Why all is not well with the River Cam

By Stephen Tomkins, Cam Valley Forum

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Stephen explained some of the history of Cambridge water, which has been sourced from the Chalk aquifer since 1609. Concerns of unsustainable demands, pollution and subsequent damage to the natural environment have been voiced since the 1960s.

The chalk aquifer, which supplies Cambridge water, is the source of the Rhee, Upper Cam and Granta chalk streams. Chalk streams are unique due to the water being exceptionally clear, calcium rich and at a constant temperature of 10°C, which supports a wide array of flora and fauna. This special water is created through the process of rainfall permeating the ground down to the chalk layer of rock, and then percolating slowly through the chalk to the aquifer. England is home to 85% of Europe’s chalk streams, many of which are in Cambridgeshire. As we are abstracting so much water from the aquifer to supply homes and industry, less and less water is left to flow to the streams and rivers.

Cambridge is one of the driest places in Britain and due to the demands we place on our water supplies we have been classified as a ‘water stressed region’. Stephen explained how the chalk aquifer is generally only refilled from winter rainfall, as summer rain is used by plant life or lost through evaporation. Winter rainfall varies from year to year but has generally maintained a steady pattern for the past 120 years. The flow of the River Cam is dependent on the rainfall of the previous winter. However, wetting up the dried out soil has to happen first, so if there is a dry spring, recharge of the ground water may fail. Groundwater in the chalk should provide a natural buffer against drier winters, enabling chalk streams to flow all year and every year. However, over-abstraction for human use has been diminishing the resource.

In times of summer drought the rivers have been augmented since the 1990s by the ‘Ground Water Support Scheme’, where water is pumped up through boreholes and then fed into the chalk streams. Despite this system the River Granta still ran dry in September 2019. Augmentation has been masking the real problem of over-abstraction, - ‘robbing Peter to pay Paul’.

As flow in the rivers falls, due to abstraction, pollutants added to the water are less diluted, making pollution worse. Pollutants include insufficiently treated sewage and septic tank leakage. Sections of the Cam have been designated as having poor water quality for this reason. Twenty-three out of sixty six water plant species in the area have already been lost due to pollution.

Currently half the water that would naturally flow into the rivers is on average abstracted from the aquifer for human use. The chalk streams are dying. With Climate Change there are likely to be hotter summers ahead, more water will be used and it will take longer for winter rain to recharge the aquifer. In times of drought the only water flowing into the rivers will be water recycled from sewage treatment works. The new Local Plan states that by 2041 there will be a minimum of 9,000 new homes built in the area, which will increase the demands on our water supply.

A specialist report by Stantec 2020(link [here](https://www.greatercambridgeplanning.org/media/1391/gclp-strategic-spatial-options-assessment-integrated-water-management-study-nov2020.pdf) or below) on water supplies commissioned for the Local Plan states:

*“For water supply, over-abstraction of the Chalk aquifer is having a detrimental impact on environmental conditions, particularly during dry years that may become more frequent due to the impacts of climate change. None of the growth scenarios considered here offer the opportunity to mitigate these existing detrimental impacts. Even without any growth, significant environmental improvements are unlikely to be achievable until major new water supply infrastructure is operational, which is unlikely to occur before the mid-2030s. Therefore, this analysis has focussed on a “no additional detriment” neutral position. To prevent any increase in abstraction and its associated detrimental environmental impacts, mitigation measures will be necessary. All stakeholders agree this should include ambitious targets for water efficiency in new development.”*

The Cambridge area Chalk, that feeds the Cam, is abstracted by Anglian Water, Cambridge Water and Affinity Water. Cambridge Water alone (who supply locally) are licensed to abstract over 30,000 megalitres per annum from the chalk aquifer- equivalent to 33 Olympic Swimming pools of water per day. Currently they are using ‘only’ 22 Olympic swimming pools of water per day. This means they are operating well within their legal limits, which have not been altered since the 1960s. This demonstrates that the licensing system is not logical. To meet environmental flow targets and restore health to the rivers it has been calculated that abstraction should be reduced by 60-70%.

Our existing demands on our water supplies are unsustainable. We cannot facilitate increased demand.

How can we solve this Groundwater Crisis?

* Substantial reductions in Ground water abstraction
* Fixing the leaks - At present there are 23% leakage from abstraction to supply delivery over the entire supply area. The remedy is long, hard and expensive.
* Metering of all water use – metering is effective in reducing demand but many people don’t want one. Should they be compulsory?
* Managing demand better – should we have progressive pricing?
* Investment in alternative sources – e.g. purchasing water from other networks, installing a new reservoir downstream in the Fens?
* Investment in water re-use and recharge
* Investment in rainwater harvesting and grey water recycling
* Change building regulations to reduce water consumption
* Water efficiency labelling of appliances
* Mandatory annual hose pipe bans – Cambridge Council to have more powers in times of drought like in Cape Town?
* Smart metering to help customers understand their consumption and detect leaks.

What can **WE** all do to save water and save the Cam?

* Don’t flush every time you pee “If its yellow, let it mellow, if its brown flush it down”
* Reduce quantity of water in WC cisterns
* Fit aerators to taps
* Have brief showers instead of baths
* Don’t run the tap when brushing teeth
* Use a bowl when washing up and only use the dishwasher and washing machine when full
* Install water butts with drain downpipe connectors
* Wash the car with a bucket and sponge rather than a hose
* Have a free smart meter installed
* Act promptly to repair or replace and leaky appliances, dripping taps or overflowing cisterns

Being Future Positive

* “We are doomed if we lack Earth Optimism”
* Cambridge could have better water quality and the best Chalk streams in East Anglia – if we lived more ecologically
* We have a great River heritage to value and protect
* We have keen volunteers who will work for these ends
* We have a relatively wealthy public who might pay more for their natural environment and its well- being
* We have wonderful wildlife which will bounce back if we give it a chance

Useful links:

<https://camvalleyforum.uk>

<https://www.cambridge-water.co.uk/household/saving-water/why-should-i-save-water>

<https://www.greatercambridgeplanning.org/media/1391/gclp-strategic-spatial-options-assessment-integrated-water-management-study-nov2020.pdf>

<https://www.ofwat.gov.uk/households/conservingwater/watersavingtips/>

<https://friendsoftheearth.uk/sustainable-living/13-best-ways-save-water>