

iNidd Report of 2023 Samplings of the Nidd and its Tributaries

The Nidd Action Group (NAG) aims to make the river **safe for humans** and to ensure a **diverse ecology** for all wildlife along the river.

A major concern is the **pollution of the river Nidd by sewage**, with annually published DEFRA data showing the huge extent to which **Storm Water Overflows** enter the Nidd currently. We wish to **improve the water quality categorisation** of the Nidd, and **the standards required for all rivers**

Safe for Humans:

NAG aimed during 2023 to get **The Lido at Knaresborough** designated as a safe bathing water to benefit swimmers and other river users and to gain additional resources to be applied locally to establish and ensure safe bathing.

The concentration for the 'sufficient' category for Bathing Water is less than 900 colony forming units (c.f.u.s) of **E. coli bacteria** per 100mls. Higher concentrations are classified POOR, and this can be due to agricultural or waste water processes.

An Improved Diverse Ecology

NAG aims to raise the ecological standard of the River Nidd's Upper and Middle & Lower Catchments. The Nidd is currently classified mostly as **Moderate** under the Water Framework Directive (WFD) assessments.

7 of the 22 WFD waterbody catchments are categorized as **worse than Moderate** (6 Poor and 1 Bad) – mostly becks feeding into the Nidd. The National aim for the WFD is for all rivers to achieve 'Good'.

The main focus of sampling was on physico-chemical elements including Nutrients (phosphates and nitrates), Total Organic Carbon (TOC), Suspended Solids, Electrical Conductivity (EC), pH levels, and metals including Zinc, Cadmium and Manganese, Mercury and Copper.

Many of these elements can be beneficial in river water at low concentrations, but at higher levels can cause ecological changes due to oxygen and light depletion, affecting aquatic organisms and plant photosynthesis, and reducing biodiversity. Some of these indicators have critical values above which the ecology of the river is at risk. The NAG sampling included E. coli concentrations, as it may lead to the identification of pollution sources that may have health or ecological implications in other parts of the river.

The NAG Surveys

Ten teams of citizen scientists took 'snapshot' water samples on August 3rd and October 17th at 45 sampling locations along the full length of the river Nidd and its tributaries to help us **understand the chemical and biological profile of the Nidd**, and to gauge **the location of pollution sources**.

The Ilkley Clean River Group (ICRG) protocol was used [Protocol Citizen-Science-guide-to-water-testing-for-faecal-bacteria-1.pdf \(ilkleycleanriver.uk\)](#) and 30 citizen scientists were trained according to that protocol.

The August 3rd sampling day had a preceding day of rain, which is known to affect the concentrations obtained. October 17th had four days of preceding dry weather.

Laboratory analyses of the samples were carried out by Simplex Ltd and by JHL



Results:

E.coli

- **E. coli concentrations** found were consistently **worse than the 'sufficient' standard** of less than 900 colony forming units or bathing water, especially in the middle and lower catchment. (Figures 1 and 2).
- Higher E. coli concentrations were found after rain.
 - **In August**, when it had rained the previous day, ALL 28 samples from the Middle and Lower Catchment failed sufficient (i.e. were **POOR**), compared with 11/17 in the Upper Catchment (Figure 1)
 - **In October**, after a period of 4 days of no prior rain, 24/28 samples from the Middle and Lower Catchment were POOR compared with 3/17 in the Upper Catchment
- In the Middle and Lower Catchment, **median E. coli concentrations** were 18,550 (Wet) and 2,050 (Dry) In the Upper Catchment corresponding figures were 2,800 and 40).
 - The locations of very high concentrations were similar in both surveys, peaking downstream of Killinghall STW, Nidd viaduct below Oak Beck (Harrogate North STW), and below Harrogate South and Hunsingore STWs.
 - Concentrations were high below Knaresborough STW *in the Dry* and below Kirk Hammerton STW *in the Wet*.
- *The separate sampling survey by The University of Leeds of locations above and below The Lido at Knaresborough during the early Bathing Season of 2023 showed overwhelmingly POOR bathing water results*
- Only 1 of the 6 samples from becks in the upper catchment was worse than sufficient, in August, but in the middle and lower catchment all 10 exceeded sufficient in August, and 7 of the 10 in October.

Phosphates

Using an EA local critical level of phosphate of 0.17 for **EQS Moderate** levels of phosphates,

- In the Middle and Lower catchment, **a quarter** of samples in the main river and **all** the samples in the becks failed Moderate,
 - in the upper catchment only Duffers (below Darley beck) was higher (0.21), while
 - In the middle and lower catchment, 8 of the 32 locations in the main river failed;
 - 4 in Knaresborough (up to 0.33) (including one below Knaresborough STW), and
 - 4 at the bottom of the river (0.3 to 0.42) where several STWs are upstream of the sampling points (Figure 3). (The sampling point below Killinghall STW was also borderline at 0.16)
 - **The 13 samples taken from the Nidd's becks** showed above moderate phosphate concentrations in **all 10** sampling locations in the Middle and Lower Catchment. Values of between 0.18 and 0.47 were found in Ripley, Oak, Bilton and Crimble becks, with the highest in Oak and Hookstone becks.

General Conclusions:

- In the Middle and Lower Nidd Catchment, at some locations in the river Nidd and in its becks, we found:
 - High levels of E. coli (**above sufficient for safe bathing**), particularly when there had been rain prior to sampling.
 - **Above EQS moderate** levels of phosphate concentrations in the Nidd and its becks.
- These high concentrations seem to be associated with the locations of Sewage Treatment Works (Killinghall, Harrogate North (via Oak Beck), Knaresborough, Harrogate South (via Crimple Beck) and several STWs in the final stretch of the Nidd before it meets the Ouse.
- **Concentrations in becks may be influenced by** the lack of dilution in these small streams, but the pollution contributes to the 'moderate' water quality of the Nidd further downstream. The condition of these becks also produces a lost opportunity for the enjoyment and improved mental health of the large populations that these becks pass through.
- According to the literature the **pollution we found may have come from a variety of point and diffuse sources** – not just from waste water treatment but potentially from agricultural practices, urban run-off etc. It is necessary to explain and understand which sources affect which locations, so that any necessary mitigations can be put in place.
- NAG citizen scientists have collected data on other indicators of river health, including concentrations of metals. These will be analysed and presented in due course.
- **A few locations have been highlighted** for more intense consideration in the future. We anticipate follow up investigations, focused on specific agreed locations of interest, of these and other polluting elements such as 'forever chemicals' and microplastics in conjunction with local and national experts and the Environment Agency.

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David Clayden. Nidd Action Group Chairperson
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