SmartRivers

Case files

Outdated data in Water Framework Directive undermines accuracy and action

January 2026

Our evidence

The accuracy of Water Framework Directive (WFD)[1] classifications hinges on robust, up-to-date monitoring, currently collected exclusively by the Environment Agency (EA). An FOI by WildFish exposes that in England **52% of invertebrate assessments have been recycled from past data and not newly assessed**.

Our case study on the Test and Itchen - two globally important chalk streams - reveals a stark contrast in how well England's rivers are monitored.

In 2019, outdated invertebrate data was used for most of the Test's assessments: **64%** of waterbodies in the upper and middle Test and **67%** in the lower Test, compared with just **29%** in the Itchen. Projections for 2025 tell the same story.

The difference: the Itchen is a Special Area of Conservation (SAC) driving better resourcing and oversight - something the Test, despite its equal ecological value, does not benefit from.

Our asks

The lack of monitoring is the result of declining resources for the EA, which has left them unable to deliver their core functions. As a result, discussions of how third-party and citizen science monitoring data can help supplement regulatory datasets must be prioritised.

All chalk streams receive SAC protection to ensure these globally rare habitats are properly safeguarded.

[1] WFD's main goal is for water bodies to reach good ecological status and to prevent any deterioration. To assess ecological status, WFD uses several biological quality elements, including benthic invertebrates, fish, aquatic plants, and phytoplankton. Invertebrate monitoring is a key part of this because different invertebrate groups have known sensitivities to pollution and habitat change. The composition of invertebrate communities surveyed is compared to reference conditions, and this result helps classify water bodies from High to Bad ecological status.

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The national picture

Our FOI request has revealed that in England, for the 2019 WFD invertebrate assessment, there were 3645 water bodies 'assessed'.

Of these:

- 1781 had new classifications
- 1852 had classifications rolled over from 2016
- 32 had classifications rolled over from 2015 (Figure 1).

Therefore, 52% of the classifications in 2019 were rolled over from historical data. This means just over half the waterbodies in England were unable to be assessed and were assumed to be in the same condition as the previous cycle.

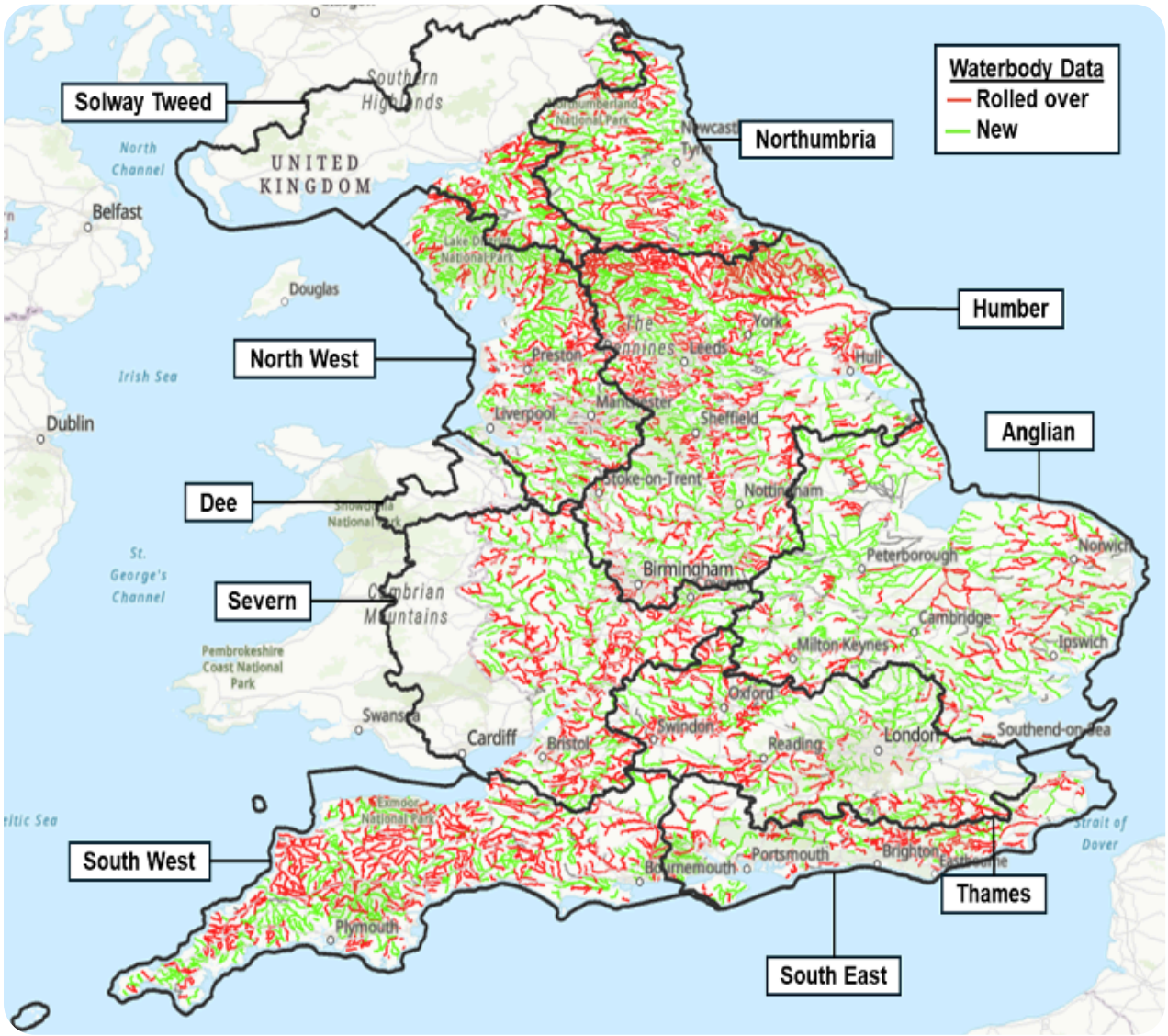

Figure 1: All waterbodies in England: where green lines represent new data and red lines represent rolled over data for their 2019 WFD invertebrate classification. The 10 EA river basin districts are outlined black.

Figure 1 clearly shows the issue of data rollover is present in waterbodies throughout England. The EA divides England into 10 River Basin Districts (RBDs)[2]. Data rollover does vary regionally (Table 1). The South West and South East RBDs have the highest levels of rollover, while Anglian had the lowest (Table 1)[3].

Table 1: Displaying percentage data rollover for WFD 2019 invertebrate assessments over the 10 River Basin Districts in England.

River Basin District	Water Bodies	Percentage Rollover
South West	567	63.1%
South East	203	62.6%
Humber	767	54.0%
Severn	415	53.5%
Solway Tweed	125	49.6%
Northumbria	307	49.2%
Thames	380	47.9%
North West	397	44.1%
Dee	10	40.0%
Anglian	474	39.9%

Each RBD is subdivided into management catchments and then operational catchments (OCs), of which there are 330 in England. Delving deeper into data rollover within the OCs paints a highly variable picture across England with some catchments ranging from having had no rollover data, to others that relied entirely on out-of-date data (Appendix 1).

[2] Note that the Dee, Severn, and Solway Tweed districts also cover areas of Wales and Scotland but this FOI investigation only covers water bodies in England.
[3] River basin district information was not provided alongside the waterbody ID data rollover information in the response to our FOI. Figure 1 was created using shapefile data from the EA's Catchment Data Explorer (CDE) matched up to water body ID rollover information from our FOI. After combining these data 127 water bodies featured on the CDE but not in our FOI spreadsheet. Inspecting a subset of these for each river basin district showed that there were no invertebrate assessments on these waterbodies, so they were excluded from the percentages in table 1 but show as grey lines in figure 1.

Case study

Test and Itchen Operational Catchments

The Test and Itchen are two of England's most famous chalk streams, rivers of international fame and global importance. The latter is protected by Special Area of Conservation status (SAC), the former is not.

The Test and tributaries are broken into the 'upper and middle' and 'lower and Southampton streams' operational catchments by the EA. The Itchen and tributaries are a single operational catchment.

2019 WFD Invertebrate Classifications

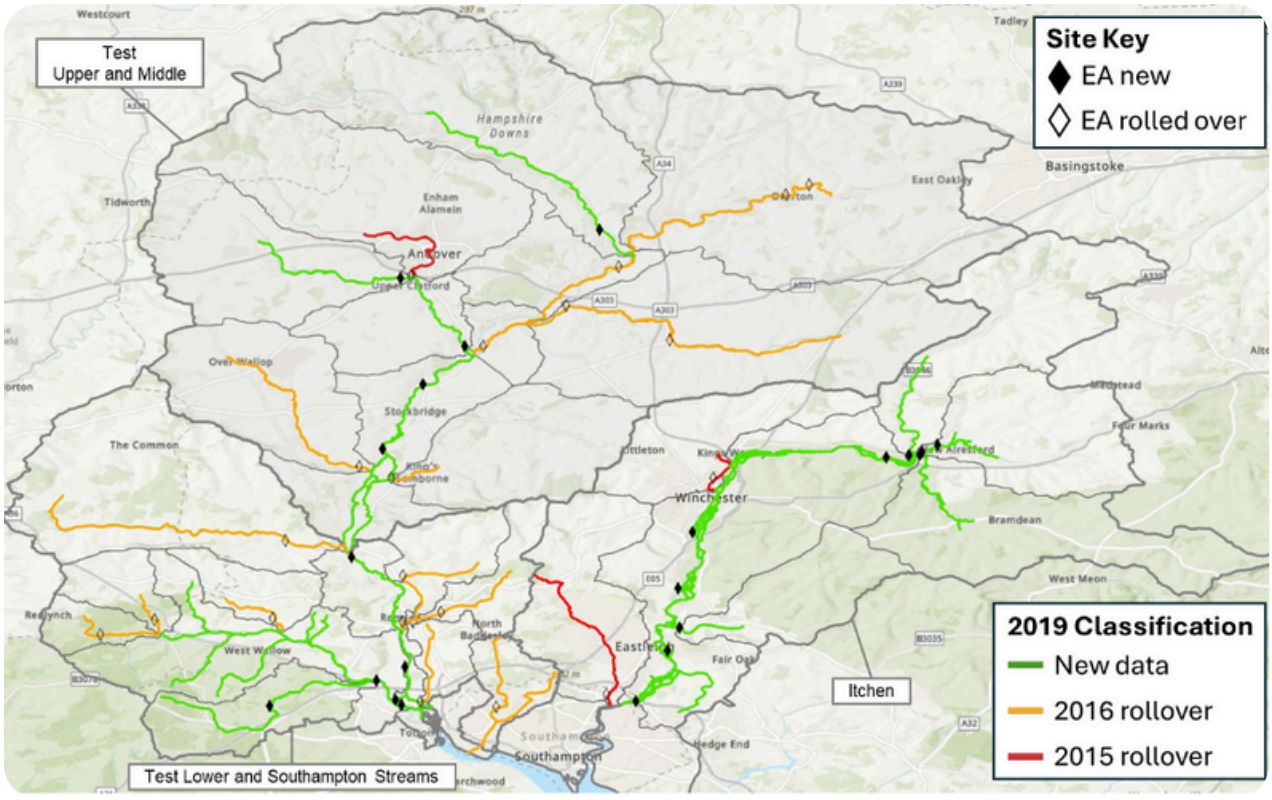

Figure 2: Showing data rollover in the Test and Itchen management catchment for 2019 WFD invertebrate classifications.

The Test upper and middle operational catchment is broken down into 11 river water bodies, four for the main river and seven covering tributaries. Data from our FOI request shows that in 2019 only four water bodies were assessed using new data, with the remaining seven water bodies being rolled over from the previous cycle. That's 64% of the operational catchment being assessed using outdated and potentially inaccurate data.

The Test lower and Southampton streams operational catchment is broken down into 12 river waterbodies, two for the main river and ten covering tributaries. The FOI request shows that eight of the waterbodies were assessed using rolled over data. So, that's 67% of the operational catchment being assessed using outdated and potentially inaccurate data.

The Itchen operational catchment is broken down into seven river water bodies, one for the main river and six for tributaries and their headwaters. The FOI shows that in 2019 five of the water bodies were assessed using new data, with the remaining two waterbodies being rolled over. So, that's 29% of the operational catchment being assessed using outdated and potentially inaccurate data.

2025 Projected WFD Invertebrate Classifications

We then used the EA's Ecology and Fish Data Explorer to look for sites within the operational catchment that had a) new data collected between 2022 and 2024 and b) surveys in both spring and autumn within a year. This would then meet data requirements to be used for 2025 WFD invertebrate classifications[4].

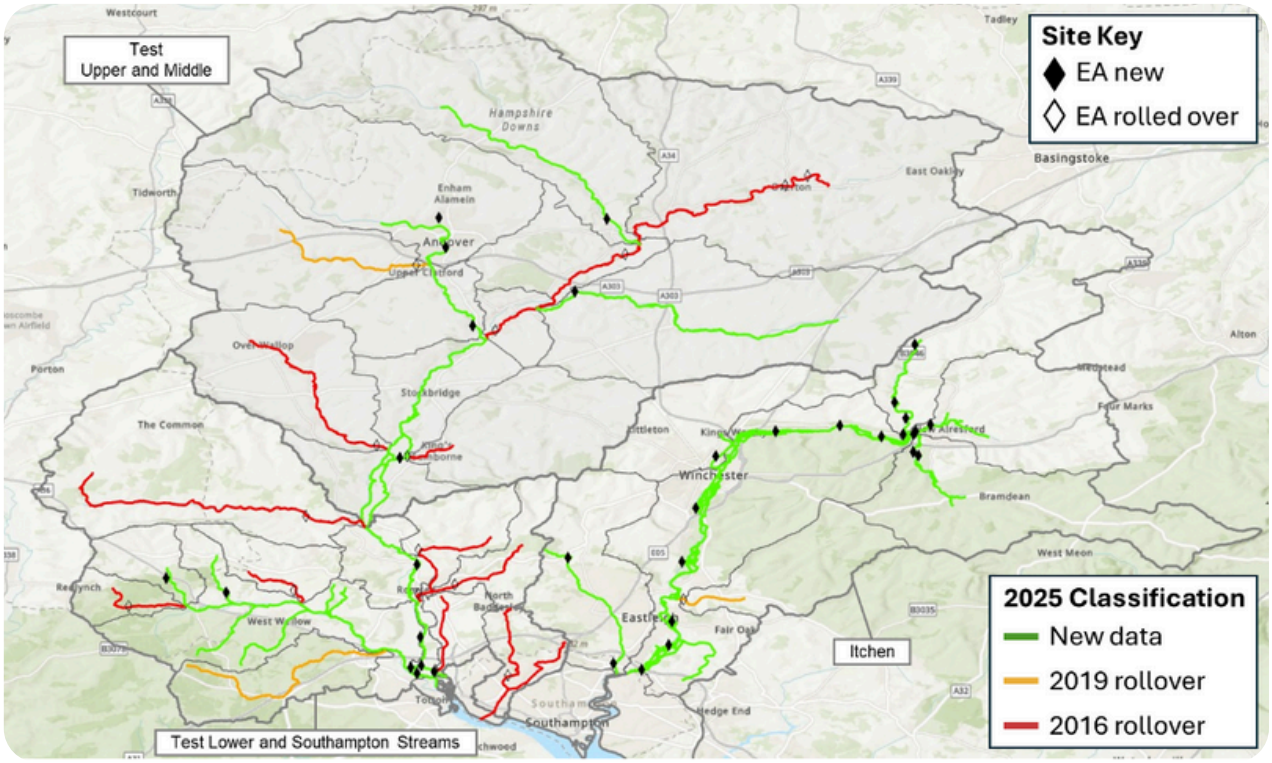

Figure 3: Showing projected data rollover in the Test and Itchen management catchment for 2025 WFD invertebrate classifications.

[4] Environment Agency (2015). Rules for assessing Surface Water Body Status and Potential. Decision document for 2015 new building block (cycle 2) Water Framework Directive classifications.

For the Test upper and middle operational catchment, this would mean for a 2025 classification only five waterbodies will have recent data, with six using rolled over data. So, that's 55% of the operational catchment still assessed using old data. More concerning still, is that five of the six rolled over water bodies are going to use data from 2016, as they were also rolled over during the 2019 cycle. That's nearly half (46%) of the operational catchment being assessed using classifications nearly a decade old. Further still, when this data is mapped the upper three water bodies of the main river fall into the category of being assessed using 2016 data. According to the EA's catchment data explorer, the length of the main river in this operational catchment is 55km, and the upper three water bodies amount to 27 km of this. So, nearly half (49%) of the main river hasn't been appropriately monitored since the 2016 classification.

For the Test lower and Southampton streams operational catchment, our 2025 projection shows that again eight of the waterbodies will be being assessed using rolled over data, so 67% of the operational catchment. As with the upstream operational catchment an issue here is that all eight of these 'rollover waterbodies' were rolled over in 2019, so data nearly a decade old for well over half the operational catchment.

For the Itchen, our assessment shows that for 2025 six waterbodies have recent data, with one using rolled over data. So, that's only 14% of the operational catchment assessed using old data.

A tale of two rivers – the importance of SAC status

This assessment of the 2019 WFD invertebrate classifications tells a different story for the two operational catchments. Both are chalk streams of global fame and international importance. Yet, the upper and middle Test operational catchment was assessed with only 36% of the waterbodies having up to date data, while for the Itchen it was 71%. In our projection of 2025 classifications, there would be a similar pattern with 45% and 86% of assessments made using new data, respectively. If we investigate this further in terms of spatial and temporal coverage between 2022 and 2024 within the operational catchments the difference becomes even more clear.

The Itchen, seven waterbodies with a combined length of 133 km, had a total of 54 samples covering 21 sites, most with multiple years' worth of data. The Test upper and middle, 11 waterbodies with a combined length of 131km, had nine samples covering five sites, with two having multiple years of data. The Test lower and Southampton streams, 12 waterbodies with a combined length of 150km, had 11 samples covering eight sites, with two having multiple years of data.

While the Test follows the national picture, the Itchen is monitored more than the national average. Why is this the case? The Itchen is classified as a Special Area of Conservation (SAC), while the Test is only a Site of Special Scientific Interest (SSSI). This "SAC effect" leads to greater resource prioritisation. This is one main reason why WildFish argues that all chalk streams should receive SAC protection to ensure these globally rare habitats are properly safeguarded.

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How citizen science can help the regulators and rivers

The importance of citizen science in helping to plug the monitoring gaps of an underfunded regulator is increasingly highlighted in public discourse. While it is important to acknowledge limitations of such datasets, the potential benefits should not be underestimated. For example, on the upper and middle Test, WildFish has monitoring in these areas.

SmartRivers, the national citizen science programme hosted by WildFish, includes professional data pathways alongside volunteer generated outputs. In the upper and middle Test, we currently hold professionally analysed data collected between 2022 and 2024 for 13 sites (seven with multiple years' monitoring) in five of the waterbodies. Two of those water bodies currently appear to be being assessed by rolling over 2016 data for a 2025 classification. So, inclusion of this data for this operational catchment could reduce rollover from 55% to 36%.

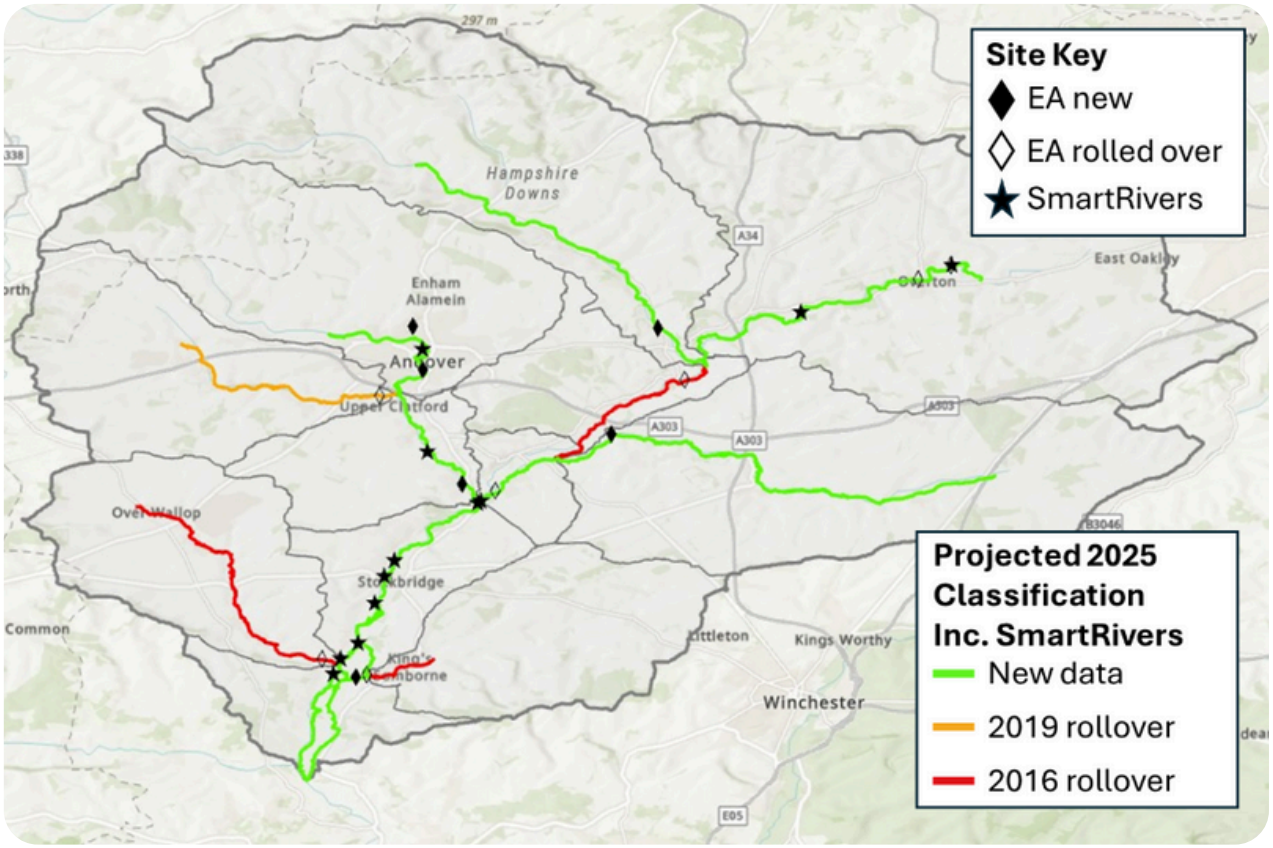

Figure 4: Showing projected data rollover in the Test upper and middle operational catchment for 2025 WFD invertebrate classifications if professionally analysed SmartRivers data was adopted.

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Appendix 1: The percentage of waterbodies that had data rolled over from previous assessments for the WFD 2019 invertebrate classification. For each River Basin District (see figure 1) the Operational Catchments are ordered by highest to lowest rollover percentage.

River Basin District	Operational Catchment	Water Bodies	Percentage Rollover
Anglian	Nene Lower	1	100%
	Gipping	9	78%
	Ouzel and Milton Keynes	14	71%
	Wensum	10	70%
	Bure	13	69%
	South Level and Cut-Off Channel	3	67%
	Waveney	16	63%
	Brampton Branch	10	60%
	Chelmer	19	58%
	Yare	16	56%
	Stour OC	17	53%
	Ise	6	50%
	Middle Level	2	50%
	North Norfolk	6	50%
	Old Bedford	4	50%
	South Forty Foot Drain	8	50%
	Nene Middle	22	45%
	Ivel	18	44%
	Crouch and Roach	7	43%
	Steeping and Eaus	14	43%
	Cam Lower	10	40%
	Deben	10	40%
	Great Ouse Bedford	10	40%
	Great Ouse Upper	25	40%
	Little Ouse and Thet	18	39%
	Cam Rhee and Granta	16	31%
	Witham Lower	26	31%
	Witham Upper	20	30%
	Blackwater	4	25%
	Welland Lower	9	22%
	Suffolk Coastal	19	21%
	Lark	10	20%
	Nene Upper	10	20%
	Great Ouse Lower	17	18%

	Colne Essex	13	15%
	Wissey	7	14%
	Welland Upper	16	13%
	North West Norfolk Rivers	10	10%
	Fens East and West	1	0%
	Glens	5	0%
	Willow Brook	3	0%
Dee	Ceiriog	2	100%
	Dee Lower Chester Weir to Ceiriog	2	50%
	Worthenbury	3	33%
	Dee Estuary	3	0%
Humber	Gypsey Race	1	100%
	Trent - Tame to Dove Rivers	2	100%
	Hull Lower	14	86%
	Sence Anker and Bourne Rivers and Lakes	12	83%
	Wiske	6	83%
	Blythe Rivers	5	80%
	Swale Upper	14	79%
	Colne and Holme	9	78%
	Rye	36	75%
	Sandsend and Staithes	4	75%
	Tame Upper Rivers	4	75%
	Trent and Trib	23	74%
	Nottinghamshire South B	15	73%
	Calder Middle	11	73%
	Isle of Axholme	11	73%
	Derwent Middle Yorkshire	7	71%
	Erewash River	7	71%
	Derwent Upper Yorkshire	17	71%
	Aire Middle	10	70%
	Aire Upper	16	69%
	Swale Middle	16	69%
	Barmston Sea Drain	6	67%
	Don Lower	14	64%
	Dove Lower Rivers and Lakes	11	64%
	Swale Lower	10	60%
	Trent - Source to Sow Rivers	12	58%
	Wharfe Lower	7	57%
	Wharfe Middle and Washburn	14	57%
	Esk	16	56%
	Sow Rivers and Lakes	9	56%
	Tame Lower Rivers and Lakes	18	56%
	Derwent Upper - Derbyshire	22	55%

	Hull Upper	11	55%
	Trent River	11	55%
	Ouse Upper Yorkshire	15	53%
	Wreake River	15	53%
	Ure Upper	17	53%
	Idle River	25	52%
	Burstwick and Eastern Drains	8	50%
	Nidd Middle and Lower	10	50%
	Nottinghamshire South A	6	50%
	Rother and Doe Lea	18	50%
	Wharfe Upper	13	46%
	Derwent Middle - Derbyshire	11	45%
	Soar River	29	45%
	Calder Lower	9	44%
	Ure Middle and Lower	16	44%
	Nidd Upper	7	43%
	Derwent Lower - Derbyshire	5	40%
	Foulness	5	40%
	Mease Rivers	5	40%
	Penk Rivers and Lakes	5	40%
	Trent - Sow to Tame Rivers and Lakes	8	38%
	Aire Lower	12	33%
	Churnet Rivers and Lakes	9	33%
	Dearne	15	33%
	Foss	6	33%
	Dove Upper Rivers and Lakes	7	29%
	Don Middle	11	27%
	Calder Upper	8	25%
	Becks Northern	17	24%
	Ancholme	13	23%
	Ouse Lower Yorkshire	9	22%
	Derwent Lower Yorkshire	10	20%
	Nottingham Urban	8	13%
	Blithe Rivers and Lakes	3	0%
	Don Upper	10	0%
	Robin Hoods Bay	1	0%
North West	Crossens System	2	100%
	Limestone Ribble	7	100%
	Savick Brook and Fylde South Drains	5	100%
	Ribble Middle - Settle to Calder	11	91%
	Ellen and West Coast	7	86%
	Colne Water	10	80%
	Ditton	4	75%

	Pilling Ridgy Cocker and Conder	4	75%
	Sankey	7	71%
	Big Ribble	3	67%
	Keer	3	67%
	Calder	11	64%
	Darwen	8	63%
	Bela	5	60%
	Bollin Dean Mersey Upper	20	55%
	Leven	13	54%
	Croal Irwell	15	53%
	Brock and Trib	4	50%
	Duddon	8	50%
	Fleetwood Peninsula Trib	4	50%
	Hodder and Loud	14	50%
	Roch Irk Medlock	10	50%
	Yarrow and Lostock	6	50%
	Irt-Mite-Esk-Annas	9	44%
	Ehen-Calder	12	42%
	Weaver Upper	27	37%
	Alt	9	33%
	Dane	15	33%
	Gowy	6	33%
	Weaver Lower	12	33%
	Wenning	9	33%
	Kent	13	31%
	Lune - Rawthey to Greta	7	29%
	Goyt Etherow Tame	22	27%
	Douglas OC	9	22%
	Glaze	9	22%
	Greta and Rawthey	9	22%
	Lune Upper	9	22%
	Crake	5	20%
	Derwent	19	5%
	Cocker	6	0%
	Wirral	3	0%
	Wyre and Calder	6	0%
Northumbria	Gaunless	3	100%
	Aln	10	90%
	Browney	7	86%
	Tees Middle	19	79%
	Derwent Tyne	7	71%
	Wear Middle	10	70%
	Coquet Lower	9	67%

	Rede	15	67%
	Coquet Upper	13	62%
	Wear Lower and Estuary	18	56%
	Leven Northumbria	6	50%
	Saltburn Coast	6	50%
	Seaham Peterlee Coast	4	50%
	South Tyne Lower	8	50%
	Tees Lower and Estuary	18	50%
	North Tyne Lower	13	46%
	Pont	11	45%
	Wansbeck	11	45%
	Berwick to Alnmouth Coast	16	44%
	Tyne Upper	12	42%
	Wear Upper	12	42%
	North Tyne Upper	20	35%
	Tees Upper	16	31%
	Blyth	5	20%
	Allen	6	17%
	Tyne Lower and Estuary	6	17%
	South Tyne Upper	15	13%
	Skerne	9	11%
	Lyne and Druridge Bay Coast	2	0%
Severn	Camlad	2	100%
	Gloucester Trib	5	100%
	Malvern Hills	4	100%
	Wye - Ithon to Hay	1	100%
	Rea Brook	8	88%
	Avon - Midlands West	22	86%
	Cound Brook	8	75%
	Severn Lower Vale	8	75%
	Somerset North Streams	10	70%
	Avon Bristol Urban	14	64%
	Perry Roden and Tern North Shropshire	27	63%
	Arrow Lugg and Frome	24	63%
	Leadon	8	63%
	Chelt Hatherley and Normans Brook	5	60%
	Severn River Worcestershire	10	60%
	Monnow	7	57%
	Severn River and Trib	7	57%
	Avon Bristol Rural	72	56%
	Wye OC	18	56%
	Clun River	8	50%
	Frome and Cam	10	50%

	Avon Rural Rivers and Lakes	32	44%
	Avon Urban Rivers and Lakes	20	40%
	Forest of Dean	5	40%
	Teme Lower	8	38%
	Teme Upper	24	38%
	Morda and Severn North Shropshire	6	33%
	Shropshire West	7	29%
	Stour River and Trib	4	25%
	Stour Upper Worcestershire Rivers and Lakes	7	14%
	Telford North	7	14%
	Bushley Longdon Marlbank and Ripple Brook	1	0%
	Salwarpe River	6	0%
	Telford South	2	0%
	Worfe River	8	0%
Solway Tweed	Waver-Wampool	10	80%
	Esk and Irthing	26	69%
	Petteril	3	67%
	Eden Lower	13	54%
	Eden Upper	28	43%
	Eamont	15	40%
	Caldew	9	33%
	Tweed River	3	33%
	Till River	18	28%
South East	Arun Lower	4	100%
	Brede and Tillingham	7	100%
	Romney Marsh South	3	100%
	Western Streams	8	88%
	Ouse Upper	24	83%
	Reading Cradlebridge and RMC	6	83%
	Pevensey	8	75%
	Stour Lower	4	75%
	Stour Upper	4	75%
	Rother Western	10	70%
	Arun Upper	9	67%
	Cuckmere Upper	6	67%
	North and South Streams	3	67%
	Rother Upper	6	67%
	Test Lower and Southampton Streams	12	67%
	Test Upper and Middle	11	64%
	Rother Levels	8	63%
	Adur Upper	18	61%
	Little Stour and Wingham	2	50%
	New Forest - Bartley Water	2	50%

	Stour Marshes	4	50%
	East Hampshire Rivers	10	40%
	Combe Haven	3	33%
	Isle of Wight Rivers	10	30%
	Itchen	7	29%
	New Forest - Lymington and Beaulieu	8	13%
	Dour	2	0%
	New Forest - Hatchet Sowley	2	0%
	Oyster Coast Brooks	1	0%
	Teville	1	0%
South West	Gannel Porth and Menalhyl	7	100%
	Hartland and Clovelly Streams	2	100%
	Sid and Otter	7	86%
	Tone	13	85%
	Tamar Upper	19	84%
	Parrett	49	82%
	Camel	15	80%
	Yealm	5	80%
	Strat Neet and North Coast Streams	9	78%
	Clyst and Culm	19	74%
	Somerset West Streams	11	73%
	Brue and Axe	24	71%
	Lim and Axe	13	69%
	Taw and North Devon Streams	52	69%
	Creedy and West Exe	16	69%
	Thrushel Wolf and Lyd	9	67%
	Avon Hampshire	39	64%
	Dart Start Bay and Torbay	24	63%
	Exe Main	24	63%
	Poole Harbour Rivers	18	61%
	Erme	5	60%
	West Dorset Rivers	10	60%
	Torridge	37	59%
	Teign	23	52%
	Cober and Lizard	8	50%
	Seaton Looe and Polperro	4	50%
	Fal	17	47%
	Stour Dorset	35	43%
	Penwith Peninsula	5	40%
	Tavy	5	40%
	Avon Salcombe and Kingsbridge	6	33%
	Fowey	9	33%
	Par St Austell and Caerhays	7	29%

	Plym	4	25%
	Tamar Lower and Inny	5	20%
	Hayle Red River and Northern Streams	8	13%
	Lynher	4	0%
Thames	Marsh Dykes	1	100%
	Ock	13	77%
	Eden	8	75%
	Evenlode	16	75%
	Teise	8	75%
	Beult	9	67%
	Chilterns South	11	64%
	Windrush	18	61%
	Cherwell	23	61%
	Thames Upper	27	59%
	Kennet	28	57%
	Medway Upper	11	55%
	Medway Middle	13	54%
	Oxon Ray	10	50%
	Ravensbourne	4	50%
	Thames Lower	12	50%
	Wey	30	50%
	Loddon	19	47%
	Mole Lower and Rythe	11	45%
	Thame	18	44%
	Mole Upper Trib	7	43%
	Crane Rivers and Lakes	3	33%
	Cray and Shuttle	3	33%
	Mardyke	3	33%
	Lee Lower Rivers and Lakes	12	25%
	Colne	16	13%
	Lee Upper	23	9%
	Roding Beam and Ingrebourne	12	8%
	Beverley Brook	1	0%
	Brent Rivers and Lakes	4	0%
	Darent	2	0%
	Hogsmill	1	0%
	Wandle	2	0%
	White Drain and Lakes	1	0%