

# Aquatic Engineering

Working Above Water, On Water & Under Water

## Case Study : Biomanipulation Curtains - Caen Hill Locks Devizes



Client: British Waterways / Canal & River Trust

Caen Hill was the last stretch of the Kennet Avon Canal (linking the River Kennet at Newbury and the River Avon at Bath) to be completed, largely because it presented such a formidable obstacle.

In all there are 29 locks which rise 237 feet in 2 miles (72 m in 3.2 km) or a 1 in 44 gradient. The locks are in three groups. The lower seven locks are spread over 1.2 km. The next sixteen locks form a steep flight in a straight line up the hillside. Because of the steepness of the terrain, the pounds between these locks are very short. As a result, 15 locks have unusually large sideways-extended pounds to store the water needed to operate them. These pounds were formerly biodiverse and species rich, however due to the increase in turbidity creating pleasure boat traffic and the rapid rise in the carp population throughout the canal network, the pounds ecology had all but expired.





High turbidity from increased diesel engine boat traffic has had a detrimental impact of the biodiversity of the Kennet Avon Canal in recent years. In January 2009 the lock pounds were drained down to facilitate fish removal.





An abundance of zooplanktivorous cyprinids (silver fish) and a few piscivores (predators) were netted from the ponds, along with turbidity creating carp to 28lb.





AquaticEngineering installed a flexible biomanipulation curtain across the mouth of the ponds to prevent the re-entry of fish and hold back the turbidity created by boats & operation of the locks.





The flexible silt / fish curtains held back the turbidity as is clearly visible in the above image and submerged macrophytes began regenerating for the first time in many years (below).



**Caen Hill Locks Biomanipulation, 17<sup>th</sup> April 2011** – Due to the success of two previous installations in 2009, the research and development department of AquaticEngineering installed a further six curtains in lock pounds, or reservoirs, on the world famous Caen Hill flight at Devizes on the Kennet & Avon Canal

In all there are 29 locks which rise 237 feet in 2 miles (72 m in 3.2 km) or a 1 in 44 gradient. The locks are in three groups. The lower seven locks are spread over 1.2 km. The next sixteen locks form a steep flight in a straight line up the hillside. Because of the steepness of the terrain, the pounds between these locks are very short. As a result, 15 locks have unusually large sideways-extended pounds to store the water needed to operate them. These pounds were formerly biodiverse and species rich, however due to the increase in turbidity creating pleasure boat traffic and the rapid rise in the carp population throughout the canal network, the pounds ecology had all but expired.



New installations May 2011





Following the initial installations clear water conditions were achieved within the lock pounds, compared to the highly turbid water generally found in the canal system. Submerged macrophyte populations naturally and rapidly regenerated providing the perfect habitat for the Anisoptera and Zygoptera which this site was once famous for, whilst zooplankton began their mammoth task of keeping phytoplankton at bay!

Glyn Onione, Senior Technical Consultant of AquaticEngineering said:

"This is a totally original concept developed by our R&D team in partnership with British Waterways Senior Ecologist (south) Oda Dijksterhuis. The original installations proved highly successful and with recent refinements and modifications we are now extremely pleased that British Waterways have committed to a further six installations. We have every confidence that these biomanipulation curtains will restore the degraded pounds back to the biodiverse habitats they once were, yet allow others to enjoy the canal network from the vantage of their narrow boats".

All eight installations will be jointly monitored by British Waterways, and AquaticEngineering over the next few years and the results made known through our websites.

**AquaticEngineering** - Working Above Water, On Water & Under Water

Kingarth Lodge, Church Road, Binstead, Isle of Wight PO33 3SZ

[www.aquaticengineering.co.uk](http://www.aquaticengineering.co.uk)

Tel No 1: 01983 616668

Mob No: 07891 438666

[caroline@aquaticengineering.co.uk](mailto:caroline@aquaticengineering.co.uk)

The **AquaticGroup** : **AquaticEngineering** : **AquaticResponse** : **AquaticConsultancy**