atac

Case Study

Reduction of Storm Flows

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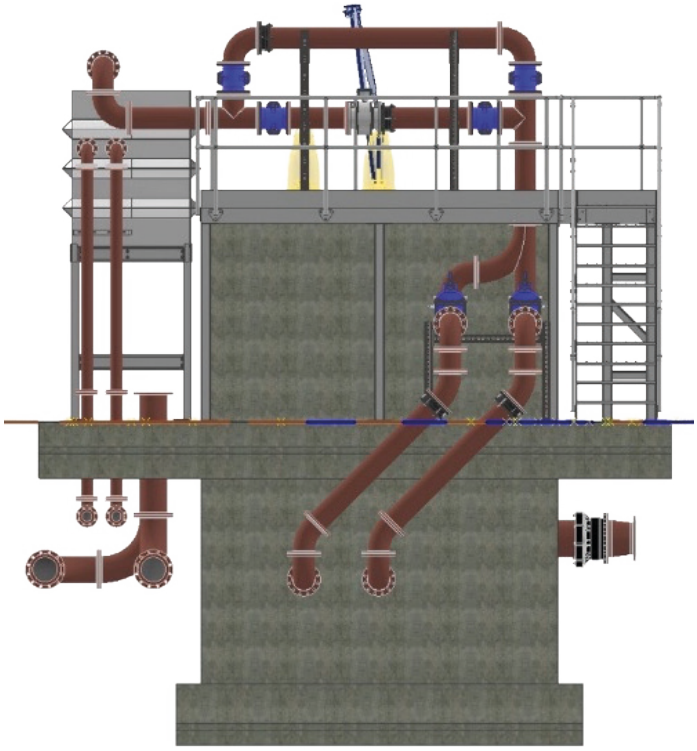
CASE STUDY

Kent — Pump Station to Reduce Storm Flows

ATAC Solutions were asked to investigate reducing premature storm flows from a Water Treatment Works in Kent and provided with a proposed design by a Water Company.

ATAC's engineers were able to identify a flaw in the proposed Water Company design and with limited time, (due to the regulation date) we were able to propose a different concept; based upon providing a Pump Station between Inlet Works and Primary Settlement Tanks. The existing site setup utilised a flume feeding a distribution chamber which in turn fed the PSTs. Unfortunately the distribution chamber only had a small (circa 50mm) driving head advantage over the outlet weirs in the PST, added to this the pipework between was surcharged and prone to becoming blocked / fouled. This led to the existing equipment not being able to pass full flow to treatment and causing increased flows to site storm tanks.

The ATAC's solution was to install a new measured Pump Station between Inlet Works and Primary Settlement Tanks, there were a number of advantages; primarily that we could achieve a gravity fall to the PS and the station itself would be able to provide some flow balancing.



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Site preparation

We were able to identify an area of ground near the Inlet Works that would allow the new Pump Station to be created “offline” and keep all existing equipment operational whilst the build was in progress.

We started excavation of the area in early May 24, this was made more difficult due to the presence of a layer of London Clay in the chose location. The temporary works were installed and the Pump Station formed.

Installation

The new Pump Station was designed to include a new MCERT flow meter to accurately measure flows being discharged by the station and provide feedback for pump speeds; thus we would be able to slow pump speeds down during low flows and increase speeds during high flows. The flow meter pipework also needed to conform to new standards set by the Water Company, so had to include a bypass arrangement and suitable rodding / cleaning means within the design.

The Pump Station was designed to be partially below ground level, this would provide a gravity fall from the inlet works and enable a volume that would assist with flow balancing. We needed to make the station above ground to ensure that it was hydraulically safe in the event of power failure.

In July 24 the concrete walls of the pump station were poured and the shuttering removed.

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Control Panel

ATAC also provided a new MCC, installed in an existing site building to control the pumps and carried the integration into the site electrical infrastructure.

The new pump station and flow meter now control the inlet penstock on the site and can work collaboratively to ensure the Kent WTW is always able to pass forward its full flow to treatment before any flows are passed to the Storm Tanks.

Completed system

The new Pump Station went online mid September 24 (before the end of September regulation date) coincidentally we had some heavy rainfall events during this time; the design proved instantly to be a success, the storm events were significantly reduced with no detrimental effect to the overall performance of the site.

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