

Case Study

Arlington Water Treatment Works



Client:
South East Water

Principal Contractor:
Enisca Browne

Specialist Subcontractor:
Colloide

Location:
Eastbourne, East Sussex,
UK

Project:
Rapid Gravity Filters

Arlington WTW is a 20 mld plant near Eastbourne operated by South East Water. The site is fed from a nearby Reservoir which is in turn topped up from a nearby river (filled over the winter months). The plant consisted of Clarifiers, RGF, GAC filtration, Chemical dosing inc Ferric chlorite at clarifier stage etc

Some of the RGF's had lost a lot of the media (300-500mm) and were experiencing turbidity spikes and affecting the run times of the GAC filters. The 4 clarifiers upstream were in poor condition and were prone to losing blankets during periods of high flows. The plant was designed to run on 4 out of the 5 RGF's and work commenced in Spring when demand was lower and the plant could cope with one of the filters being off-line.

Technical Information

The main components of the system

The original works were built in the early Seventies and the plant was upgraded in 2020-21 from the original plant i.e., new MCCs, pumps, blowers, new clarifier internals along with a new sludge process etc. Enisca Browne were the principal contractors.

As part of the upgrade, the 5 RGF's were upgraded to include new Media, New Control valves, new isolation valves etc . Colloide were initially contacted to offer proposals for replacing the existing filter floors completely and developed options (In House) including a new dual lateral floor with new launder arrangements.

We also considered installing a cadar plenum nozzle floor as an alternative to either the existing or dual lateral floors. However, these new floor options would have required not only new pumps and blowers but replacement of practically all of the pipework and other infrastructure and these options were, in the end, not taken forward in favour of refurbishing what was there and keeping the older style backwashing arrangements. Thus, Colloide's package included the refurbishment of the existing filter, retaining the existing backwash arrangement.

Initial investigation was carried out to determine the condition and confirm the size of the nozzles.

The sequence of refurbishment work included existing media and nozzles removal, Inspection of the RGF structure including the floor, underfloor chamber, Removal of existing valves. A lot of the pneumatic valves were passing, and the manual isolation valves were inoperable due to lack of operation. These were replaced after the media replacement was completed.

The new sand media was installed along with a proportion of manganese Dioxide and a pea shingle base. Due to the failure of some nozzles some of the media had worked its way into the under-floor area.

2 days were spent on each filter jetting and washing all media into the drain. Camera Inspection of all the nozzles laterals was carried out to confirm that the underfloor laterals and drainage channels was clean prior to the new nozzles installation. The new nozzles were installed and 2 pattern tests were carried out at low /high level top confirm that the pattern was uniform. This was witnessed and signed off by the client.

The new media was placed in the filter by crane and once the required level was reached, the filter was mixed and washed and fines removal was started. 5 to 6 washes were carried out per filter to remove the fine material.

The RGF was then pattern tested again to prove the wash efficiency and after some water quality checks , the RGF was put back into service.

Engineering a brighter tomorrow

