Chalk Streams First response to Ofwat Gate 2 reports on strategic resource options: Thames to Affinity Transfer.

In Appendix B on page 23 of Ofwat's standard Gate 2 draft decision report (March 23) for the Thames to Affinity transfer, the required action 6 states: "Thoroughly consider the CSF proposal for flow recovery at gate two and engage with RAPID and interested stakeholders on how this might best be accomplished" and is marked as "complete".

The T2AT, Gate 2 Main Report v3 FINAL refers to this action in more detail on page 5 under the column T2AT Response at Gate: "All T2AT options enable the CSF proposals. The modelling of conjunctive deployable output takes account of streamflow recovery from reduced groundwater abstraction at key sources to ensure that any additional available water can be incorporated into TW or AFW's supply network through existing abstractions."

The Chalk Streams First coalition is encouraged by the inclusion of the CSF proposal in the T2AT investigations and the concluding statement above that "all the T2AT options include the CSF proposals".

However, as stated in CSF responses to WRSE draft regional plan and to the Affinity Water and Thames Water WRMPs, a key component of the CSF proposal is the timeliness of abstraction reductions.

In the CSF response to the WRSE draft regional plan we expressed a concern that the

> "Thames to Affinity Transfer – upon which the initial concept of Chalk Streams First rests – is framed as being contingent upon either the construction of SESRO or the STT, with the supply network first identified by CSF as facilitating the scheme – "Supply 2040" – now pushed back and re-named "Supply-2050". In our initial proposal we had asked for that network to be brought forward to become "Supply-2030"."

In subsequent email dialogue Affinity Water responded to this concern stating that:

> "the use of the CSF concept is not in any way contingent on the SROs, and our dWRMP inherently accounts for this. We have one existing transfer (Fortis Green) and two additional transfers from Thames Water that will allow us to use additional imported water from Thames by the start of AMP8 (Cockfosters and Perivale). Together these account for 27M/d of transfer capability. Our Connect 2050 proposals then ensure we can transfer this from WRZ4 further north as required. Our environmental destination proposals include 47Ml/d of abstraction reduction in total in the Colne and Lee by 2035, so this transfer capacity is more than enough to transfer any DO benefits that Thames experiences (please note that the CSF inspired 15Ml/d licence transfer is additional to this, and there are 17Ml/d reductions across the Cam, Hiz and Ivel, just in case you wanted to check the figures). We are confident that we *have* incorporated the CSF concept in the short term in a way that minimises bill impacts for customers, and have additionally sought to extend this through the use of the licence transfers, as discussed.

– all of which is also encouraging. And yet one can see how the reductions and the transfer capacity are somewhat chicken and egg. The existing transfer capacity is enough for the DO benefits that come from 47 Ml/d abstraction reductions up to to 2035. But not enough if the reductions were greater and sooner, which CSF argues they should be.

According to CSF analysis, lowering groundwater abstraction in the iconic chalk stream tributaries of the Colne and Lea to a level that is sustainable – meeting the EFI targets, but measured as abstraction as a % of recharge – would necessitate reductions of circa 63 Ml/d in the Colne catchment and 87.6 Ml/d in the Lea.

Catchment	Recent actual abstraction 2019-21	Proposed future 'CSF' abstraction	Reduction from 2019/21 abstraction	Proposed abstraction as a % of recharge
Ver	25.8	7.7	18.1	7.5%
Gade*	36.2	11.9	24.3	8.3%
Chess	15.1	4.1	11	5%
Misbourne	15.8	6.2	9.6	8.3%
Total Colne	92.9	29.9	63	

Catchment	Recent actual abstraction 2019-21	Proposed future 'CSF' abstraction	Reduction from 2019/21 abstraction	Proposed abstraction as a % of recharge
Upper Lea**	48.4	7.2	41.2	8.3%
Mimram	10.4	6.1	4.3	7.7%
Beane	24.9	9.8	15.1	9.6%
Rib	22.8	7.3	15.5	8.3%
Ash	1.2	1.2	0	2%
Stort***	25	13.5	11.5	8.3%
Total Colne	106.5	30.4	87.6	

Abstraction reductions on the CSF Highest Priority chalk streams in the Colne and Lea catchments with A%R adjusted to meet the EFI (average of A8.3%R)

* These figures are for the whole Gade. CSF Highest Priority reductions for upper Gade and Bulbourne only would be lower.
** These figures are for the whole Upper Lea. CSF Highest Priority reductions for Lea upstream of Luton Hoo would be lower.
*** These figures are for the whole Stort. CSF Highest Priority reductions excluding the Stort d'stream of Bishop's Stortford would be lower.

CSF concern that T2AT – which would enable this greater and speedier level of abstraction reduction – is indeed contingent on the construction of SESRO and STT, appears to be vindicated by the statement on page 2 in Section 1.3 of the aforementioned T2AT, Gate 2 Main Report v3 FINAL: "The LTR solution of the Thames to Affinity Transfer is selected in the WRSE draft Regional Plan and by the draft WRMP24 for both partner companies, linked to the development of SESRO, for use by 2040."

CSF remains concerned therefore, that what could be a self-contained and timely solution to unsustainable abstraction in the Colne and Lea catchments does not become dependent (for its full realisation) on future schemes that remain uncertain and unlikely to be completed before 2040.

As stated in the CSF response to the WRSE draft regional plan, the contingency / delay in realising all of these reductions appears to be partly based on an estimate of 17% flow recovery from chalk stream abstraction reduction at very low flows, Q95 - Q100, meaning that the strategic

resource is necessary to underwrite the abstraction reductions. There is some debate and uncertainty about modelled flow recoveries from abstraction reductions, but our analysis of *measured* flow recoveries suggests that 17% is an unrealistically low estimate and that flows in the region of 50% to 60% of upper catchment reductions would translate into increased deployable output into downstream reservoirs at the average percentiles through the duration of 1921 and 33/34 droughts, falling to as low at 20% for only very restricted portion of those long duration droughts.

CSF has also proposed that a tried and tested mitigation against this uncertainty could be modelled on the West Berkshire Groundwater Scheme. Preliminary CSF modelling of such a scheme suggests that it could be used to more than offset the replacement supplies for all the abstraction reductions, and potentially yield a 55-60 Ml/d of deployable output increase for London, with minimal impact on the re-naturalised chalk stream flows.

All of the organisations within the CSF coalition support the investigation of such a scheme. A groundwater insurance scheme would help to keep the CSF concept self-contained, and would therefore allow more speedy delivery of chalk stream flow-recovery, and also – because it would underwrite any uncertainty around flow recovery – could well create a drought water resource in its own right, and free up the net gains from any other strategic resource options in the future.

CSF proposes that the *urgent* need for abstraction reductions and our pragmatic proposals for minimising any DO loss via a groundwater insurance scheme (modelled on WBGWS) should be factored into the timing of the T2AT scheme, re-scheduling and re-naming it to Supply 2030 and that the investigation of such a scheme combined with the acceleration of Supply 2050 to *2030* should become Ofwat Actions for Gate 3.

Charles Rangeley-Wilson, OBE
On behalf of the Chalk Streams First coalition.