Rivers to Reef

Spring 2026

Report

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Yorkshire Wildlife Trust

Aire Rivers Trust
Connecting People. Places. Nature.

Yorkshire Derwent Catchment Partnership

YorkshireWater

Contents

Key Findings

- **197** samples were collected during April 2026
- **60%** of samples recieved a ‘Good’ nutrient rating for nitrates and phosphates
- Approximately **1 in 4** samples recieved a ‘Poor’ nutrient rating for nitrates and phosphates
- **Higher phosphate** concentrations were recorded in the Aire Catchment
- **Higher nitrate** concentrations were recorded in the Yorkshire Derwent Catchment
- Some locations recorded elevated nutrient concentrations, including parts of **Pocklington Beck**, **Wyke Beck** and the **Low/Wortley/Pudsey Beck** system. These locations would benefit from repeat and more detailed monitoring
- The results provide an April 2026 **baseline snapshot.** Further monitoring is needed to determine whether the patterns persist, vary seasonally or change over time

Introduction

During April 2026, members of the public were invited to participate in the Great UK WaterBlitz, a nationwide citizen science initiative coordinated by Earthwatch. Through the Rivers to Reef project, participants were encouraged to collect nutrient data from across the River Aire and River Derwent catchments in Yorkshire, helping to build a better understanding of nutrient levels within local rivers and streams, and how these may influence estuaries and the North Sea.

The Great UK WaterBlitz focuses on measuring two key nutrients: nitrate and phosphate. Elevated concentrations of these nutrients can indicate pollution from sources such as agricultural runoff, wastewater discharges and urban drainage. Excessive nutrient levels can contribute to eutrophication, leading to algal blooms, reduced oxygen levels and declines in aquatic biodiversity (2).

Participants used nutrient-testing kits containing chemical reagents that change colour according to the concentration of dissolved nitrate or phosphate present in a water sample. To ensure consistency and accuracy, samples were collected using standardised sampling cups and results were recorded after a specified development period: three minutes for nitrate and five minutes for phosphate (1).

Although the official Great UK WaterBlitz took place between 24-27 April 2026, this report includes all monitoring data collected throughout April to provide a more comprehensive overview of nutrients across both catchments.

Nutrient Pollution

Nutrient concentrations are widely used as indicators of river health and can provide valuable insight into both natural processes and human impacts within a catchment. The ecological condition of a waterbody is often influenced by the amount of nitrogen and phosphorus available within the aquatic environment (4).

While nutrients occur naturally and are essential for plant growth, excessive concentrations can lead to ecological degradation. Elevated nutrient levels may indicate pollution from both diffuse sources, such as agricultural runoff, and point sources, such as wastewater treatment works or sewage discharges. Natural nutrient concentrations vary depending on local geology, soil type, vegetation, hydrology and climate. However, human activities have significantly increased nutrient inputs into many rivers through fertiliser application, livestock farming, wastewater discharge and urban development (3,5).

Nitrate is a form of nitrogen commonly found in soils and is readily absorbed by plants. Elevated nitrate concentrations in rivers are often associated with agricultural activities, although urban wastewater can also contribute significant inputs. Phosphate is another essential nutrient for plant growth but is naturally present at relatively low concentrations in freshwater environments. Elevated phosphate levels are frequently linked to agricultural fertilisers, domestic wastewater and sewage discharges. Even small increases in phosphate concentrations can stimulate excessive plant and algal growth, making it a particularly important indicator of water quality (3,5).

River Catchments

A river catchment is the area of land where all rainfall drains into the same river system. Water flows through streams, tributaries and groundwater into the main river, meaning activities across the catchment can affect water quality, flood risk and wildlife. Managing rivers at a catchment scale helps protect and restore these connected environments.

Yorkshire Derwent Catchment

The Yorkshire Derwent Catchment covers approximately 2,000 km² across North and East Yorkshire, extending from the North York Moors to its confluence with the River Ouse at Barmby. It supports diverse habitats and wildlife, and provides important benefits including drinking water, flood management and recreation. Organisations and communities across the catchment are working collaboratively to improve water quality and restore nature.

Find out more here:
https://www.ywt.org.uk/yorkshire-derwent-catchment-partnership

Aire Catchment

The Aire Catchment covers approximately 1,000 km² across Yorkshire, extending from the Yorkshire Dales to its confluence with the River Ouse. It encompasses both rural and urban landscapes, and provides important benefits including drinking water, flood management, wildlife and recreation. Organisations and communities work together across the catchment to improve water quality, restore habitats and build resilience to future environmental challenges.

Find out more here:
https://aireriverstrust.org.uk/aire-catchment-network/

Survey Uptake

To provide the most complete picture possible and avoid duplication, data was collated from multiple citizen science programmes and monitoring initiatives. This report includes results submitted through:

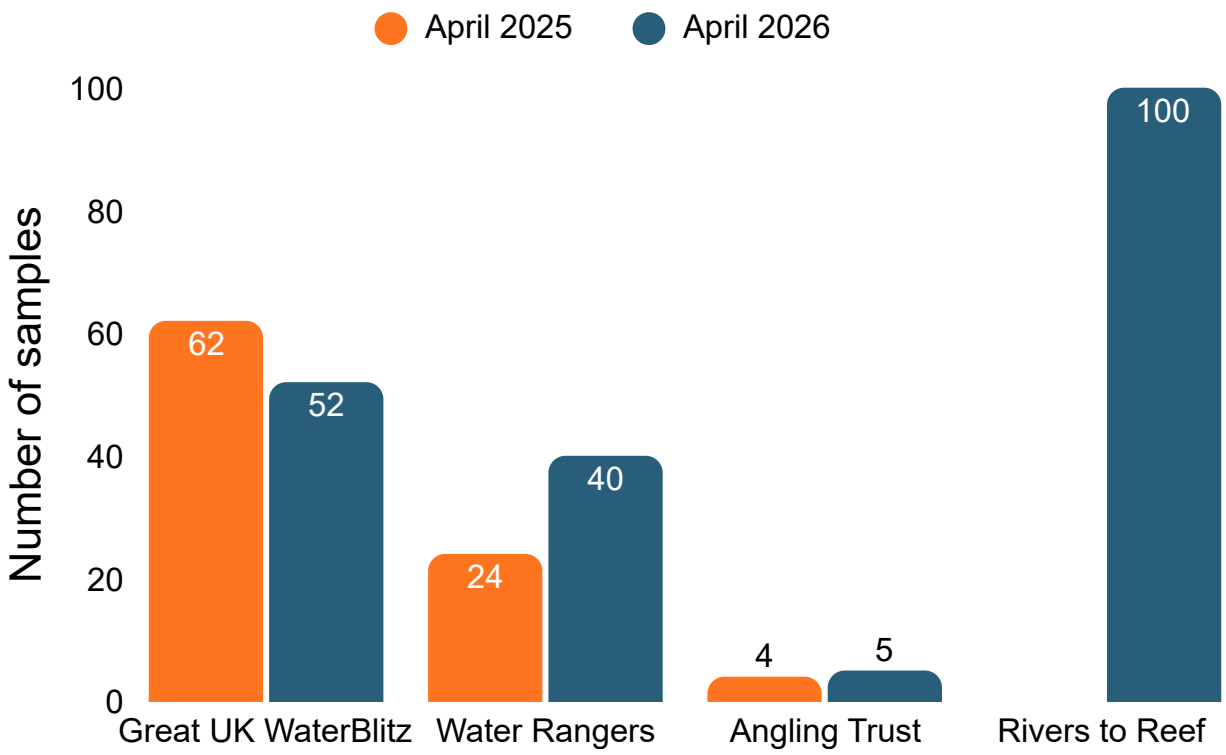
- Rivers to Reef
- Great UK WaterBlitz
- Water Rangers
- Angling Trust

A total of **197 nutrient samples** were collected across the two catchments during April 2026, comprising of:

- **163 samples** from the Aire Catchment
- **34 samples** from the Yorkshire Derwent Catchment

The lower number of samples collected within the Yorkshire Derwent Catchment represents an important gap in monitoring coverage. Possible factors include its rural geography and fewer nearby volunteers.

Figure 1. Number of samples submitted by each monitoring programme in April 2025 and April 2026.



Given that Rivers to Reef officially launched at the end of March 2026, it is particularly encouraging that participants engaged through the project contributed over **half of all samples collected** during April, demonstrating strong early uptake and public interest in the programme.

Increasing participation and sampling effort within the Yorkshire Derwent Catchment will be a key focus for the September 2026 Great UK WaterBlitz and in subsequent years.

Data Analysis

Different monitoring programmes use different analytical equipment and reporting units. To enable direct comparison between datasets, the measurements were converted using the appropriate conversion factors to ensure consistency with the nutrient concentration ranges used by the Great UK WaterBlitz/Rivers to Reef monitoring programme.

Where nutrient concentrations were recorded as ranges rather than exact values, the midpoint of the reported range has been used for analysis. This approach provides a consistent method for summarising and comparing results across all datasets.

Each sampling point was assigned a **Good**, **Moderate**, or **Poor** rating based on Earthwatch's ecological thresholds, using the lowest classification derived from either the nitrate or phosphate measurement. These are designed to indicate whether nutrient enrichment may be affecting river ecology.

Table 1. Earthwatch's ecological thresholds

Parameter	Good	Moderate	Poor
Nitrate (mg/L)	<1	1.0-2.0	>2
Phosphate (mg/L)	<0.1	0.1-0.2	>0.2

What We Found

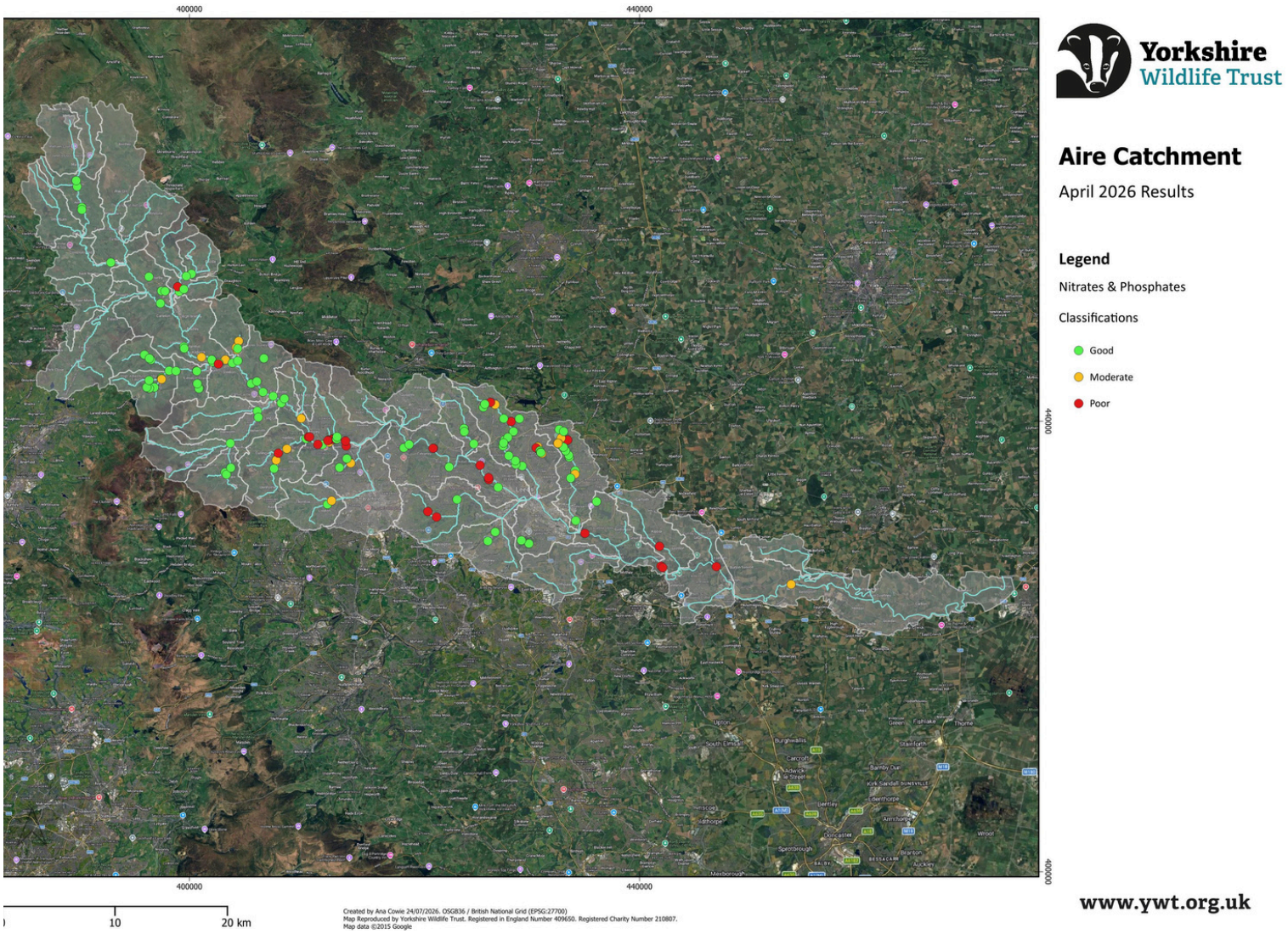
These results provide a snapshot of nitrate and phosphate concentrations during April 2026. They do not provide a complete assessment of river health, establish long-term trends, or identify the causes of individual results. Continued monitoring over several years and improved geographical coverage will be needed before conclusions can be drawn.

Table 2. Summary of nutrient results from both catchments

	Aire	Derwent
Number of samples	163	34
Mean nitrate (mg/L)	1.46	2.4
Median nitrate (mg/L)	0.75	1.5
Range nitrate (mg/L)	0.1-7.5	0.1-10
Mean phosphate (mg/L)	0.039	0.027
Median phosphate (mg/L)	0.035	0.01
Range phosphate (mg/L)	0.01-0.35	0.01-0.15

Among the locations sampled, nitrate measurements were generally higher in the Yorkshire Derwent dataset, while phosphate measurements were generally higher in the Aire dataset. Because sampling coverage differed substantially, these figures should not be interpreted as a definitive comparison of the two catchments.

Figure 2. Distribution of '**Good**', '**Moderate**' and '**Poor**' nutrient ratings across the Aire Catchment in April 2026 (n = 163).



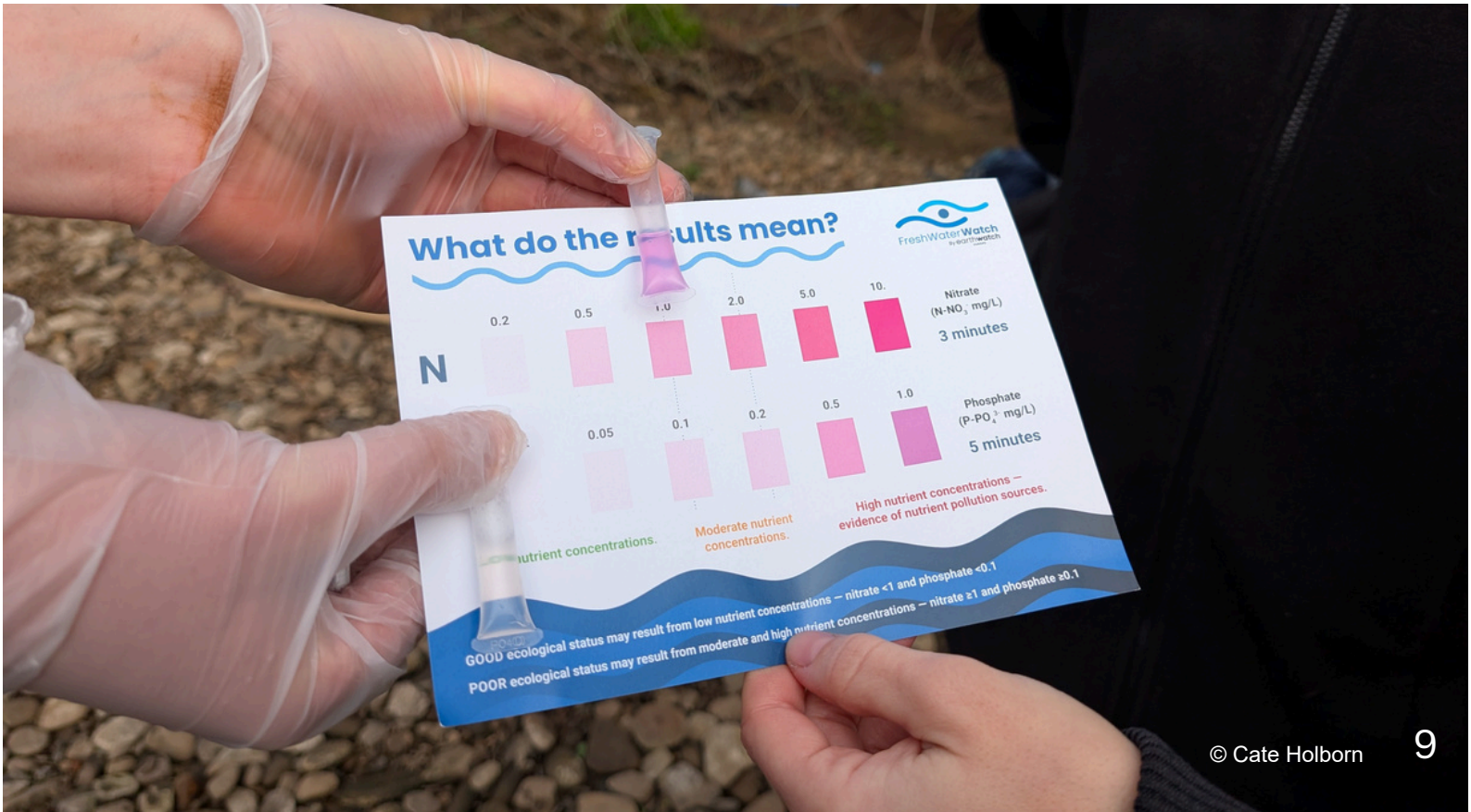


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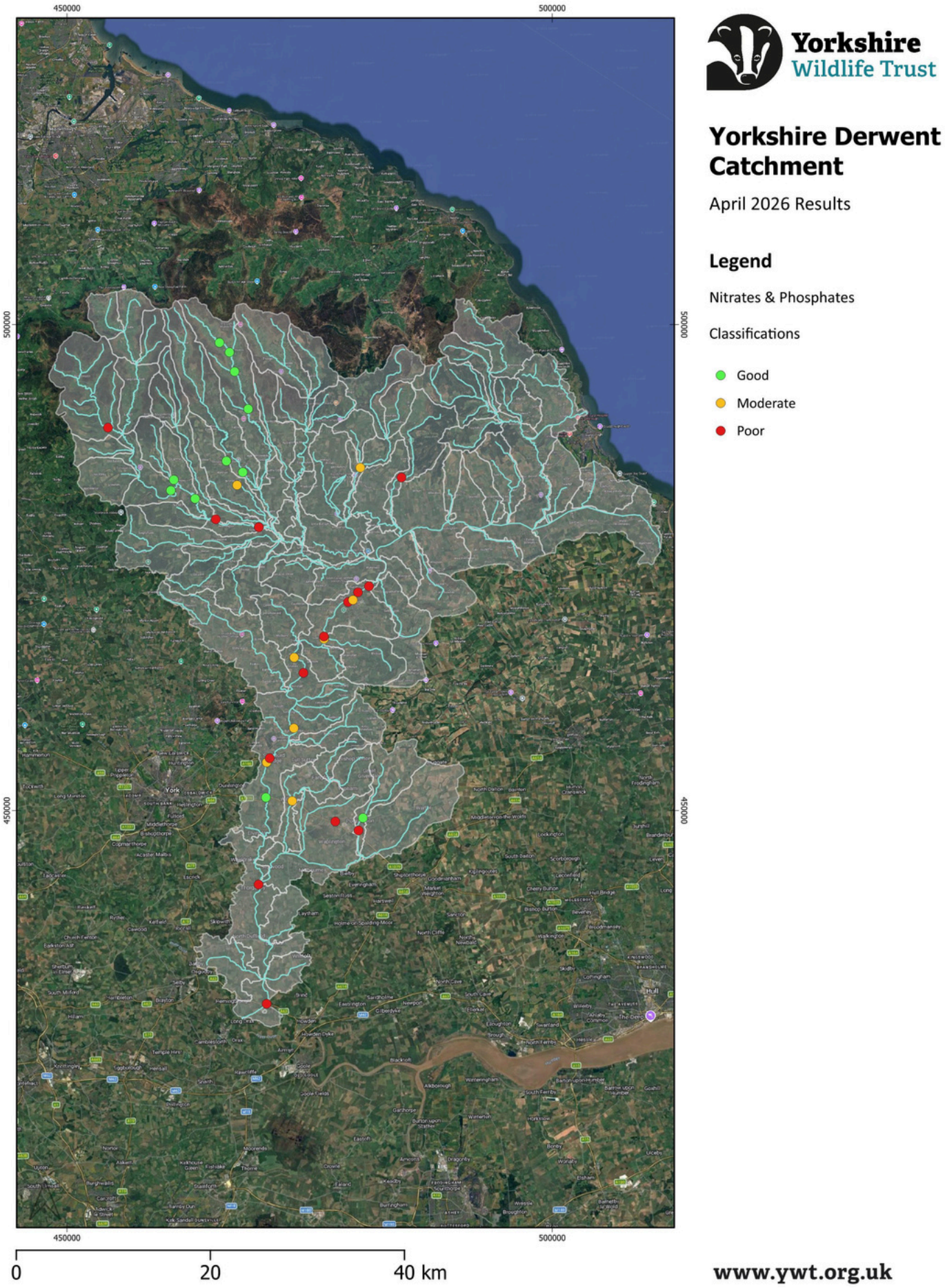
Figure 3. Distribution of '**Good**', '**Moderate**' and '**Poor**' nutrient ratings across the Yorkshire Derwent Catchment in April 2026 (n = 34).



Created by Ana Cowie 24/07/2026. OSGB36 / British National Grid (EPSG:27700)
Map Reproduced by Yorkshire Wildlife Trust. Registered in England Number 409650. Registered Charity Number 210807.
Map data ©2015 Google

Figure 4. Mean nitrates and phosphates across sub-catchments of the Aire Catchment in April 2026. Dotted line indicates the threshold for a 'Poor' nitrate rating >2 mg/L.

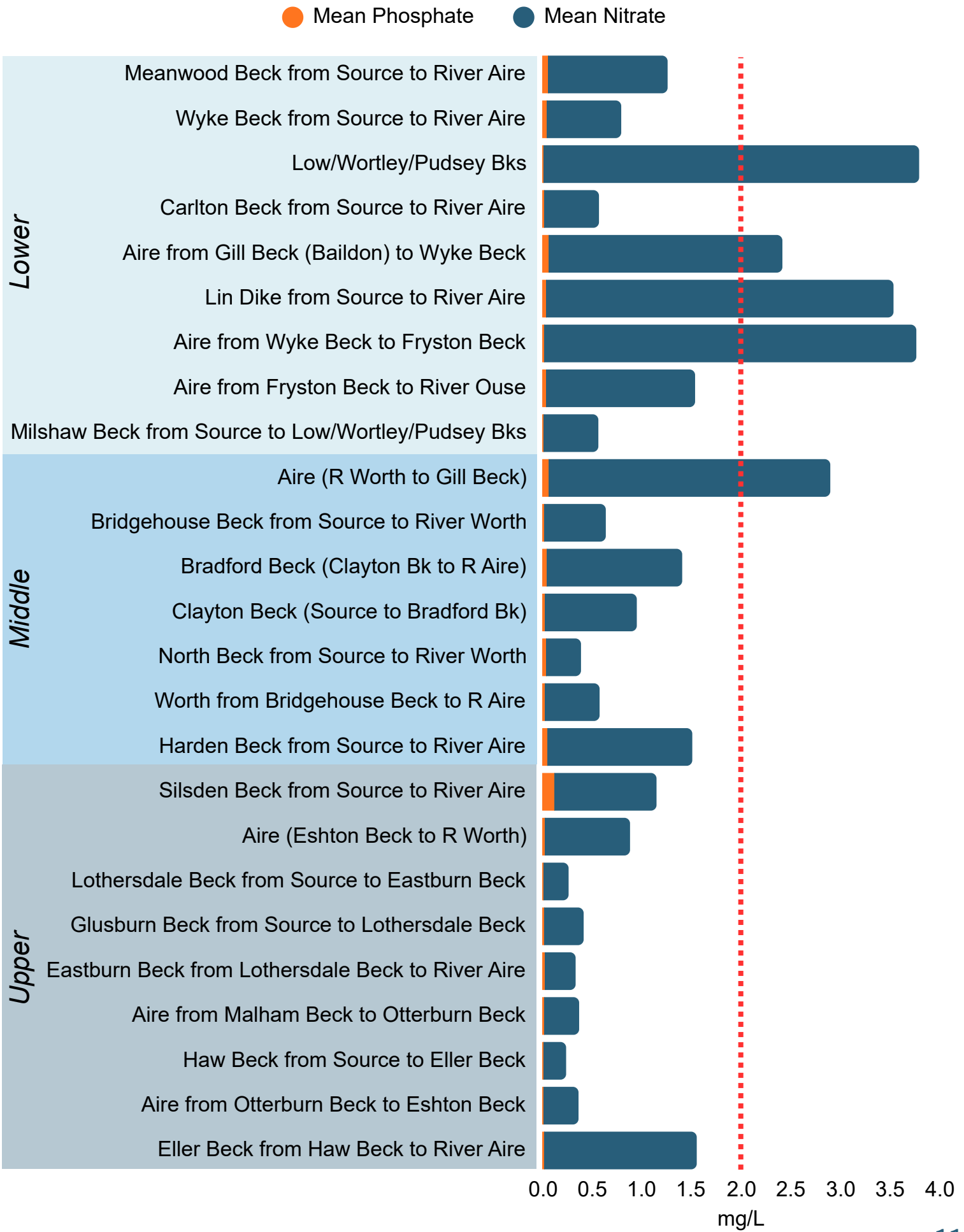


Figure 5. Mean nitrates and phosphates across sub-catchments of the Yorkshire Derwent Catchment in April 2026. Dotted line indicates the threshold for a 'Poor' nitrate rating >2 mg/L.

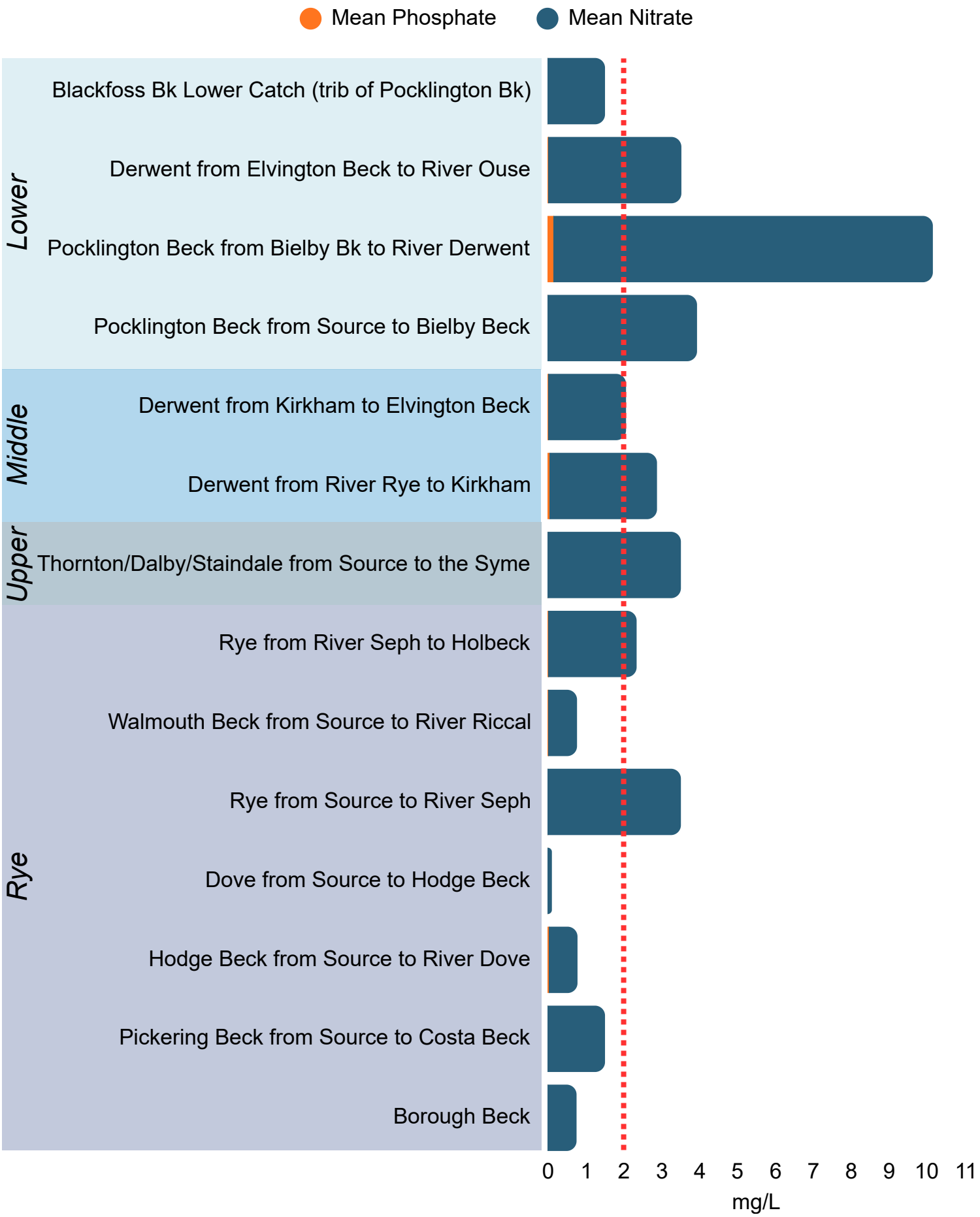


Figure 6. Nitrate concentrations across the Aire (n = 163) and Yorkshire Derwent (n = 34) Catchments in April 2026.

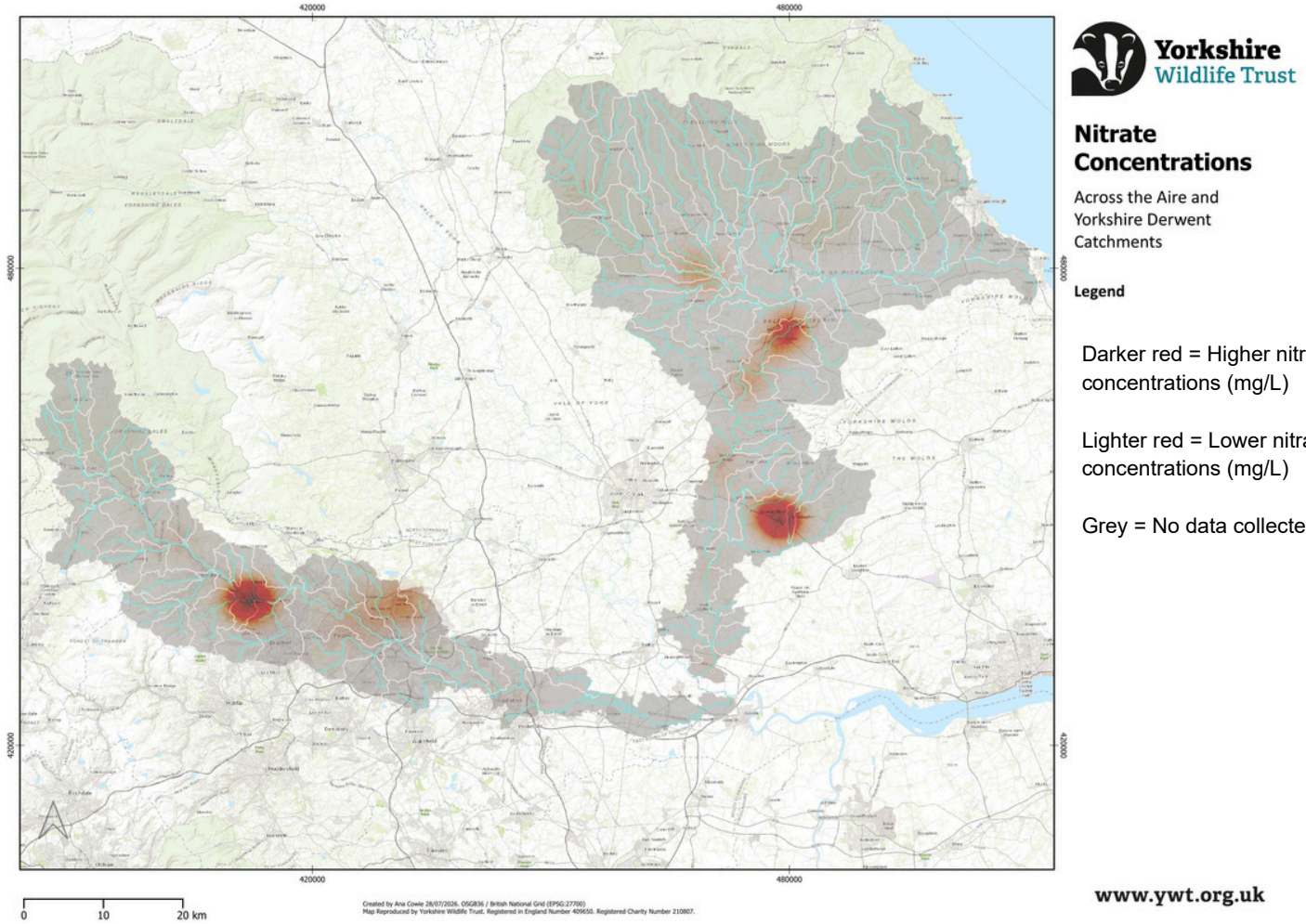


Figure 7. Phosphate concentrations across the Aire (n = 163) and Yorkshire Derwent (n = 34) Catchments in April 2026.

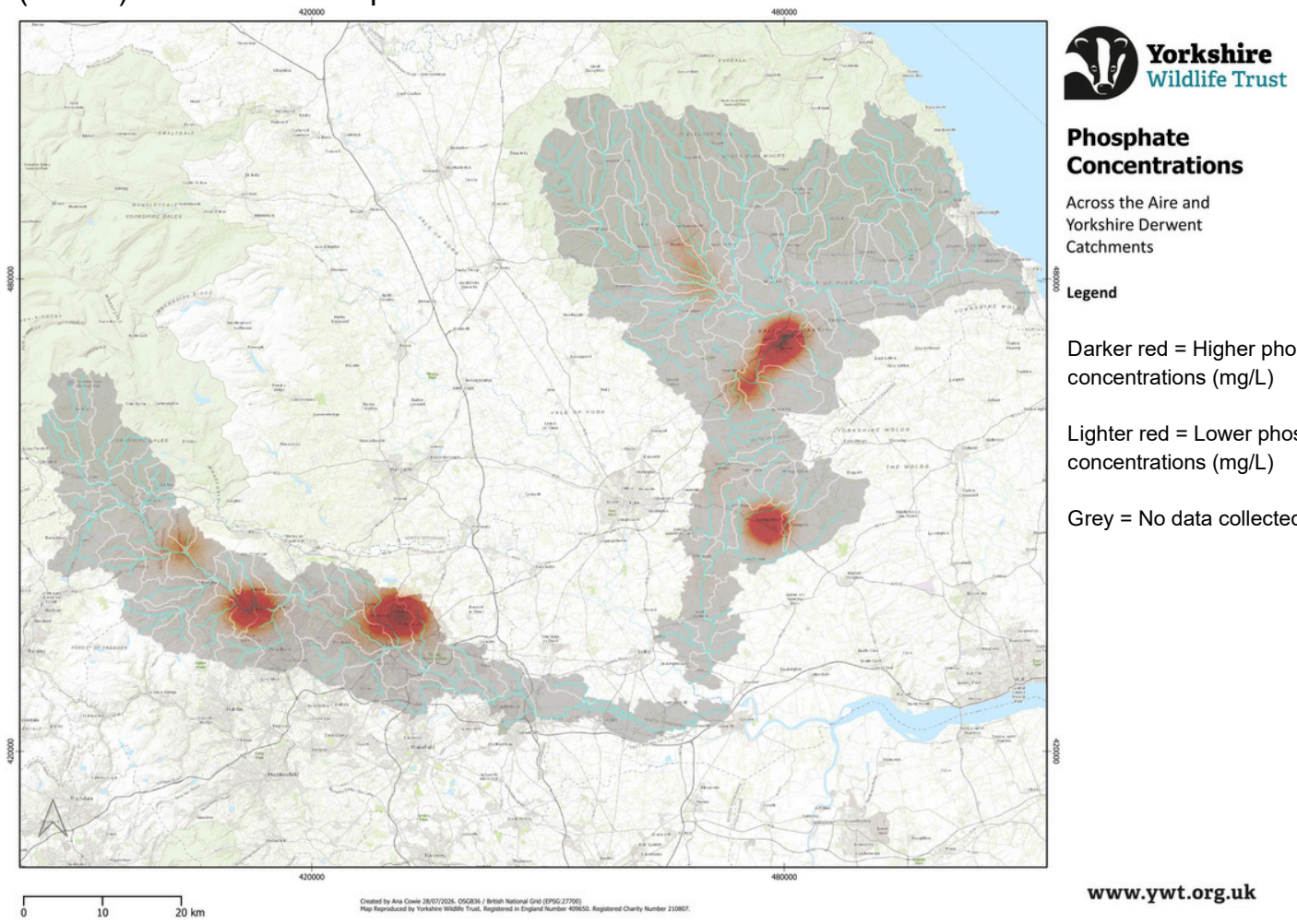


Table 3. Locations with the highest nitrate or phosphate measurements recorded in April 2026.

Latitude	Longitude	Nitrate (mg/L)	Phosphate (mg/L)	Nearest consented discharge
53.833997	-1.533295	7.5	0.15	Allerton Grange CSO
53.783674	-1.679949	7.5	0.01	Pudsey (Smallwell) CSO
53.80892121	-1.597381743	7.5	0.35	Island (River Aire) CSO
53.82037033	-1.609158889	7.5	0.01	Vesper Lane CSO
53.73807266	-1.291492739	7.5	0.01	Airedale WWTW
53.84148986	-1.809435028	7.5	0.01	Dowley Gap (Bingley) WWTW
53.8408019	-1.8136788	7.5	0.035	Dowley Gap (Bingley) WWTW
53.84358227	-1.83925897	7.5	0.01	Hesp Hills Cottage
53.93013398	-0.818809334	10	0.15	Barmby Moor SPS CSO
53.92148802	-0.782661382	7.5	0.01	Devonshire Mill

CSO = Combined Sewer Overflow
WWTW = Wastewater Treatment Works
SPS = Sewage Pumping Station

The nearest consented discharge is included for geographical context only. Proximity does not demonstrate that a discharge caused the recorded nutrient concentration. Identifying sources would require further investigation, including repeat sampling, upstream and downstream comparisons, flow information and discharge timing data.

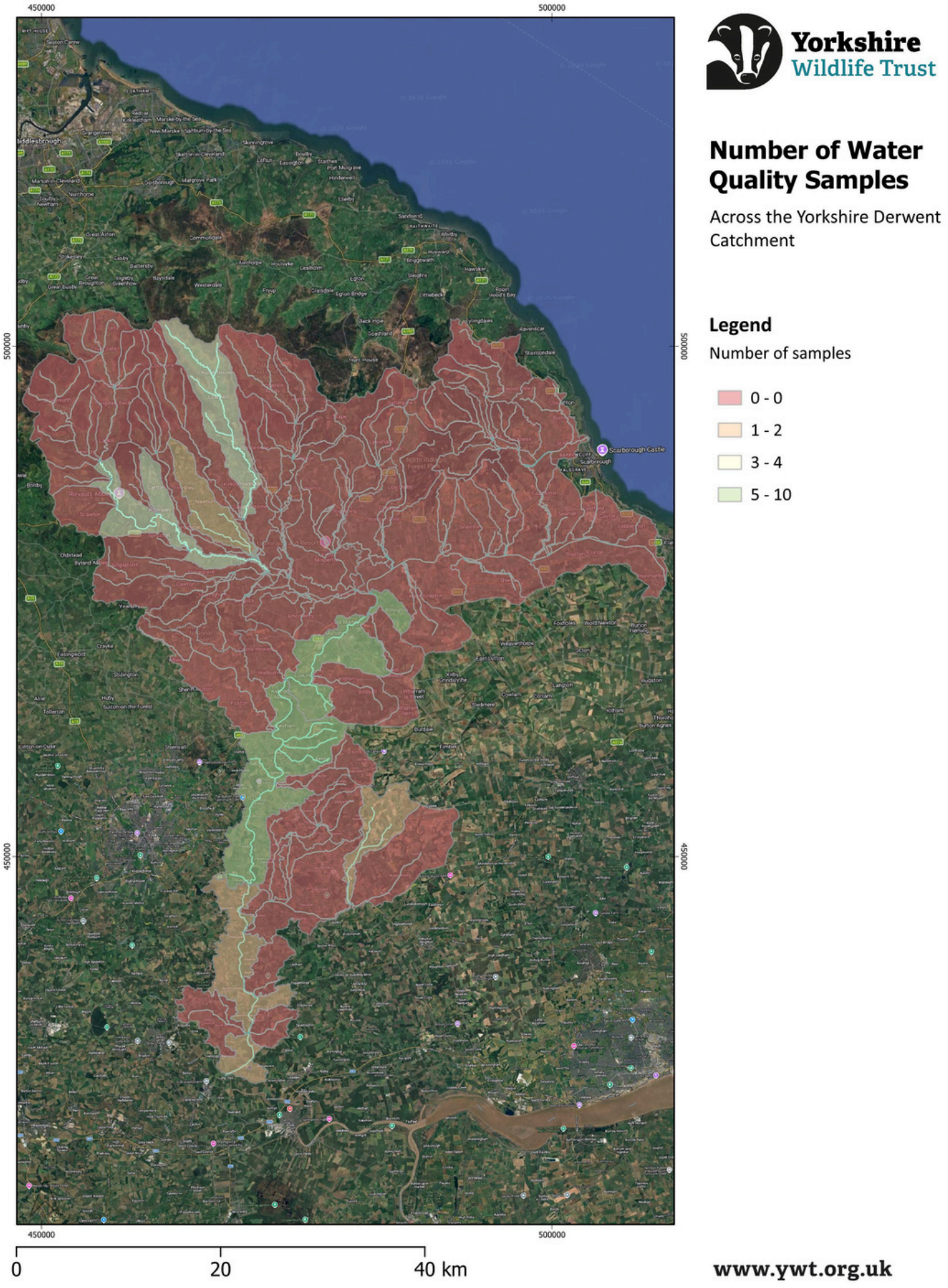
Figure 8. Sampling effort across the Aire Catchment in April 2026 (n = 163). Red areas indicate locations where no samples were collected.

Table 4. Priority areas for future sampling

Aire Catchment		Yorkshire Derwent Catchment	
Airmyn	Hillam	Appleton-le-Moors	Kirby Misperton
Beal	Kelbrook	Bishop Wilton	Lower Derwent Valley
Earby	Knottingley	Castle Howard	North Duffield
East Morton	Lofthouse	East Ayton	Rosedale Abbey
Gargrave	Lumbfoot	Garrowby	Slingsby
Gowdall	Malham	Hackness	South Duffield
Hawksworth	Otterburn	Harwood Dale	Wheldrake
Hetton	Yeadon	Hayton	Yedingham

Please choose a safe sampling location with easy access to the water

Figure 9. Sampling effort across the Yorkshire Derwent Catchment in April 2026 (n = 34). Red areas indicate locations where no samples were collected.



Summary

During the Spring 2026 monitoring campaign, volunteers collected 197 nutrient samples across the Aire and Yorkshire Derwent catchments, creating an important baseline for understanding nitrate and phosphate levels.

The health of the Humber Estuary and North Sea is closely connected to conditions upstream. Nutrients can travel through streams and rivers into estuarine and coastal environments, so understanding where elevated concentrations occur is an important first step towards protecting the whole system, from rivers to reef.

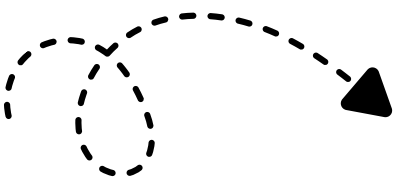
Overall, 60% of samples received a ‘Good’ nutrient rating, while around one in four received a ‘Poor’ nutrient rating. Nitrate concentrations were generally higher in the Yorkshire Derwent, while phosphate concentrations were generally higher in the Aire. Elevated nutrient levels were recorded in several locations, including parts of Pocklington Beck, Wyke Beck and the Low/Wortley/Pudsey Beck system, highlighting areas where repeat and more detailed monitoring would be valuable.

These findings provide only a snapshot of conditions in April 2026. Sampling coverage was much greater in the Aire than in the Yorkshire Derwent, and several areas remain unmonitored. Continued seasonal monitoring and wider geographical coverage will be essential to understand whether these patterns persist, vary or change over time.

The campaign also demonstrates the value of citizen science and partnership working. By combining data from Rivers to Reef, the Great UK WaterBlitz, Water Rangers and the Angling Trust, the total number of samples collected more than doubled between April 2025 and April 2026. Rivers to Reef participants contributed more than half of all samples, showing strong early engagement with the project.

By following water from rivers to reef, the project can help identify where nutrient pressures occur and where action may have the greatest benefit. Protecting upstream rivers is therefore not only important for local water quality, but also for the health of the Humber Estuary, the North Sea, and the wildlife and communities that depend on these connected environments.

Register your interest for Rivers to Reef



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3. Environment Agency (2019). 2021 River Basin Management Plan: Nitrates

4. Jarvie, H. P., Smith, D. R., Norton, L. R., Edwards, F. K., Bowes, M. J., King, S. M., Scarlett, P., Davies, S., Dils, R. M., & Bachiller-Jareno, N. (2018). Phosphorus and nitrogen limitation and impairment of headwater streams relative to rivers in Great Britain: A national perspective on eutrophication. Science of the Total Environment, 621, 849–862

5. White, P.J. & Hammond, J.P. (2009). The sources of phosphorus in the waters of Great Britain. J Environ Qual, 13;38(1):13-26

Data Sources

- **Rivers to Reef** - www.ywt.org.uk/rivers-to-reef
- **Great UK WaterBlitz** - https://www.freshwaterwatch.org/pages/explore-our-data
- **Water Rangers** - http://data.waterrangers.com/datasets
- **Angling Trust** - https://five.epicollect.net/project/water-quality-monitoring-network