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## **RESPONSE TO THE WATER RESOURCES EAST CONSULTATION PAPER:**

### **The Emerging Water Resources Regional Plan for East England**

This paper sets out the Cam Valley Forum's response to the [Emerging plan](#) issued in January 2022. It represents the collective local knowledge, opinion and consideration of our members and Committee.

1. The Forum is an association of local individuals and groups with diverse environmental, recreational, academic and business interests. Our mission is to be an authoritative voice for the River Cam and all its tributaries: defending its health and wellbeing for its wildlife, environment and everyone that enjoys it; safeguarding its historical and cultural importance; and seeking, through a reasoned and evidence-based approach, changes in policy and practice to enhance the entire Cam catchment.

#### **Have we gained a clear initial view of the problem of future water deficits across all sectors and the environment?**

2. Our 2020 Report, [Let it Flow!](#) set out our concerns over the impact of groundwater abstraction from the Cam Chalk aquifer on flows in the Chalk rivers, streams and tributaries of the Cam Valley. The aquifer sustains 27 (out of 29) water-bodies in the Cam Catchment. The impacts have been felt for well over 100 years (in the case of the Wilbraham Rivers, since abstraction began at Fulbourn in the 1890s).
3. The damaging impacts of groundwater abstraction on the number and ecological health of our watercourses and wetlands include:
  - The complete loss of some watercourses, now just dry ditches e.g. the Wardington Brook (GB 105033037610), once a 'River' and still marked with a 17 km blue line on the OS maps.
  - The drying even of substantial rivers. In September 2019, the Granta at Stapleford dried completely, *despite* augmentation upstream and the substantial inputs of treated wastewater from sewage works.
  - Reduced flows in watercourses across the Cam Catchment (e.g. in eight tributaries of the Rhee, in the Lodes and River Granta, and at Nine Wells, Hobson's Brook and Hobson's Conduit).
  - The loss and degradation of wetlands (e.g. Teversham/Fulbourn wetland Sites of Special Scientific Interest have been reduced from 400 to 90 hectares since 1951, and Ashwell Springs, Fowlmere, and Thriplow Meadows now depend for their very survival on augmentation schemes).
  - Significant documented local extinctions of wetland plant species, invertebrates, and fish species because the flows of clean unpolluted water are not there either to sustain them or to dilute polluting inputs of nutrients, organic matter and man-made chemicals from treated wastewater and runoff from both urban and rural sources.

4. The damaging environmental impacts of groundwater abstraction in the Cam Catchment began to be recognised only in the 1980s, and only then in some areas:
  - Two huge Ground Water Support Schemes (Lodes-Granta GWSS and Rhee GWSS), initiated in the 1990s, now support summer flows in some 30 headwater streams, testifying to the widespread ecological impacts of over-abstraction at source;
  - These schemes abstracted a further 15 MI/day in 2019 from the same Cam Chalk aquifer that is used by the water companies, hence intensifying the overall pressure on it, ‘robbing Peter to pay Paul’.
  - The augmentation schemes do not always deliver enough water to restore proper flows or provide that water when it is most needed, and the pumped water may be of inferior quality and insufficient to provide effective dilution of pulses of treated wastewater from sewage works.
5. Climate change is not the cause of these long-standing problems (total annual rainfall has been more or less constant over the last century) but may well intensify them in the coming years. Our assessment is that a warming climate is lengthening the growing season and increasing the level of evapotranspiration, so that it takes longer for the resulting Soil Moisture Deficits to be made up before winter rain can reach and recharge the aquifer. Wetter winters are predicted but not yet borne out by local measurements.
6. It has been argued (e.g. by Affinity Water, and even by the Environment Agency) that some Cam Valley Chalk streams are ‘ephemeral’ in their upper reaches. We reject this assertion as it fails to recognise the impact on the flow patterns of recent years of the abstraction of over 100 MI /day from the Cam Chalk aquifer. Flow patterns were very different before significant abstraction began many decades ago. The best way to test whether there is any truth in the assertion would be to reduce abstractions substantially, or to cease them, at multiple boreholes; then we would start to see what ‘natural’ flows look like.
7. We conclude that Chalk streams need to be prioritised for action to reduce the damaging environmental impacts of groundwater abstraction at source. The references to Chalk streams in the emerging plan are welcome but a strategic concern needs to be turned into an action plan to restore every single Chalk spring, headwater, tributary, stream and river. The Government, OFWAT, RAPID, WRE, WRSE and the water companies all have a global responsibility for restoring these rare ‘priority’ habitats.
8. The [CaBA Chalk Stream Restoration Strategy 2021](#) ably sets out the overall challenge. The plan’s environmental destination - we favour the ‘enhance’ scenario - should be informed by the *Strategy*: it recommends limiting abstraction so that it reduces flows by no more than 10% from natural flows during low flow periods. The Environment Agency has suggested that a 60-70% reduction in abstraction at source from the Cam Chalk aquifer is needed to ensure adequate flows but the objective for these streams should be to deliver ‘High’ ecological status, not merely ‘Good’ status, as proposed.
9. Chalk streams need restoration across the Region but those in the Cam catchment face particular challenges. No less than *three* water companies together take some 105 MI/day (2019 figures) from the Cam Chalk aquifer - Cambridge (64%), Affinity (22%), and Anglian (14%) - with Cambridge Water depending on this source alone for 97% of its supplies. The three companies must work together, with the Environment Agency (and with WRE and WRSE), to develop *one* collaborative plan for Cam Chalk streams. This must deliver the most environmentally-beneficial reductions in abstraction at source in the shortest time while also securing new compensatory surface water supplies from elsewhere.

**Are we taking the right approach to identify potential solutions to mitigate the challenge?**

10. We are not convinced of the advantages of the Polyvis tool over traditional approaches to option appraisal that rely on human brainpower rather than computer models. The presentations on Polyvis given in WRE webinars have been far from convincing. So much depends on how each axis is

calibrated; behind each calibration lies a set of assumptions, any one of which may be mistaken. Robust reality checks should be an essential element in evaluating the outputs of this tool.

**Does our emerging adaptive plan, including the immediate low-regret options such as reservoirs, look like it will help address the problem?**

11. We welcome the emerging plan's recognition of the need for a multi-dimensional approach, embracing:
  - *Large infrastructure options (e.g. reservoirs, transfers, desalination, effluent re-use) >10 Ml/d that have a whole regional, or national significance.*
  - *'Local' non-water company and smaller (<10 Ml/d) water company infrastructure projects and schemes.*
  - *Demand management – leakage and Per Capita Consumption (PCC) reduction with multi-sector water efficiency measures.*
  - *Supporting, facilitating or overseeing water innovations and exemplars in Eastern England which push the 'art of the possible'.*
12. However, much more detail is needed about the actions to be taken and their timing and sequencing before we can be confident that the plan will deliver significant benefits for Chalk streams. The overall plan needs to be developed at a much more granular level. We need to understand how each of the 27 Chalk water bodies in the Cam Catchment will benefit from the actions identified, especially in their upper reaches, at the springs and in the headwaters and tributaries, and then downstream.

***From abstracting groundwater at source to surface water downstream***

13. The overall approach needed is to replace groundwater abstraction at source with surface water abstraction much further downstream (a 'Chalk-streams first' solution, as proposed for some Affinity Water abstractions on the southern flank of the Chilterns). The catchment can then supply the same amount of water but in a way that does not unduly damage Chalk streams. Reductions should be made first at those groundwater abstractions that have the most impact in the upper reaches. In any catchment, groundwater abstractions should be reduced ahead of surface water abstractions.
14. Large infrastructure developments - the South Lincolnshire reservoir, the Fens Reservoir and the associated water transfer pipelines - are essential elements in the long-term plan but will not come on stream until the mid 2030s at the earliest. In the interim - and continuing beyond - resolute action is needed to drive down demand for water and to arrange surface water transfers into the Cam catchment from outside it, to enable substantial reductions in groundwater abstraction at source within it.

***Water transfers***

15. We welcome Cambridge Water's proposals to assess several water transfers from outside the Cam catchment; they are an essential part of the mix (but must not themselves have damaging environmental impacts). Affinity Water has also suggested that water transfers from the Severn-Trent catchment could enable it to further reduce pressure on its own abstractions in the south of the Cam Catchment.
16. All new demand for water for drinking and business use from new or expanded settlements that our three water companies would otherwise have met by groundwater abstraction from the Cam Chalk aquifer should be met *instead* via such transfers. Where these continue to provide the best option for supplying that new development, they should continue indefinitely, so long as they remain environmentally-sustainable, even after the major new supply reservoirs come online.

17. The need for water transfers is strongly supported by other independent assessments. For example:

- Stantec [\*Integrated Water Management Study - Strategic Spatial Options Review\*](#) for the Greater Cambridge Shared Planning Authority: ‘*There is no capacity to increase groundwater abstraction from the Chalk aquifer. Future water demand and supply will need to be balanced in other ways*’, including ‘*major new regional water supply reservoirs, transfer schemes and land use change.*’
- Cambridgeshire & Peterborough Commission on Climate: [Fairness, nature and communities: addressing climate change in Cambridgeshire and Peterborough](#): ‘*The Commission recommends that the Government and Ofwat provide for the investment to allow intercompany trading and water infrastructure improvements by 2025 to enhance water supply, including eliminating Cambridge’s dependence on the ground water aquifer. including eliminating Cambridge’s dependence on the ground water aquifers..*’

### **Local schemes**

18. Additional local investments (each supplying less than 10 Ml/day) are also needed to supplement the major new schemes and significant water transfers. These could include:

- *Wastewater re-use schemes*: the opportunity to build a re-use facility at the new Cambridge wastewater treatment works should not be missed. This could build on the precedent offered by the Langford Scheme in Essex, where up to 40Ml/day of wastewater is disinfected, and nutrients are removed, before the treated water is released into the River Chelmer for re-abstraction downstream.
- *Creating infiltration basins in suitable locations*: trials in the Granta catchment could offer a blueprint for natural managed aquifer recharge elsewhere, realise additional benefits for farming and wildlife, and by capturing high winter flows, reduce flood risk to communities downstream.

### **Demand management**

19. The three water companies need a *coordinated* strategy to communicate the plight of Chalk streams to domestic and business water consumers in the Cam catchment. This needs to underline: the catchment’s new status as an ‘area of severe water stress’; the rarity of Chalk streams and impacts of low flows; and the need to reduce water use at all times, and particularly during the summer or other dry periods.

20. A robust approach is needed - including water-saving messages on six-monthly water bills is not enough. An effective demand management programme should include:

- Setting targets for reducing ‘Distribution Input’ (the total amount of treated water used for the public water supply). This target is much more relevant to the objective of leaving more water in the environment for nature than targets based on individual per capita use.
- Establishing a new baseline of annual statutory restrictions on drinking water use (e.g. a ban on household use of sprinklers, hosepipes, and high-pressure washers from May to August every year) and tightening these progressively as necessary in dry weather in response to environmental triggers.
- Implementing compulsory metering of water supplies to drive down consumption, working to demanding but achievable targets.
- Reducing leakage from water company and customer pipes to drive down wastage, again working to demanding but achievable targets.
- Require all major new housing and business development to meet a design standard that reduces personal water consumption to 80 litres/person/day, including water-efficient appliances and measures such as water harvesting and greywater recycling.

- Require all major new housing and business development to be water neutral - i.e. offsetting new demand with equivalent efficiency savings in the use of water in existing development.
- Managing soil on agricultural land and in urban areas to maximise its ability to hold and retain water (e.g. by improving its organic matter content and reducing soil compaction). On farms this will help to sustain rain-fed agriculture and to limit future growth in demand for irrigation.

**Are the technical methodologies, processes and decision support tools which we have used robust and appropriate for the task?**

21. WRE should use a range of approaches, rather than relying on one tool or method alone, in determining the reductions in groundwater abstraction needed to restore Chalk streams. This work should be informed by the *CaBA National Chalk Stream Restoration Strategy* and the Environment Agency report [Hydrological approaches to assessing sustainable abstraction in chalk streams](#).
22. Whatever the model, it is the quality of the data that matters. As T H Huxley wrote in 1869: ‘... *what you get out depends upon what you put in; and as the grandest mill in the world will not extract wheat-flour from peascod, so pages of formulae will not get a definite result out of loose data.*’ For example, assessments of environmental flows need to be based on measurements made *upstream* at Chalk springs and in Chalk headwaters, not *downstream* of wastewater treatment works. A far more intensive network of flow measurement points is needed across all 29 Cam Catchment water bodies.
23. Whatever models are used to evaluate flow requirements and options for managing demand and developing new supplies, WRE needs to find high quality data and to subject the outputs to peer review, ground-truthing, and common sense. Simple observation can be just as powerful; you can see that there is a problem to be solved simply by standing by the now grassy ditch that used to be a Chalk stream tributary, or by the barely trickling Chalk stream in which, years ago, children were able to swim.

**Has our emerging regional plan been co- created in a fair, open and transparent process involving the right stakeholders and organisations?**

24. A truly collaborative approach requires open sharing of data, models and analyses by all parties. This has not happened. A key need is for ready sharing of data on the quantities abstracted from all licences and the locations of these licences by water body, to support local independent analyses of impacts and options for change. Having to use formal information requests to obtain data from the Environment Agency is an arduous process. One should not need to know exactly what question to ask and then have to wait several weeks for the answer. ‘Knowledge is power’; at the moment the balance is weighted too much towards those with an interest in supplying water than those concerned about its impacts.

**Are there any areas which you feel WRE should be considering which are not currently reflected in our plan? What have we missed?**

25. The emerging plan contains welcome references to Chalk streams but sets no single objective for them. This should be: ‘**To reduce abstraction from the Chalk aquifer at source so that Chalk springs and headwaters run freely, as they would under natural conditions, every year, whatever the weather**’.
26. A more fundamental point is the need to recognise that we humans are part of the ecosystem and are already overdrawing our natural capital. WRE should heed the authoritative voice of Sir David King (former Government Chief Scientist): he made it very clear to a recent meeting of Natural Cambridgeshire that unless you first have ecosystem well-being you cannot contemplate truly sustainable development. He is right. WRE has sometimes suggested that it has an overly narrow utilitarian view of water resources as being for human exploitation alone. A deeper commitment to the ethics of sustainability and nature conservation is needed.

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