



Project Summary

Organization:

Mott MacDonald and the Costain, VINCI Construction Grands Projets, Bachy Soletanche Joint Venture

Solution:

Project Delivery

Location:

London, England, United Kingdom

Project Objective:

- Accelerate project delivery by applying new technologies and practices.
- Improve collaboration, create a connected data environment, and establish a single source of truth to help complete the project two years early.

Products Used:

ContextCapture, LumenRT, MicroStation, Navigator, OpenBuildings Designer, Pointools, MicroStation®, STAAD®

Fast Facts

- ProjectWise CONNECT Edition saved 80 percent on information delivery time, reducing it from five days to one, while reducing overall project risk.
- The client accepted 76 percent of packages the first time due to improved collaboration and program assurance.

ROI

- BIM advancements reduced overall design delivery time by six months.
- Mott MacDonald saved 32 percent in design production time through ProjectWise's connected data environment and single source of truth.
- By digitally accelerating project delivery practice, Thames Tideway East project benefits can be repeated on other major projects.

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 sewerage 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 billion 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.

Cleaning Up the Thames

The Tideway project faced many challenges, including dispersed teams throughout Europe, different disciplines utilizing a wide array of software, the management of vast amounts of data, and the need for fast information delivery and real-time updates. Collaboration was vital for this design and build project because 12 design disciplines were participating, as well as many supply chain companies and stakeholders. Also, Tideway Chief Executive Andy Mitchell challenged the project contracting teams to deliver the project two years ahead of schedule.

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

“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*

Find out about Bentley at: www.bentley.com

Contact Bentley
1-800-BENTLEY (1-800-236-8539)
Outside the US +1 610-458-5000

Global Office Listings
www.bentley.com/contact

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.



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