

iWHARFE

Improving water quality on the River Wharfe from Oughtershaw to the Ouse: a citizen science project

Ilkley Clean River Group, The Yorkshire Dales Rivers Trust, Addingham Environment Group, Otley 2030, Otley Angling Club, Boston Spa, Wetherby & Villages Community Green Group, the Environment Agency, Yorkshire Water and the Wild Trout Trust

Background

In 2018 the Ilkley Clean River Group (ICRG) was formed to draw attention to problems of untreated sewage discharge into the River Wharfe in Ilkley from the Ashlands Sewage Treatment Works. In 2019 there were 136 storm discharge events.

The group's campaign has attracted national media attention. The campaign was supported by a local citizen science study of faecal bacteria concentrations in the water and surveys of people at risk of infection playing, paddling and swimming in the river in Ilkley.

The group has submitted a bid for Designated Bathing Water Status, supported by Ilkley Town Council, Bradford Metropolitan District Council, the Environment Agency and Yorkshire Water to Defra.



A full account of the Ashlands campaign including data on faecal bacterial concentrations in the river can be found on the ICRG website: <https://sites.google.com/view/cleanwharfeilkley/home>

iWHARFE objectives

The iWHARFE project builds on the Ashlands project by extending it geographically to include **the full length of the river** from Oughtershaw in Upper Wharfedale down to Cawood at the confluence of the Lower Wharfe and the Ouse. It is a **citizen science project** involving members of local communities along the valley working together with the Environment Agency and with Yorkshire Water.

We will collect water samples to be analysed by specialist laboratories for **faecal indicator organisms** (*E. coli* and intestinal enterococci) and for **nutrient chemistry** (nitrate and phosphate). Whereas faecal indicator data will allow us to assess water quality with respect to human health, nutrient chemistry data will allow us to assess water quality with respect to ecological health.

The results of the project will provide a **snapshot of water quality** conditions on a single day. It will raise awareness about the health of the entire river and it will help us understand better the relative roles of agricultural land management and wastewater treatment in determining whether the river is **fit to swim in and/or fit for wildlife** at different points along the river.

By working closely with the EA, YW and other organisations we hope, in the longer term, **to restore the river to a high water quality status** both for people and for wildlife.

We also intend to demonstrate how citizens, charities and statutory authorities can work together with the water industry and with landowners not only to identify and control pollution sources but also to show **how individuals and communities within river catchments can play their part** in preventing pollution and protecting river health.

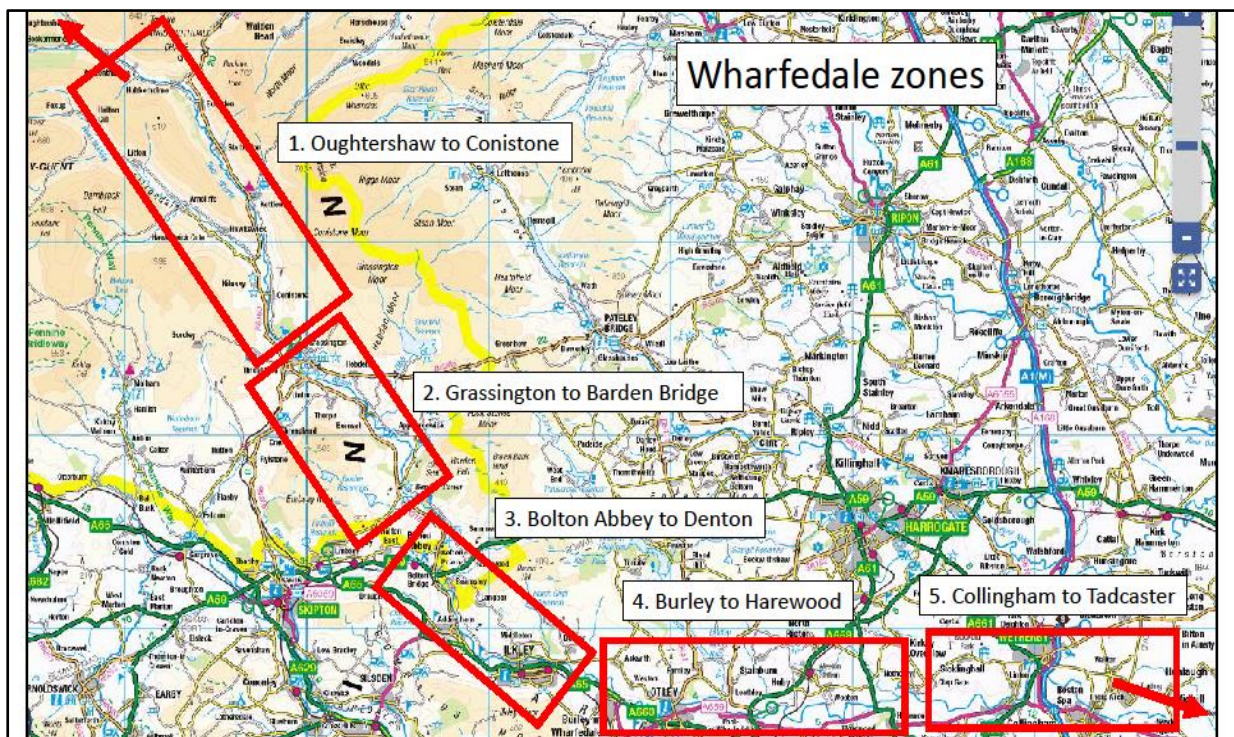
Sampling sites

On the day in question (Monday, August 24th) we will take water samples at approximately 60 representative sites along the river. Sites selected include crossing points (mainly bridges) that occur at regular intervals along the river as well as sites used for recreation.

We have divided the river into five zones (see map) each with its own team of samplers. This will allow water samples to be taken from the entire length of the river at approximately **the same time on the same day**. Assuming no significant overnight changes in weather conditions, the analytical results from site to site will then be directly comparable and not distorted by changes in river flow.

Each team will have the responsibility for collecting samples from approximately 12 sites in their zone.

The samples will be taken to a collection point in Boston Spa and then delivered to ALS Ltd in Wakefield where they will be registered before being transported overnight to ALS Coventry for microbiological analysis. All samples will be tested for *E.coli* but samples from the recreational sites will be tested for both *E. coli* and intestinal Enterococci, the bacteria used in defining the quality of bathing water under the EU Bathing Waters Directive. Samples collected separately for nutrient analysis will be analysed by the Centre for Ecology and Hydrology (CEH) at Lancaster University.



Visitor surveys

To assess whether and where exposure to poor water quality might pose a risk to human health we will also carry out a number of visitor surveys at the recreational sites. The sites selected are shown here:

https://drive.google.com/open?id=130Aw473U4xbKUgSN96_mq9nxHF6tjWA7

We are currently recruiting volunteers from the different local communities along the valley to conduct the surveys. Volunteers will be asked to count the number of individuals (children and adults) using the river for recreation on a number of selected days and record their activities (swimming, paddling, canoeing etc).

Partners

The iWHARFE project has the support and involvement of a number of organisations, all of whom will provide funding in kind, as follows:

Yorkshire Dales Rivers Trust: YDRT will co-manage the project and will align iWHARFE with their EU Water Co-Governance (WaterCog) project on the Wharfe which benefits from co-funding from the European Regional Development Fund. They will host the project website and assign a staff member to each of the five sample teams to trial nutrient chemistry citizen science test kits (Leads: Marie Taylor and Charlotte Simons).

Ilkley Clean River Group: ICRG is responsible with YDRT for project design, co-ordination, budgeting and publicity. It will be the budget holder. It will also be responsible for co-ordinating the visitor surveys and for sample collection and visitor surveys in Zone 2 (Leads: Becky Malby, Kathleen Roberts and Rick Battarbee).

Addingham Environment Group: AEG is building the site and map database providing the high resolution interactive maps needed to pinpoint sampling locations in the field. It will also be responsible with ICRG for sample collection and visitor surveys in Zone 1 and 3 (Leads: Malcolm Secrett, Rick Battarbee and Steve Cheetham)

Boston Spa, Wetherby & Villages Community Green Group: The Boston Spa group is responsible for sample collection and visitor surveys in Zone 5 (Leads: Mike Gadd and Mark Barrow).

Otley 2030 and Otley Angling Club: Otley Angling Club is responsible for sample collection and visitor surveys in Zone 4 (Lead: Karl Ridley)

The Environment Agency: The EA will provide equipment, help with volunteer training and assign a staff member to each of the five sample teams. They will use multi-meters to carry out field measurements of pH, conductivity, water temperature, ammonia and turbidity (Leads: Martin Christmas and Josh Tinsley)

Yorkshire Water: YW has offered to provide access to their facilities should this be necessary, notwithstanding operational restrictions. They have also agreed to provide information about the STWs along the river and may help with sampling (Lead: Graham Weston)

Wild Trout Trust: WTT has proposed conducting a fish population survey along the length of the river working with local angling clubs (Lead: Jon Grey)

Add-ons

Whilst the focus of iWHARFE is on faecal bacteria and nutrient chemistry, we are also exploring the possibility of following up the water quality sampling scheduled for August 24th with a **biological survey of diatom, invertebrate and fish populations** from the same sample sites. The Wild Trout Trust has expressed an interest in organizing a fish survey involving angling clubs along the river.

Rick Battarbee

July 8th 2020