

Key Challenges for the Wilbraham Rivers in the 21st Century

Background

The Wilbraham Rivers are chalk streams documented as far back as the Domesday Book in 1086. Initially supporting four water mills the river water levels reduced after the 1805 Inclosure acts created a lower level field drainage system. Fulbourn Mill closed in 1820 as a result but the others worked until the early 20th Century when abstraction for public water supply (PWS) started in Fulbourn and later Fleam Dyke. Even then there was sufficient water to swim in the rivers which then had all year round flow. The drained surrounding agricultural land shrank to some extent but persistent flooding in fields near Herrings House led to the Great Wilbraham River being diverted into the lower field drainage system in the 1950s – and the old river bed through Great Wilbraham Common Land dried up. In the latter part of the 20th Century increased PWS abstraction started to reduce water in the remaining Little Wilbraham River and diverted river. There are now multiple supply boreholes near the river headwaters providing around a third of Cambridge's PWS. As a result an augmentation scheme was introduced in the 1990s to support the river in drier periods and allow even more PWS abstraction. Despite this the river has runs dry for periods in most years threatening its very existence and the adjacent wildlife. The river passes next to or through three Sites of Special Scientific Interest and a County Wildlife Site.

[A] Water Abstraction Policy

All of Cambridge's public water supply is abstracted from the underlying chalk aquifer as this has been the least expensive option for water companies. This started at the beginning of the 20th Century but increased dramatically in the 1930s with the building of Fleam Dyke Pumping Station near Fulbourn. In recent decades the resulting reduction of groundwater levels has had a noticeable impact on the surface natural environment – particularly the chalk streams that flow on porous chalk streambeds – but affecting all watercourses and their related wildlife.

Recent years have finally seen recognition of this as a problem and limits are starting to be placed on abstraction licences. However this is being very slowly implemented and Cambridge is growing fast (see Cambridge Growth Company). Within 3km of the headwaters of the Wilbraham Rivers approximately a third of all Cambridge's Public Water Supply is abstracted using 5 or more active boreholes.

At a 2022 meeting with the EA the WRPS were shown groundwater modelling that indicated PWS abstraction reduced the groundwater levels at the two river source springs by 3 metres. Empirically this is supported by local observation that the springs at Shardelowe's Well in Fulbourn start up almost immediately if the Fleam Dyke pumping station stops operating.

In the future the WRPS and Cameo are asking the EA to model altering the pattern of PWS water abstraction to see if this can reduce the impact on the river. Cambridge Water Company has indicated they will reduce local abstraction in the future (at the earliest 2028) but this is dependent on new supplies from the Grafham Reservoir transfer scheme and the building of the proposed Chatteris Reservoir (2035).

[B] Water Framework Directive (WFD 2003 & WFDR 2017) Related Issues

B1 Incorrect River Nomenclature

When the Wilbraham River surface water body was classified for the WFD it was incorrectly labelled Quy Water-Bottisham Lode (ID GB105033042700). It should be Little Wilbraham River – Bottisham Lode. The water body is officially classed as a “Main River” along the Little Wilbraham river to Hawk Mill. The correct names are evident on Ordnance Survey maps back to the first edition in the 19th Century.

[The monitoring point regularly used in the past for augmentation management is identified by the EA as “Cherry Tree Stud” but in fact the borehole is situated at Cedar Tree Stud – another error.]

The result is the Wilbraham River is often overlooked when searched for in official records.

The EA have been asked to correct this but have stated it's too complex as so many other data elements on linked websites use these incorrect names.

B2 WFD Surface Water Body Designation

The EA have designated the river as “A Heavily Modified Water Body - AHMWB” this classification is important as it means assessment of the river can only ever be for its “ecological potential” rather than its actual ecological state.

The reason for this designation cannot be identified in the Anglian River Basin Management Plan – where it should be stated. The WRPS would like the reasons to be clearly and publicly stated.

B3 Flow Measurement Policy

After 2015 the EA stopped assessing the hydrological (FLOW) regime in the Wilbraham River. This was because the river is “a heavily modified water body” – but so are most other surface water bodies in this catchment that are hydrologically assessed. More importantly the EA operate an augmentation scheme on the river where flow is supposed to be monitored in order to manage the augmentation – see below.

The effect of the decision to class the river as “augmented and not flow dependent” means the local water company (and others) can avoid monitoring the hydrological state of the river - as they use EA designations as guidance. This is particularly relevant in drought period environmental assessments. The WRPS considers that this decision needs to be directly challenged and reversed.

B4 WFD Flow Measurement Location

The WFD FLOW measurement point is at LODE. This is downstream in the catchment but crucially also downstream of the nearby confluence with the Black Ditch - which is always in water owing to the continuous effluent discharge from Teversham Sewage Works.

The result is that the entire Wilbraham River system can be dry but the WFD measurement at Lode continues to record flow. The WRPS considers that more relevant flow/level monitoring points are needed.

B5 WFD Quality Sampling Location

The main Quality Sampling point is identified as Quay Water at the A1303 bridge crossing. This location is upstream of the Black Ditch confluence so completely misses where the sewage effluent (and any road runoff via the Parish Ditch) might be expected to have the most effect on quality.

Quality sampling should take place at the current WFD flow monitoring site or closer to the Cam. Ideally the quality and flow sampling locations need to be reversed!

B5 WFD Assessment Frequency

The WFD assessment cycles were initially yearly but more recently only 3 yearly.

Quality measurements also were originally on a yearly basis but were last made in 2019 and 2022 and several items have been removed from the listing. Such infrequent testing is of questionable value and likely inaccurate given the wide range of water volumes during the year.

RESULT – When planning for government policy, commercial developments or National Infrastructure Projects takes place all of these designations and measurements (usually based on “desktop assessments/surveys”) are used to decide if the policy / development will have any impact on the environment. The inadequate WFD assessments are being used to base planning and policy decisions on – which may involve construction and other permanent impacts on river flow and quality.

A recent report from the Office of Environmental Protection has identified clearly the widespread failings of the current UK implementation of the Water Framework Directive. The current government response has been to acknowledge this and set up the Cunliffe Water Commission to report end Q2 2025. This has a formidable task covering potential reform of the water companies and regulators. The WRPS hopes to make submissions to the Commission.

[C] Failure of the Lodes Granta Groundwater Scheme (Augmentation) Objectives

In 1992 the Lodes Granta Groundwater Scheme was introduced in order to allow increased local PWS abstraction. *“The Lodes-Granta Groundwater Scheme is designed to improve the water environment to the north and east of Cambridge and at the same time provide more water to meet increasing public demand in a rapidly expanding part of the country.”*

It is the view of the WRPS that the drying up of the Wilbraham River on frequent occasions since the implementation of the LGGS indicates a failure of the scheme to meet its objectives.

However we also recognise that reducing abstraction is challenging – but the augmentation scheme could be improved and that limited EA resources have led to significant problems in recent years that should be addressed.

C1 Augmentation Pump

The Dungate Farm pump is the most utilised pump of the six pumps in the LGGS and was last replaced in 2006. It operates fully on/off or on a duty cycle as there is no ability to vary the output otherwise. It is prone to “tripping out” owing to hot weather or powercuts and needs manually

resetting. This cannot be done remotely and requires a site visit (Engineer from Bury St Edmunds) to restart. This will only occur in working hours. At critical dry periods at weekends a 72 hour failure can result in the river bed drying out and making recovery impossible. It is also not clear if the capacity of the pump can actually achieve the licenced volumes.

The WRPS and the associated Dungate Farm Augmentation Stakeholder Group believe the Dungate Farm pump should be upgraded and provided with improved remote telemetry and control systems.

C2 Augmentation Monitoring

There are two EA gauging stations that monitor flow in the upper sections of the augmented river relatively close to the augmentation sites. Only one of these has live telemetry and is visible on the hydrology explorer. At present this station (The Lanes) stopped providing public data on 24 April 2024. The other station “Fulbourn New Cut” – actually at Coles Bridge, Fulbourn – has no telemetry although we have been advised this will be installed in 2025. We are also advised it is the only gauging weir in the Cam catchment without telemetry.

Downstream there is no monitoring prior to the WFD point at Lode – as noted above – which is kept in water by effluent flowing in the Black Ditch which joins the river downstream of Quay Mill Hotel. We have proposed live monitoring downstream by the A1303 bridge using the existing EA stage borehole TL55/170 installed in the 1990s that contains a datalogger (no longer read) which can apparently be networked fairly easily. A request has been made for this to happen in 2025.

The WRPS believe the existing EA monitoring assets should be repaired and provided with live telemetry. In addition live telemetry should be provided for the TL55/170 stage borehole to allow appropriate monitoring of the downstream section of the Wilbraham River.

Given the lack of current effective monitoring the WRPS is trialling cameras showing the calibrated gauge boards at both gauging weirs and TL55/170 on an hourly basis.

C3 Augmentation Operational Management

Given the less than ideal pump arrangements and the lack of timely and appropriate monitoring it is not surprising that the EA operational team work in difficult circumstances. Monthly site visits, live monitoring of the Cherry Tree Stud borehole levels and regular updates from WRPS members and riparian landowners are the current basis for managing the augmentation. However the management criteria appear to be rather vague. The WRPS was advised by a retired EA engineer who worked on the Great Ouse Groundwater Scheme that all these augmentation sites were given “control” documents. The current EA team have said they have no knowledge of these.

The WRPS consider the current operational management needs to be substantially improved with clear operational criteria following improvements to the augmentation pump and river monitoring spelt out above. This could then provide more timely and consistent augmentation and contribute to the WRPS aim of maintaining all year round flow in the river whilst the difficult subject of reducing abstraction is addressed.