

KEEPING the wheels turning

The hard shoulder has always been present as a safety feature on UK motorways. Its value as a place of refuge during breakdowns and for emergency access during incidents is appreciated by all motorway users. It is perhaps not surprising then that the critics had a field day when, in September 2006, the UK Highways Agency's M42 Active Traffic Management (ATM) pilot introduced controlled use of the hard shoulder for the first time.

However, after a year and a half of operation and post-pilot analysis, the project has been deemed an outstanding success. It has significantly enhanced the performance of the M42 motorway, resulting in reduced and more predictable journey times for motorists, and a reduction in noise and emissions per vehicle. A UK Department for Transport (DfT) report published in March 2008 [DfT 2008] tentatively suggests that the road is now safer too - personal injury accidents dropped from 5.2 per month over the five year period before September 2006 to 1.5 per month in the first 6 months of the pilot. As a result, the UK government is now considering hard shoulder running on a further 500 miles of its motorway network.

Cambridge Consultants played a key role in implementing the safety programme for this project. Although safety standards such as IEC 61508 were applicable to the project, there was no road transport specific version of this standard available. It was therefore necessary to return to first principles in choosing a suitable method. An innovative feature of the approach adopted was the use of GALE (Globally At Least Equivalent) as the safety target. This specified that the M42 motorway, with ATM in operation, should present a level of

risk less than or equal to that experienced by users of the M42 prior to the implementation of ATM. By taking a global view of the risk, this method differed markedly from the more traditional ALARP (As Low As Reasonably Practicable) approach, where each hazard is individually analysed and mitigated. To facilitate the demonstration of GALE, Cambridge Consultants developed a different type of risk assessment methodology, appropriate to the particular features of the road transport environment, which would enable the global risk to be assessed and compared.

For the M42 ATM project, we also designed a custom hazard log which served as the primary tool for managing safety-related information and ensuring its visibility across the project. Key features of the tool included a web-enabled user interface - allowing multi-site access and ensuring that hazard review meetings had access to real-time live hazard data - and an automatically maintained audit trail of all events, risk assessments and document changes.

The hazard log for the M42 ATM pilot is now serving as a safety 'knowledge base' for further developments on the UK's motorway infrastructure, which can be drawn upon to assess the impact of future changes and for carrying out safety assessments on future schemes.

[DfT 2008] 'Advanced motorway signalling and traffic management feasibility study', 4 March 2008, available on <http://www.dft.gov.uk>.

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