

Monthly water situation report: Hertfordshire and North London Area

1 Summary - May 2024

Every month since September 2023, rainfall totals have exceeded the monthly long term average rainfall and the pattern continued in May. The Hertfordshire and North London area received 79mm of rain during May, 153% of the long term average. Soil moisture deficits increased but remained below the long term average. River flows and groundwater levels remained high for the time of year with many sites recording the second highest monthly flows and levels on record. The majority of river flow indicator sites were in the exceptionally high bands while nearly all groundwater indicator sites were also in the exceptionally high band.

1.1 Rainfall

Every month since September 2023, rainfall totals have exceeded the monthly long term average (LTA) rainfall and the pattern continued in May across the Hertfordshire and North London area (“the Area”). During May, a total of 79mm fell across the Area, 153% of the LTA rainfall. All 5 of the Area’s areal rainfall units ended the month in the notably high and above normal bands. It was a wet start to May recording rainfall totals on the 1 May of 13.8mm at Epping Forest (Lower Lee) and Luxborough Lane (Roding), 24.8mm at Rye Meads (Lee Chalk) on 2 May, and 11.2 in Nazeing Golf Course (Lower Lee) on 3 May. However, the largest rainfall totals were recorded on 21 May, with 53mm in St Albans (Chilterns) and over 48mm in Wheathampstead (Lee Chalk). Despite these individual wet days, there were an average of 12 dry days (with less than 0.2mm of rainfall recorded) during May. Across the Area, it was the wettest start to Summer (April and May) since 2012. Over the last 12 months (June 2023 to May 2024) rainfall totals were the third highest for that period on record (which started in 1871), with only the 12 months to May in 1904 and 2001 wetter.

1.2 Soil moisture deficit and recharge

Throughout May, soil moisture deficits (SMD) increased across the Area from 5mm at the start of the month to 16mm at the end of the month but remained well below the LTA of 43mm. Despite the soils beginning to dry, the Area continued to see notable effective rainfall of 182% of LTA. For the summer period (April - May) the Area received 154% of the LTA effective rainfall.

1.3 River flows

River flows remained very high for the time of year with many peaking in response to the heavy rainfall around 21 May. By the end of the month, 7 river flow indicator sites reported monthly mean river flows in the exceptionally high band, 2 in the notably high band, one was in the above normal band, while the remaining 2 indicator sites recorded flows in the normal band.

Many of the sites experienced their second highest May monthly mean flows on record, exceeded only by 2001. These included the River Ver at Colney Street (records start 1956), River Gade at Croxley Green (records start 1970), the River Misbourne at Denham Lodge (records start 1984), the River Colne at Denham Colne (records start 1952), the River Lee at Howe Green (records start 1959) and the River Mimram at Panshanger (records start 1952). A total of 11 flood alerts were issued across the Area in response to heavy rainfall at the start of the month and on 21 May.

1.4 Groundwater levels

During May, groundwater levels declined slightly but remained high with all sites (except for Ballingdon Farm (Mid Chilterns Chalk)) recording levels in the exceptionally high band. Four sites recorded their second highest level on record after 2001. These were Ashley Green (Mid Chilterns Chalk) (record began 1987), Amersham Road (Mid Chilterns Chalk) (record began 1991), Wapseys Wood (Mid Chilterns Chalk) (record began 1988), and Hixham Hall (Upper Lee Chalk) (record began 1964).

1.5 Reservoir stocks

Lower Thames and Lee Valley Reservoir stocks remained above the LTA throughout the month. The Lower Thames reservoir levels increased from 96% to 98% of live capacity, while the Lee Valley reservoir increased from 94% to 98%.

1.6 Environmental impact

The sources of the Chalk rivers remained at similar locations to April 2024. In the Colne catchment, the River Chess flowed above Chesham, the River Ver continued to flow upstream of Markyate cell, while the River Gade was still flowing from Hudnall Corner. The River Bulbourne remained upstream of Dudswell village near Cowroast, and the Misbourne continued to flow from Mobwell pond. In the Upper Lee catchment, the River Mimram started flowing at the lakes upstream of Whitwell, while the River Beane started flowing upstream of Cromer. The River Rib started flowing upstream of Hay Green and the River Ash (Herts) started flowing at Meesden, losing flow temporarily around Clapgate. The River Stort started flowing above Langley Lower Green.

To protect the environment during May a number of abstraction license flow constraints were in force. This ranged between 0 and 1 per week, out of a maximum of 35.

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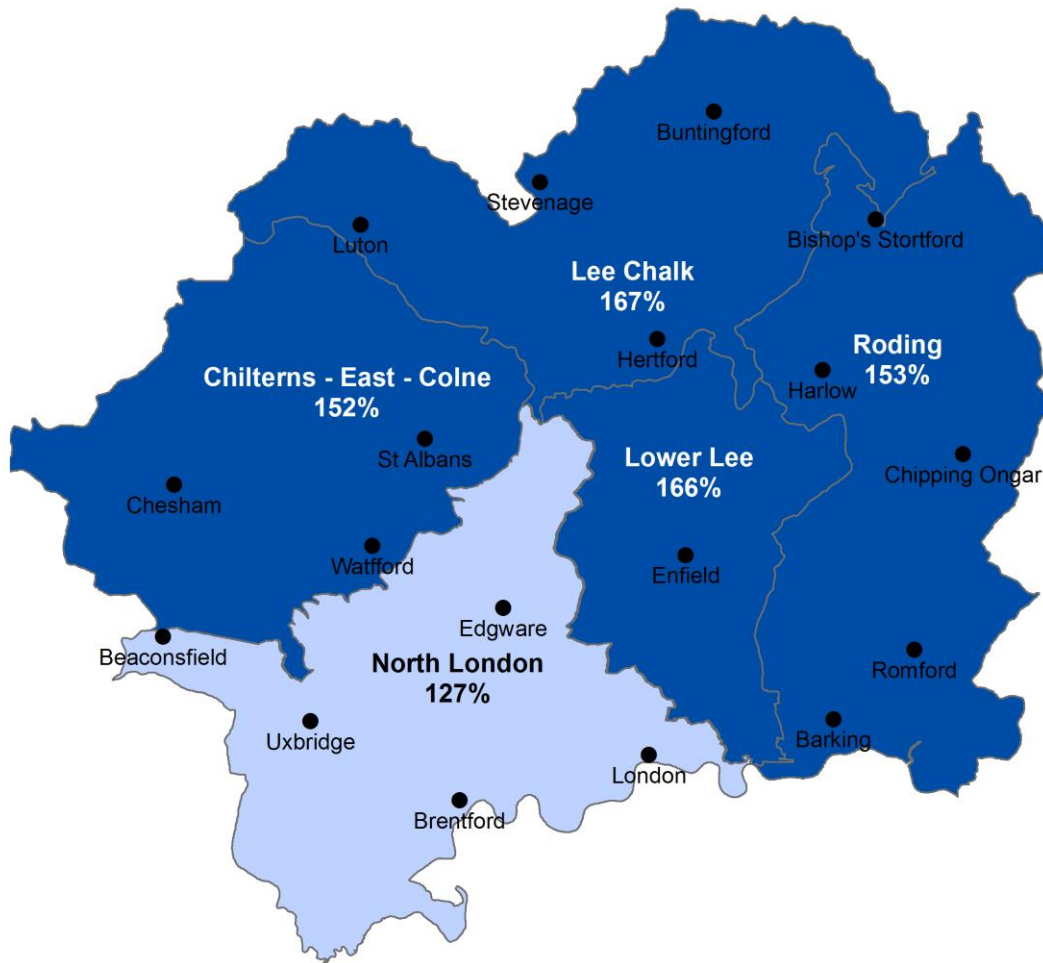
Contact Details: 03708 506 506

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2 Rainfall

2.1 Rainfall map

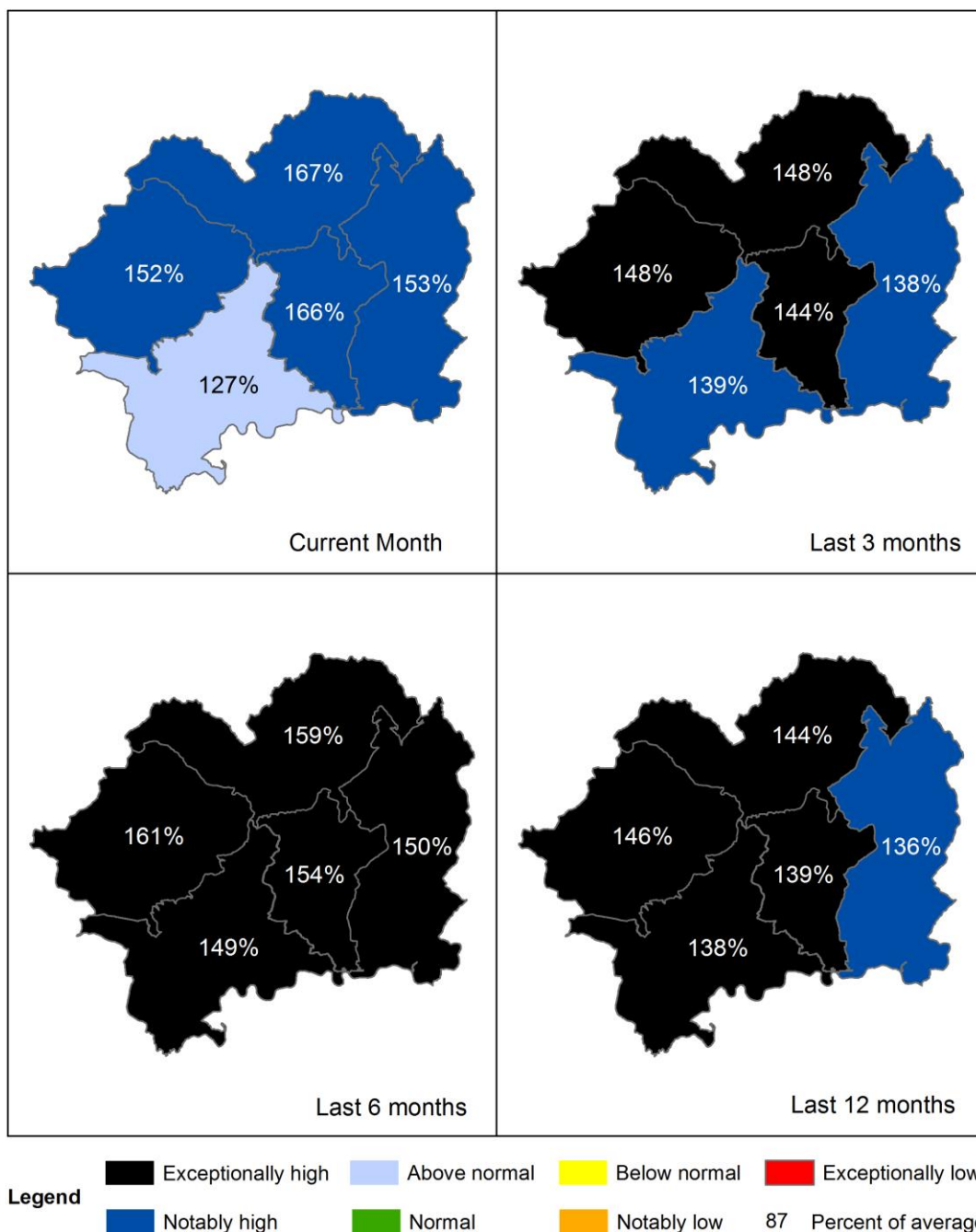
Figure 2.1: Total rainfall for hydrological areas for the current month (up to 31 May 2024), classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.



Legend

Exceptionally high	Below normal	Town / City
Notably high	Notably low	87% Percent of average
Above normal	Exceptionally low	
Normal		

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

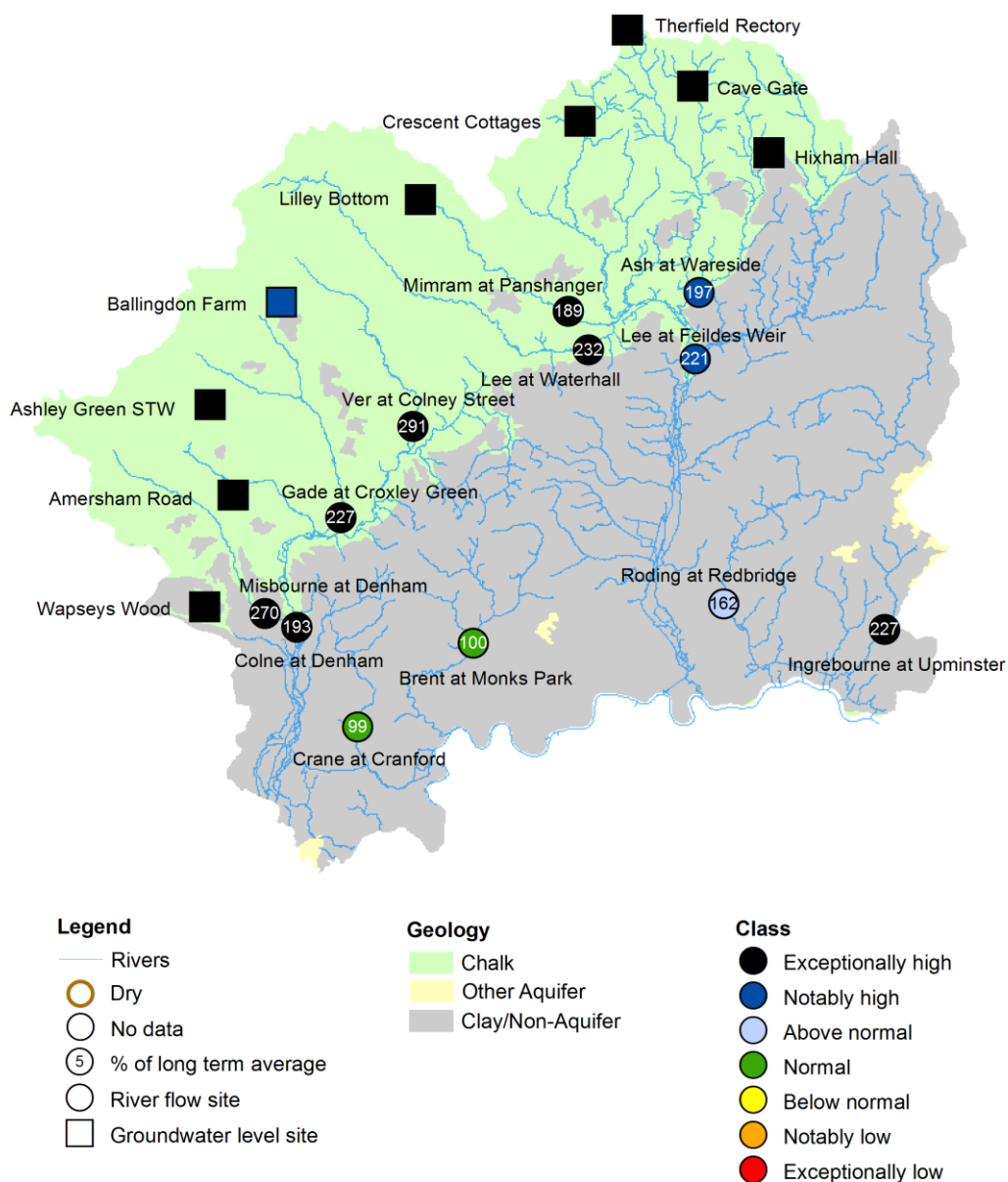


HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2024). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Crown copyright. All rights reserved. Environment Agency, 100024198, 2024.

3 River flows and Groundwater levels

3.1 River flows and Groundwater level map

Figure 3.1: Monthly mean river flow and groundwater levels at our indicator sites for May 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic May monthly means. Table available in the appendices with detailed information.



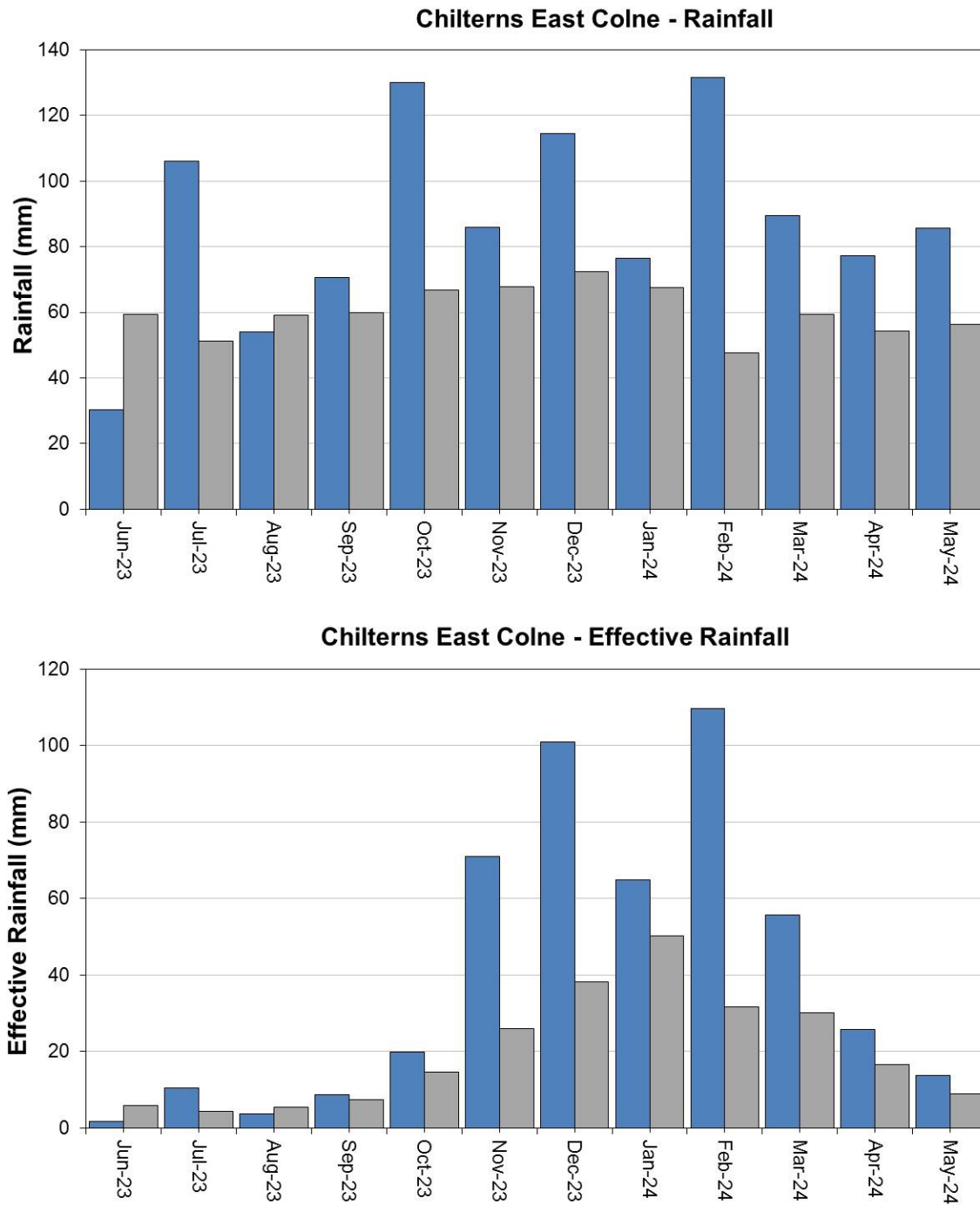
(Source: Environment Agency). Crown copyright. All rights reserved. Environment Agency, 100024198, 2024. Geological map reproduced with kind permission from UK Groundwater Forum, BGS copyright NERC. Crown copyright. All rights reserved. Environment Agency, 100024198, 2024.

4 Colne Catchment

4.1 Colne Rainfall and effective rainfall charts

Figure 4.1: Monthly rainfall and effective rainfall totals for the past 24 months compared to the 1961 to 1990 long term average for the Colne.

Monthly total rainfall (mm) Long term average rainfall (mm)



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

EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2024)

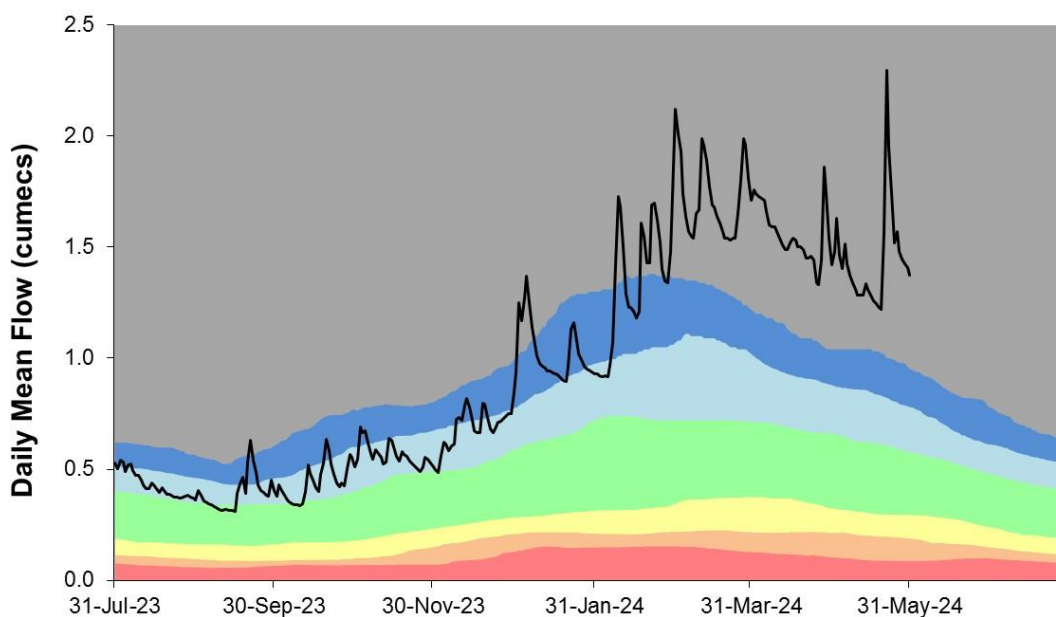
4.2 Colne River flow charts

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.



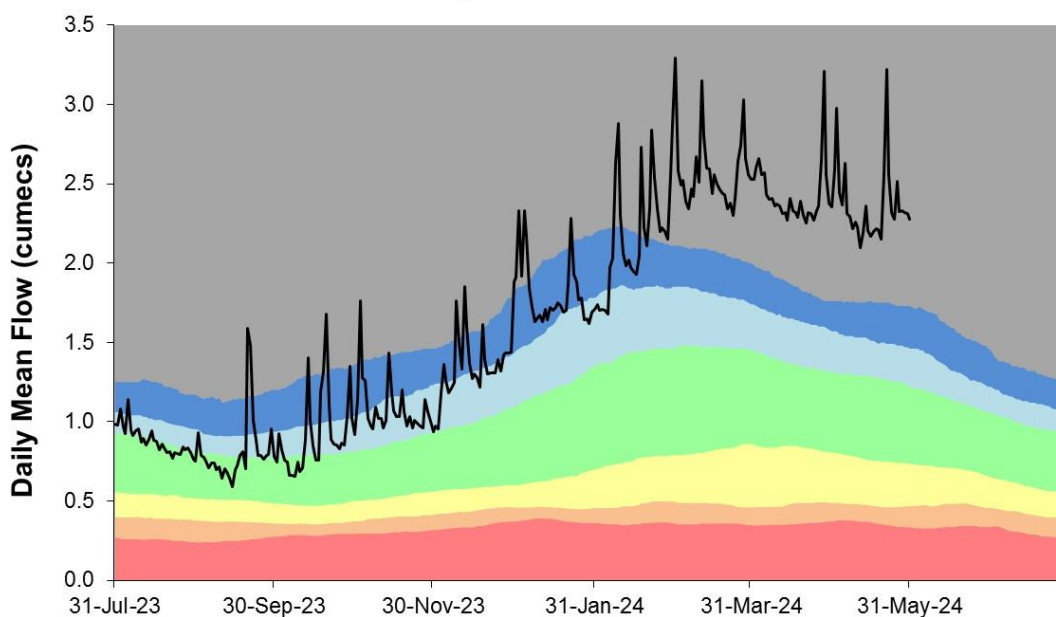
RIVER VER AT COLNEY STREET (HANSTEADS)

Ranking used data from 01/10/1956 to 31/12/2022

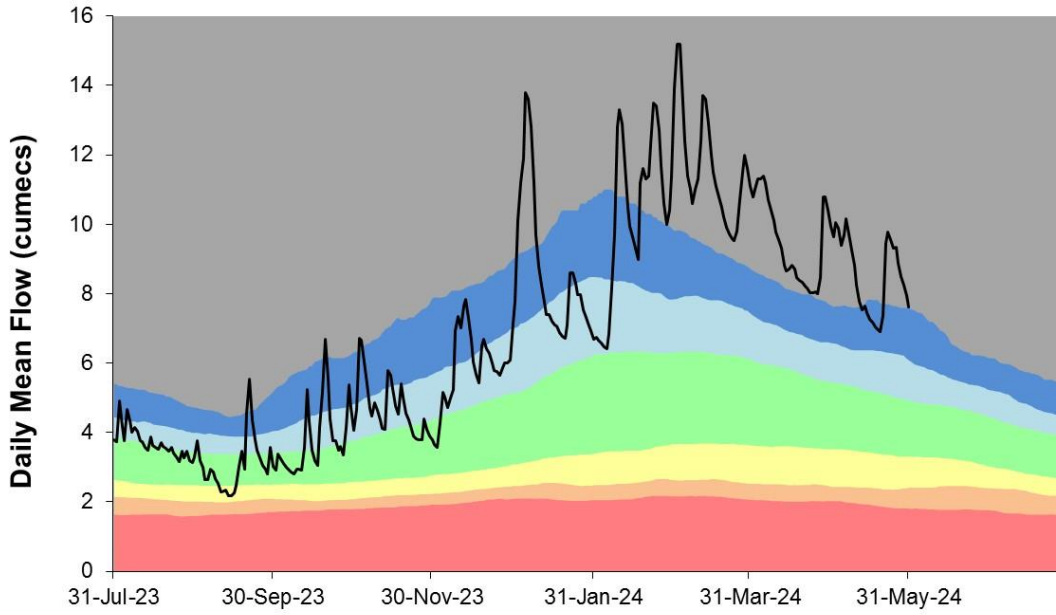


RIVER GADE AT CROXLEY GREEN

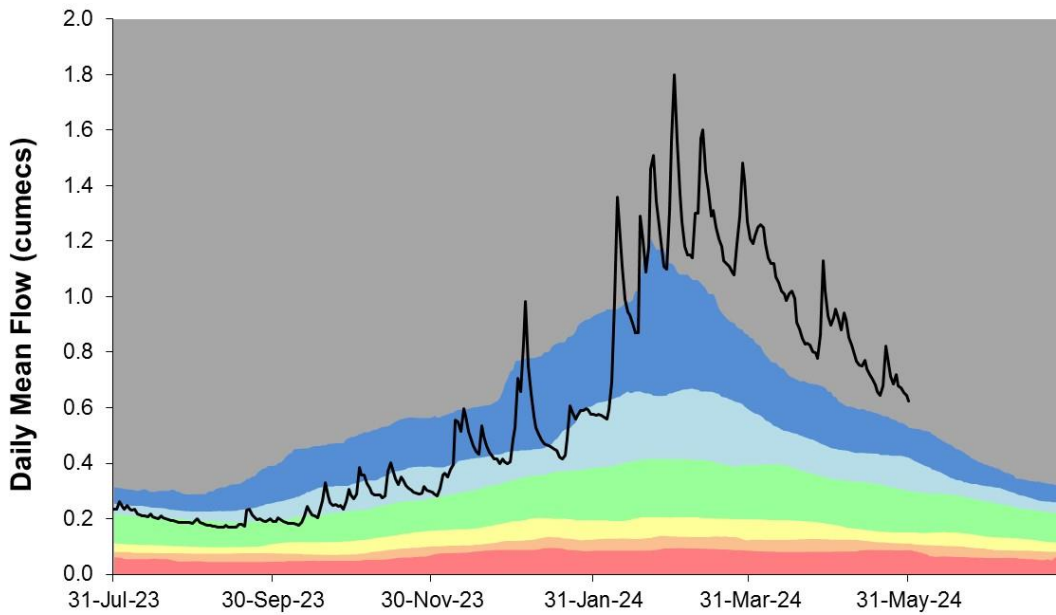
Ranking used data from 01/10/1970 to 31/12/2022



RIVER COLNE AT DENHAM
Ranking used data from 01/10/1952 to 31/12/2022



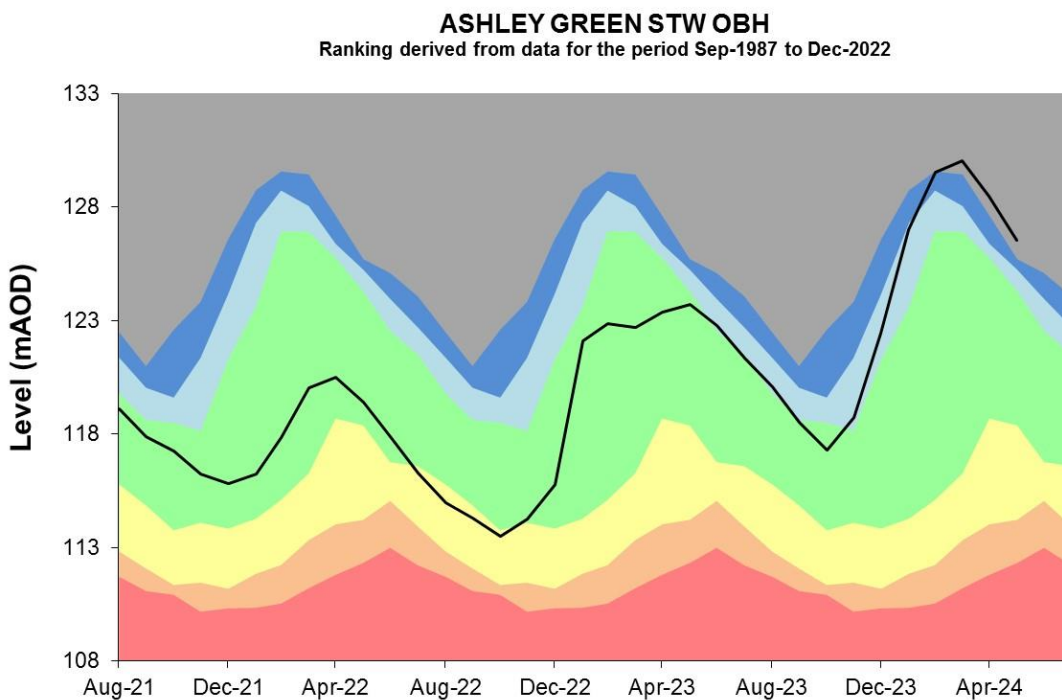
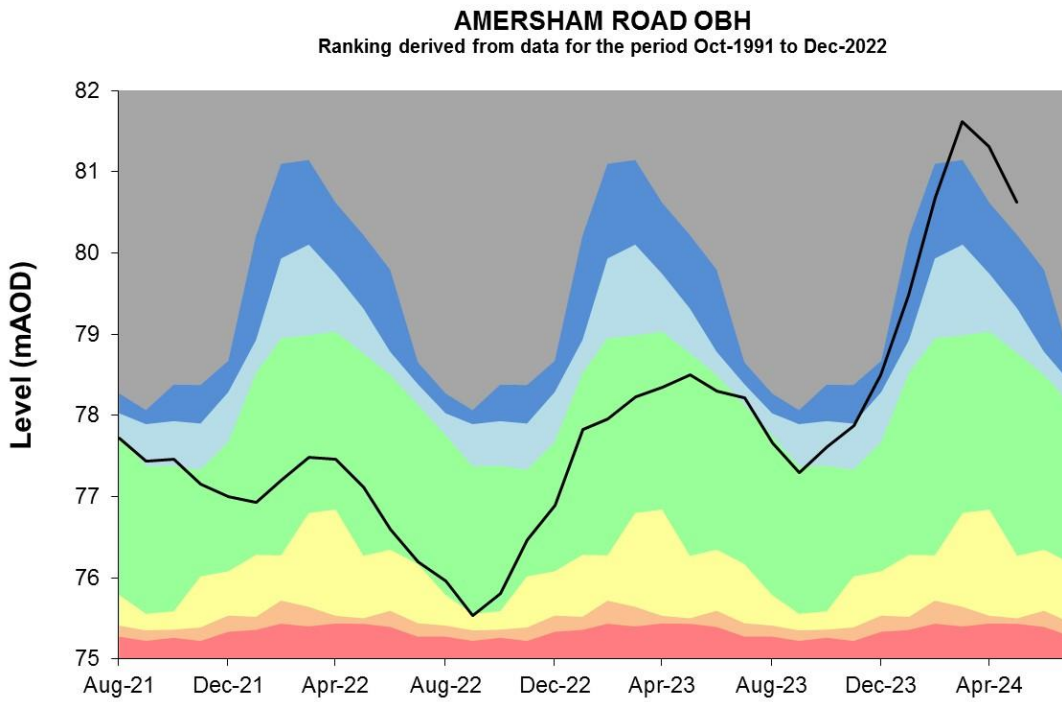
RIVER MISBOURNE AT DENHAM LODGE
Ranking used data from 01/07/1984 to 31/12/2022



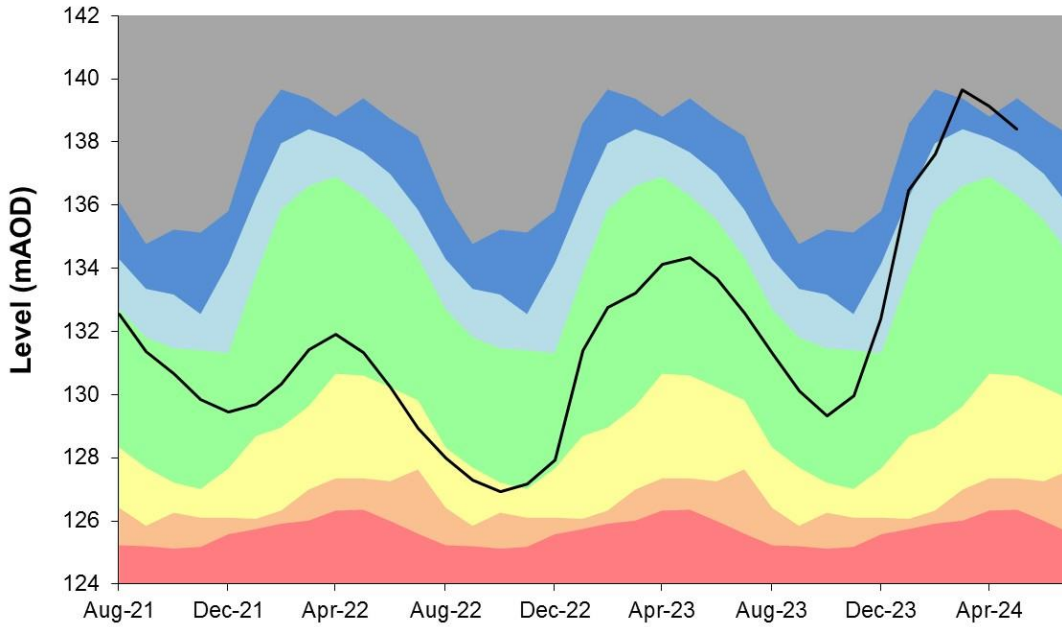
Source: Environment Agency, 2024

4.3 Colne Groundwater level charts

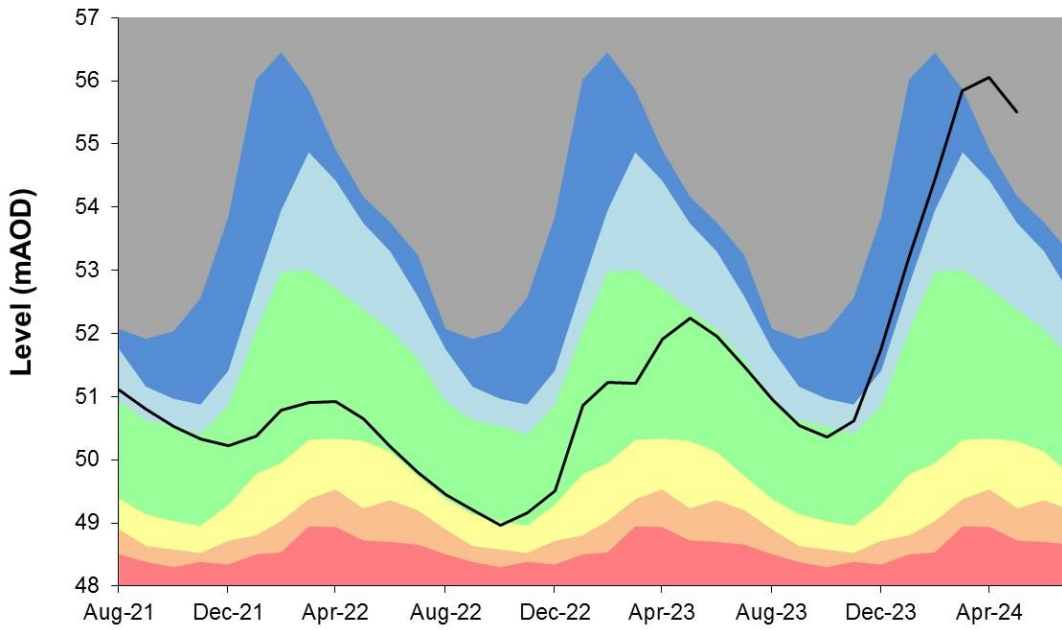
Figure 4.3: End of month groundwater levels at index groundwater level sites for major aquifers. 22 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.



BALLINGDON FARM
Ranking derived from data for the period Jan-1975 to Dec-2022



WAPSEYS WOOD OBH
Ranking derived from data for the period Mar-1988 to Dec-2022



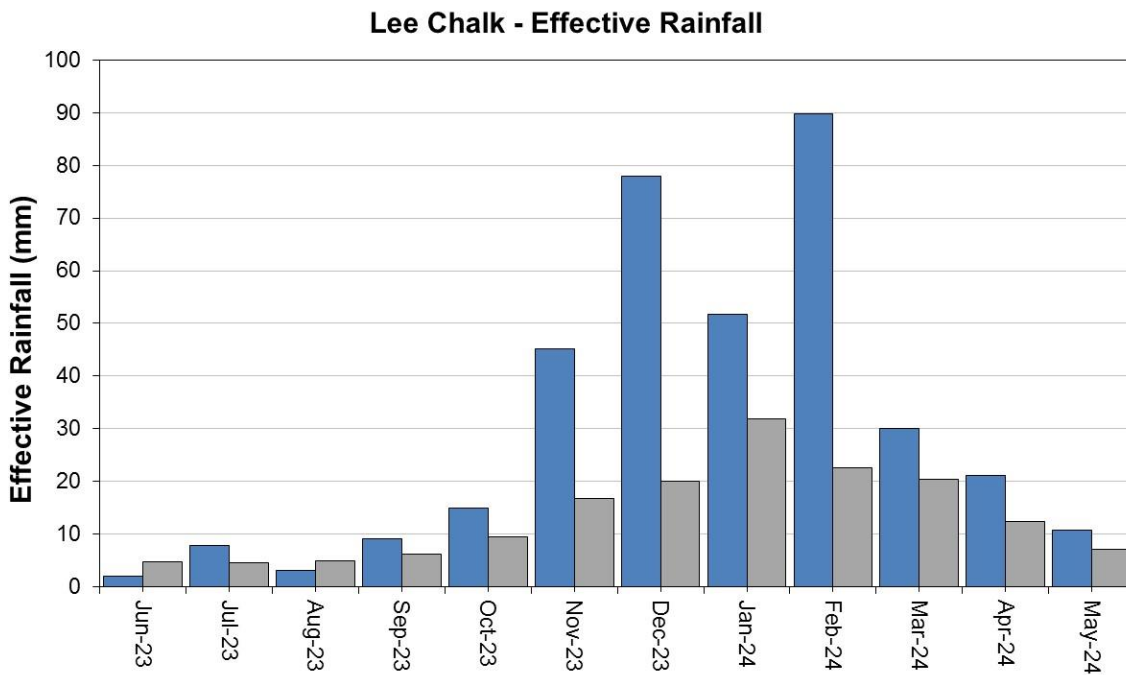
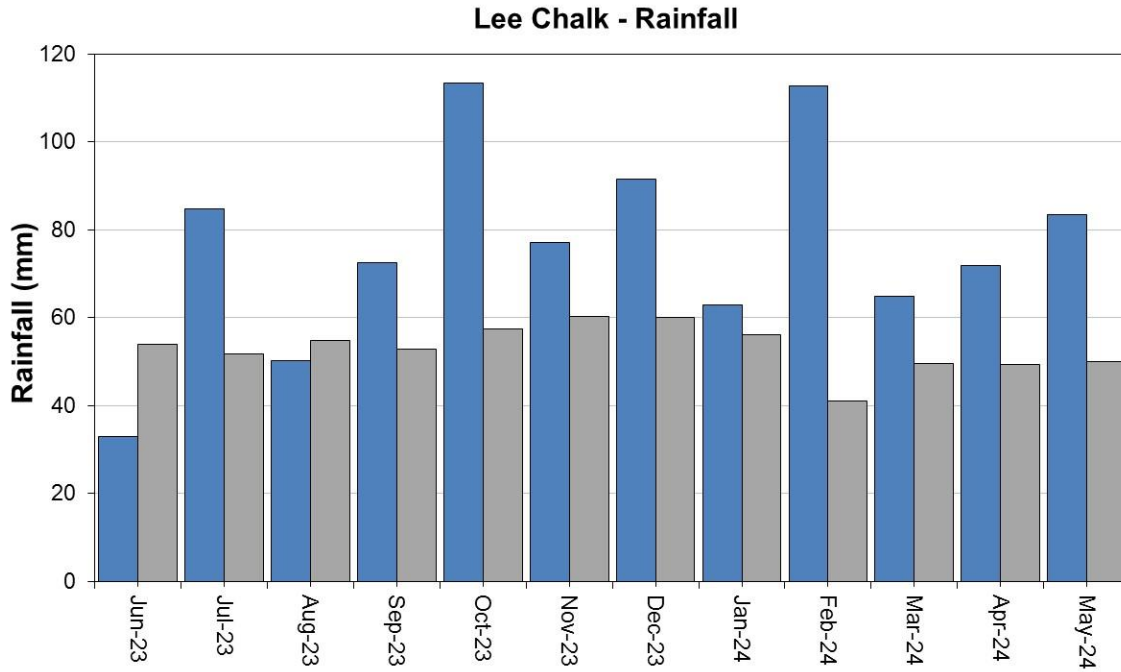
Source: Environment Agency, 2024

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 24 months compared to the 1961 to 1990 long term average for each region and for England.

Monthly total rainfall (mm) Long term average rainfall (mm)



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

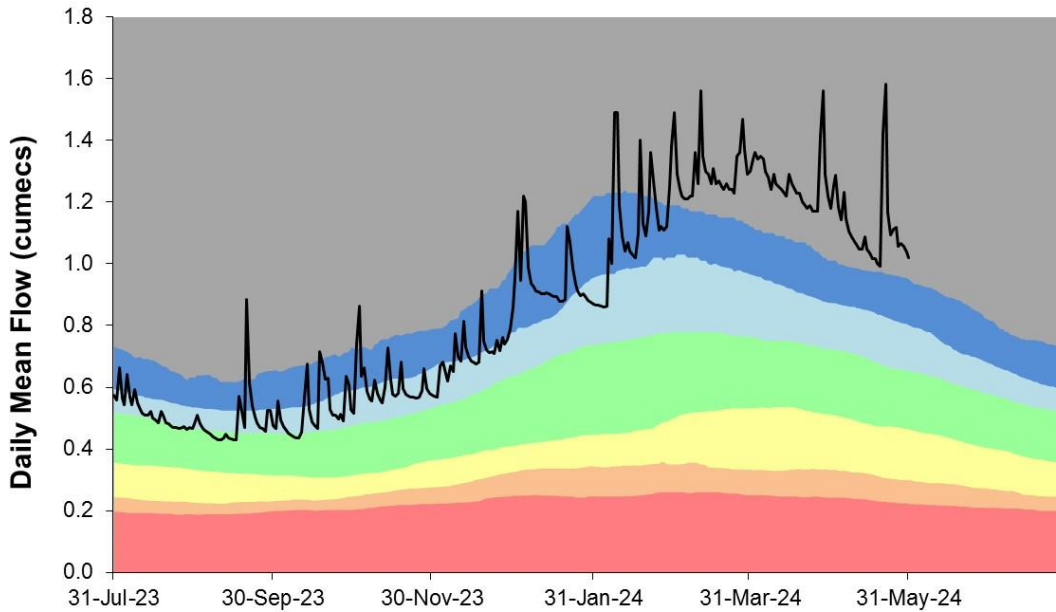
EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2024)

5.2 Upper Lee River flow charts

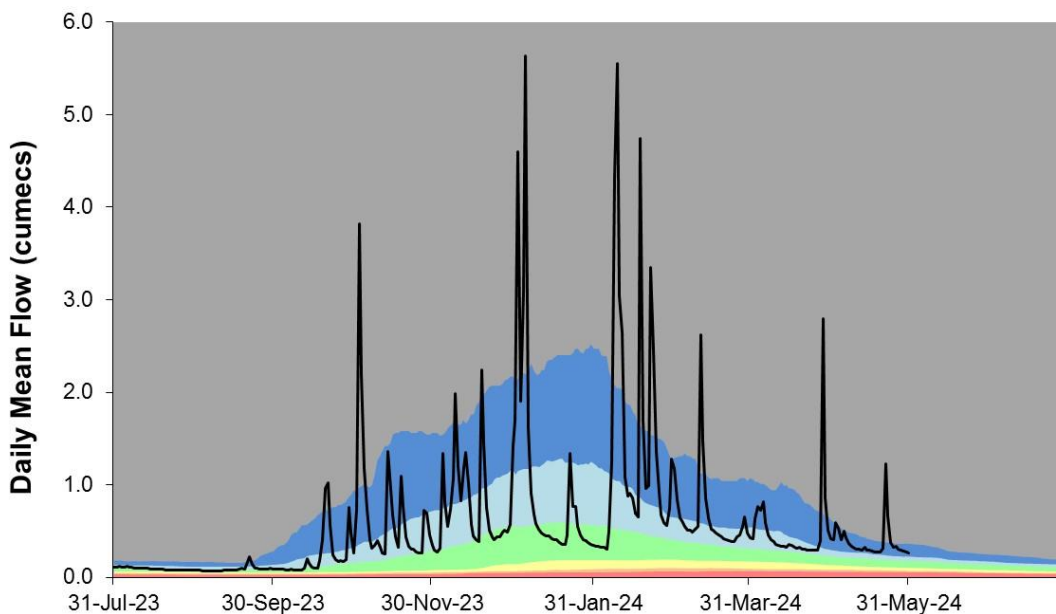
Figure 5.2 Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



RIVER MIMRAM AT PANSHANGER
Ranking used data from 01/12/1952 to 31/12/2022

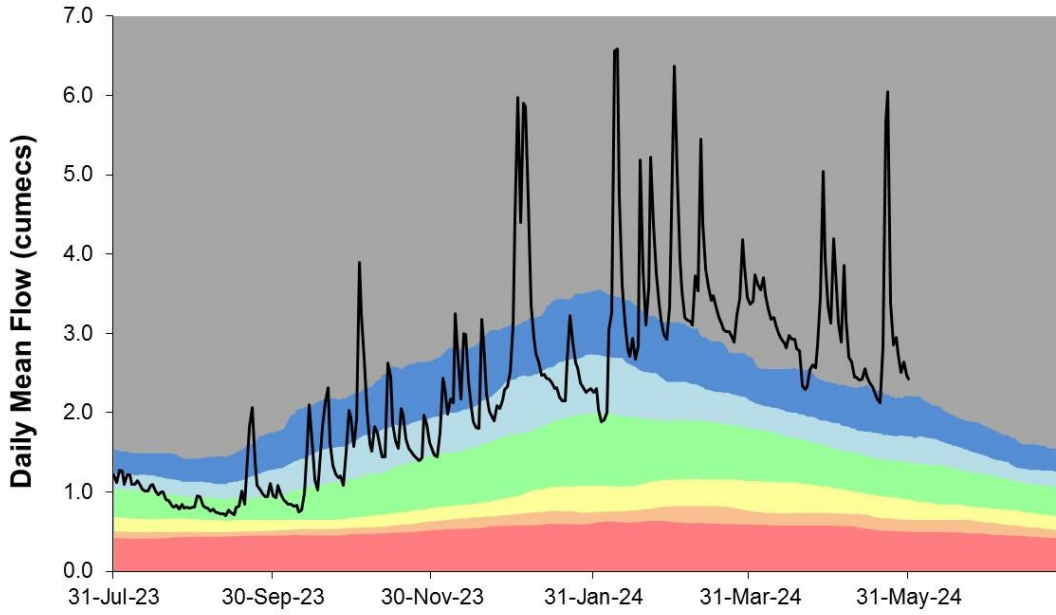


RIVER ASH AT WARESIDE (MARDOCK)
Ranking used data from 03/06/1980 to 31/12/2022



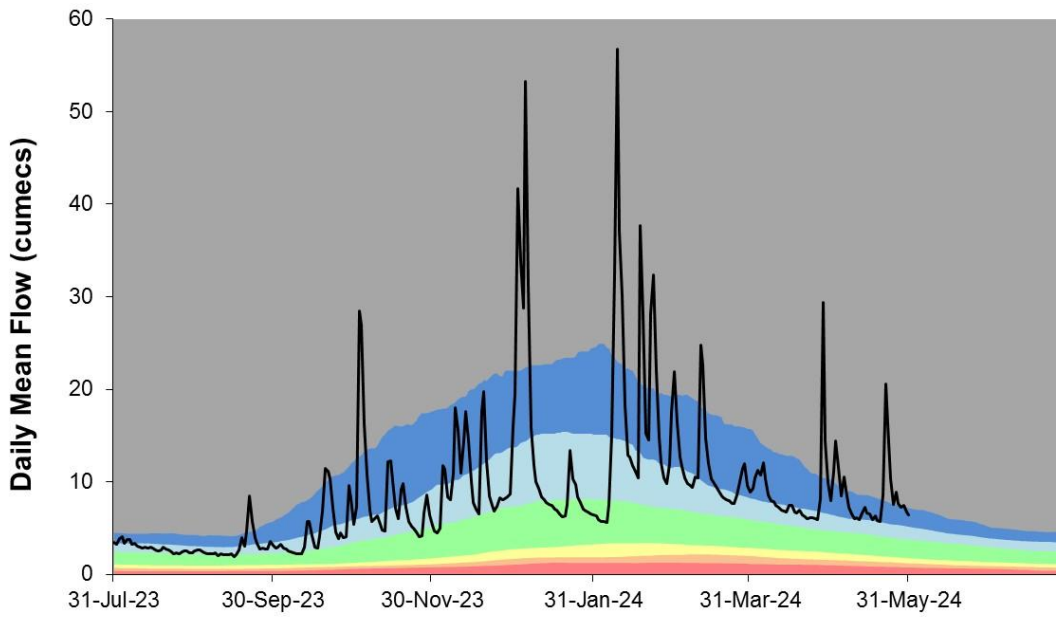
RIVER LEE AT HOWE GREEN (WATER HALL)

Ranking used data from 01/04/1959 to 31/12/2022



RIVER LEE AT FEILDES WEIR

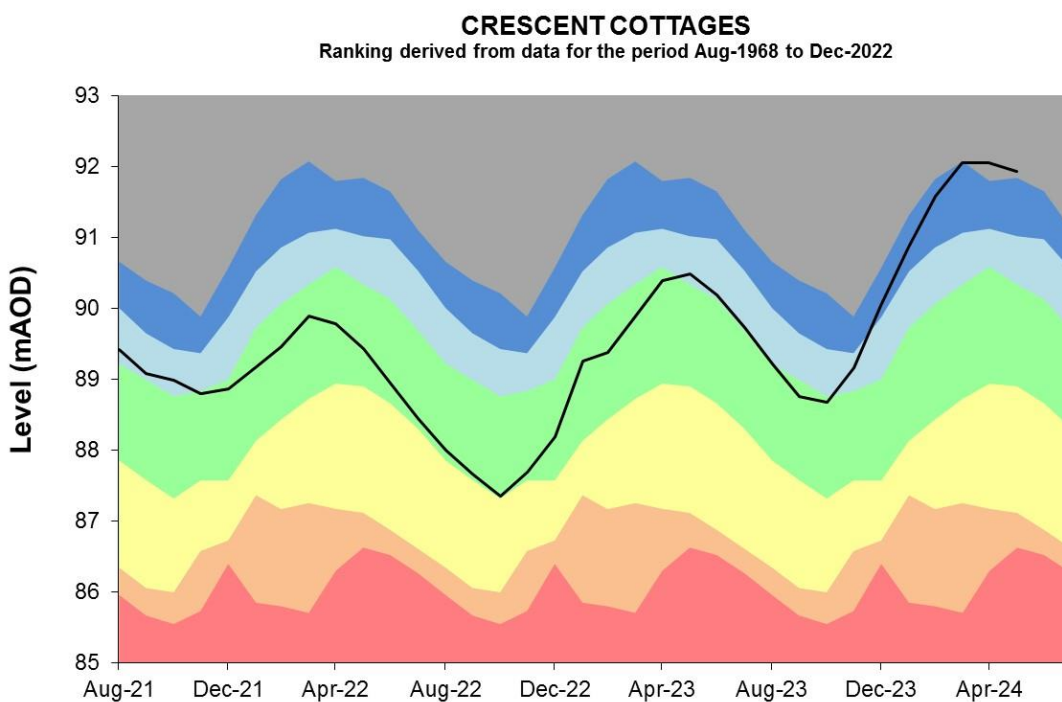
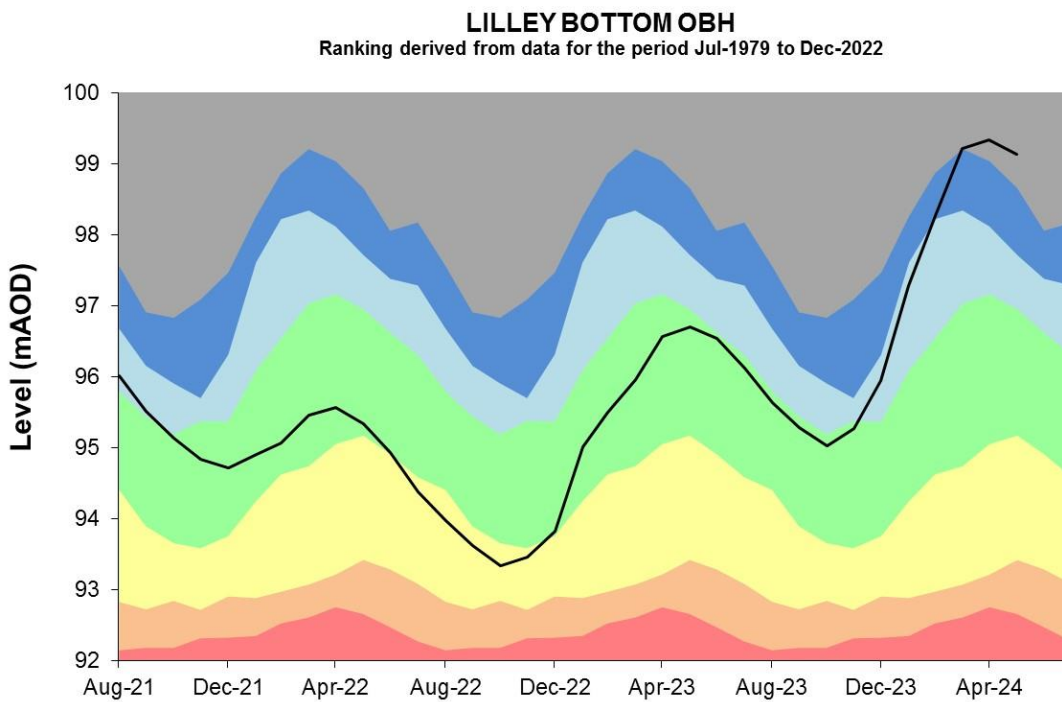
Ranking used data from 10/05/1883 to 31/12/2022



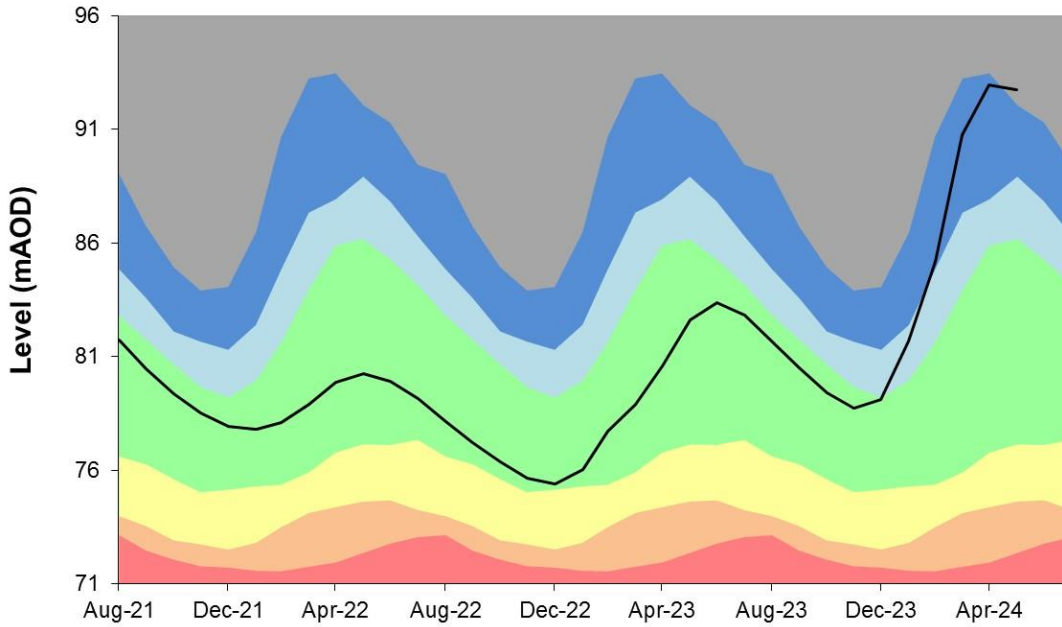
Source: Environment Agency, 2024

5.3 Upper Lee Groundwater level charts

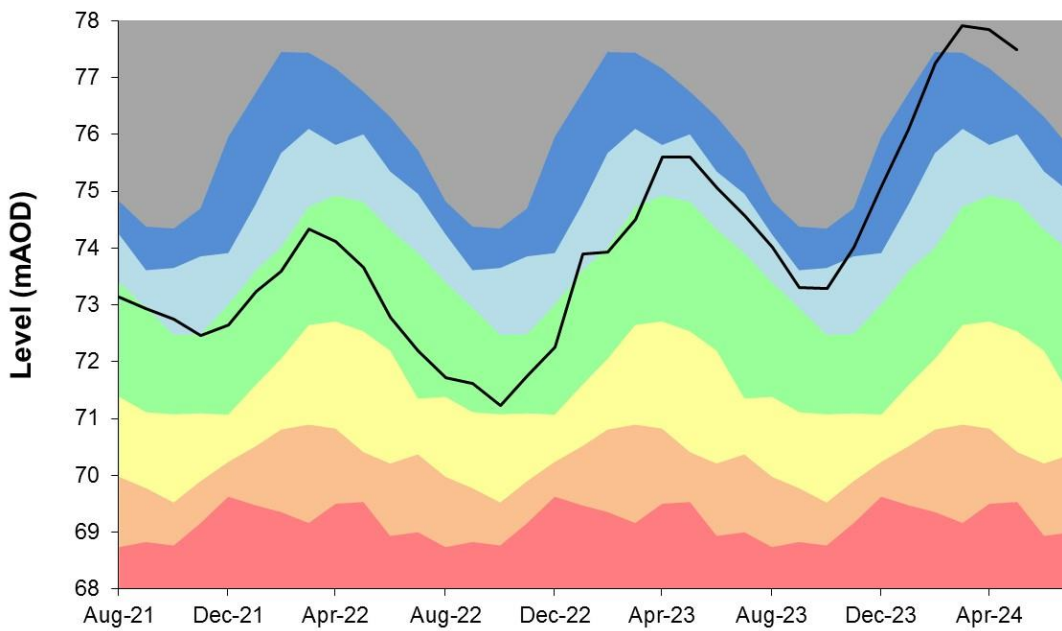
Figure 5.3: End of month groundwater levels at index groundwater level sites for major aquifers. 22 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.



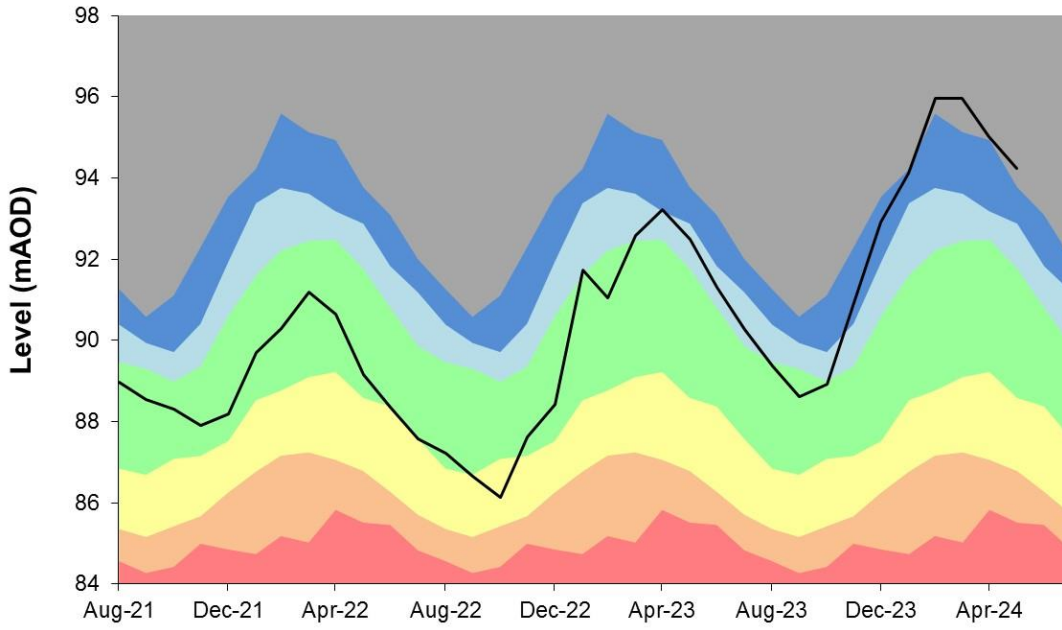
THERFIELD RECTORY
Ranking derived from data for the period Jan-1883 to Dec-2022



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



CAVE GATE
Ranking derived from data for the period Jun-1966 to Dec-2022



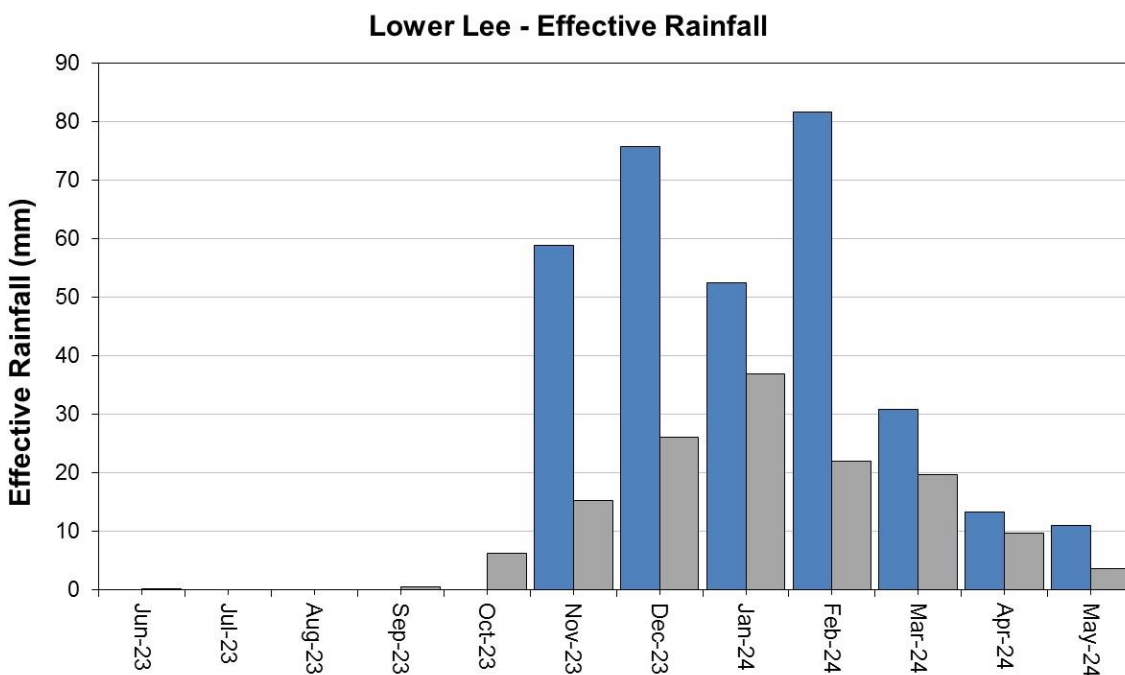
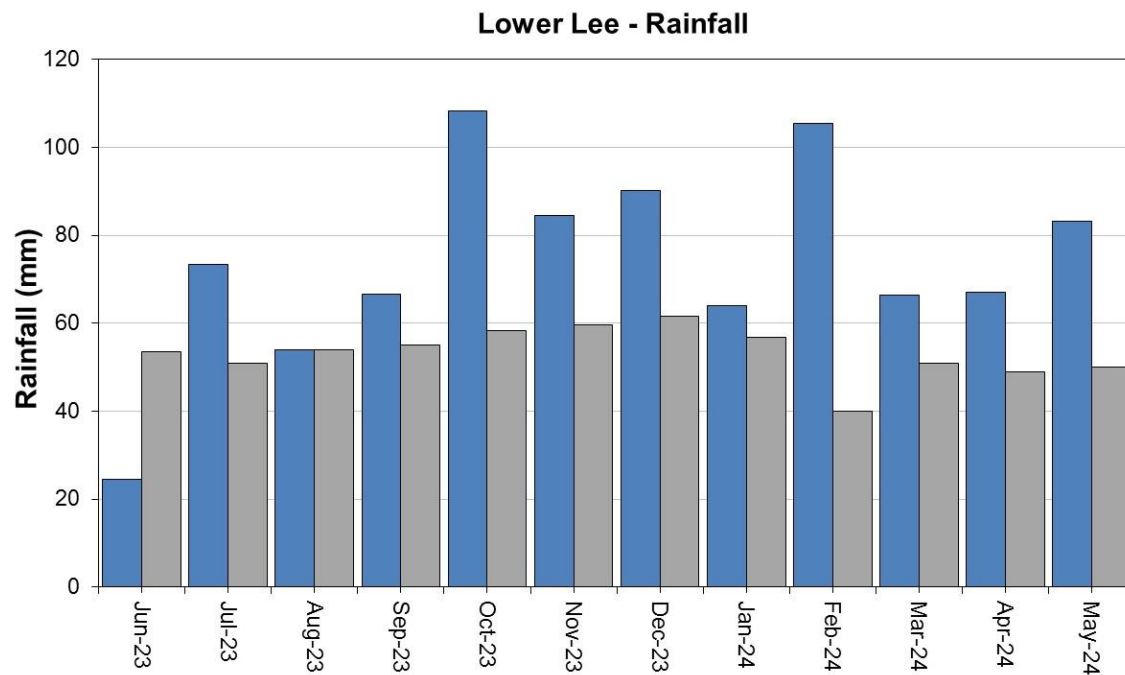
Source: Environment Agency, 2024

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 24 months as a percentage of the 1961 to 1990 long term average for the Lower Lee.

Monthly total rainfall (mm) Long term average rainfall (mm)



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

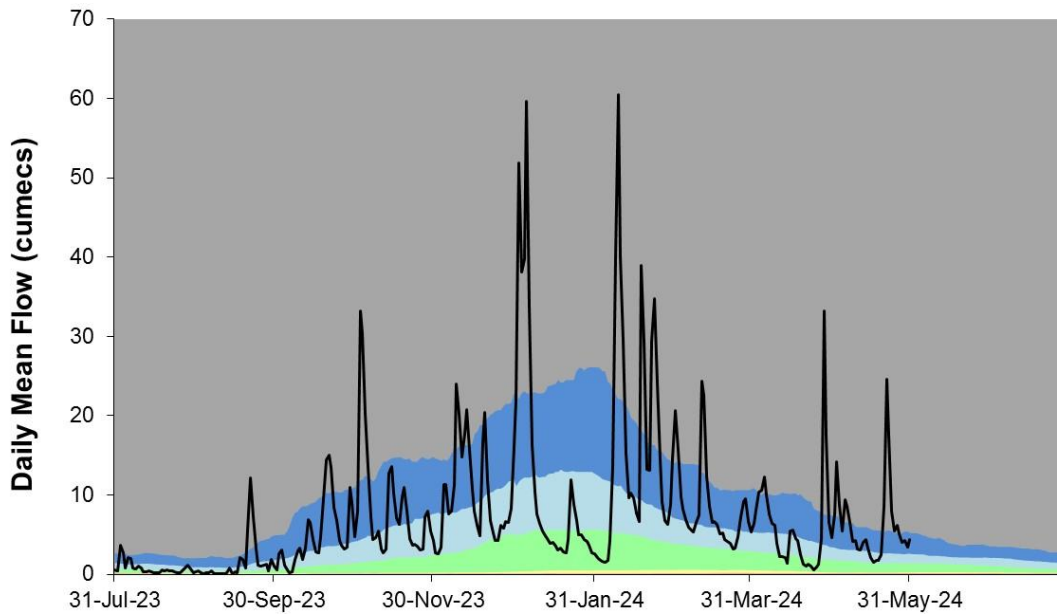
EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2024)

6.2 Lower Lee River flow charts

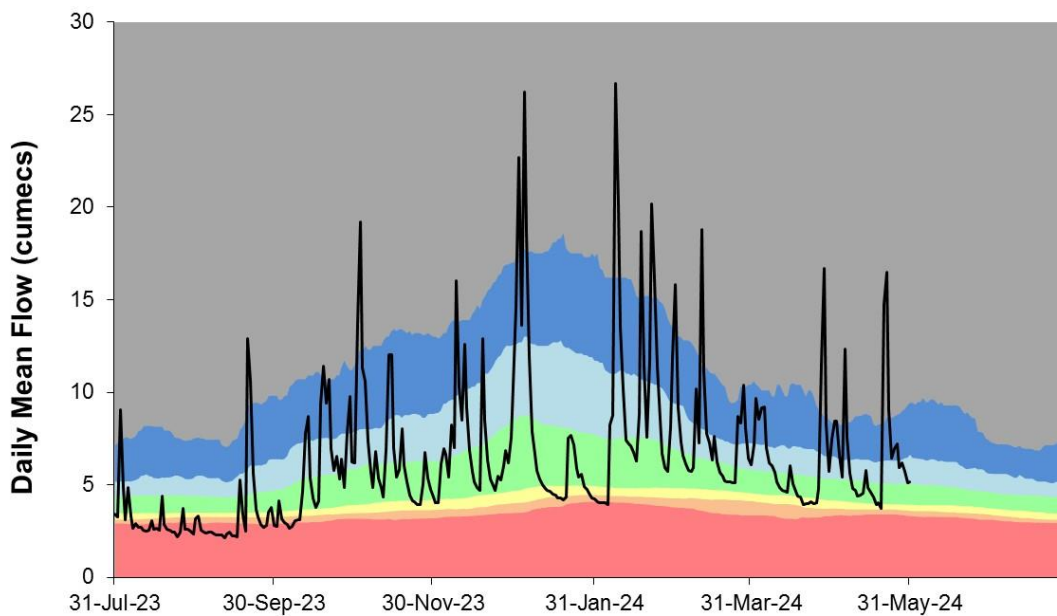
Figure 6.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



LEE FLOOD CHANNEL AT WALTHAMSTOW (LOW HALL)
 Ranking used data from 01/01/1980 to 31/12/2022



RIVER LEE AT LEA BRIDGE
 Ranking used data from 22/07/1992 to 31/12/2022



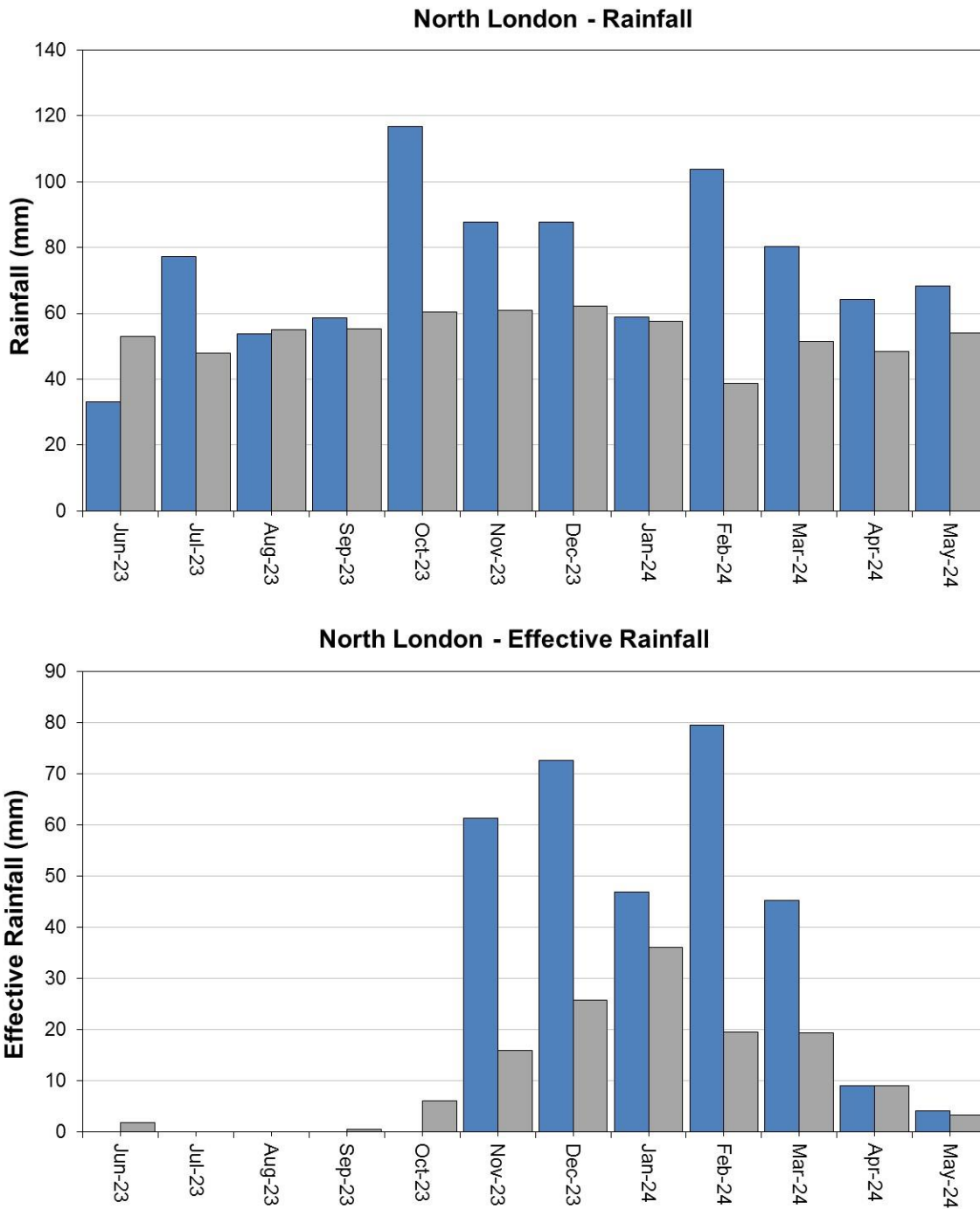
Source: Environment Agency, 2024

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 24 months compared to the 1961 to 1990 long term average for each region and for England.

Monthly total rainfall (mm) Long term average rainfall (mm)



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

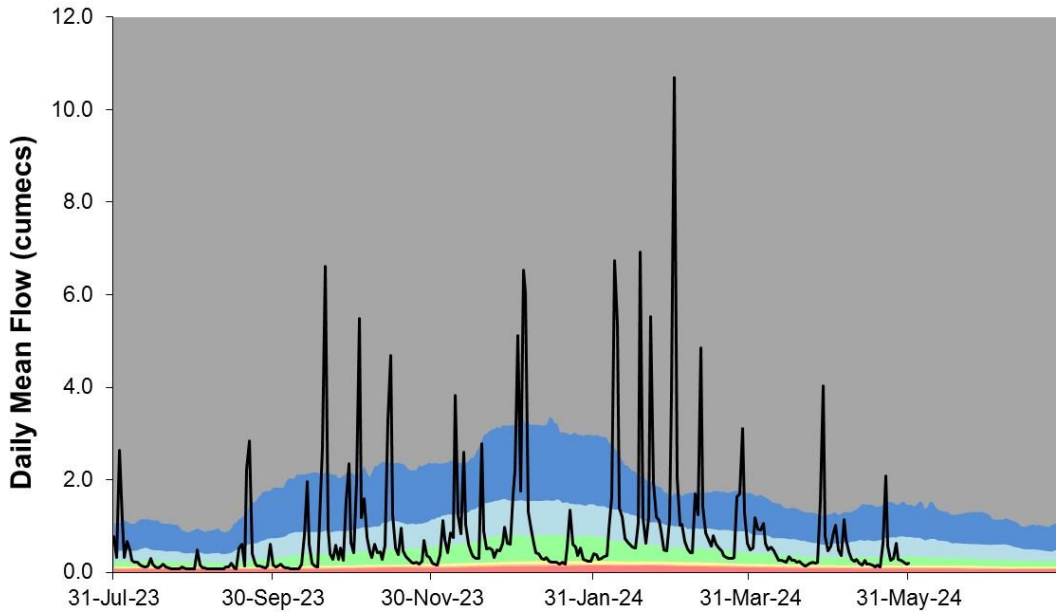
EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2024)

7.2 North London River flow charts

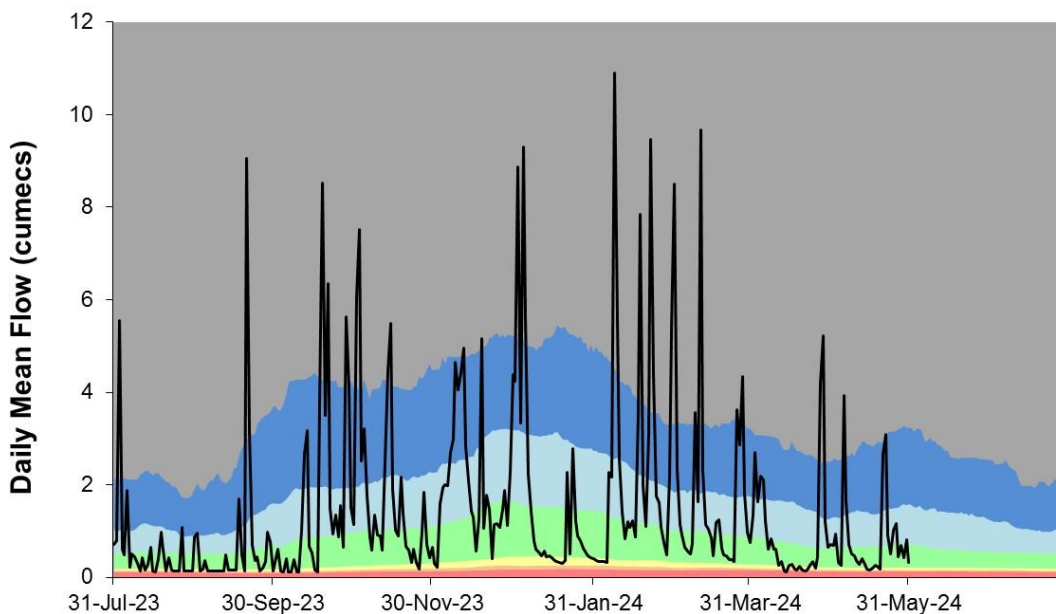
Figure 7.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



RIVER CRANE AT CRANFORD PARK
Ranking used data from 03/04/1978 to 31/12/2022



RIVER BRENT AT MONKS PARK
Ranking used data from 01/12/1978 to 31/12/2022

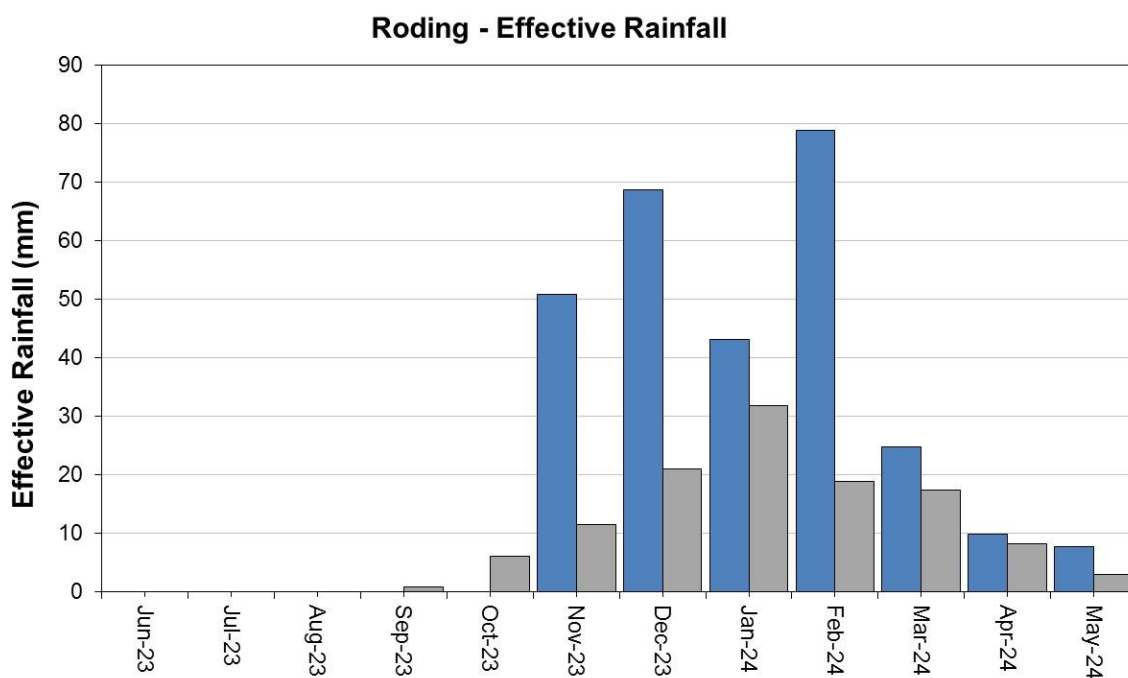
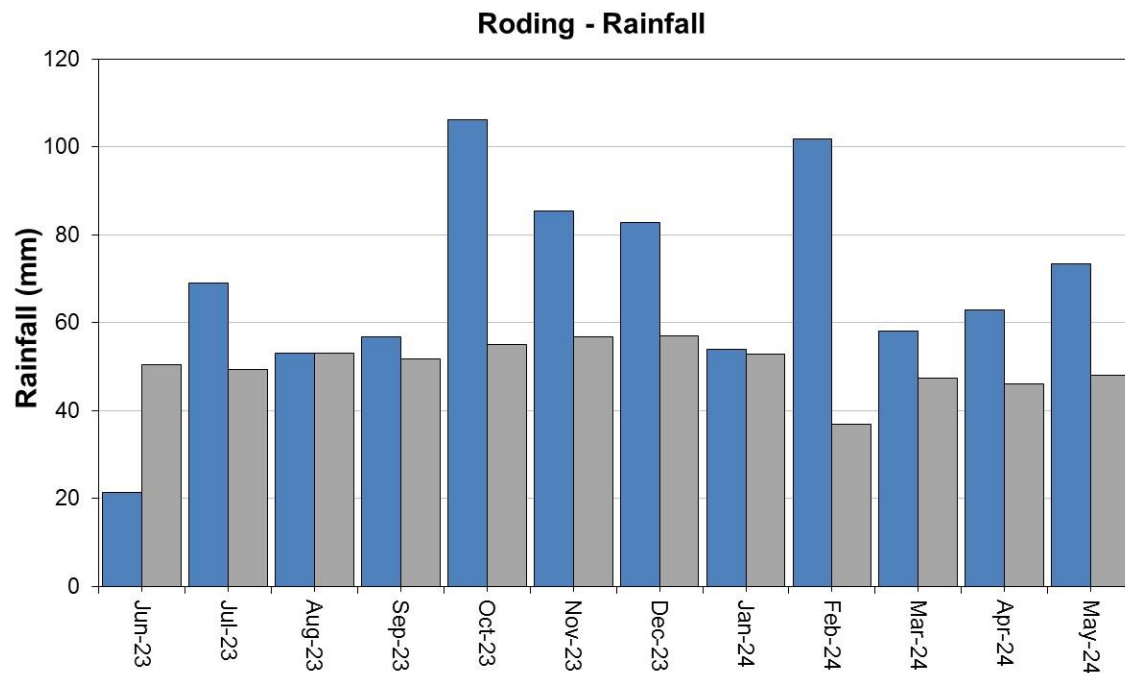


8 Roding Catchment

8.1 Roding Rainfall and Recharge chart

Figure 8.1: Monthly rainfall and recharge totals for the past 24 months compared to the 1961 to 1990 long term average for each region and for England.

Monthly total rainfall (mm) Long term average rainfall (mm)

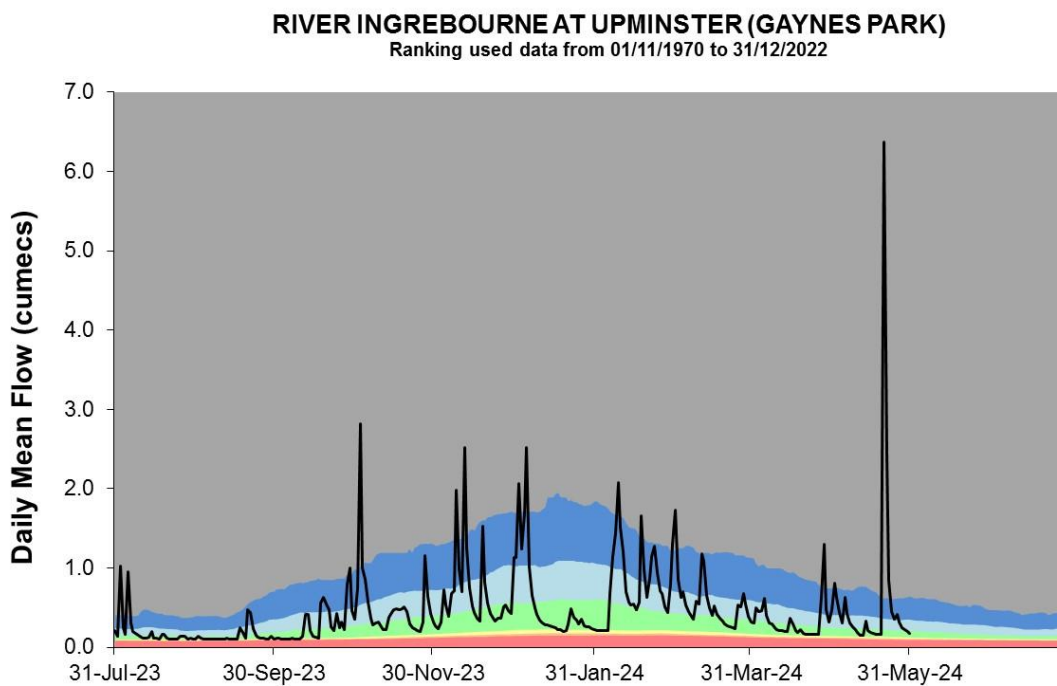
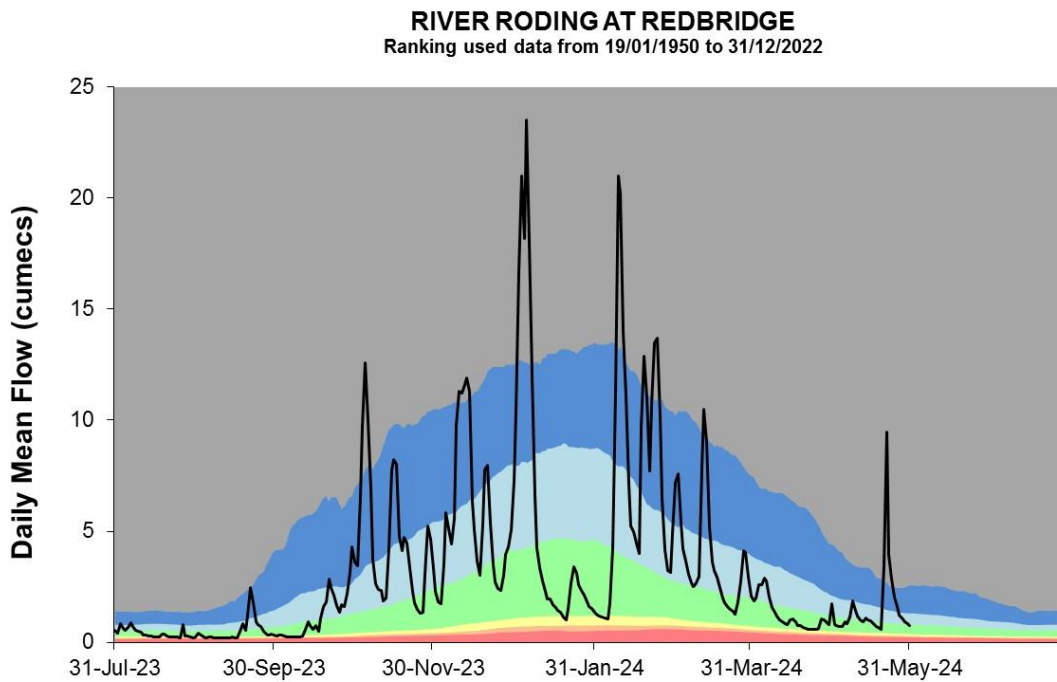


HadUK rainfall data (Source: Met Office. Crown copyright, 2024)

EA Soil Moisture Model effective rainfall data (Source: Environment Agency, 2024)

8.2 Roding River flow charts

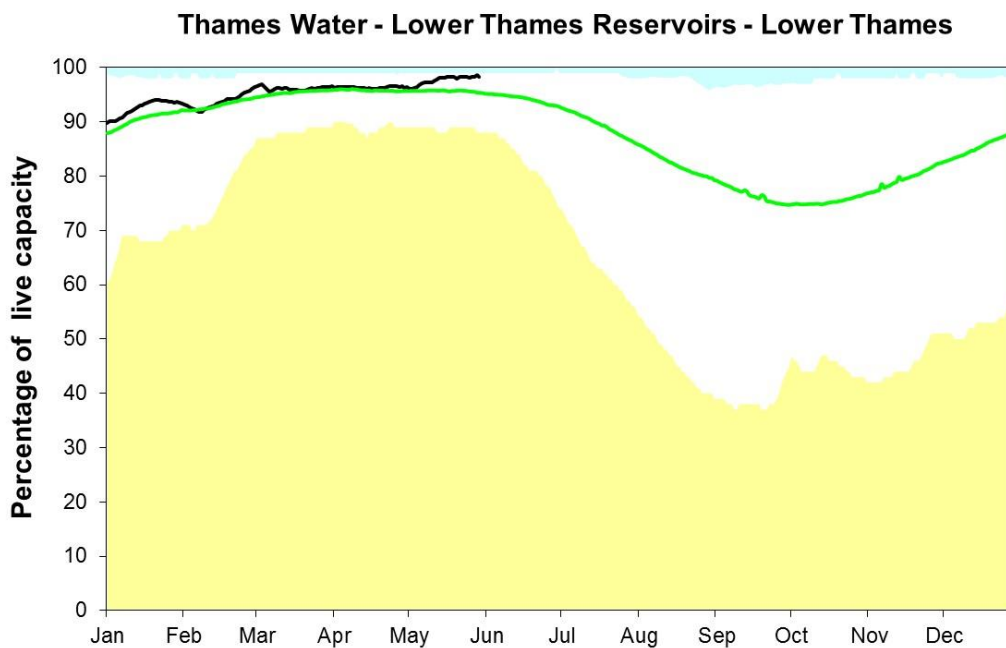
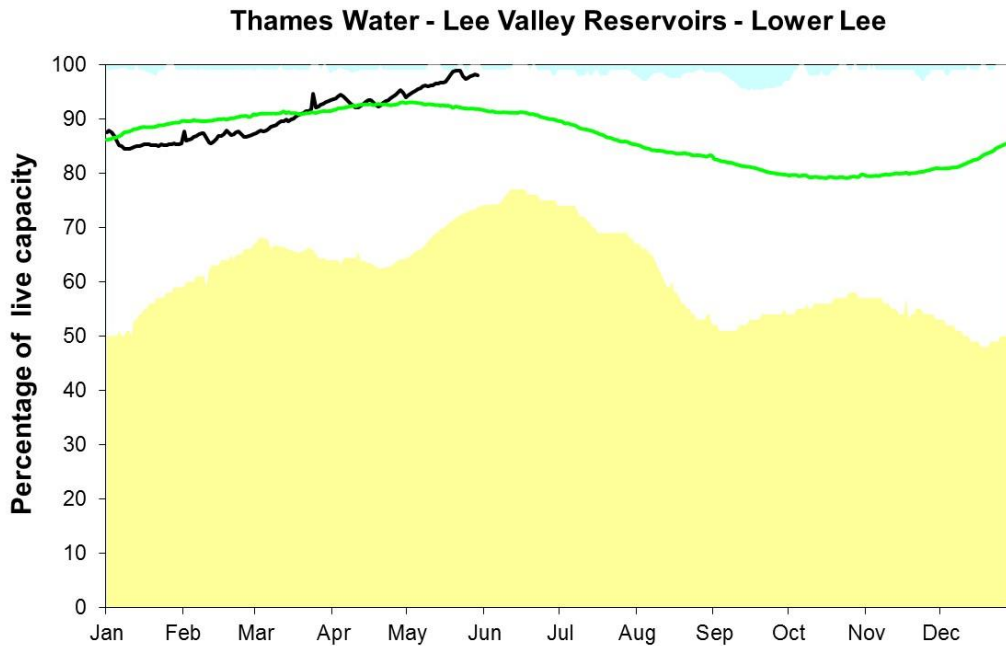
Figure 8.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



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.

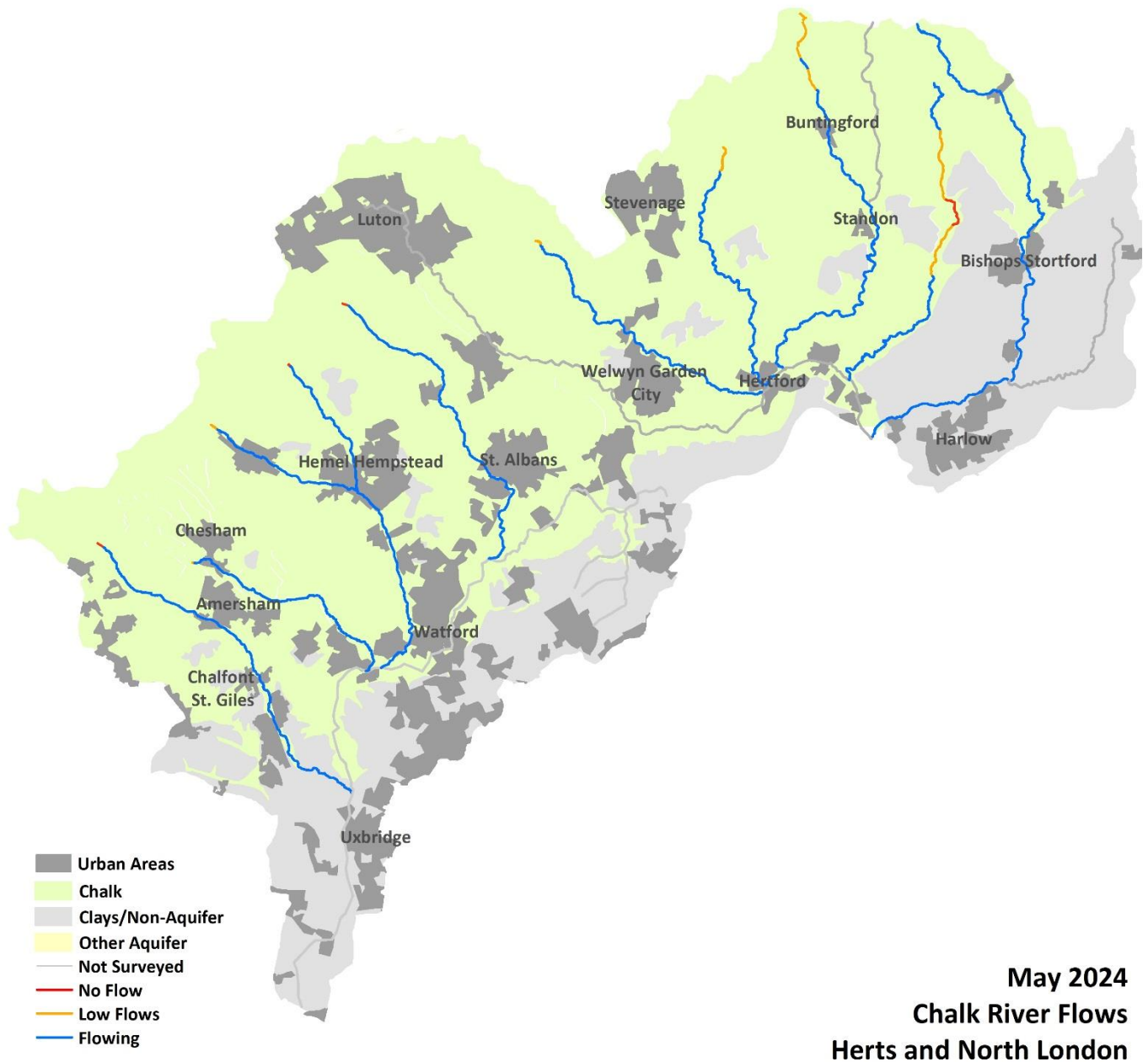
Below minimum
 Above maximum
 Average
 Latest data



Source: water companies, 2024

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, 2024

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	May 2024 total rainfall in mm	May 2024 rainfall long term average 1961 to 1990	May 2024 rainfall % of long term average 1961 to 1990	Summer Apr 2024 to May 2024 total rainfall in mm	Summer Apr 2024 to May 2024 rainfall % of long term average 1961 to 1990
Chilterns East Colne	86	56	152	163	147
Lee Chalk	84	50	167	155	156
Lower Lee	83	50	166	150	152
North London	68	54	127	133	130
Roding	74	48	153	136	145
Herts and North London total	79	52	153	147	146

12.2 Rainfall banding table

Hydrological area	May 2024 band	Mar 2024 to May 2024 cumulative band	Dec 2023 to May 2024 cumulative band	Jun 2023 to May 2024 cumulative band
Chilterns East Colne	Notably high	Exceptionally high	Exceptionally high	Exceptionally high
Lee Chalk	Notably high	Exceptionally high	Exceptionally high	Exceptionally high
Lower Lee	Notably high	Exceptionally high	Exceptionally high	Exceptionally high
North London	Above normal	Notably high	Exceptionally high	Exceptionally high
Roding	Notably high	Notably high	Exceptionally high	Notably high

12.3 Effective Rainfall table

Hydrological area	May 2024 total effective rainfall in mm	May 2024 effective rainfall long term average 1961 to 1990 in mm	May 2024 effective rainfall % of long term average 1961 to 1990	Summer Apr 2024 to May 2024 total effective rainfall in mm	Summer Apr 2024 to May 2024 effective rainfall % of long term average 1961 to 1990
Chilterns East Colne	14	9	153	40	155
Lee Chalk	11	7	152	32	163
Lower Lee	11	4	302	24	182
North London	4	3	123	13	105
Roding	8	3	257	17	157
Herts and North London total	9	5	182	25	154

12.4 Soil Moisture Deficit table

Hydrological area	May 2024 end of month Soil Moisture Deficit in mm	May 2024 end of month Soil Moisture Deficit long term average 1961 to 1990 in mm	Apr 2024 end of month Soil Moisture Deficit in mm	Apr 2024 end of month Soil Moisture Deficit long term average 1961 to 1990 in mm
Chilterns East Colne	10	38	4	19
Lee Chalk	11	47	5	24
Lower Lee	14	43	6	22
North London	25	44	6	23
Roding	19	44	5	22
Herts and North London total	16	43	5	22

12.5 River flows table

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

12.6 Groundwater table

Site name	Aquifer	May 2024 band	Apr 2024 band
Ashley Green	Mid-Chilterns Chalk	Exceptionally high	Exceptionally high
Ballingdon Farm	Mid-Chilterns Chalk	Notably high	Exceptionally high
Amersham Road	Mid-Chilterns Chalk	Exceptionally high	Exceptionally high
Wapseys Wood	Mid-Chilterns Chalk	Exceptionally high	Exceptionally 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	Exceptionally high	Exceptionally high
Therfield Rectory	Upper Lee Chalk	Exceptionally high	Notably high

12.7 Abstraction licence flow constraints

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