

ENHANCING SCOUR ASSESSMENT OF HIGHWAY STRUCTURES THROUGH AUTOMATION

ABSTRACT With the increase in frequency and intensity of extreme rainfall events as a direct consequence of climate change, scour susceptibility is a major concern for bridge owners and network operators. Bridges and large structures are vital for a successful network, and the loss or unavailability of a structure can have a significant impact on connectivity, network operations and socio-economic outcomes for the region.

The identification and prioritisation of scour susceptible structures involves the analysis of a large amount of detailed data specific to individual structures, and typically takes time and effort to collate and analyse. A mature methodology has been in place for many years, and in 2024 the UK Standard CS 469: Management of scour and other hydraulic actions at highway structures was updated to revise the way in which scour assessments are undertaken. AtkinsRéalis, working in collaboration with Oxfordshire County Council and M-Group Highways supporting as client, automated key parts of the assessment process, enabling over 1000 structures to be analysed quickly using existing datasets.

Automation offered several benefits:

- Enhances safety by limiting on-site exposure.
- Eliminates the need for certain site visits.
- Introduces a repeatable and auditable process.
- Significantly reduces assessment time.
- Minimises network disruption.

These combined benefits enable time to be better spent on developing mitigation measures for the key scour susceptible structures on the network. This work also forms part of a broader Structures Asset Management Strategy for the Bridges Portfolio.

The presentation will detail the development of the automated process, including:

- Interpretation of the CS 469 methodology.
- Evaluation of client and external datasets.
- Integration of data into a streamlined, effective assessment workflow.

The approach demonstrates how automation can improve resilience in transport infrastructure by enabling faster, safer, and more consistent scour assessments.