

Dear Sir or Madam,

As a District Councillor in whose ward the proposed SESRO would be primarily constructed, I am writing to comment on the proposals from Thames Water.

I would like to believe my comments might be educated ones, as a [REDACTED]

“Bottom Line Up Front”

Military briefs always have a point summary of the main elements in the document. To assist, given the length of the document, I have reached for this method:

- The SESRO submission has considerable redaction of environmental impacts for no apparent commercial reason. This makes public review extremely difficult.
- Many key WFD questions are not addressed and dismissed with “weasel words” attempting to imply that known and certain impacts to two significant watercourses are merely possible and aspirational benefits with no support are certain.
- The carbon cost calculation is held secret for no apparent reason (it’s hardly likely to be commercially sensitive) and looks and the expressed number looks considerably lower than comparison with another proposed reservoir by another water company would suggest.
- All environmental impacts are certain (and underplayed) and all mitigation and expected benefits are aspirational (and overplayed) – and, in cases, mutually contradictory and potentially impossible to have occur simultaneously.
- The former un-mitigable red risk of flooding to Abingdon and surrounding villages from swamping a floodplain is now dismissed by a new modelling method that is also not shared
- The financial costing and benefit calculation is, again, not shared other than a claimed figure. The sole detail provided (an assumption of 100% utilisation to justify the benefit) is contradicted in the submission.
- The suggested method of avoiding algae build-up is also expressly and repeatedly contradicted in the submission and would be especially damaging during periods when the SESRO would be used.
- The justification that “customers prefer reservoirs” is facile and, in any case, based on an attempted skewing of the responses by customers, who actually prefer leakage reduction and then water transfers, despite a deliberately biased question to try to avoid that.
- Comparison with the (much less investigated) Severn-Thames Transfer option point to the SESRO being far less cost-effective, far more costly, taking far longer to provide, delivering far more in the way of certain environmental impact, having significantly greater running costs, providing far more water in a far more resilient way (and this, unlike the SESRO option, would be new water to the water-stressed region). The Severn-Thames Transfer would be far more likely to be delivered on time and budget. And that’s without mentioning that the parts of the environmental submission that can be made out indicate that the fabled recreational benefits may be impossible to deliver whilst trying to mitigate some of the inevitable environmental damage of the reservoir.

Opaque submission and much redaction of information

I have attempted to review the submission by Thames Water and encountered significant issues with the large quantity of redacted information within the environmental section of their submission. Given that the only reason for redaction should be commercial sensitivity, I fail to see any plausible argument for why multiple figures are redacted (Figure 2-1, Figure 2-2, Figure 2-3, Figure 2-4, Figure 2-5, Figure 2-6, which are the various options for reservoir layout), why the entire

impact on the water environment is redacted, the details of which water bodies had high impacts were redacted... this is unacceptable. The commercial rationale for redacting the details of the specific waterways affected, the specifics of the Thames itself, and the specifics of the limitations of mitigation of environmental impact must be made clear and the opportunity for genuine public scrutiny offered.

For any project ostensibly put forward for public consultation to have public scrutiny so obviously and systematically blocked is alarming. For a megaproject with huge potential environmental impact, colossal costs, genuine permanent and un-mitigable flood risks to local residents, and questionable benefits to have public scrutiny blocked is unacceptable.

Key WFD questions not addressed

From what *can* be made out, or from previous submissions, the following key questions remain:

- The flooding impact on local communities caused by covering so much of the floodplain was previously assessed as “Red” and not capable of being mitigated. Has this been taken into account? Or is it deemed acceptable to cause frequent floods in Abingdon and the surrounding villages?

- It is clear that at least one water course will have high impact (“3”) regardless of whatever mitigation is attempted.

- A second one will have a “3” which “could” possibly be mitigated down to a “2” but not any further. In addition, details of the planned mitigation (or even whether the mitigation *would* be undertaken) are not given. There is a reason that “could” is regarded as a “weasel word” in project planning – it should be “will” or “will not,” together with a specific plan for the mitigation and the knock-on effects of that mitigation on other areas of risk, as well as cost and impact.

Thames Water admit that *“The scheme does have the potential for moderate adverse environmental effects”* and claim that *“adverse effects can be addressed through mitigation.”* It should be noted that the “potential” is a misleading word for a proposal that states that these adverse environmental effects will be incurred. The claim that these “can” be addressed through mitigation is, conversely, an overly confident claim for an aspiration that isn’t backed up with any plans or even outlines as to how they can be achieved. Swapping the sense (so that adverse environmental effects will be incurred which may have the potential to be mitigated) would be far more accurate.

This is repeated later in 5.8 and 5.9. The repeated and sustained attempts to imply these inescapable negative effects are uncertain whilst the aspirational mitigation is certain is tantamount to an indication of significant bias and potentially an attempt to mislead by omission.

Carbon cost alarm

One key area of concern is the carbon cost of the construction. I note that the Chartered Institution of Building Services Engineers, the Royal Academy of Engineering, and the Architects Journal (in a campaign backed by 14 Stirling Prize winners) have all raised the alarm over the amount of embedded carbon in new construction of cement, concrete, and steel.

After all, 8% of global CO2 emissions are from production and use of cement alone, and 35%-50% of the lifecycle carbon of new buildings is emitted during the construction phase. Accordingly, the environmental impact of the construction phase of any large project or construction cannot be ignored; to do so would be a dereliction of duty.

Thames Water admit that “SESRO has a high embodied carbon footprint (lots of excavation required)” but claim that “this can be mitigated through off-setting and implementation of low carbon construction techniques.”

The carbon cost calculation is not shown; merely claimed numbers to be taken on trust. For the embedded carbon in construction, this number is the highest of all the projects put forward to RAPID.

The embedded cost of the carbon in the concrete needs to be shown separately, as should the estimated carbon cost of the earth-moving, materials transport, and support activity. As there is currently no roadmap to decarbonising the concrete or for low-emissions heavy construction vehicles, this is urgently needed. The operational carbon cost does have a roadmap to reduction (the decarbonising of the grid) and is thus less of a concern (and is far lower in any case, albeit the number given strains credibility in comparison to a reservoir in a different submission); we must have visibility of the carbon calculation. Even the current figure is extremely high and if this has been “low-balled,” the prospect of carbon reduction in the Vale of White Horse would be impossible.

With negligible experience in the field of reservoir construction, all I can fall back on is the technique known as “comparative estimation,” which happens to be the best of the estimation techniques recommended for Project Managers in any case.

Anglian Water are proposing a reservoir with one-third the volume of SESRO. This can provide a baseline for a credibility check (assuming their calculations, which are somewhat more explained, are accurate).

Of course, we cannot simply triple the Anglian Water figures for comparison. The area of the walls, for example, would, instead, increase by the square of the cube root of the volume difference (area to volume following a square-cube law). The amount of preparation and earth-moving, however, might be up to tripled (excavating the multiple of the volume of earth), so a reasonable comparative estimation would have the carbon cost running somewhere between double and triple that of the Anglian Water reservoir.

This Anglian Water reservoir, depending on options, came in at 190,500-253,200 tCO₂e. Thus the comparative range for SESRO would be 381,000-759,600 tCO₂e (and be unlikely to be very close to either extreme; it would be unlikely to be exactly double the lowest figure (only area comparison needed) or exactly triple the highest figure (only volume comparison needed)).

I would therefore, by comparison, have expected to see a value somewhere between 500,000-600,000 tCO₂e (and that would be assuming that Anglian Water had accounted for all sources of CO₂).

The operational carbon costs for SESRO, in comparison to the Anglian Water proposal, are far lower than any of the options Anglian Water provide (which, we remember, are for a reservoir one-third the size). This makes the baldly stated number by Thames Water look highly suspect.

Concrete adverse effects and aspirational benefits and mitigation

Following up on the earlier points, they repeat that “*All options have the potential for a significant impact on the WFD compliance of two waterbodies in the River Ock catchment, which will require further investigation as part of Gate 2. All options could provide a net increase in terrestrial biodiversity units of over 10% and a positive change in natural capital value at the site*”

Once again, they use weasel words such as “potential for...” when the supporting documents make clear that it is not a potential – it is inescapable and not capable of mitigation. One (redacted details) watercourse scores the maximum “3” for negative impact and this is noted as not capable of being mitigated. The second scores the maximum “3” and can only be mitigated to a still serious and unacceptable “2”.

Conversely, the claim that “*could provide a net increase in terrestrial biodiversity units of over 10%*” is solely aspirational and, again, with not even a woolly idea of how this may be achieved. It is, however, “banked” as a benefit later on. They do claim that “*Habitat creation opportunities have been identified, but as design progresses refinements could include rewilding to create added value*” but, once again, have completely neglected to even indicate what these opportunities might be. Surely an indication, at least, would have helped? Especially if they claim to have done the work, but unaccountably not put it forwards.

They make clear their fallback plan, but claim that it is merely a potential (despite the documentation making it clear that it is a necessity): “*There are two watercourses in the reservoir footprint which may experience a deterioration of WFD status and there is the potential for a derogation to be required under Article 4.7 of the WFD in respect of these two waterbodies.*”

(Again the “may” for something they are clear is a “will” and a “potential” for something that will be necessary)

In Table 5 (the summary of environmental impacts), once again, all the negatives are concrete and will certainly be realised:

- Damage to biodiversity during construction
- Damage to biodiversity during operation
- Damage to population and human health during construction
- Damage to soil during construction
- Damage to air during construction
- Damage to cultural heritage during construction (“*Listed buildings and scheduled monuments in close proximity to each of the reservoir options and the reservoir boundaries are also immediately adjacent to a listed building. There is therefore potential for the setting of these historic assets to be affected during the construction phase. There is a high likelihood of encountering previously undiscovered archaeological assets as a result of construction activities*”)
- Damage to landscape during construction.

Whilst I fully agree that “*The construction of the reservoir would result in landscape and visual impacts,*” the claim that “*mitigation measures will be implemented to avoid, reduce and minimise loss or disturbance*” is once again fairly woolly. The capability to hide a 150 million cubic metre water feature stretching over several hundred hectares (occupying a similar size to Heathrow Airport) would be impressive and might deserve to be shared with airport operators.

These certain adverse effects rate as “moderate”, whilst the purely aspirational intent to deliver a biodiversity net gain rates as “major beneficial.” As does the claim of provision of recreation and education facilities (which are later noted may be impossible due to potential conflict with the Invasive Non-Native Species (INNS) Risk Assessment, which notes that to reduce the risk to low, all recreational activities must be removed in full).

This would also remove the Material Assets “Moderate Beneficial” element. And the Landscape one also requires an aspirational “we’ll make it look really nice, honest,” claim, which is suspect at best.

The document even goes on to claim at para 5.16 that *"All options demonstrate an overall positive change in natural capital value, although there will be lag after construction to realise this gain. This is largely due to the significant increase in recreation value at the site,"* is obviously unsupportable. All options are accompanied by an aspirational claim of improvement and a promise of recreational facilities which, by this document, may not be possible to provide.

Flood concerns

Previous iterations of this scheme (of which there have been several over the past 25 years) have had significant issues with flood risk increase to Abingdon and surrounding villages. This is due to the construction being made on a flood plain. They now, however, claim that *"The update of the hydraulic model (from 1D to a 1D-2D) has demonstrated that the construction of SESRO results in a slight reduction in flood risk to Abingdon rather than the previously identified increase in flood risk. This is because an increased accuracy in the modelling technique and the fact that rain falling on the reservoir surface is effectively removed from the River Ock catchment."*

This statement would be more reassuring had they not repeatedly redacted environmental impact information with no apparent justifiable rationale. And if they had provided the modelling output in any sense rather than hoping for us to take them at their word (something that the other errors, inconsistencies, and misleading statements within this document do not encourage).

"However, replacement flood storage has been retained in line with Environment Agency guidance for development. The area required for level-for-level replacement floodplain storage (RFS) has been revisited based on the updated flood risk model. The assessment has increased confidence that there is sufficient space on the west side of SESRO for relatively shallow excavation to provide sufficient RFS. However, further development of the design will be required in consultation with geomorphologists and ecologists to confirm this conclusion"

Given the importance, independent consultation, funded by the Regulators, not Thames Water, should be carried out prior to Gate 1. It would not be lengthy or costly and it is surprising that this was not carried out in advance, given the red risk status in the past.

Costing, technical need, and issues

Thames Water have, as with the carbon calculation, failed to provide their working on calculation of the CAPEX and OPEX, other than to note that *"the economic Net Present Value (NPV) of the single-phase options is between £1.42Bn and £1.17Bn"* [Based upon a nominal 100% utilisation of the scheme].

However, they also state at Table 7 that *"For much of the time, SESRO would remain full, with abstractions and discharges made to meet sweetening flow requirements only. As such, at the beginning of a dry period, there is an expectation that SESRO would be full."*

This implies that 100% utilisation is not only unlikely, but specifically planned not to be the case.

Whilst the nominal value might be acceptable as a “this is what our reserve capability would increase by,” it does lead tie into the issue later on *"While there will be natural circulation of water within the reservoir, there is a risk that poor mixing could result in water quality deterioration and algae growth. The jetting of water into the reservoir (described above) will enhance the natural circulation of reservoir water and aid mixing."*

Should the reservoir typically be full, there would be no further abstraction of water from the Thames and this solution to algae would be unavailable by design. This would be exacerbated by the fact that the water is expected to only be needed during times of drought (when no abstraction of water from the Thames would even be possible), so the maximum risk of algae would coincide with the maximum need.

It's even noted earlier in Table 5 whilst being used as justification for "moderate beneficial" Climate Factors: *"The reservoir stores water for use in dry years and therefore pumping into the reservoir (with consequent power / carbon use) is an intermittent activity."*

This is seriously inconsistent.

In the justification for the SESRO, it is claimed that the maximum output in a 1 in 500 year drought is 293 Ml/d but it is noted that this calculation is "simple" and will "potentially double-count benefits"

It's notable that this is comparable to the water savings that would be achieved by reducing their poor leakage rates to comparable with those of Anglian Water (300Ml/day would be saved).

Another key justification is shown in Table 2, early on: *"It is expected that SESRO will provide a source of raw water for other regional transfers (e.g. the Thames to Affinity transfer SRO). The current transfer options rely upon a new source of raw water into the fluvial Thames or one of the London effluent re-use schemes."*

If there is to be a new source of water (because this scheme does not provide any new water), what is the need for the reservoir in the first place? The plausible sources (for new water Severn Water, United Utilities) have ample reservoir storage capacity. If there is *not* to be such a source of new water, regional transfers will not be possible and this expectation will be baseless.

A key justification does seem to be that "customers prefer reservoirs." Which, frankly, is not what a billion-pound-plus megaproject that would affect tens of thousands of people and take over a decade, incurring a massive carbon cost, should be based upon. Even so, in their document describing customer engagement ("Customer Preferences to Inform Long-term Water Resource Planning"), the majority of comments still preferred the Severn-Thames water transfer:

"It makes much more sense looking at this, it's like the arteries of England. The body sends blood to where it needs to be. I live in London, but I've got family in Wales and they obviously have an abundance of water there, so it makes sense."

Nevertheless, they claim that *"Situations where large numbers of customers would be dependent on water being transferred into an area from another company region in the long-term was a major concern."* I've seen the question they used to elicit the response:

"Do you favour water transfers, bearing in mind these would mainly come from a devolved Welsh Government region?"

(Loaded questions such as these would be unacceptable for public opinion polling)

They even had to admit that *"Participants felt that a collaborative approach cannot be a reason for a company to lower its ambitions to reduce leaks or help customers save water."* - which translates to: "First sort out your leaks, then assist customers in saving water, and then go for water transfers."

Comparison with Severn-Thames Transfer Scheme

In contrast with Thames Water's relentless attempts to push the reservoir scheme over 25 years, the Severn-Thames water transfer scheme (which would be quicker, less disruptive, cheaper, and would provide new water to the water-stressed South-East from the areas of the country where it is plentiful) has long been a neglected option. In their previous proposals, it had been pushed out to past 2050 and later (even 2080).

The fact that this would not provide a capital asset paid for by the consumer against which they could borrow capital sums, thereby reducing their corporation tax burden may make the more cynical suspect an understandable and rational bias by Thames Water, when these other factors are borne in mind.

It does look as though, from the review of submission quality carried out by RAPID, that the work done on the Severn-Thames Transfer was possibly more perfunctory.

However, the comparative benefits of the Severn-Thames Transfer are still inescapable, even with the less detailed work done:

- The use of the Cotswold Canal alone could provide 300MI/day to the Thames (greater than the greatest output from the largest SESRO – and without any double-counting) whilst aiding in recreational benefits. This is new water to the water-stressed South East. This could be scaled up to 500MI/day with all transfer options.
- The new water (with additional sources already identified clearly in case of concurrent lengthy drought) would certainly provide the required water in a drought, whilst climate change in the already water-stressed South East could preclude the SESRO alone being capable of supporting the demand (given no new water into the South East) over a 2-year-plus drought. SESRO provides no new water. All else being equal, this should be decisive.
- CAPEX is significantly cheaper (even bearing in mind the secretive nature of the calculations: £783m compared to £1,330m for comparable flow, with £81m OPEX compared to £91m. This is a CAPEX saving of half a billion (41% cheaper) and an OPEX saving of £10m per year. All else being equal, this should be decisive.
- Carbon cost is calculated at 198,423 tCO₂e versus 352,081 tCO₂e claimed for SESRO even assuming this low estimate for SESRO is accurate, the difference would be decisive as well (all else being equal).
- Carbon costs of running are again opaque and would certainly be susceptible to mitigation by the ongoing decarbonisation of the National Grid, so cannot be fairly compared at this time frame. By comparison with the Anglian Water proposed new reservoir, the figures for SESRO look extraordinarily low. Even if there was no further decarbonisation and the numbers given were accurate, then it would take a prolonged period for the carbon costs to balance – and, if the carbon cost of construction (which has no roadmap for decarbonisation) is underestimated, might never close.
- The Net Benefit would be £2,127,813 for the STT versus £1,766,284 for SESRO (remembering that the latter number is dependent upon a 100% utilisation, which is established to not be accurate). That is, 20% more valuable (and upwards), with a return on investment (assuming their numbers are reliable) of a factor of 2.7 versus a return of investment of a factor of 1.33. Again, this alone would be decisive with all else being equal.
- Biodiversity enhancement without needing significant new construction, the huge reduction in the areas of disruption, impact on the natural landscape, impact to cultural heritage, damage to soil and air, loss of residential and commercial properties, transport infrastructure and energy and community facilities, biodiversity impact, and loss of priority

woodland habitats by following the transfer route for new water rather than the SESRO route would alone, all else being equal, be decisive.

- The time taken to construct the strategic water options is far less for the Severn-Thames Transfer – it could be provided within three or four years of the go ahead. In all large projects, shorter timescale projects are far more likely to be delivered on time and budget. In contrast, the SESRO would be over a decade and not planned to be delivered prior to 2040, and megaprojects with those timescales are extremely unlikely to be delivered on time or budget. Again, this alone would be decisive with all else being equal.

Overall

The elements in this document that highlight the swathes of omitted detail and aspirational absences in the Thames Water documents may be viewed as harsh. This would be fair for the Severn-Thames Transfer proposal, as it has genuinely only been seriously considered very recently. However, the SESRO has been a major focus for Thames Water since 1996 – a good 25 years.

Even when the SESRO was rejected by the Inspector at the public Inquiry in 2011 as not fit-for-purpose, not compliant with the Regulator's requirements, and noting that Thames Water had failed to investigate viable alternatives to the reservoir or made essential environmental assessments, Thames Water has still been very much inclined towards the SESRO as a major commercial asset for the shareholders that would be paid for by the customers.

The fact that every single factor is so strongly pointing towards the Severn-Thames Transfer option over the SESRO coupled with the unacceptable secrecy and redaction of documents concerning the SESRO, the inconsistent and incoherent arguments for the SESRO, the massive risk and aspirational nature of all mitigation and many benefits of the SESRO, the blatantly biased language to dismiss known negatives of the SESRO as being merely potential and claim aspirational benefits as being certain, and the need to cause Thames Water to focus effort on a genuine development of the Severn-Thames Transfer option (rather than the danger of a purely token effort) point to an early downselect to the Severn Thames Transfer option, which:

- Is far faster to bring on line at much lower risk,
- Provides new water to a water-stressed area
- Has a greater flow rate than the SESRO proposal
- Is more resilient
- Is considerably cheaper
- Has considerably less carbon cost
- Gives no impact to existing smaller water-courses
- Does not have the risk of flooding existing settlements
- Provides far greater retention of existing biodiversity with at least as much opportunity to provide enhancement to this
- Causes minimal or no damage to the natural landscape, priority woodland habitats, cultural heritage, soil, and air
- Causes negligible disruption to residential and commercial properties, transport infrastructure, community facilities, or energy
- And does not rely on uncertain and undefined "recreational facilities" - which may be impossible to provide in SESRO, anyway.

I haven't even looked at the third option that was dropped with a bald statement that it was too expensive and environmentally damaging: desalination in the Thames Estuary. From having paid

attention in previous submissions, this was put forward as being faster to achieve, lower risk, and with “multi-objective environmental benefit.” And would, of course, bring in new water to a water-stressed area, again unlike SESRO. I would strongly recommend this be added with a proper look at it; it could be argued that it would be negligent to not examine it given that other water companies are at least considering similar such options.

Yours faithfully,

Councillor 

(Drayton Ward of Vale of White Horse District Council)