

CASE STUDY

# Data visualisation for Bristol Avon Rivers Trust (BART)



Riskaware collaborates with local non-profit, [Bristol Avon Rivers Trust \(BART\)](#), to help coordinate and manage several of its citizen science projects. BART delivers education, land and river management advice, and practical river restoration work throughout the Bristol Avon catchment.

The team first approached us to support with Bristol Avon RiverBlitz in 2020, an annual event where the public collects water samples from their local waterways. This provides BART with important data that helps with monitoring water quality, and subsequently prioritising and targeting conservation and protection efforts.

In 2022 BART launched its River Detectives initiative, where volunteers collect crucial data over time by visiting an assigned site every month. We were able to build on the capability developed for RiverBlitz to also support this new initiative.

For both projects, we created software solutions to support BART to manage volunteer operations and data collection, and enhance the data insights gained.



# The objectives

BART's primary goal in running both the RiverBlitz event and the River Detectives initiative is to raise awareness. Therefore, the team wanted a user interface that would not just support the project's operations but would also present the results in ways that would engage multiple audiences.

## Data management

- Enable the full process including project coordination, data collection, and engaging visualisation.
- Support multiple formats of geolocated data, such as measurement values, textual descriptions, multiple choice answers and photographs.
- Be compatible with a range of devices, such as computers, tablets and phones, to ensure every user is able to access the site.

Firstly, educating and inspiring the local community about river health. Secondly, providing technical detail for the BART team and their stakeholders to inform targeted action.

Based on these needs, we established the following requirements:

## Results visualisation

- Demonstrate how BART's projects serve to effectively monitor river water quality.
- Highlight trends in river quality since the scheme started.
- Provide detail about measurement data, patterns and trends to a level that would help BART inform its conservation, protection and intervention strategies.



# The Congregate platform – an interactive solution

Congregate is a versatile platform designed to help organisations manage environmental crowdsourcing projects. It allows organisers to coordinate their teams and data outputs, participants to enter geospatial data, and authorised users to easily view the results.

We used Congregate, Riskaware's all-in-one data collection and visualisation platform, to underpin the development of two customised data explorer platforms.

## How we customised it for BART

Our team configured the Congregate platform to accommodate both projects. At the core of BART's RiverBlitz and River Detectives data explorers tools is an interactive, geospatial map.



Images collected by BART and the RiverBlitz volunteers.

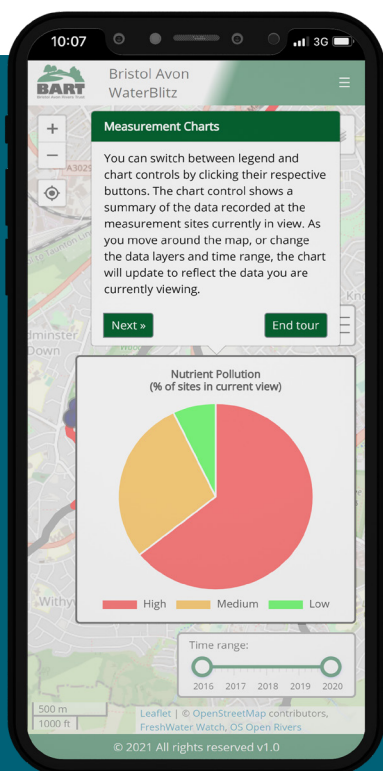
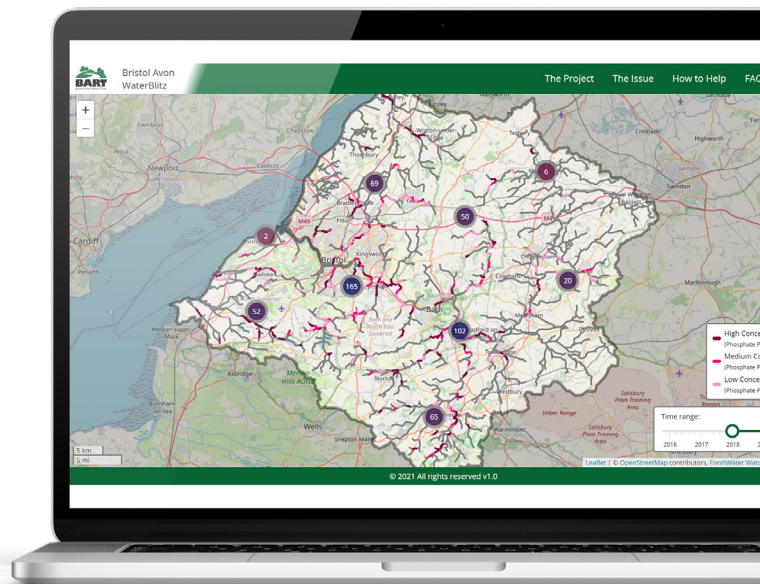
Here are the primary features:

## Operational management

Congregate supports users to manage crowdsourced projects, from volunteer coordination to data collection. BART's solutions took advantage of the following capabilities to ensure the projects ran smoothly:

- Volunteer registration and communication
- Configurable data fields that can accommodate multiple data formats, such as images or text
- The ability to review and approve data before it is uploaded live to the visualisation interface
- A web-accessible data visualisation interface

Because building public awareness was a key goal for BART, the visualisation platforms were made publicly available so anyone could engage with the results.



## Multiple displays to represent varied data

Congregate's interface supports multiple data types with clarity. BART's solutions include maps, charts, tables and photos to display the data recorded by the citizen scientists.

The maps provide a picture of river health at different viewing levels, with custom colour-coded segments indicating the nutrient concentrations and other potential pollutants across the river systems.

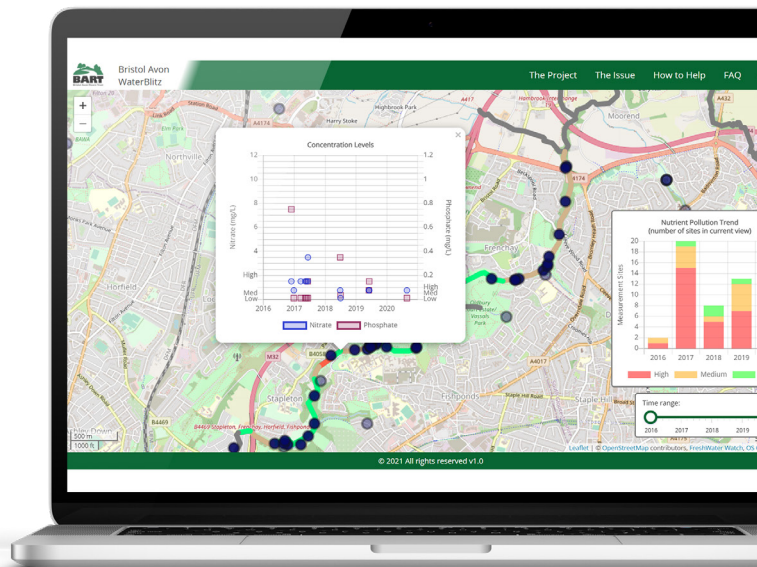
There is also a navigation header that allows users to explore more resources regarding the projects and how to get involved.

## Intuitive interface layout

Congregate is designed to offer intuitive data exploration for all potential users, from volunteers to BART’s partners. It includes geospatially organised overviews, discoverable click-through features, and simple navigation to create an easy-to-use display.

As a web-based tool, there is no need for users to download an app or install any software. The interface also seamlessly scales to different screen sizes, allowing BART’s citizen scientists to input or view data from any device for both initiatives.

For the data visualisation stage, we configured tailored interactive tours which take users through each of the tools’ main features.



Understanding how nutrient pollution in the rivers has changed over time



Viewing images of the measurement sites

## Interactive visualisation controls

Using data clustering and charts, larger datasets are aggregated and displayed on the platform’s main map display. Users can then zoom in to focus on specific areas or click to open pop-ups with more detailed data about individual testing sites. They can also filter what is displayed on the map by these indicators and time range.

Each platform has customised display features which accommodate their respective projects’ datasets, audiences and analysis needs.

# Individual project customisations

## RiverBlitz // RiverBlitz Data Explorer

**The project:** The Bristol Avon RiverBlitz is an annual citizen science event that gives a snapshot of water quality and ecological health in the rivers and streams across the catchment. Volunteers from the public can sign up annually to take part, after which they will be assigned a site and sent equipment.

### Unique platform features:

- Rivers pathways data from the Ordnance Survey was used to project river measurement sites onto their corresponding rivers and contextualise the results collected within the overall river system.
- The platform includes a registration form to collect user details and enable BART to coordinate and send equipment to its volunteer teams.
- Data goes back to when BART first began organising the events in 2016 and now contains over 1500 measurement sites.
- Locations where testing hasn't been completed are clearly indicated on the map interface so BART can identify opportunities to expand its testing sites.

[View RiverBlitz Data Explorer](#)

## River Detectives // River Detectives Explorer

**The project:** The River Detectives project is a long-term water quality monitoring initiative funded by Wessex Water, Bristol Water, Bath & Northeast Somerset Council, and the Bristol Avon Catchment Partnership. Trained volunteers for the [Bristol Avon Rivers Trust](#) and [Wiltshire Wildlife Trust](#) take river water samples from targeted sites on a monthly basis.

### Unique platform features:

- Users can open an additional full-screen view that displays the complete scope of monthly data in graphs and tables.
- River Detectives data was also integrated into a third platform, RiverHub, which pulls in multiple datasets, from sources including Wessex Water and BART, to show the larger picture of the health of our waterways.

[View River Detectives Explorer](#)

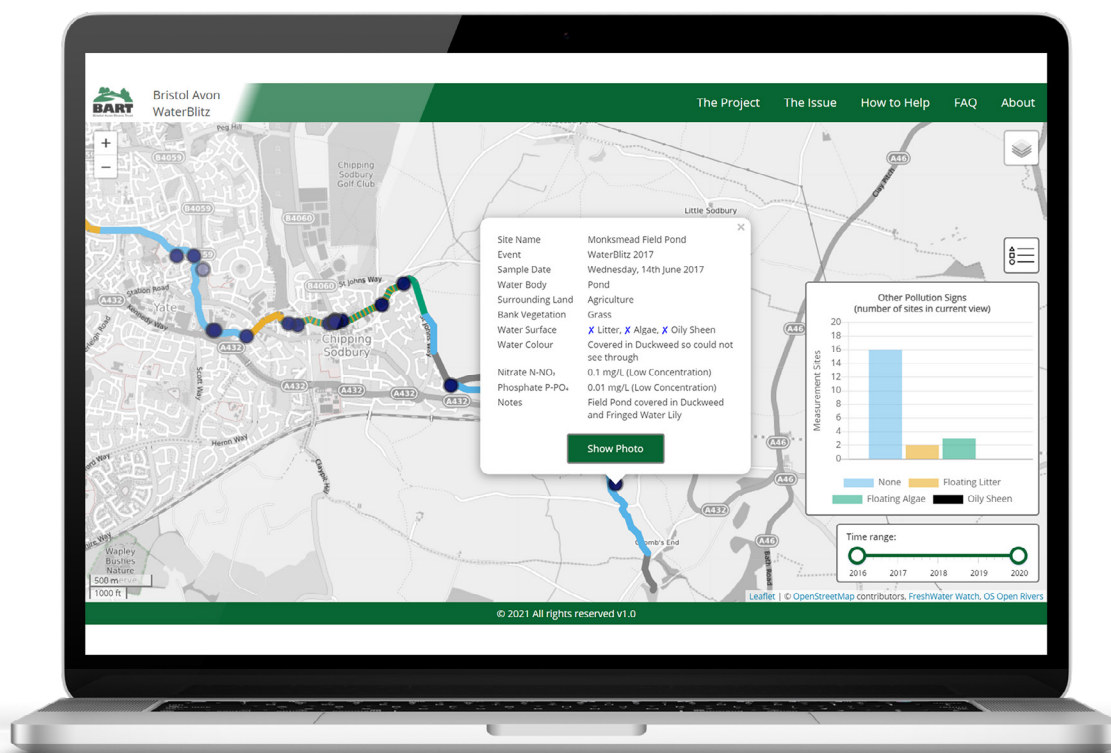
[Explore RiverHub](#)

# Continuing to work together to preserve the UK's rivers

BART continues to run RiverBlitz events, with participation increasing every year, and River Detectives continues to run monthly. As new data is added to both platforms, they become even more powerful resources for BART in its river conservation and restoration efforts.

[Get in touch](#) to learn more about our work with Bristol Avon Rivers Trust, or to discuss how we can help you.

Discover more about Congregate





Checking for recorded signs of pollution along a stretch of river

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