

BIM in Civil Projects

M25 Widening

Around London, United Kingdom

M25 Widening

Length	117 miles (188km), 63 miles (101km) of this is being widened
Project value	GBP 6.2 billion (EUR 7.6 billion, USD 9.7 billion)
Construction spend	Average GBP 1 million (EUR 1.2 million, USD 1.6 million) per day

"Here at Skanska ID we develop, invest and operate long-term building and infrastructure projects. While it is clear that the implementation of BIM on our projects has brought many immediate benefits to the design and construction phases, we also recognize the significant efficiencies and cost savings that the ongoing application of BIM allows through the operation and maintenance periods. BIM really helps us with life cycle and green optioneering, which ensures that we deliver optimum value to our clients. Therefore we strongly support BIM and are working hard to ensure we exploit the various applications as widely as possible across our portfolio."

Julian Desai
Life Cycle Director, Skanska Infrastructure Development

The combination of working on sections of the busiest motorway in Great Britain, having to maintain three running lanes in both directions during the day and delivering the widened sections of carriageway to a very demanding program required Skanska Balfour Beatty and Atkins, the design team leader, to adopt a new way to manage the widening works. The award-winning use of BIM on the project has enabled the joint venture to reduce risk, decrease cost and deliver the widened sections of motorway.

The use of BIM on the M25 Widening project has delivered the efficiencies required to allow the design and construction teams to meet the demanding program and reduce risk. A coordinated, accurate, integrated 3-D design model is relied on by the design and construction teams to visualize the whole project both above and below ground. In addition to the physical aspects of the design, non-physical aspects like safety and access zones were included in the model. The software used to develop and coordinate the model enabled the team to identify and resolve clashes in advance of construction, which would have been very difficult to do accurately using traditional methods.

The BIM model files are available to view by all of the M25 project team and around 90 percent of the 120 design-related staff are regular users. Regular project review meetings use BIM model files and staff members can learn about the model and its uses. Us-

ing the model prior to constructing elements of work allowed the project team to complete their work with confidence, right first time construction minimises remedial work and allows the project to comply with the programme.

While basically changing the role of the traditional land surveying function, the application of global positioning and modeling and the application of laser scanning have produced substantial secondary benefits, such as savings in traffic management fees thanks to shorter lane closures.

Using the BIM model has had a positive impact on reducing construction errors. This has allowed the project team to build elements correctly and avoid the need for costly and time-consuming remedial works.

BIM is a valuable tool that has been used by the team during the process to value engineer elements of the widening works, for example, the retaining solutions for the cuttings and embankments.

The model makes it easy to view and understand the project. Screen shots and fly-throughs from the BIM model allowed the design to be better understood so that potential problems could be resolved in the office rather than on site. This allowed the project team to prove that elements will work within the overall scheme in a virtual model before building them out on site.

Adding further aspects to BIM models for future projects will have time and cost benefits and enable project teams to make informed decisions from an earlier stage, reduce risk and save time and costs.

Experience has shown that it would have been extremely difficult for the team to deliver the design and construction of the widened section of the M25 without the use of BIM. It's a valuable tool for large, complex and bespoke civil engineering projects, and its use on the M25 project has set a benchmark for future large highways projects.

