Mott MacDonald Accelerates Project Delivery on East Tideway Tunnel Project

Bentley’s ProjectWise® CONNECT Edition Helps Reduce Design Time by 32 Percent for the Complex Design

Accelerating Project Delivery

London’s antiquated Victorian sewers were overflowing into the River Thames, causing increased pollution and water contamination. The city determined that it needed a newly designed and constructed sewage tunnel system to reduce overflows and boost the river’s water quality. The resulting joint venture project among Costain, Vinci Construction Grands Projets, and Bachy Soletanche was expected to be completed in seven years.

As the lead designer for the project, Mott MacDonald was contracted to design and build a new, modernized sewerage system for the east portion of the project, involving approximately 10 kilometers of tunnel works located 70 meters beneath central London and six shaft sites. In the process, Mott MacDonald had to bridge communication gaps among team members across various locations and with diverse design principals. The organization also needed to control the information accessed by team members and stakeholders while developing a streamlined, but accurate, workflow to meet the tight project deadline.

The GBP 4 million Thames Tideway East (Tideway) project successfully applied new technologies and practices to accelerate project delivery in the digital environment and complete the largest infrastructure project ever undertaken by the United Kingdom’s water industry.

The Mott MacDonald project team met these challenges by implementing a connected data environment with ProjectWise CONNECT Edition, thereby streamlining design delivery, managing large collections of information, and limiting rework. By seamlessly bringing together project participants and design content across the project, the project team advanced industry practice to deliver results and create a model that helped future projects achieve similar outcomes.

Collaborating in a Connected Data Environment

By leveraging ProjectWise, Mott MacDonald accelerated collaboration across the 12 design disciplines during the development phase of the tunnel. ProjectWise was used to store all project information, including not only drawings and models, but also reports, specifications, calculations, and meeting minutes. The controlled and structured environment enabled information to be found quickly and easily, and allowed users to create, modify, and store thousands of deliverables in one location, readily accessible by dispersed users from organizations across Europe. It also gave control to package managers and design teams by providing clarity of the project’s status in the workflow, while providing assurance for the clients, who know that the project was checked and approved by the appropriate people. All these capabilities significantly reduced design time.

The most recently approved information from all disciplines was formulated and shared through the connected data environment, which acted like a single source of truth on the project. It provided control and the ability to swiftly clarify project information statuses. The project team also used the connected data environment to set up weekly BIM Wednesdays meetings, where members of the project teams participated and reviewed work throughout the design phase. A total of 170 meetings were held with over 1,500 attendees from across the continent, including the client. The meetings provided Mott MacDonald with progressive assurance and, with the client’s direct involvement, workflows became more streamlined, with 76 percent of packages accepted the first time. The constant communication and flexibility...
of collaborating via ProjectWise reduced rework, cost, and travel time, while also providing control and clarity of all information.

**Automating and Streamlining Design Delivery**
Mott MacDonald also used ProjectWise to control and expedite the completion of design deliverables, saving time and mitigating risk by automating, integrating, and codifying the processes surrounding the assembly, review, and approval of transmittals, submittals, and RFIs across the project. In the past, emails and excel tracking systems controlled this flow of information. With ProjectWise automating key workflows and bringing information into one place, however, the team achieved greater transparency, speed, and flexibility. Workflows that used to take a morning were reduced to an hour, and it became easier for Mott MacDonald’s diversely located team to deliver to the client from any location—a necessity if the organization wanted to meet its tight project deadline while minimizing potential risk.

**Achieving Significant Outcomes**
Mott MacDonald delivered documents 80 percent faster with ProjectWise than on similar past projects. Engineers could quickly sift through information in ProjectWise and what used to take days to deliver to the client would now happen instantly. By using ProjectWise as the single source of truth, the team also reduced risk. Users could work quickly while knowing that all information was accurate and up-to-date. This fast-paced, secure environment and model-based delivery reduced the design time by 22.5 hours per week, reducing it by a total of six months. These outcomes have saved the team GBP 20,000 so far.

The most important outcome from improved collaboration is the enhanced communication between the project team and the client. About 960 documents were shared informally with the client, allowing the team to resolve any issues earlier and faster, saving time and money. Also, there was a high level of engagement between the client and design team, with an average of 5.2 clients attending the weekly meetings. This engagement directly correlates with the time for client approval, which was less than five days, and shows how collaboration can streamline digital workflows. Finally, by storing all the design content in ProjectWise’s connected data environment, this information was easily accessible to all parties, regardless of location, to create a single source of truth on the project.

**Advancing Future Projects**
By leveraging a digital project delivery approach enabled by ProjectWise, Mott MacDonald accelerated collaboration, drove better project outcomes, and reduced risk across its project. The organization delivered a better-quality product to the client ahead of schedule by aligning its team and content, automating and streamlining design delivery, and providing a single source of truth for project information. The company has now adopted a fully digital platform and uses a connected data environment on all major projects to attain similar benefits, such as projects for HS2 and Crossrail, and the Heathrow expansion project.

"ProjectWise enabled the project to achieve control and clarity in our design delivery, and ultimately deliver a better-quality product to our client”
— Michael Gaunt, BIM Manager, Mott MacDonald

Mott MacDonald used ProjectWise’s connected data environment to share a single, coordinated 3D model to improve efficiency.