Overview

Rainfall was near average overall for April and wettest in the north east and parts of the west. The average river flows for April were above the long-term average at almost three-quarters (71%) of river monitoring stations, particularly in the north east of the country. Lake and turlough levels were lower at 56% of monitoring locations compared to March levels, although 80% of these were above the long-term average for April.

Average monthly groundwater levels for April increased at 59% of monitoring wells with almost two-thirds (61%) of monitoring wells observing levels above the long-term average for April. Similarly, almost all monitored spring outflows were in the above the normal range for this time of year.

Rainfall

The percentage of 1981-2010 Long-Term Average (LTA) rainfall values were variable across the country. Percentage of monthly rainfall values ranged from 68% (monthly rainfall total of 52.0 mm) at Cork Airport, Co Cork to 145% (monthly rainfall total of 76.4 mm) at Phoenix Park, Co Dublin (its wettest April since 2012). Monthly rainfall totals ranged from 49.4 mm (88% of its LTA) at Oak Park, Co Carlow to 121.1 mm (125% of its LTA) at Newport, Co Mayo.

The month's wettest day was also recorded at Newport, Co Mayo with 25.5 mm on Saturday 15th (its highest daily fall for April since 2013). The number of rain days ranged from 16 days at Oak Park, Co Carlow to 22 days at both Newport, Co Mayo and Knock Airport, Co Mayo. The number of wet days ranged from 10 days at both Mace Head, Co Galway and Roche's Point, Co Cork to 18 days at Newport, Co Mayo. The number of very wet days ranged from zero days at Shannon Airport, Co Clare to 4 days at Newport, Co Mayo.

River Flows

While remaining high, the average river flows for April decreased at 82% of river monitoring stations compared to average flows observed in March 2023. The monthly average flows at 156 river monitoring sites identified: 58 (37%) as being ‘particularly high’, 53 (34%) ‘above normal’ and 45 (29%) as ‘normal’ for this time of year.

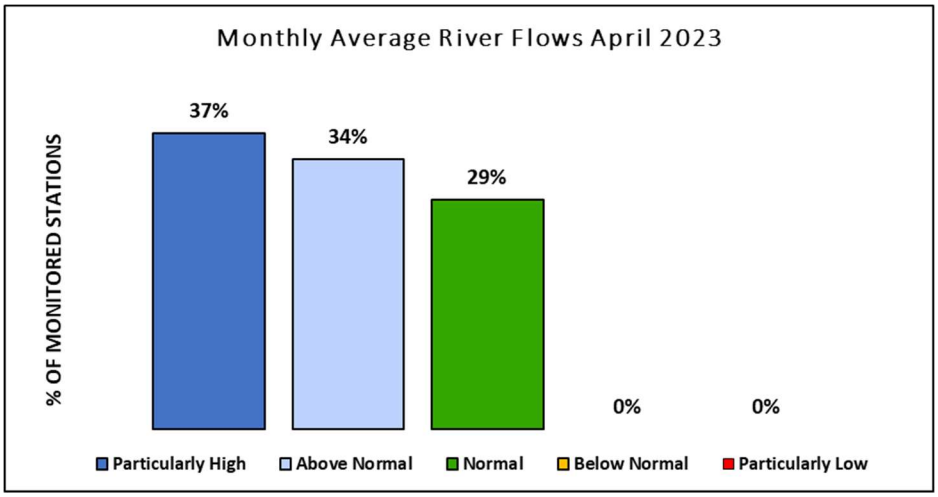


Figure 1: Percentage distribution of river flow monitoring sites within each of the percentile flow categories for April 2023.

Lake and Turlough Levels

Average water levels during April fell at 56% of monitored lakes compared to average levels for March. Analysis of monthly average levels at 36 lakes and 4 turloughs were classified as being 'particularly high' at 16 (40%), 'above normal' at 16 (40%), 'normal' at 6 (15%) and 'below normal' at 2 (5%) monitoring locations for the month of April.

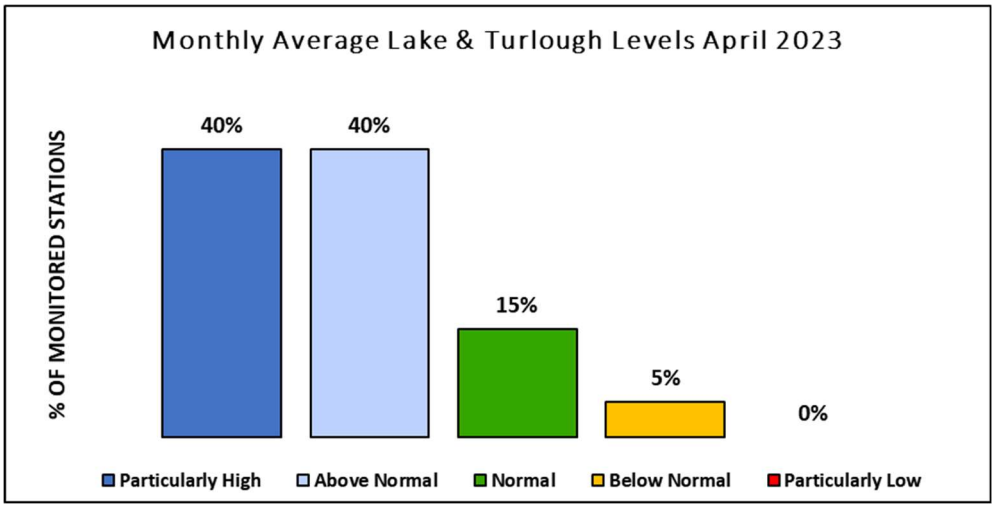


Figure 2: Percentage distribution of lake and turlough level monitoring sites within each of the percentile flow categories for April 2023.

Groundwater Levels and Spring Flows

Average groundwater levels in April rose at 59% of monitoring wells compared to average levels observed in March. During April, groundwater levels were classified as being 'particularly high' at 14 wells (34%), 'above normal' at 11 wells (27%), 'normal' at 12 wells (29.5%), 'below normal' at 3 wells (7%), and 'particularly low' at 1 well [Ballysax, Co. Kildare] (2.5%) across the country.

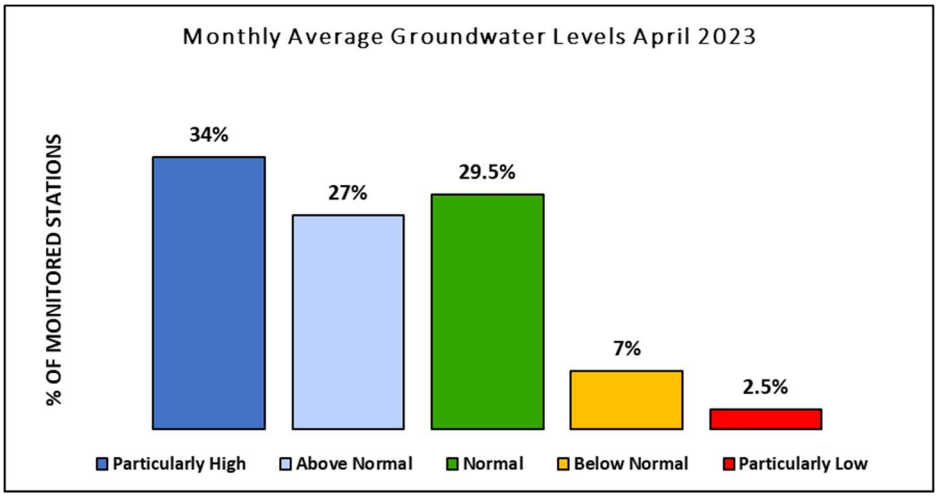


Figure 3: Percentage distribution of groundwater level sites within each of the percentile flow categories for April 2023.

Spring outflows were also monitored at 9 EPA monitoring sites for April. The outflows from these springs were compared to previously recorded flows for April and were 'particularly high' at 5 locations, 'above normal' at 1 location [Kilkerrin Spring, Co. Galway] and 'normal' at 3 monitoring locations for this time of year.

Rainfall

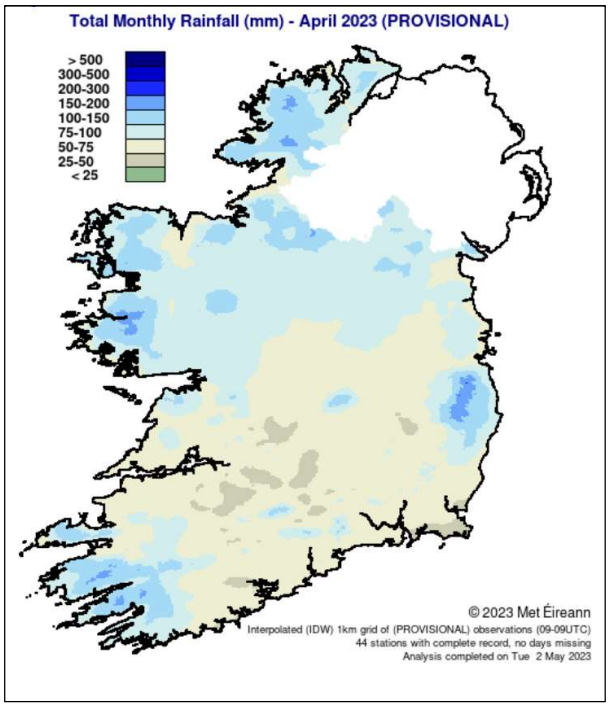


Figure 4: Rainfall map for Ireland April 2023 ***(Source: Met Eireann.ie).***

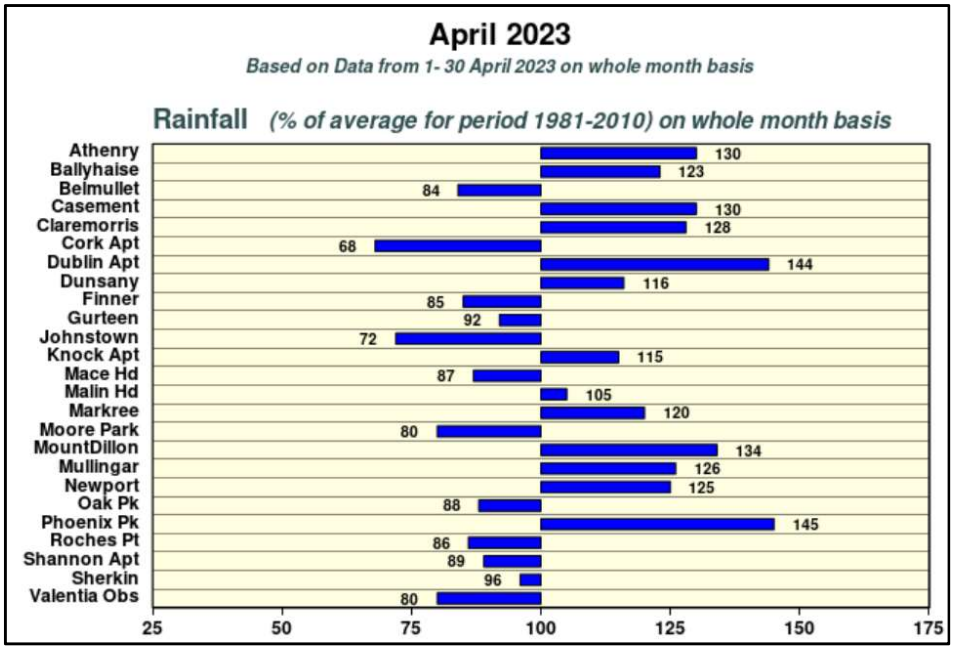


Figure 5: Summary of rainfall at synoptic stations for April 2023, figures indicate the percentage difference from the Long-Term Average rainfall for this month ***(Source: Met Eireann.ie).***

River Flows

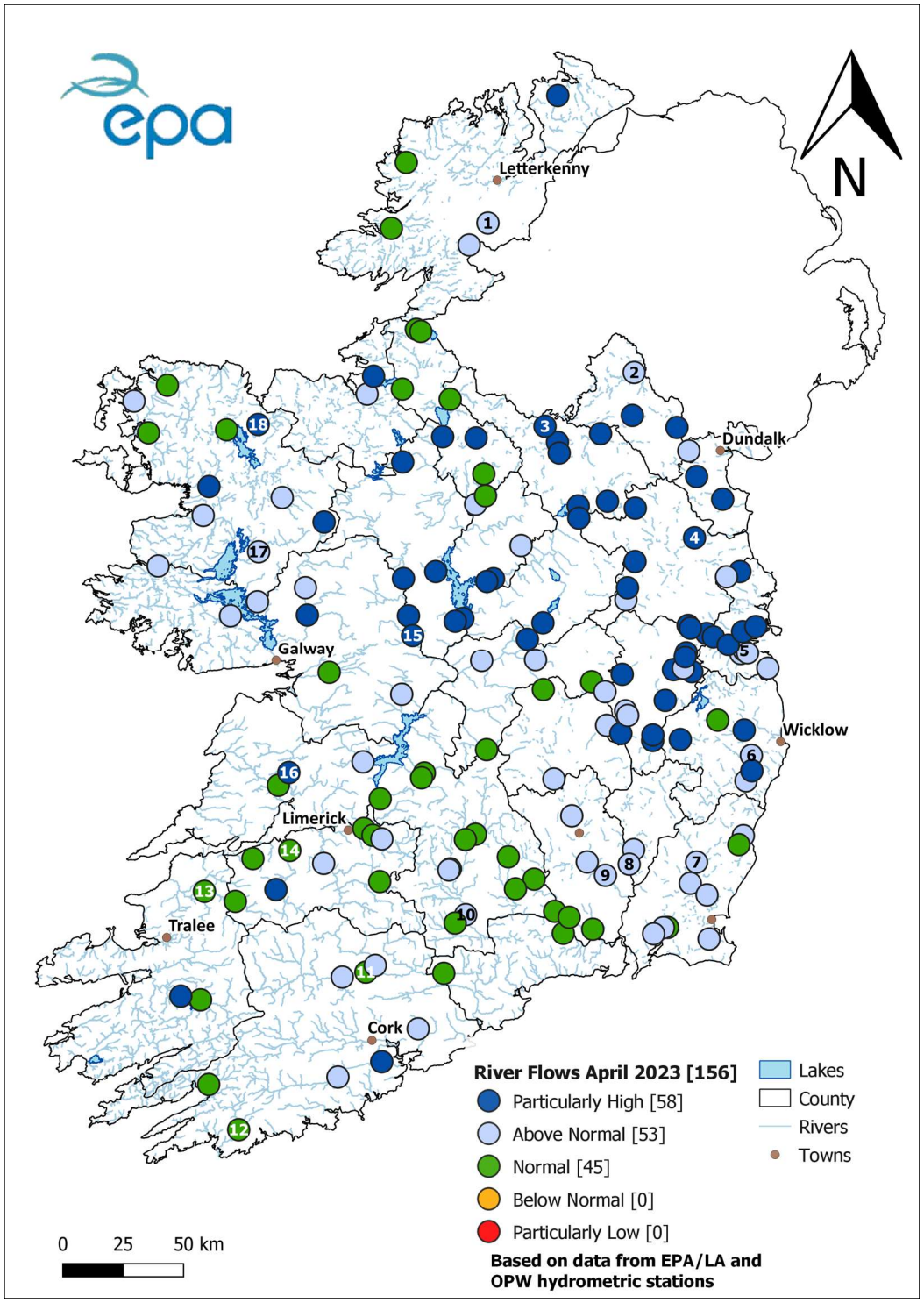


Figure 6: Monthly average river flows for April 2023 relative to historic monthly average flows expressed as percentile of the long-term values of monthly flow. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision ***(Source: EPA, OPW).***

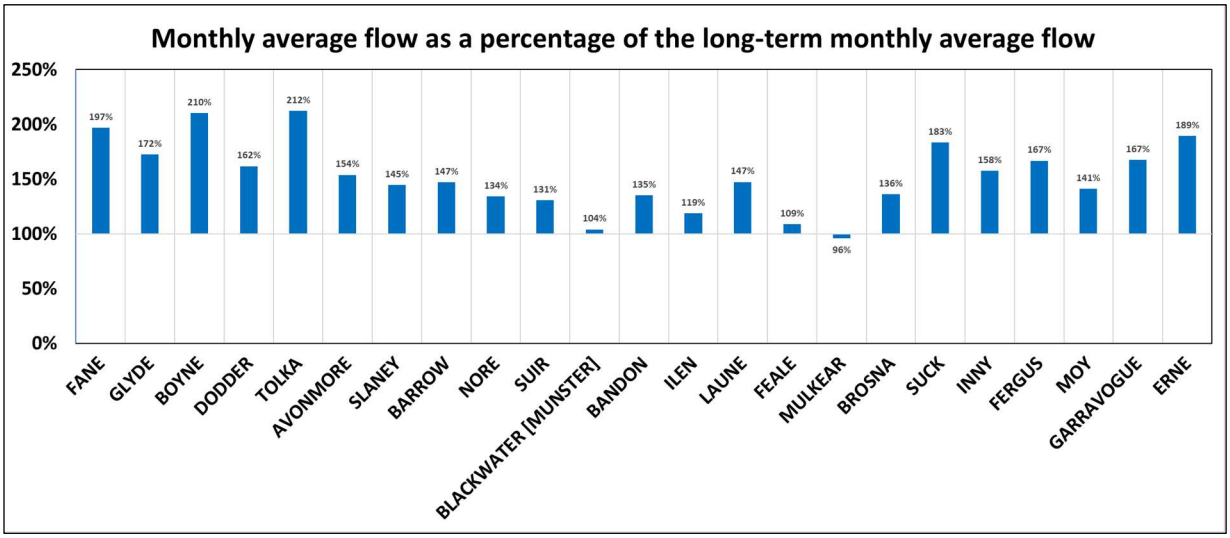
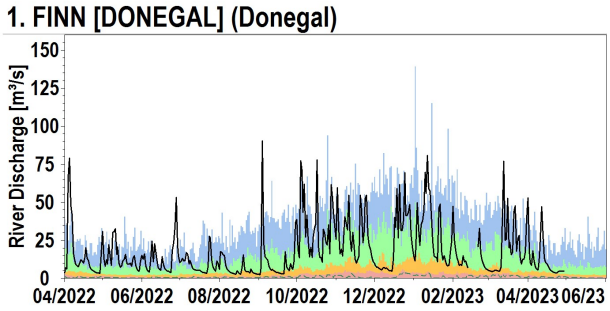
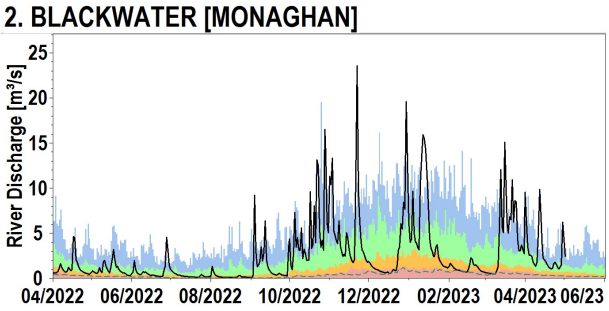
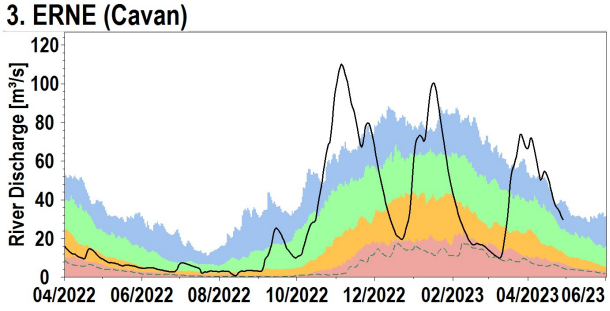


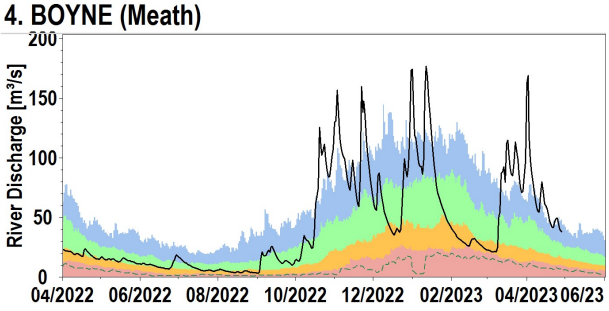
Figure 7: April 2023 average flows as a percentage of the long-term monthly average flow for this month at a selected number of stations. All data are provisional and may be subject to revision ***(Source: EPA, OPW).***

Flow hydrographs for selected rivers

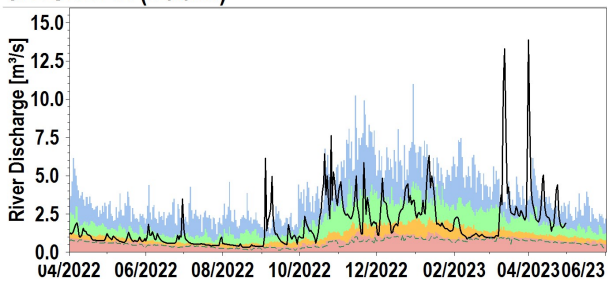




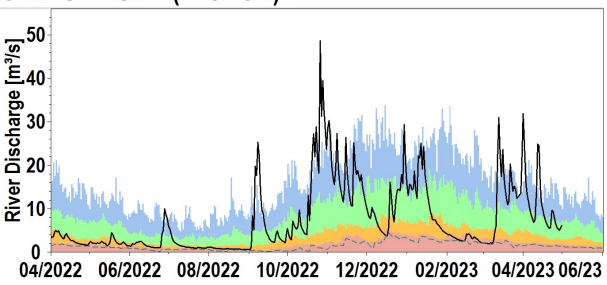




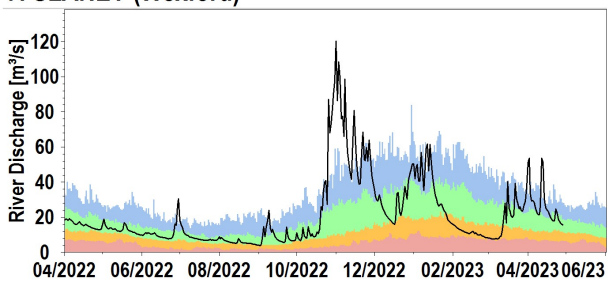
5. DODDER (Dublin)



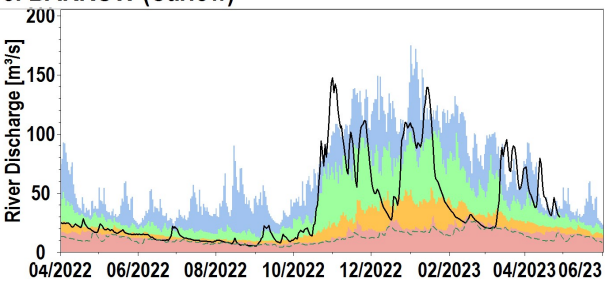
6. AVONMORE (Wicklow)



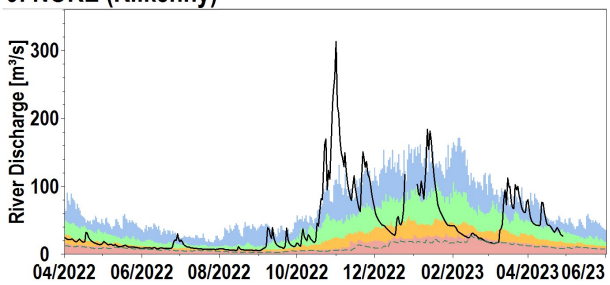
7. SLANEY (Wexford)



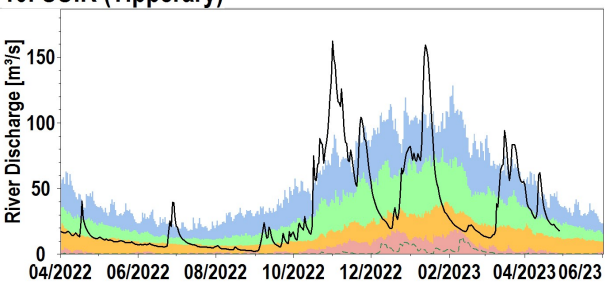
8. BARROW (Carlow)



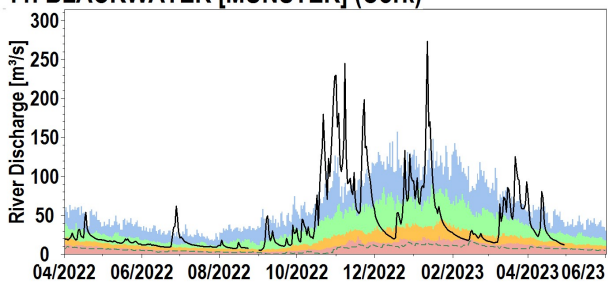
9. NORE (Kilkenny)



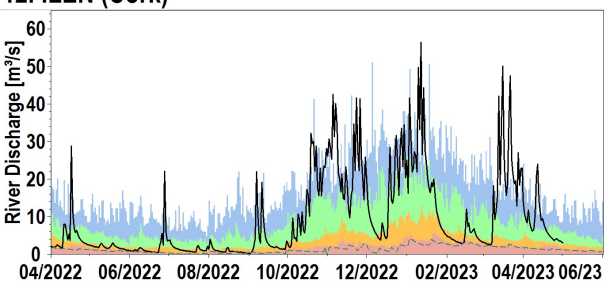
10. SUIR (Tipperary)



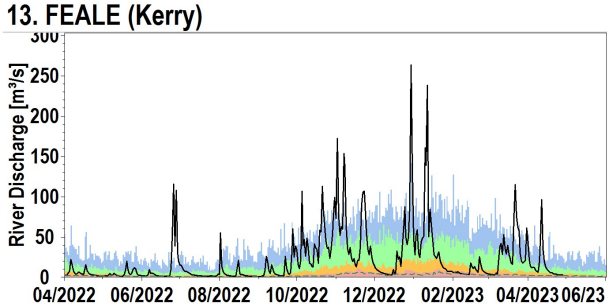
11. BLACKWATER [MUNSTER] (Cork)



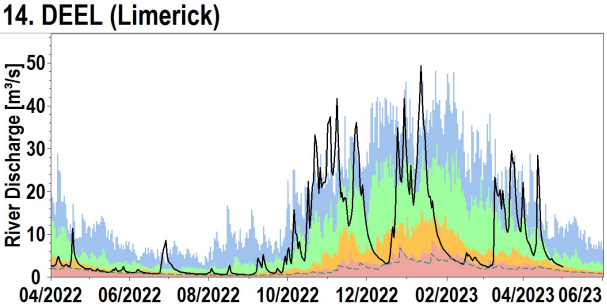
12. ILEN (Cork)



13. FEALE (Kerry)



14. DEEL (Limerick)



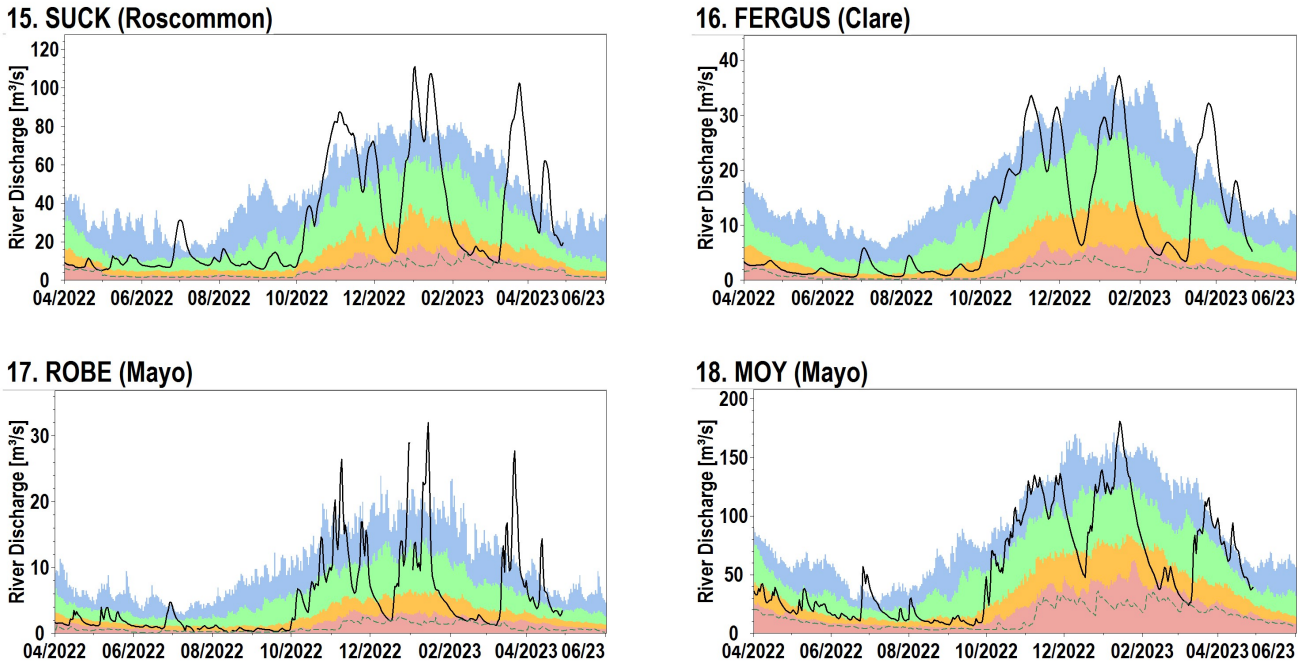


Figure 8: Daily average river flows measured in cubic metres per second relative to historic daily average flows expressed as percentile of the long-term values of each day and long-term minimum flows. All data are provisional and may be subject to revision ***(Source: EPA, OPW).***

Explanation - Classes						
Particularly Low **<95%tile daily average flow**	**Below Normal** **>95%tile <70%tile daily average flow**	**Normal** **>70 %tile <30%tile daily average flow**	**Above Normal** **>30%tile 10%tile daily average flow**	**Particularly High** **>10%tile daily average flow**	**Daily Mean Flow**	**Lowest Daily Mean Flow**

Lake and Turlough Levels

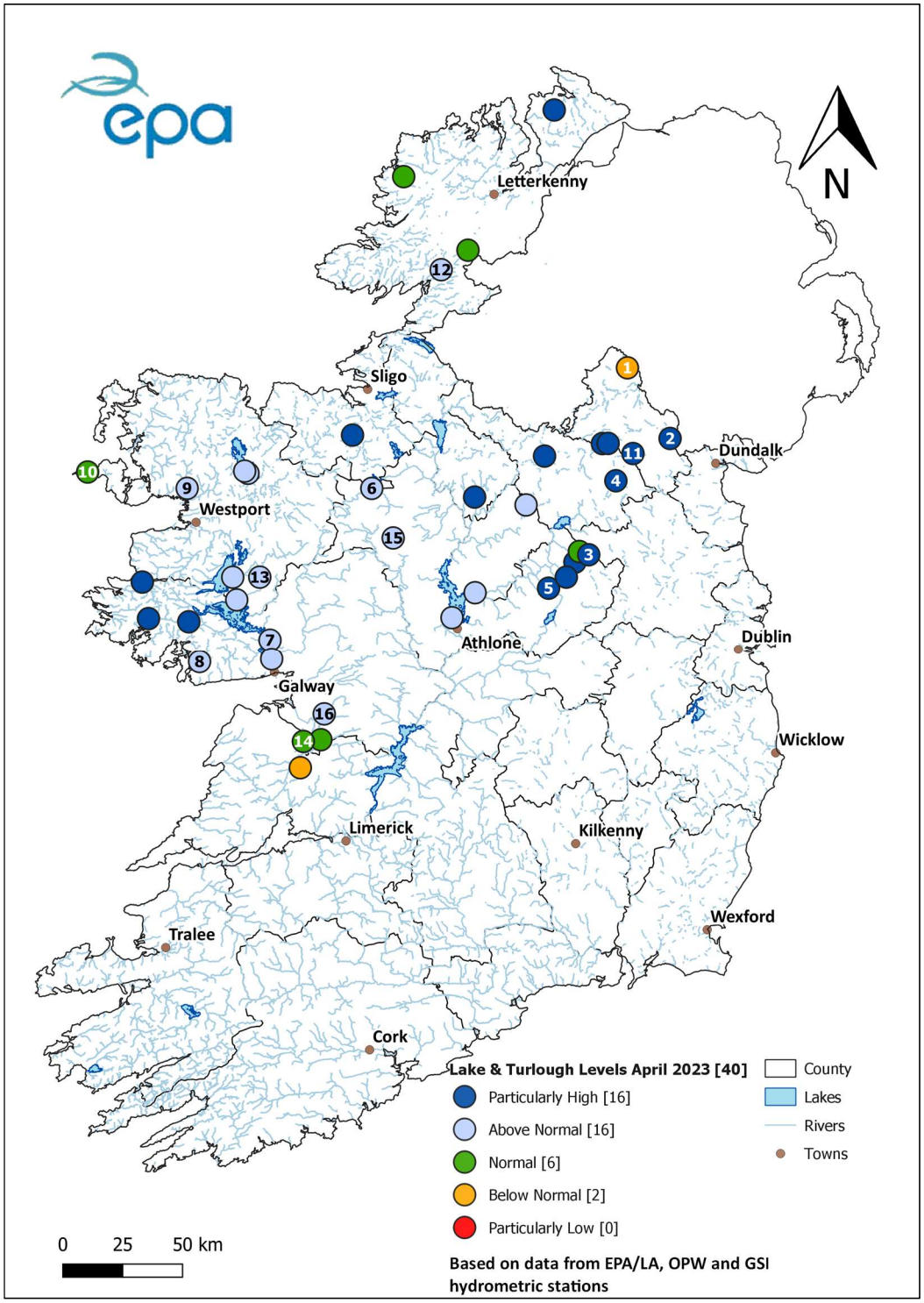
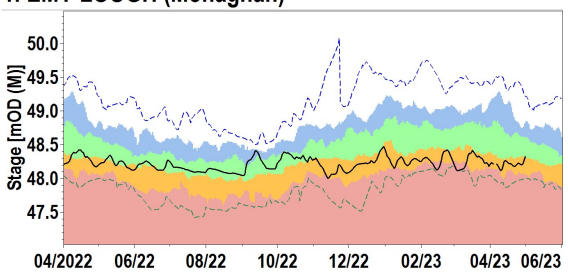


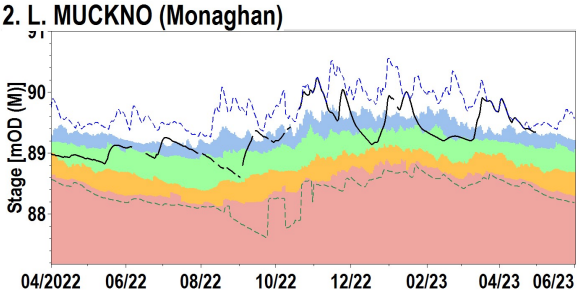
Figure 9: Monthly average lake levels for April 2023 relative to historic monthly average levels expressed as percentile of the long-term values for this month. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision ***(Source: EPA, OPW and GSI).***

Water level hydrographs for selected lakes and turloughs

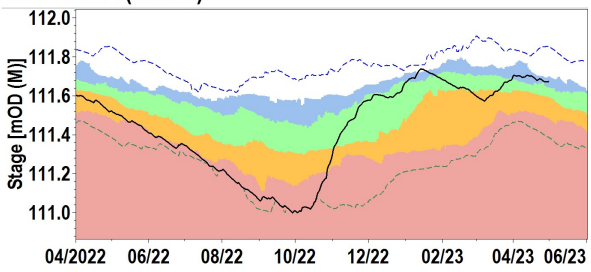
1. EMY LOUGH (Monaghan)



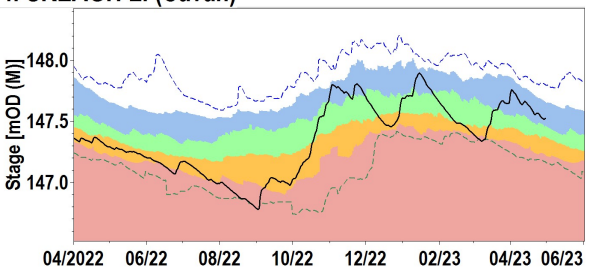
2. L. MUCKNO (Monaghan)



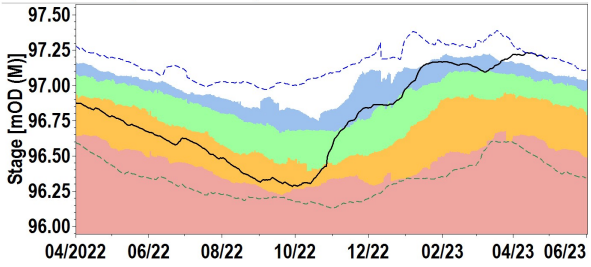
3. L. BANE (Meath)



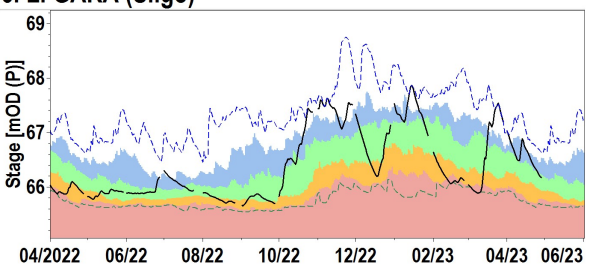
4. SKEAGH L. (Cavan)



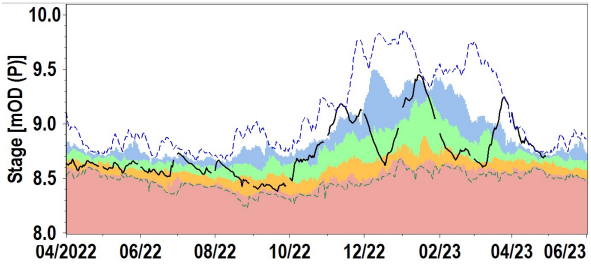
5. L. OWEL (Westmeath)



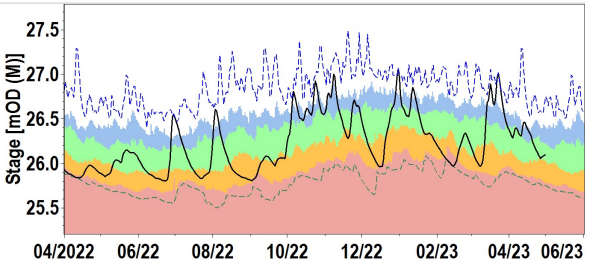
6. L. GARA (Sligo)



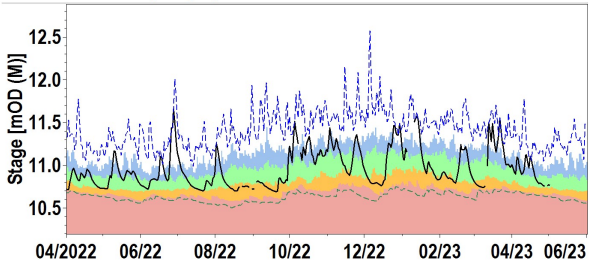
7. L.CORRIB (Galway)



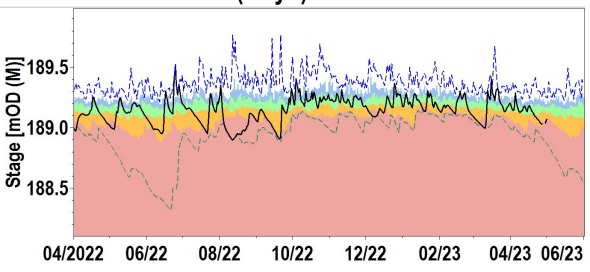
8. GLENICMURRIN LAKE (Galway)



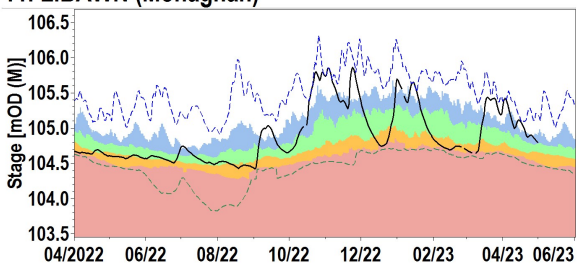
9. L.FEEAGH (Mayo)



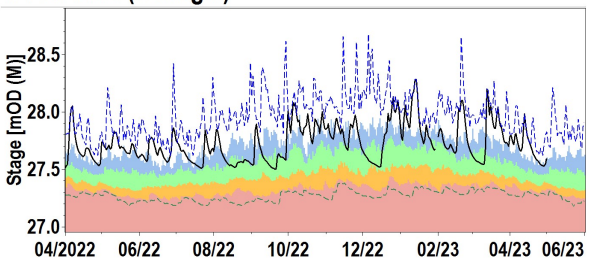
10. L. ACCORYMORE (Mayo)



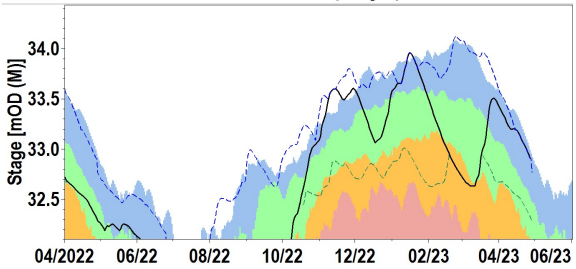
11. L.BAWN (Monaghan)



12. L.ESKE (Donegal)

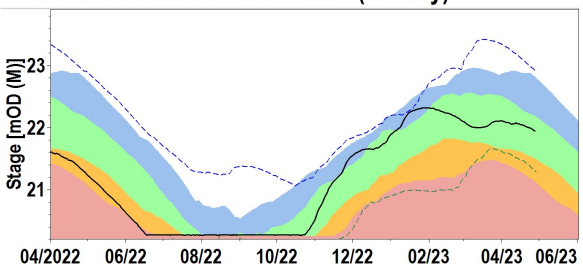


13. SKEALOGHAN TURLOUGH (Mayo)



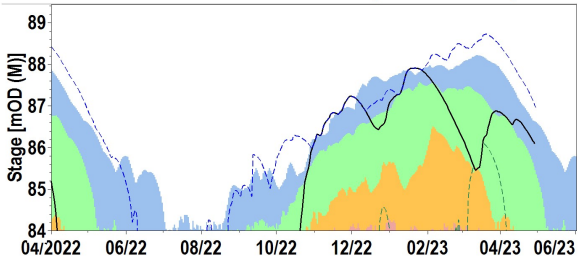
**Modelled long-term percentiles

14. TERMON SOUTH TURLOUGH (Galway)



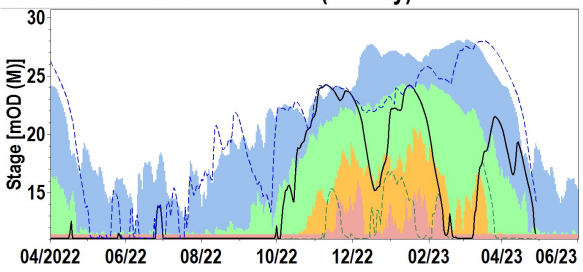
** Modelled long-term percentiles

15. CASTLEPLUNKET TURLOUGH (Roscommon)



** Modelled long-term percentiles

16. BLACKROCK TURLOUGH (Galway)



** Modelled long-term percentiles

Figure 10: Observed daily mean lake and turlough levels (black trace) measured in meters above ordnance datum compared to the 10%tile, 30%tile, 70%tile and 95%tile for each month for the period of record and observed long-term maximum and minimum levels. Note historic percentiles for turloughs are based on modelled data. All data are provisional and may be subject to revision ***(Source: EPA, OPW, GSI, TCD, IT Carlow).***

Explanation - Classes							
Particularly Low <95%tile daily average level	Below Normal >95%tile <70%tile daily average level	Normal >70 %tile <30%tile daily average level	Above Normal >30%tile <10%tile daily average level	Particularly High >10%tile daily average level	Daily Mean Level mOD	Highest Daily Mean Level mOD	Lowest Daily Mean Level mOD

Groundwater Levels and Spring Flows

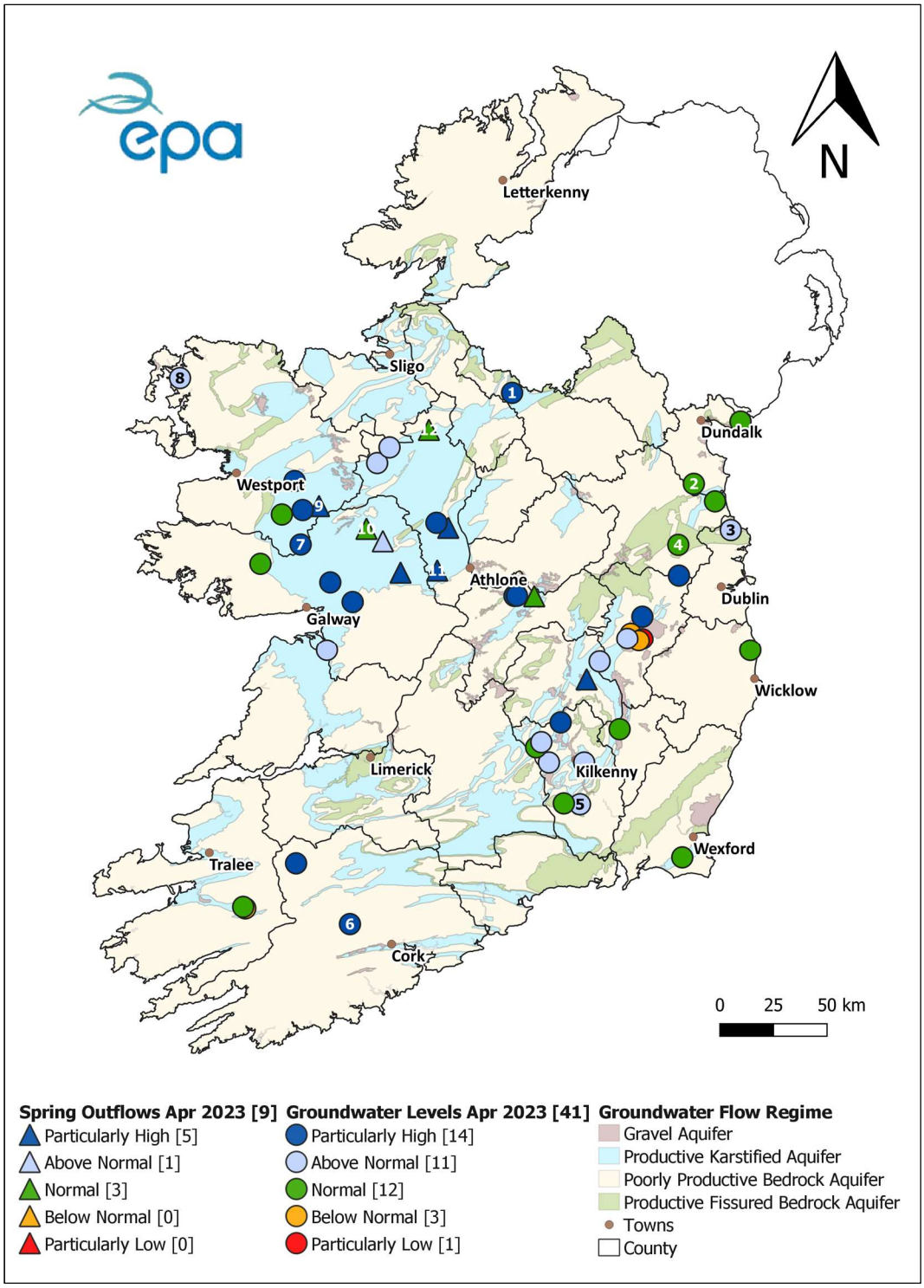
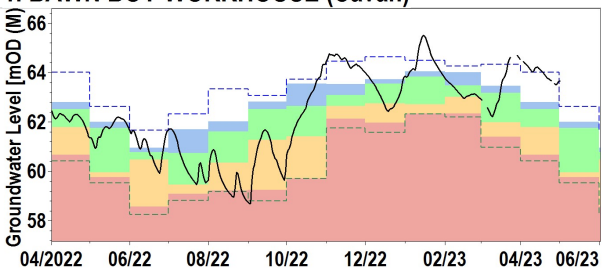


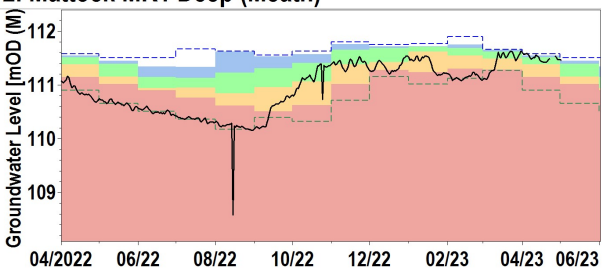
Figure 11: Groundwater level and Spring Flow status for April 2023, relative to historic monthly groundwater levels. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision ***(Source: EPA).***

Groundwater and spring hydrographs

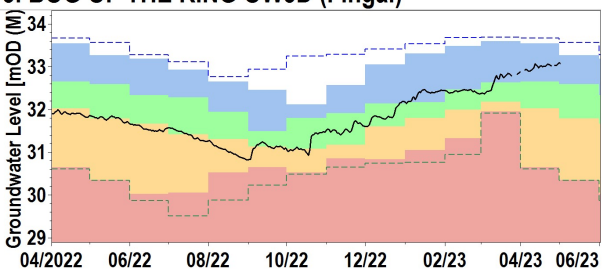
1. BAWN BOY WORKHOUSE (Cavan)



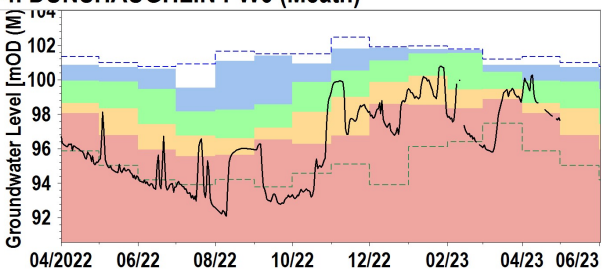
2. Mattock MK1 Deep (Meath)



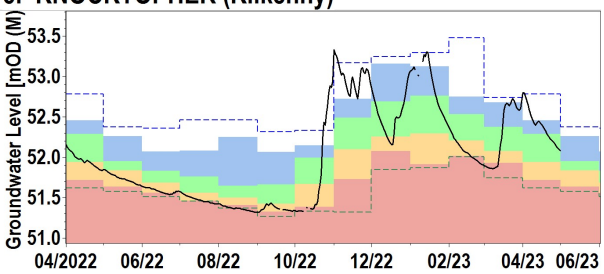
3. BOG OF THE RING OW3D (Fingal)



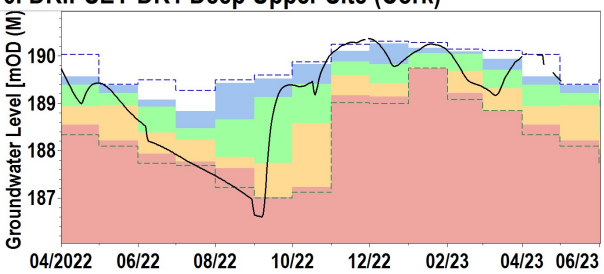
4. DUNSHAUGHLIN PW6 (Meath)



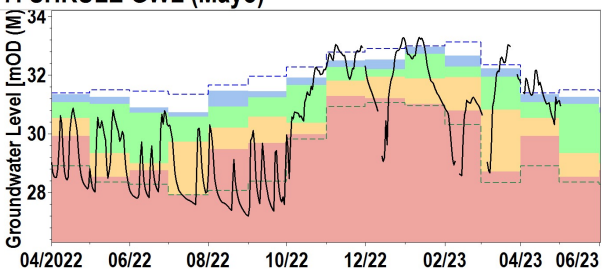
5. KNOCKTOPHER (Kilkenny)



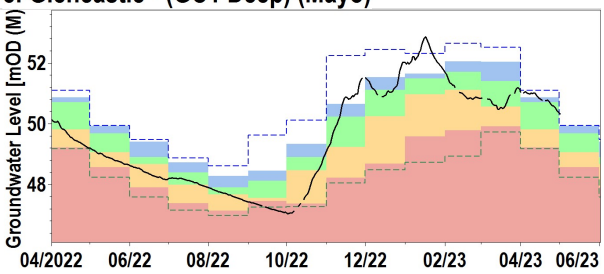
6. DRIPSEY DR1 Deep Upper Site (Cork)



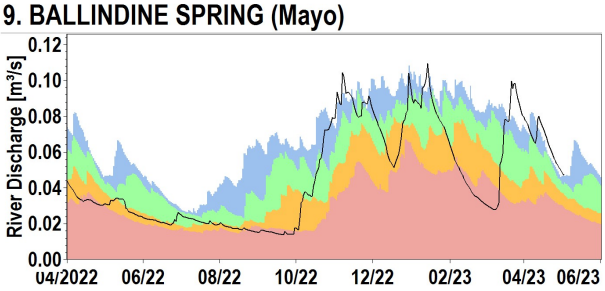
7. SHRULE GWL (Mayo)



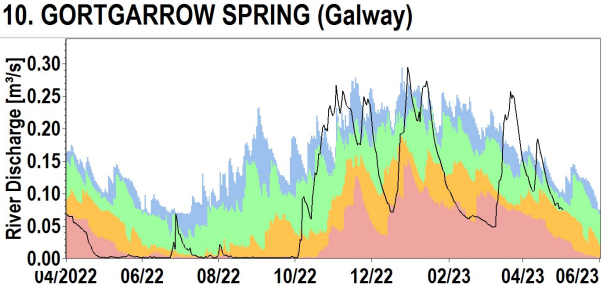
8. Glencastle - (GC1 Deep) (Mayo)



9. BALLINDINE SPRING (Mayo)



10. GORTGARROW SPRING (Galway)



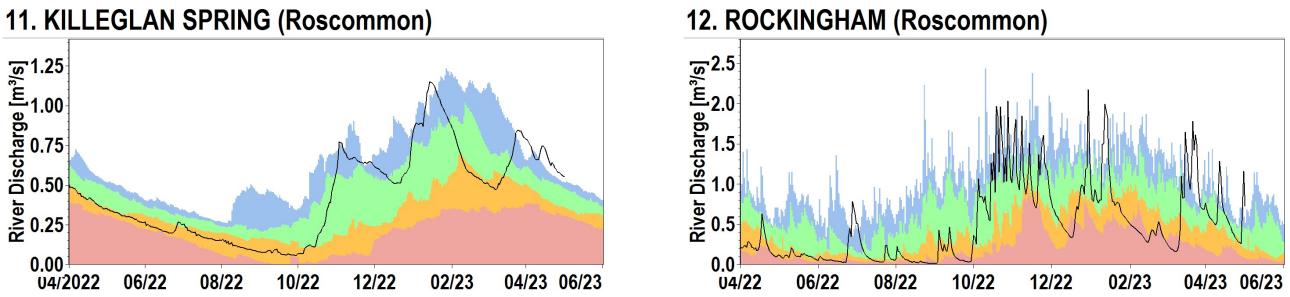


Figure 12: Daily mean groundwater levels (black trace) measured in meters above ordnance datum compared to the 10%tile, 30%tile, 70%tile and 95%tile for each month for the period of record and long-term maximum and minimum levels. All data are provisional and may be subject to revision ***(Source: EPA)****.*

Explanation - Classes							
Particularly Low **<95%tile monthly average level**	**Below Normal** **>95%tile <70%tile monthly average level**	**Normal** **>70 %tile <30%tile monthly average level**	**Above Normal** **>30%tile <10%tile monthly average level**	**Particularly High** **>10%tile monthly average level**	**Daily Mean Level mOD**	**Highest Month Mean Level mOD**	**Lowest Month Mean Level mOD**

Glossary of terms

Aquifer Type	An aquifer is an underground body of water bearing rock or unconsolidated materials (gravel or sand) from which groundwater can be extracted in useful amounts. For the purposes of this report they have been grouped into four aquifer categories as follows: ➢ Karstic (Rk and Lk) aquifers; ➢ Gravel (Rg and Lg) aquifers; ➢ Productive fractured bedrock (Rf and Lm) aquifers; ➢ Poorly productive bedrock (Ll, Pl and Pu) aquifers.
Dry spell	A dry spell is a period of 15 or more consecutive days to none of which is credited 1.0 mm or more of precipitation (i.e. daily tot < 1.0 mm).
Long term average (LTA)	The arithmetic mean calculated from historic record. For rainfall, the period 1981 to 2010 is used. For other parameters, such as groundwater levels, lake levels and river flow the period may vary according to data availability.
mOD	Groundwater levels or lake levels above ordnance datum. In most cases this is relative to mean sea level at Malin but in some cases is relative to Poolbeg.
Long-term monthly average	The arithmetic mean calculated from historic record of all monthly averages.
Percentile Level/Flow	Level or flow that is equalled or exceeded the stated percent of the time, e.g. 30%tile is the level or flow that is equalled or exceeded 30 percent of the time.
Very Wet Days	A very wet day is a day with 10.0 mm or more of rainfall.
Wet Days	A wet day is a day with 1.0 mm or more of rainfall.
Dry Spell	A dry spell is a period of 15 or more consecutive days to none of which is credited 1.0mm or more of precipitation (i.e. daily tot < 1.0 mm).
Absolute Drought	An absolute drought is a period of 15 or more consecutive days to none of which is credited 0.2 mm or more of precipitation.
Partial Drought	A partial drought is a period of at least 29 consecutive days, the mean daily rainfall of which does not exceed 0.2 mm

Description of flow and level percentile classifications

Particularly High	>10%tile exceedance	Monthly level or flow that can occur 10% of the time
Above Normal	>30%tile <10%tile exceedance	Monthly level or flow that can occur 20% of the time
Normal	>70%tile <30%tile exceedance	Monthly level or flow that can occur 40% of the time
Below Normal	>95%tile <70%tile exceedance	Monthly level or flow that can occur 20% of the time
Particularly Low	<95%tile exceedance	Monthly level or flow that can occur 5% of the time

Useful links

Access to EPA/LA Hydrometric data on HydroNet

Access to provisional water level only data from OPW hydrometric stations on waterLevel.ie

Access to archived water level and flow data from OPW hydrometric stations on HydroData

Access to turlough and borehole level data from GSI hydrometric stations on gwlevel.ie

Access to this month's Met Éireann and historic weather statements.