Hazards Green WTW

Drinking Water | Case Study

The Client

South East Water supplies 565 million litres of drinking water to 2.1 million customers in Kent, Sussex, Surrey, Hampshire and Berkshire. SEW merged with Mid Kent Water in December 2007 to bring together two key water companies in the South East of England into one company.

The Works

Hazards Green WTW is located near the site of the Battle of Hastings and now supplies up to 18 million litres of drinking water per day (Ml/d).

Hazards Green WTW was originally supplied by boreholes on site until a raw water source was added from the nearby Wallers Haven River. This source is subject to high turbidity loadings during heavy rain and can be too low to abstract from during drier periods.

SEW have recently constructed an additional supply from Darwell Reservoir to provide a raw water source during periods of drought.

The Client's Needs

The expansion of Hazards Green WTW was due to South East Water's requirement for a new independent water treatment clarifier stream to produce up to an additional 12.0 Ml/d of water.

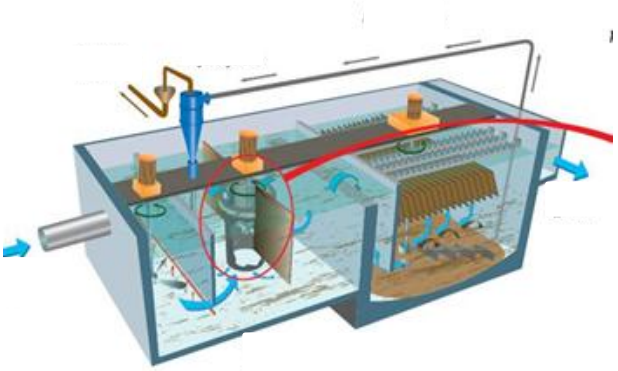
The Solution

Veolia Water Technologies provided the process design, construction, installation, testing and commissioning of 2 package unit Actiflo® High Rate Clarifiers. This water is blended with the effluent from the existing clarifier stream rapid gravity filters, before being treated through the existing GAC absorbers and chlorinated in the existing contact tank.

In addition to the new Actiflo® clarifier stream, the existing sludge dewatering centrifuge was replaced by a membrane filter press. This press is sized to take the combined sludge flow from both treatment streams. The existing dirty washwater facilities have been retained but modified to interface with the new sludge thickening facilities which are centred on 2 Multiflo® sludge thickeners.

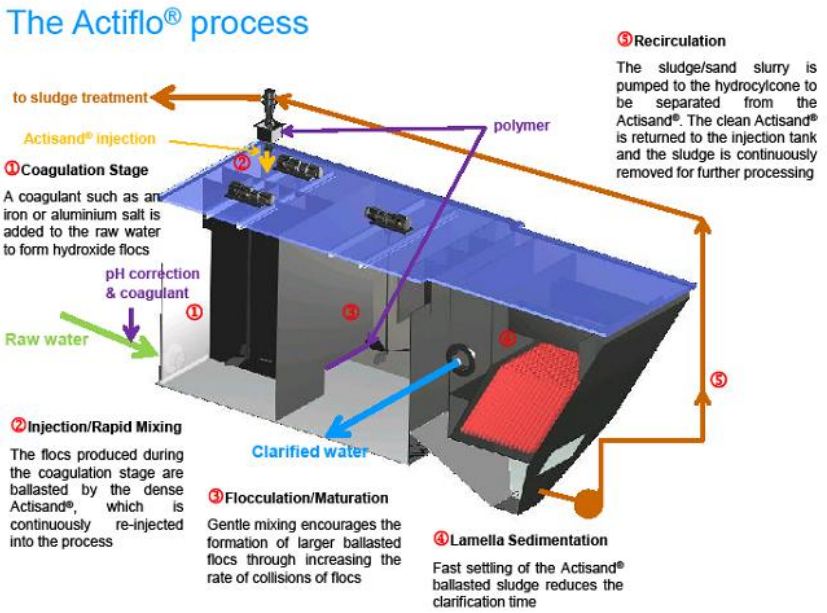
The existing chemical dosing facilities have been replaced and/or upgraded to accommodate a revised chemical selection. The purpose of the project was to increase the treatment capacity of the works while improving the process response to sudden high raw water turbidity events. Due to its ability to start-up and achieve treatment requirements within minutes, Actiflo® has proved to be more effective and versatile than the original clarifiers in dealing with the raw water variations.

Hazards Greens WTW



Project Description

The Actiflo® process is a patented compact clarification system that utilises microsand as a seed for floc formation. The resulting sand ballasted floc displays rapid settling characteristics that permit clarifier designs with high rise rates and short retention times. These designs result in system footprints that are between 5 and 20 times smaller than conventional clarification systems of a similar capacity. Actiflo® is ideally suited for difficult-to-treat waters, such as rapidly fluctuating water sources.



Key Data

ACTIFLO®
Package size – AS4
Number of streams - 2
Water Quality:
Turbidity - <2NTU

RAPID GRAVITY FILTERS
No. of units - 4
Filter area – 31.75m2
Water Quality:
Turbidity - <0.15NTU
Aluminium - <50□g/l
Manganese - <10□g/l
Iron - <50□g/l

MULTIFLO®
Number of units - 2
Design flow – 40m3/h
Design loading – 74kgDS/h

Engineering Challenges
Planning constraints limited the height of new structures on site so the new stream was constructed partially below ground level.

The package Actiflo® and Multiflo® units were able to be fabricated off site and then erected onto a flat slab which simplified civil works.

Each process stage of the new treatment stream had to be commissioned whilst discharging to waste until such time as the treated water quality could be proven. The flow was then integrated into the works output flow. Once the new treatment stream was fully commissioned, the existing works had to be shut down in stages to be integrated into the new control system. This required very close cooperation between the VWS and SEW site operational teams.

Environmental Challenges
Methods of work were restricted due to the presence on site of Great Crested Newts (*Triturus cristatus*) and Pipistrelle Bats (*Pipistrellus pipistrellus*). A derelict cottage which was due to be demolished as part of the work scope was delayed until after the bat roosting season. Even then the demolition of the entire roof was carried out by hand under the scrutiny of a 'bat inspector'. Great Crested Newts were commonly found on site and the topsoil stripping and replacement could only be carried out when the newts were not seeking new habitats after hibernation.

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