

Pix Piece
#07
May 2024

ResilienTogether is a Defra-funded project that aims to build a Smart Catchment to enhance flood resilience. Our Pix Pieces capture and share what we have learned about the Pix Brook catchment and its community.

Pix Brook Water Quality: Total Petroleum Hydrocarbons

Sampling for Total Petroleum Hydrocarbons in the Pix - where do they come from and why they are important?



Figure 1 & 2. Water Quality Sampling in the Pix Brook

ResilienTogether

ResilienTogether is creating a Smart Catchment, using innovative technologies and techniques to reduce flood risk, enhance the water environment and improve community resilience in the Pix Brook catchment.

ResilienTogether undertook water quality sampling for a nine month period at eight sites along the Pix Brook. Pix Piece #01 provides information on how we undertook our water quality sampling. This provided a baseline water quality for a range of determinants across a long stretch of the watercourse, which allowed us to build up a picture of where different determinants may be an issue and why. This Pix Piece focuses on the Total Petroleum Hydrocarbons (TPH), where they have been detected and where they come from.

What is TPH?

Total petroleum hydrocarbons (TPH) is a term used to describe a large family of chemical compounds that originally come from crude oil and are made up of hydrogen and carbon. Crude oil is used to make petroleum products for fuelling cars such as petrol and diesel.

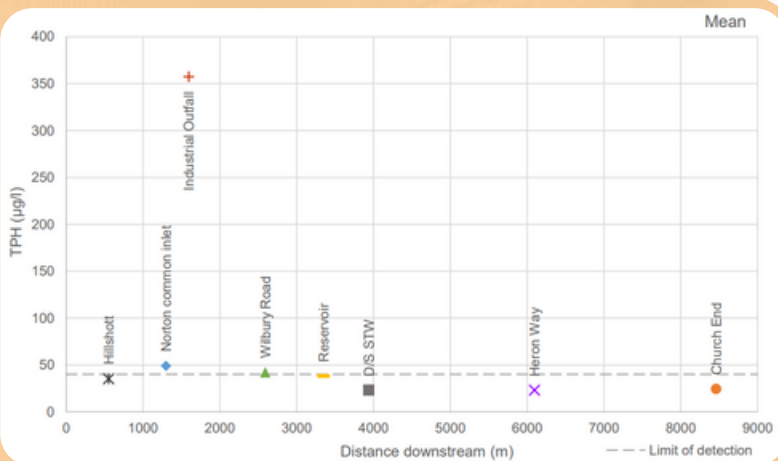
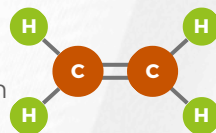


Figure 4. Average TPH levels at each sampling location in the Pix Brook

TPH and rivers

Rainwater flows across and off roads, carrying pollutants from vehicles into drains and then ultimately into watercourses as shown in Figure 3. This is called road runoff and is the primary way that TPH enters the Pix Brook. Road runoff is a bigger issue during rainfall events after prolonged dry periods, when hydrocarbons and other chemicals have built up on roads over time, and are washed into watercourses all at once. TPH is toxic and cannot be broken down by micro-organisms in the water environment and so can build up in the sediment negatively affecting aquatic life.

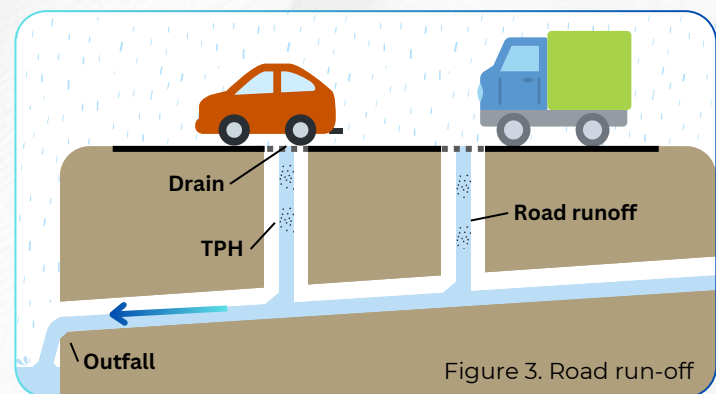


Figure 3. Road run-off

TPH in the Pix Brook

Figure 4 shows that, for the most part, the amount of TPH in the Pix Brook is too low to be detected. However, at the outfall from the industrial estate in Letchworth, TPH was frequently detected with a high concentration. This shows that road runoff from Letchworth or potentially spilled oil is being carried into the Pix Brook at this point. Luckily, at present this isn't increasing the concentration of TPH downstream and isn't causing any issues.

Sustainable drainage systems (SuDS) such as swales and retention ponds can help to reduce TPH in rivers by collecting and filtering urban and road run off, preventing pollutants from entering our watercourses.