Monthly water situation report: Lincolnshire and Northamptonshire Area

1 Summary - March 2025

Overall, March was a very dry month, with notably low levels of rainfall falling across most catchments. On average, the Lincolnshire & Northamptonshire area (LNA) received 12mm of rainfall, which was 25% of the long term average (LTA). As a result of the dry weather, soil moisture deficits (SMD) continued to increase in all six hydrological areas. By the end of March, the area had an SMD of 16mm, which falls within the normal range for this time of year. Monthly mean river flows ranged from 45% to 102% of the LTA, with classifications ranging from below normal to normal. Following the notably low level of rainfall across LNA in March, the groundwater level trend showed a decline at all indicator sites except Grainsby and Grange de Lings. With the exception of Ravensthorpe and Hollowell, reservoirs in the area ended the month slightly above their normal operating curves.

1.1 Rainfall

March was a very dry month, with rainfall varying between 21% and 26% of the LTA for the time of year. The average rainfall across the Lincolnshire & Northamptonshire area was 12mm, 25% of the LTA, making it the 8th driest March since the record began in 1871 (classified as notably low). Rainfall was spread evenly across the area with all catchments receiving roughly the same amount of rainfall. Apart from the two days (12 and 23 March), which accounted for approximately 62% of the month's total rainfall, throughout the month, the frontal system did not give catchment rainfall totals higher than 1.3mm during any single event.

Hydrological areas in the East of the area received the lowest rainfall totals (South Forty Foot and Hobhole (10mm, 22% of the LTA), Steeping Great Eau and Long Eau (11mm, 21% of the LTA), and Lower Welland and Nene (11mm, 24% of the LTA). Rainfall was classified as notably low in five of the six catchments and exceptionally low in the one remaining catchment (Steeping Great Eau and Long Eau).

Although the 6-month totals map display all six hydrological areas classified as normal, a north-south trend pattern is reflected in all the long-term rainfall maps, which unanimously show the slightly higher totals received in the south compared to the north.

1.2 Soil moisture deficit and recharge

SMD responded in line with the rainfall patterns observed through March. Due to the dry start to March (and a dry end to February), SMD increased sharply across all six hydrological areas, but the levels stabilised in the second half of the month when the month's main rainfall fell.

The lowest levels of SMD were observed in the Ancholme Grimsby Louth (15mm), whilst the highest levels were observed in the Steeping Great Eau and Long Eau (21mm). On average, SMD for the area increased from 2mm at the end February to 16mm by the end of March. This figure is within the normal range for the time of year.

The SMD difference-to-LTA (mm) map shows all hydrological areas are in the 6mm to 25mm category, indicating that they are within the normal or slightly drier than normal for the time of year.

1.3 River flows

In line with the seasonal trend and in response to the notably low rainfall, river flows for all sites decreased since February, with flows varying between 45% and 102% of the LTA. Flow at 6 sites remained normal, whilst 6 others were considered below normal. The most notable drop in flow has been observed at the Ashley (Welland) which has gone from above normal in February to below normal levels in March. Wansford (Nene) levels show no change in banding since January 2025.

1.4 Groundwater levels

Following the notably low level of rainfall across LNA in March, the groundwater level trend showed a decline at all indicator sites except Grainsby and Grange de Lings, ending the month with 1 site classified as above normal, 7 sites as normal, and 1 site (Leasingham Exploratory) as below normal.

While Burnham (Chalk) banding remained unchanged since November 2024, the Barton Horkstow Road (Chalk) and Grainsby (Chalk) banding remained unchanged since the previous month. Likewise, Hanthope (Limestone) shows no change in banding since the previous month.

1.5 Reservoir stocks

With the exception of Ravensthorpe and Hollowell, reservoirs in the area ended the month slightly above their normal operating curves. The level at Ravensthorpe and Hollowell was 2.5% below target in March, however levels are not alarmingly low.

1.6 Environmental impact

All transfer schemes remained off throughout March. There were 5 flood alerts. There were no flood warnings issued. There were 6 HOFs (Hands Off Flow) active: 4 in the Ancholme River catchment, and 2 in the Nene River Catchment.

1.7 Forward look

1.7.1 Probabilistic ensemble projections for river flows at key sites

June 2025: The two Nene sites are showing increased probabilities of normal flows. North Brook is showing a reduced probability of extreme flows (both high and low).

September 2025: All sites are showing an increased probability of normal or above normal flows with none of the modelled rainfall scenarios showing exceptionally low levels.

1.7.2 Probabilistic ensemble projections for groundwater levels in key aquifers

September 2025: All sites are showing an increased probability of below normal levels with none of the modelled rainfall scenarios showing exceptionally low levels.

March 2026: All sites are showing a reduced probability of exceptionally low levels.

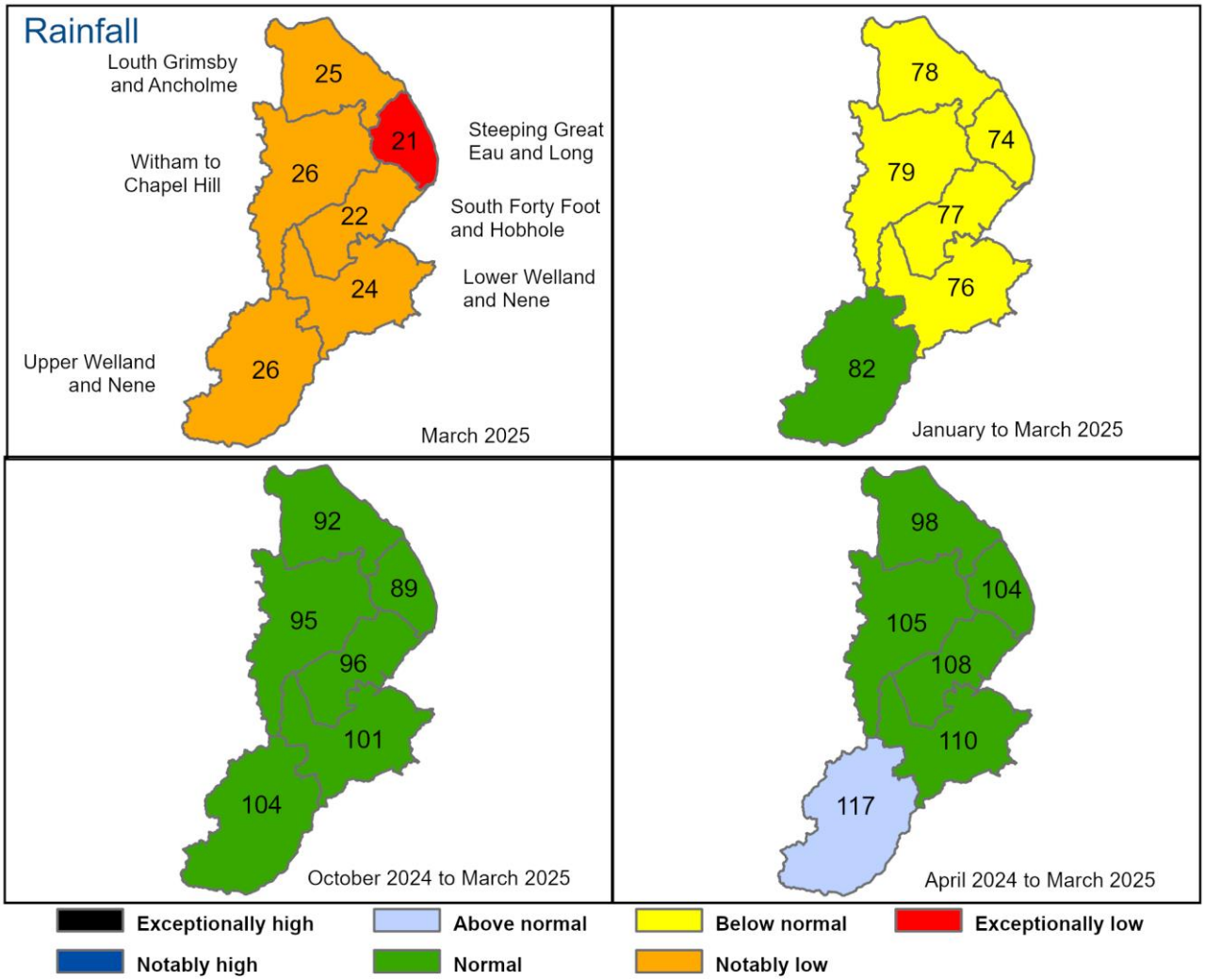
Author: Pan Hydrology Team, Hydrology-EAN-and-LNA@environment-agency.gov.uk

Contact Details: 03708 506 506

2 Rainfall

2.1 Rainfall map

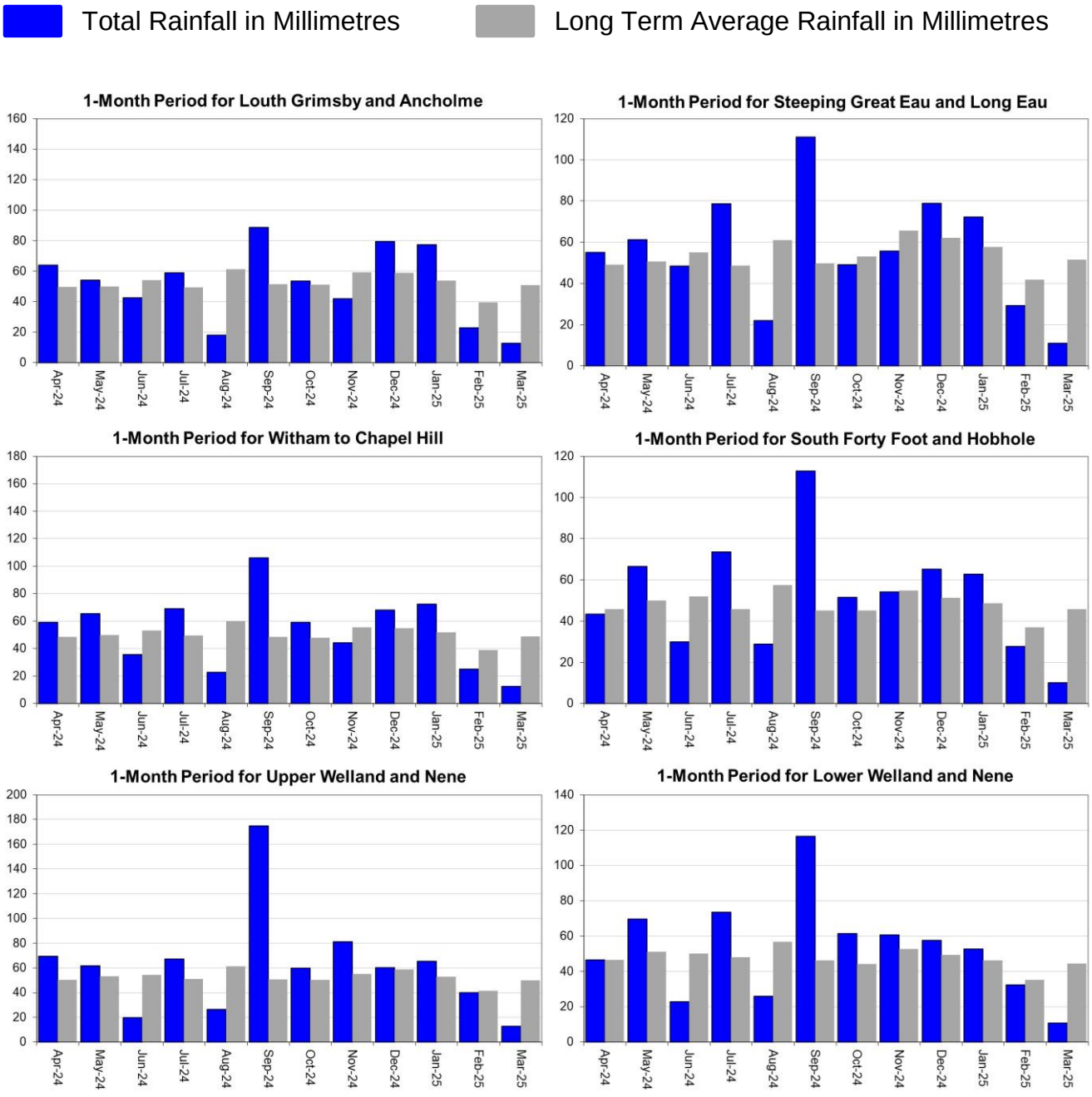
Figure 2.1: Total rainfall for hydrological areas across Lincolnshire and Northamptonshire, expressed as a percentage of long term average rainfall for the current month (up to 31 March 2025), the last 3 months, the last 6 months, and the last 12 months. Category classes are based on an analysis of respective 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, 2025). 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, 2025.

2.2 Rainfall charts

Figure 2.2: Monthly rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average for each region and for England.

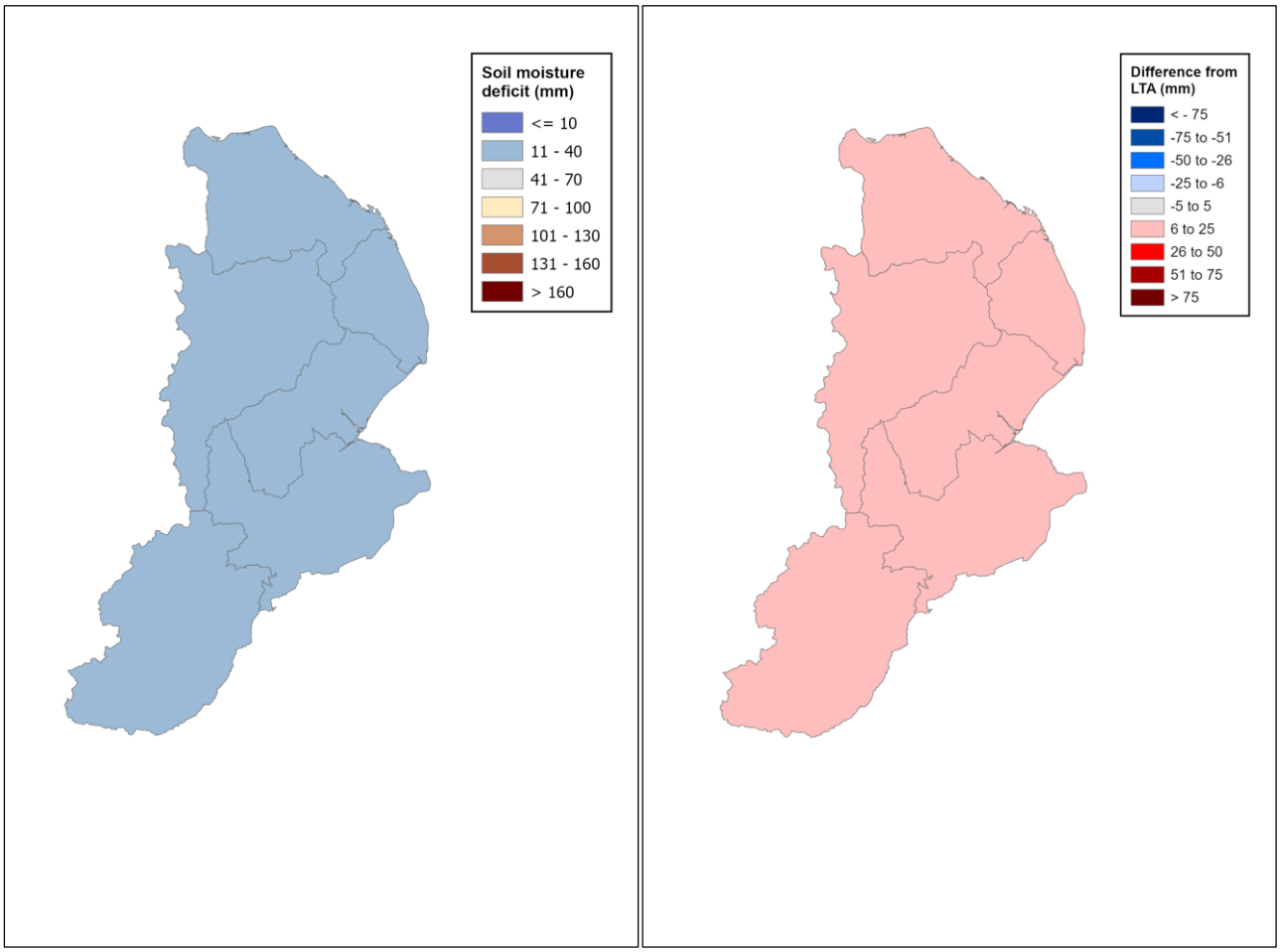


HadUK rainfall data. (Source: Met Office. Crown copyright, 2025).

3 Soil moisture deficit

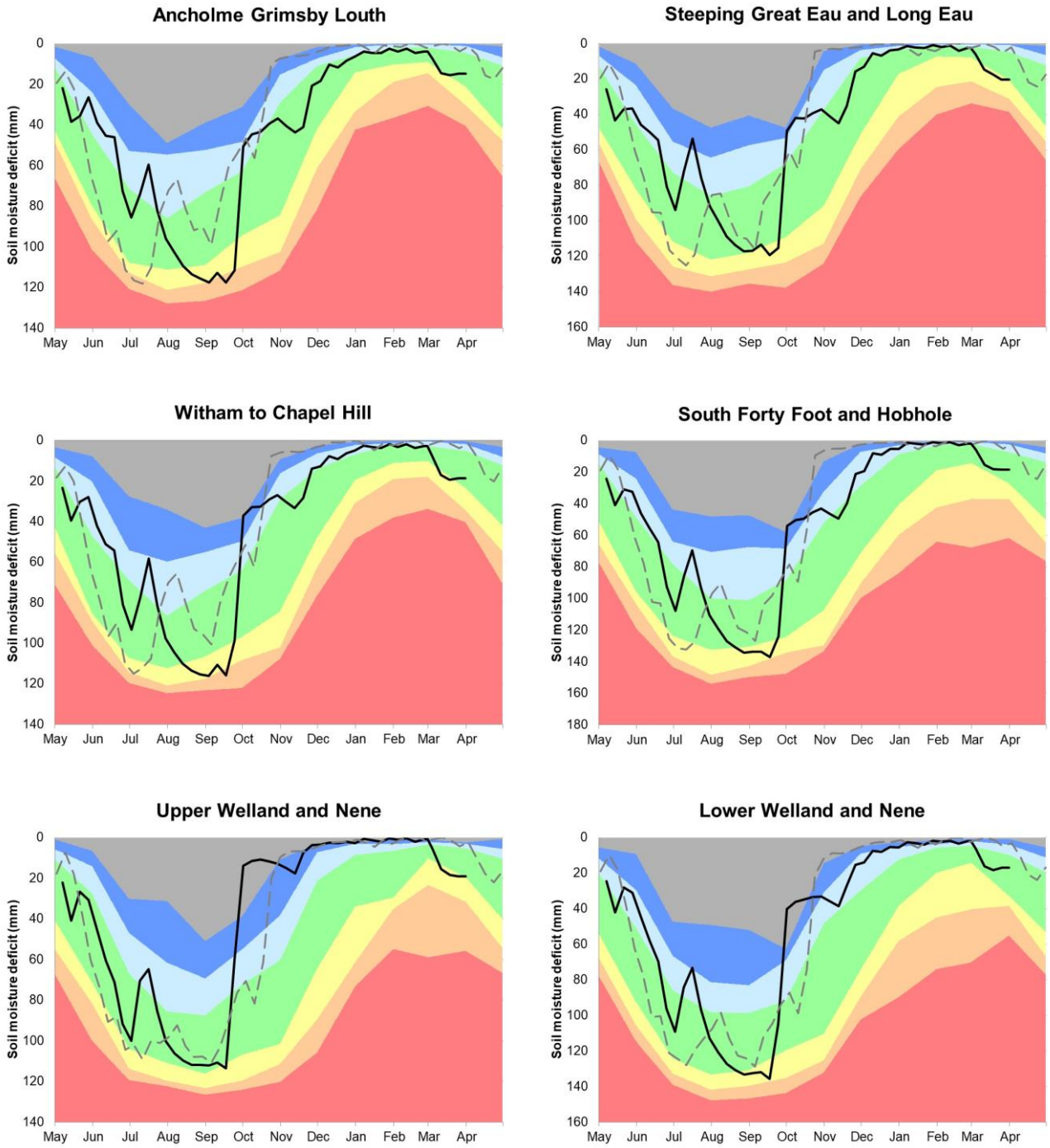
3.1 Soil moisture deficit map

Figure 3.1:Left map shows Soil moisture deficits for weeks ending 31 March 2025. Right map shows the difference (mm) of the actual soil moisture deficit from the 1961 to 1990 long term average soil moisture deficits. MORECS data for real land use.



3.2 Soil moisture deficit charts

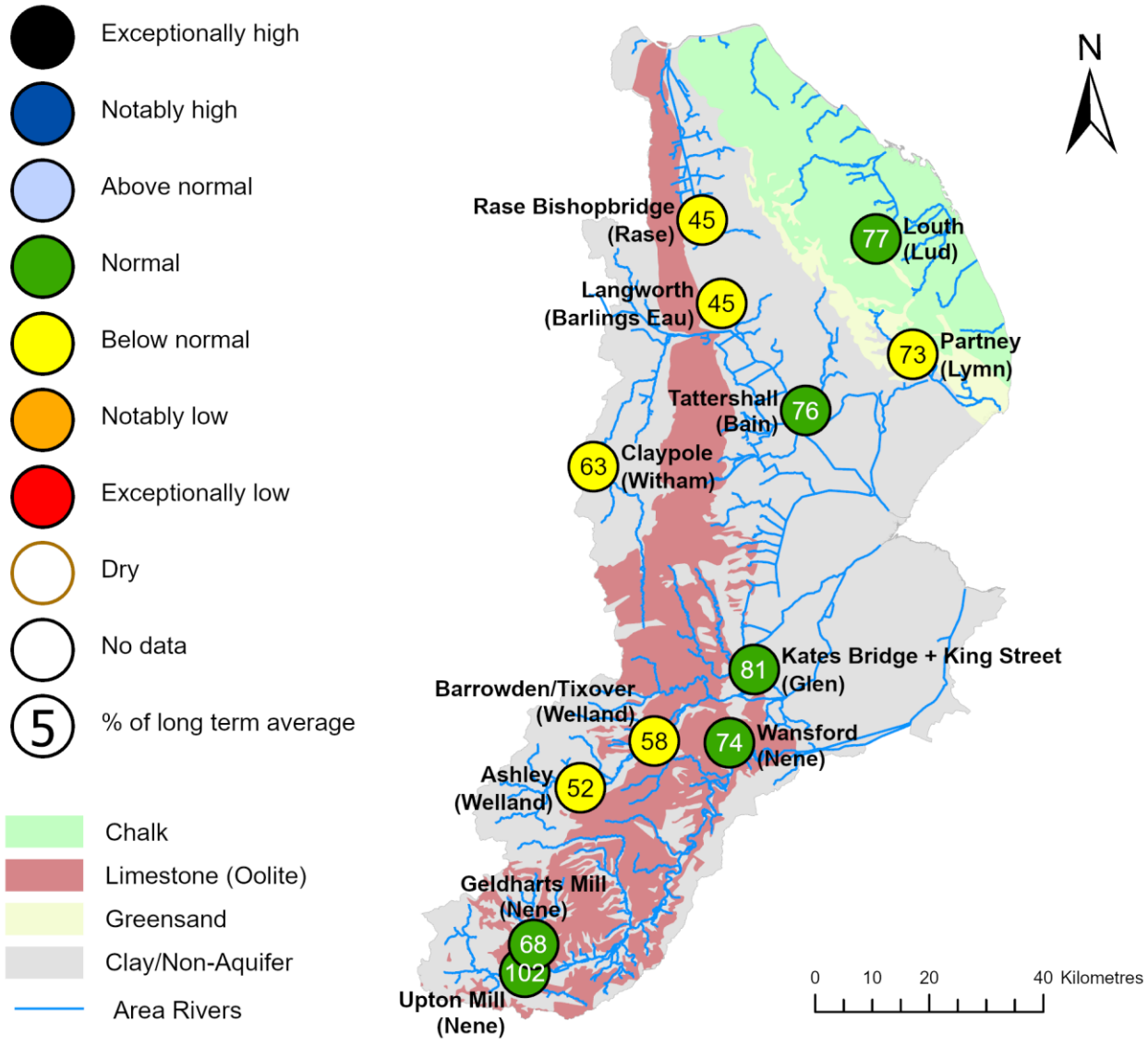
Figure 3.2: Latest soil moisture deficit compared to previous year, maximum, minimum, and 1961 to 1990 long term average. Weekly MORECS data for real land use.



4 River flows

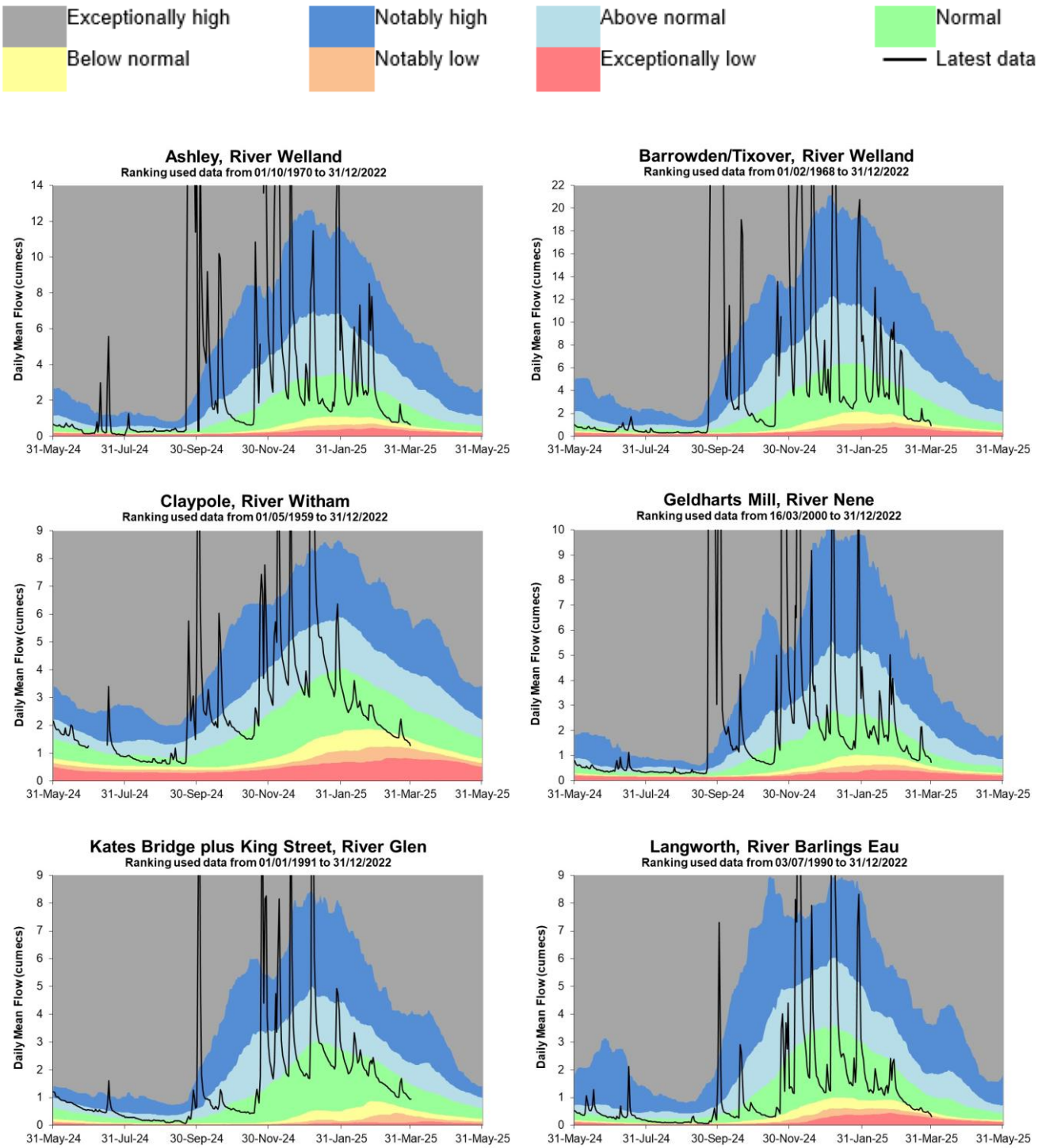
4.1 River flows map

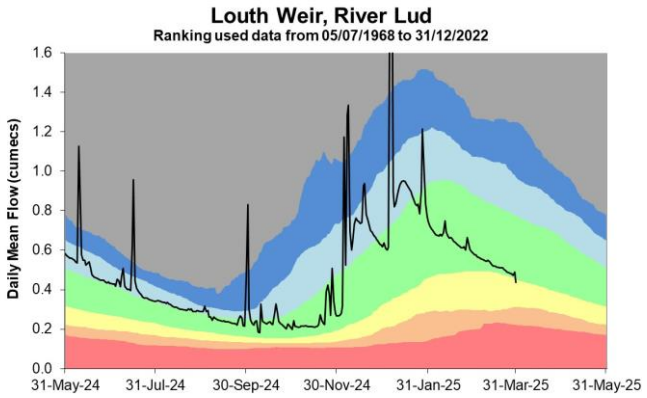
Figure 4.1: Monthly mean river flow for indicator sites for March 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic March monthly means Table available in the appendices with detailed information.

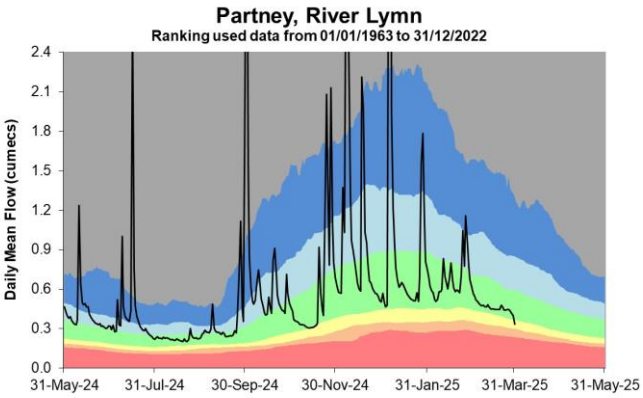


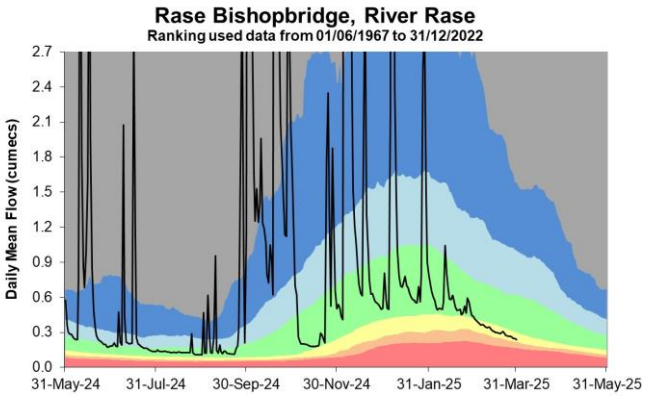
4.2 River flow charts

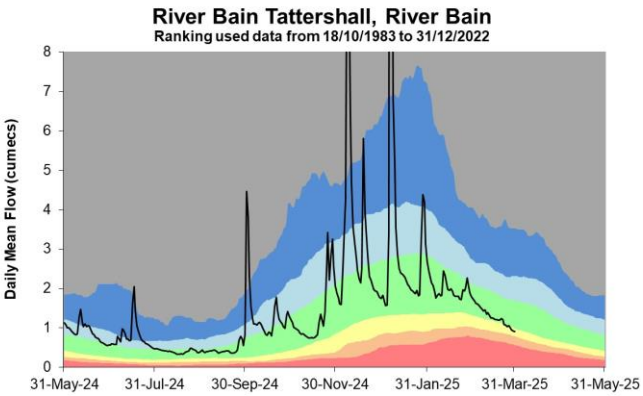
Figure 4.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.

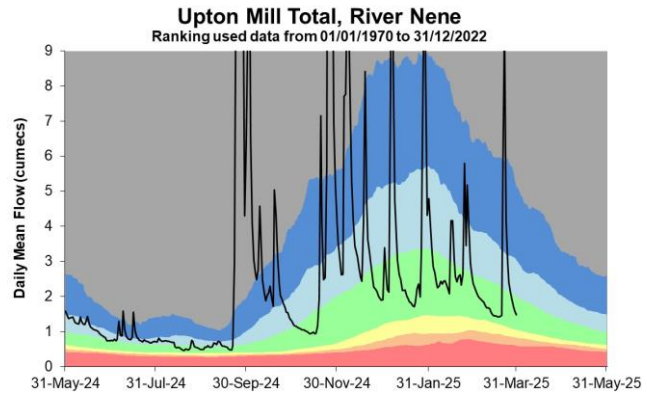


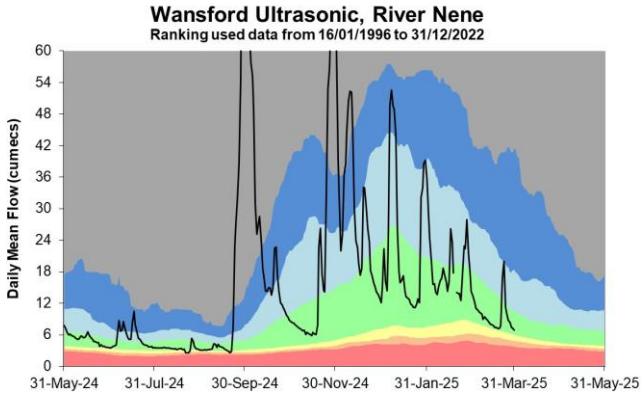










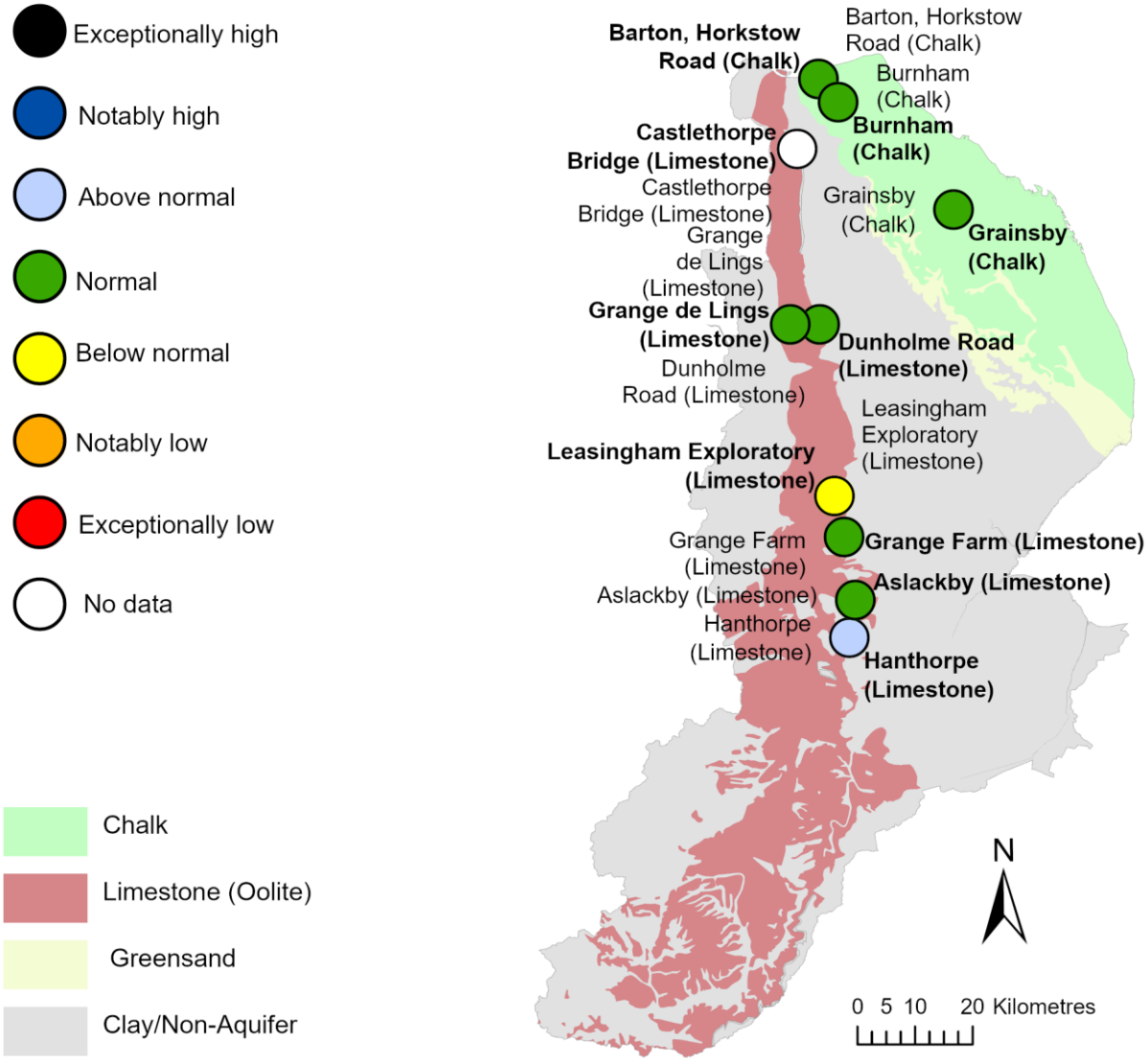


Source: Environment Agency.

5 Groundwater levels

5.1 Groundwater levels map

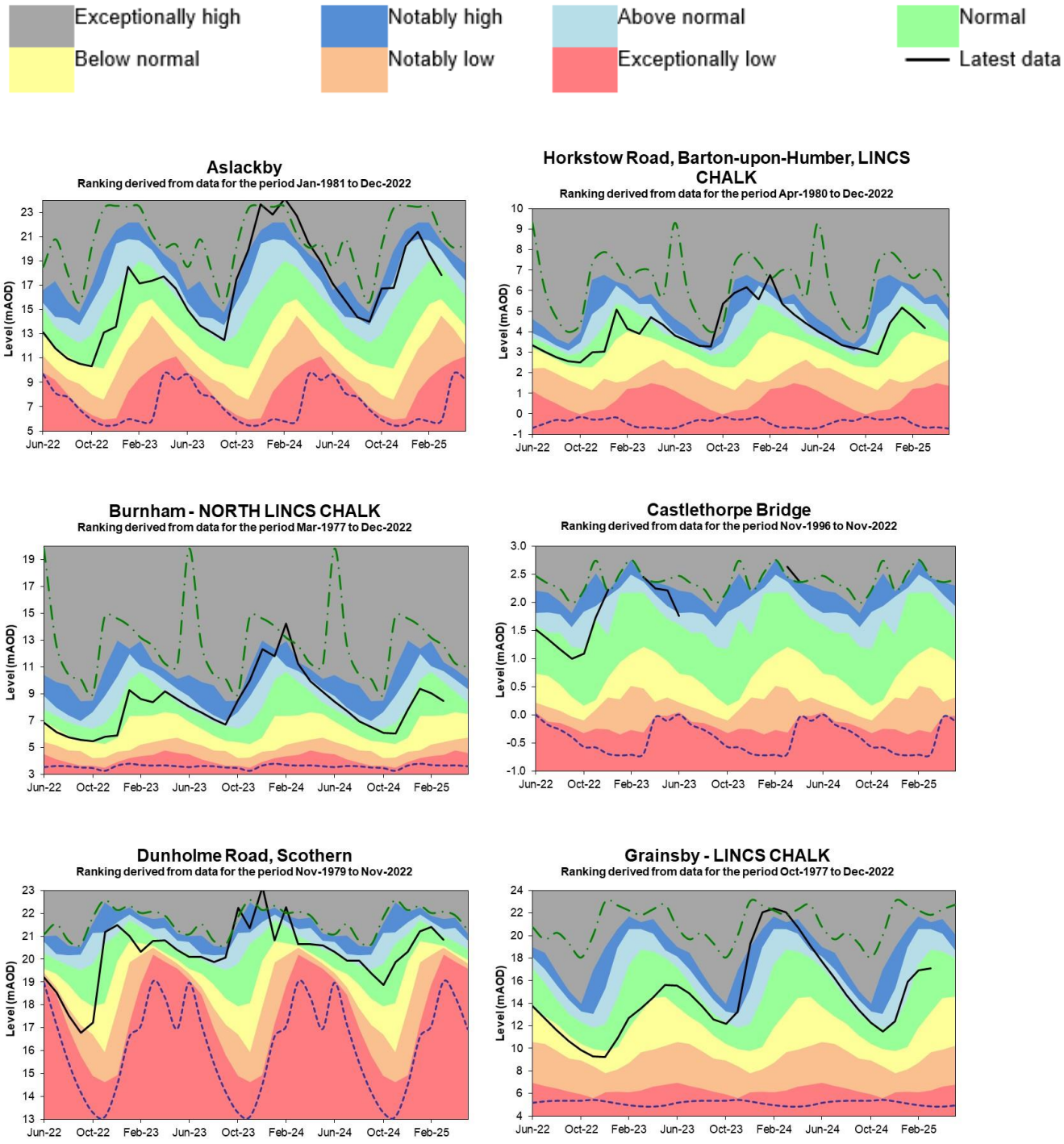
Figure 5.1: Groundwater levels for indicator sites at the end of March 2025, classed relative to an analysis of respective historic March levels. Table available in the appendices with detailed information.

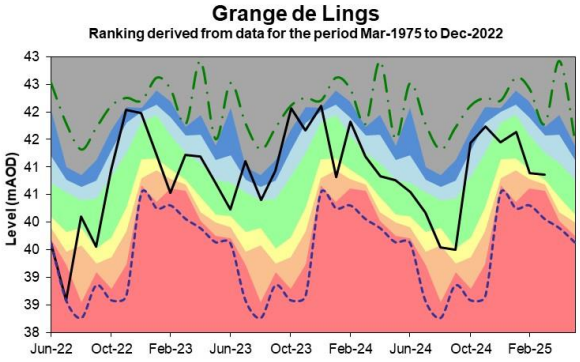


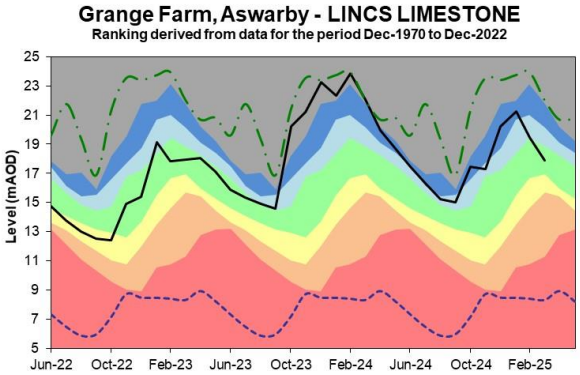
(Source: Environment Agency). Geological map reproduced with kind permission from UK Groundwater Forum, BGS copyright NERC. Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

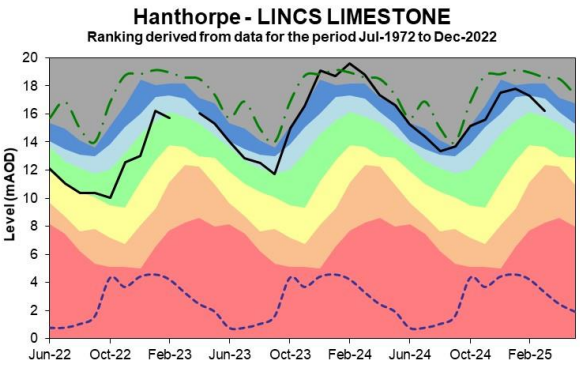
5.2 Groundwater level charts

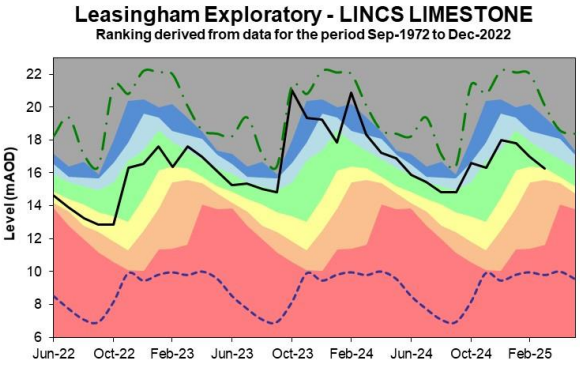
Figure 5.2: End of month groundwater levels at index groundwater level sites for major aquifers. 22 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.







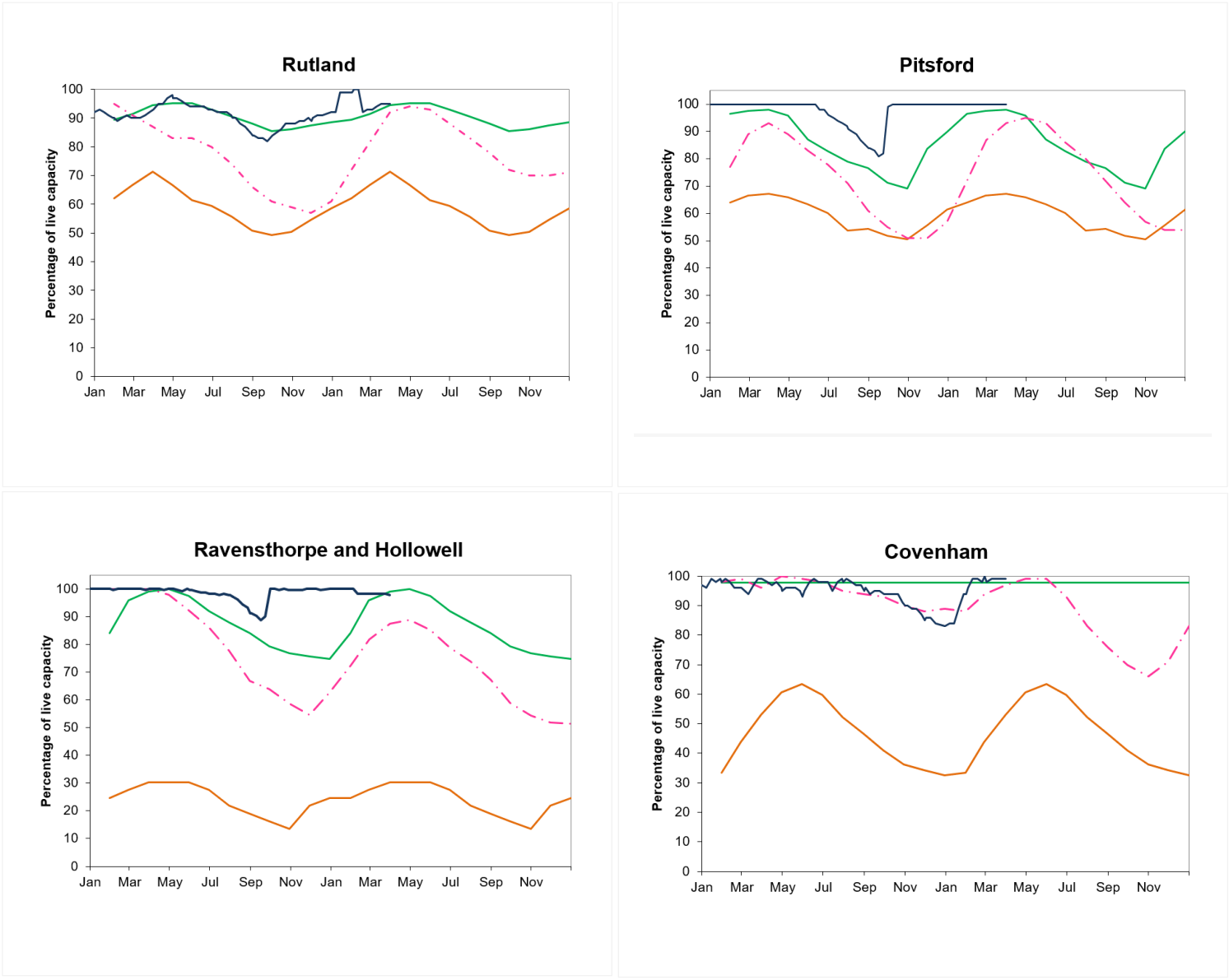




Source: Environment Agency, 2025.

6 Reservoir stocks

Figure 6.1: End of month regional reservoir stocks compared to the normal operating curve, drought curve and dry 1995-1996 stocks. Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in length.

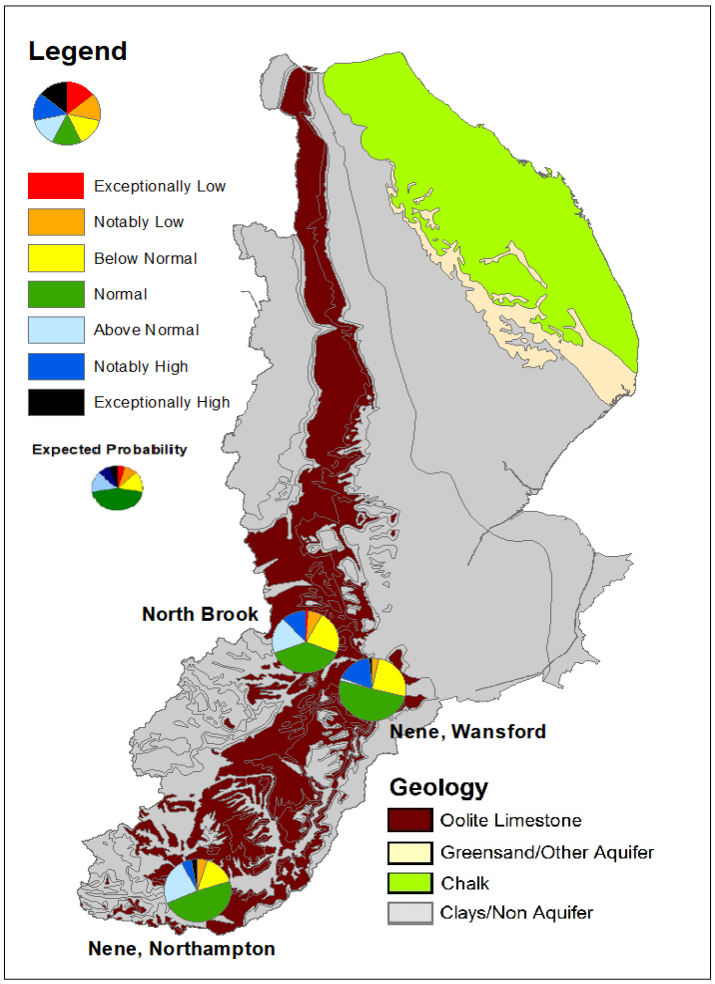


(Source: water companies).

7 Forward Look

7.1 Probabilistic ensemble projection of river flows at key sites in June 2025

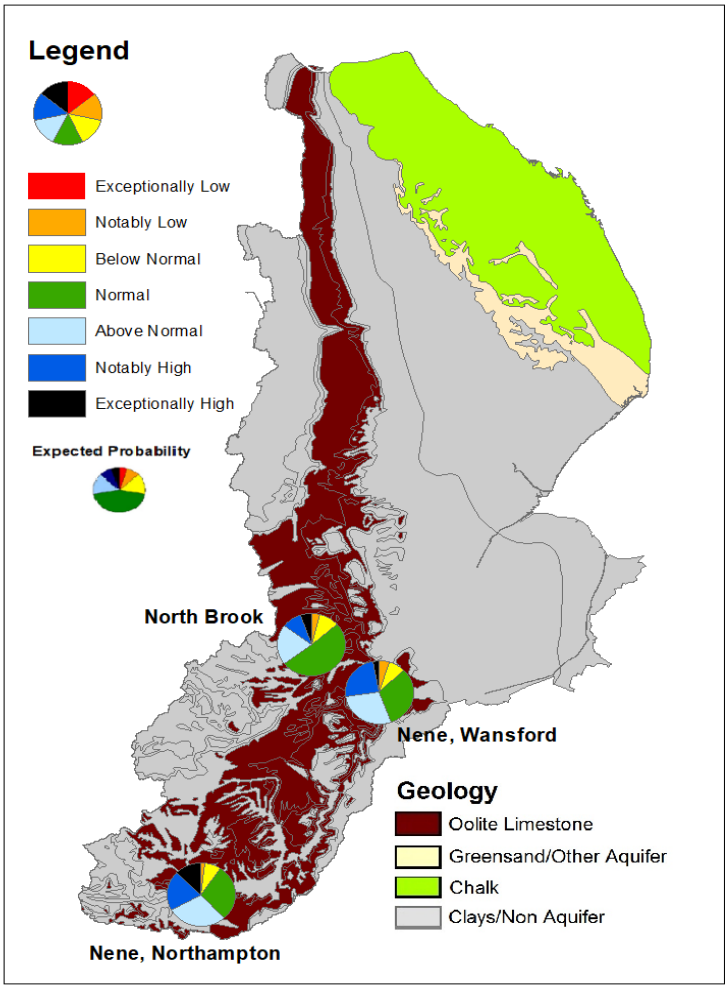
Table available in the appendices with detailed information. Exceptionally high or low levels are those which would typically occur 5% of the time within the historic record. Notably high or low levels are those which would typically occur 8% of the time. Above normal or below normal levels are those which would typically occur 15% of the time. Normal levels are those which would typicall occur 44% of the time within the historic record.



Pie charts indicate probability, based on climatology, of the surface water flow at each site being, for example, exceptionally low for the time of year. (Source: Centre for Ecology and Hydrology, Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2025.

7.2 Probabilistic ensemble projection of river flows at key sites in September 2025

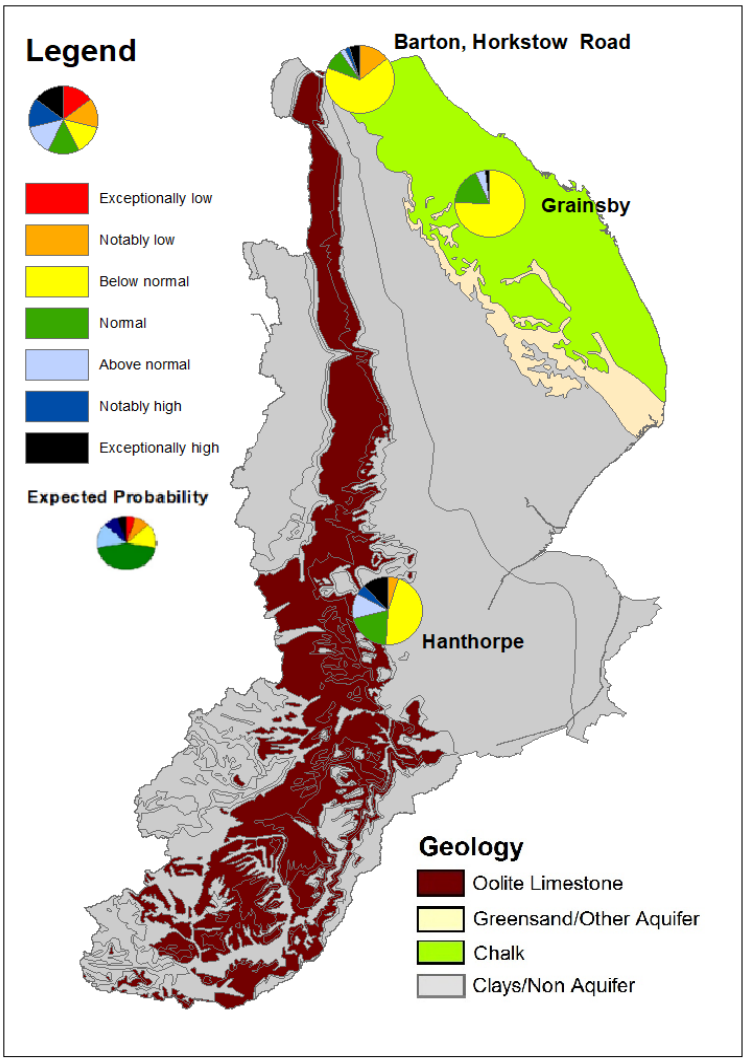
Table available in the appendices with detailed information. Exceptionally high or low levels are those which would typically occur 5% of the time within the historic record. Notably high or low levels are those which would typically occur 8% of the time. Above normal or below normal levels are those which would typically occur 15% of the time. Normal levels are those which would typically occur 44% of the time within the historic record.



Pie charts indicate probability, based on climatology, of the surface water flow at each site being, for example, exceptionally low for the time of year. (Source: Centre for Ecology and Hydrology, Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2025

7.3 Probabilistic ensemble projection of groundwater levels at key sites in September 2025

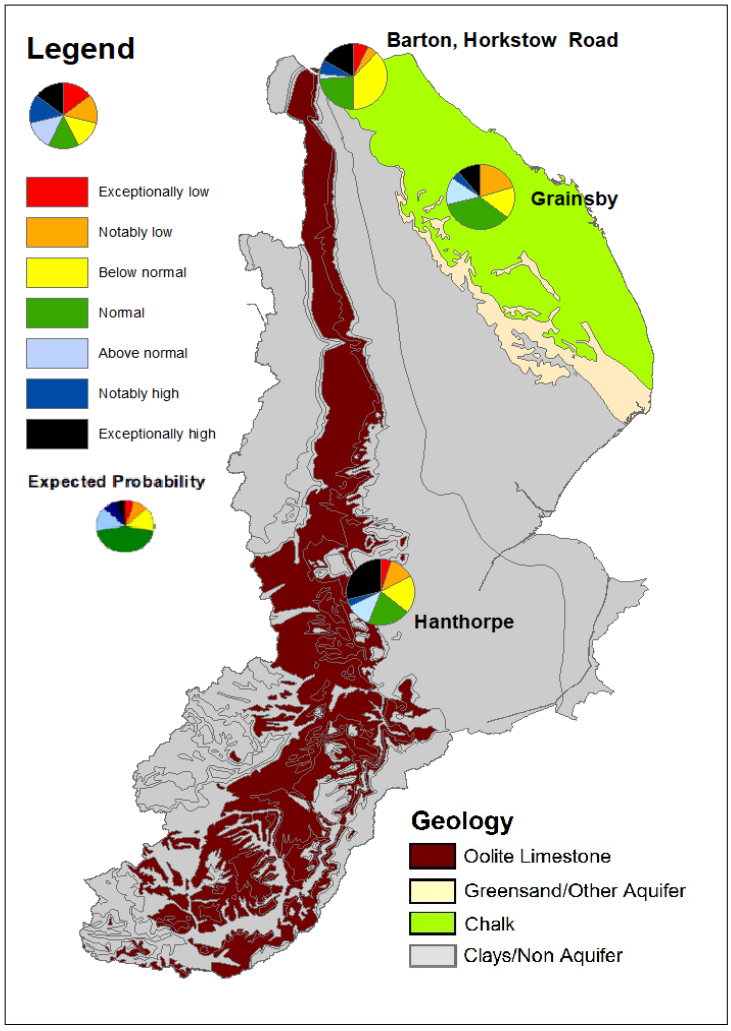
Table available in the appendices with detailed information. Exceptionally high or low levels are those which would typically occur 5% of the time within the historic record. Notably high or low levels are those which would typically occur 8% of the time. Above normal or below normal levels are those which would typically occur 15% of the time. Normal levels are those which would typically occur 44% of the time within the historic record.



Pie charts indicate probability, based on climatology, of the groundwater level at each site being, for example, exceptionally low for the time of year. (Source: Environment Agency)
Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2025

7.4 Probabilistic ensemble projection of groundwater levels at key sites in March 2025

Table available in the appendices with detailed information. Exceptionally high or low levels are those which would typically occur 5% of the time within the historic record. Notably high or low levels are those which would typically occur 8% of the time. Above normal or below normal levels are those which would typically occur 15% of the time. Normal levels are those which would typically occur 44% of the time within the historic record.



Pie charts indicate probability, based on climatology, of the groundwater level at each site being, for example, exceptionally low for the time of year. (Source: Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2025

8 Glossary

8.1 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).

8.2 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.

9 Appendices

9.1 Rainfall table

Hydrological area	Mar 2025 rainfall % of long term average 1961 to 1990	Mar 2025 band	Jan 2025 to March cumulative band	Oct 2024 to March cumulative band	Apr 2024 to March cumulative band
Louth Grimsby And Ancholme	25	Notably Low	Below normal	Normal	Normal
Lower Welland And Nene	24	Notably Low	Below normal	Normal	Normal
South Forty Foot And Hobhole	22	Notably Low	Below normal	Normal	Normal
Steeping Great Eau And Long Eau	21	Exceptionally Low	Below normal	Normal	Normal
Upper Welland And Nene	26	Notably Low	Normal	Normal	Above normal
Witham To Chapel Hill	26	Notably Low	Below normal	Normal	Normal

9.2 River flows table

Site name	River	Catchment	Mar 2025 band	Feb 2025 band
Ashley	Welland Mkt.harb-rockinghm	Welland Rockingham	Below normal	Above normal
Barrowden/tixover	Welland (rockingham To Stamford)	Welland Stamford	Below normal	Normal
Claypole	Upper Witham	Witham Bargate Upper	Below normal	Normal
Geldharts Mill	Nene (brampton Branch)	Nene Brampton Bridge	Normal	Normal
Kates Bridge Plus King Street	Glen (an)	Welland and Glen	Normal	Normal
Langworth	Barlings Eau	Barlings Eau	Below normal	Normal
Louth Weir	Lud	Louth Canal	Normal	Normal
Partney	Lymn & Steeping	Lymn Steeping	Below normal	Normal
Rase Bishopbridge	Ancholme	Ancholme W Mid	Below normal	Normal
River Bain Tattershall	Bain	Bain	Normal	Normal

Upton Mill Total	Nene (kislingbury Branch)	Nene Kislingbry Bridge	Normal	Normal
Wansford Combined	Nene (wollaston To Wansford)	Nene Wansford	Normal	Normal

9.3 Groundwater table

Site name	Aquifer	End of Mar 2025 band	End of Feb 2025 band
Aslackby	Limestone (cornbrash Formation)	Normal	Above normal
Barton-upon-humber	Grimsby Ancholme Louth Chalk	Normal	Normal
Burnham	Grimsby Ancholme Louth Chalk	Normal	Normal
Castlethorpe Bridge	Grimsby Ancholme Louth Limestone		Above normal
Dunholme Road, Scothern	Grimsby Ancholme Louth Limestone	Normal	Normal
Grainsby	Grimsby Ancholme Louth Chalk	Normal	Normal
Grange De Lings	Grimsby Ancholme Louth Limestone	Normal	Below normal
Grange Farm, Aswarby	Limestone (mudstone - Peterborough Member)	Normal	Above normal

Hanthorpe	Limestone (cornbrash Formation)	Above normal	Above normal
Leasingham Exploratory	Limestone (rutland Formation)	Below normal	Normal

9.4 Ensemble projections tables

9.4.1 Probabilistic ensemble projection of river flows at key sites in June 2025

Percentage of pie chart for each band

Site	Nene Nton	Nene Wansford	North Brook
Exceptionally low	0.0	0.0	1.3
Notably low	4.8	3.2	6.7
Below normal	15.9	25.4	22.7
Normal	47.6	50.8	38.7
Above normal	23.8	1.6	18.7
Notably high	4.8	17.5	12.0
Exceptionally high	3.2	1.6	0.0

9.4.2 Probabilistic ensemble projection of river flows at key sites in September 2025

Percentage of pie chart for each band

Site	Nene Nton	Nene Wansford	North Brook
Exceptionally low	0.0	0.0	0.0
Notably low	1.6	4.8	4.1
Below normal	7.9	7.9	9.5
Normal	28.6	31.7	51.4
Above normal	28.6	28.6	20.3
Notably high	20.6	23.8	9.5
Exceptionally high	12.7	3.2	5.4

9.4.3 Probabilistic ensemble projection of groundwater levels at key sites in September 2025

Percentage of pie chart for each band

Site	Grainsby	Hanthorpe	Horkstow
Exceptionally low	0.0	0.0	0.0
Notably low	0.0	5.1	14.3
Below normal	75.6	45.8	66.7
Normal	17.8	20.3	9.5
Above normal	4.4	11.9	2.4
Notably high	0.0	5.1	2.4
Exceptionally high	2.2	11.9	4.8

9.4.4 Probabilistic ensemble projection of groundwater levels at key sites in March 2026

Percentage of pie chart for each band

Site	Grainsby	Hanthorpe	Horkstow
Exceptionally low	0.0	5.1	7.1
Notably low	20.0	11.9	4.8
Below normal	15.6	18.6	38.1
Normal	35.6	20.3	23.8
Above normal	13.3	11.9	2.4
Notably high	4.4	3.4	7.1
Exceptionally high	11.1	28.8	16.7