



Rapid and efficient delivery of a new 12 MLD water treatment plant using off-site methods.

Tullich WTW supplies drinking water to the communities in and around Oban in Argyll, Scotland. The completed works takes raw water from Loch Gleann A'Bhearraidh Reservoir and treats 7.2 million litres of water a day through its filtration system. Working at full capacity, it has the ability to process 11.8 million litres a day.

Construction began on the site in Spring 2016 and the site has been operational since December 2018. It was delivered by Scottish Water's delivery partner ESD, and EPS were engaged (through its MEPS joint venture with MWH Treatment) to deliver the main treatment process units and interconnecting infrastructure using off-site construction.



OVERALL PROJECT COST

£29 Million



EPS PACKAGE VALUE

£2.8 Million



PLANT CAPACITY

12 MLD



COMPLETION DATE

Dec 2018

Tulich WTW

Project Background & Scope

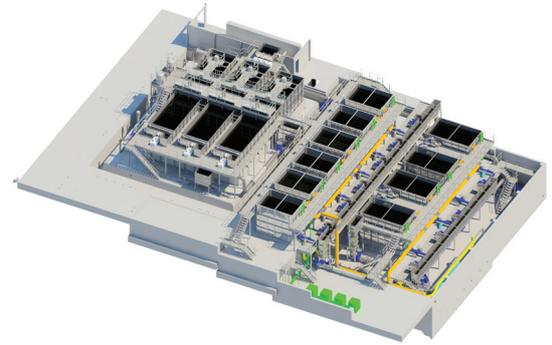
Tulich Water Treatment Works is one of Scottish Water's biggest ever investments in Argyll and Bute. The permanent population in Oban and the surrounding area of 12,000, more than doubles during the summer months to 40,000 due to the number of visiting tourists. The new water treatment works is providing cleaner, fresher, quality drinking water and will future proof supplies for more properties and development in the area for more than 20 years ahead.

The main project drivers were as follows:

- Ageing assets and old technology built 1970
- Changing and variable raw water quality
- Repeated THM challenges
- Vulnerability to cryptosporidium
- Need for greater supply resilience
- Negating use of ozone

The outline solution consisted of:

- New inlet pumping station
- Dissolved air flotation (DAF) plant
- Primary rapid gravity filters for solids removal
- Secondary rapid gravity filters for manganese removal
- New motor control centres
- Chemical dosing
- Sludge treatment plant
- New administration building and workshop

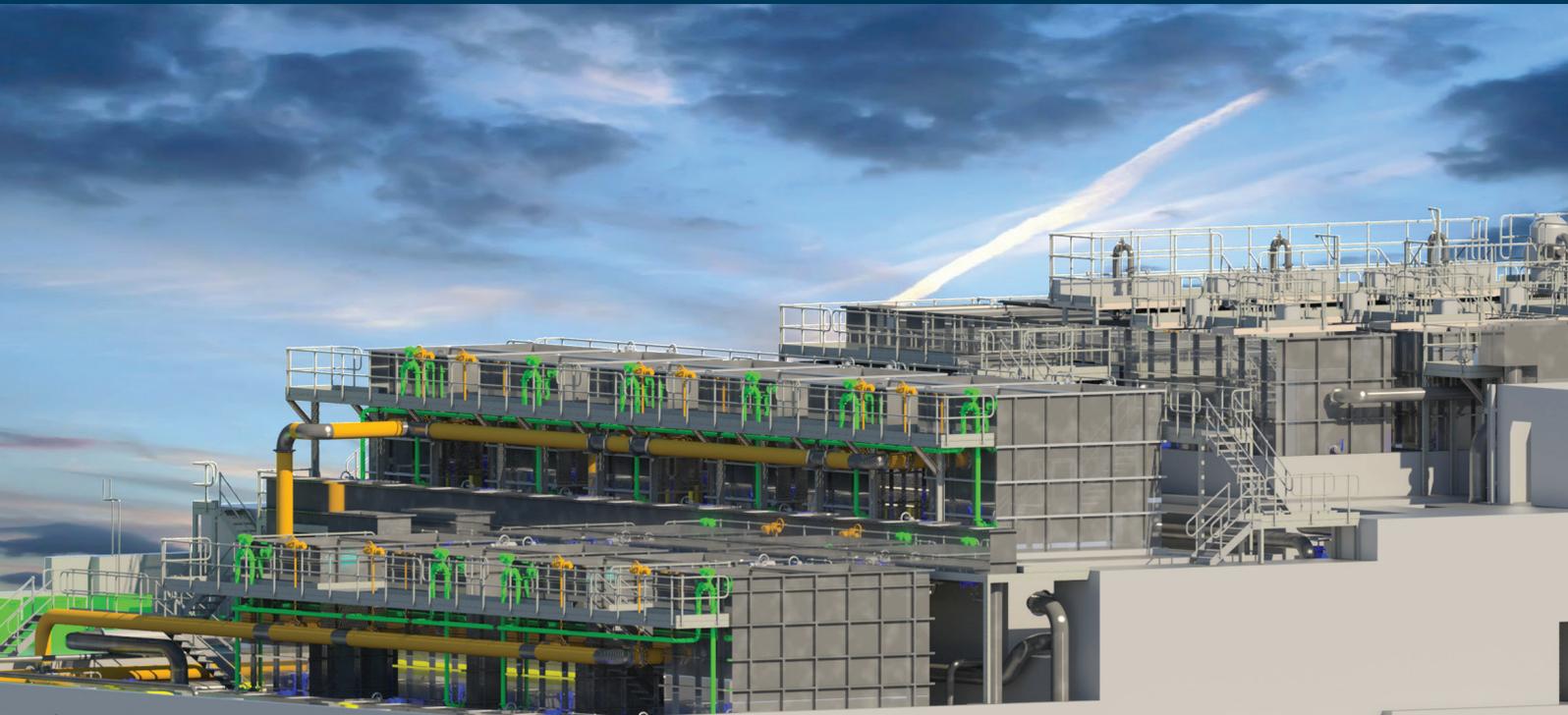


“This is a major investment in our water infrastructure in the Oban area which will safeguard a robust and resilient water supply for many years to come.”

Jim Tudhope
Project Manager,
Scottish Water

**Scottish
Water**





Digital Collaborative Planning

Tullich was identified by Scottish Water as a ‘Conversion Project’ which would be used to accelerate the application of digital tools beyond digital engineering into the digital delivery space. EPS were selected as the most suitable partner to deliver the main process and MEICA package due to our capabilities and experience in the successful delivery of projects using digital and DfMA principles.

The project’s digital delivery platform brought a different way of thinking about project delivery, by creating open dialogue between all the parties and a joined-up approach to getting the best out of construction activities. Some of the digital tools used to enhance project outcomes included:

Visual Project Initiation - to give the whole team an instant visual representation of what had to be built.

BIM 360 Glue - a cloud based tool to share 3D models, allowing effective interface with the

federated 3D model for all stakeholders. It was also used for visualisation demonstrations with Scottish Water, facilitating far more optimised design development meetings.

BIM 360 Field - an extension of Glue, used to co-ordinate multiple contractors working on a relatively confined site, thus minimising disruption and enhancing buy-in from supply chain and other stakeholders.

Synchro 4D - allowed the team to visually create the timed sequence for building the project, focusing on challenges and creating solutions ahead of time and in a ‘safer’ environment than reactive on-site methods.

As a key subcontractor on the project, EPS sat at the heart of this digital process and were able to engage in much more detailed collaborative planning. This allowed constant interaction with client operators, the main contractor, design team, construction teams and other suppliers.



DfMA Delivering Optimised Outcomes

By designing, manufacturing & testing the main process units, pipe racks, access platforms & other packages in the factory, EPS were able to de-risk and significantly accelerate the on-site installation works at Tullich. DfMA principles were applied to over 80% of the overall MEICA scope of the project, including the following elements:

- Flocculation tanks
- Dissolved Air Flotation (DAF) Filters
- Primary Rapid Gravity Filters
- Secondary Manganese Filters
- Chemical Dosing Packages
- Inter-stage pipe racks including pipework, distribution channels and electrical containment
- Access platforms and steelwork
- Pump skids

The elements produced & tested in the EPS factory were transported to the remote site location in Argyll & installed directly into their final positions on arrival. By eliminating on-site fabrication, hot work & the majority of working at height, EPS significantly reduced safety, quality & weather-related risks & ensured the delivery of the project remained on-track.

“In the very beginning, to get buy in from my operators, ESD could show them how to run it, how to maintain it in the virtual world which was fantastic. It meant they could visualise things before it was even built.”

Ross Barclay
Argyll Mainland Team
Leader, Scottish Water



See the plant
in action