

# Cam Valley Forum Briefing Sheet.

The National Chalk Streams Recovery programme listed three actions that needed addressing :-

1. Reduction of abstraction from the Chalk aquifer.
2. Improvement of Water Quality in our rivers.
3. River channel remodelling to encourage better flows.



This briefing note addresses 1. in depth.

2. is addressed in another paper.

3. is addressed by the Local GCP Chalk Streams Recovery programme already underway in the catchment.

All three need to be implemented together.

**The water supply problems we face are principally that :**

- Cambridge Chalk streams depend for their enduring resilience and survival on the Chalk aquifer. This is now a very limited and over exploited resource. The Chalk streams in the UK are highly valued globally for their unique biodiversity.
- The local public water supply is exclusively (96%) drawn from this same Chalk aquifer. This is 60% of all the abstraction. Industry is also wasteful.
- Enough rain water falls on our total catchment area for human supply but it must no longer be taken from the Chalk. There are other possible sources of supply.

**What are the science-based realities that may help you to both understand and to better manage this ecological water resource supply problem?**

- Cambridge is at the heart of the lowest rainfall area of Britain (with only 560mm rain per annum).
- Historically, the rainfall has always had high variance - huge ups and downs. There is in reality no long term change in either the mean annual rainfall (we have >100 years of records) or any great change in seasonal rainfall. We have always had both wet years and droughts.
- Any problem we have now with supply and environmental well-being is not on its own just 'climate change'.
- There is certainly some element of climate change influencing an increasing unpredictability of the rainfall.
- Meteorologists are agreed that climate change will bring hotter summers. Summer (the plant growing season) was typically April to September. Climate change (global warming) means earlier springs and longer growing seasons are to be expected (now March to October). This lengthens the summer and reduces winter.
- Meteorologists have predicted 'wetter winters' but that has so far not operated here with any predictability.
- All through the 'summer', for much of the rain that falls, green plants take it up fully and lose it back into the atmosphere by evapotranspiration. So river flow here is only 10-15% of total catchment rainfall. Well under <10% of the total catchment rainfall ever gets back to the sea.

- Hot dry summers involve greater evapotranspiration by plants, drying soils out, so that soil moisture deficits are raised - the more so in the hotter drier summers.
- Soil moisture deficits in our Chalk catchment are currently (August 2022) unprecedented and off the normal measures scale.
- For an aquifer to replenish the soil must first have its moisture deficit repaid. That deficit should normally be made up by autumn rain (October - December).
- Dry springs will necessarily ensure a failure in full aquifer recharge. These are arguably now more common.
- If the soil is in good condition, then more rainfall will be held without running off into rivers.
- Modern farming methods (with heavy plant machinery) have caused much soil compaction and poorer water percolation.
- For many decades farming has raised the use of agrochemical fertilisers over traditional soil/crop fertilisation methods. Abandonment of many traditional (pro-soil carbon) soil management practices, e.g. fallow, animal and green manuring, cover crops, etc. This has lowered soil carbon.
- Raised soil carbon significantly increases a soil's water holding capacity and water percolation into the aquifer.
- By over abstraction and soil change, our aquifer has lost its former resilient water stores. At present the aquifer is not adequately recharged in about 40% of winters.
- Much winter rainfall (and even occasionally summer rainfall in wet summers) is lost to the rivers as runoff.
- Water is a 'Commons'. It does not belong to us alone as a resource. Its management needs to reflect that reality. It is not 'owned' by any one agency.
- There has never been enough recognition of the unsustainability of our present water catchment supply operations nor the need for greater environmental resilience. Presently the precarious Cam valley Chalk stream environment loses 100 megalitres of its traditional flow every day to public water supply.

**What are the actions that have been taken by the EA and water companies to date?**

- Augmentation of streams was introduced in the 1980s. This has saved Chalk streams but diminished the total aquifer's resilience in drier times. It is a false assurance of well-being.
- Reducing Cambridge Water Company leakage is a priority for them but it is still a significant problem as most losses do not return to their Chalk source.
- Affinity Water has now managed to cut some its Chalk abstractions by finding water transfers.
- Metering water supply users helps (80% is achieved), but is still not compulsory.

**What are the actions that need trying now?**

- A 60-70% cut in abstraction, to achieve 'normal flows', has been requested by the Environment Agency. (But it cannot be mandated as Cambridge Water have a licence and a contract to supply and presently have no large alternative sources).
- Water transfers might be purchased through other water companies like Anglian, but Anglian and Affinity also both take from the same Chalk sources.
- Raising soil carbon will help rain-water retention and percolation into the chalk but this requires wider adoption and takes decades of improved practice to work.
- Building down stream reservoirs is clearly one way ahead. This was proposed by Cam Valley Forum, in 2020, and is now planned by Water Resources East. This will be accessible only from 2035-37 at earliest. Can this be accelerated?

## Some suggested actions that better leadership could take

<b>Grouping</b>	<b>Short term <i>Operational</i></b>	<b>Medium Term <i>Tactical</i></b>	<b>Long Term <i>Strategic</i></b>
<b>Water Resources East</b>	Work more fully together with all the local water companies . (CWC is a very small local company but not doing nearly enough fast enough to change their present operations)	Major down stream Reservoir building. One will not be enough  Trans regional water transfer.	Think much more ecologically about environment and Natural Capital.  Desalination with spare nuclear and wind energy.
<b>Water Companies</b>  (Affinity Water, Cambridge Water, Anglian Water).	Fix the leaks. Seek trans regional water transfer.  Incentivise ‘water saving’ messaging.  Move to compulsory metering and smart metering. Use public feedback. Embrace TUBS as ‘responsible’, and not evade them as ‘a business failure’!	Greatly increase investment in leakage reduction.  Encourage on farm water storage to reduce farm pressure on abstraction from the aquifer.  Integrate their water saving message with farmers also upping carbon in agricultural soils	More of the tens of millions of pounds paid to investors should be put into future structural and ecological resilience. e.g. Invest in Reservoirs and in aquifer recharge.  Invest very much more in your manifest environmental and social responsibilities
<b>OfWAT , the industry regulator.</b>	Seek graduated pricing to protect poorer users.  Up the price of water for irresponsible water users.	Act on OfWAT’s new environmental responsibilities.	Introduce graduated pricing to drive down usage.
<b>DeFRA, Landowners, farmers, CLA and NFU</b>	Farming to raise the organic soil content (this will help both water retention and carbon storage:- a ‘win-win’ situation.	Encourage on farm water storage .	Think ecologically about soil health. Farming change is needed to help aquifers.
<b>Parliamentary members and HMG</b>	Keep up the pro-Chalk stream lobbying. Don’t let them die!  Decide on what priorities water users want e.g. what priority should go to farming and food supply in each regional area.  Strengthen all the EA and Natural England monitoring and policing powers.	Accelerate water transfers and reservoir planning.  Persuade the water companies that they need to press for and lead on water saving.  Change the building regulations for water stressed areas.	Disallow Chalk aquifer supply for all new developments.  Consider partitioning domestic water supply into potable and reusable ‘grey’ water.  Legislate for local authority regulation of water use (as in other water stressed areas of the world)
<b>County and District Councillors</b>	Keep up water saving messaging.  Employ more ecologists to monitor environment and promote green thinking. Many benefits will arise from this.	Saving water is a responsible and green thing to do  Reduce run-off rates in sub-urbia. Promote SUDS and green space	Refuse to accept any further chalk aquifer use to supply new developments.  Urge for more regulatory control of water use in their own locality
<b>Parish Councillors</b>	Urge all to save water	Identify water wasters	Get each Parish to think ecologically
<b>The Public</b>	‘Value every drop’	Install water saving systems	Think Ecologically!