



MHA+ Technology Awards **Winner: Best use in Design**

Executive Summary: Amey Consulting

This entry demonstrates how Amey combined the use of structural analysis and technology through innovation, to design and deliver a sustainable solution at Chetwynd Bridge.

A structural survey identified extensive cracking to this Grade 2* listed structure adjacent to the National Memorial Arboretum. Precise geometry was obtained by aerial mounted LIDAR and photogrammetry to record existing and any future component change. A surface mounted sonar drone captured underwater profiles. The finite element structural model was site verified through load testing, with sub-millimetre movement recorded by remote high precision cameras, enabling a design solution that is practical, whilst meeting strict heritage constraints.

The bridge is now digitally monitored remotely through a series of telemetry sensors that record structural performance and the passage of any vehicles over the 7.5 tonne weight limit. Load sensors connected to CCTV now capture any over-weight vehicles crossing the structure, enabling enforcement with Trading Standards