

CASE STUDY

BANGKOK METRO BLUE LINE



Independent Verification and Validation services for the extension of Bangkok Metro's Blue Line, converting the existing route into a new 'loop' through the city.

In 2017, Bangkok Expressway and Metro Public Company Limited (BEM) appointed Ricardo to provide Independent Verification and Validation (IVV) services on the building work already underway to extend the city's Blue Line route.

The operator's overarching concern was for the 28km extension to form a seamless continuation of the original Blue Line, with no degradation of performance or safety levels across the wider network. One of the biggest challenges was to provide solutions to issues that spanned multiple systems, contractors and disciplines.

CHALLENGE

Our responsibility was to assess the activities of BEM and its sub-system contractors, and provide independent certification that the newly extended line was ready for passenger service, having provided expert reviews of:

- Safety and risk management
- RAM management and demonstration
- EMC management
- Fire engineering management
- Human factors and ergonomics
- Software assurance
- Interface management and system integration
- Testing and commissioning activities
- Operational readiness, including training, emergency drills

Client:

Bangkok Expressway and Metro Public Company Limited

Start date:

12/2017

Completion date:

03/2020

Duration of assignment:

3 years

Country:

Malaysia

APPROACH

With services expected to start within four months of our team joining the project, resources were immediately made available for retrospective assessments of a build that was already in the advanced stages of installation. In just 12 weeks, the team fulfilled all site observations, audits and assessment reports to issue a Certificate on time.

A priority for the Ricardo IVV team was to ensure a seamless integration of the new track sections without any impacts on the safety and performance of the entire route. For example, the original 2004 rolling stock would be required to operate on both the original route and on the new infrastructure.

RECOMMENDATIONS

Railways are increasingly complex. When constructing a new railway, it's best practice to identify high-risk areas at the earliest possible opportunity. Independent Verification and Validation does this by systematically confirming whether railways comply with a client's requirements for Safety, Functionality, RAM and Quality.

- *Verification* assesses whether the project has built the railway correctly, as it was originally specified
- *Validation* tracks the project ensuring it is ultimately fit for purpose upon completion

The process involves audits and assessments conducted by an independent third party - an organisation with no financial or operational stake in the project - that searches and collates evidence throughout the project lifecycle. If successful, the process culminates with formal certification.

RESULTS

The Ricardo IVV team completed their assessments on schedule to ensure the client was able to commence operations as planned.

Phase One, the single-stop Bang Sue - Tao Poon section, opened for full commercial service in August 2017.

In September 2019, Phase Two, the Hua Lamphong - Lak Song section started full service, followed by the Tao Poon - Tha Phra section in March 2020.

The Blue Line is now a fully operational 'Loop' service, with 38 stations along its 48km route and a daily ridership of around 400,000.

- Independent Verification and Validation
- Safety and Risk Management
- Human Factors
- EMC Management
- Operational Readiness
- RAMS

FIND OUT MORE ABOUT OUR IVV SERVICES

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