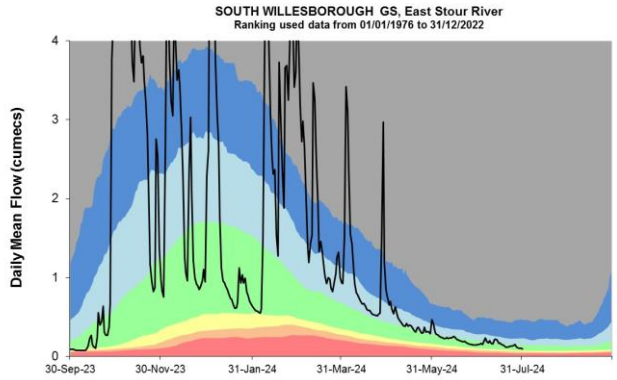


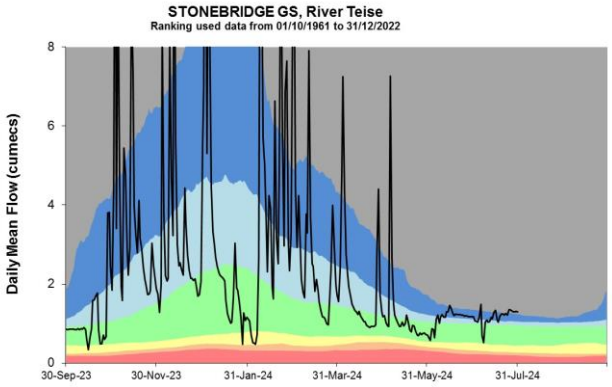

*Flows at some sites might be affected by overestimation due to weed growth at this time of year
**Weir Wood Reservoir is currently offline
***Flows at gauging stations in the Medway catchment might be affected by upstream reservoir releases

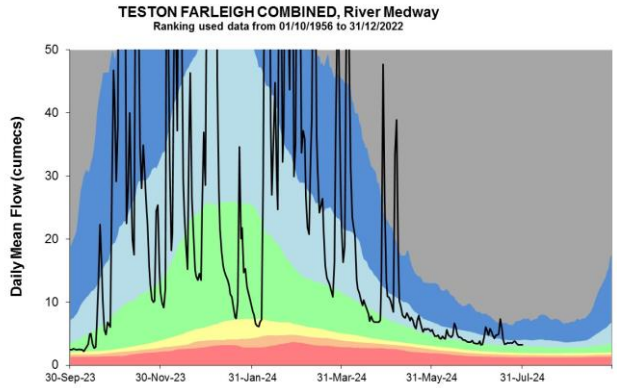
## 4.2 River flow charts

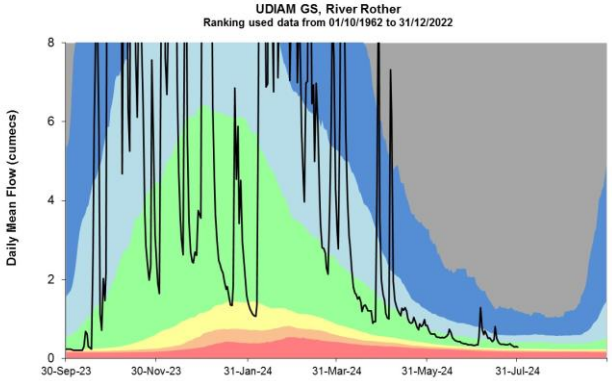
Figure 4.1: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.

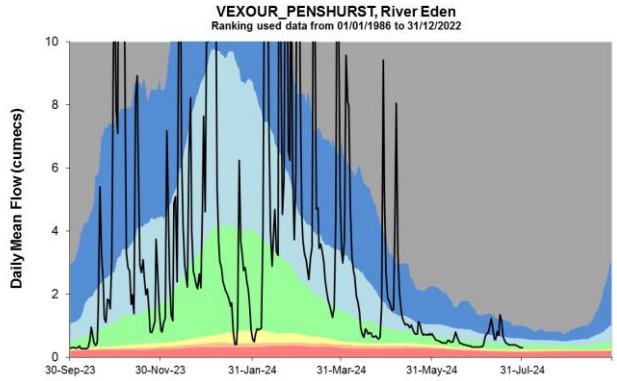




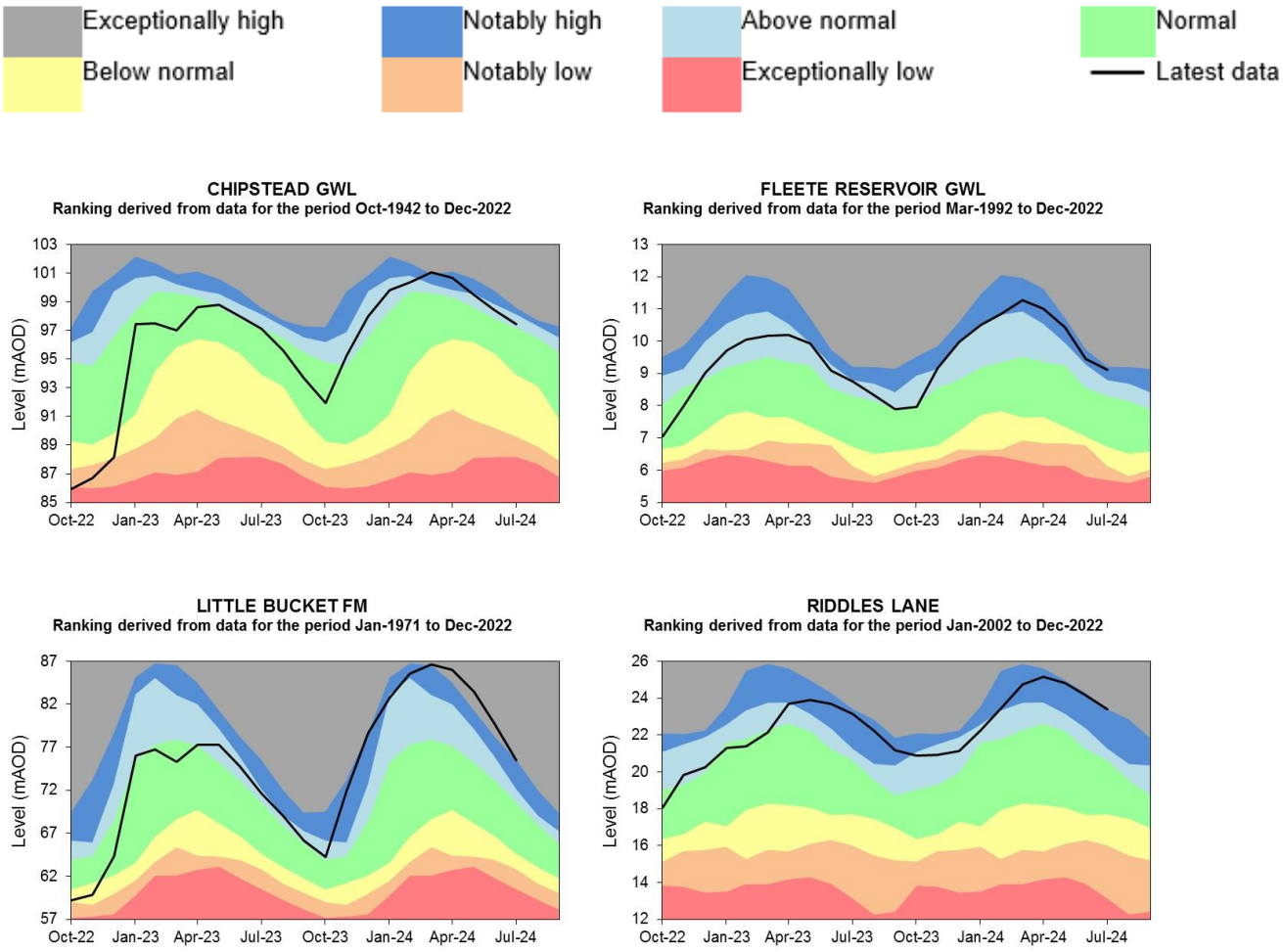



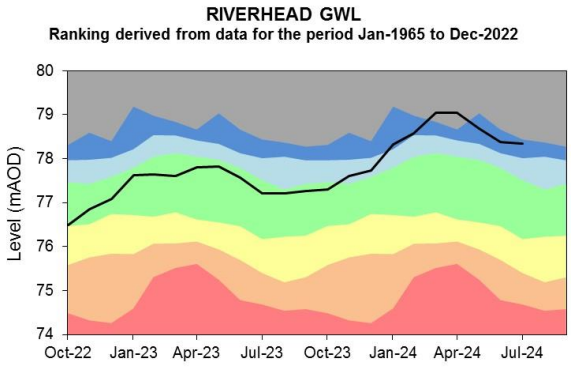

Source: Environment Agency.

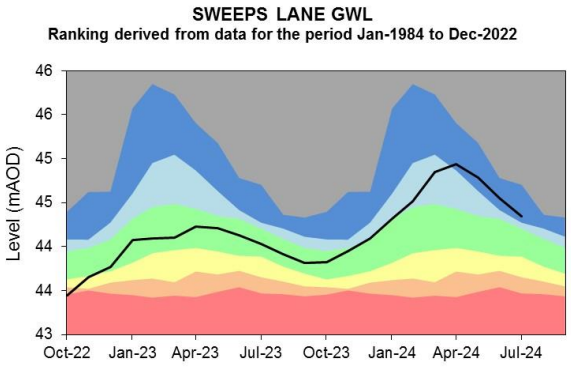
# 5 Groundwater levels

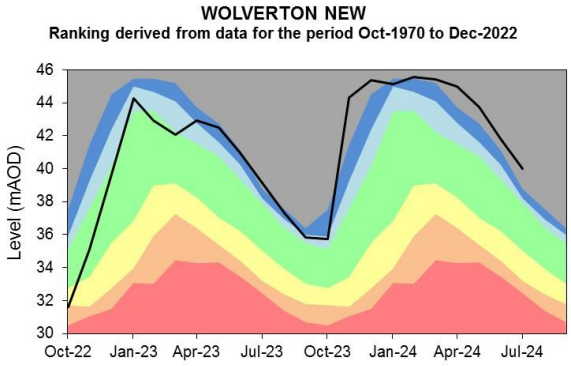
## 5.1 Groundwater level charts

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.





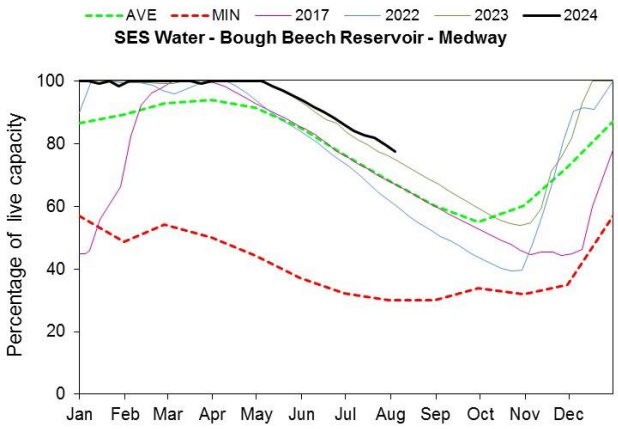



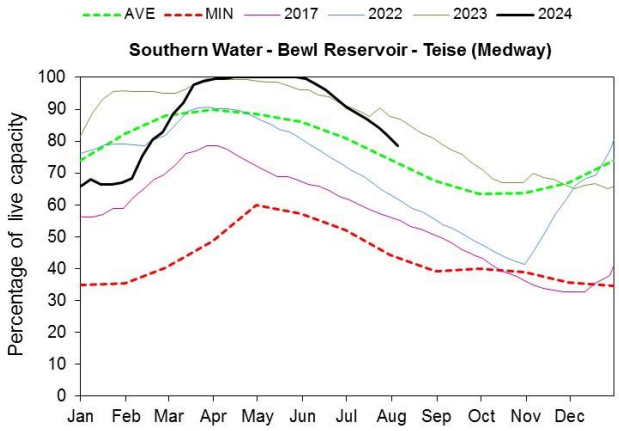

Source: Environment Agency, 2024.

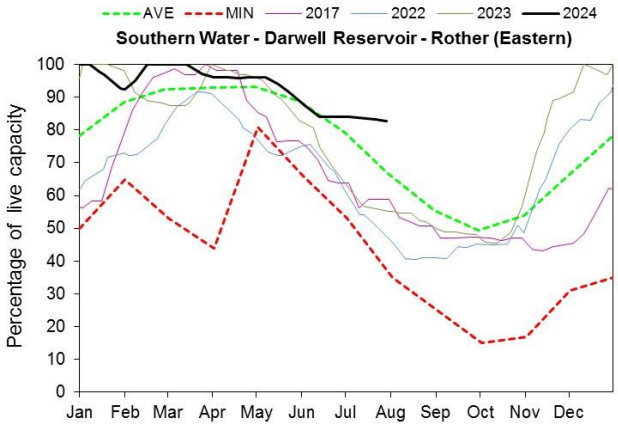
# 6 Reservoir stocks

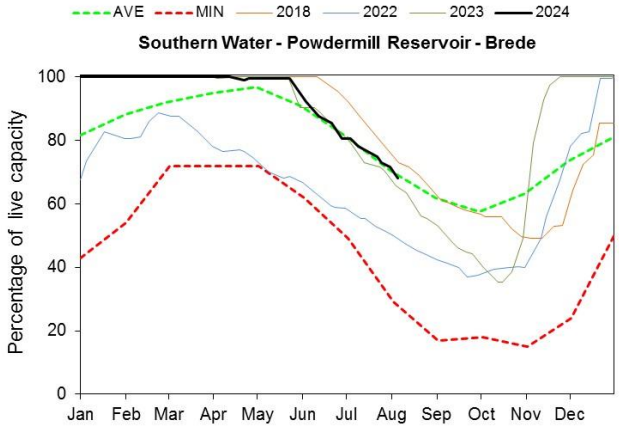
## 6.1 Reservoir stocks charts

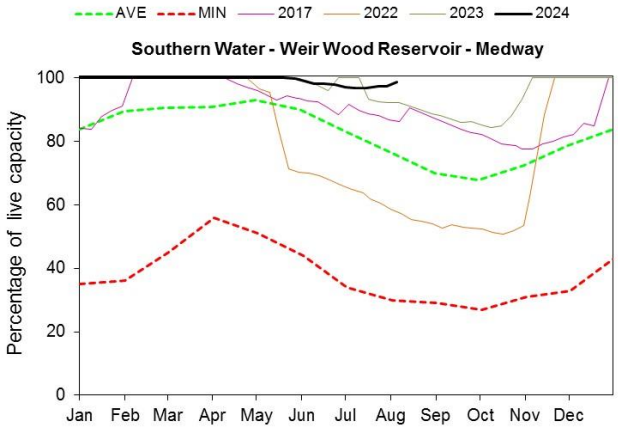
Figure 7.1: End of month regional reservoir stocks compared to long term maximum, minimum and average stocks. (Source: Water Companies). Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in length.



# 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 | Jul 2024 rainfall % of long term average 1961 to 1990 | Jul 2024 band | May 2024 to July cumulative band | Feb 2024 to July cumulative band | Aug 2023 to July cumulative band |
|---|---|---|---|---|---|
| North Downs - South London | 142 | Normal | Normal | Notably high | Exceptionally high |
| Upper Mole | 151 | Normal | Normal | Exceptionally high | Exceptionally high |
| South London | 138 | Normal | Normal | Notably high | Exceptionally high |
| River Darent | 123 | Normal | Normal | Notably high | Exceptionally high |
| North Kent Chalk | 133 | Normal | Normal | Exceptionally high | Exceptionally high |
| Stour | 93 | Normal | Below normal | Notably high | Exceptionally high |
| Dover Chalk | 89 | Normal | Normal | Exceptionally high | Exceptionally high |
| Thanet Chalk | 81 | Normal | Below normal | Above normal | Notably high |
| River Medway | 149 | Above Normal | Normal | Exceptionally high | Exceptionally high |

| | | | | | |
|---|---|---|---|---|---|
| Eastern Rother | 119 | Normal | Normal | Exceptionally high | Exceptionally high |
| Romney Marsh | 94 | Normal | Normal | Exceptionally high | Exceptionally high |
| North West Grain | 119 | Normal | Normal | Notably high | Notably high |
| Sheppey | 110 | Normal | Normal | Notably high | Above normal |

## 8.2 River flows table

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

## 8.3 Groundwater table

| Site name | Aquifer | End of Jul 2024 band | End of Jun 2024 band |
|---|---|---|---|
| Fleete Reservoir Gwl | Isle Of Thanet Chalk | Notably high | Notably high |
| Chipstead Gwl | Epsom North Downs Chalk | Above normal | Above normal |
| Little Bucket Fm | East Kent Chalk - Stour | Notably high | Exceptionally 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 | Notably high | Notably high |
| Wolverton New | East Kent Chalk - Stour | Exceptionally high | Exceptionally high |