

# Railway Application Safety Cases



## CASE STUDY



### Overview of Deliverables

Since 2003 Vertex has provided safety engineering support and Application Safety Cases (ASC) to both owners and operators of fixed infrastructure and rolling stock.

Our output has been provided in accordance with industry best practise and both generic and rail related standards such as the current Commission Implementing Regulation (EU) 402/2013, EN50126, EN50129 and Technical Specifications for Interoperability.

Vertex has supported from minor changes through to major projects where Vertex have managed the safety assurance for infrastructure changes and protection of existing assets.

Our product management service to equipment suppliers, infrastructure and rolling stock owners and operators is often used in support of the Application Safety Case to provide a single solution and point of contact for such complex works.

Vertex provide the complete solution from the development of the safety case to critical review and project hand back, aligned as necessary with processes such as CDM and Network Rail GRIP 8. Functions such as Whole Life Cost modelling, HAZID/HAZOP, FMEA/FMECA, trial management, DRACAS/FRACAS, Verification/Validation, rail system and project engineering are also employed to provide a completely packaged ASC solution to the customer. Vertex capability also enables it to undertake ASC under challenging timescales, this was the case for several the examples detailed.

### Change & Disciplines ASC:

The following details the subject areas that Vertex provides Application Safety Cases:

- SILO to SIL4 applications
- Infrastructure (Command & Control, signalling, telecoms)
- Energy (E&P, Overhead Line, 3<sup>rd</sup> /4<sup>th</sup> rail traction)
- Possession
- Plant
- Asset monitoring systems

- Track
- Operations
- Maintenance
- Locomotives and Passenger Rolling Stock
- Stations
- Human Factors

### Example ASC delivered

- West Coast Route Modification
- Rugby and Nuneaton interim operational process
- Jubilee and Northern Line Upgrade programme
- Bournemouth - change to operational procedures to support degraded working
- Portsmouth resignalling
- London 2012, North and East London Line, Gospel Oak, Latchmere Curve, Lee Valley On Network, Angel Lane
- Enhanced Vehicle Management & Possessions process for Network Rail
- Axminster resignalling
- Durham Coast signalling upgraded
- DLR, Olympics resilience
- Salisbury & Exeter resignalling
- Use of On Track Machines outside of possession
- Intelligent Infrastructure
- Stansted Airport
- Great Northern Great Eastern route Upgrade
- Southern Platform extensions – provision of SDO
- Level crossing changes - MCB-OD and SPAD prediction
- ETCS testing facility – ENIF
- Network Rail Crossrail North East and West changes
- High Speed 1 to Network Rail connection
- OLE Live Line – part of Network Rails safety initiative
- Rail Infrastructure alignment Acquisition – ASC for trial on rolling stock and infrastructure
- London Overground Capacity Improvements

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