Monthly water situation report: Lincolnshire and Northamptonshire Area

1 Summary - February 2025

February was a fairly normal month, with rainfall varying between 58% and 97% of the long term average (LTA) in the six catchments. On average, the Lincolnshire and Northamptonshire area (LNA) received 30mm of rainfall, which was 78% of the LTA. Rainfall was classified as normal in all catchments apart from the Louth Grimsby and Ancholme, which was below normal. Soil moisture deficits (SMD) slightly increased in all hydrological areas. By the end of February, the area had an SMD of 2mm, which falls within the below normal category for this time of year. River flows at most sites responded in line with the rainfall received across February. Monthly mean river flows ranged from 62% to 131% of the LTA, with classifications ranging from normal to above normal. Following the normal level of rainfall across LNA in February, the groundwater level trend showed a slight decline at all indicator sites except Grainsby. All reservoirs in the area ended the month above their normal operating curves.

1.1 Rainfall

Overall, February brought normal levels of rainfall, with an average total of 30mm, which was 78% of the LTA for Lincolnshire and Northamptonshire. Rainfall was distributed throughout the month, but six days (7, 8, 10, 15, 23, and 24 February) accounted for approximately 76% of the month's total rainfall. Throughout the month, the frontal system did not give catchment rainfall totals higher than 8mm during any single event. Rainfall totals were normal in all catchments except Louth Grimsby and Ancholme which was classified as below normal. The lowest rainfall was in the Louth Grimsby and Ancholme with 23mm (58% of the LTA), and the highest rainfall was in the Upper Welland and Nene with 40mm (97% of the LTA).

Three-month rainfall totals showed normal levels of rainfall in all six hydrological areas. This is a decrease from January's report, which showed normal to above normal levels of rainfall in all catchments. The six-month and twelve-month long-term rainfall maps reflect a north-south trend, with higher totals received in the south compared to the north. All hydrological areas show normal or higher levels of rainfall during these periods.

1.2 Soil moisture deficit and recharge

Due to the below normal to normal levels of rainfall received across the area in February, SMD slightly increased in all six hydrological areas. The lowest levels of SMD were observed in the Upper Welland and Nene (1.3mm), whilst the highest levels were observed in the Ancholme Grimsby Louth (3.8mm). On average, SMD for the area increased from 1.3mm at the end of January to 2mm by the end of February. This figure is within the below normal range for the time of year. The SMD difference-to-LTA (mm) map show most hydrological areas are in the -25mm to -6mm category, indicating that they are slightly wetter than normal for the time of year. The only exceptions are the Louth Grimsby and Ancholme and Steeping Great Eau and Long areas that are in the -5mm to 5mm category, meaning the soils are within the field capacity range, and there is little or no water shortage.

1.3 River flows

At most sites river flow responded in line with the amount of rainfall received. Monthly mean river flows ranged from 62% to 131% of the LTA, and from normal to above normal classification. Ashley (Welland) was classified as above normal, whilst the remaining 11 sites were classified as normal. Ashley (Wellend) and Wansford (Nene) levels show no change in banding since January 2025.

1.4 Groundwater levels

Following the normal level of rainfall across LNA in February, the groundwater level trend showed a slight decline at all indicator sites except Grainsby, ending the month with 3 sites classified as above normal, 4 sites as normal, and 1 site (Grange de Lings) as below normal. Barton Horkstow Road and Leasingham Exploratory show no change in banding since the previous month, and the Burnham banding remained unchanged since November 2024.

1.5 Reservoir stocks

All reservoirs in the area ended the month above their normal operating curves. Previously, Covenham had been below the normal operational curve for a sustained period.

1.6 Environmental impact

During February, there were no flood alerts or flood warnings issued. All transfer schemes remained off throughout February. No licence cessations were issued.

1.7 Forward look

1.7.1 Probabilistic ensemble projections for river flows at key sites

March 2025: All sites are showing a slightly increased probability of greater than normal flows with none of the modelled rainfall scenarios showing exceptionally/notably low level.

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).

1.7.2 Probabilistic ensemble projections for groundwater levels in key aquifers

March 2025: All sites are showing a greatly increased probability of normal levels.

September 2025: All sites are showing a reduced probability of exceptionally/notably low levels.

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2 Rainfall

2.1 Rainfall map

Figure 2.1.1: Total rainfall for hydrological areas across Lincolnshire and Northamptonshire, expressed as a percentage of long term average rainfall for the current month (up to 28 February 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.
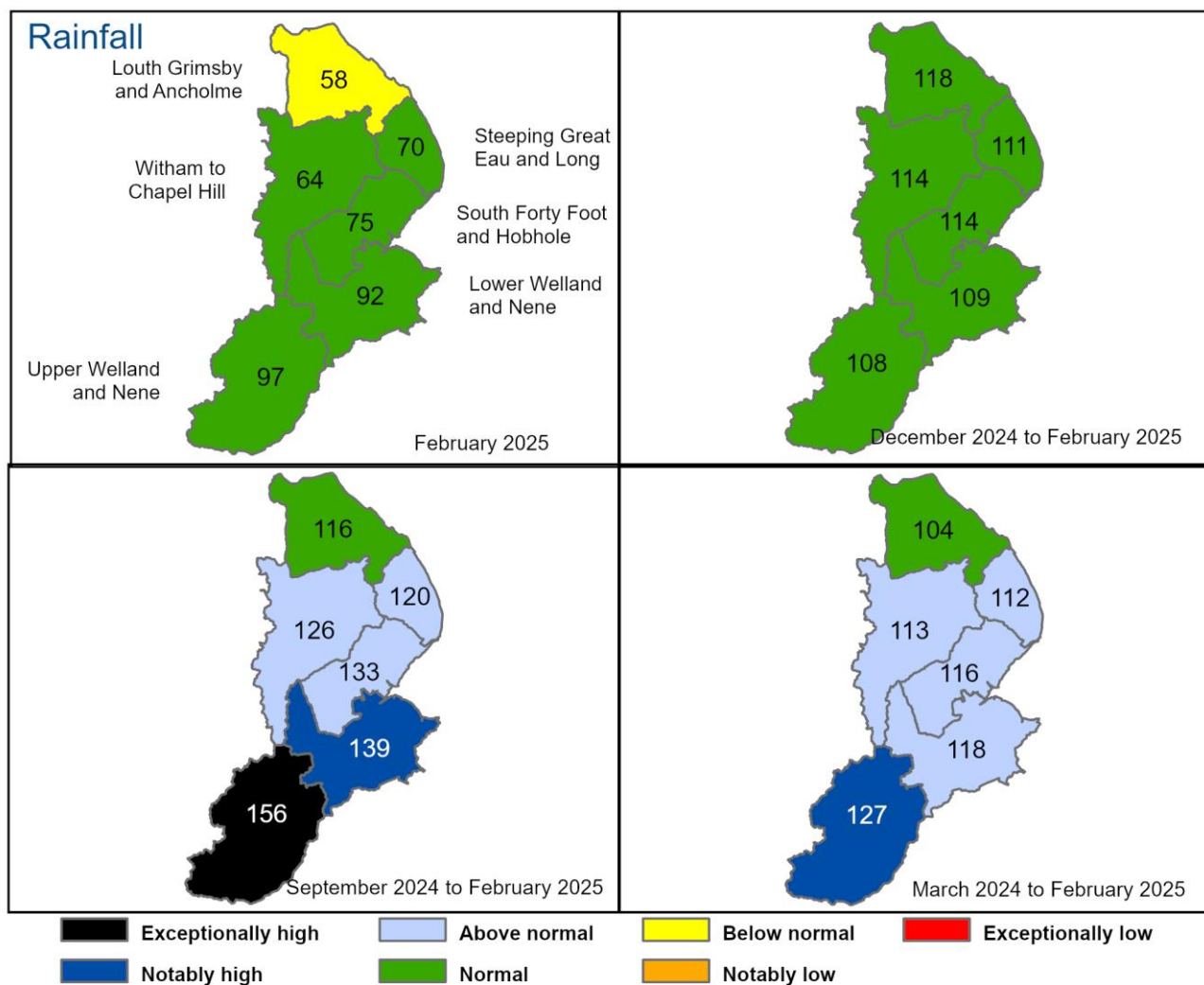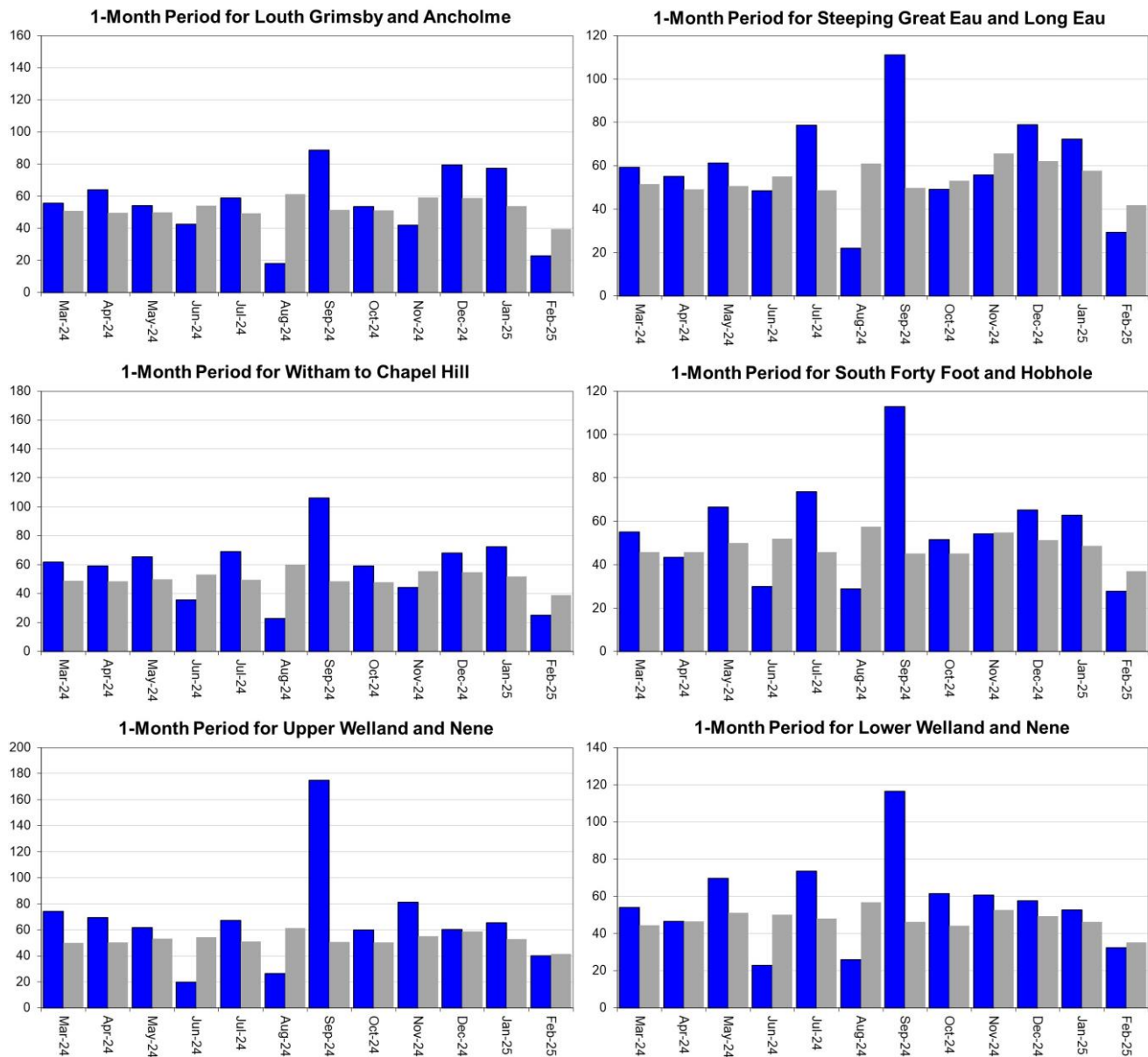

HadUK data based on the Met Office 1km gridded rainfall dataset derived from rain gauges (Source: Met Office. Crown copyright, 2025). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

2.2 Rainfall charts

Figure 2.2.1: 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.
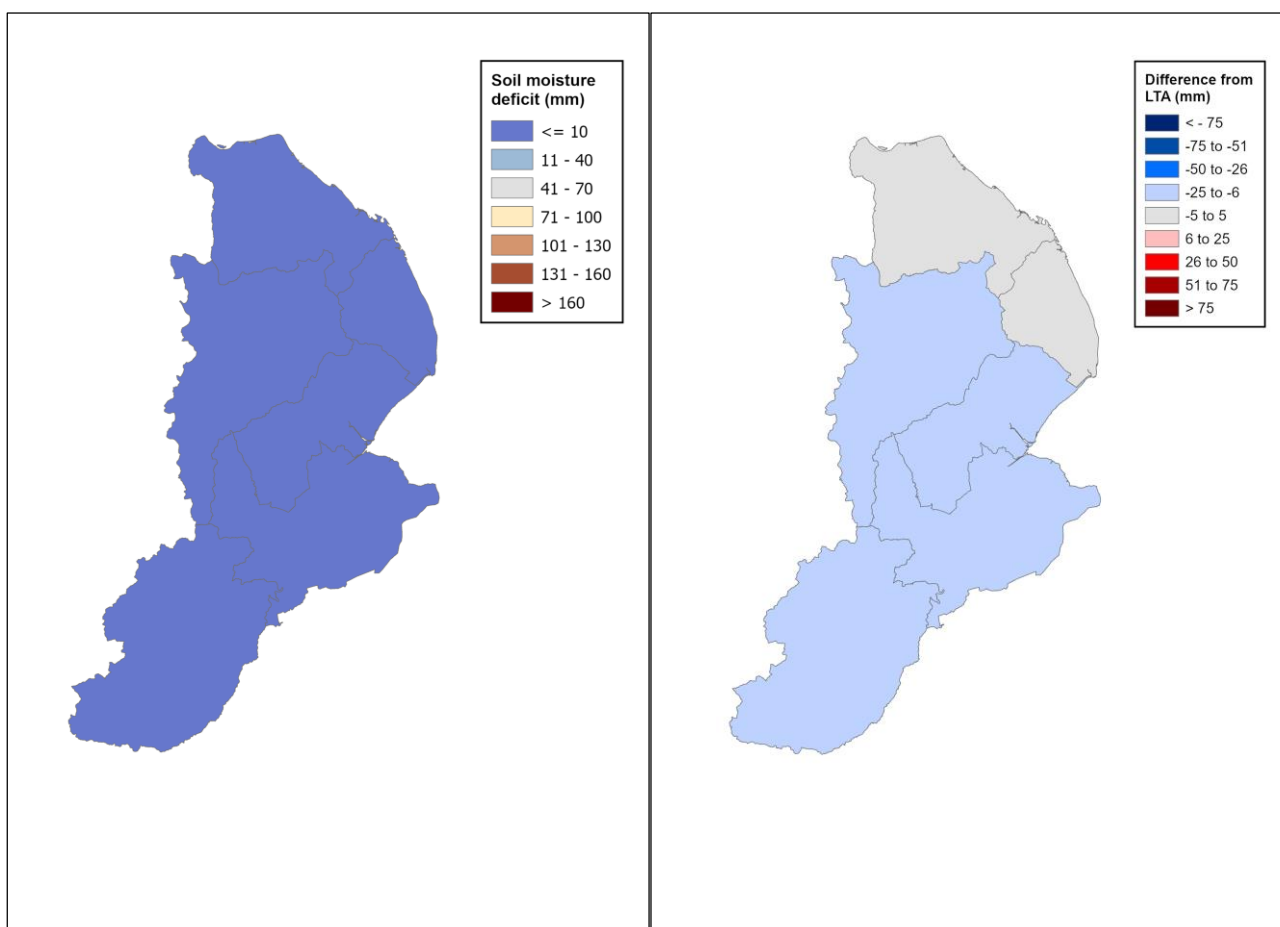

HadUK rainfall data. (Source: Met Office. Crown copyright, 2025).

# 3 Soil moisture deficit

3.1 Soil moisture deficit map

Figure 3.1.1:Left map shows Soil moisture deficits for weeks ending 28 February 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 3.2.1: Latest soil moisture deficit compared to previous year, maximum, minimum, and 1961 to 1990 long term average. Weekly MORECS data for real land use.
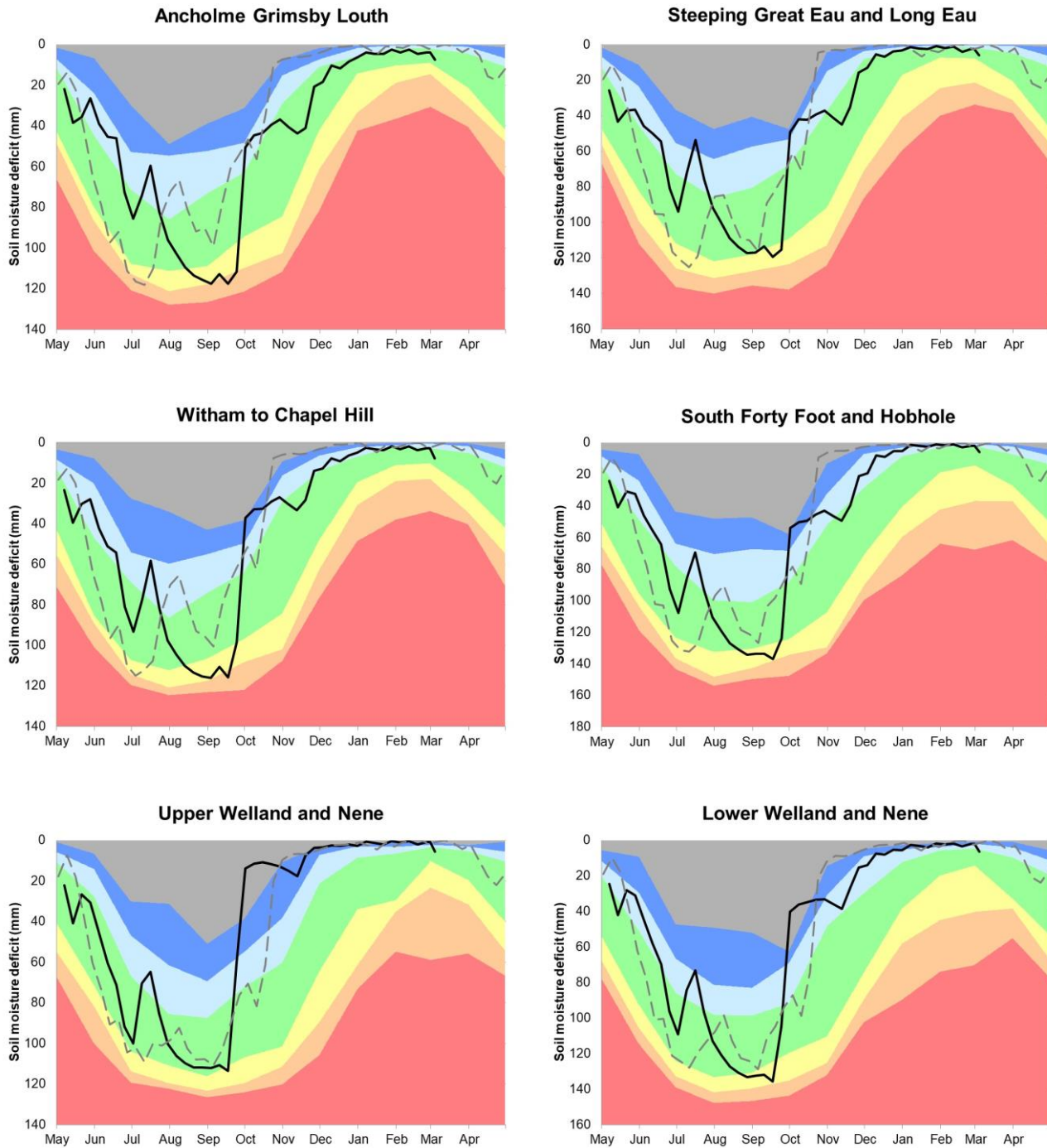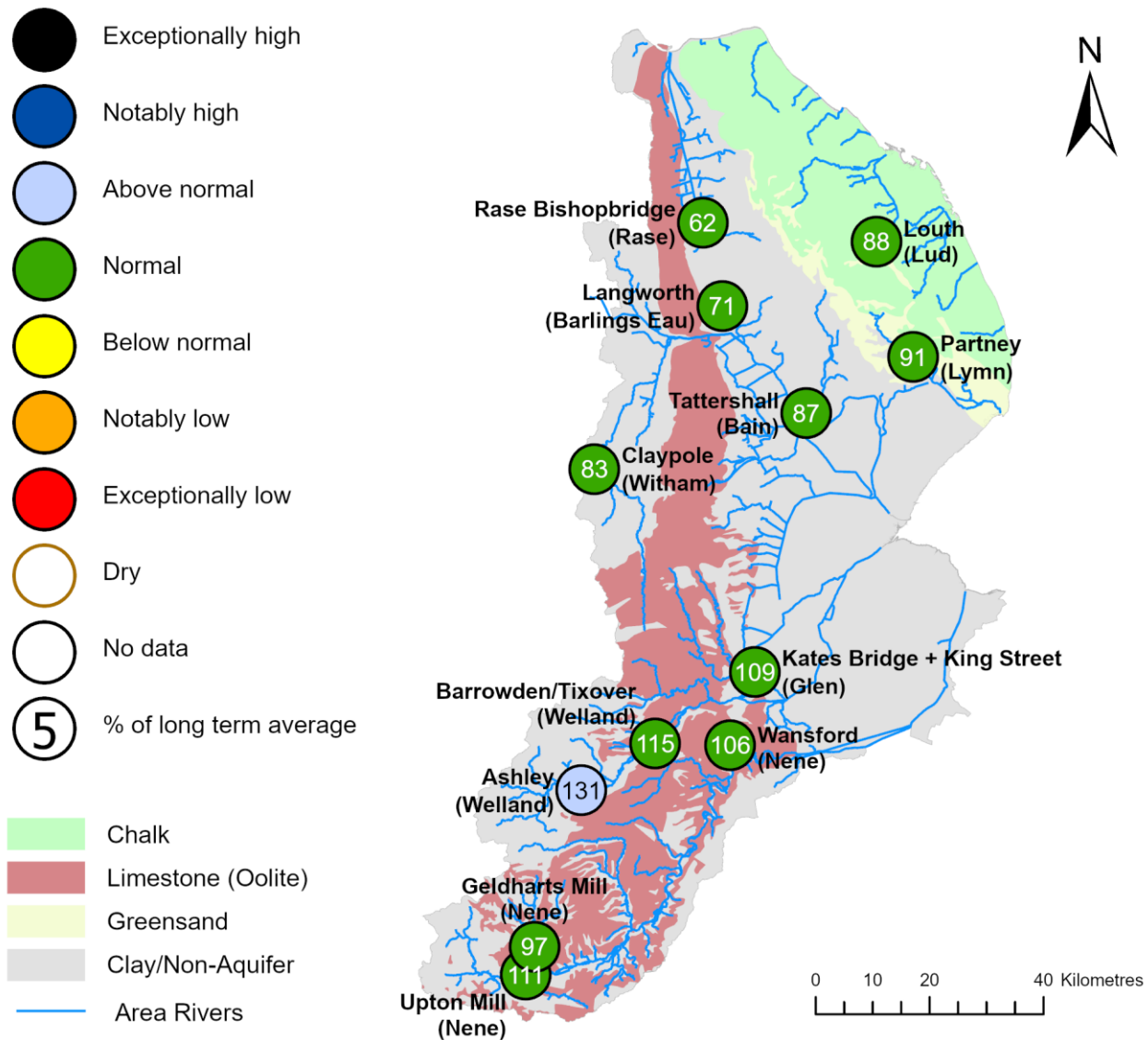
4 River flows

4.1 River flows map

Figure 4.1.1: Monthly mean river flow for indicator sites for February 2025, expressed as a percentage of the respective long term average and classed relative to an analysis of historic February monthly means Table available in the appendices with detailed information.
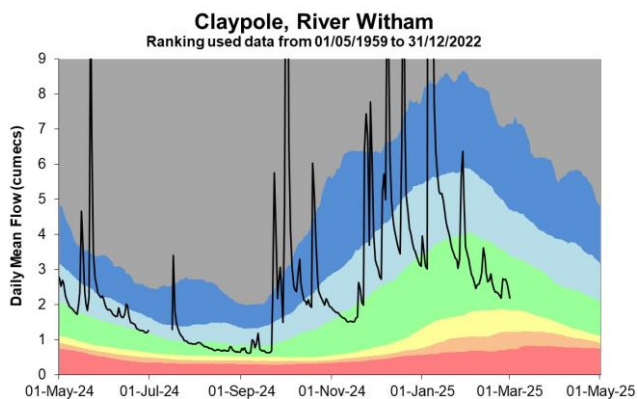
4.2 River flow charts

Figure 4.2.1: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.
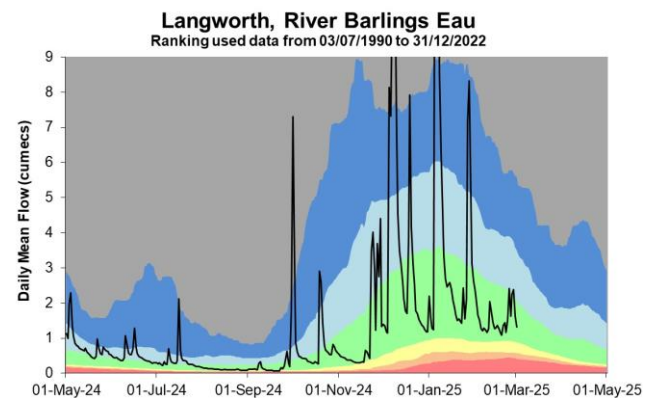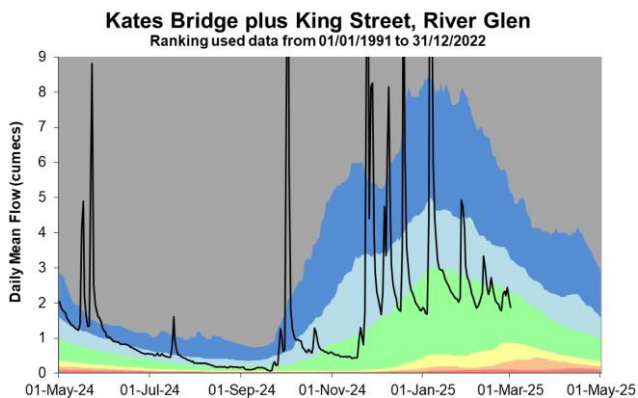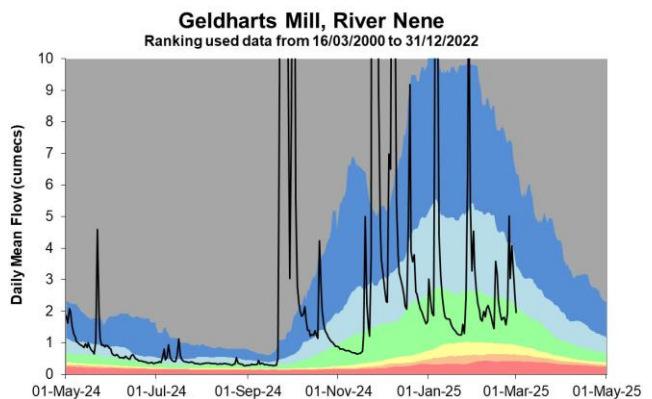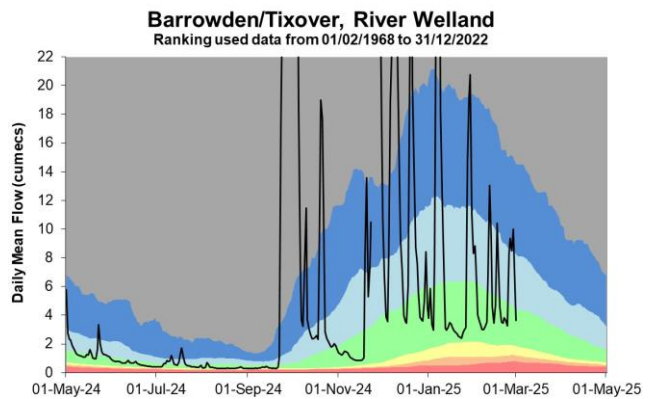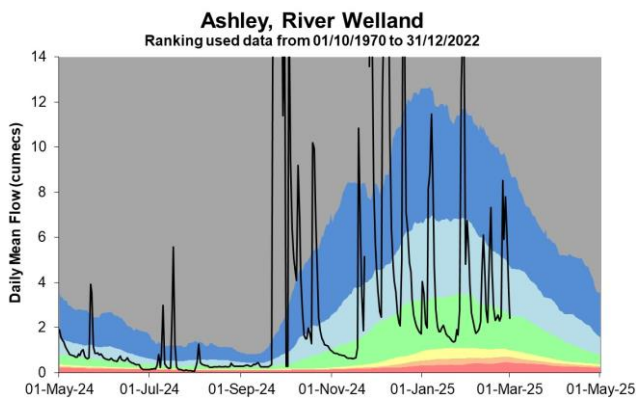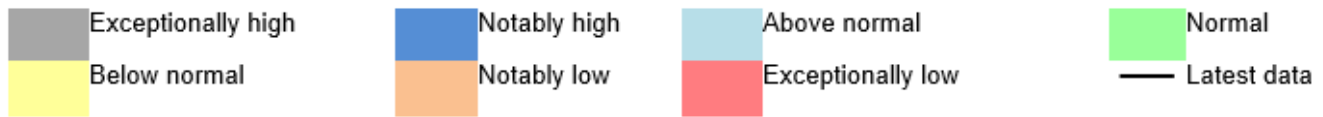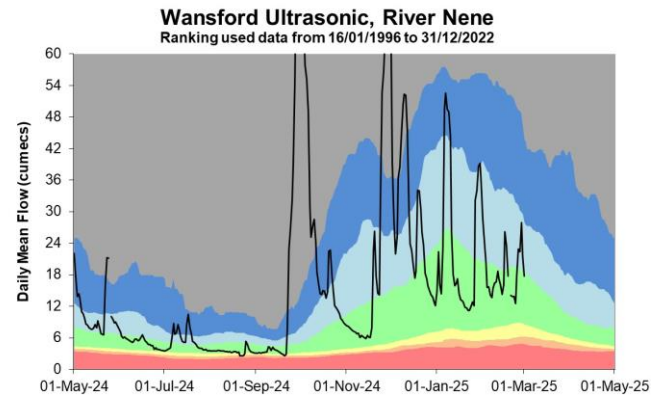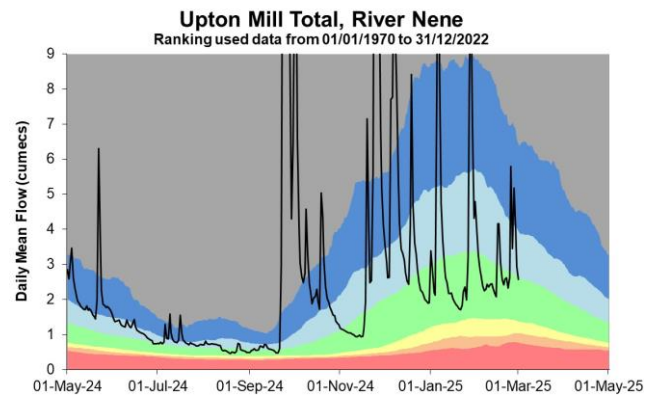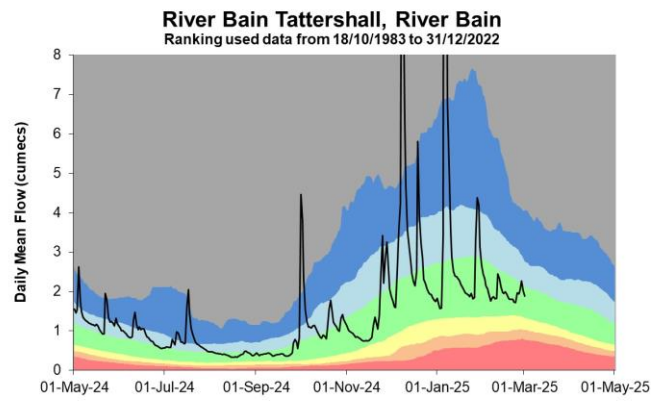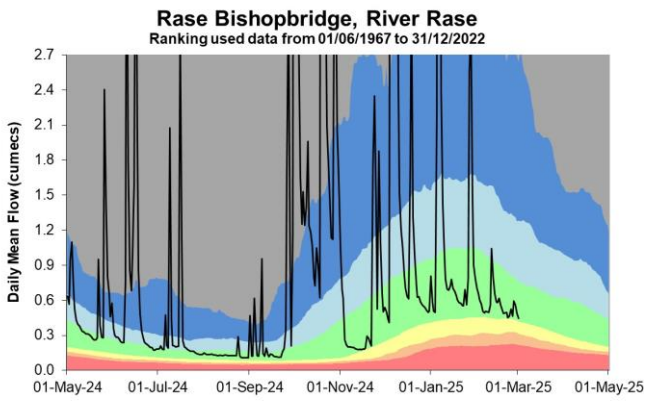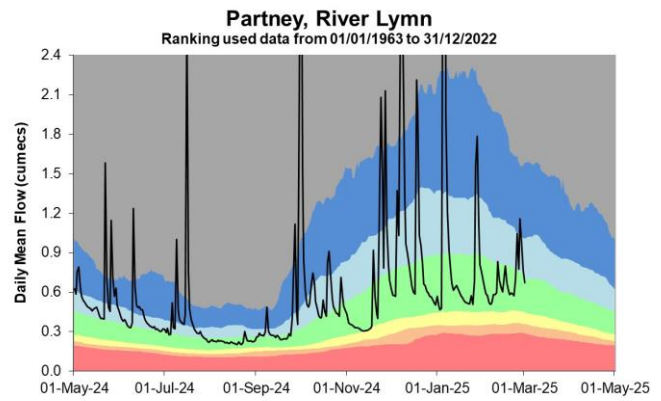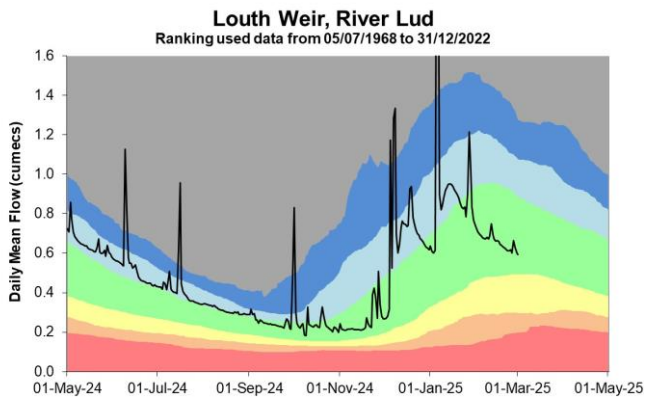
Source: Environment Agency.

5 Groundwater levels

5.1 Groundwater levels map

Figure 5.1.1: Groundwater levels for indicator sites at the end of February 2025, classed relative to an analysis of respective historic February levels. Table available in the appendices with detailed information.
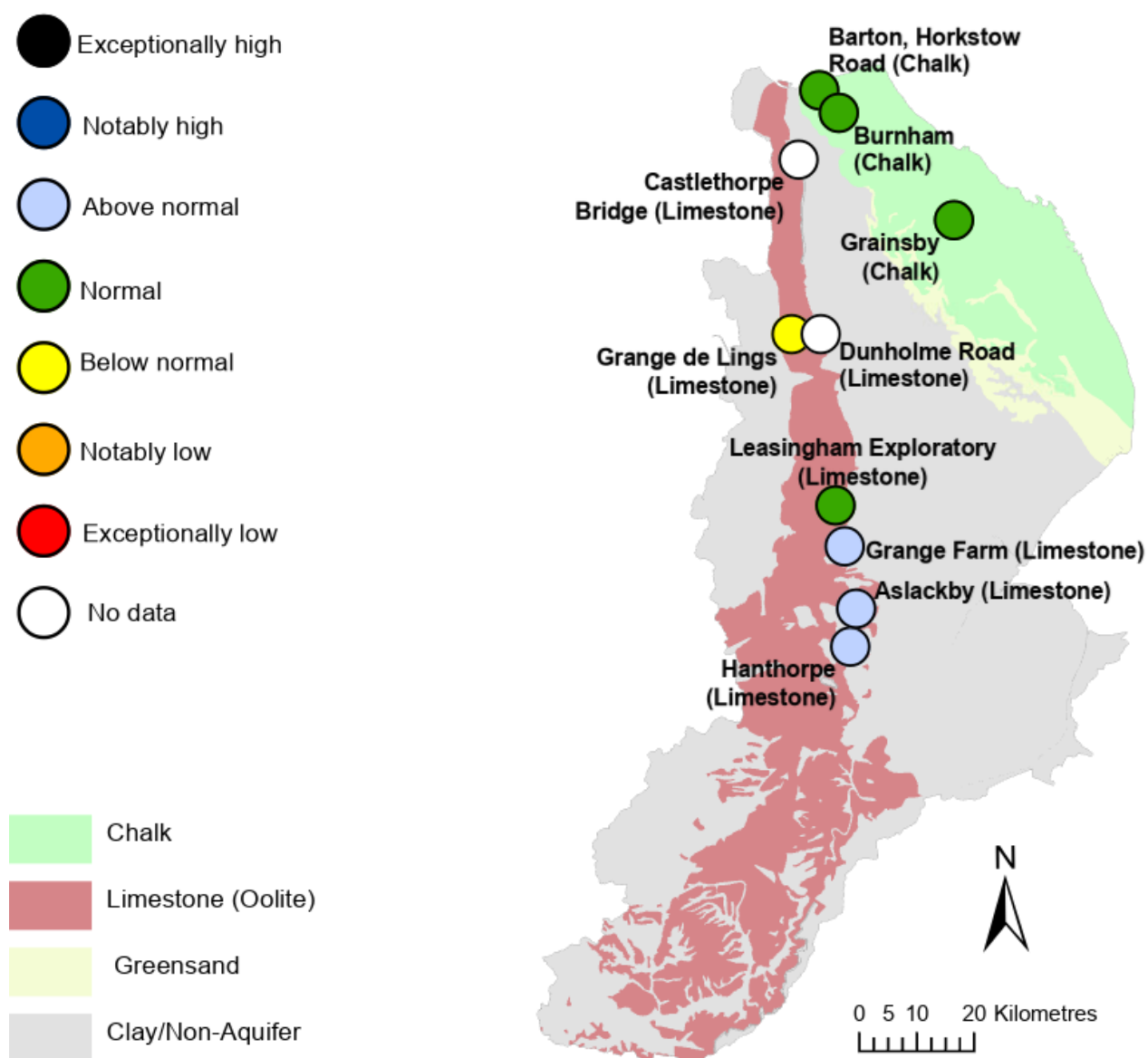
(Source: Environment Agency). Geological map reproduced with kind permission from UK Groundwater Forum, BGS copyright NERC. Crown copyright. All rights reserved. Environment Agency, 100024198, 2025.

5.2 Groundwater level charts

Figure 5.2.1: End of month groundwater levels at index groundwater level sites for major aquifers. 22 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.

Grange de Lings
Ranking derived from data for the period Mar-1975 to Dec-2022

Grange Farm, Aswarby - LINCS LIMESTONE
Ranking derived from data for the period Dec-1970 to Dec-2022

Hanthorpe - LINCS LIMESTONE
Ranking derived from data for the period Jul-1972 to Dec-2022

Leasingham Exploratory - LINCS LIMESTONE
Ranking derived from data for the period Sep-1972 to Dec-2022
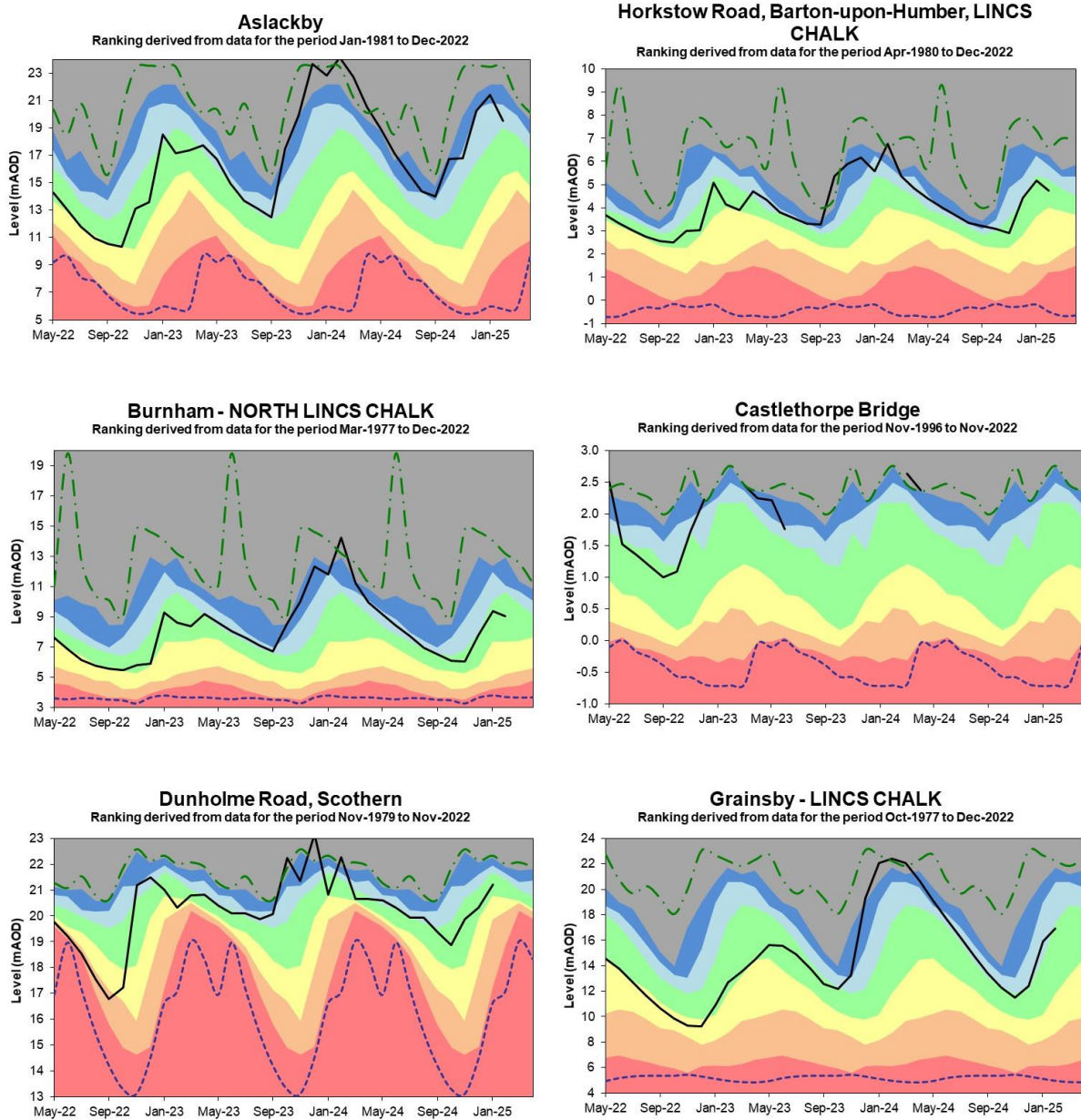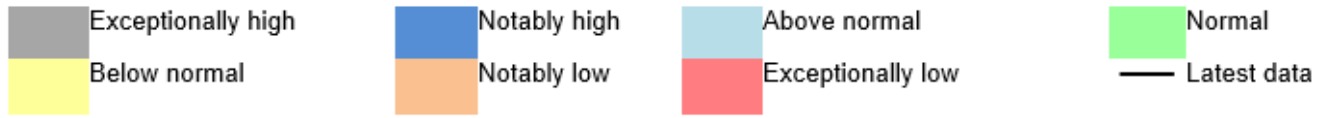
Source: Environment Agency, 2025.

6 Reservoir stocks

Figure 5.2.1: End of month regional reservoir stocks compared to the normal operating curve,
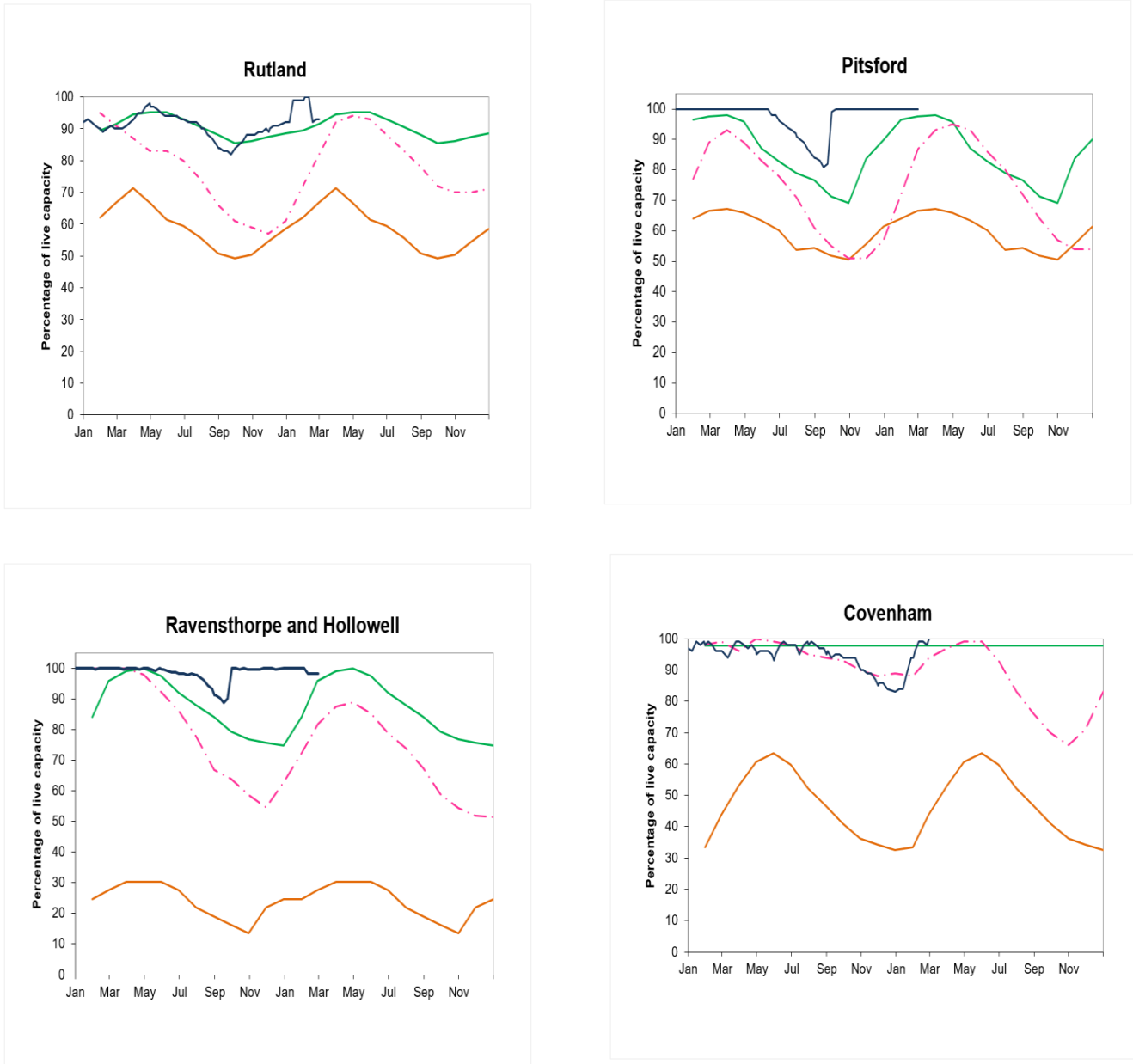
_____ 2023-2024 _____ Normal Operating Curve _____ Drought Alert Curve _ _ _ 1995-1996

(Source: water companies).

7 Forward Look

7.1 Probabilistic ensemble projection of river flows 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 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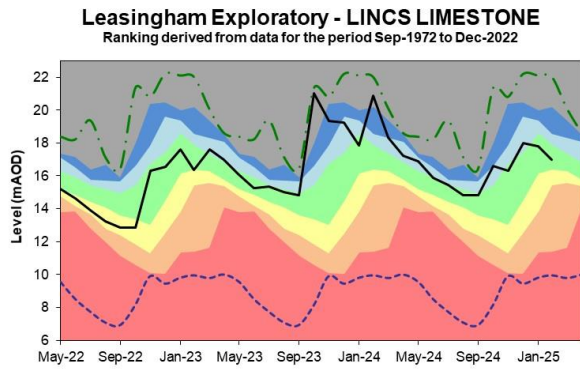, Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC. Crown copyright. All rights reserved. Environment Agency, 100026380, 2025.

7.2 Probabilistic ensemble projection of river flows at key sites in 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 typically occur 44% of the time within the historic record.

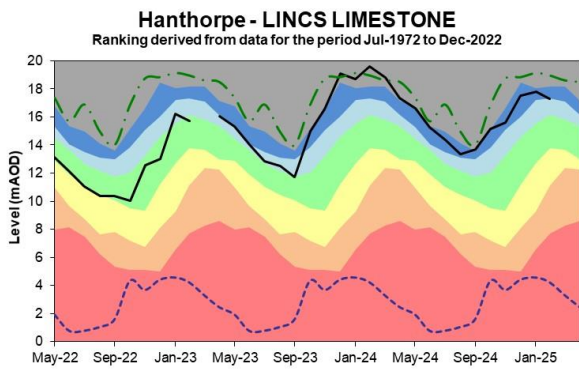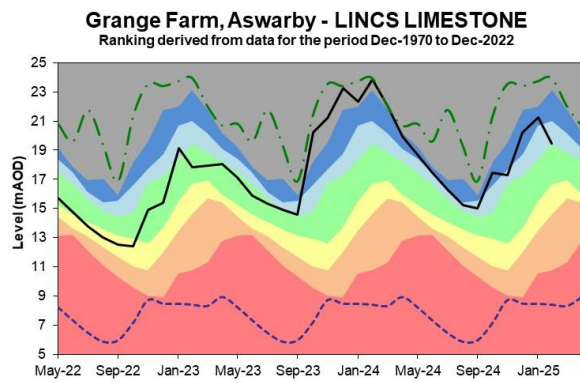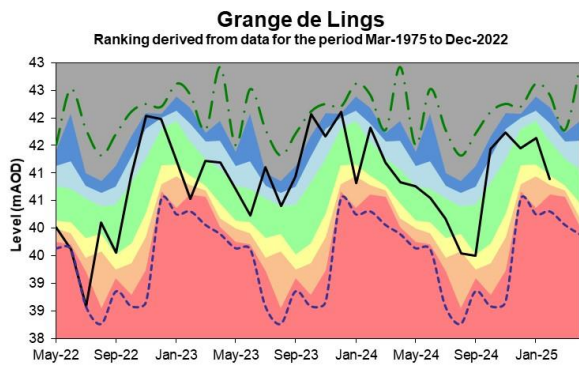Pie charts indicate probability, based on climatology, of the surface water flow at each site being, for example, exceptionally low for the time of year. (Source: Centre for Ecology and Hydrology, Environment Agency) Geological map reproduced with kind permission from UK Groundwater Forum, BGS © NERC.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

7.3 Probabilistic ensemble projection of groundwater levels at key sites in 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

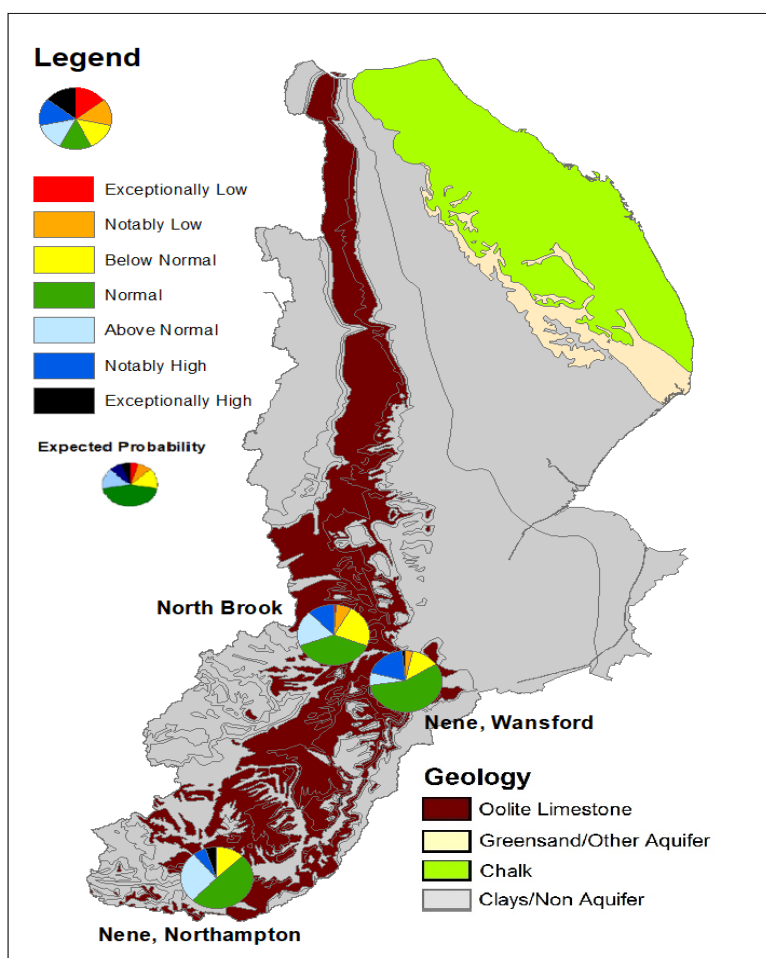## 7.4 Probabilistic ensemble projection of groundwater levels at key sites in September 2025
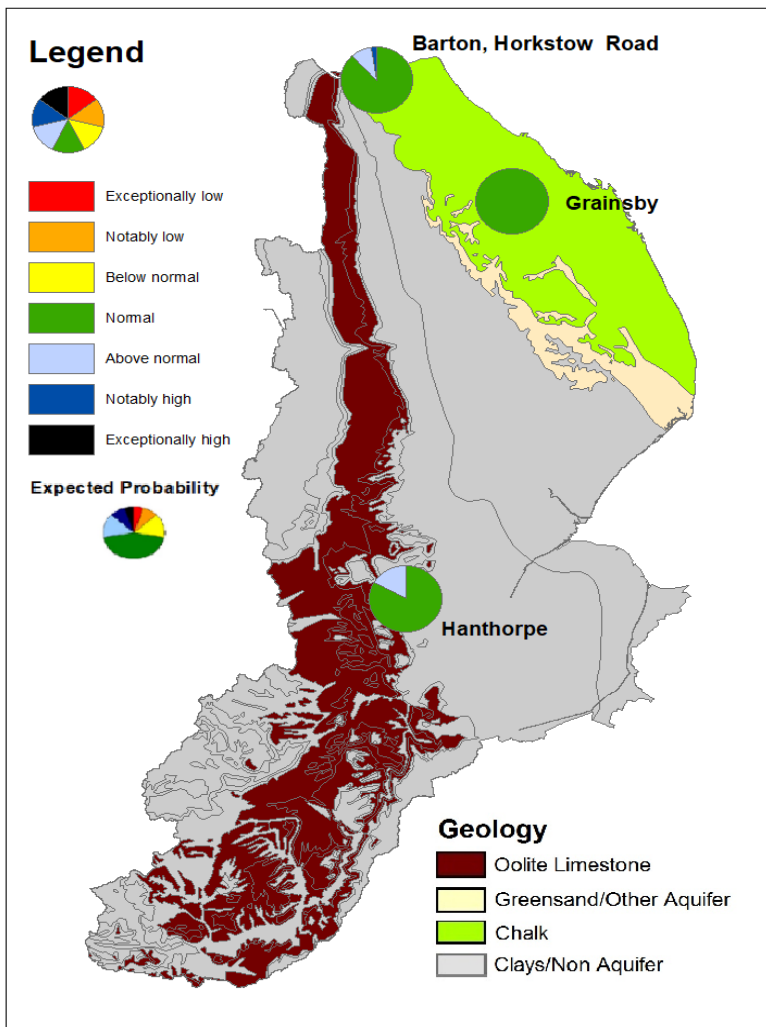
Table available in the appendices with detailed information. Exceptionally high or low levels are those which would typically occur 5% of the time within the historic record. Notably high or low levels are those which would typically occur 8% of the time. Above normal or below normal levels are those 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

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	Feb 2025 rainfall % of long term average 1961 to 1990	Feb 2025 band	Dec 2024 to February cumulative band	Sep 2024 to February cumulative band	Mar 2024 to February cumulative band
Louth Grimsby And Ancholme	58	Below Normal	Normal	Normal	Normal
Lower Welland And Nene	92	Normal	Normal	Notably high	Above normal
South Forty Foot And Hobhole	75	Normal	Normal	Above normal	Above normal
Steeping Great Eau And Long Eau	70	Normal	Normal	Above normal	Above normal
Upper Welland And Nene	97	Normal	Normal	Exceptionally high	Notably high
Witham To Chapel Hill	64	Normal	Normal	Above normal	Above normal

9.2 River flows table

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

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

9.3 Groundwater table

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

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

9.4 Ensemble projections tables

9.4.1 Probabilistic ensemble projection of river flows at key sites in March 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	0.0	0.0	0.0
Below normal	4.8	0.0	6.9
Normal	57.1	52.4	59.7
Above normal	22.2	25.4	13.9
Notably high	12.7	6.3	18.1
Exceptionally high	3.2	15.9	1.4

9.4.2 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	0.0	3.2	6.7
Below normal	12.7	12.7	22.7
Normal	49.2	57.1	38.7
Above normal	27.0	6.3	18.7
Notably high	6.3	19.0	12.0
Exceptionally high	4.8	1.6	0.0

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

Percentage of pie chart for each band

Site	Grainsby	Hanthorpe	Horkstow
Exceptionally low	0.0	0.0	0.0
Notably low	0.0	0.0	0.0
Below normal	0.0	0.0	0.0
Normal	100.0	83.1	88.1
Above normal	0.0	16.9	9.5
Notably high	0.0	0.0	2.4
Exceptionally high	0.0	0.0	0.0

9.4.4 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	0.0	0.0
Below normal	31.1	27.1	31.0
Normal	48.9	33.9	40.9
Above normal	15.6	16.9	9.5
Notably high	2.2	5.1	4.8
Exceptionally high	2.2	16.9	14.3