

Amey Connects 1,500 Collaborators on a Massive Rail Electrification Project in Wales

Bentley Applications Enabled Data Sharing, Enhanced Accuracy, and Significantly Lowered Carbon Emissions

SUPPORTING GROWTH IN WALES

The United Kingdom has developed an array of high-profile rail projects in England and Scotland. But for decades, the country did not undertake significant rail development in Wales. Today, the country's strategy has dramatically changed with the Core Valley Lines (CVL) Transformation project. The GBP 1 billion initiative—funded by the Welsh government, the U.K. government, and the European Development Fund—will electrify 170 kilometers of track to the cities of Aberdare, Coryton, Merthyr Tydfil, Rhymney, and Treherbert, upgrade all stations and signaling, and construct two new stations.

Though this project focuses on existing railways, the enhancements will boost overall journey times, double most of the network's capacity, and improve accessibility at stations and the trains themselves. Greatly boosting the system's capacity is vital for the region's long-term growth. In addition, the electrified trains will significantly reduce carbon emissions during operations and embodied carbon in the railway and stations. Amey, a provider of full life-cycle engineering, operations and decarbonization solutions for transportation infrastructure, is helping to deliver the project as an infrastructure manager.

MASSIVE SIZE, MASSIVE CHALLENGES

Though such a large-scale rail project will dramatically improve the quality of life for Wales residents, its size presented significant development and project management challenges. The lengthy development process was also affected by multiple transformational world events. "Some of the challenges faced by the project included the cost and complexity impact of working through the pandemic, Brexit, and the war in Ukraine," said Nathan Sealy, systems integration director at Amey. Since the existing railways to Wales serve as a lifeline

for the region, Amey had to ensure the system would remain operational during the upgrade.

From the beginning, the massive project required a comprehensive and integrated approach to management, due to the numerous requirements, data, and stakeholders involved. "From the tender stage to today, we have applied systems thinking and systems engineering techniques and needed software tools that would align with this approach," explained Sealy. Initially, Amey only used a simple web-based data environment for project management, but they soon realized that the teams needed a more robust solution that could handle a wide range of specialized software without creating data silos.

CONNECTING PEOPLE WITH DATA

In short order, Amey switched to ProjectWise and other Bentley applications, as they could support the project's goals as well as their preferred workflows and design methods. Migrating to ProjectWise's connected data environment enabled all stakeholders and contributors to share project data, including designs, reports, and surveys. "ProjectWise also gave us the capability to configure multistage workflows and management of user lists and permissions," continued Sealy. Designers leveraged that ability to divide up the sprawling project into 65 manageable project information models, supporting quick design reviews with real-time conversations and amendments viewable by all.

Still, Amey had to manage and verify thousands of requirements. They used ComplyPro to create a requirements management system, but soon determined that the application could support an array of project needs. For example, teams used ComplyPro to support a systems engineering approach to engineering assurance. They created

PROJECT SUMMARY ORGANIZATION

Amey

SOLUTION

Enterprise Engineering

LOCATION

Cardiff, Wales, United Kingdom

PROJECT OBJECTIVES

- ◆ To greatly improve rail travel to Wales and encourage economic growth in the region.
- ◆ To improve collaboration and project management with a connected data environment.

PROJECT PLAYBOOK

Bentley Descartes™, Bentley LumenRT™, ComplyPro®, iTwin® Capture, MicroStation®, OpenGround®, OpenRail™, PLAXIS®, ProjectWise®, SYNCHRO™

FAST FACTS

- ◆ The GBP 1 billion Core Valley Lines project will electrify railways into Wales, supporting development in the region.
- ◆ Amey needed an improved method for managing the sprawling, complex project.
- ◆ They used ProjectWise and other Bentley applications to improve collaboration while ensuring a single source of truth.

ROI

- ◆ Using ProjectWise, Amey connected 1,500 users across more than 40 organizations.
- ◆ Over the last four years, Amey has produced and shared over 100,000 documents.

“Bentley’s software and support, coupled with our domain knowledge of infrastructure, the environment, and social value, has enabled us to bring this [project] together and use digital engineering processes from start to finish to manage and deliver the work program in record time, despite facing global challenges, such as the pandemic, like never before.”

– Alex Gilbert, Managing Director, Amey Consulting



a module for tracking any deviations from standards and requirements. Another of their modules captured potential hazards in the project, helping them meet safety requirements. Finally, they implemented a technical interface management module that tracks nonstandard technical interfaces in this innovative system, including the automatic power changeover functionality of the electrification system and the hybrid battery-electric trains.

IMPROVING ASSET QUALITY WHILE SAVING TIME

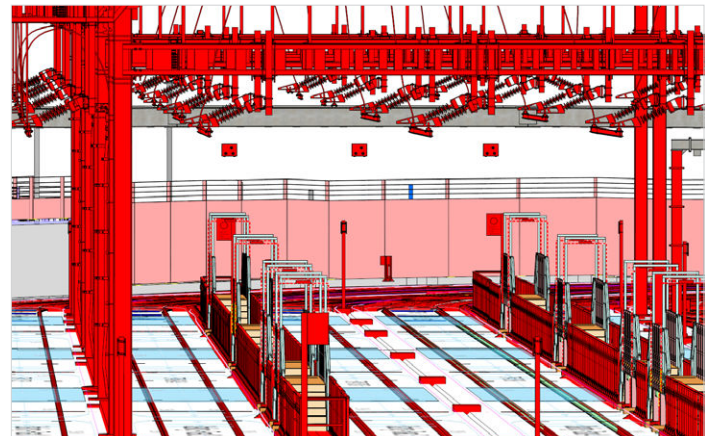
Using ProjectWise, Amey connected 1,500 users across more than 40 organizations, enabling them to easily and seamlessly collaborate. “Four years on, with over 100,000 documents produced and submitted via controlled workflows and standards, we cannot imagine how we would have coped without the provision of Bentley software,” said Sealy. They developed



Amey used ProjectWise and other Bentley applications to improve collaboration while ensuring a single source of truth.

30 different automated workflows that support collaborative production, significantly reducing the time and cost needed for design and ensuring a single source of truth. “Throughout the project lifecycle, we have been managing document control via multistage workflows, allowing file continuity as the design matures so designs are traceable and auditable through all stages,” said Sealy. ComplyPro supported a requirement-led approach to project delivery, helping teams drive value while meeting fundamental project objectives.

As a result of Amey’s digital initiative, they boosted productivity, improved asset quality, and saved significant resource hours. The connected data environment helped the team avoid downtime, minimize impact to travelers during construction, and reduce the need for travel, site visits, and in-person meetings. The project is on pace for completion by the end of 2025.



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