CASE STUDY Coppermills WTW





Construction of 12 Rapid Gravity Filters using an off-site ethos to maximum effect.

Coppermills WTW is located in North London adjacent to the Walthamstow Wetlands and a 300acre reservoir system providing approximately one third of London's drinking water, supplying North and East London primarily and to the wider London water supply system.

EPS, as part of our MEPS joint venture with MWH Treatment, undertook the off-site construction of 12 filter flumes in stainless steel which would traditionally have been built on site in cast-in-situ concrete and the main two filter feed pipework galleries which would otherwise have been built on site. The site labour reduction achieved was 92% in this area with Zero accidents.



EARLY ENGAGEMENT BEGINS



Oct 2014



Rethinking Water

CASE STUDY Coppermills WTW

Project Background & Scope

The treatment plant itself was built during the 1960s and completed in the early 1970s and processes 560 million litres of water each day. Strategically and economically, this is arguably the most important source of London's water, serving areas from the Financial district in the East to the Government district in the Centre.

A potential challenge to capacity of the supply from Coppermills was identified by Thames Water in that effective capacity was potentially reduced during periods of Algal bloom due to the increased work load this placed on the existing 24 Rapid Gravity Filters, which could restrict output to 380MLD limiting headroom in the London Supply Demand balance. As a solution, it was decided to build an additional 12 Rapid Gravity Filters to augment the existing infrastructural capacity on site.

New works required which were to provide an additional 200MLD Rapid Gravity Filter process in a fully automated process system which was to be integrated so as to fully function in tandem with or independently of, current site Rapid Gravity Filters. Filters had to be capable of operating at 8 million litres per hour with one filter offline for backwashing.

The final project scope agreed was to provide a new High Lift Pumping, provide 300m³ additional surge capacity and build 12 new Rapid Gravity Filters with a filration area of 95m² each on the North Western part of the site.





- > 8 million litres per hour
- 12 new Rapid Gravity Filters with a filtration area of 95m² each
- 10 men installed in 4 days
 95 tonne of equipment
- Original Civil programme
 12 men, 24 weeks
- Target programme 10 men, 3 weeks exceeded
- > 95% reduction on deliveries

Rethinking Water





Supply Chain Integration & Collaboration

After the initial engagement period and selection of contractors, monthly collaboration meetings were held led by the SMB design team with all of the individual contractors present as required. The Thames Water internal communication system was used for communication for tracking and accuracy purposes.

At an early stage a discussion was had as to which supplier was best for task on each part of the construction. Based on an EPS/MEPS proposal, the possibility of building tank internal H Flumes which would have ordinarily been made in cast in situ concrete from steel was explored. This solution, after careful consideration, was accepted and built. The use of stainless steel for the H Flumes channels, while technically challenging, provided significant programme benefits, was cost effective, increased the quality of the finished product and greatly reduced the project's carbon footprint.

Detailed collaboration between SMB, Leopold, Shay Murtagh, MWH and EPS allowed the detailed design of these innovative H flumes to be completed with a final design that was both more cost effective and of higher quality than a conventional concrete solution.

CASE STUDY Coppermills WTW





Added value through DfMA

SMB confirmed that each of the H flumes was installed on average by 3 men in under a week, using standard concrete construction methods, 12 men would have been required for 4 weeks. This provides for a 94% reduction in site labour.

As each flume was delivered in a single load SMB list a 95% reduction in deliveries compared to building these on site in concrete.

Lifting operations, which statistically are the most dangerous site activity, were reduced to 2 per cell. Using traditional methods, a crane would have been required for the full 4-week H flume install duration. The flume design required Zero working at height.

Challenging traditional thinking in this project led to benefits way beyond the specifics mentioned above. The project met all of Thames Water's benchmarks as laid out in the statistics on the right.





working at height 90% ↓



programme 18 Month↓



LABOUR USED ON SITE $92\% \downarrow$



savings on site prelims €6.5 Million



carbon 40% ↓



Rethinking Water