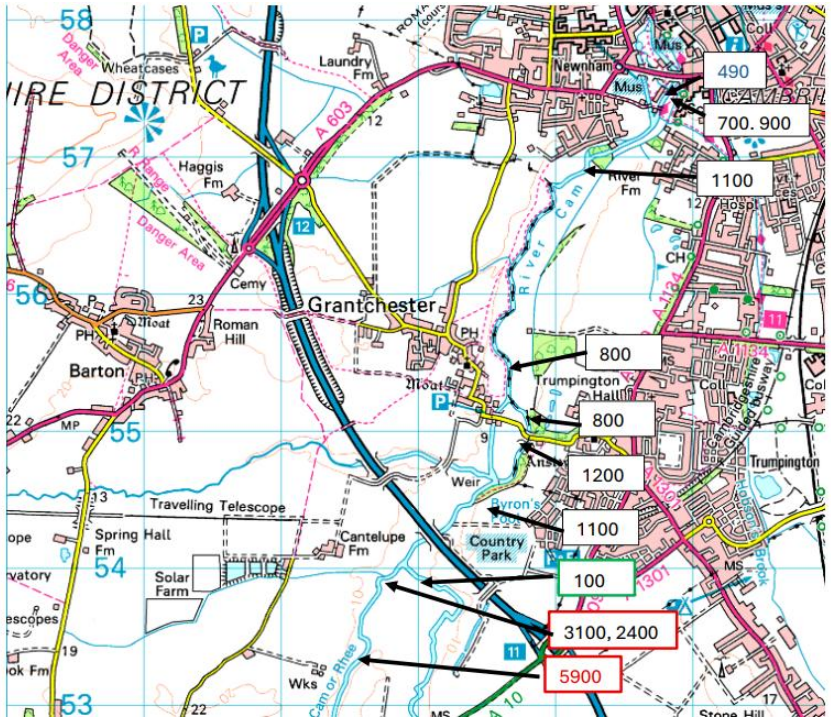
Sewage Sleuthing on the River Cam: Notes for meeting with Anglian Water 17 July 2025

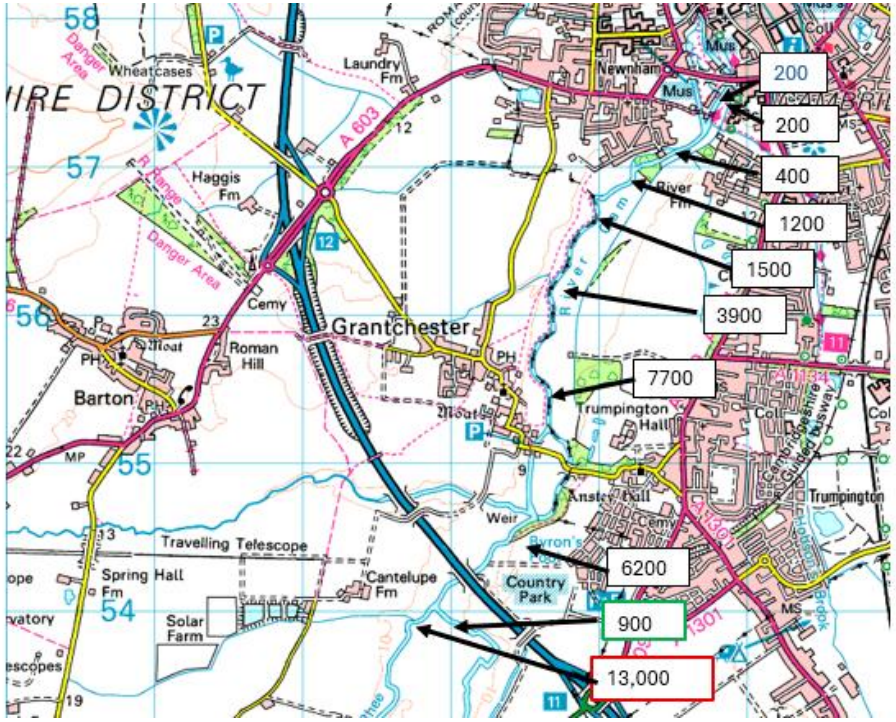
Anne Miller
Cam Valley Forum
info@camvalleyforum.uk

Ref 22099

Usually, water quality remains poor downstream of Byron's Pool. Just sometimes it steadily improves resulting in "good" water quality.. Why?



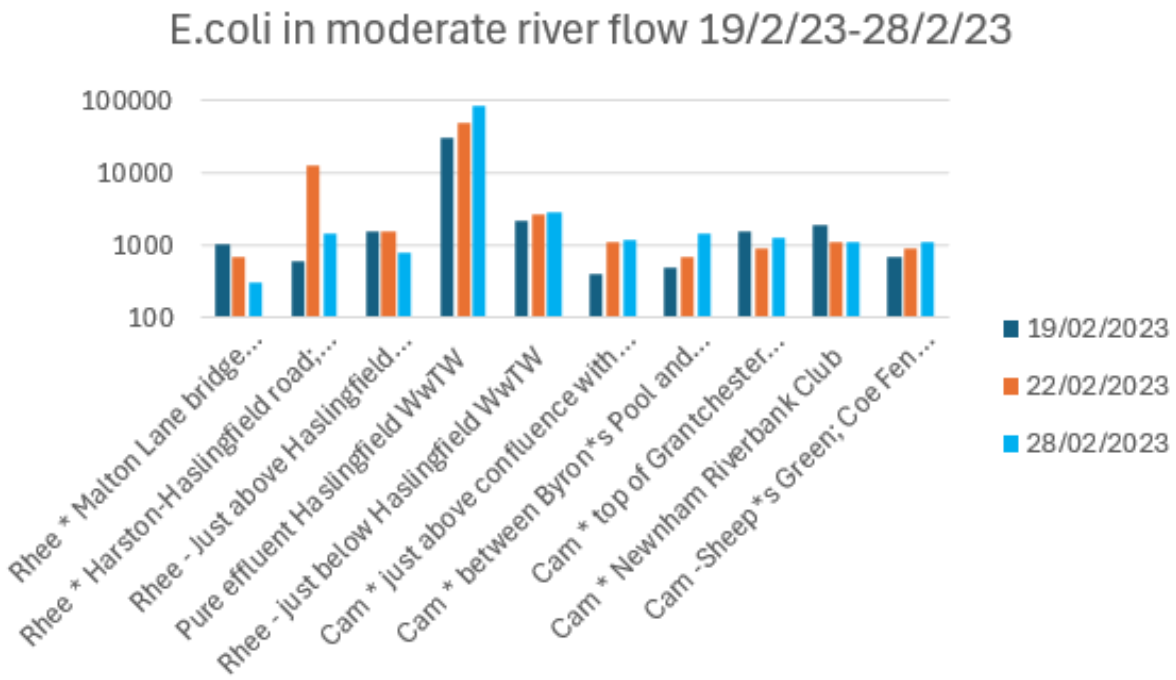
1 May 2025: E.coli stable



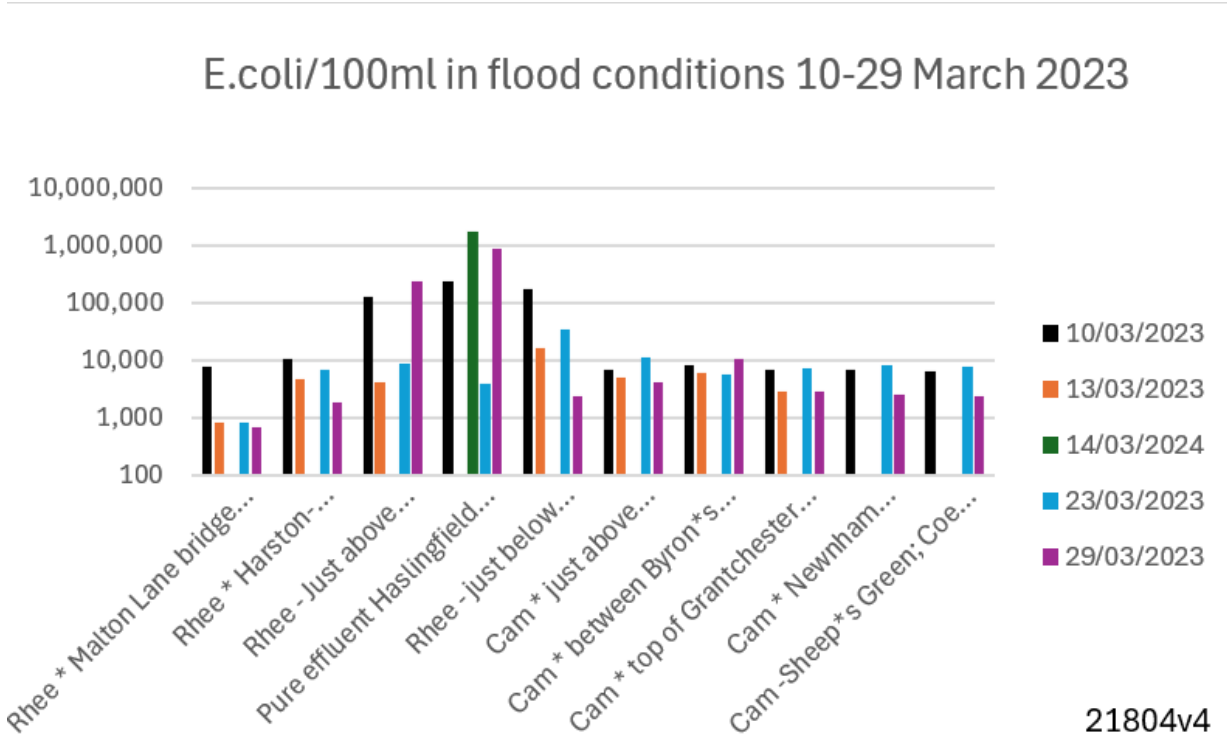
12 July 2025. E.coli improves

Both test runs: dry sunny weather, no cattle, turbid water.

AW data from 2022-23 suggested it might depend on river flow: E.coli usually stable downstream of Byron's pool…

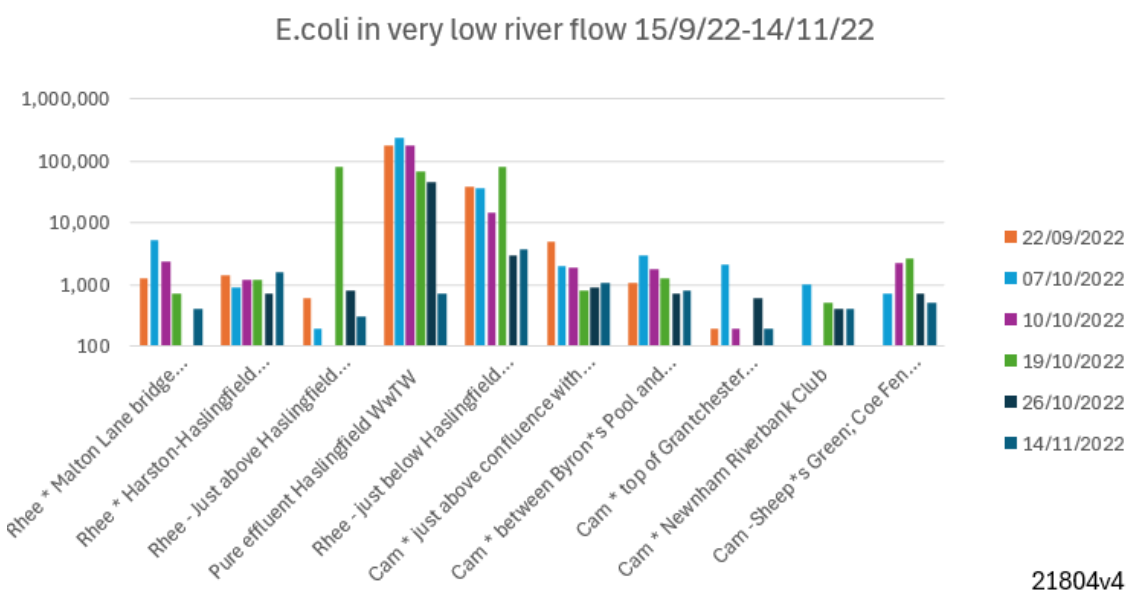


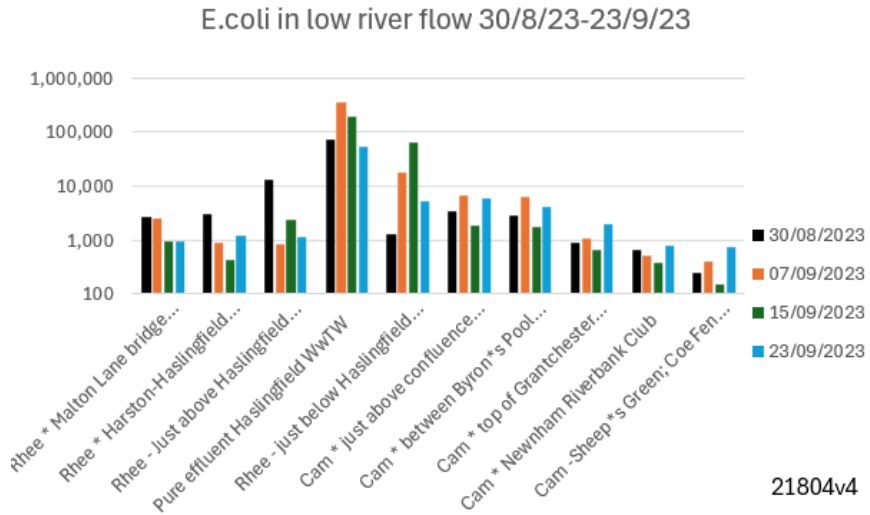
Rhee river flow 0.9 m3/sec



Rhee river flow 5-10 m3/sec

..but SOMETIMES, it improved downstream:
typically this was in sustained dry weather with low river flow.



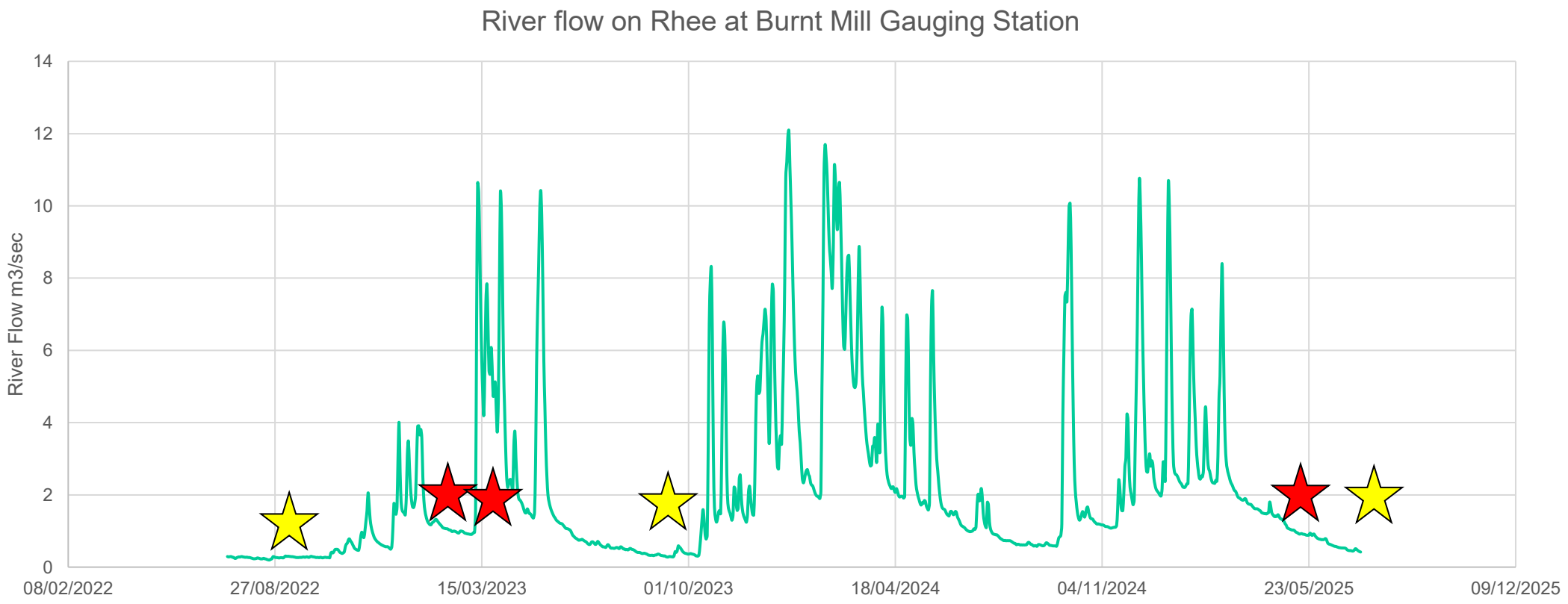


Rhee river flow
0.26-0.49 m3/sec

Rhee river flow
0.33-0.54 m3/sec

0.42 m3/sec on Rhee =~0.1m/s, at Sheep's Green ie ~14hr transit time on 14 July 25

Could low flow give sunlight UV time to work despite the turbid water?



E.Coli improves downstream

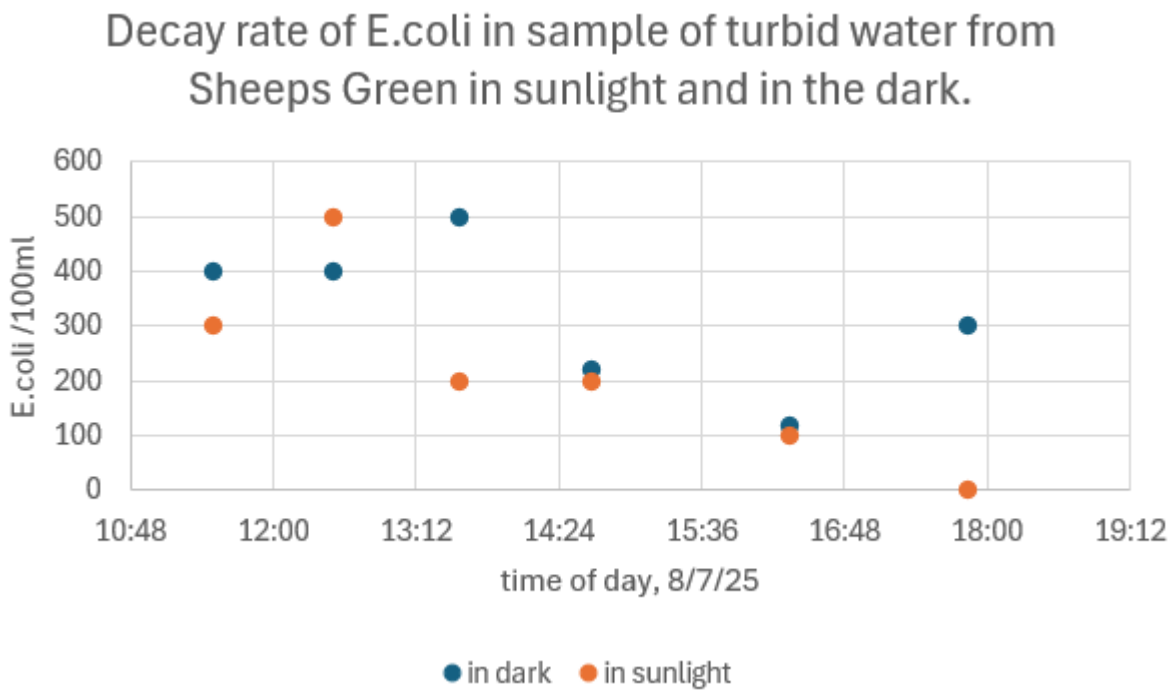
E.Coli unchanged downstream

Turbidity is shockingly effective at attenuating UV

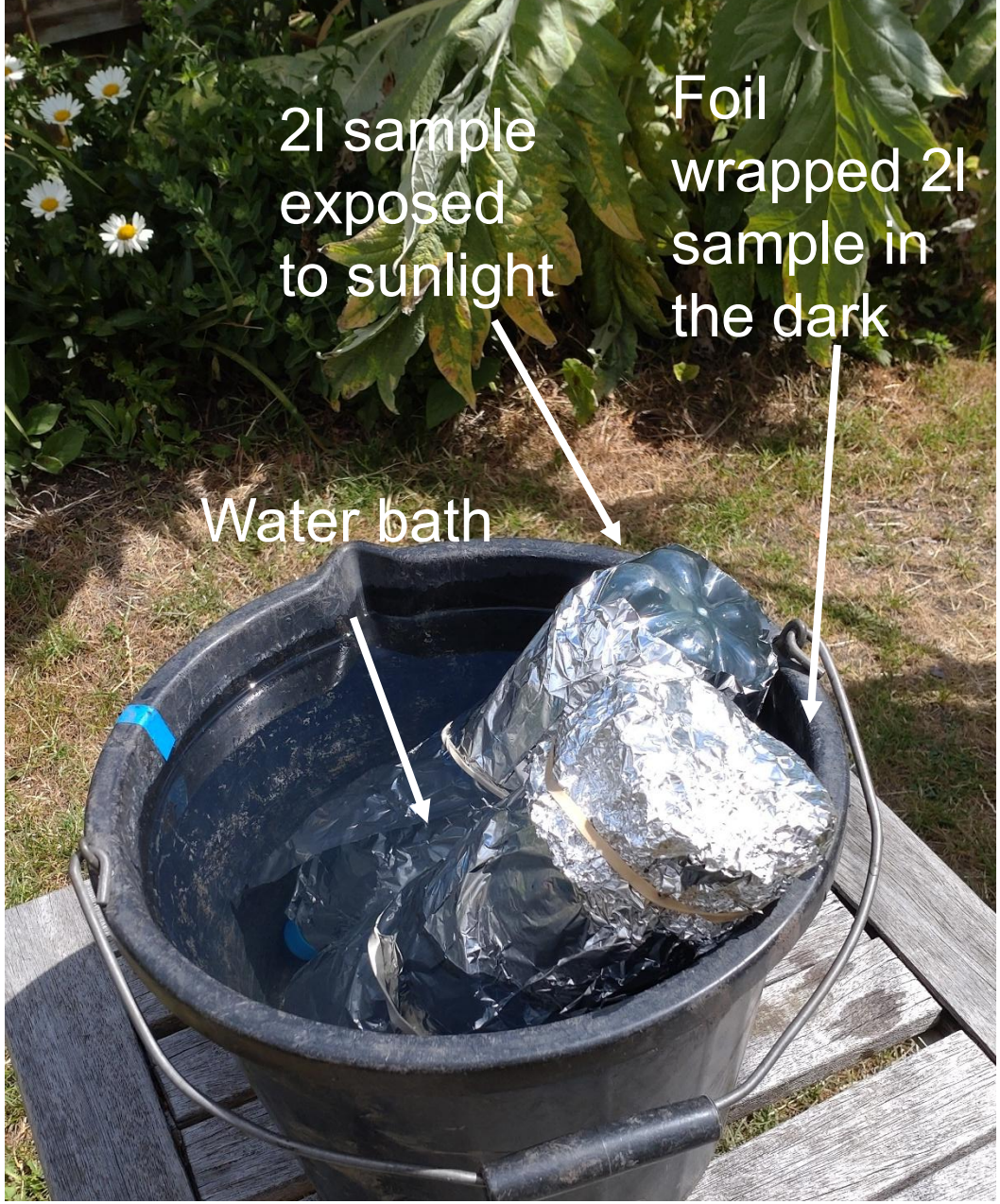
- “a Turbidity of 10 FTU (not very cloudy) obscures 50% of the UV after 10cm. This equates to a DTI of around 93.5cm” (Typical in summer on the Cam and Rhee)

Preliminary UV (395nm) absorption tests by Steve Boreham WildReach Nov 2024

Decay of E.coli in a sample from Sheep's Green in summer sunlight



Tentatively this suggests it takes around 6 hours for sunlight to neutralise E.coli in a 25cm deep sample of water from Sheep's Green. This suggests that a long transit time from the STW to Sheep's Green could be important.



Preliminary UV tests by Anne Miller, CVF July 2025

Our tentative conclusions so far..

- Haslingfield Sewage Works is clearly a major source of E.coli
- Could “good” water quality at Sheep’s Green happen when there is:
  - Sustained dry, sunny weather +
  - Low river flow, eg Rhee < 0.5m3/sec (ie <~0.1m/s at Sheep’s Green) This flow rate gives a ~14 hour transit time from the STW to Sheep’s Green
  - Reasonable E.coli in Haslingfield STW effluent < say 100,000 cfu/100ml
  - No contamination from other sources (eg Vicar’s Brook or Newnham)

- Further work needed, but if confirmed, this suggests UV very important for achieving good water quality at Sheep’s Green