Water Balance Visualiser (WBV) – briefing

June 2026

Water Balance Visualiser (WBV) – visualising how changes to abstractions and discharges impact river flows

Purpose of the tool

The Water Balance Visualiser tool was designed to allow those in the water sector to explore how proposed changes to abstractions and discharges affect river flows and compliance against environmental flow indicators. It supports users in understanding impacts on the system by providing clear, interactive visualisation of flow changes.

Key Functions

- **Environment Agency (EA) data integration**: the tool runs using the Environment Agency's WRGIS (Water Resources GIS) dataset
- **user-friendly interface**: the tool enables all users to edit and create abstractions and discharges through easy to navigate maps, tables and forms
- **SACO compatibility**: the tool works alongside the Sustainable Abstraction Calculator and Optimiser tool. Users can import and apply pre-configured scenarios from the SACO tool into the Visualiser
- **scenario modelling**: users can build and compare multiple "what-if" scenarios
- **clear outputs**: generates data tables, maps, and schematics showing impacts on water bodies and performance against Environmental Flow Indicators (EFI) as a consequence of any changes
- **data transparency**: The tool's code and underlaying algorithms can be viewed and reviewed by all users. This is to support collaborative working and open, evidence-based decision-making

Intended Users

- **Environment Agency (internal)**

  National water resources planners and area teams

- **external partners**

  Regional water resource groups, water companies and associated consultants

- **wider partners (subject to data licensing)**

  For example, environmental non-governmental organisations (eNGOs) and academia supporting research and innovation

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Benefits

- **evidence-based planning**: supports early-stage optioneering by enabling rapid testing of proposed abstraction and discharge changes
- **strong visualisation**: provides catchment and graphical views of river flows at the various flow percentiles, showing performance against environmental flow targets
- **consistency and efficiency**: a national tool, that uses the same calculations as other EA water resource tools
- **open and collaborative**: a national, open-source tool, which creates a real opportunity to work from a common platform on scenarios supporting more transparent conversations between users
- **scenario comparison**: tracks changes, which are displayed in a log, and enables easy comparison of results across multiple scenarios.

Limitations

- results depend entirely on the accuracy, quality and completeness of input datasets (e.g., WRGIS, abstraction licensing data)
- users must input abstraction and discharge volume data across the flow duration for new or modified records
- does not cover all aspects of licensing or legal compliance
- does not make an assessment of the viability or desirability proposed changes
- requires technical competence to interpret results correctly. For example, understanding of flow percentiles, abstraction licences, and environmental flow indicators

Licensing and IP Position

- **IP ownership**: The EA hold the legal rights to the intellectual property rights of the tool
- **proposed licence**: We will initially publish under the Open Government Licence to allow reuse, subject to a clear disclaimer and a limitations statement in the release package
- **open-source data**: all code components are open-source compliant and able to be shared on GitHub
- **legal approval**: legal approval approach and wording align with SACO

Extended user testing

We're now entering a 6-month user testing phase and are keen to engage users who have the interest and capacity to support. This is valuable opportunity to help shape and improve the tool, particularly while dedicated support is in place to for bug fixes and enhancements.

If you're interested in getting involved, please get in contact using the details below.

Contacts

For queries please contact either:

- **tool owners (Operational Catchment Services Sustainable Abstraction team)**:

  sustainable.abstraction@environment-agency.gov.uk

  or

- **project team (Oxford to Cambridge team)**:

  Ox.Cam@environment-agency.gov.uk

Frequently Asked Questions (FAQ)

Q: What is the water balance visualiser?

A: It is a front-end visualiser of the EA water resource data. It allows you to make changes to abstraction and discharge parameters in scenarios. It then shows what these changes mean for river flows and whether they comply with environmental flow indicators.

Q: Why do we need it?

A: The tool is not needed for any statutory function; however it will support work on water resources as we try to balance the needs for the environment and society. It was developed to support those working across to water sector to quick see what impacts changes to abstractions and discharge volumes make to river flows and compliance against flow targets.

Q: Does the Water Balance Visualiser replace existing EA processes?

A: No. SACO is a planning tool to explore scenarios. It does not replace licensing, legal compliance, or other regulatory processes.

Q: Who can use the Water Balance Visualiser?

A: Internally, EA and DEFRA group staff will have access through a web-based interface hosted by the DEFRA Data Analytics and Science Hub (DASH) team. External partners such as water companies and consultants can access the code on GitHub, but will need a Qube licence and WRGIS data to run it.

Q: What data does the Water Balance Visualiser use?

A: The Water Balance Visualiser runs on the Water Resources GIS (WRGIS) dataset, abstraction licensing information, and environmental destination targets. Users may also add SACO outputs.

Q: Do I need specialist skills to use it?

A: No, running the visualiser tool does not need specialist skills. There is a video guide which talks the user through all of the functionality. However, a level of familiarity with abstract licenses, discharge permits and flow duration curves will be needed to draw out the value the tool provides.

Q: How does the Water Balance Visualiser differ from SACO?

A: SACO contains two parts, calculator and optimiser. One of its core functions is to suggests abstraction licence reductions to meet environmental destination targets, which uses the optimiser part of its functionality. The water balance visualiser only contains the calculator element of SACO. It does not suggest licence changes to the user, instead it is focused on making the interface as user friendly as possible for users to manually adjust abstractions or discharges.

Q: How do I get the tool?

A: Internal users - via the EA web-based interface from autumn 2026. This FAQ will be updated with the link once it is available.
External users - the tools code will be on GitHub by the end of summer 2026, with data requested separately through an information request. This FAQ will be updated with the link once it is available.

Q: Can I be part of the extended user testing?

A: Yes certainly. We have set feedback deadlines of 11 September and 06 November. Please provide any feedback back to the sustainable abstraction mailbox. sustainable.abstraction@environment-agency.gov.uk

Q: What further refinements may happen?

A: The extended user testing is primarily focused on finding small bugs and minor updates. If large refinements to the tool are needed, then we will have to consider them for a future project.

Q: Who developed the tool?

A: The Environment Agency's Oxford to Cambridge team created the tool to support the water resources challenges facing the region. They worked with the EA's National Appraisal and the Sustainable Abstraction team, to ensure compatibility with the visualiser tool and the sustainable abstraction calculator and optimiser.

Q: Who owns the tool?

A: The OCS Sustainable Abstraction team have taken over ownership of the tool and will be running an internal demonstration of the tool in July which will be recorded and available.

Q: What support will be available over the next few months?

A: The National Appraisal unit will provide limited email support during the user testing period in relation to the tools technical coding. The OCS Sustainable Abstraction team and Oxford to Cambridge team will jointly be coordinating feedback and responses on the tool regarding usability and general queries. The development consultant, WSP, are contracted to provide minor bug fixes until the end of November 2026, this will be coordinated through the Oxford to Cambridge team mailbox.

Glossary

ED (Environmental Destination): the EA's programme to identify the abstraction reductions needed to restore water bodies to sustainable levels under different climate and demand scenarios

EDAG (Environmental Destination Advisory Group): a stakeholder forum bringing together regulators, non-governmental organisations (NGOs), and water industry representatives to guide ED delivery
GitHub - a cloud-based platform for hosting, managing, and collaborating on software code using version control (Git)

MAG (Modelling Advisory Group): an EA and industry group focusing on modelling approaches, assumptions, and technical development

NAU (National Appraisal Unit): the EA's technical team responsible for developing, maintaining, and supporting tools such as SACO

OCS SA (Operational Catchment Services Sustainable Abstraction team): the EA team leading the coordination, governance, and internal rollout of the Water Balance Visualiser

OGL (Open Government Licence): the licence under which SACO code will be published, allowing free use and reuse subject to attribution and disclaimer conditions

Oxford to Cambridge team (OxCam team): the EA project team who led on the scoping, development and delivery of the Water Balance Visualiser

RCG (Regional Coordination Group): regional-level water resources governance forums, linking EA, water companies, and other stakeholders

Qube: specialist data license required to run the WRGIS dataset used within SACO

SACO (Sustainable Abstraction Calculator and Optimiser): the EA's new national tool for modelling and optimising water abstraction reductions

WINEP (Water Industry National Environment Programme): the list of actions water companies must deliver to meet environmental objectives, agreed with the EA and Ofwat

WRGIS (Water Resources Geographic Information System): the EA's database combining abstraction, licensing, hydrology, and environmental flow data

WRMP (Water Resources Management Plan): a statutory plan prepared by each water company setting out how it will balance supply and demand over the long term. The current round is WRMP29 (drafts due 2027, final 2029)