Monthly water situation report: Hertfordshire and North London Area

1 Summary - January 2025

In January, the Hertfordshire and North London area received 79mm of rain (135% of the long term average). River base flows increased during the month in chalk catchments, while in clay and urban catchments the start and end of the month saw notable flow peaks as a result of storms Floriane and Herminia. Groundwater levels continued their seasonal rise during January, with several sites in the exceptionally high band.

1.1 Rainfall

January was a fairly wet month in the Hertfordshire and North London area (the Area), receiving 79mm of rainfall, 135% of the long term average (LTA) with all five areal rainfall units ending the month in the above normal band. The most significant amount of rain fell at the beginning of the month during Storm Floriane, when on the 5 January, 26.2mm was recorded at Chenies (Chilterns East Colne unit). Other large rainfall totals were recorded on this day at Prestwood Reservoir, with 25.2mm of rain and at Markyate STW, which recorded 22mm of rain (both also in Chilterns East Colne). Fairly high rainfall totals were also recorded towards the end of the month due to Storms Eowyn and Herminia, when 18.6mm was recorded at Prestwood Reservoir on 26 January. Despite the heavy rainfall there were also a total of 13 dry days in January (less than 0.2mm of rain recorded).

1.2 Soil moisture deficit and recharge

Across the Area, soil moisture deficits (SMDs) decreased to 0mm during January, with all five areal units below their LTAs. All units in the Area also received effective rainfall above their LTAs. The highest effective rainfall was recorded in the Chilterns East Colne unit, however, North London recorded the highest percentage of effective rainfall in relation to the January LTA.

1.3 River flows

River base flows continued to increase during January, with five sites recording monthly mean flows in the exceptionally high band (all of which being located in chalk catchments). Panshanger (River Mimram) recorded its third highest mean flow for January, while Colney Street (River Ver) recorded its second highest mean flow for the month (records begin in 1952 and 1956 respectively). The most significant flow peaks occurred around the 5 and 27 January, during storms Floriane and Hermina. These flow peaks were experienced most notably in the Area’s clay and urban catchments like North London and the Roding.

During January, 16 flood alerts were issued in the Area, however, there were no flood warnings. Most of the alerts were issued on 5 January in response to the high rainfall, including the:

- Upper River Roding
- Middle River Roding
- Cripsey Brook in Epping Forest
- River Ingrebourne at Harold Park and Hornchurch
- River Lee at Hertford
- River Stort and Stansted Brook catchment
- Lower Lee tributaries
- Upper River Colne and Radlett Brook
- Middle River Colne
- River Pinn and Woodridings Stream
- Lower River Colne and Frays River
- Colne Brook at Iver and Colnbrook

1.4 Groundwater levels

Groundwater levels across the Area continued their seasonal increase during January, remaining high for the time of year, with five of nine groundwater level indicator sites in the exceptionally high band. All other indicator sites ended January in the notably high band. In the Upper Lee Chalk, Lilley Bottom and Crescent Cottages recorded their highest January groundwater levels (records begin in 1979 and 1968 respectively). Also in the Upper Lee Chalk, Therfield Rectory recorded its highest January groundwater level since 1918 (records begin in 1883). Overall, compared to the Upper Lee Chalk, groundwater levels in the Mid-Chilterns Chalk were not as high compared with their historic levels.

1.5 Reservoir stocks

Reservoir stocks in the Lee Valley group decreased slightly during January, from 93% to 89% of live capacity. In the Lower Thames group, reservoir stocks started January at 95% of live capacity and finished the month with 96%.

1.6 Environmental impact

In the Colne catchment, the sources of the chalk rivers were essentially in the same locations as December.

- The River Ver started flowing above Markyate.
- The River Gade started flowing above Hudnall Corner.
- The River Bulbourne was flowing upstream of Dudswell village.
- The source of the River Chess stayed upstream of Chesham.
- The River Misbourne flowed continuously from Mobwell pond.

The chalk river sources in the Upper Lee saw some minor changes from their locations in December

- The River Mimram started flowing above Whitwell Gas Compound.
- The River Beane started flowing above Cromer.
- The source of the River Rib remained upstream of Hay Green, from where it flowed continuously.
- The River Ash (Herts) was flowing upstream of Brent Pelham, from where it flowed continuously.
- The source of the River Stort was still above Langley Lower Green.

To protect the environment, during January a number of abstraction licence flow constraints were in force. This ranged between 1 and 12 per week, out of a winter maximum of 48.

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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 January 2025), classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

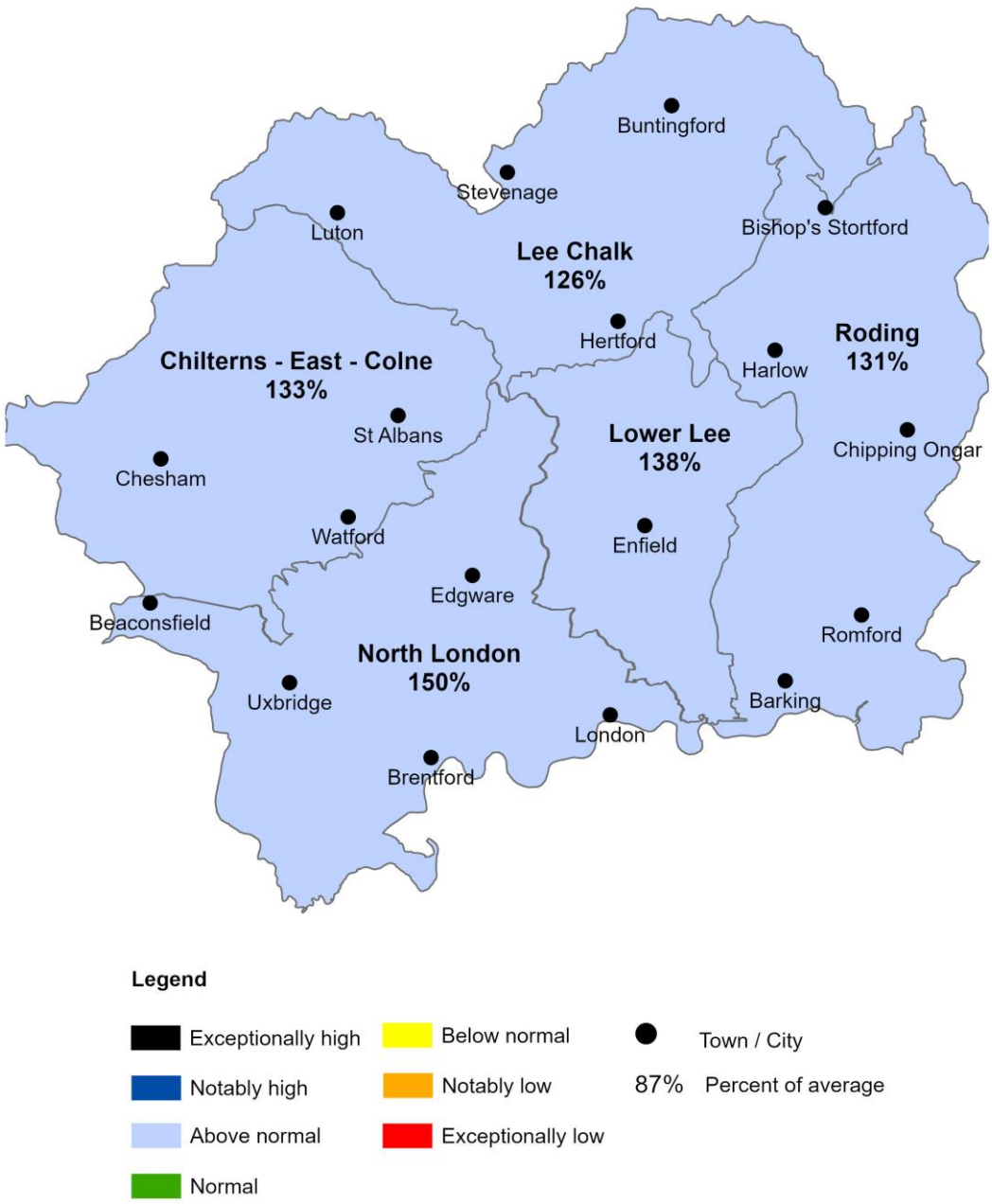
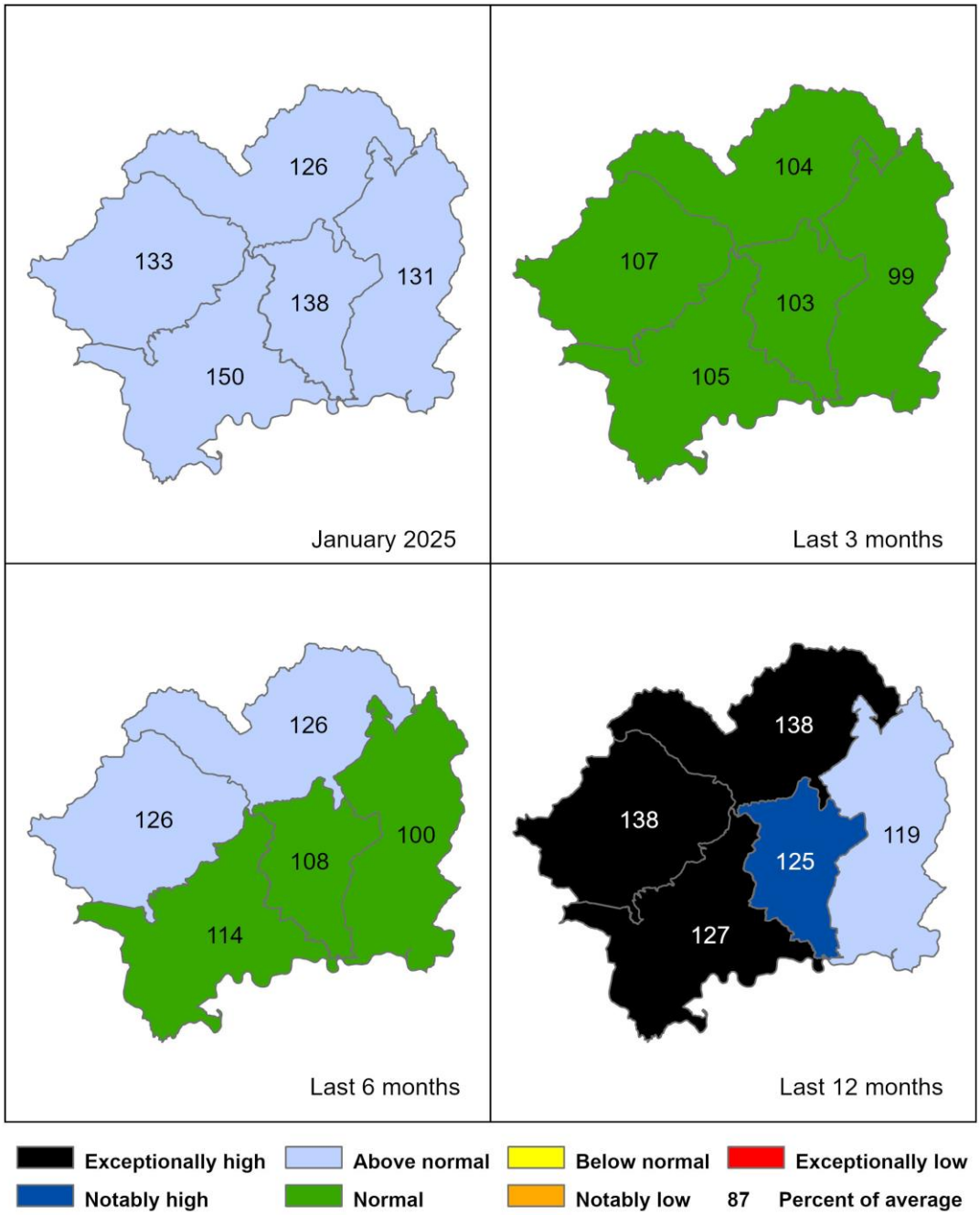


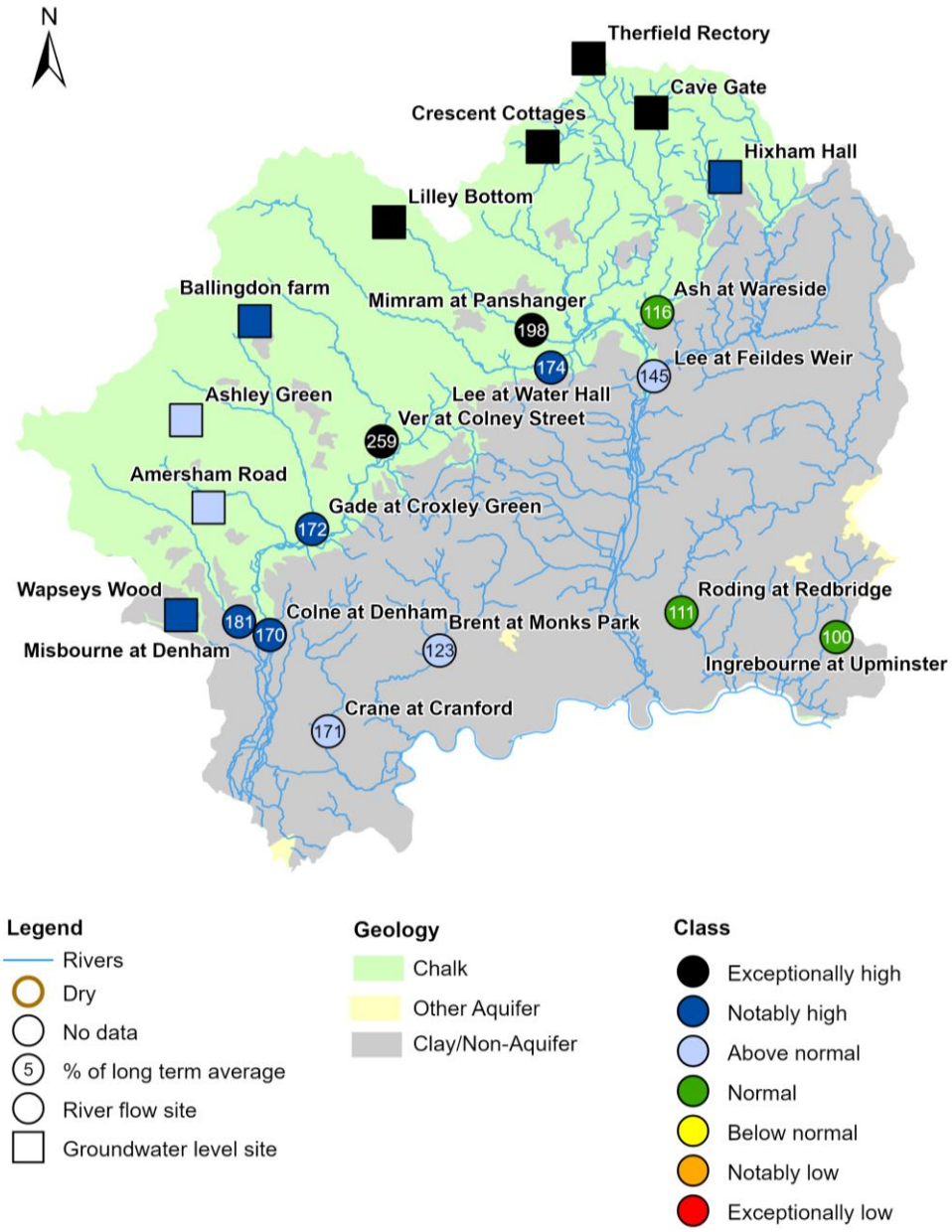
Figure 2.2: Total rainfall for hydrological areas for the current month (up to 31 January 2025), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.



3 River flows and Groundwater levels

3.1 River flows and Groundwater level map

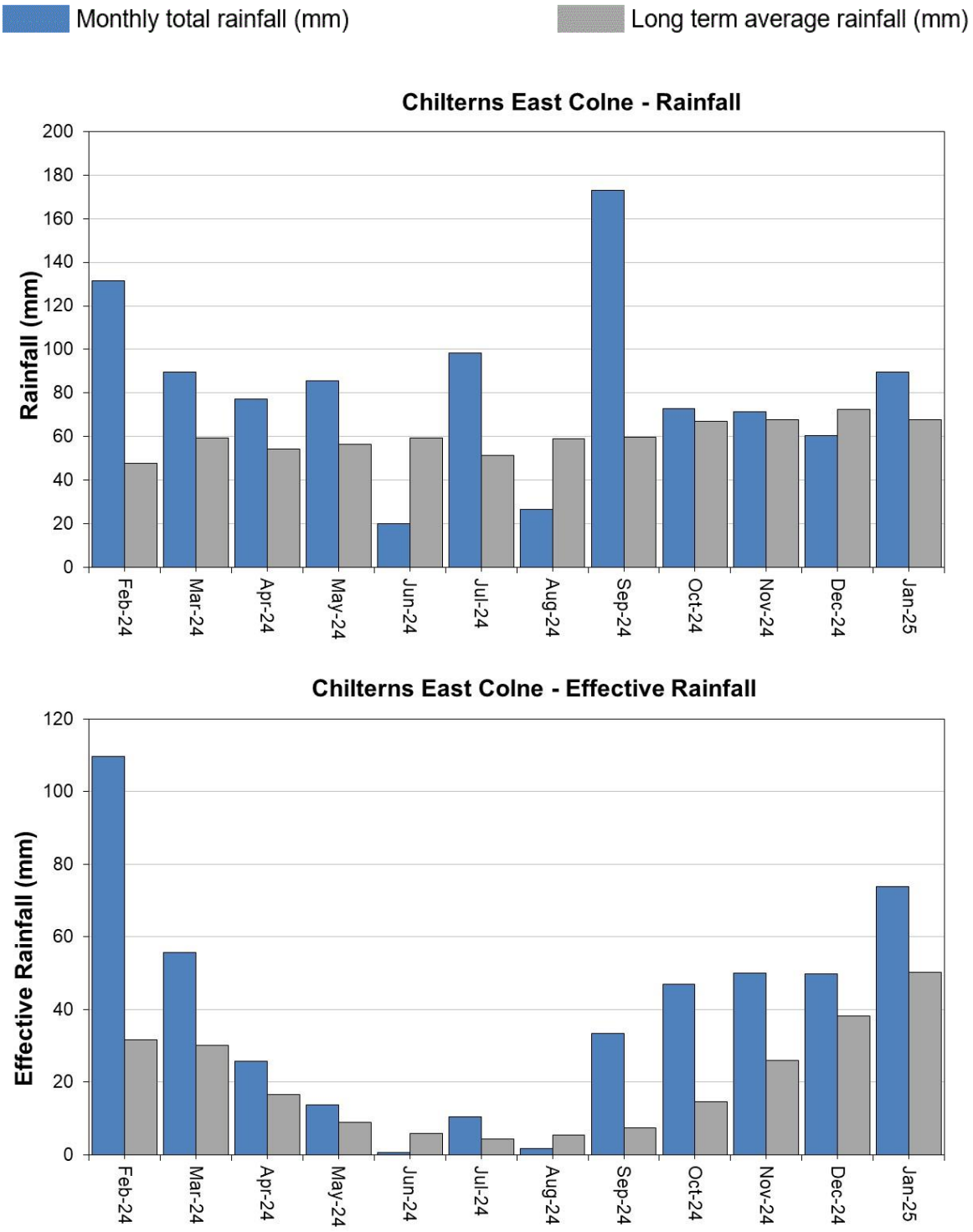
Figure 3.1: Monthly mean river flow and groundwater levels at our indicator sites for January 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic January monthly means. Table available in the appendices with detailed information.



4 Colne Catchment

4.1 Colne 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 for the Colne.

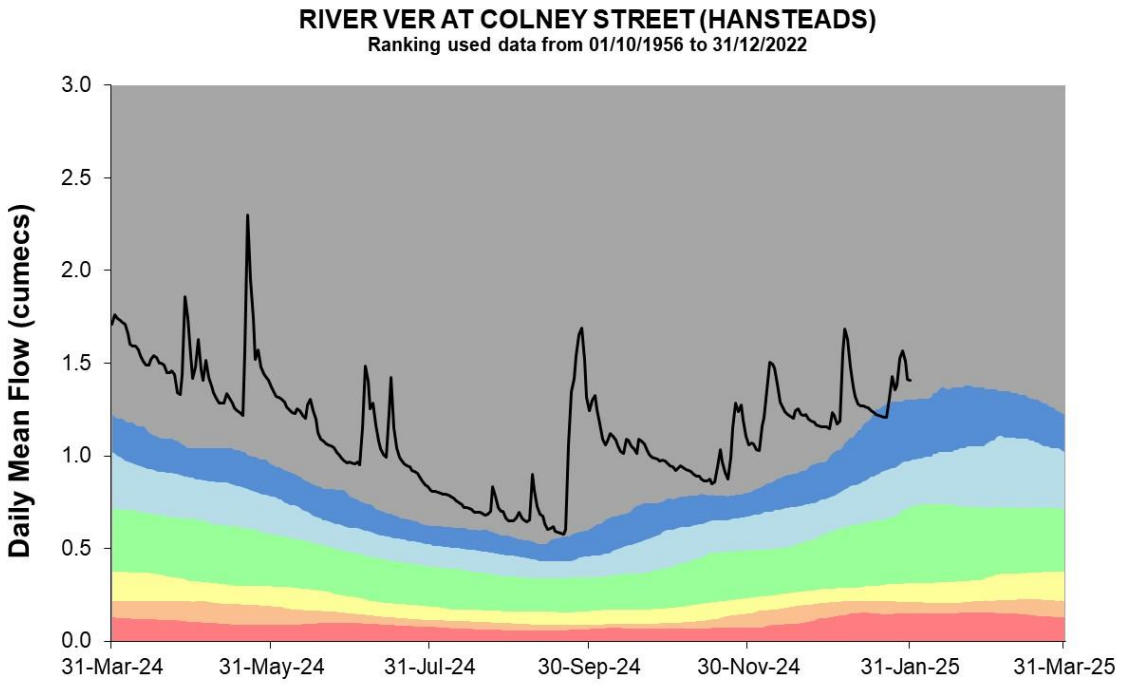


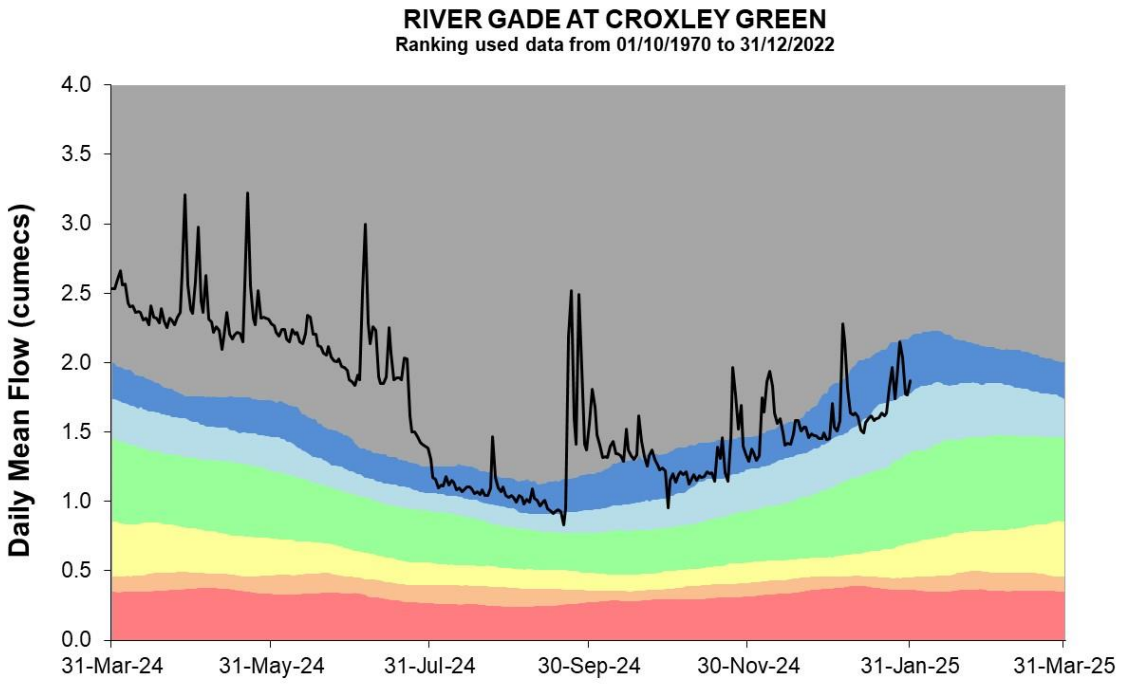
HadUK rainfall data (Source: Met Office. Crown copyright, 2025)

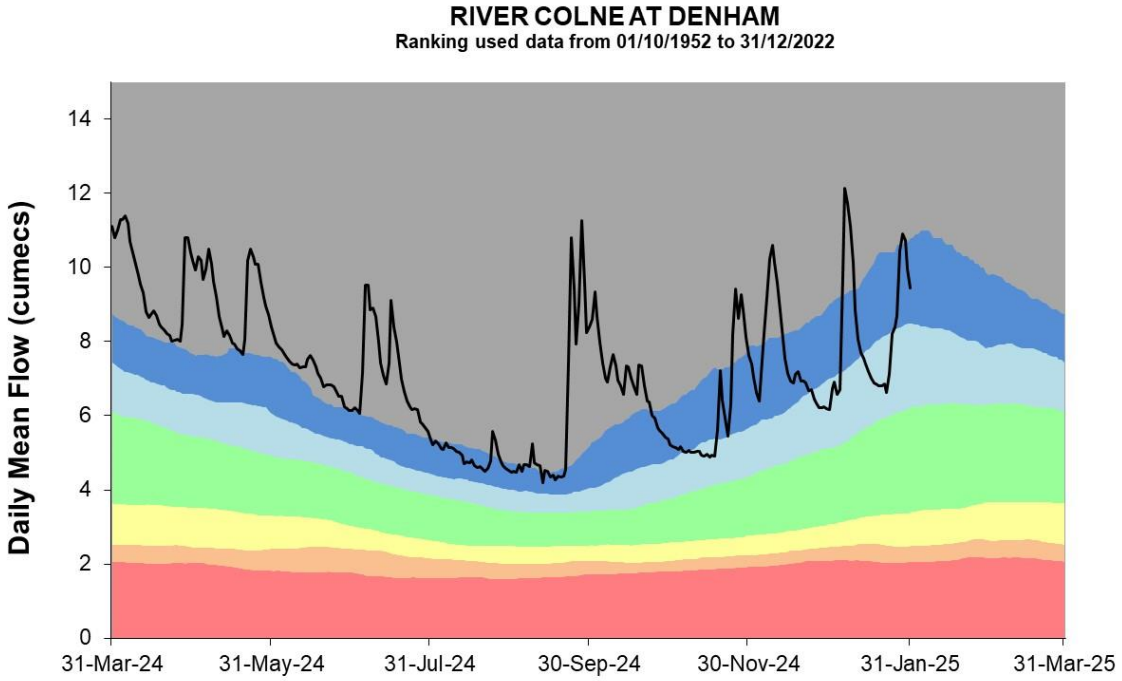
EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2025)

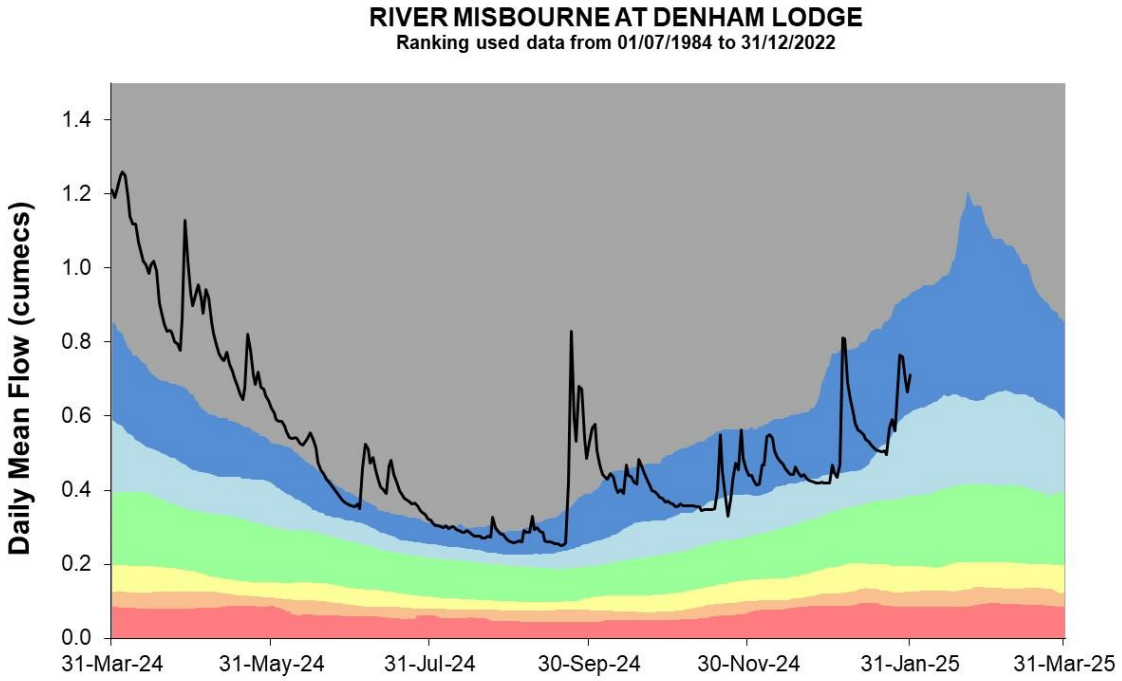
4.2 Colne River flow charts

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.





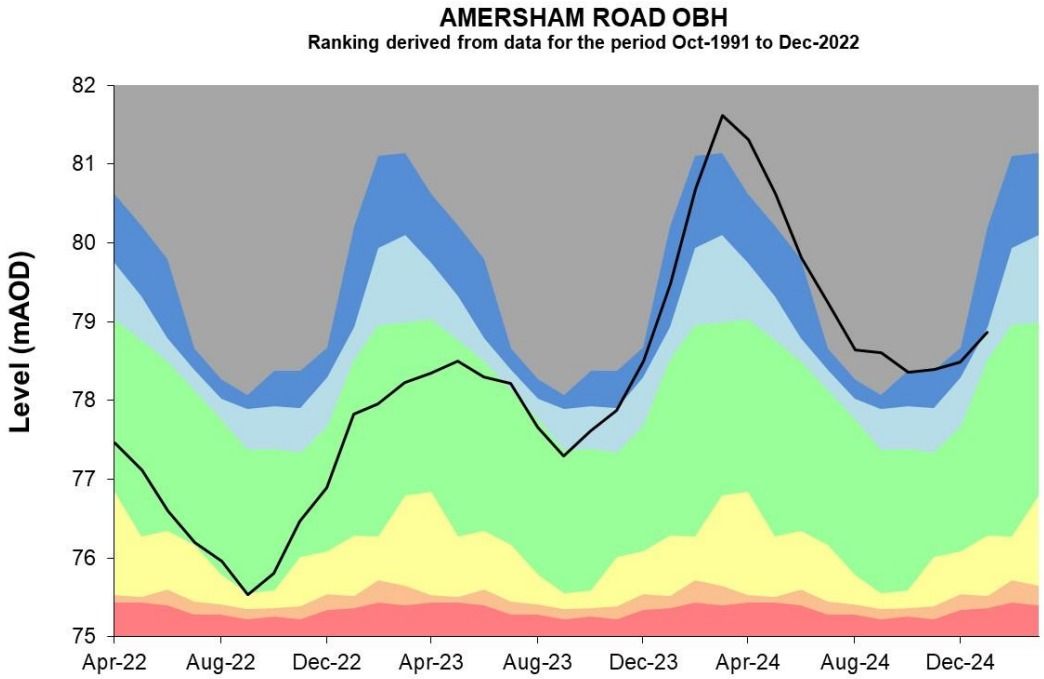


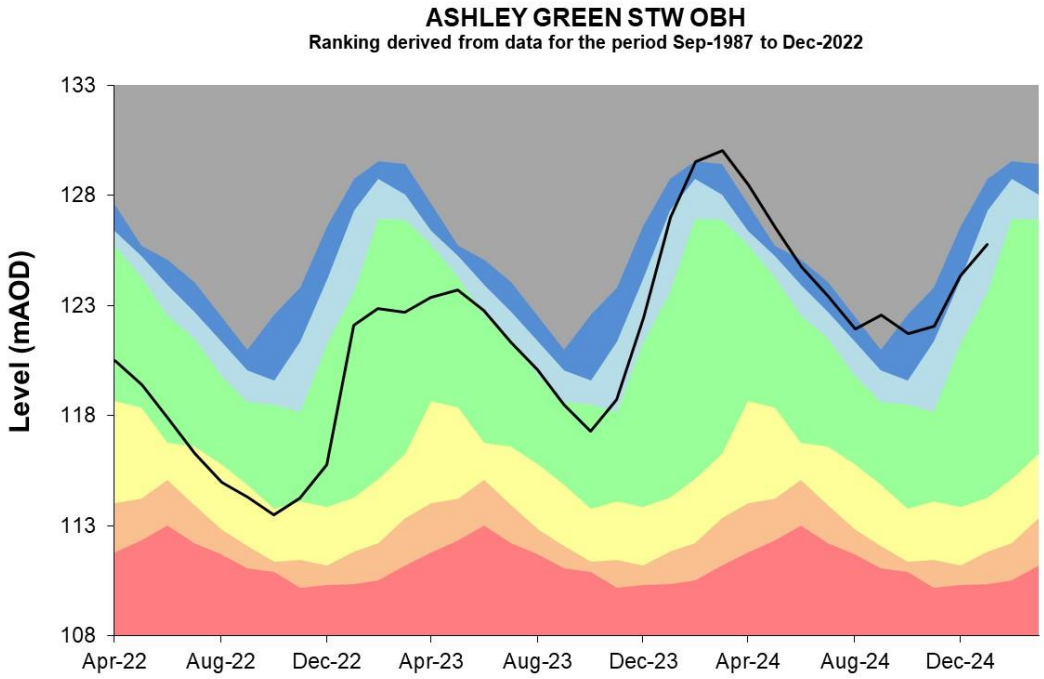


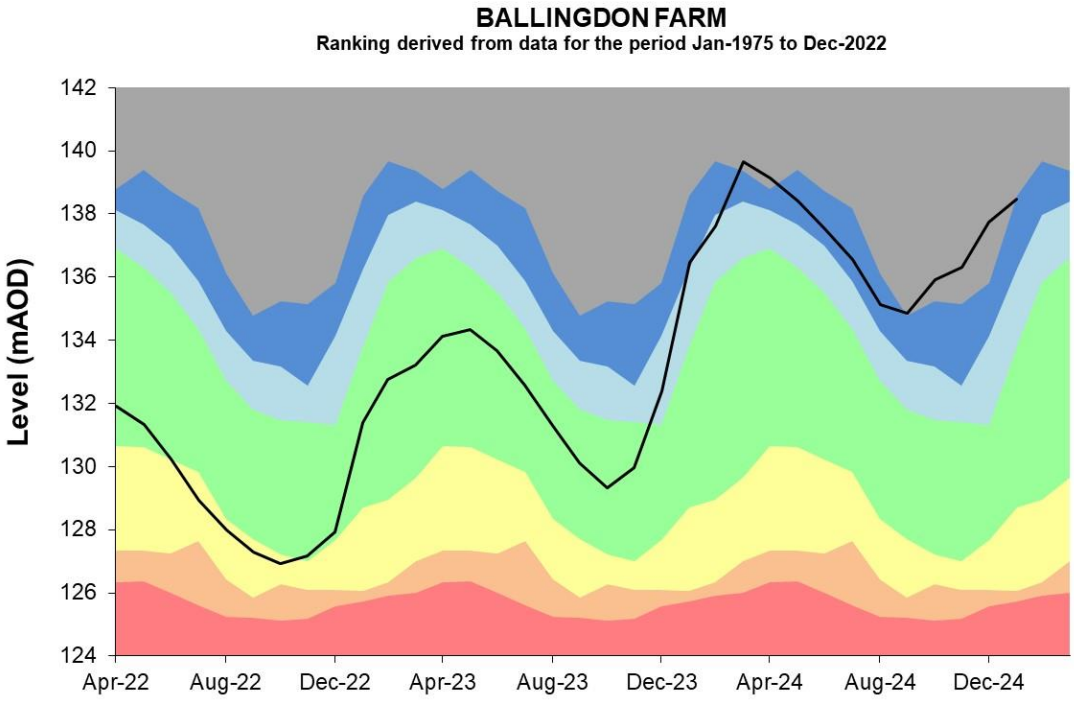
Source: Environment Agency, 2025

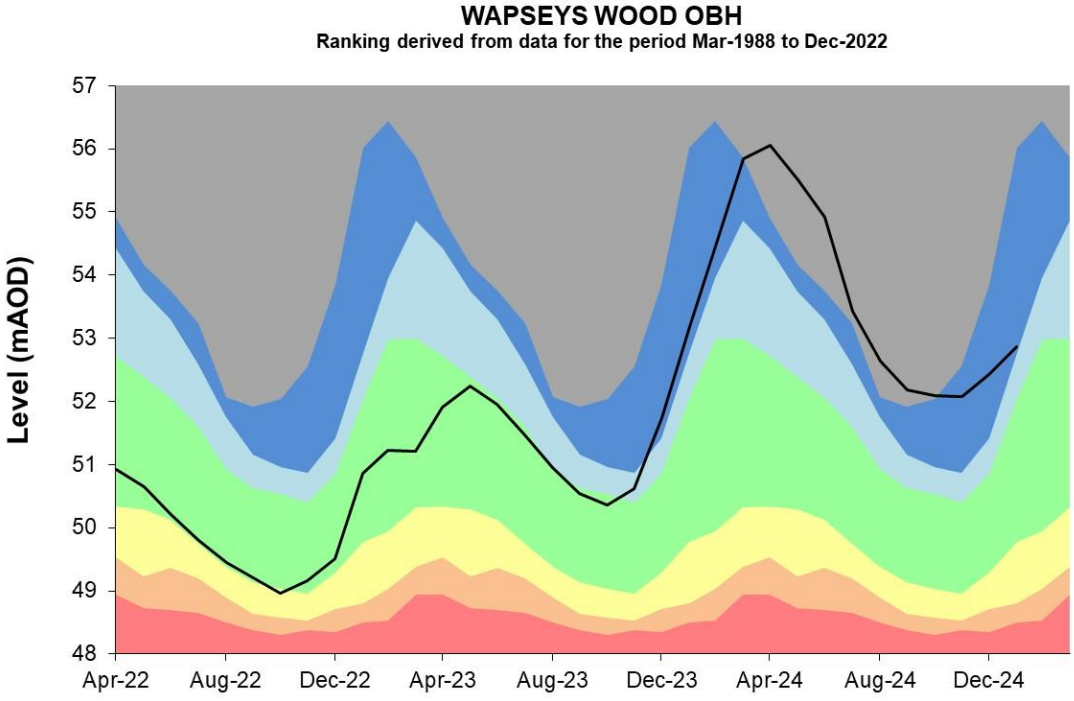
4.3 Colne Groundwater level charts

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.







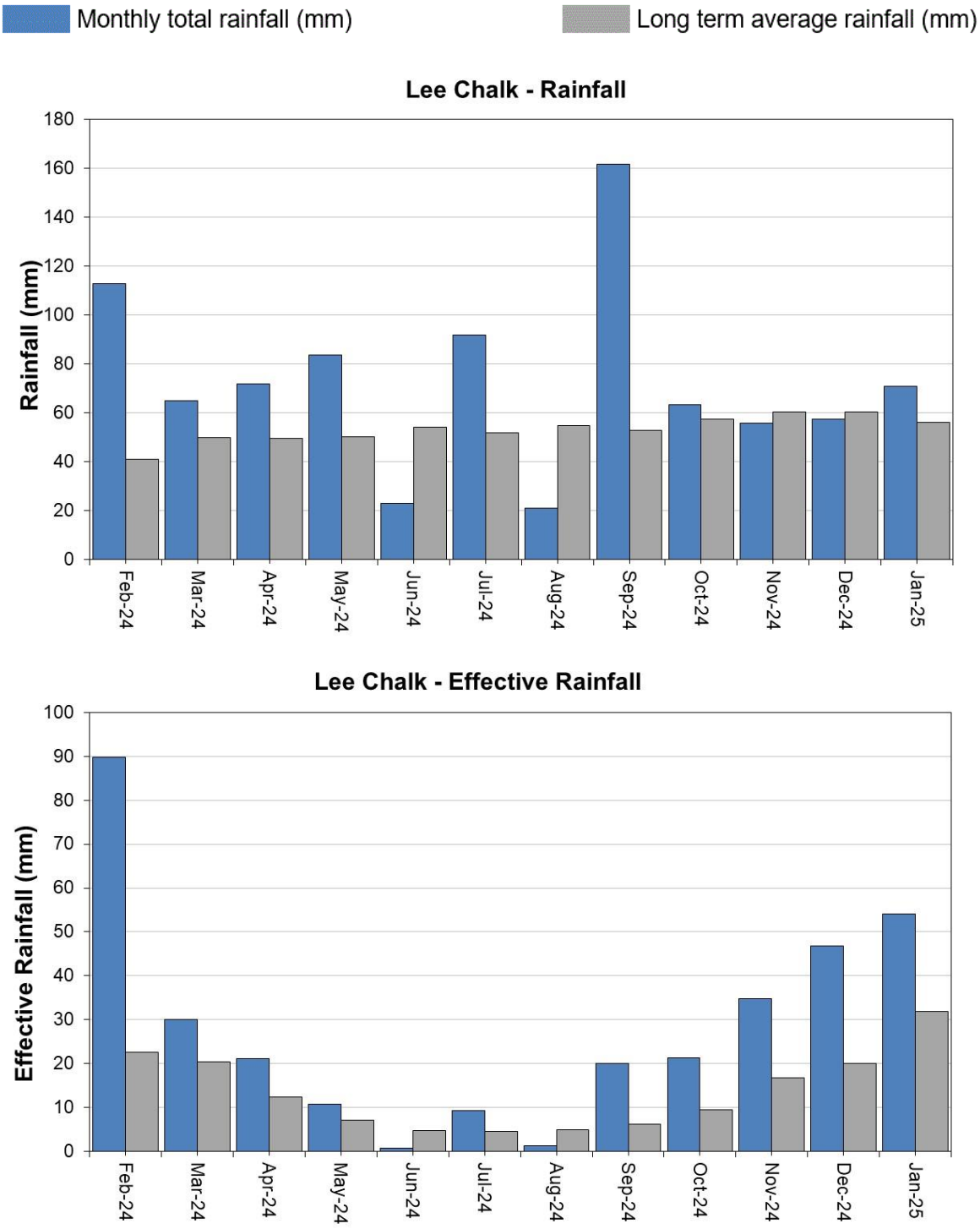


Source: Environment Agency, 2025

5 Upper Lee Catchment

5.1 Upper Lee 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 for each region and for England.

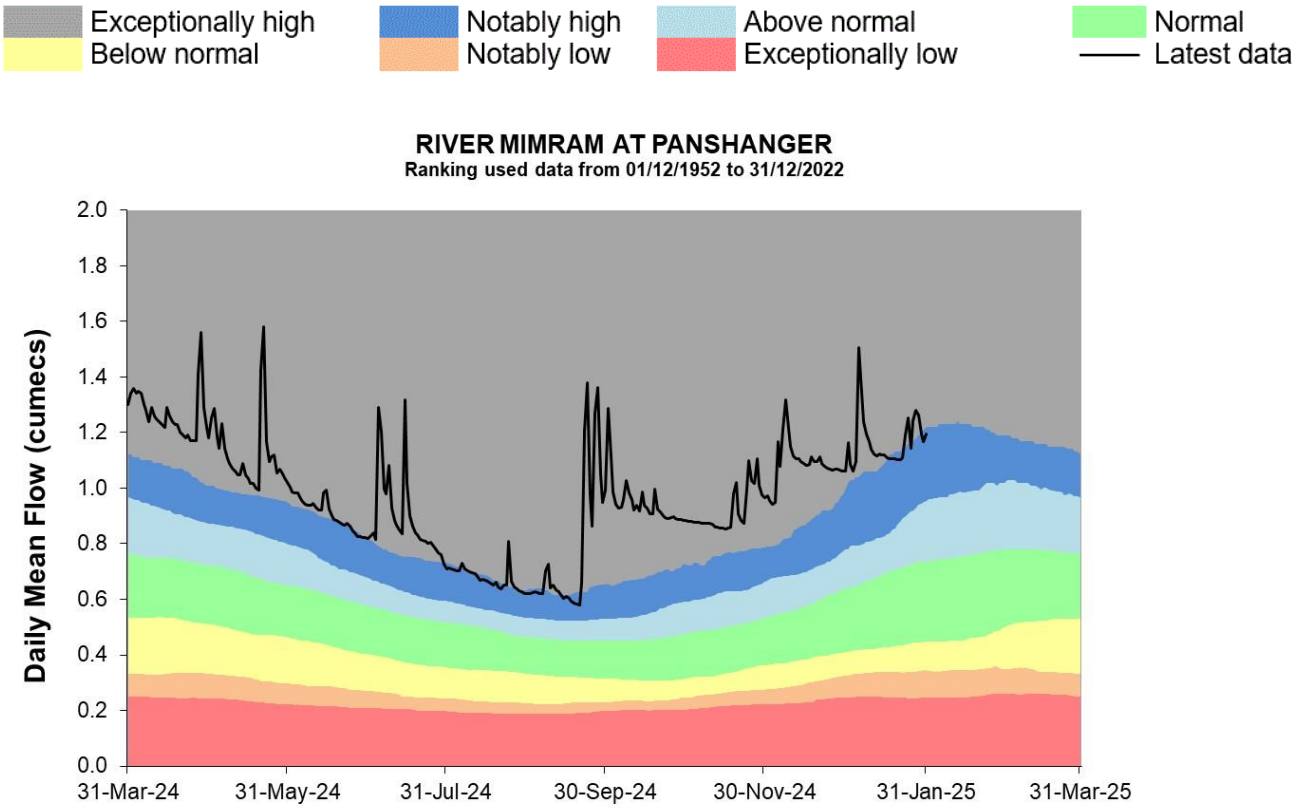


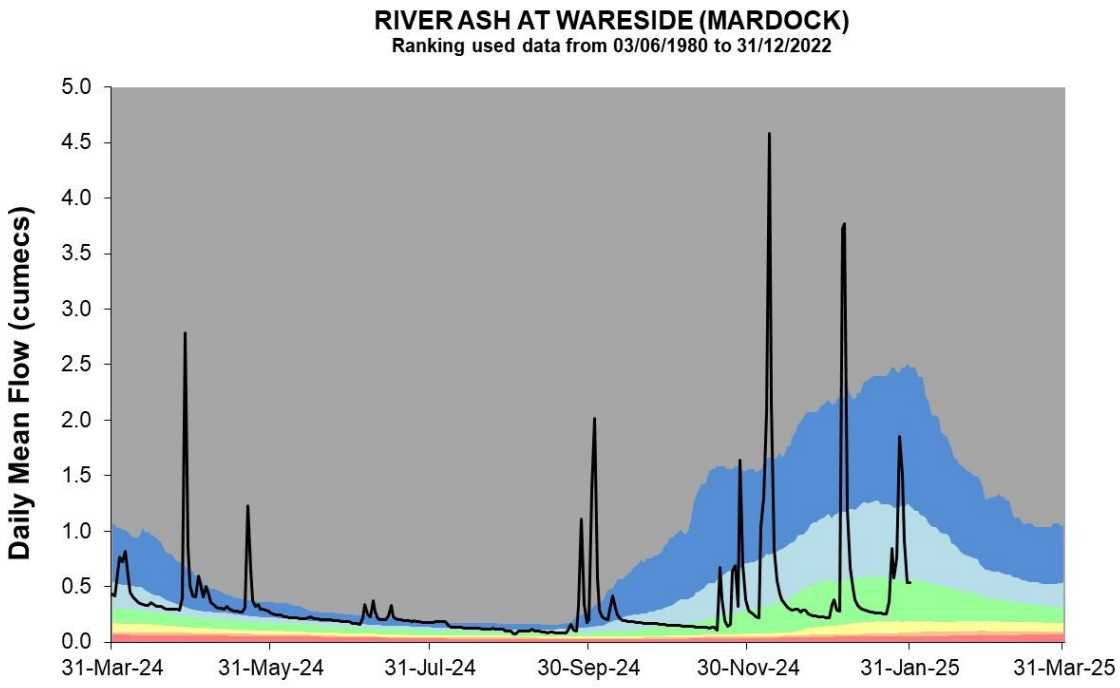
HadUK rainfall data (Source: Met Office. Crown copyright, 2025)

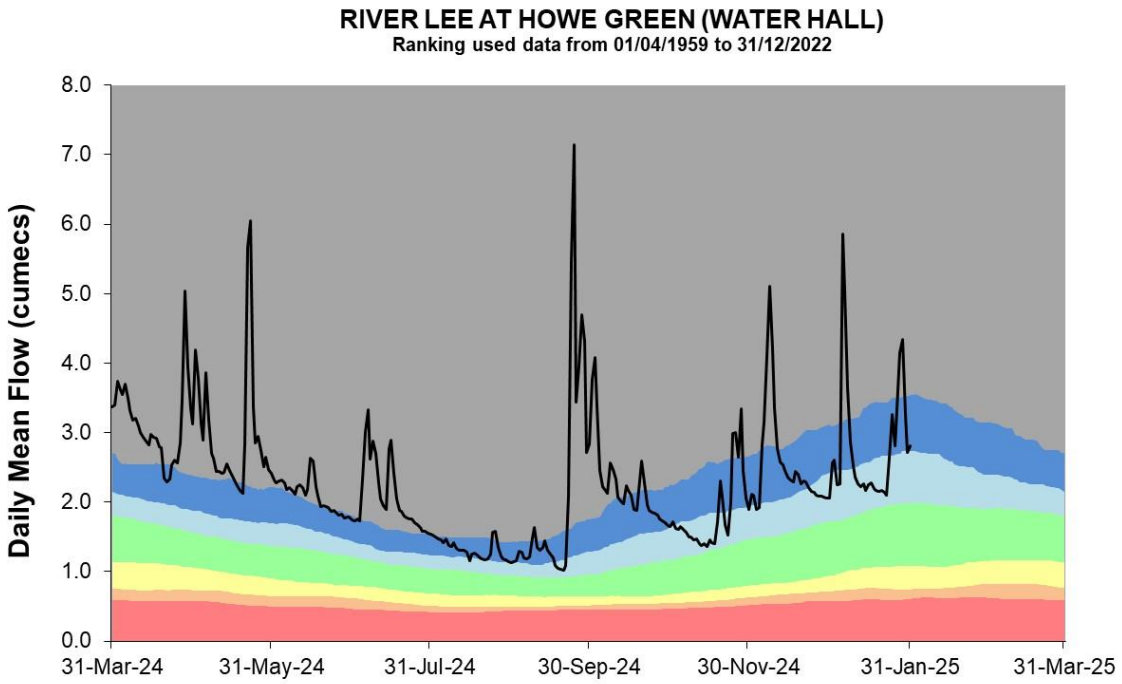
EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2025)

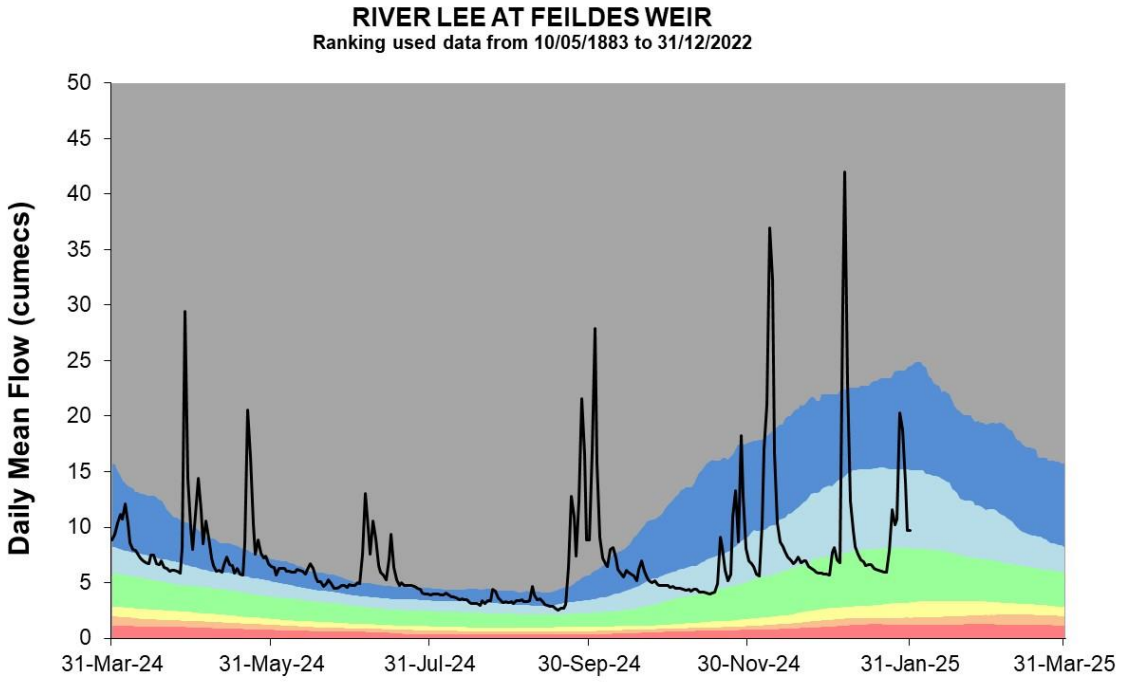
5.2 Upper Lee River flow charts

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.





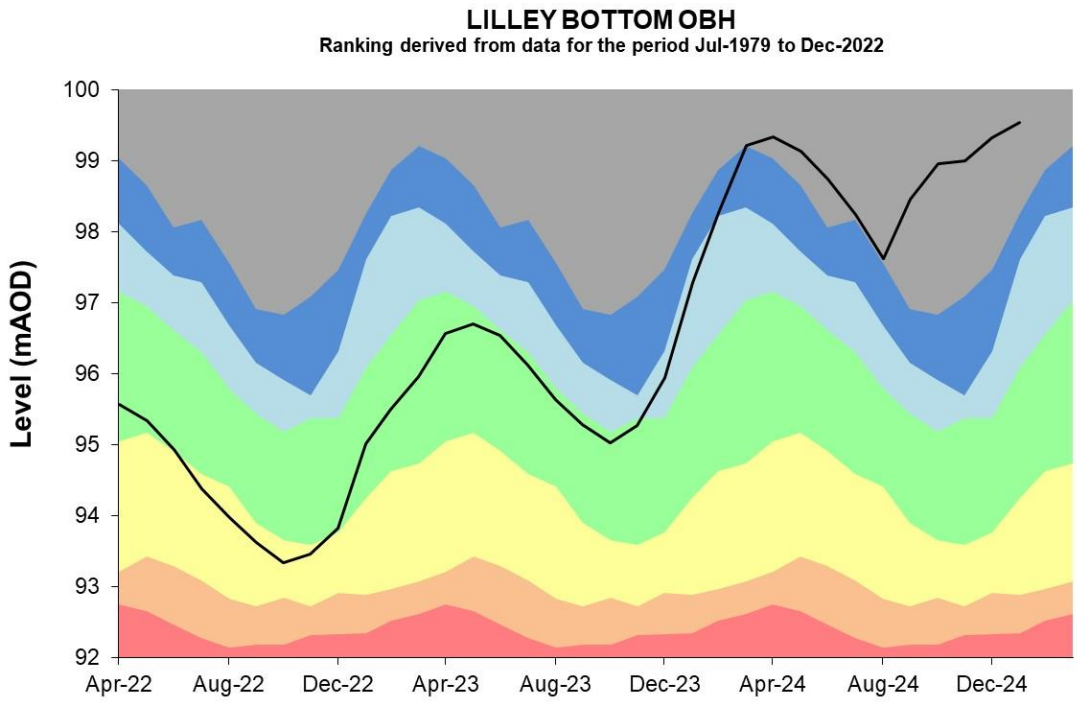


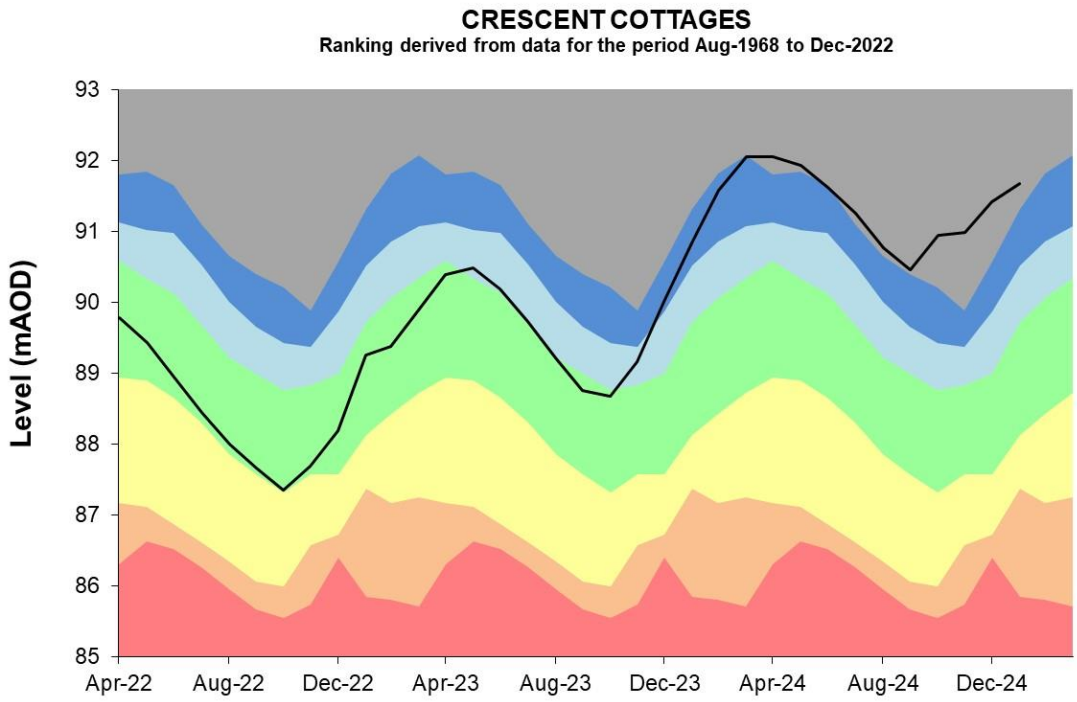


Source: Environment Agency, 2025

5.3 Upper Lee Groundwater level charts

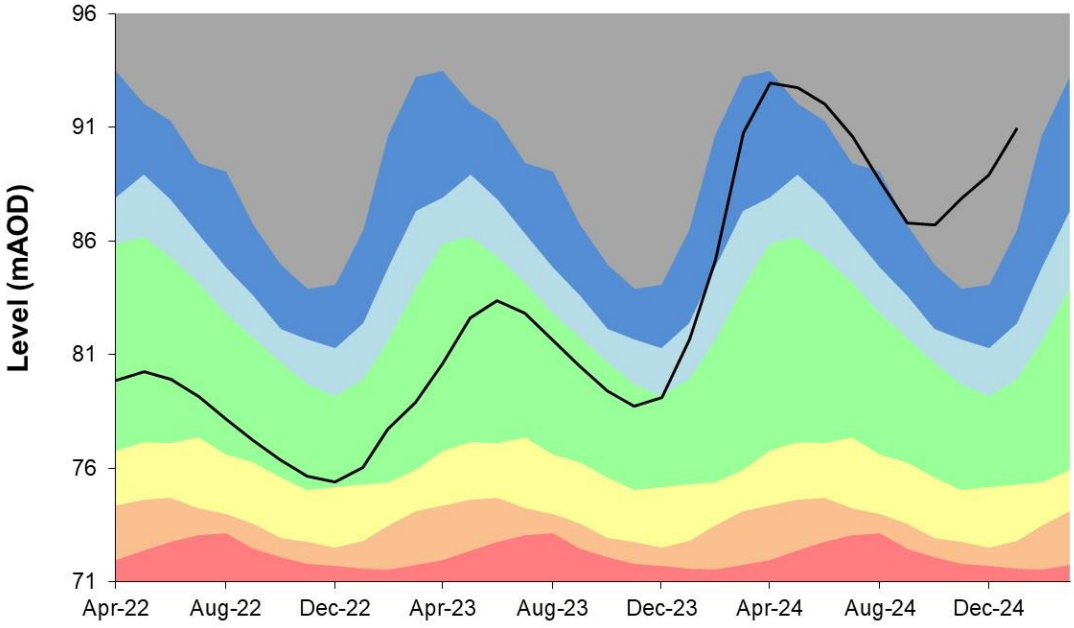
Figure 5.3: End of month groundwater levels at index groundwater level sites for major aquifers. 34 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.





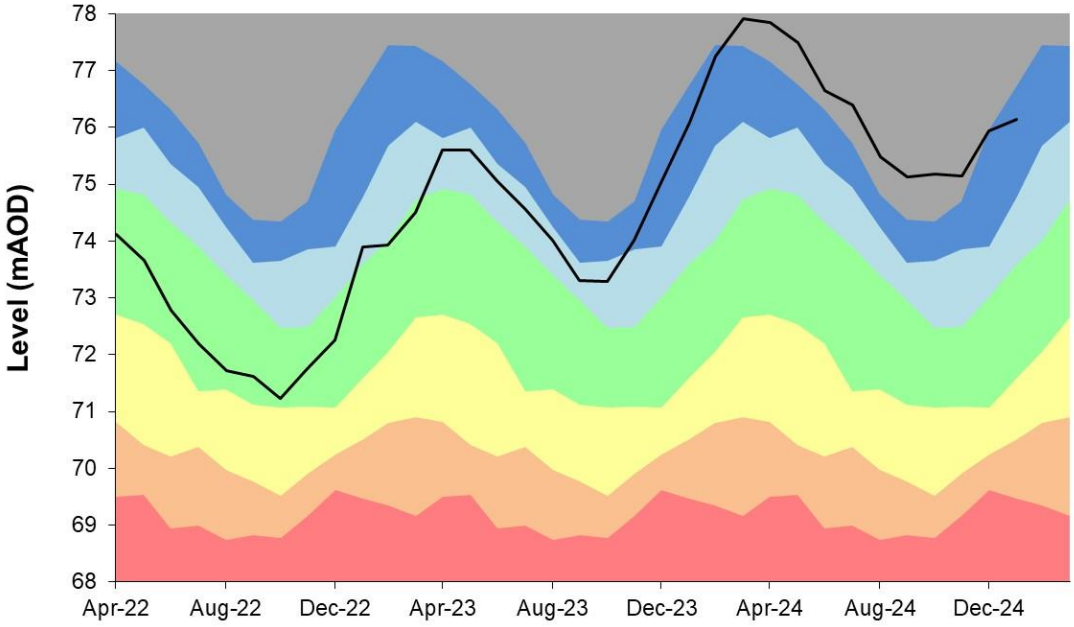
THERFIELD RECTORY

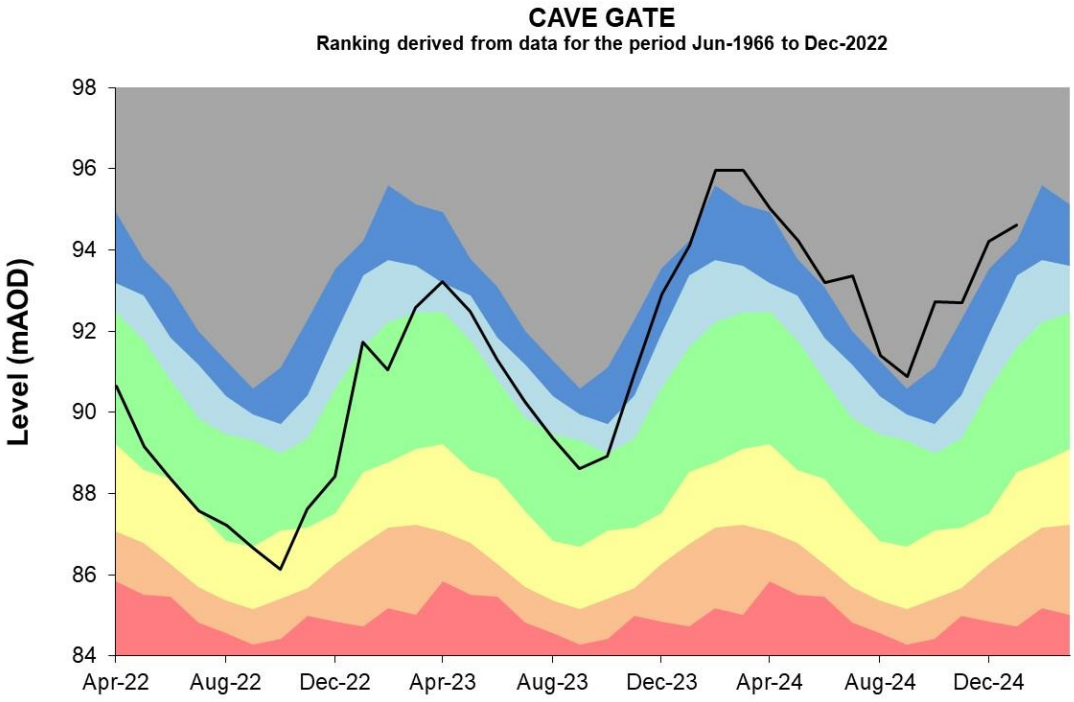
Ranking derived from data for the period Jan-1883 to Dec-2022



HIXHAM HALL

Ranking derived from data for the period Jun-1964 to Dec-2022



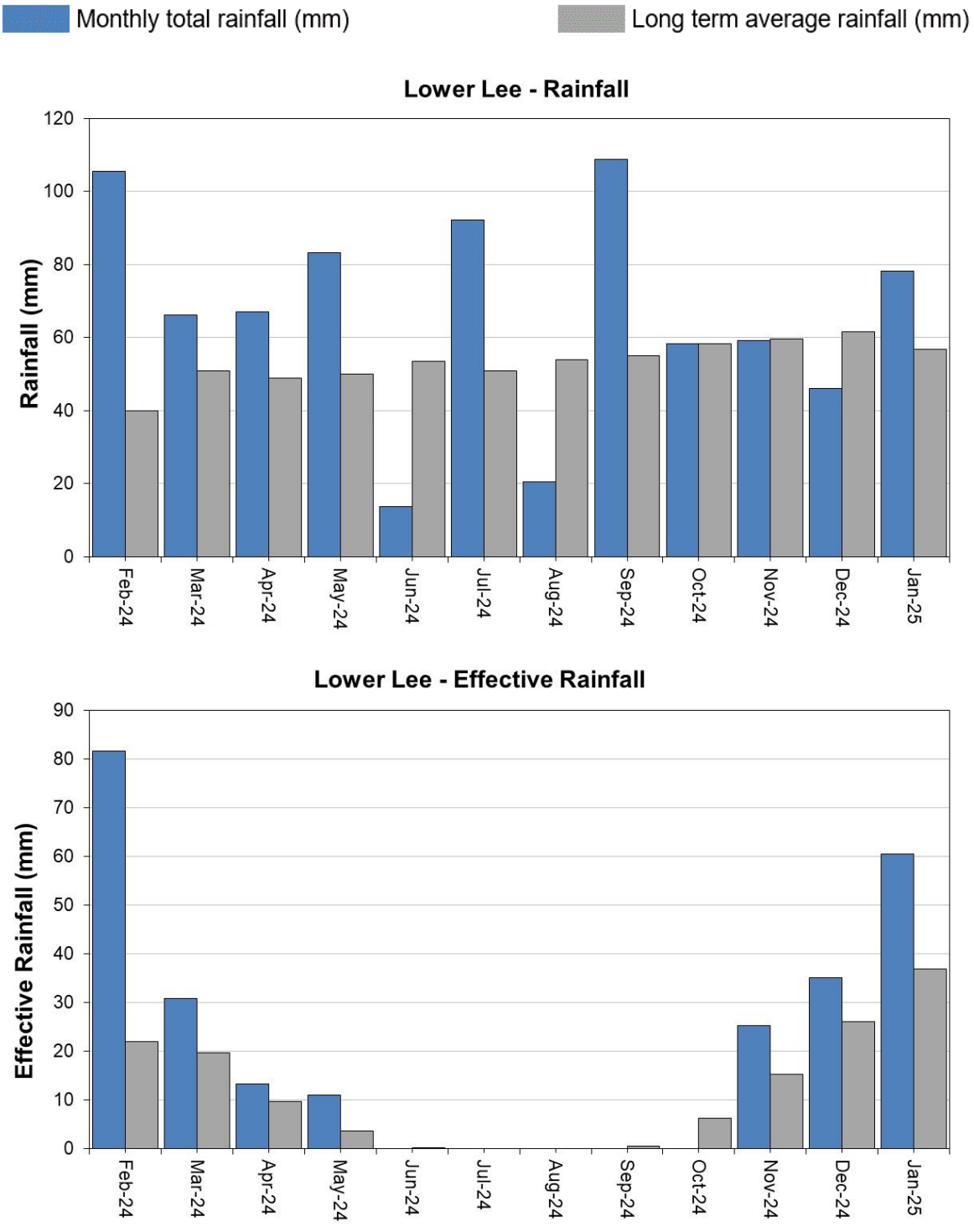


Source: Environment Agency, 2025

6 Lower Lee Catchment

6.1 Lower Lee 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 for the Lower Lee.

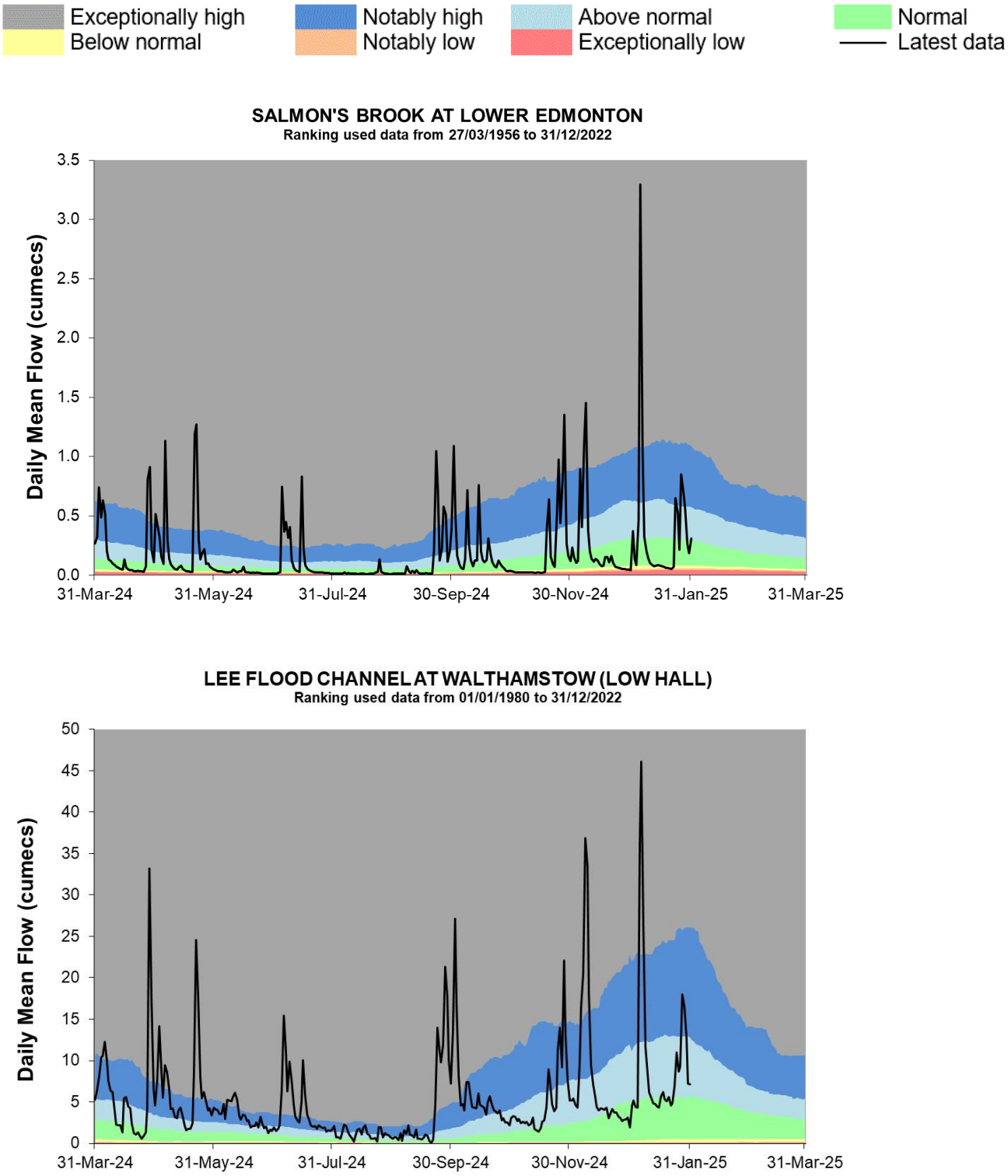


HadUK rainfall data (Source: Met Office. Crown copyright, 2025)

EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2025)

6.2 Lower Lee 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.

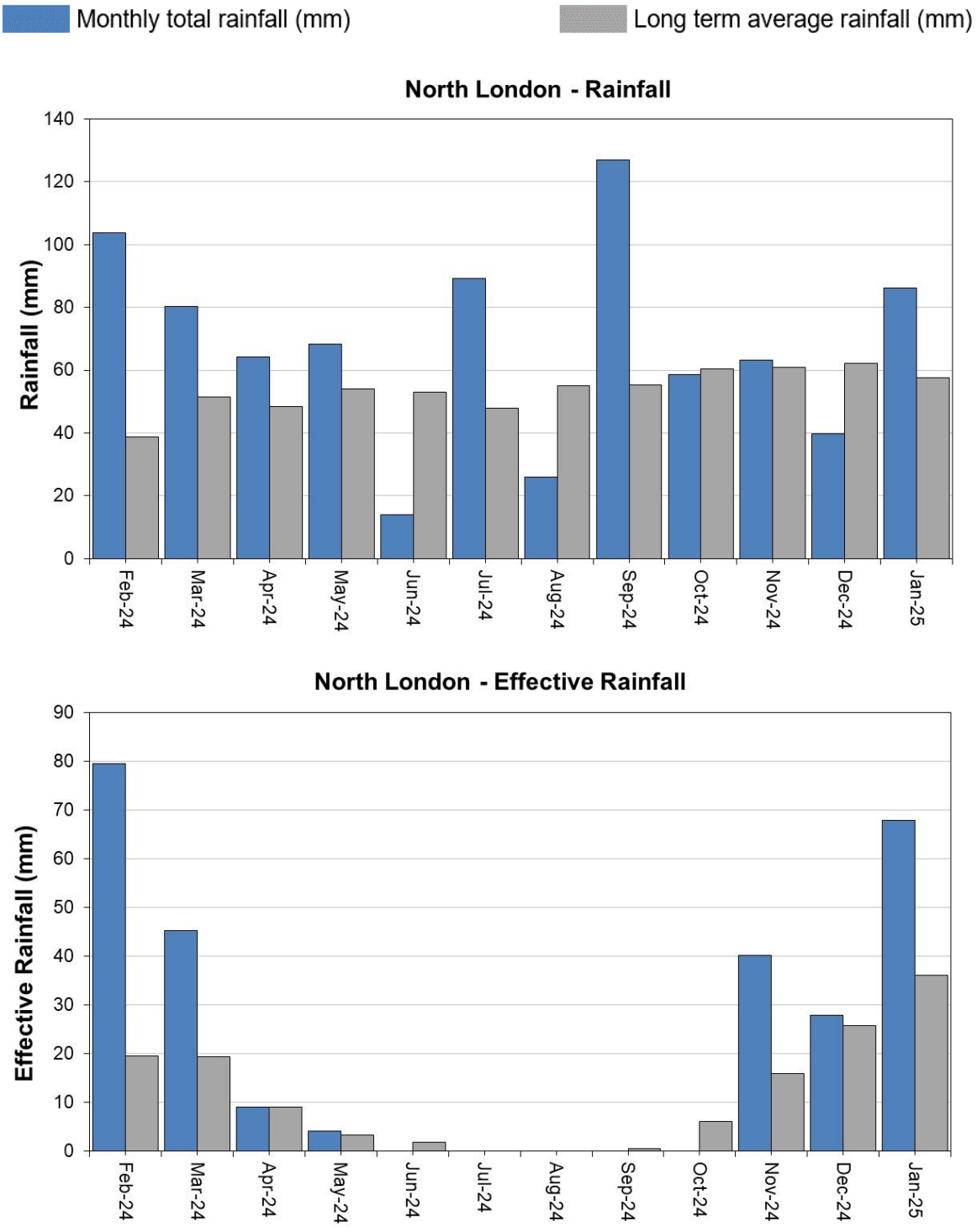


Source: Environment Agency, 2025

7 North London Catchment

7.1 North London 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 for each region and for England.

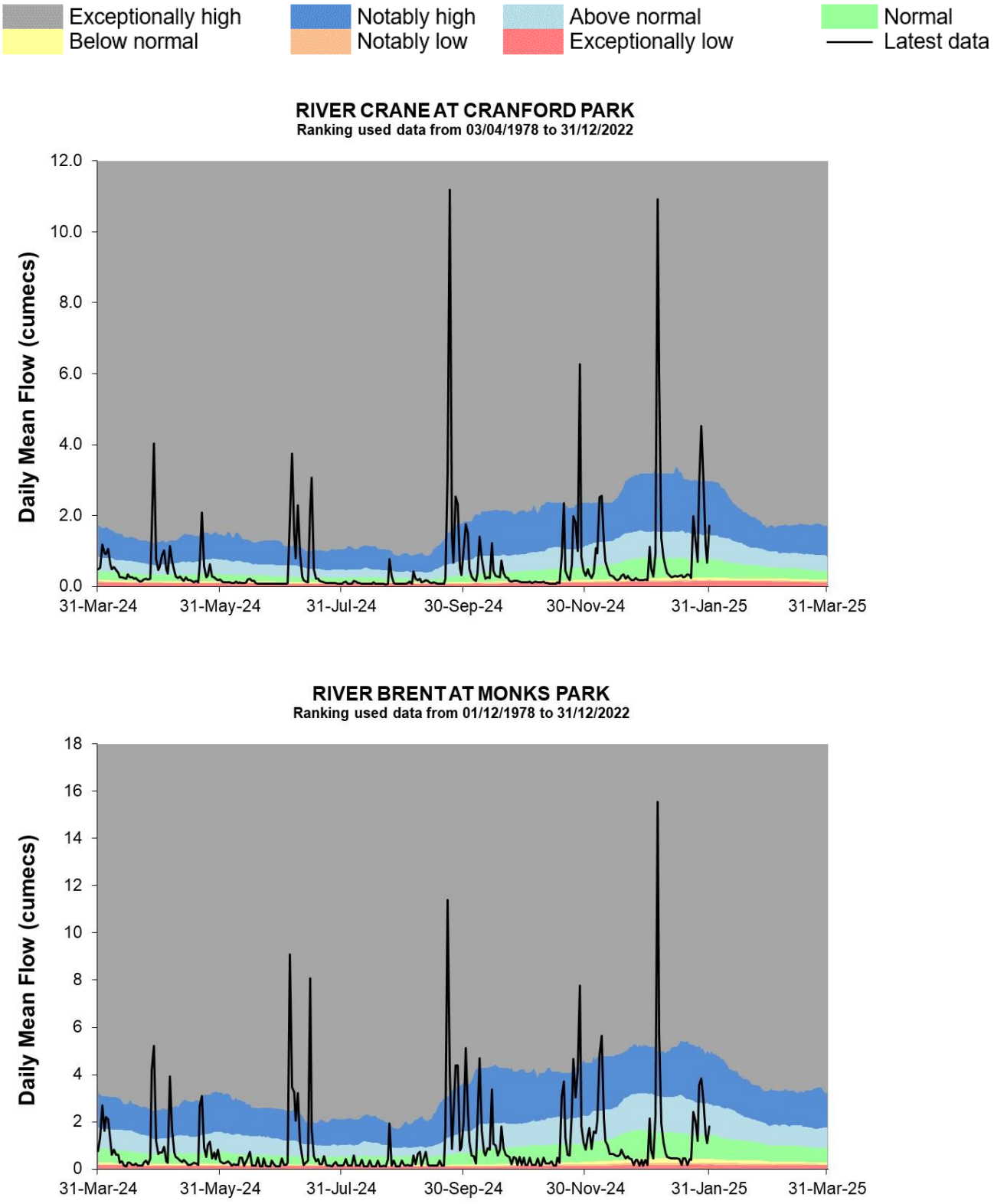


HadUK rainfall data (Source: Met Office. Crown copyright, 2025)

EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2025)

7.2 North London 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.

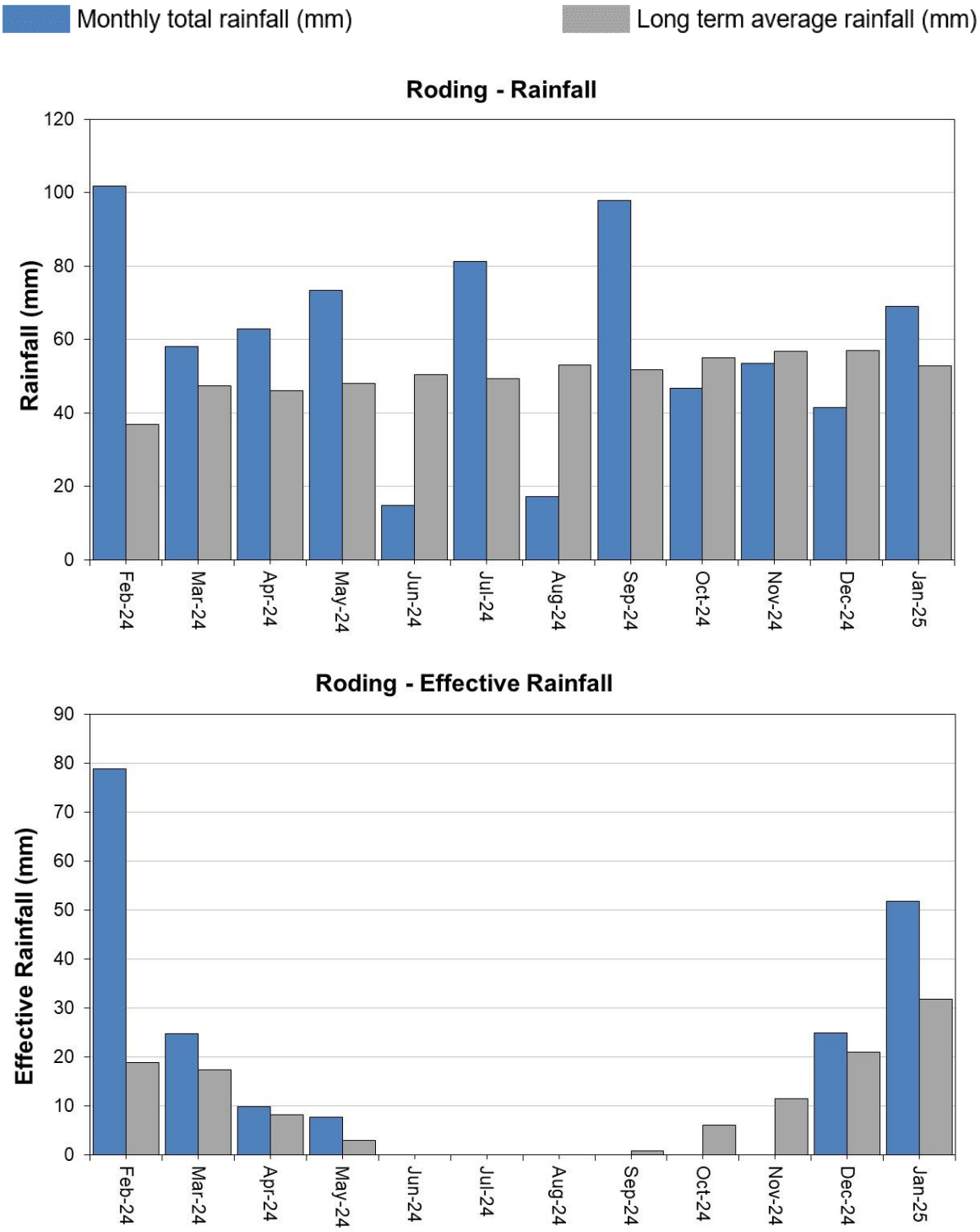


Source: Environment Agency, 2025

8 Roding Catchment

8.1 Roding Rainfall and Recharge chart

Figure 8.1: Monthly rainfall and recharge totals for the past 12 months compared to the 1961 to 1990 long term average for each region and for England.

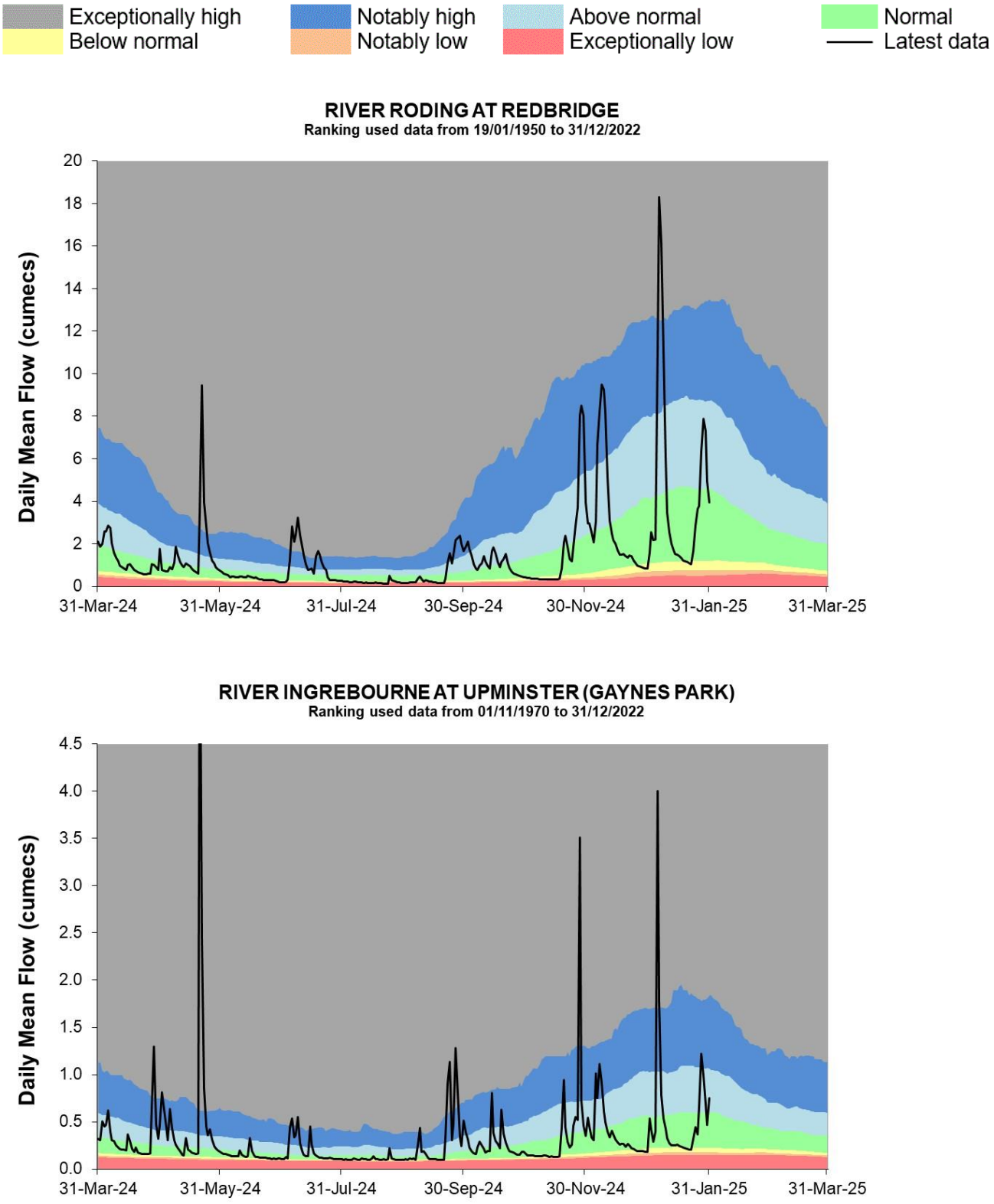


HadUK rainfall data (Source: Met Office. Crown copyright, 2025)

EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2025)

8.2 Roding River flow charts

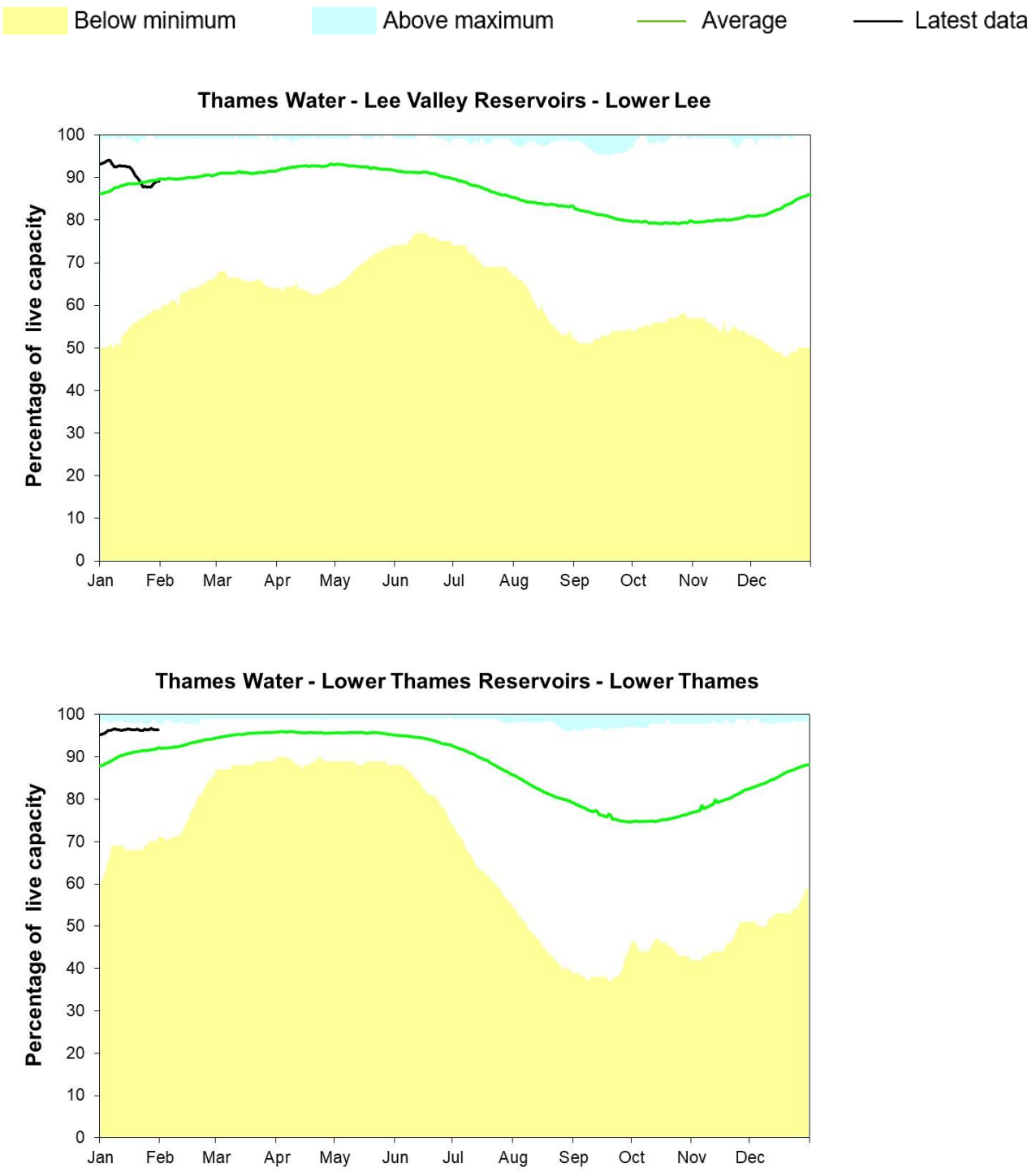
Figure 8.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



Source: Environment Agency, 2025

9 Reservoir stocks

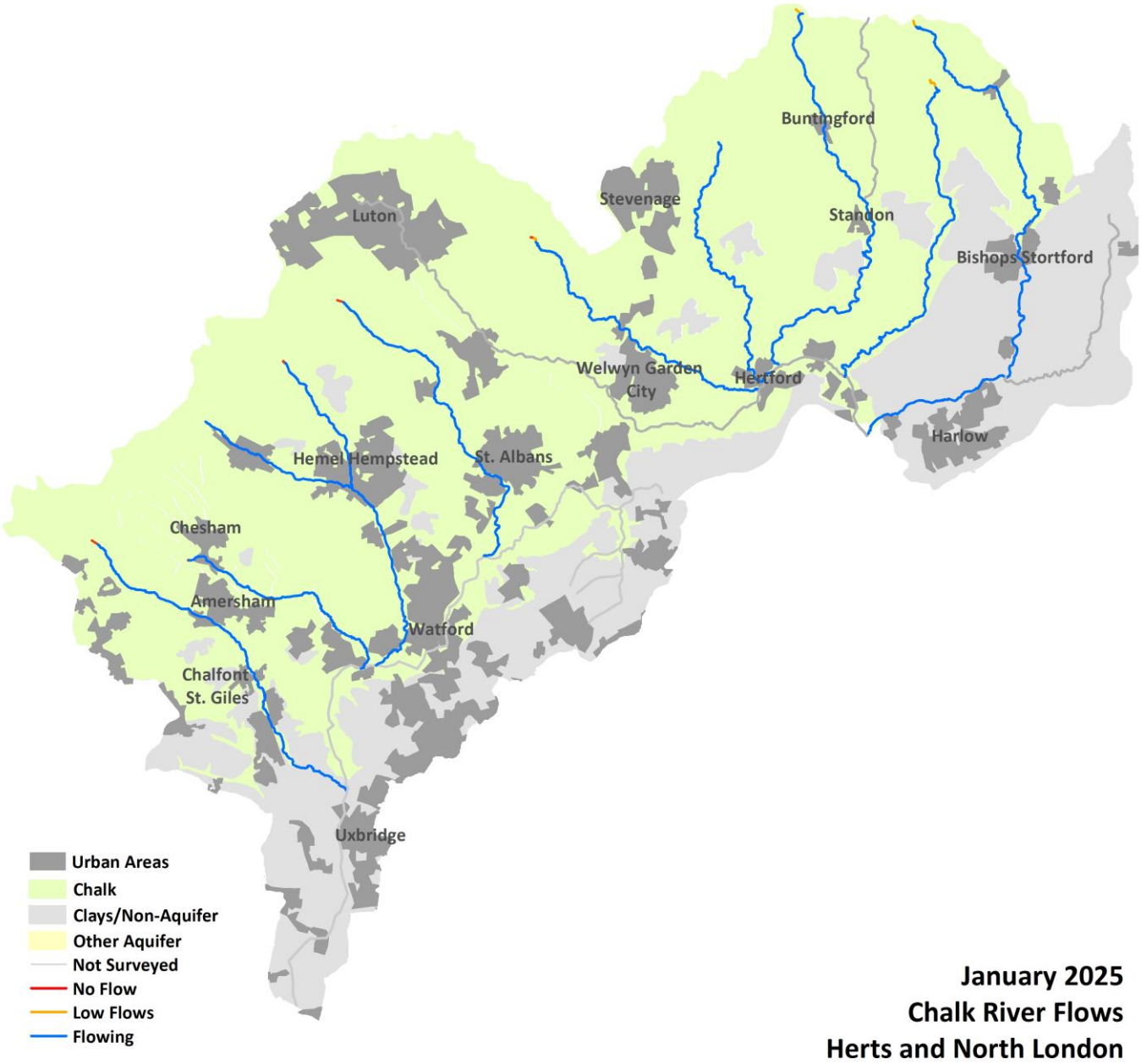
Figure 9.1: End of month reservoir stocks for the Lower Thames reservoir group and the Lee Valley reservoir group compared to long term maximum, minimum and average stocks. Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in length.



Source: water companies, 2025

10 Chalk Rivers

Figure 10.1: Length of Chalk Rivers surveyed during the month and categorised as: Flowing, Low Flows, No Flow or Not Surveyed.



Source: Environment Agency, 2025

11 Glossary

11.1 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).

11.2 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.

12 Appendices

12.1 Rainfall table

Hydrological area	Jan 2025 total rainfall in mm	Jan 2025 rainfall long term average 1961 to 1990	Jan 2025 rainfall % of long term average 1961 to 1990	Winter Oct 2024 to Jan 2025 total rainfall in mm	Winter Oct 2024 to Jan 2025 rainfall % of long term average 1961 to 1990
Chilterns East Colne	90	68	133	294	107
Lee Chalk	71	56	126	247	106
Lower Lee	78	57	138	242	102
North London	86	57	150	247	102
Roding	69	53	131	210	95
Herts and North London total	79	58	135	248	103

12.2 Rainfall banding table

Hydrological area	Jan 2025 band	Nov 2024 to Jan 2025 cumulative band	Aug 2024 to Jan 2025 cumulative band	Feb 2024 to Jan 2025 cumulative band
Chilterns East Colne	Above normal	Normal	Above normal	Exceptionally high
Lee Chalk	Above normal	Normal	Above normal	Exceptionally high
Lower Lee	Above normal	Normal	Normal	Notably high
North London	Above normal	Normal	Normal	Exceptionally high
Roding	Above normal	Normal	Normal	Above normal

12.3 Effective Rainfall table

Hydrological area	Jan 2025 total effective rainfall in mm	Jan 2025 effective rainfall long term average 1961 to 1990 in mm	Jan 2025 effective rainfall % of long term average 1961 to 1990	Winter Oct 2024 to Jan 2025 total effective rainfall in mm	Winter Oct 2024 to Jan 2025 effective rainfall % of long term average 1961 to 1990
Chilterns East Colne	74	50	147	221	171
Lee Chalk	54	32	169	157	201
Lower Lee	61	37	164	121	144
North London	68	36	188	136	163
Roding	52	32	163	77	109
Herts and North London total	62	37	165	142	160

12.4 Soil Moisture Deficit table

Hydrological area	Jan 2025 end of month Soil Moisture Deficit in mm	Jan 2025 end of month Soil Moisture Deficit long term average 1961 to 1990 in mm	Dec 2024 end of month Soil Moisture Deficit in mm	Dec 2024 end of month Soil Moisture Deficit long term average 1961 to 1990 in mm
Chilterns East Colne	0	4	2	19
Lee Chalk	0	13	3	35
Lower Lee	0	6	3	21
North London	0	7	3	23
Roding	0	8	3	25
Herts and North London total	0	8	3	25

12.5 River flows table

Site name	River	Catchment	Jan 2025 band	Dec 2024 band
Colney Street (Hansteads)	Ver	Colne	Exceptionally high	Exceptionally high
Croxley Green	Gade	Colne	Notably high	Exceptionally high
Denham Lodge	Misbourne	Colne	Notably high	Notably high
Denham Colne	Colne	Colne	Notably high	Exceptionally high
Howe Green (Water Hall)	Lee	Upper Lee	Notably high	Exceptionally high
Panshanger	Mimram	Upper Lee	Exceptionally high	Exceptionally high
Wareside (Mardock)	Ash	Upper Lee	Normal	Above normal
Feildes Weir (naturalised)	Lee	Upper Lee	Above normal	Above normal
Brent (Monks Park)	Brent	North London	Above normal	Normal
Cranford (Cranford Park)	Crane	North London	Above normal	Normal
Redbridge	Roding	Roding, Beam and Ingrebourne	Normal	Normal
Upminster (Gaynes Park)	Ingrebourne	Roding, Beam and Ingrebourne	Normal	Normal

12.6 Groundwater table

Site name	Aquifer	Jan 2025 band	Dec 2024 band
Ashley Green	Mid-Chilterns Chalk	Above normal	Notably high
Ballingdon Farm	Mid-Chilterns Chalk	Notably high	Exceptionally high
Amersham Road	Mid-Chilterns Chalk	Above normal	Notably high
Wapseys Wood	Mid-Chilterns Chalk	Notably high	Notably high
Lilley Bottom	Upper Lee Chalk	Exceptionally high	Exceptionally high
Crescent Cottages	Upper Lee Chalk	Exceptionally high	Exceptionally high
Cave Gate	Upper Lee Chalk	Exceptionally high	Exceptionally high
Hixham Hall	Upper Lee Chalk	Notably high	Notably high
Therfield Rectory	Upper Lee Chalk	Exceptionally high	Exceptionally high

12.7 Abstraction licence flow constraints

Number of flow constraints in force between 30 December 2024 and 5 January 2025	Number of flow constraints in force between 6 and 12 January 2025	Number of flow constraints in force between 13 and 19 January 2025	Number of flow constraints in force between 20 and 26 January 2025
12	1	9	10