Dear Sir

Objection to the Incorporation of Recycled Wastewater into Havant Thicket Reservoir

Application: Dams and Reservoirs – Hampshire Water Transfer and Water Recycling Project

I wish to object to the proposed use of Havant Thicket Reservoir as a storage and blending facility for treated wastewater originating from Budds Farm Wastewater Treatment Works.
My objection is principally based upon the precautionary principle, protection of public health, the protection of the existing spring-water resource and the need to demonstrate that the proposed system remains safe under foreseeable failures and abnormal operating conditions.

1. The proposal fundamentally changes the character of the reservoir

Havant Thicket Reservoir was originally promoted as a reservoir supplied principally by natural spring and other water resources. The present proposal introduces a fundamentally different source: wastewater which has passed through a sewage treatment and a water-recycling process.
Southern Water itself describes the proposal as taking treated wastewater from Budds Farm, subjecting it to treatment and transferring the resulting recycled water into Havant Thicket Reservoir, where it will be blended with other sources before being subsequently abstracted and treated for drinking-water supply.
The reservoir therefore becomes an environmental buffer containing a mixture of natural spring water and water derived from sewage effluent.
That distinction is extremely important when assessing public health and environmental risk.

2. Testing after contamination has occurred cannot provide the principal safeguard

The applicant places considerable reliance upon continuous monitoring and testing of the recycled water.
I do not consider monitoring alone to provide sufficient protection against a serious contamination event.
If a contaminant passes through the treatment process, enters the reservoir and becomes mixed with a very large volume of water, detection may occur only after the contaminant has already entered the area drinking water supply.
The subsequent discovery of contamination does not reverse the contamination of the reservoir which immediately renders a valuable water resource unavailable .
This is particularly important because the Drinking Water Inspectorate itself emphasises that drinking-water safety should be based upon proactive risk assessment and multiple barriers rather than relying simply upon end-point sampling.
DWI has specifically stated that sampling and analysis alone cannot always provide assurance of safety. (Drinking Water Inspectorate)
Accordingly, the application should demonstrate that every reasonably foreseeable failure is prevented or contained before recycled water can enter the reservoir, rather than relying principally upon detecting a failure after it has occurred.

3. The potential contaminants are not limited to bacteria and viruses

The public discussion surrounding the proposal can give the impression that the principal concern is whether viruses and bacteria are removed.
The risk is substantially wider.

Municipal wastewater can contain a complex mixture of substances, including:

- pharmaceuticals and their metabolites;
- endocrine-disrupting substances;
- PFAS and other persistent chemicals;
- pesticides and biocides;
- industrial chemicals;
- solvents;
- hydrocarbons;
- microplastics and associated contaminants;
- antibiotic-resistant organisms and resistance genes;
- nutrients such as nitrogen and phosphorus;
- disinfectant by-products and treatment chemicals.

The fact that an individual contaminant is not routinely included within a statutory drinking-water parameter does not necessarily demonstrate that its presence is harmless.
This is particularly relevant to PFAS.
DWI has issued specific guidance concerning PFAS in drinking water, demonstrating that emerging and persistent contaminants remain an active regulatory concern. (Drinking Water Inspectorate)
The applicant should therefore be required to demonstrate, using independent evidence, how the complete range of relevant contaminants in the Budds Farm wastewater stream is identified, controlled and removed.

4. A failure at the Water Recycling Plant could become a reservoir contamination event

The proposal appears to rely upon the Water Recycling Plant shutting down or diverting water when specified parameters move outside defined operating limits.
That is an important safeguard, but it does not eliminate the possibility of:

- instrumentation failure;
- sensor drift;
- calibration failure;
- electrical failure;
- software or control-system failure;
- membrane failure;
- inadequate chemical dosing;
- loss of pressure;
- treatment-process malfunction;
- operator error;
- maintenance failure;
- undetected contaminants;
- contamination occurring between monitoring points;
- incorrect interpretation of monitoring results;
- failure of automatic isolation or diversion equipment.

The planning authority should therefore require the applicant to demonstrate the consequences of credible worst-case failures, rather than merely demonstrating normal operating performance.
In particular, the assessment should establish the maximum volume of inadequately treated water that could enter the reservoir following every credible single failure and credible combinations of failures.

Once recycled water enters the reservoir, it is no longer simply a controlled stream passing through a treatment plant.
It becomes part of an environmental water body.
Southern Water's own documentation recognises that the reservoir will contain water from three different

sources and that drinking-water quality risks associated with blending recycled water within the reservoir will need to be managed. (Southern Water)
This creates a fundamentally different risk profile from a closed treatment system.

The applicant should therefore demonstrate:
a) how contaminants behave once introduced into the reservoir;
b) whether contaminants can accumulate in sediments or biological material;
c) whether persistent chemicals can remain in the reservoir;
d) whether algal or microbiological conditions could alter contaminant behaviour;
e) how seasonal changes in reservoir volume affect concentrations;
f) how long contaminated water could remain within the reservoir;
g) what procedure would be followed if contamination were discovered after introduction;
h) whether the reservoir could actually be isolated from the drinking-water system;

i) how the reservoir would subsequently be remediated following a significant contamination event.

The precautionary principle should apply

The question is not simply whether Southern Water can produce water that normally complies with drinking-water standards.
The more fundamental question is whether it is necessary to introduce sewage-derived water into a drinking-water reservoir when doing so creates an additional potential source of contamination.
The applicant has not demonstrated the proposed arrangement is safe under normal operation, foreseeable abnormal operation and credible failure conditions.

The proposed scheme should not compromise the existing spring-water resource

There is also a fundamental question of resource protection.
Natural spring water is a valuable source of drinking water in its own right. Introducing treated wastewater into the same reservoir means that the quality of the natural spring resource becomes dependent upon the successful operation of an additional industrial wastewater-treatment system.
This effectively transfers part of the risk associated with wastewater treatment into the drinking-water resource.
If the recycling scheme fails, it is not simply a failure of a wastewater-treatment facility: it potentially becomes a failure affecting a strategic drinking-water storage reservoir.
That is an important change in the risk hierarchy which should be fully considered in the Environmental Impact

Assessment and Drinking Water Safety Plan.

Southern Water's own evidence demonstrates that the issue requires further scrutiny
Southern Water has acknowledged that blending recycled water with other sources in Havant Thicket Reservoir presents drinking-water quality risks which require management. (Southern Water)
Southern Water has also acknowledged concerns raised during consultation concerning the treatment efficacy of wastewater entering the recycling process and public confidence in monitoring the recycled water. (Southern Water)
Those concerns should not simply be dismissed on the basis that the final water is expected to meet regulatory standards.
The planning decision should establish whether the proposed safeguards are sufficiently robust before

the reservoir becomes contaminated, rather than relying on compliance monitoring afterwards.

Alternatives must be properly considered

The applicant should demonstrate that all reasonably practicable alternatives have been properly compared.

These should include demand reduction, leakage reduction, water efficiency, catchment measures, additional natural storage, groundwater protection, transfers, desalination and other sources of supply.
The justification for introducing recycled wastewater has not been demonstrated
Consideration must be given to storing the waste effluent in a separate storage facility and used to irrigate forestry or similar land use not associated with food supplies.

I strongly object to the proposal to introduce sewage-derived recycled water into Havant Thicket Reservoir

The central concern is whether a failure of the wastewater-recycling process could contaminate a strategic drinking-water reservoir before that failure is detected, and whether such contamination could subsequently be completely removed.
The Drinking Water Inspectorate's own approach is based upon proactive risk assessment and multiple barriers, rather than reliance upon sampling alone. (Drinking Water Inspectorate)
I therefore request that the application should not be approved

Yours faithfully

Derek Stewart Smith
[redacted]