Monthly water situation report

Hertfordshire and North London Area

Summary – January 2015

Hertfordshire and North London had a mixture of wet and dry days during January, with 126% of the long term average rainfall. The rainfall kept soils saturated through January, with soil moisture deficits ending the month at zero. There was a steady increase in baseflow in most of our rivers, with flashier peaks responding to the heavy rainfall, and flood alerts issued on 4 days. Groundwater levels rose in response to the seasonal recharge, although the contrast in the chalk bodies continued, with the Chilterns-East-Colne chalk suffering a slower recovery compared to the Lee Chalk.

Rainfall

Hertfordshire and North London Area ('the Area') had a mixture of wet and dry days during January, with 126% of the long term average (LTA) rainfall. The Roding areal rainfall unit recorded the highest rainfall LTA of 139% to the east of the Area, but this was less actual rainfall than the Colne. The New Year started wet, with widespread rainfall on 2 and 8 January. The largest daily total of the month was recorded on 12 January, when a band of rain lingered for much of the day, with totals of 16mm at Wanstead PS (Roding), 14.2mm at Hampstead Observatory (North London), and 14mm at Hornsey PS (Lower Lee) and Chenies TBR (Chiltern). Further rainfall on 14 January gave way to high pressure, bringing cool and dry conditions to the majority of the Area. The month ended with some isolated wintery showers on 30 and 31 January.

Soil Moisture Deficit/ Recharge

The rainfall during January kept soils saturated across the Area, with soil moisture deficits ending the month at zero, which meant the Area had 131% of the LTA effective rainfall. Despite recharge in the west, there was a clear difference across the Area. Between October 2014 and January 2015 Chilterns-East-Colne had only 90% of the LTA, while the Lee Chalk had 132% of the LTA.

River Flows

There was a steady increase in baseflow in most of the Area's rivers during January. The flashier flow peaks reflected the rainfall events through the month, notably the double peak between 12 to 14 January. Most of our indicator sites recorded **normal** monthly river flows, whilst 4 our indicator sites, the Ash at Wareside, Lee at Feildes Weir, Ingrebourne at Upminster and Misbourne at Denham, all recorded **above normal** January flows. Flood alerts were issued on 4 days during January. The Middle River Roding flood alert was issued on 3, 8 and 12 January, whilst the Upper Colne and Radlett Brook was issued on 3 and 14 January. Pre-emptive flood alerts were issued in response to the rain on 14 January at the River Lee at Hertford, the Lower Lee Tributaries and the River Stort and Stansted Brook Catchment. No property flooding was reported and no warnings were issued.

Groundwater Levels

Groundwater levels across the Area rose in response to the seasonal recharge. All but one of the groundwater indicator sites in the Lee chalk recorded **above normal**, with Hixham Hall at **notably high** groundwater levels. In contrast, the Chilterns-East-Clone groundwater indicator sites continued to suffer from a slower recovery, despite with all 4 remaining at **normal** levels. Ballingdon Farm recorded only a slight increase in groundwater levels.

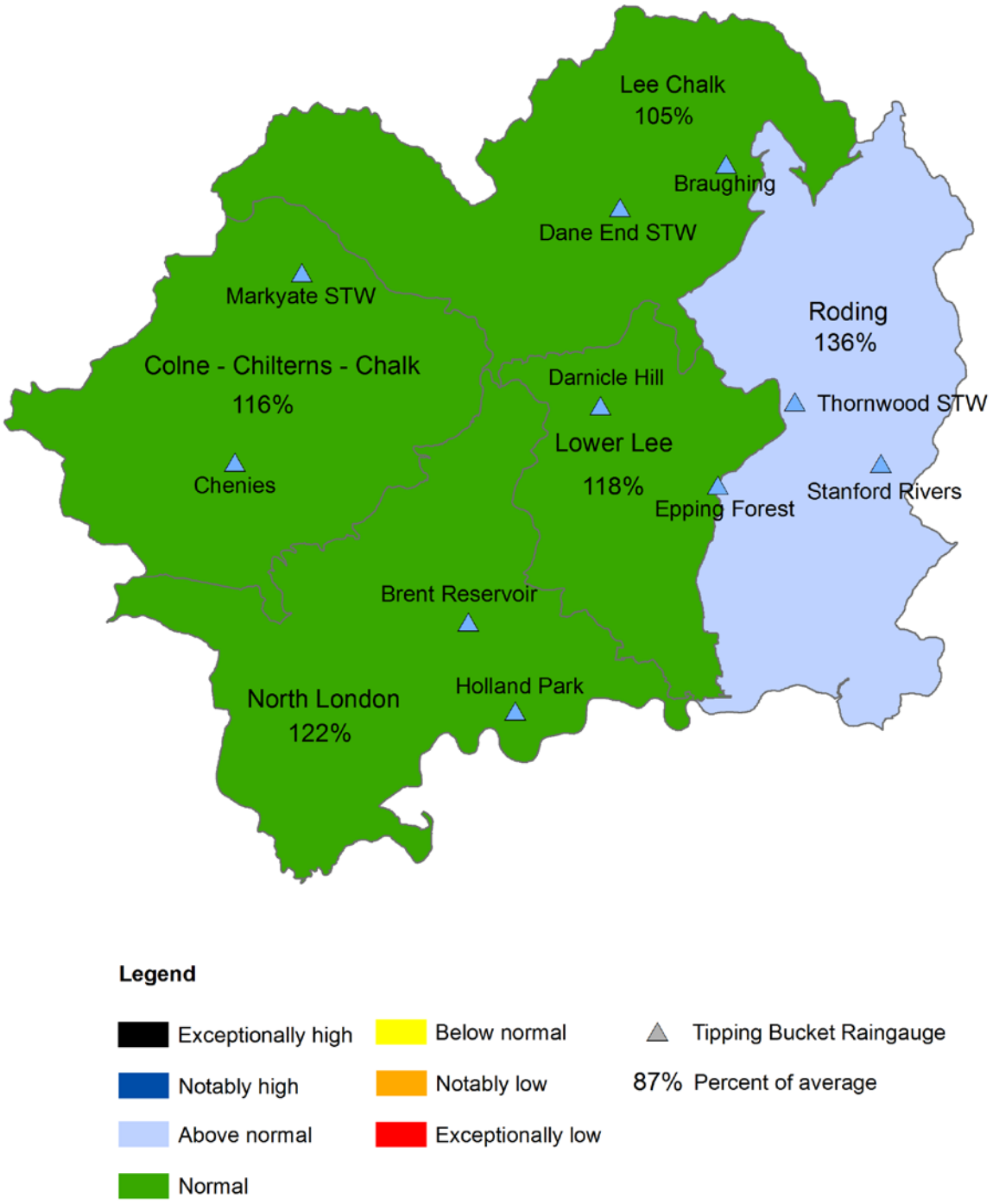
Environmental Impact

The table below shows the abstraction licence flow constraints that were in force in January, out of a Winter maximum of 52:

Week Commencing	5 January	12 January	19 January	26 January
Number of Constraints	2	4	4	9

Author: Groundwater, Hydrology & Contaminated Land Team Contact details: 03708 506 506

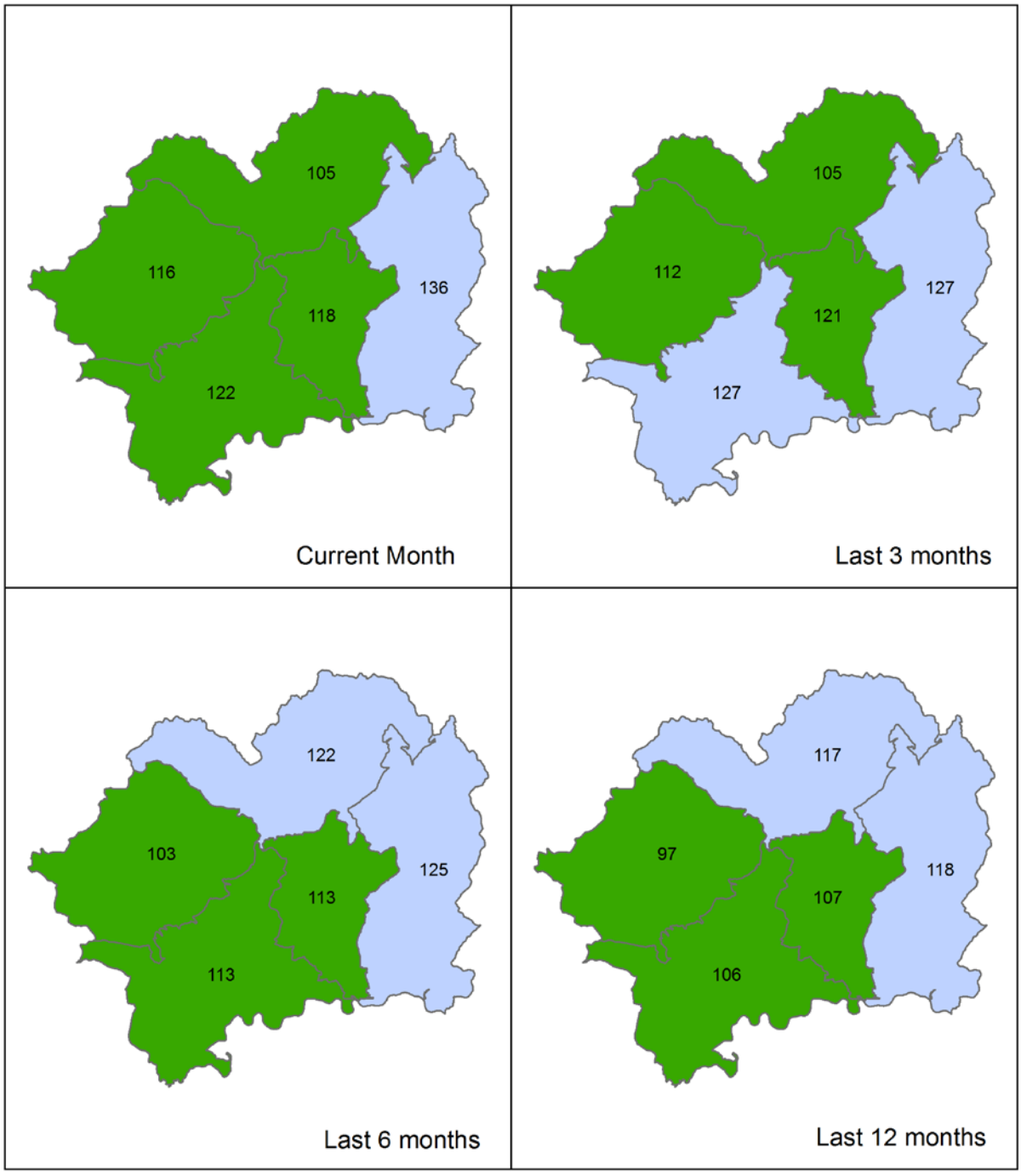
Rainfall Map



Total rainfall for hydrological areas across the Hertfordshire and North London Area for the current month, classed relative to an analysis of respective historic totals.

Data source: Rainfall calculated using the Environment Agency, South East Soil Moisture Model.

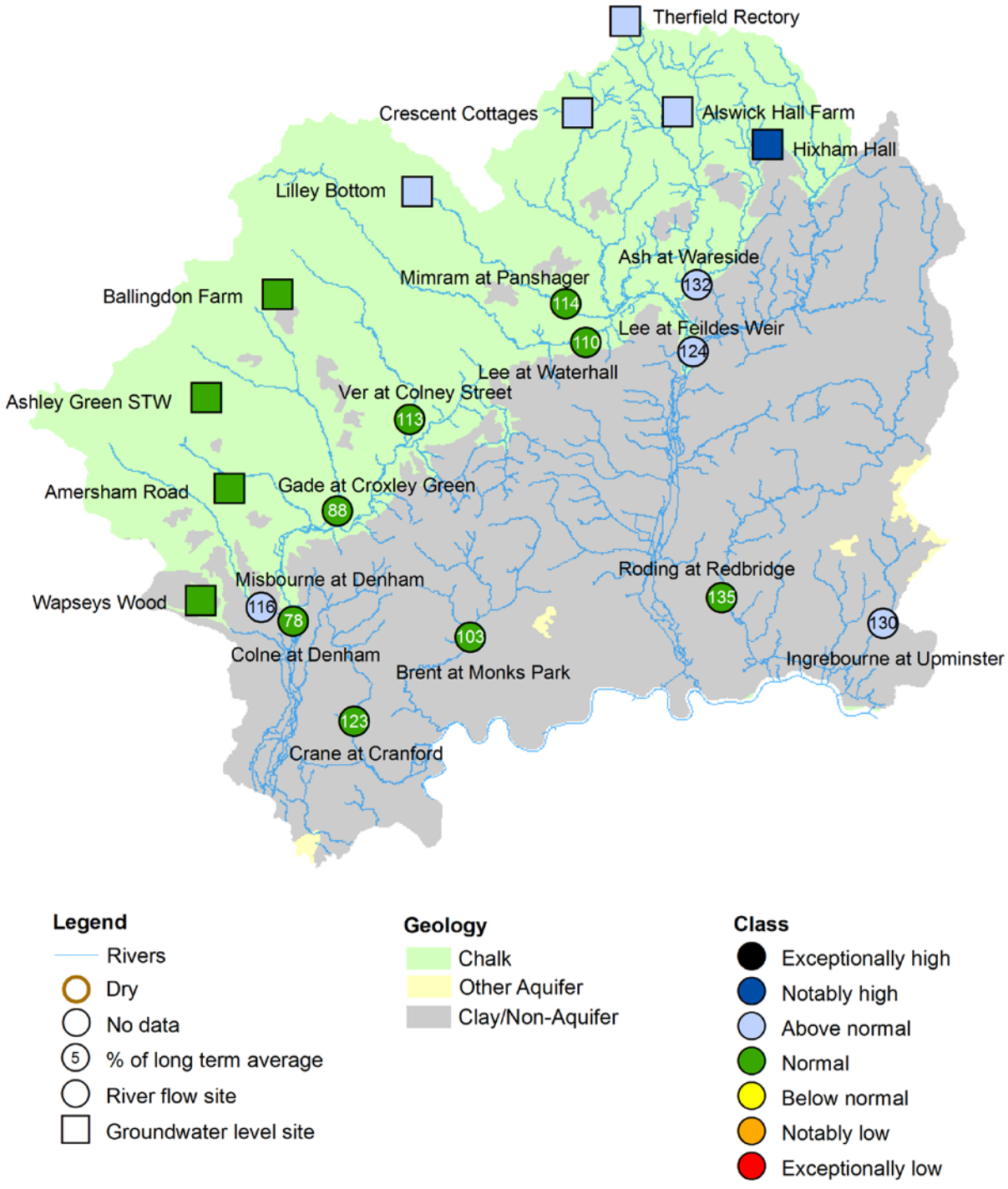
Rainfall Map



Total rainfall for hydrological areas across the Hertfordshire and North London Area for the current month, the last three months, the last six months, and the last 12 months, classed relative to an analysis of respective historic totals.

Data source: Rainfall calculated using the Environment Agency, South East Soil Moisture Model.

River Flow and Groundwater Status Map

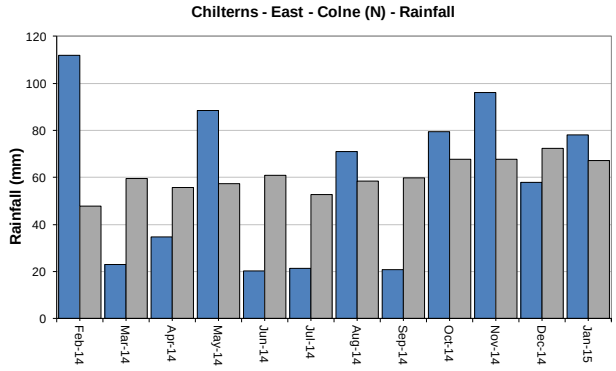


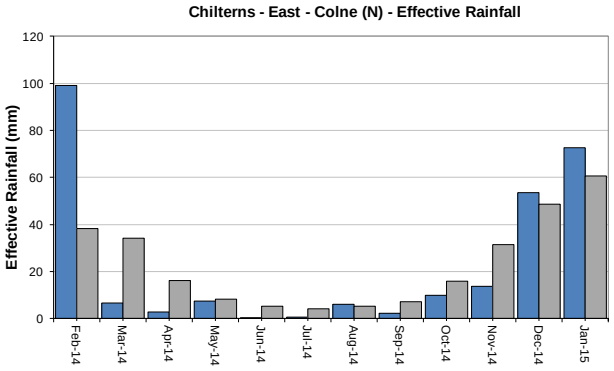
Groundwater site status based on end of month level. Surface water site status based on mean monthly flow.

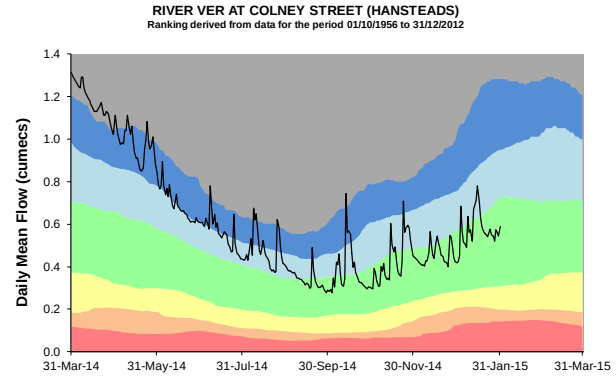
Colne

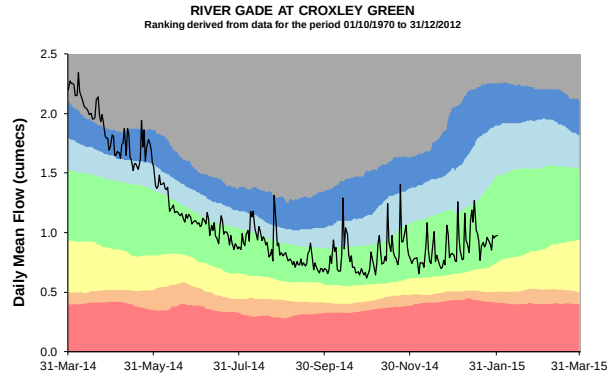
Monthly total rainfall (mm)

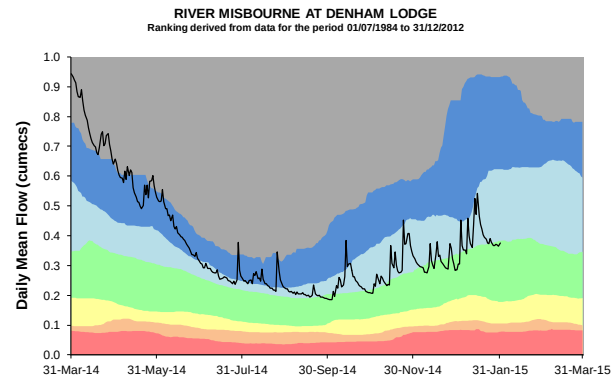
Long term average rainfall (mm)

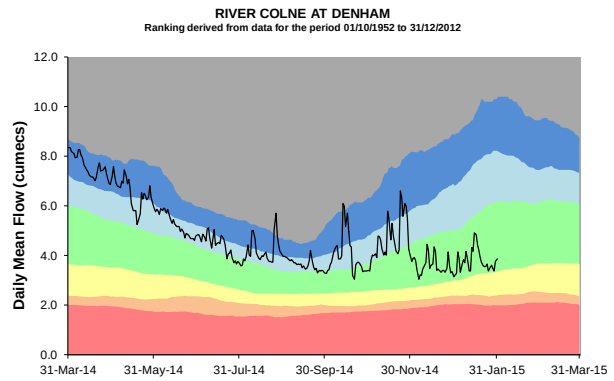








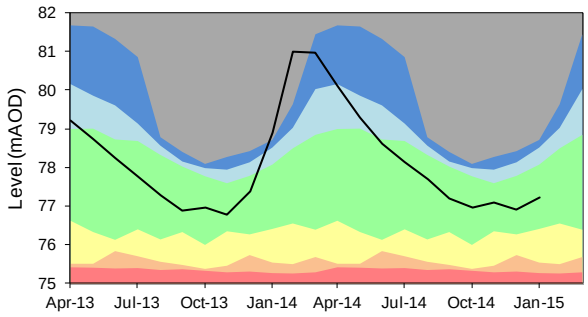




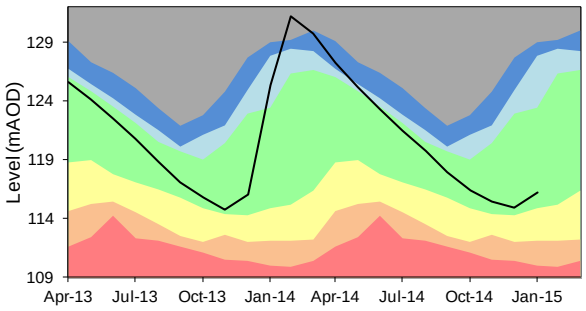
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

Colne Groundwater

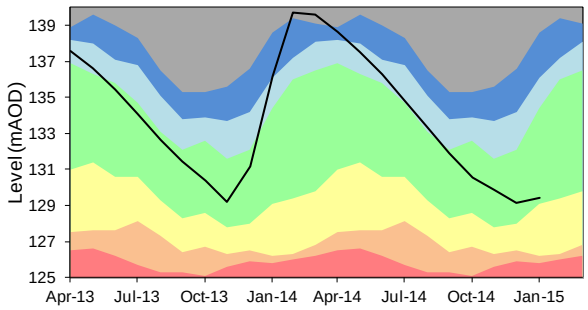
AMERSHAM ROAD OBH
Ranking derived from data for the period Nov-1991 to Dec-2012



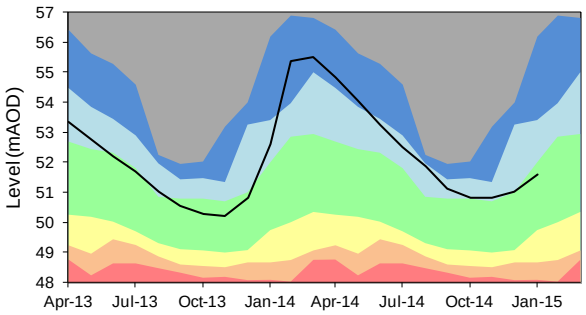
ASHLEY GREEN STW OBH
Ranking derived from data for the period Sep-1987 to Dec-2012



BALLINGDON FARM
Ranking derived from data for the period Jan-1975 to Dec-2012



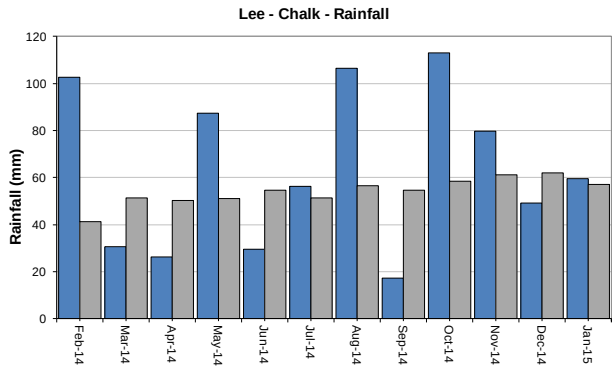
WAPSEYS WOOD OBH
Ranking derived from data for the period Mar-1988 to Dec-2012

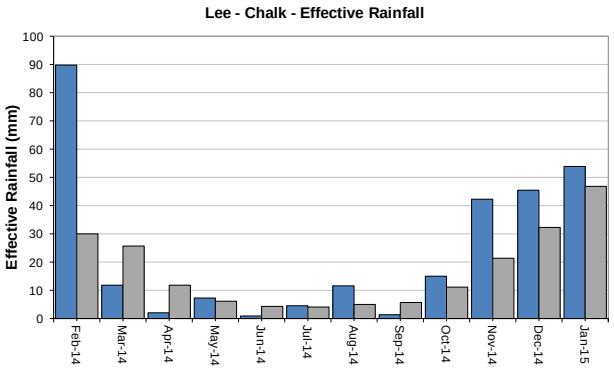


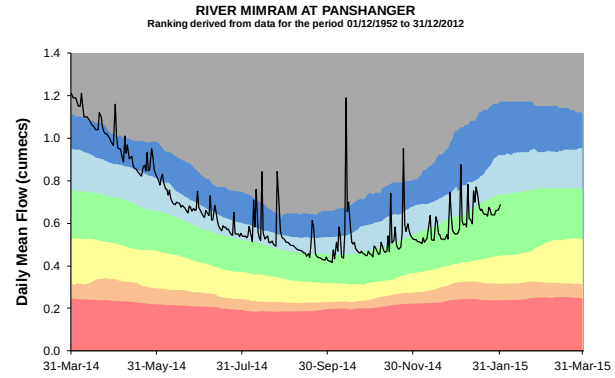
Upper Lee

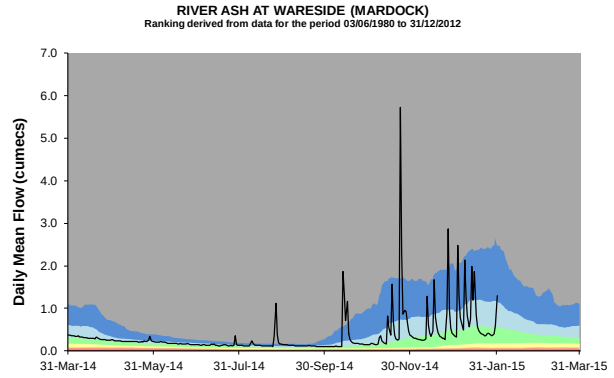
Monthly total rainfall (mm)

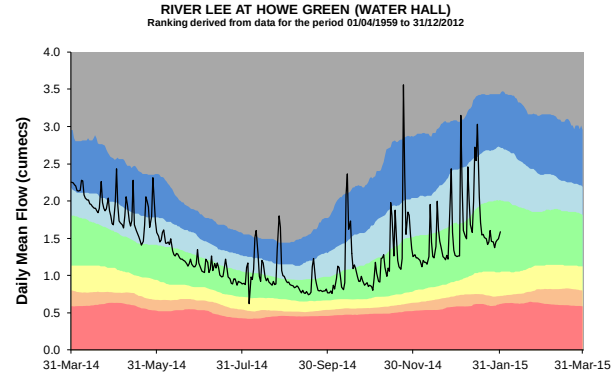
Long term average rainfall (mm)

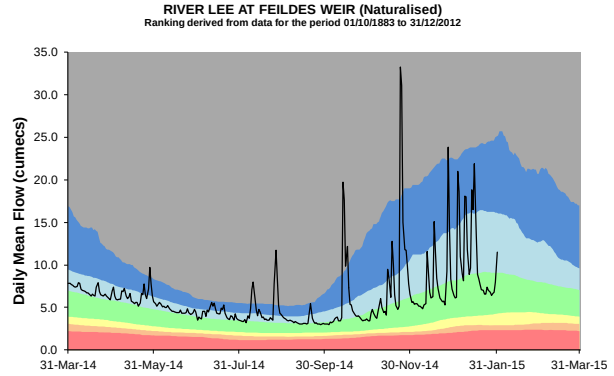








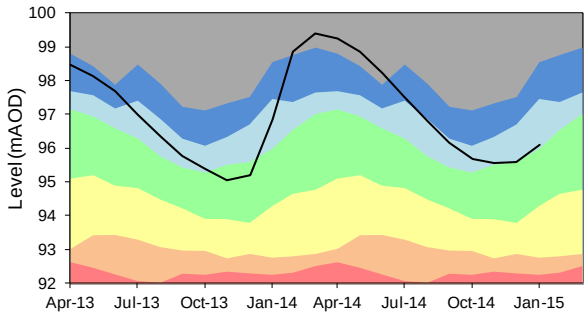




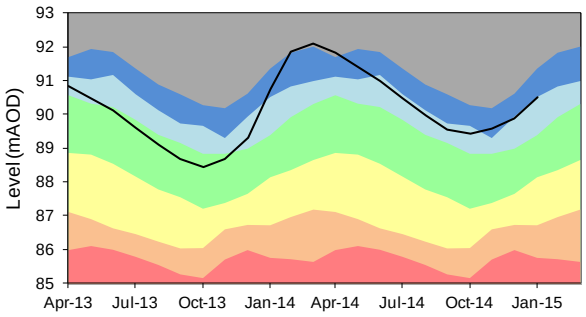
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

Upper Lee Groundwater

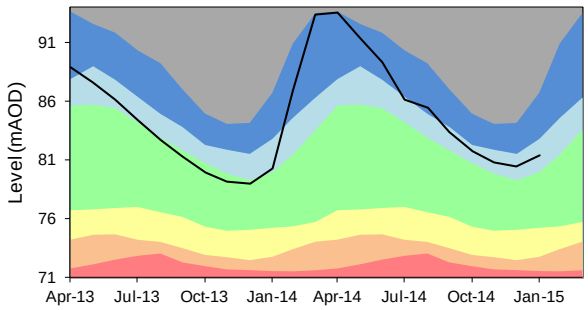
LILLEY BOTTOM OBH
Ranking derived from data for the period Jul-1979 to Dec-2012



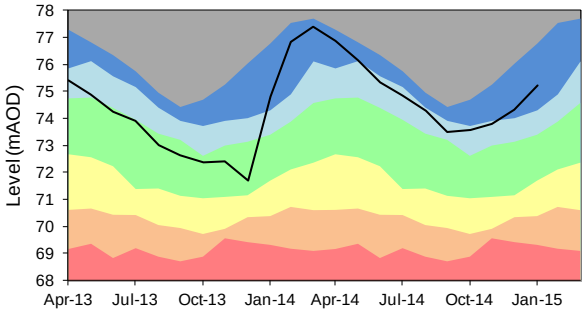
CRESCENT COTTAGES
Ranking derived from data for the period Aug-1968 to Dec-2012



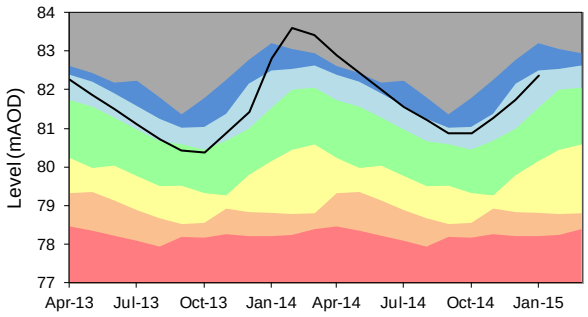
THERFIELD RECTORY
Ranking derived from data for the period Jan-1883 to Dec-2012



HIXHAM HALL
Ranking derived from data for the period Jun-1964 to Dec-2012



ALSWICK HALL FARM
Ranking derived from data for the period Jul-1982 to Dec-2012

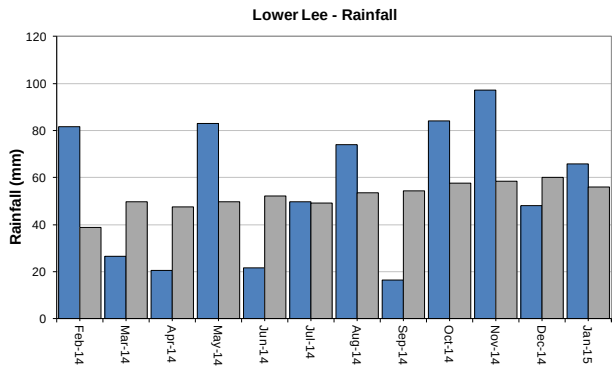


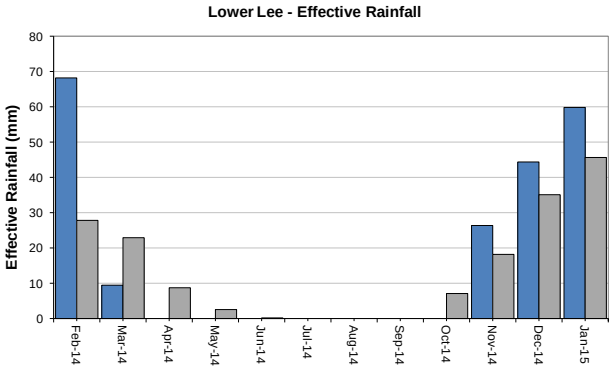
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

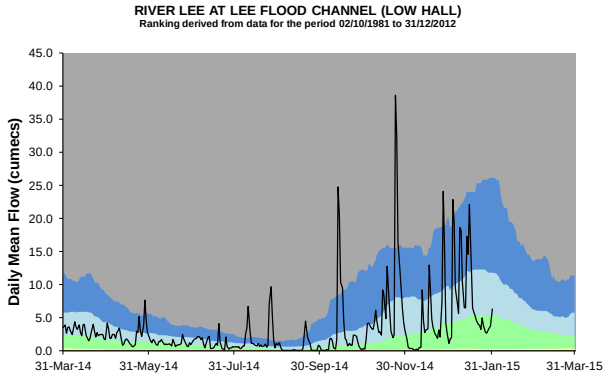
Lower Lee

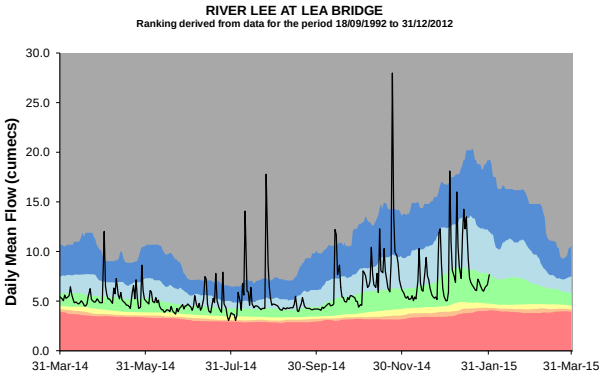
Monthly total rainfall (mm)

Long term average rainfall (mm)







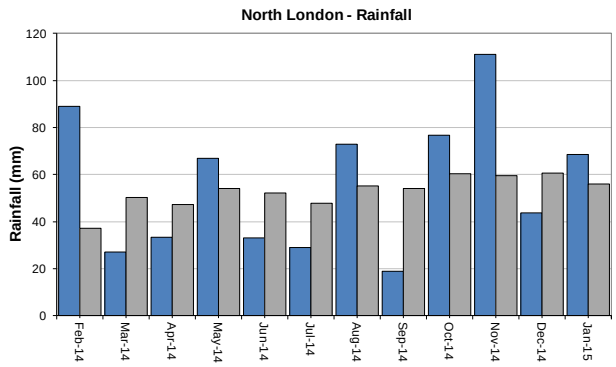


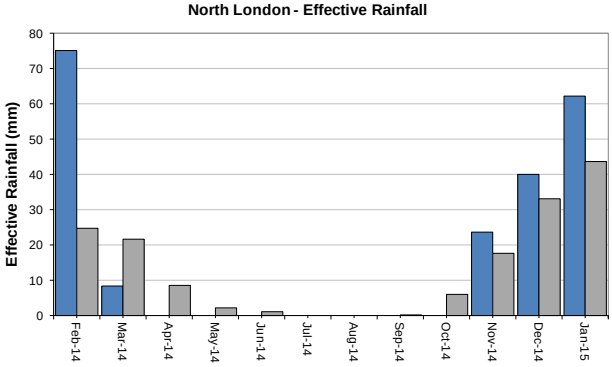
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

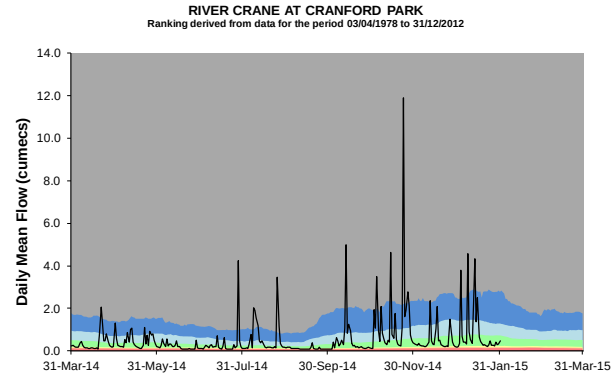
North London

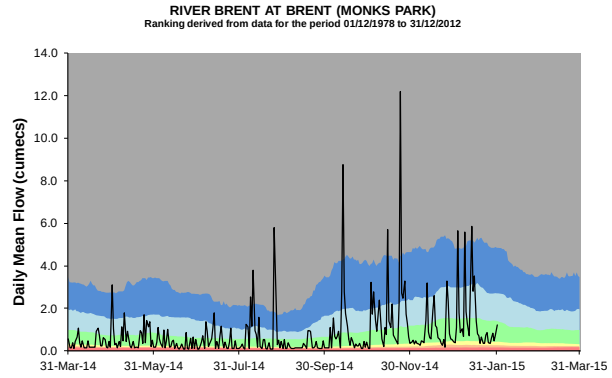
Monthly total rainfall (mm)

Long term average rainfall (mm)







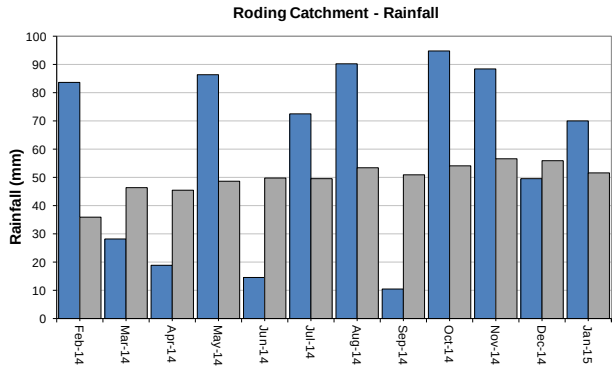


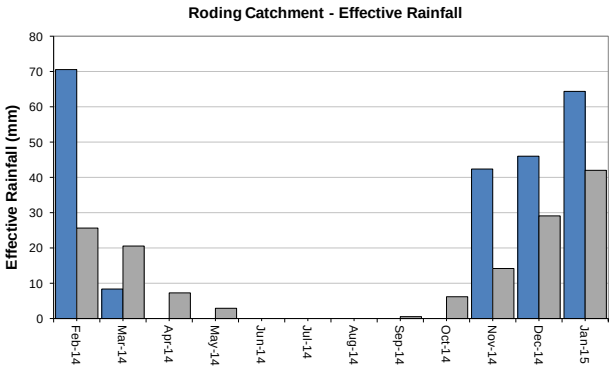
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

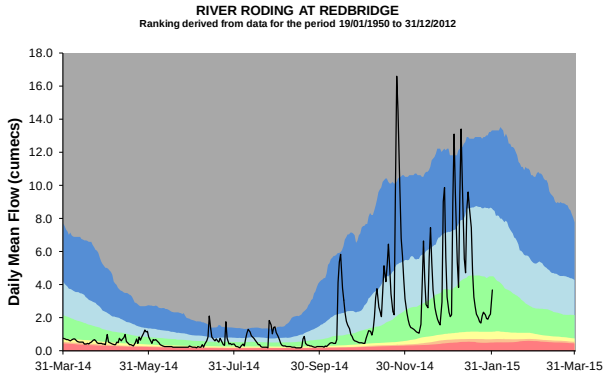
Roding

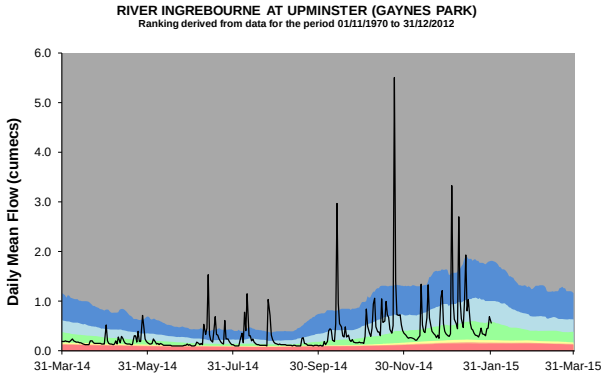
Monthly total rainfall (mm)

Long term average rainfall (mm)



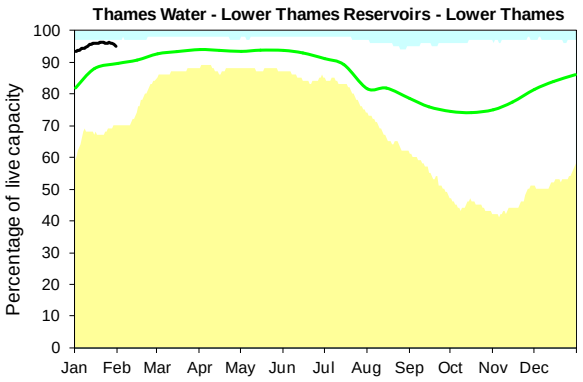


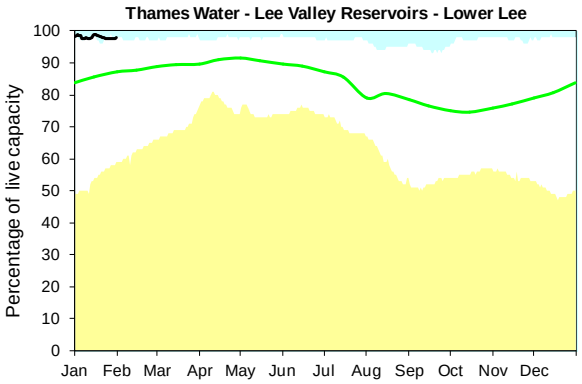




Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

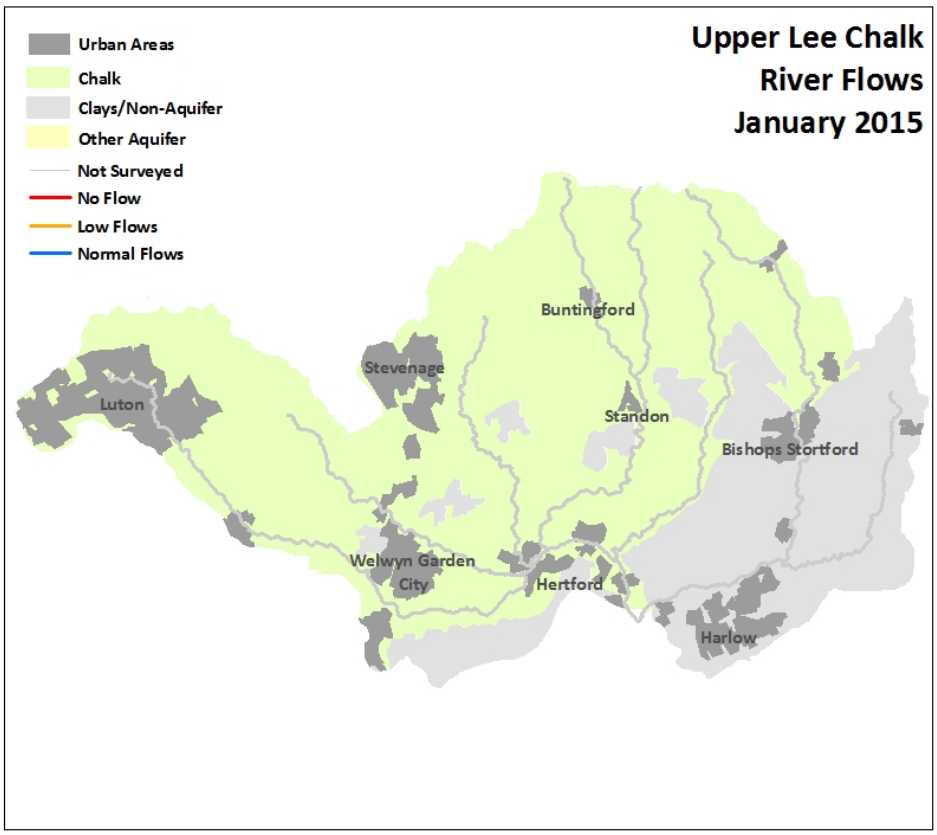
Reservoir Storage

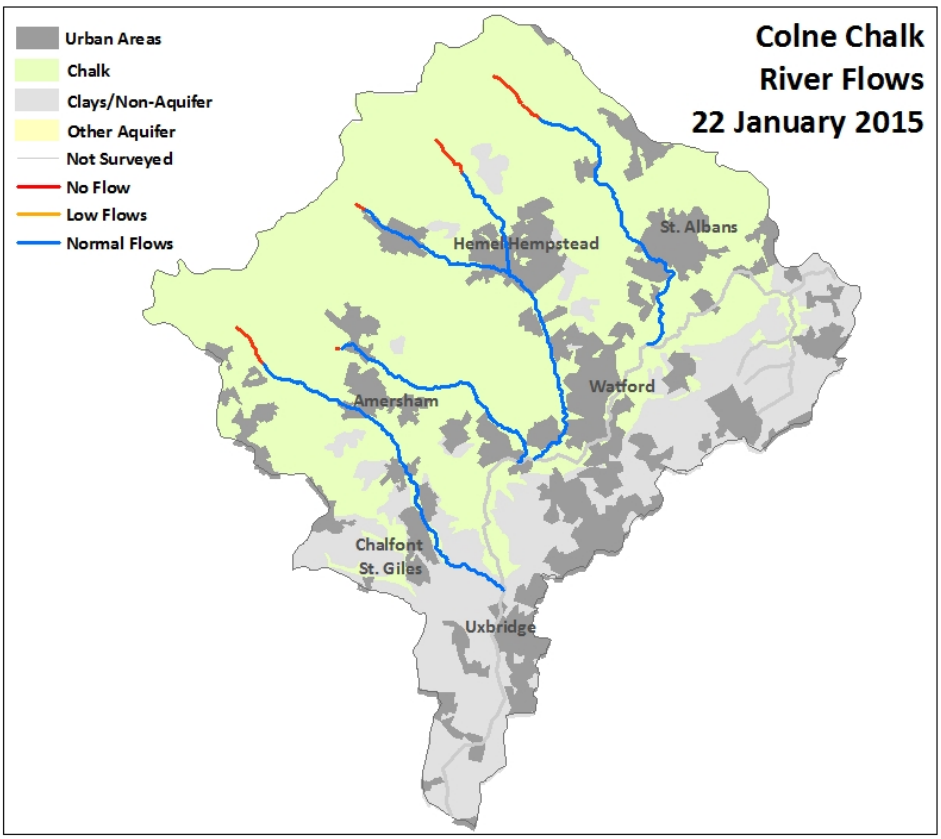




Below minimum
Above maximum
Average
Latest data

Flows in the chalk fed rivers – January 2015





Summary of rainfall, effective rainfall and soil moisture deficit

Rainfall and Effective Rainfall – January 2015

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	78	67	117	73	61	120
Lee - Chalk	60	56	106	54	47	115
North London	68	57	119	62	43	144
Lower Lee	66	56	117	60	46	131
Roding Catchment	70	52	135	64	42	154
Hertfordshire and North London Area Average	68	58	119	63	48	131

Soil Moisture Deficit (SMD) – January 2015

Area	End of Month SMD (mm)	End of Month SMD LTA (mm)
Chilterns- East - Colne	0	0
Lee - Chalk	0	2
North London	0	2
Lower Lee	0	0
Roding Catchment	0	1
Hertfordshire and North London Area Average	0	1

Rainfall and Effective Rainfall – winter total for period 1 October 2014 to 31 January 2015

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	312	271	115	150	166	90
Lee - Chalk	301	235	128	157	119	132
North London	300	241	124	126	102	123
Lower Lee	295	235	126	131	111	118
Roding Catchment	303	218	139	153	93	165
Hertfordshire and North London Area Average	302	240	126	143	118	121

Glossary

Term	Definition
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/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 1961-1990. 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).
Naturalised flow	River flow with the impacts of artificial influences removed. Artificial influences may include abstractions, discharges, transfers, augmentation and impoundments.
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 (e.g. 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).

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