Water Balance Visualiser (WBV)
User Instruction Manual

Overview

- The Water Balance Visualiser (WBV) is an interactive tool designed to support water abstraction and discharge volume planning. It provides a user-friendly interface for viewing how changes to the abstractions and discharges impact the river environment. It can also be used as a way of visualising the results of the Sustainable Abstraction Calculator and Optimiser (SACO) tool, which was also developed by the Environment Agency (EA).

Key Capabilities

- upload and explore water resource datasets
- edit abstraction and discharge data
- create and compare multiple abstraction and discharge scenarios with the baseline
- compare which water bodies move into or out of deficit
- run the river-flow calculator and visually analyse outputs

Getting Started

Access the application

- Between 01 June 2026 and 30 November 2026, the tool is available to a limited number of users via a platform hosted by WSP.
  ://waterbalance.wsp.com/
- Internal DEFRA group users will soon be able to access this system, via a platform hosted through the DEFRA DASH (The Data Analytics and Science Hub) team. This guidance will be updated once it is available. Expected to be autumn 2026.
- Water Companies, regional water resource groups and consultants will be able to access the tool via a data repository on GitHub. This will require those organizations to host the tool via independent platforms.

The Environment Agency owns the legal rights to the intellectual property rights of the tool; however we have published the tool along with all code components under the Open Government Licence.

Accessing the Data

The tool requires the input dataset to be in the (Water Resources GIS) WRGIS format and to be uploaded as a single ZIP file.

- There is an example dataset available from the SACO GitHub repository here.
- To access the full Water Resources GIS data, users will be required to hold a Qube License. This is required because the flow estimation tool forms a core component of the calculation element of the water balance visualiser tool.
- Once you have confirmed that your organisation holds a Qube licence you can request the WRGIS dataset from the Environment Agency. Please contact sustainable.abstraction@environment-agency.gov.uk for further information.
- For EA users during the test period, this folder provides test data for you to use Water Balance Visualiser testing folder: [insert folder link]

What this guide is for

This guide is for people using the Water Balance Visualiser. It is deliberately practical and short. A fuller user guide may be developed in the future if needed. This guide will help users:

- access the tool
- load test data
- create an editable scenario
- make simple changes to abstractions or discharges
- calculate and view outputs
- compare a scenario with the baseline
- save useful feedback for the development team

Using the tool

Before you start

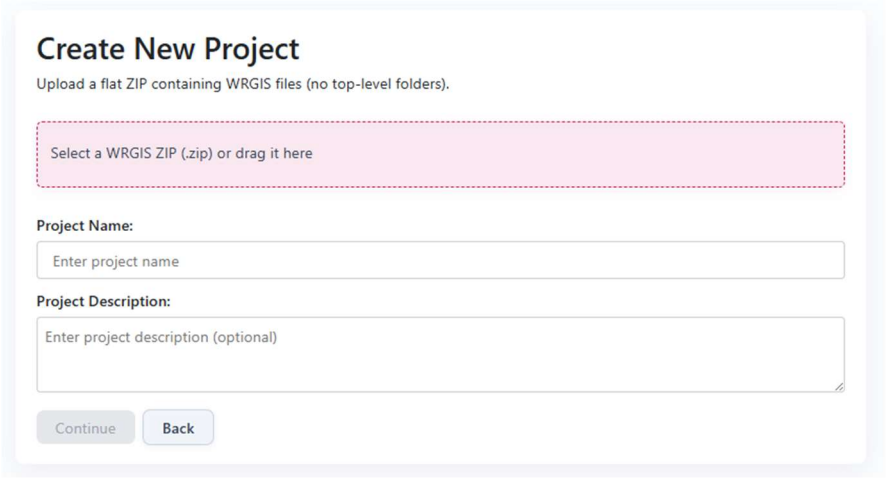
Key points to note	Why it matters
The baseline scenario cannot be edited.	Create a new scenario before trying to make changes.
The tool currently uses the Sustainable Abstraction Calculator and Optimiser (SACO) tool's calculator element only.	It does not include the SACO optimiser. If you would like to optimise scenarios as part of environmental destination work, you will need to use SACO. (i.e., to optimise is for the tool to suggest the best possible licences changes to achieve your goals.
Projects are not automatically saved online.	Save your project locally if you want to return to it later. After 2 hours of being open, the tool will provide a 5-minute warning on the screen, if 'continue' is not pressed, the tool will close and unsaved changes will be lost.
Some input and output fields are technical.	It will requires technical competence to make changes and to interpret results correctly. For example, understanding of flow percentiles, abstraction licences, and environmental flow indicators.
Outputs are generated using waterbodies as the base unit.	They will not show sub-waterbody effects.

1. Creating a new project

Click 'New Project', upload your data, enter a project name and description, and click Continue.

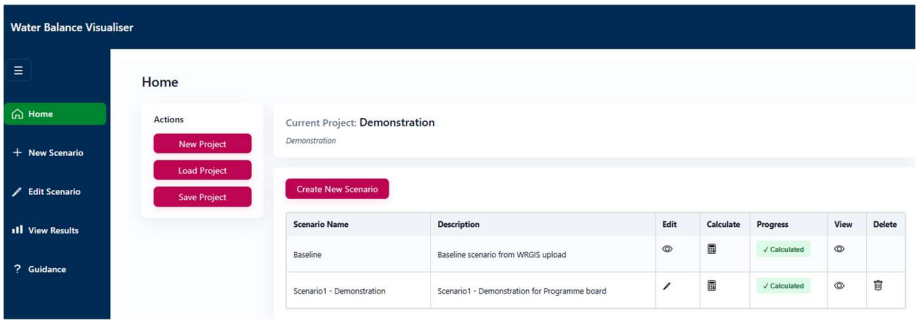
You can view and calculate the baseline, but you cannot edit or deleted it.

To make changes you must create a new scenario.



2. Homepage overview

The homepage is where you can view your list of scenarios. From here you can navigate to the other areas of the tools.

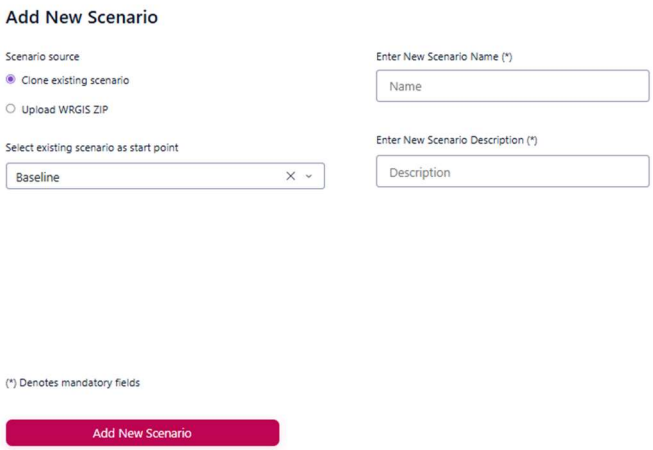


3. Adding a scenario

When adding a scenario, you can either:

- clone an existing one within your project, or
- you can upload a fresh WRGIS file.

The second option is how you import a scenario from SACO into the Water Balance Visualiser.



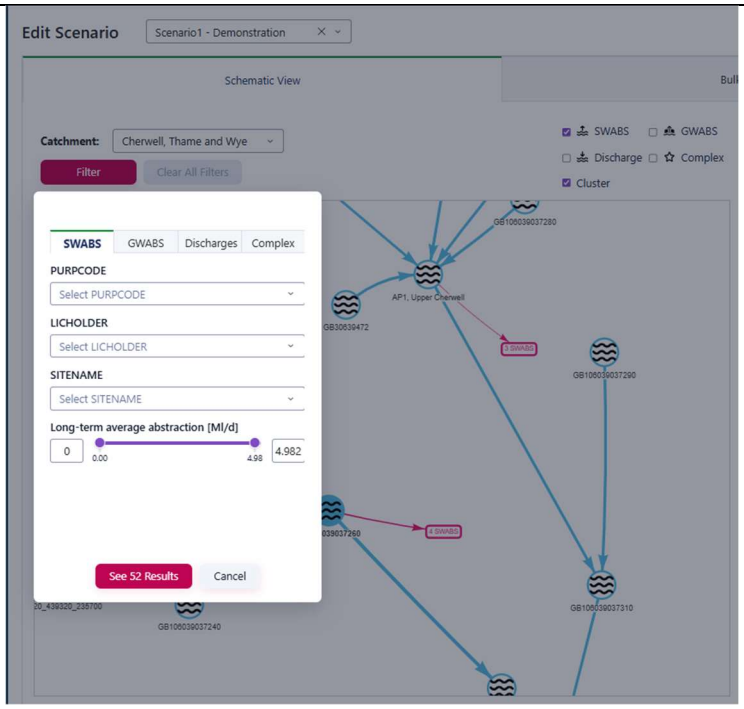
4. Viewing scenarios

View data in schematic diagrams and tables. To do this you can click on the ‘Edit’ option under each scenario in the home page.

At the top of the page, you need to select the catchment that you would like to interrogate.

By default, abstractions and discharges are clustered in the schematic. This can be switched on or off using the thumb nail at the top or open up individual clusters by clicking on them.

One of the key functionalities of this view is the ability to filter the results in both the schematic and table.



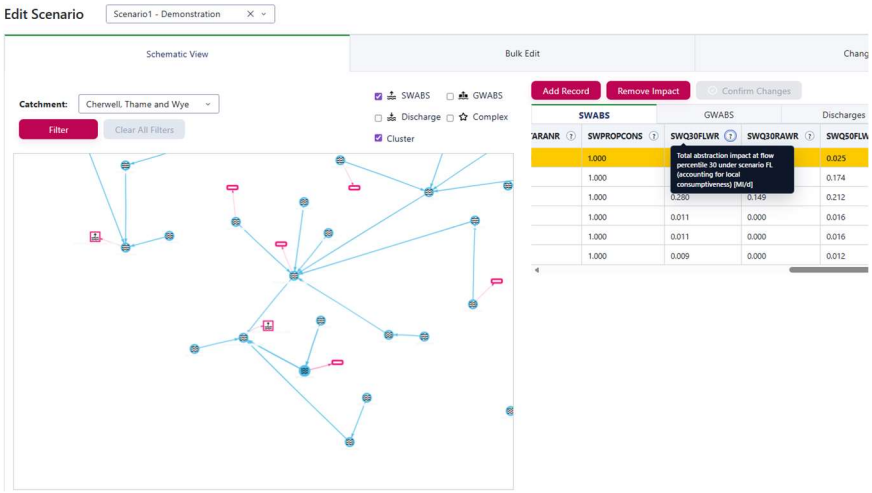
5. Editing scenario: schematic view

To modify abstractions and discharges, make changes in the table to the right of the screen.

Always click 'Confirm Changes' after editing.

To add a record, click the ‘Add Record’ button with will pop open a form. Each field has thumb nail to explain the title. Most fields are required and if they are not filled in, an error will appear when you press ‘Save’.

If you click the “Remove Impact” button, it will resets the water balance values to 0 without removing the selected row from the table, this is to ensure traceability between scenarios.



6. Editing scenario: Bulk changes

Use bulk edit for large datasets changes.

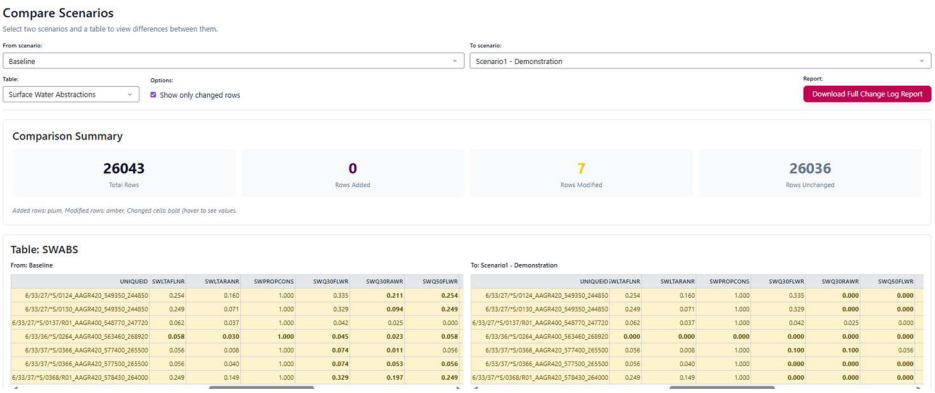
To do this you can download the .CSV file, make edits using your computer and then reupload the file using the ‘Upload CSV’ button.



7. Change log

Use the change log, to quickly see the differences between your scenarios.

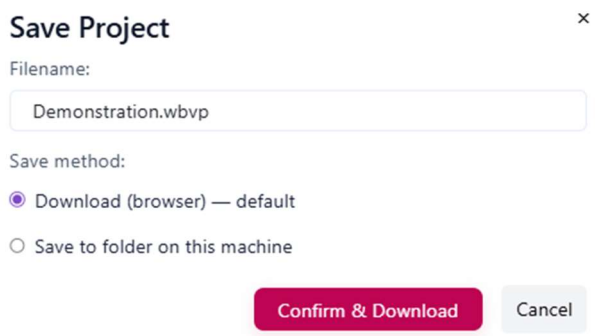
You can toggle on ‘Show only changed rows’ and you will see numbers in **bold** where they vary between the two scenarios you are comparing.



8. Saving projects

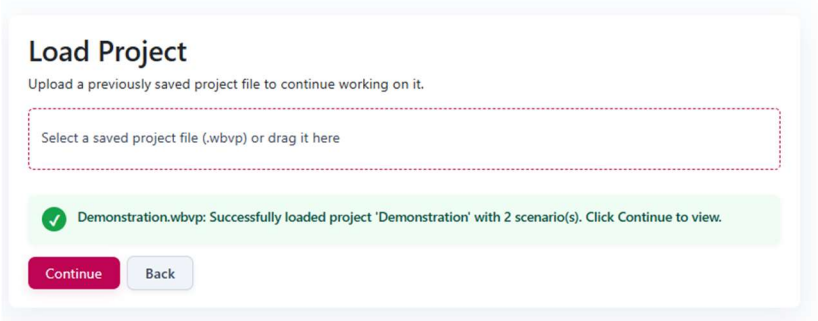
Saving your project regularly is highly recommended. Projects are not saved automatically this must be done manually. After 2 hours of being open, the tool will, provide a five minute warning on the screen, if ‘Continue’ is not pressed, the tool will close and unsaved changes will be lost.

Save files as .wbvp and reload them later using the ‘Load Project option’.



9.Loading projects

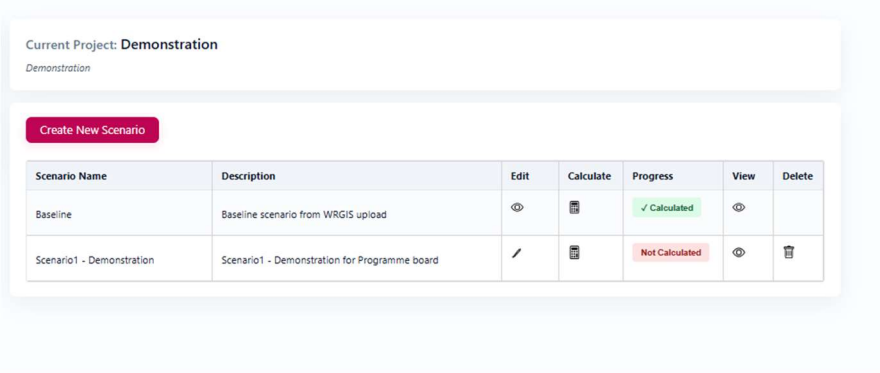
Saved project can be reloaded when you next open the tool and you want to pick up where you left off.



10. Running calculations

Click “Calculate” from the homepage to generate outputs for each scenario.

You must do this before you are able to see the results of your changes.



11. Viewing results: schematic view

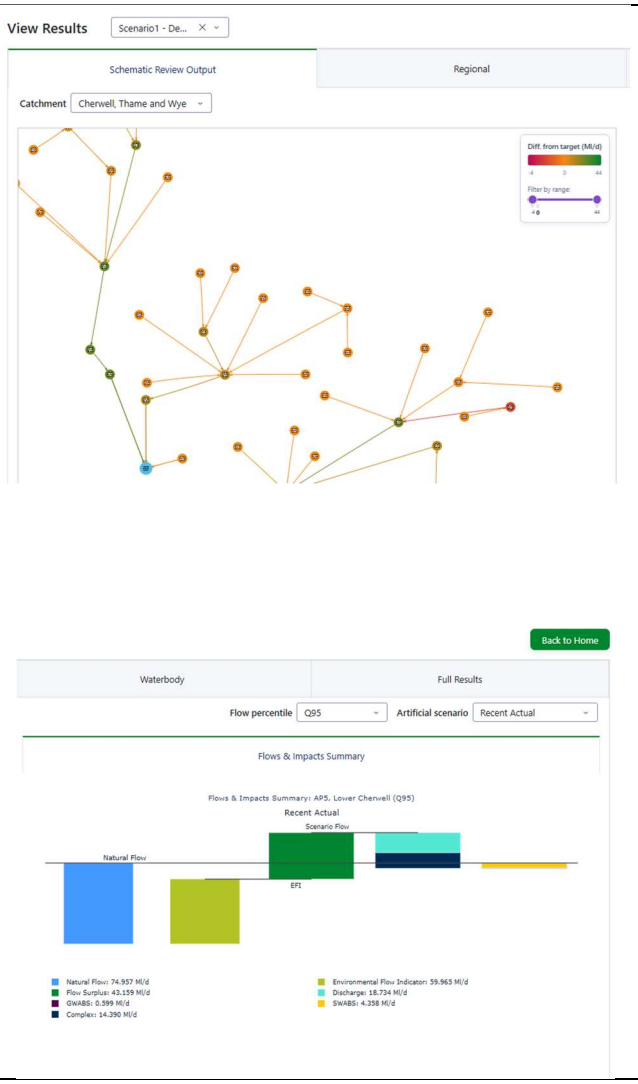
When viewing the results in the schematic view, the lines and nodes are coloured according to their surplus or deficit relative to environmental flow indicators or targets.

At the top left of the page, you can select the catchment that you want to view the results for.

At the top right of the page, you need to select the flow percentile you wish to review and decide if you want to see the results for the recent actual or fully licenced scenario.

You can filter the diagram by variance against the environmental flow targets.

If you select a waterbody on the schematic the balancing table on the right-hand side will appear.



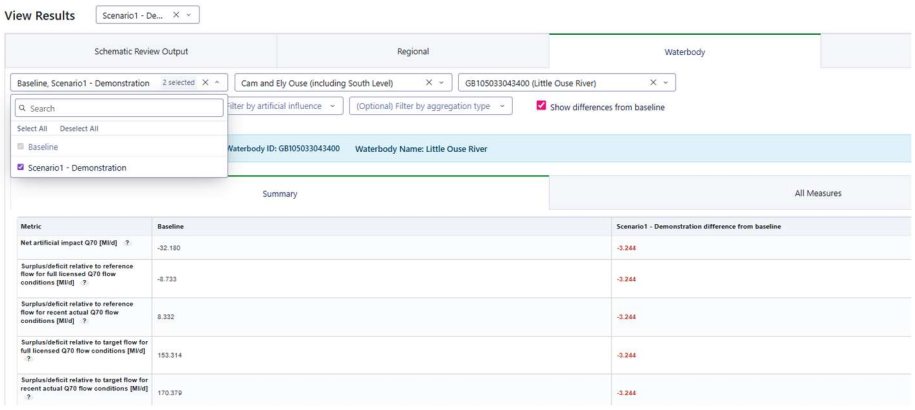
12. Viewing results: waterbody

The waterbody results view provides the most detail of the results.

At the top you can select which scenarios you would like to compare side by side.

You will also need to select the flow duration you would like to view.

By default, the table will show the change from the baseline, however this can be turned off via the thumbnail ‘Show differences from baseline’ button at the top.



13. Viewing results: regional

The regional view offers the user a more traditional waterbody map view comparison of the results. There are 2 map types shown, compliance to environmental targets and surplus/deficit

You can display the results for different region types, including catchments, Environment Agency areas, ledger areas, or river basin districts.

Each map can be opened in full screen, river lines switched on or off, and downloaded as a PDF.

