CASE STUDY

Manage the risk of fish and eels being trapped in pumps and turbines

Project Summary

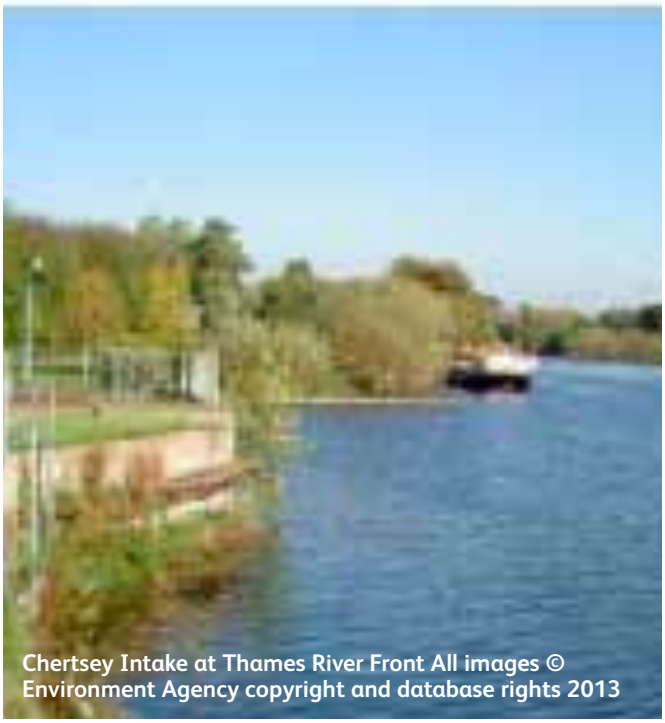
Title: Fish Screening on Lower Thames Potable Water Intakes
Location: Chertsey, England
Technique: Fish screens on abstraction intakes
Cost of technique: ~~£££££~~
Overall cost of scheme: ~~£££££~~
Benefits: ~~£~~£
Dates: 2013 - 2014

Mitigation Measure(s)

Manage the risk of fish and eels being trapped in pumps and turbines

How it was delivered

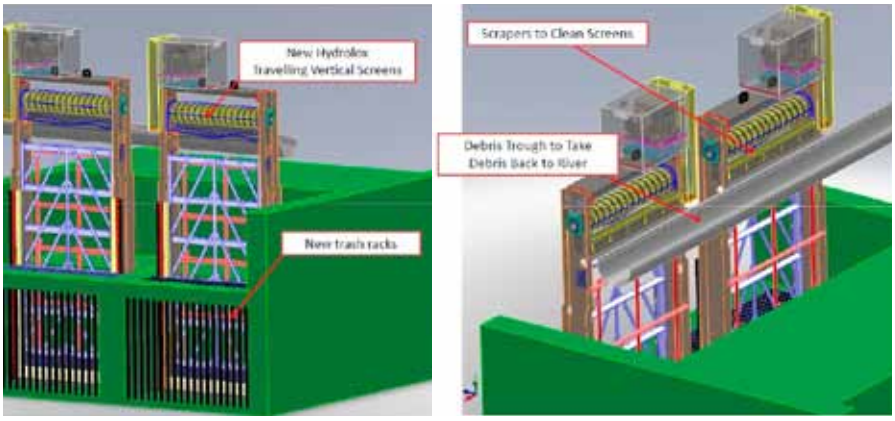
Delivered by: Veolia Water (now Affinity Water); Thames Water
Partners: Environment Agency



Chertsey Intake at Thames River Front All images © Environment Agency copyright and database rights 2013

Background / Issues

A comprehensive study was carried out to look at the scale of entrainment of fish into the major potable water intakes on the River Thames. The study revealed that very few intakes on the river currently have any positive exclusion screening for fish, and that there is a significant level of entrainment. This has a potentially detrimental impact on fish populations in the river.



Scematic view of proposed structural changes at the Chertsey intake

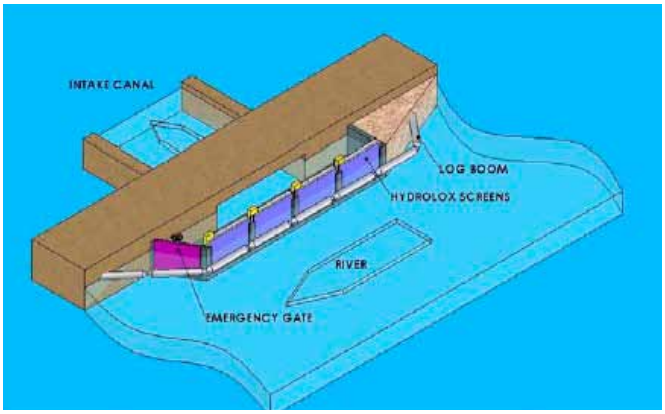
CASE STUDY

Step-by-step

Following recommendations included in the investigation report the preferred solution was to:

- Install Hydrolox self cleaning belt screens to one group of Veolia Water intakes on the Thames at a single location. These were tested, (along with other technologies) as part of the study and proved to be effective and suitable for use at a number of the intakes. The narrow slot width of 1.75 mm effectively excludes all but the very smallest of juvenile fish.
- Install screens at the river's edge, providing sufficient surface area to maintain low levels intake in and around the abstraction pumps which preventing fish from being sucked onto the outside of the screen. In addition, because these are self-cleaning, there is no significant blinding or reduced abstraction head loss

Best practice 3 mm passive wedge wire cylinder screens were installed over the 1.75 mm slots on the first intakes in 2013. Installation will continue until the end of 2014.



Overview of Hydrolox self-cleaning belt screens

Benefits

- Improved fish stocks (in terms of both productivity and diversity) with a wider range of species recorded and greater numbers of each species.
- Protection for downstream migrating adult eel and salmonid smolts.
- Protection for upstream migrating elvers.
- Improved angling opportunities.
- Improved water treatment efficiency as the water pumps do not need to be regularly cleaned out of entrained fish.

Lessons Learnt

- The first screen installed as part of this project included a screen set slightly recessed into the inlet behind the trash racks. Where possible this needs to be avoided and the travelling screen positioned at the river front so that a sweeping flow is maintained across the face of the screen to guide fish safely downstream.
- Subsequent intakes are being designed with the travelling screens positioned flush with the river bank. This can make installation more expensive (in some situations) but can be a very important consideration in reducing the risk of fish entrainment (and for debris handling).

Project contact: Fisheries & Biodiversity Team, South East Thames Area, South East Region, Environment Agency