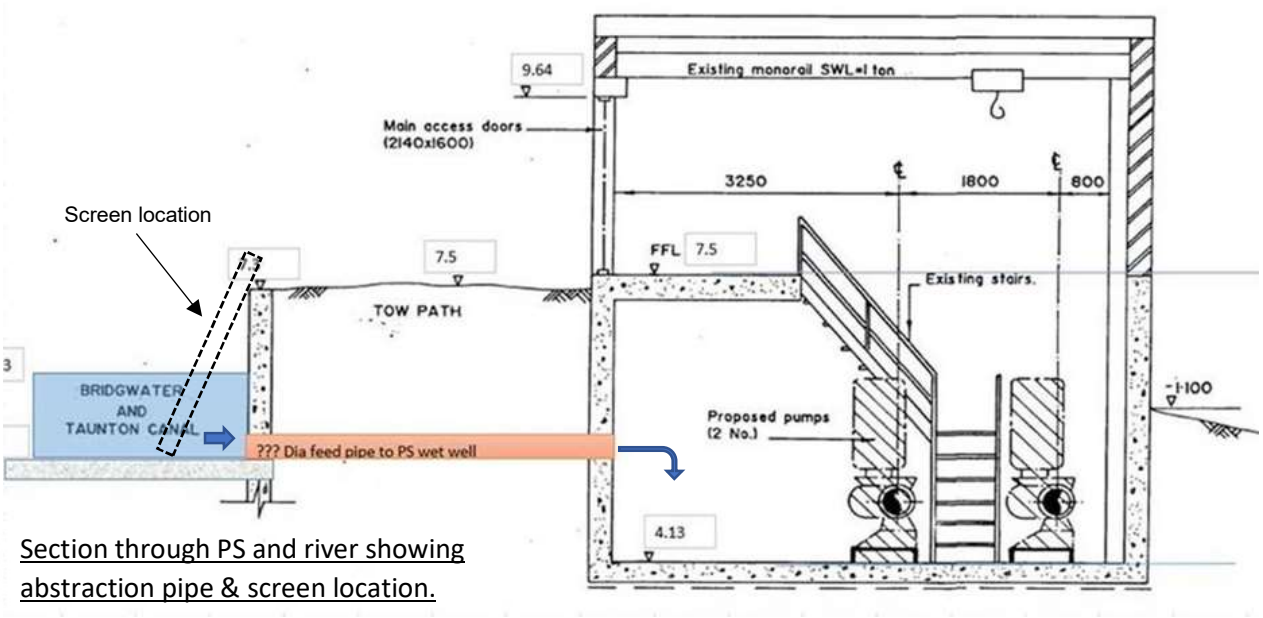
Albert Street – Wessex Water

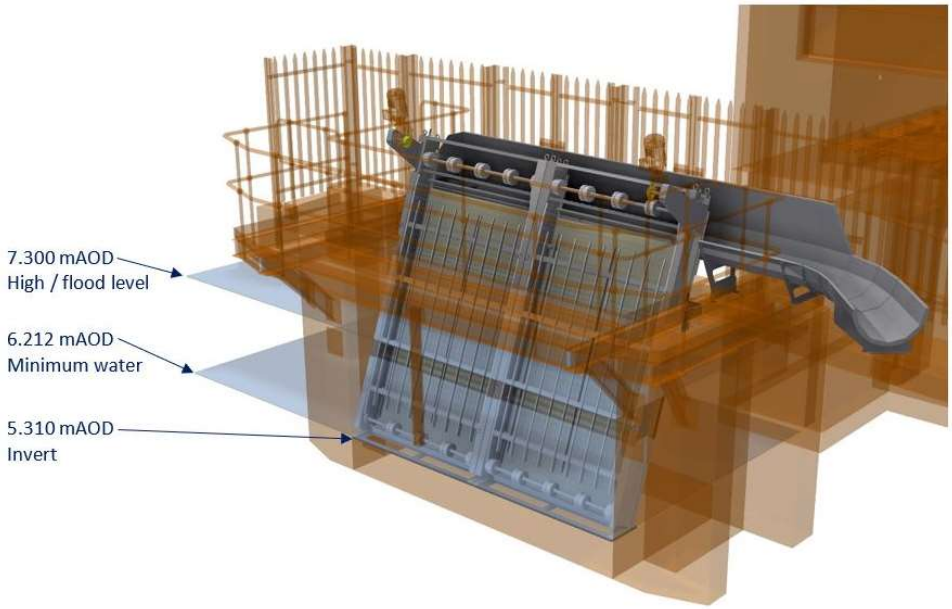
A fish exclusion intake screen, compliant with the Eels Regulations, was required at the Albert Street pumping station, Bridgewater, Somerset.

The screening equipment was required to be positioned on the front of the existing intake structure.

GoFlo screens was approached by Stantec (Contractor to Wessex Water) to provide screens with a 2 mm mesh opening and pass 0.222 m^3/s river water to the pumps.



Section through PS and river showing abstraction pipe & screen location.



Two 1.7 m wide, 3.34 m long screens were selected to comply with the Eel regulations for this particular application with an abstraction rate of 0.222 m^3/s.

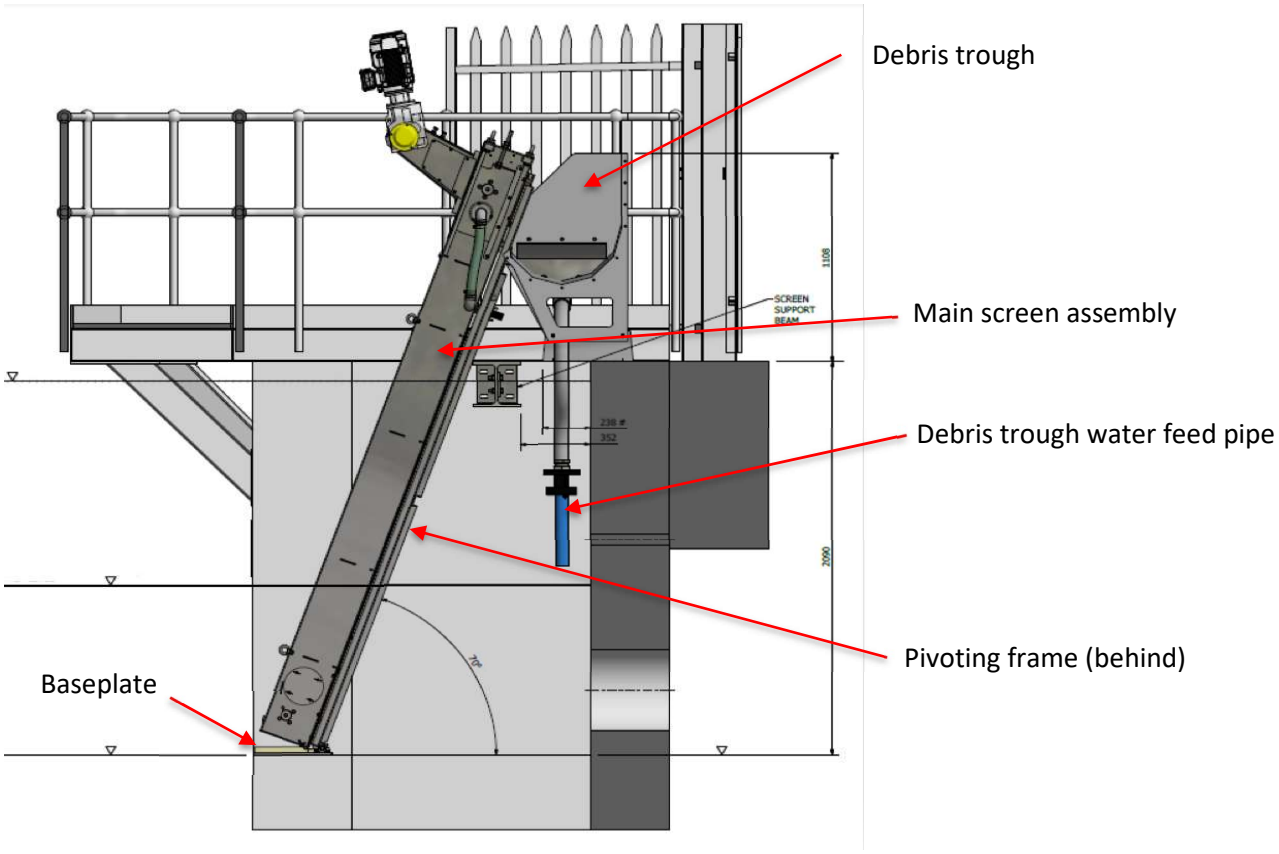
The water flow to the pumping station had to be slow enough to allow eels and other small fish to escape, hence the Approach Velocity calculation is based on the Low Operating Water Level, a screen Angle of 70° from the horizontal and screen mesh area including a 10% blinding factor.

The screens selected each have a mesh belt width of 1.7 m and a wetted mesh length of 0.789 m, giving a total mesh area for two screens of 2.6826 m^2.

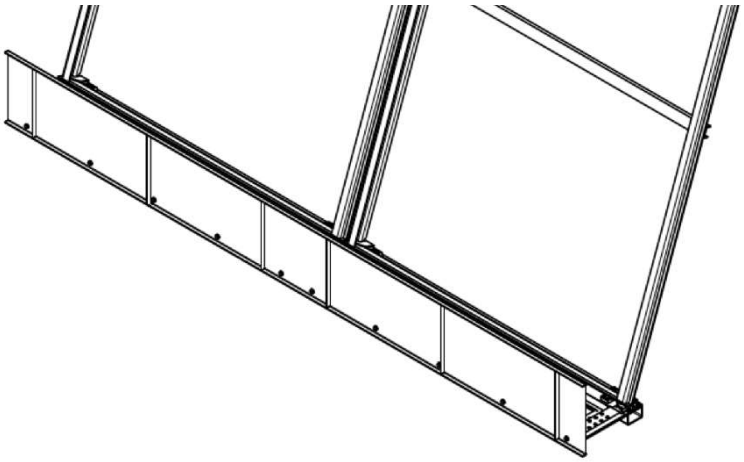
Maximum flow through the screens: 0.222m^3/sec.

The calculated approach velocity is 0.0993m/s. This meets the EA requirement to not exceed 0.1m/s.

The screens being installed on the river-side meant that an access platform would be required for access and maintenance of the screens. The screens can pivot forward into the vertical position for better access to the drive motors etc. The screens are moved into this position if there is a need for one to be lifted out for major servicing.



A late addition to the design was to include a silt baffle in front of the screens. The function of this was to retain silt and prevent it from inundating the bottom of the screens.



Installation

The pumping station intake required a new concrete structure to accommodate the GoFlo screens, house the new pipework, cabling and also provide support to the access platform. GoFlo were not contracted to supply the access platform on this occasion, although some design input was required so the contractor could design the structure around the two screens and incorporate winch anchor points for pulling the screens forward into the maintenance position.

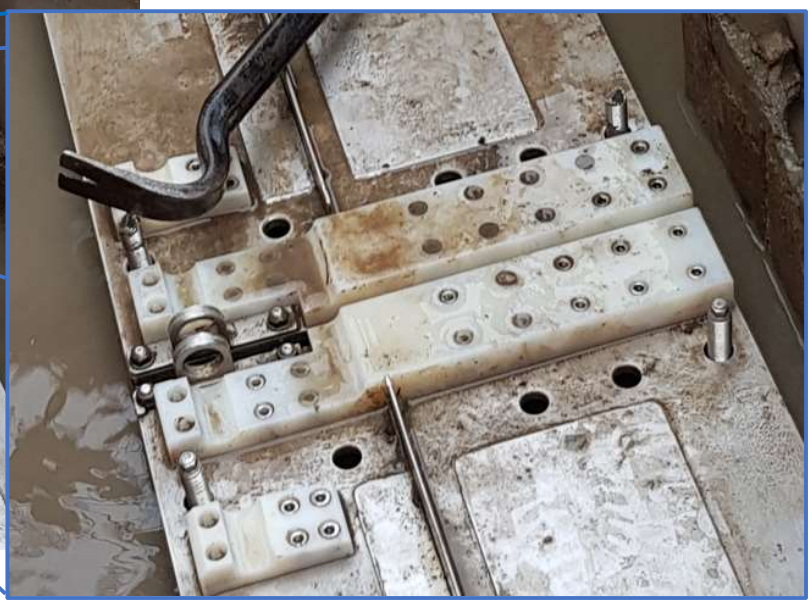
The new in-river structure required a cofferdam had to be in place before any civils works could begin.

Once the concrete structure had been cast and shuttering removed, GoFlo installation team could access the inlet chamber and prepare for installing the screen baseplates.

The chamber being below the riverbed level meant there had to be shuttering to retain the silt. There was some water leakage, which made conditions in the chamber less than ideal for marking out the floor anchor points for the baseplates, even though a pump was used to keep the water down to an acceptable level.

This picture shows a more permanent solution for retaining the silt.

Inset: Note the threaded studs. These were resin-fixed using a Reg 31 approved polyester resin that is suitable for use in wet environments.



The baseplates were levelled with shims under the anchoring points before tightening down.

Galvanised I-beam mounted across the back of the chamber supports the top of the two screens when they are inclined in the operational position. The beam support brackets are made in stainless steel and have to include galvanic isolation sheets between the beam and bracket. The fixings are also stainless steel, so these include isolation washers.

Above: Angle bracket in position. These were an addition to the original design due the back wall being further way that it should have been. The brackets were to support the debris trough, which overhangs the concrete wall, hence the extra supports needed.

It was noticed that the chamber wall was bulging out and would interfere with the screen support frames. The side of the wall had to be ground down until the frame had enough clearance, which took several hours to achieve!

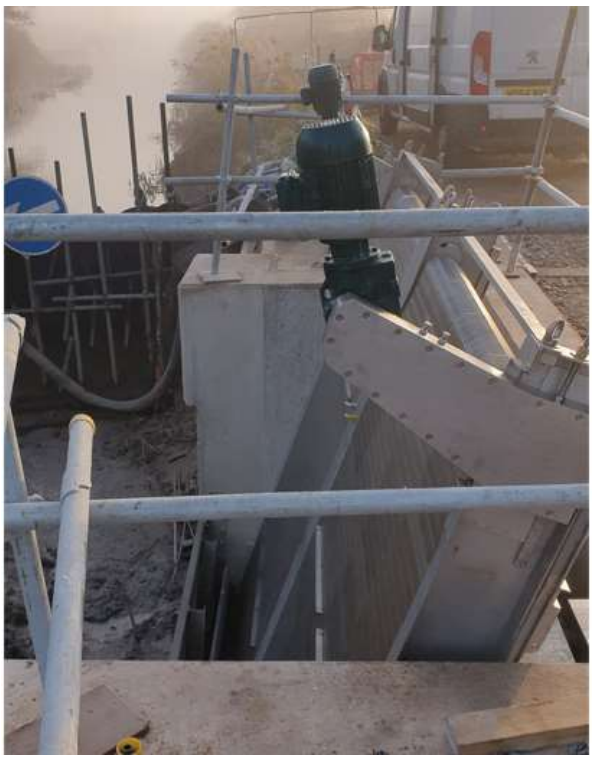
Clearance between the wall and frame is minimal, but enough to allow the screen's side brush strips to fit.

View of frame guide rails from top of chamber wall.

The time taken to level and align the base plates pays off as the frames are parallel to each other along their entire 3.3 m length.

Once the screens are both installed, the benefit of the accurate frame installation becomes apparent as the screens fit together with equal spacing and brush strip interference.

First screen being lifted into position.



Both screens were in position within a few hours. Most of that time was due to crane availability: The screens slide into place on the pivoting frames and are then leaned back onto the I-beam that spans the chamber.

GoFlo engineers would not visit site again for a few weeks, as the access platform and cabling had to be installed.

The return visit would be to install the remaining sections of the debris trough.

Debris trough section to the right of the picture showing how the angle bracket below supports the overhang of the trough. Blue hose is the wash water feed to the screen spray bars. These have quick-release connections to allow the screens to be pivoted forward from their resting position for access to the drive motor from the platform.

Completed stainless steel debris trough.

The trough is anchored to the floor at several locations and has a gentle slope to aid flow back to the canal.

Trough is made up of flanged sections bolted together, all in TIG welded 304 stainless steel.

Completed and operational. Security fencing was required at this site due to the location of the inlet structure being adjacent to a public footpath.

Enquiry and contact info

If you have a specific screening project in mind, you may find it useful to complete the 'measuring-up guide' on our website here: **www.gofloscreens.co.uk /measuring-up-guide** Alternatively just call our office and speak with one of the GoFlo engineers who will be happy to help.

GoFlo Availability: GoFlo screens are available throughout the European Union. Availability outside of the EU is by special arrangement.

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