Case study

Western Rail Link to Heathrow

THE CHALLENGE

The Western Rail Link to Heathrow Project (WRLtH) aims to provide a route for up to four trains per hour (in either direction) between Reading and Heathrow Terminal 5 (T5). Two new lines (Up and Down) will diverge from the Great Western Mainline to the east of Langley Station. The lines will run through ~8km of tunnel to connect to the existing Heathrow Express Station at T5.

The project consists of many aspects including, but not limited to, construction of the new rail lines, a bridge, the tunnel (both cut and cover and twin bore) and several head houses. In support of these major elements there are to be substantial ground works and provision of supporting systems such as overhead line equipment, telecoms, signalling, tunnel ventilation, E&P and drainage infrastructure.

THE SOLUTION

Frazer-Nash Consultancy was tasked with providing safety support to the Jacobs' Project Team carrying out the design of the new line. The major tasks performed by Frazer-Nash thus far include:

- Production of a safety plan detailing the methodologies by which the project intended to ensure that implementation of the project is sufficiently safe.
- Production of a system definition to describe and bound the system under consideration during the safety assessments.
- Facilitation of hazard identification workshops, using a structured approach to identify all reasonably foreseeable hazards.
- Production and management of a hazard record.
- Identification of safety requirements using the EU Common Safety Method for Risk Evaluation and Assessment (CSM-REA) Risk Acceptance Principles. In particular the conduct of cost benefit analysis calculations to conduct explicit risk estimation (ERE).
- One such ERE related to the electrical clearances between the 25kV overhead line equipment (OLE) and the standing surfaces of the evacuation walkway in the tunnels. The design clearance was just short of that required by relevant Codes of Practice. Hence an ERE was carried out in order to identify the various causes and consequences of the related hazard, identify technically feasible mitigation options, carry out risk assessment of the effectiveness of the mitigations and use cost benefit analysis to make recommendations on the most reasonably practicable options. The analysis took into account the fact that some mitigation options might increase the risk from other hazards and the implementation of some mitigations may reduce the overall effectiveness, and hence practicability, of other mitigation options.
- Work remains on-going with further support being provided as required.

All above work was carried out in compliance with the CSM-REA.

THE BENEFITS

Frazer-Nash has provided significant added value to Jacobs during the work conducted so far. Our extensive experience in rail safety, in particular compliance to the CSM-REA, has allowed us to efficiently produce the necessary documents to minimise re-work to meet the necessary requirements. Our work has been appreciated by both Jacobs and Network Rail, as is shown by our on-going and productive relationship as we continue to support our client through its programme of work.

Client

Jacobs U.K. Ltd.

Business need

To provide additional transport capacity to Heathrow Airport from the west to reduce congestion in the area and allow for future expansion of the airport.

Why Frazer-Nash?

Frazer-Nash Consultancy has a strong background in rail safety, particularly in the area of compliance with the EU Common Safety Method for Risk Evaluation and Assessment and the production of quantified explicit risk estimations.

For more information please email **rail@fnc.co.uk**

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