

**State of the Water Environment
indicator B3:
Supporting evidence pack
May 2023**



**Environment
Agency**

Contents May 2023

This pack presents data and evidence across the breadth of the water environment to support the published B3 State of the Water Environment indicator: [An accessible version of this slide pack](#) is published on gov.uk

Slide 3 - [25 Year Environment Plan Water Indicators](#) - infographic

Slide 4 - [25 Year Environment Plan: Water, Resilience to natural hazards and Chemical Theme Indicators](#) - infographic

Slide 5 - [State of the Water Environment in England dashboard](#) visual summary of the current evidence for water.

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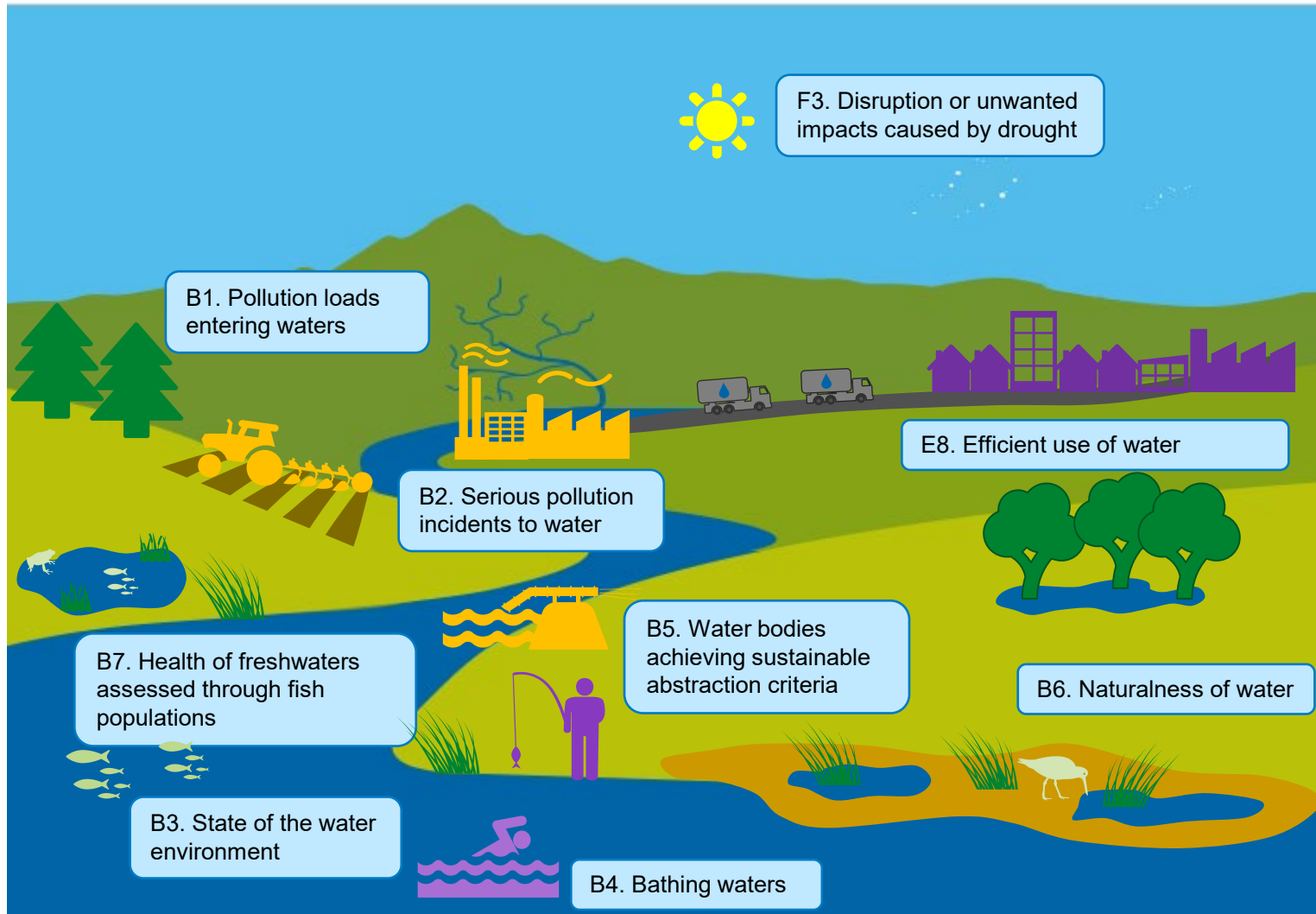
Slide 11 - [Reasons for Not Achieving Good Status](#) - key issues and sectors affecting water bodies in England.

Slide 12 – [Notes for Reasons for Not Achieving Good Status](#) data in slide 11.

Slide 13 – [Updates for 2023](#) – full detail of the changes included in this pack

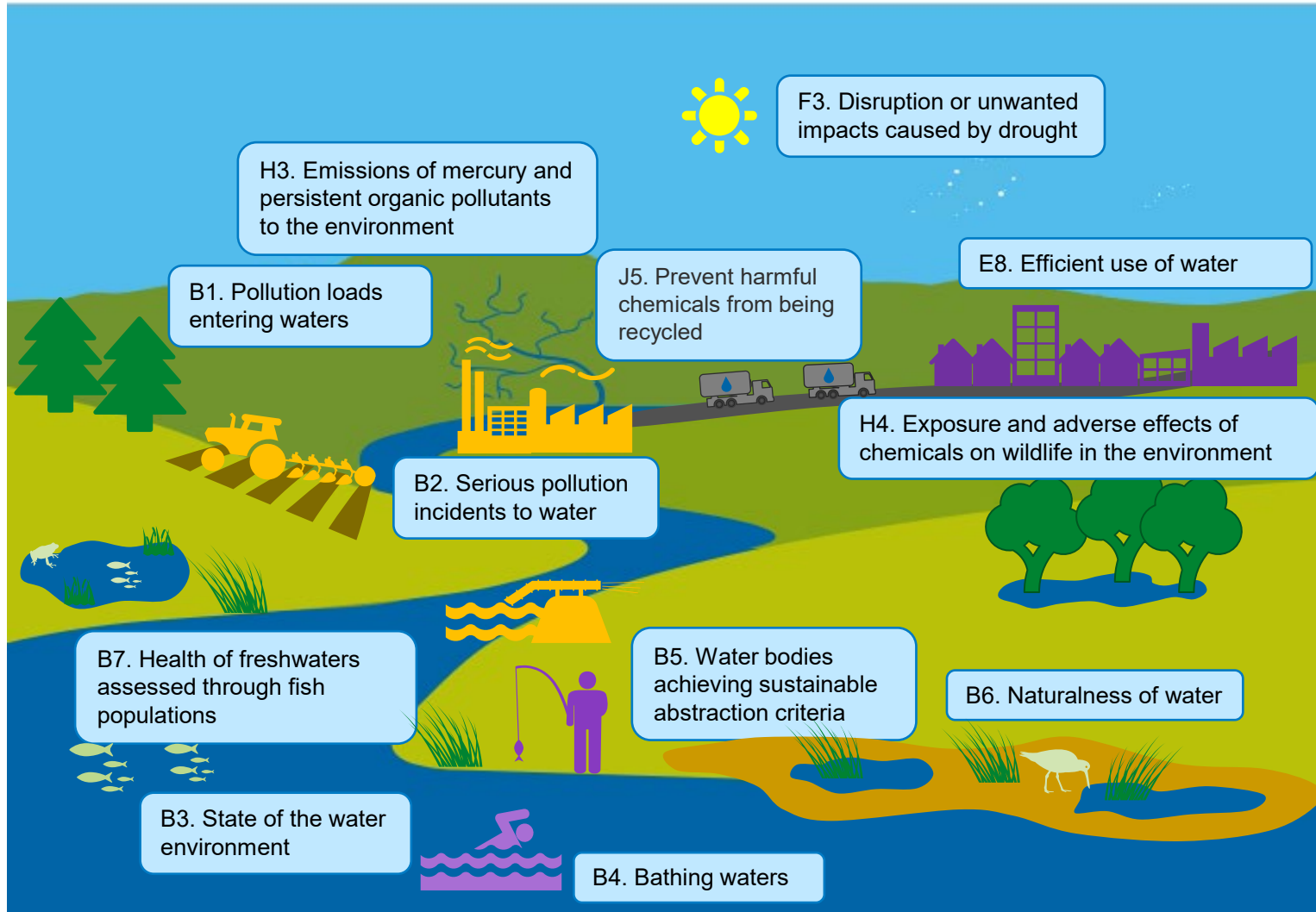
Slide 14 – [Updates for 2023](#) - continued

25 Year Environment Plan: Clean and Plentiful Water Indicators



This infographic shows the individual Indicators that form the Water Theme (B1-B7) in the 25 YEP and also two related indicators that relate to water use, quantity and availability (E8 and F3)

25 Year Environment Plan: Water, Resilience to Natural Hazards and Chemical Theme Indicators



This infographic combines the *Water* Theme Indicators and adds in the other indicators within the *Resilience to natural hazards* (F3), together with those that are under the *Managing exposure to chemicals and minimising waste* (H3, H4 and J5) themes within the framework

16% of surface waters and 79% of individual tests achieve good ecological status.

Rivers 14% of rivers are at good ecological status.

Biology

Fish: 42% at good status

Invertebrates: 76% at good status

Macrophytes and phytobenthos: 45% at good status

Physical modification

Morphology: 49% at good status

Flow regime: 88% at good status

Water quality

Dissolved oxygen: 82% at good status

Ammonia: 92% at good status

Phosphorus: 45% at good status

Hazardous substances

Chemical status: 0% at good status

Chemical status excluding uPBTs: 93% at good status

Lakes 14% of lakes are at good ecological status.

Biology

Phytoplankton: 52% at good status

Macrophytes and phytobenthos: 29% at good status

Physical modification

Morphology: 97% at good status

Water quality

Total Phosphorus: 25% at good status

Total Nitrogen: 45% at good status

Hazardous substances

Chemical status: 0% at good status

Chemical status excluding uPBTs: 100% at good status

Estuaries 19% of estuaries are at good ecological status.

Biology

Fish: 77% at good status

Invertebrates: 67% at good status

Saltmarsh: 36% at good status

Seagrass: 90% at good status

Eutrophication * (combined assessment)

- 43% certain there is no problem
- 41% uncertain there is a problem
- 13% quite certain there is a problem
- 3% very certain there is a problem

Hazardous substances

Chemical status: 0% at good status

Chemical status excluding uPBTs: 92% at good status

Coastal waters 45% of coastal waters are at good ecological status.

Biology

Invertebrates: 87% at good status

Saltmarsh: 50% at good status

Seagrass: 83% at good status

Eutrophication * (combined assessment)

- 71% certain there is no problem
- 27% uncertain there is a problem
- 0% quite certain there is a problem
- 2% very certain there is a problem

Hazardous substances

Chemical status: 0% at good status

Chemical status excluding uPBTs: 100% at good status

Groundwater

Quantity: 73% at good status

Quality: 45% at good status

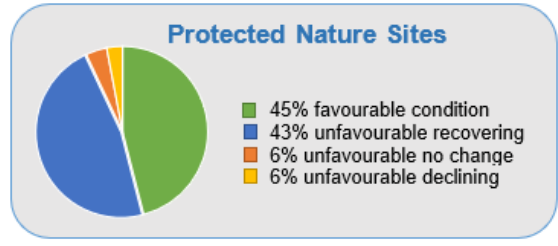
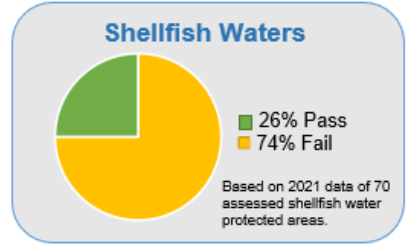
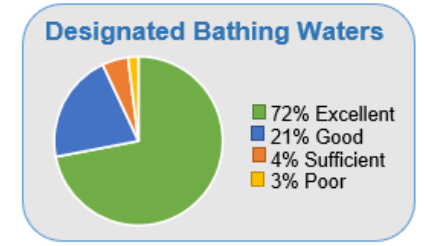
Drinking Water Protected Areas

Surface water

47% Not at risk of deterioration

Groundwater

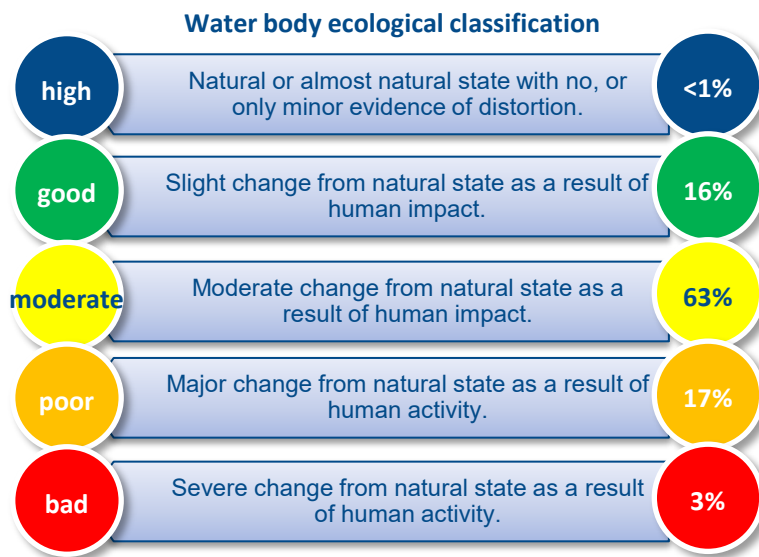
53% Not at risk of deterioration



Figures are percentages of water bodies assessed and where referred to as 'at good status' this is good or better status. Hazardous substances: uPBTs are substances that are ubiquitous, persistent, bio-accumulative and toxic. The [2019 water body classification data](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414212/2019_water_body_classification_data.pdf) is published on data.gov.uk, for other data marked * and for an accessible version of this slide contact enquiries@environment-agency.gov.uk.

Surface waters - ecological and chemical classification

- **Ecological status** is assigned using various water, habitat and biological quality tests. Failure of any one individual test means that the whole water body fails to achieve good or better ecological status or potential (the “one out all out” rule).
- Data on slide 5 show for each surface water type, representative elements that are tested to assess the condition of the water body; reflecting water quality and/or hydromorphology.
- Ecological status is measured in 5 classes (bad to high).
- 2019 classification results show surface water ecological status has remained stable and 16% of surface water bodies achieved good or better ecological status or potential, the same as in 2016.



- **Chemical status** is calculated by assessing 52 different chemical elements (individual and groups of chemicals). Water bodies are classified as good or failing.
- For 2019 chemical classifications, new assessments for uPBTs (**ubiquitous, persistent, bioaccumulative, toxic substances**) were included, as well as new standards, and improved techniques and methods.
- This resulted in 0% surface water bodies meeting the criteria for achieving good chemical status in 2019 (compared to 97% pass in 2016).
- If we exclude the new assessments for uPBTs then only 6.2% of surface water bodies fail the chemical tests and 93.8% pass.
- Current data is shown as ‘**Hazardous substances**’ on slide 5. This shows the water body results for rivers, lakes, estuaries and coasts for chemical status with and without the uPBTs.
- The 2019 water body classification data are published on data.gov.uk
- [Accessing information in the river basin management plans, updated 2022 on gov.uk](#)
- [Explore catchment data in the Catchment Data Explorer \(CDE\)](#)

Surface waters – new monitoring approach and data for future reporting

- Under our current approach to monitoring and reporting water status, it is hard to separate out the evidence of environmental change over time from the evidence associated with identifying problems and targeting solutions. A fresh approach to assessing environmental change in the water environment is needed.
- To enable us to do that, the government has funded the Natural Capital & Ecosystem Assessment programme (NCEA)
- The NCEA will deliver a set of robust environmental monitoring networks and integrated assessments designed to evaluate and track changes in the environment's natural capital, at national and regional scales.
- The data and evidence from the new networks will be included in 25 YEP and new Environmental Improvement Plan (2023) reporting on the condition of the water environment in future.
- Surface water quality and quantity data will be delivered by the River Surveillance Network (RSN) and equivalent networks being developed for small streams, lakes and estuaries and coasts.
- There will also be a groundwater network which will provide condition data for this water category.
- This is a large and complex programme which is taking time to develop and phase in over the next few years.

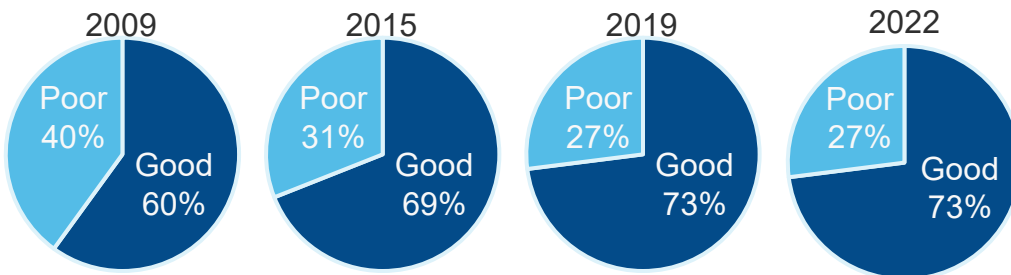
Groundwater

Nitrate is the most common cause of groundwater test failure



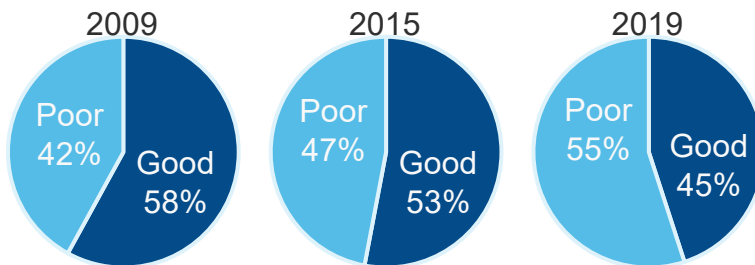
Groundwater quantitative classification

Net increase in the number of groundwater bodies meeting Good quantitative status



Groundwater chemical classification

Net decrease in the number of groundwater bodies meeting Good chemical status



Substances causing failure for 2019 across all tests and groundwater bodies



Other:

Solvents (12), Lead (11), Electrical conductivity (9), Aluminium (9), Pesticides (8), Cadmium (8), Arsenic (8), Boron (6), Sodium (3), Other metals (2), Mecoprop (2), Hydrocarbons (2), Bromate (2), PAHs (1), PFAs (1), Fluoride (1), Chromium (1), Antimony (1)

Drinking water protected areas (DrWPAs)

Reservoirs, lakes, rivers and groundwater, from which raw water is abstracted for human consumption at a rate of 10 m³/day or more or serving more than 50 people are Drinking Water Protected Areas (DrWPAs). These criteria are defined in the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Safeguard zones are areas connected to the DrWPA where pollution needs to be reduced to protect the drinking water resource.

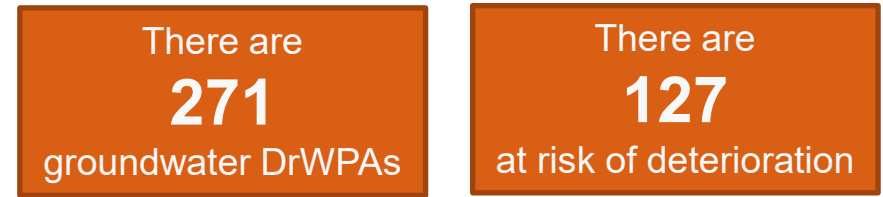
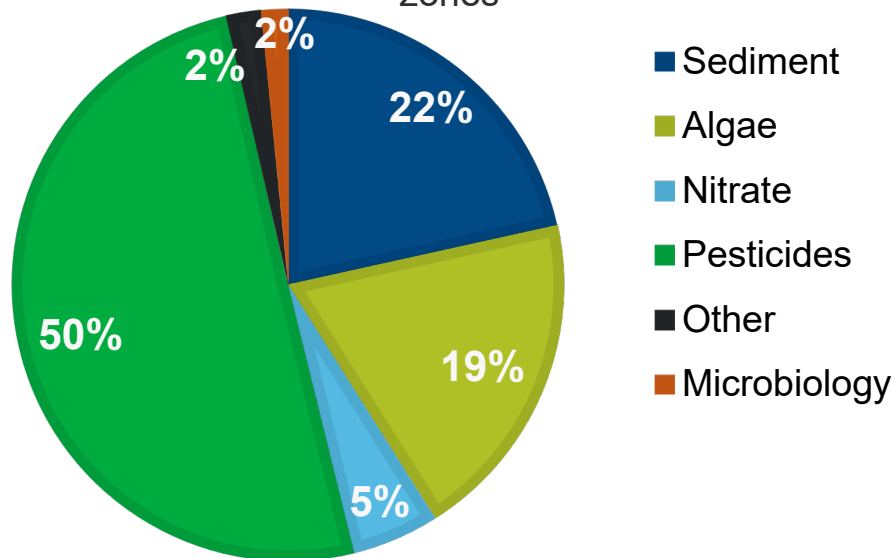
For surface water DrWPAs the safeguard zones cover the upstream catchment areas which can include more than one DrWPA. For groundwaters the DrWPA is a large underground aquifer which may include multiple safeguard zones to protect springs or boreholes.

Safeguard zones can cover more than one pollutant type, and are established when raw water quality is deteriorating, or is likely to deteriorate in the future i.e. is 'at risk of deterioration'. Measures aiming to avoid deterioration, reducing the level of water treatment required to produce drinking water, are set out in Safeguard Zone Action Plans.



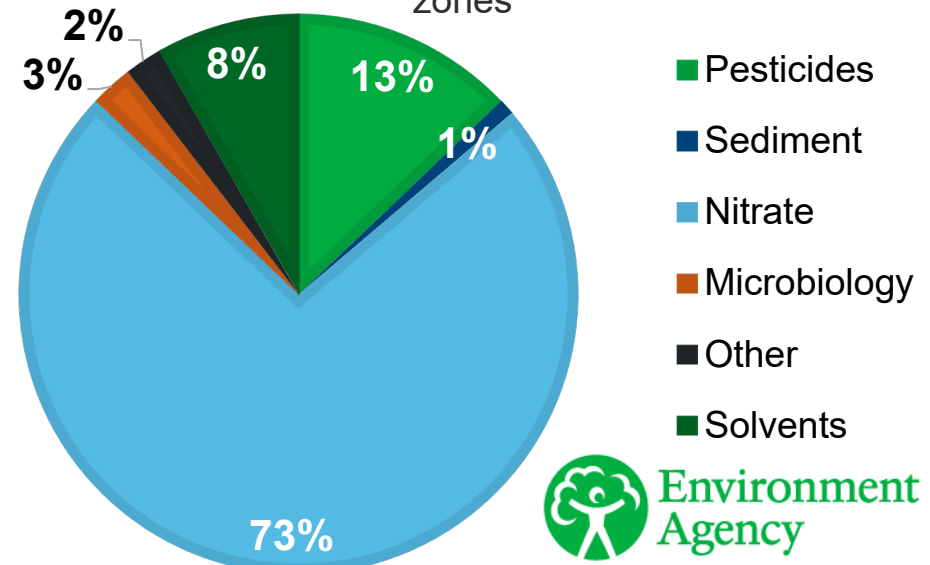
There are 148 surface water safeguard zones

Reasons for establishing surface water safeguard zones



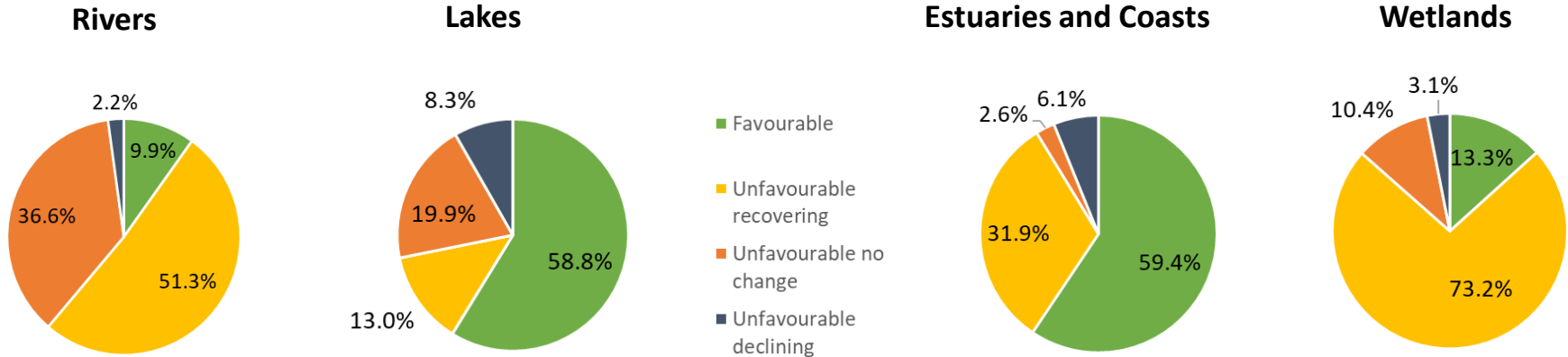
There are 251 groundwater safeguard zones

Reasons for establishing groundwater safeguard zones



European protected nature sites for water and wetlands

Underlying SSSI unit condition by habitat



Condition change – All SSSI units underlying water-dependent habitats

<p>Favourable</p> <p>240,179 hectares 45%</p>		<p>Unfavourable recovering</p> <p>229,298 hectares 43%</p>
<p>Unfavourable no change</p> <p>29,860 hectares 6%</p>		<p>Unfavourable declining</p> <p>32,229 hectares 6%</p>

- Includes rivers, lakes, wetlands, estuaries and coasts, and other water-dependent habitats
- Sites designated for birds may be in favourable condition without assessment of water quality
- Excludes Adverse Condition Reasons that are unrelated to Water Framework Directive drivers
- Data retrieved: **November 2022**
- Bespoke data analysis – not a published dataset
- Further information: Natural England Enquiries 0300 060 3900

Key issues and sectors affecting water bodies in England

Issue	Agriculture and rural land management	Industry	Mining and quarrying	Navigation	Urban and transport	Water Industry	Local and Central Government	Domestic General Public	Recreation	Waste treatment and disposal	No sector responsible	% of water bodies impacted by each issue
Physical modifications	12.9%	1.9%	0.1%	1.9%	10.9%	7.9%	14.3%	0.3%	2.9%		0.1%	41%
Pollution from waste water	0.1%	0.5%			0.6%	35%	0.2%	1.1%		0.1%		36%
Pollution from towns, cities and transport	0.1%	3.4%	0.1%		10.1%	0.8%		6.4%	0.2%	0.3%	0.1%	18%
Changes to natural flow and levels of water	1.3%	0.4%		0.1%		9.8%	0.2%		0.1%			15%
Non-native invasive species											23%	23%
Pollution from rural areas	40.0%											40%
Pollution from abandoned mines			3.2%									3%

% of water bodies impacted by each sector	Agriculture and rural land management	Industry	Mining and quarrying	Navigation	Urban and transport	Water Industry	Local and Central Government	Domestic General Public	Recreation	Waste treatment and disposal	No sector responsible
	45%	6%	3%	2%	18%	44%	14%	8%	3%	0.3%	23%

Where:

High (>30%)
Medium (<30% and >10%)
Low (<10% and >1%)
Very Low (<1% and >0.1%)
Insignificant (<0.1%)

The figures in the separate row at the bottom of the table '*% of water bodies impacted by the activity of each sector*', and those in the separate column on the right of the table '*% of water bodies impacted by each issue*' are not summations of the figures displayed in the main table. These percentages have been calculated by only counting any particular water body once per sector or per issue and so avoid including multiple entries as outlined above.

Note: the bottom row and right hand column are not summations of the rows and columns in the main table – see Introduction

Reference: Environment Agency Challenges & Choices 2019.

Key issues preventing good water quality in England – notes for slide 11

- The majority of the data used to produce the table are taken from the 2019 set of probable and confirmed reasons for not achieving good status (RNAGs) linked to 2016 WFD classifications, with the exception of:
 - 1. Changes to the natural flows and levels of water. The data are for those water bodies that do not have sustainable levels of abstractions. The sector contributions include suspected, probable and confirmed RNAGs.
 - 2. Invasive non-native species. This uses Environment Agency monitoring data and are for water bodies that have specific invasive non-native species present which we consider to be contributing to the water body not achieving good ecological status.
- ‘No sector responsible’ covers those situations where it is not possible to assign the failure to achieve good status to the activities of a specific sector. We have used this category mainly for invasive non-native species. Whilst the speed of their spread can be increased by poor practice, it is not possible to say whether their presence in a particular water body is ‘natural’ or due to someone’s actions.
- Around 6% of water bodies have one or more RNAGs where the sector responsible is still under investigation. Around 5% of water bodies have one or more RNAGs caused by a different sector to those listed in the table. These are mainly where the issue is physical modification.
- For further information please contact: enquiries@environment-agency.gov.uk

Updates to B3 Indicator supporting pack

The changes made between the first B3 supporting pack (May 2021) and this refreshed version (May 2023) are given below:

- **Slide 2-** Contents page the same as for 2021 but with an extra slide (slide 7) for summary text on the new monitoring approach and data for future reporting.
- **Slide 4** – Reference to Indicators F1 and F2 removed from Infographic as Defra now lead on these two indicators, J5 added.
- **Slide 5 - State of the Water Environment in England:**
 - Estuaries eutrophication combined assessment %s
 - 45% certain there is no problem has been updated to 43%
 - 40% uncertain there is a problem updated to 41%
 - 12% quite certain there is a problem updated to 13%
 - Coastal waters eutrophication combined assessment %s
 - 63% certain there is no problem updated to 71%
 - 35% uncertain there is a problem updated to 27%
 - No change in % but extra category added in to read: “0% quite certain there is a problem”
 - Drinking water protected areas
 - Surface water 52% not at risk of deterioration updated to 47%
 - Designated bathing waters
 - 5% sufficient updated to 4%
 - 2% poor updated to 3% poor
 - Shellfish waters
 - 25% pass updated to 26%
 - ¹³ 75% fail updated to 74%
- Protected Nature Sites
 - 46% favourable condition updated to 45%
 - 47% unfavourable recovering updated to 43%
 - 4% unfavourable no change updated to 6% unfavourable no change
 - 3% unfavourable declining updated to 6% unfavourable declining.
- **Slide 6-**Two new links added to this slide. One to the 2022 Updated River Basin Management Plans and the second to the Catchment Data Explorer (CDE).
- **Slide 7-** New slide added with text summarising surface waters and the new monitoring approach and data for future reporting via NCEA networks.
- **Slide 8 - Groundwater:**
 - 2022 pie chart added to groundwater quantitative classification.
- **Slide 9 – Drinking water protected areas (DrWPAs):**
 - DrWPA description text updated,
 - ‘There are 485 surface water DrWPAs’ updated to 450.
 - ‘There are 234 at risk of deterioration’ updated to 240.
 - ‘There are 144 surface water Safeguard Zones’ updated to 148.
 - ‘There are 485 surface water DrWPAs’ updated to 450.

Updates to B3 Indicator supporting pack

Slide 9 continued

- 'There are 234 at risk of deterioration' updated to 240.
- 'There are 144 surface water Safeguard Zones' updated to 148.
- Reasons for establishing surface water Safeguard Zones pie chart percentages changed:
 - 43% pesticides updated to 50%
 - 30% sediment updated to 22%
 - 19% algae remains the same.
 - 4% nitrate updated to 5%
 - 3% microbiology updated to 2%
 - 1% other updated to 2%.
- 'There are 254 groundwater Safeguard Zones' updated to 251.
- Reasons for establishing groundwater Safeguard Zones pie chart percentages changed:
 - 9% pesticides updated to 13%
 - 1% sediment remains the same
 - 80% nitrate updated to 73%
 - 2% microbiology updated to 3%
 - <1% other updated to 2%.

Slide 10: European protected nature sites for water and wetlands

- Underlying SSSI unit condition by habitat:
- River pie chart percentages changed:

- 10.3% favourable updated to 9.9%
- 59.1% unfavourable recovering updated to 51.3%
- 1.8% unfavourable declining updated to 2.2%
- Lakes pie chart percentages changed:
 - 61.5% favourable updated to 58.8%
 - 19.2% unfavourable recovering updated to 13%
 - 13.9% unfavourable no change updated to 19.9%
 - 5.4% unfavourable declining updated to 8.3%
- Estuaries and coasts
 - 61.2% favourable updated to 59.4%
 - 32.9% unfavourable recovering updated to 31.9%
 - 2.4% unfavourable no change updated to 2.6%
 - 3.5% unfavourable declining updated to 6.1%
- Wetlands
 - 14.8% favourable updated to 13.3%
 - 79% unfavourable recovering updated to 73.2%
 - 4% unfavourable no change updated to 10.4%
 - 2.2% unfavourable declining updated to 3.1%
- Condition change figures:
 - 245, 562ha 46% favourable updated to 240,179ha 45%
 - 22,973ha 4% unfavourable no change updated to 29,860ha 6%
 - 250,144ha 47% unfavourable recovering updated to 229,298ha 43%
 - 17,093ha 3% unfavourable declining updated to 32,229ha 6%
- Data retrieved by Natural England, updated from December 2019 to November 2022.