

CASE STUDY ELIZABETH LINE



London's Elizabeth Line, which Ricardo supported between 2012 and 2022, was one of the largest and most complex assessment assignments ever performed by Ricardo Certification.

The Elizabeth Line, known as 'Crossrail' during its construction, connects existing main line routes in Berkshire, to the west of London, and Essex, to the east, via 21kms of twin-bore tunnels beneath the city centre. The complete system increases London's rail capacity by 10% and created a new east-west route with 'metro-style' frequencies in its central section. As well as commuter districts, it serves Heathrow airport, the West End, the City and Canary Wharf area. As one of the first UK rail schemes to be brought into use in accordance with the EU's Interoperability specifications, an independent accredited party was required throughout its development.

CHALLENGE

Ricardo was appointed as the Notified Body (NoBo) for the central tunnelled section in 2012, and subsequently the Designated Body (DeBo) - to assess compliance with the UK's National Technical Rules - and the Assessment Body (AsBo) for both Crossrail and Rail for London Infrastructure, the Infrastructure Manager of the central section. The Notified Body role evolved into Approved Body (ApBo) role following the UK's formal departure from the EU in 2020.

Our remit was to monitor the design, construction, testing and commissioning of the various structural sub-systems, ensuring they met the specified requirements for mainline railway infrastructure in the UK – such as platform length, track layout, control command and signalling – as well as matters such as accessibility, safety and environmental protection.

Client:

Crossrail Ltd, Rail for London Infrastructure

Start date:

09/2012

Completion date:

08/2022

Duration of assignment:

12 years

Country:

United Kingdom

APPROACH

As the appointed ApBo, our experts received more than 6,000 evidence submissions – including design drawings, safety cases and hazard records – which we assessed against an extensive range of technical specifications.

In our role as the project's AsBo, it was also our responsibility to determine whether procedures for managing hazards and evaluating risk were compliant with the Common Safety Method on Risk Evaluation and Assessment Regulation, a mandatory requirement for major rail projects in Europe.

Evidence logged: **6,033** Observations: **3,105** Assessment records: **223**

Figures produced by Ricardo Certification, May 2022

RECOMMENDATIONS

A valuable legacy from this assessment lies in the way future main line rail programmes in the UK – such as HS2 – will benefit from Crossrail's experiences.

The technical standards, for example, are now more honed towards the practicalities of the rail environment. Meanwhile, workshops hosted by Ricardo for Crossrail's supply chain ensured a greater understanding of the new regulatory landscape.

As the single ApBo, DeBo and AsBo provider, we accumulated a detailed 'knowledge bank' of the railway and its sub-systems, providing continuity as suppliers joined and left the programme. Our joint roles also supported a transition towards 'progressive assurance'. With a single competent body in place so early in the programme, certification could be delivered as works progressed – such as when each station was completed – rather than waiting until later stages when rectification would be more costly.

RESULTS

Crossrail was one of the first large-scale railway projects in the UK to be designed and constructed in accordance with the EU's Interoperability specifications, with our teams performing a 'pathfinder' role during the project, providing feedback on Crossrail's experiences with the specifications, and assisting with the development of specific Technical Rules when necessary. This experience was to prove invaluable when it came to ensuring a smooth transition to the UK's post-Brexit regulatory regime so late in the programme.

Once our assessment work was concluded, our teams could prepare the Approved Body Files and Safety Assessment Reports required by the Office Rail and Road, the UK's National Safety Authority, ahead of issuing authorisation to commence passenger service.

- Notified / Approved Body
- Designated Body
- Assessment Body
- Smooth transition to new post-Brexit UK regulations
- Demonstrated advantages of 'progressive assurance' model for future large schemes

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