Marston Moretaine WRC

project to reduce phosphorus discharge, increase flow capacity & stormwater storage, and to provide accurate UMON4 flow measurement & control

by Anglian Water's @one Alliance

Anglian Water

Located in a parish of Central Bedfordshire directly between Milton Keynes and Bedford, Marston Moretaine Water Recycling Centre (WRC) sits on a tributary of the River Ouse an serves a population of just under 5,000 residents. As part of Anglian Water's AMP7 portfolio it was identified that Marston Moretaine WRC required improvements in order to comply with the Government's Water Industry National Environment Programme (WINEP). In order to meet the new compliance requirements, the site needed to address a requirement to reduce phosphorus in the final effluent, to provide additional storm capacity, and to provide more accurate flow control and increase the sites full flow to treatment (FFT) capacity.

Newly installed kit - Courtesy of @one Alliance

Scope of works

Anglian Water's @one Alliance was tasked with the delivery of these schemes as part of its £887m AMP7 Water Recycling Portfolio with a brief to:

- Reduce the level of phosphorus discharge by 75% from 2.0 mg/l to 0.5 mg/l.
- Increase stormwater storage by 92% from 450m^3 to 864m^3.
- Provide accurate UMON4 flow measurement and control.
- Increase flow capacity by 13% from 70.6 l/s to 79.9 l/s

These upgrades, worth a combined £4.1m were designed to provide the site with increased resilience in the face of changing environmental conditions, resulting in higher flow storm events than the site has historically experienced.

Solution

With four unique challenges to solve the project was split into individual projects for storm, phosphorus, UMON4 flow monitoring and FFT in order to allow our specialist teams to deliver the best and most efficient solution for each section of the project.

Phosphorus removal

To enable the required 75% reduction in phosphorus discharge, the team began work on this £2m scheme by replacing the existing dosing pumps while retaining the existing chemical storage tank alongside installing a new dual-contained duty/standby dosing line to the activated sludge process (ASP).

The additional solids generated through the increased dosing rates are catered for with the new final settlement tank constructed to also meet the FFT need.

Storm tank

Throughout AMP7 the @one Alliance delivered over 100 stormwater storage tanks worth over just under £110m, including the scheme delivered at Marston Moretaine. Here the team converted a redundant balance tank into a third storm tank for the site, the first two having been installed as part of a previous works programme.

In addition, a new above-ground tank was installed by supplier Hayes GFS Ltd to create a fourth storm tank with a washdown facility included in the construction.

To integrate the new systems with the existing storm capacity built into the site the team added additional pumping and auto-discharge back to the existing return system. Due to the limited space available for working the Alliance set up an external site compound located outside the WRC to give the team the space required to build the new tank and associated pipework.

FFT

In order to increase the maximum amount of inbound flow the site can accept the team constructed a new final settlement tank at 14.9m in diameter and 2.8 meters high after demolishing a series of now redundant trickling filters.

Included in the works was the construction of a new final effluent pumping station allowing for improved sludge handling and a host of electrical upgrades, including a new motor control centre (MCC) kiosk and new return activated sludge (RAS) pumps.

This scheme entered construction in August 2024 and was handed over to Anglian Water operations in June 2025.

Exterior of newly installed FFT tank - Courtesy of @one Alliance

Tank installation - Courtesy of @one Alliance

Marston Moretaine WRC: Supply chain – key participants

- **Project delivery**: @one Alliance
- **Principal contractor**: Skanska
- **Civils contractor**: OnSite Central Ltd
- **Storm tanks**: Hayes GFS Ltd
- **Tank**: Stortec Engineering Ltd
- **MEICA**: FSD
- **Specialist supplier:** CEMA Ltd

Challenges

These projects faced a number of challenges from customer experience to the extremely tight constrained and congested space available on site.This was further compounded during the project by the establishment of a badger sett (relocated due to local flooding) inside the site boundary which sterilised part of the site and necessitated a change in design which caused delay in the programme.

Carbon

This scheme has faced challenges in terms of carbon reduction however some 45% carbon saving have been achieved on the storm tank in this scheme due to the reuse of an existing balance tank and the use of a glass coated steel tank for additional storage capacity.

Tank pipework - Courtesy of @one Alliance

Customer relations

Marston Moretaine WRC is only accessible via a residential estate meaning the project had the potential to seriously disrupt nearly 70 nearby properties. In order to mitigate this, the site team worked closely with the @one Alliance Customer team who provided the project with a Customer Experience Coordinator to liaise with local residents as a single point of contact, keeping them informed of the site's progress and any upcoming issues they may experience.

Working with the Customer Experience Coordinator the team put a mitigation plan into action to reduce disruption as much as possible and agreed to a range of solutions including:

- Restricting deliveries to the site between the hours of 08:00 and 14:00.
- Providing traffic marshals during large deliveries.
- Conducting structural surveys of nearby properties.
- Implementing wheel washing & road sweeping to keep the area clean.

Despite the significant opportunity for disruption and as a result of the collaboration between locals and the @one Alliance, the scheme received a Customer Measure of Experience (C-MEX) score

Pipework installation - Courtesy of @one Alliance

Demolition of section of existing concrete wall
Courtesy of @one Alliance


Repaired wall with new cable run installation
Courtesy of @one Alliance

of 77, just below the teams combined AMP7 target score of 80 and received no complaints from residents during the construction.

Sarah Lovitt, Customer Experience Coordinator said:

> *"Access to Marston Moretaine STW was challenging, taking us through a narrow residential estate, over a small bridge, and along an uneven track regularly used by walkers and families. The demolition of the existing tanks caused the most disruption due to high volumes of traffic and noise, so work was scheduled at specific times of day to minimise noise, and a dedicated traffic operator managed the flow of vehicles, this was greatly appreciated by residents. Throughout the project, we kept customers informed about progress and upcoming work, helping to maintain good relationships, resolve any issues quickly, and build trust within the local community."*

Conclusion

Due to the challenges the Marston Moretaine WRC project has faced it has been a difficult site to deliver but the scheme has been delivered with a significant carbon saving and without any customer complaints despite the very small working area and through traffic.

The editor and publishers would like to thank Anglian Water's @one Alliance for providing the above article for publication.

The @one Alliance is a collaboration of eight partner companies that each provide specialist knowledge allowing the Alliance to deliver complex delivery projects in the most efficient way, reducing the cost to Anglian Water's customers. The partners are Anglian Water, Balfour Beatty, Barhale, Binnies, Mott MacDonald Bentley, MWH Treatment, Skanska and Sweco.


Interior of newly installed FFT tank - Courtesy of @one Alliance