#### Bridge Owners Forum – 13<sup>th</sup> June 2023

#### **Eastham Bridge, Tenbury Wells**

Keith Harwood

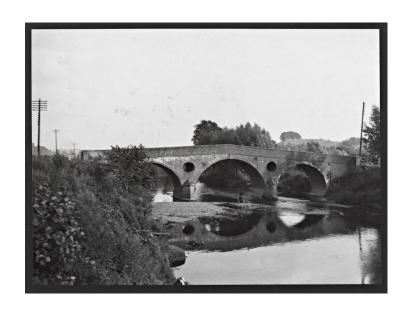
# That's a lucky escape! Entire 18th century bridge COLLAPSES just moments before rush hour drivers crossed

- Eastham Bridge in Tenbury Wells, Worcestershire, was reduced to rubble
- The 18th century bridge crumbled into the River Teme on Monday
- · Vehicles were forced to slam their brakes to avoid disaster, said witnesses
- The bridge is part of a main route into the picturesque town of Eastham



# Eastham Bridge – pre-collapse







# Eastham Bridge Collapse 24 May 2016







## Timeline of reporting

- Collapse 24 May 2016
- Draft report by CH2M July 2016
- Review comments Aug 2016
- Final report October 2018



Eastham Bridge Collapse Investigation & Findings

Worcestershire County Council

July 22, 2016



WR5 21G

Comments on chain report: Earthum Bridge Collapse Investigation & Findings

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## Report contents

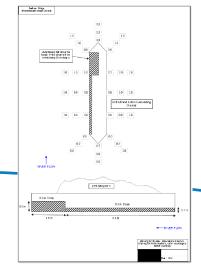














## Conclusions of the report

SECTION 9

## Conclusion

There was nothing to suggest that the structure had become unstable during the flood events; the cracks in the parapet which have been attributed to previous movement of the south pier appeared stable. A road survey a month prior to the collapse indicated no disruption of the carriageway. It is difficult to identify any feature that could have indicated in advance that the structure had become unsafe.

The underlying cause of the collapse of Eastham Bridge is considered most likely due to scour of the south pier irrespective of road traffic. At this stage nothing has been identified that the collapse could have been predicted within the current inspection regime.

It is proposed that the enhancement opportunities within Section 7 are discussed further with Worcestershire County Council with regards to whether any of the proposals are taken forward.



### Enhancement opportunities – Section 7

- Inspection Regime. Increase frequency of diving inspections. Currently annual, instead do them after every flood event
- WCC to consider adopting BICS
- Manual on scour at bridges and other hydraulic structures' Publication 551,
   CIRIA, 2002 consider its recommendations
- A review of other structures is suggested
- Extensive list of potential scour monitoring techniques



#### FOI response

- Worcestershire County Council already had in place a Diving Inspection regime that far exceeds Code of Practice requirements.
- The County's main river crossings of the Teme, Severn and Avon that have piers or abutments in the water have been subjected to annual Diving Inspections for many years before the Eastham issue. In addition to this, the same bridges were and are further inspected after each flood event.
- Since the collapse the County have tasked our Professional Services provider to assess the merits of any system that may further assist in monitoring scour. Jacobs have also added Scour Reviews to the Structural Review process.
- Rather than commissioning a separate independent report an independent review of the CH2M report was sought.
- The reviews comments, although raising some additional points, broadly agreed with the collapse mechanism.





# Eastham Bridge re-build

- The bridge reopened to traffic in April 2017 and construction fully completed in September 2017.
- Weathering steel composite, 33m span on piled foundations
- 12,500 bricks from the old structure used as cladding for the new bridge
- The very first vehicle to drive across the bridge was the Lindridge First School minibus, driven by Derek Trow

   the same bus and driver that noticed the first signs that the old bridge was about to collapse





#### Discussion

- The structure and the collapse mechanism
- The extent, detail and independence of the investigation
- Scour inspections using divers
- Should there at least be guidance on collapse reporting. In Well Managed Highway Infrastructure?

#### Links

- <u>Eastham Bridge 3D model by aerial-cam</u>
   (@aerial-cam) [d85d34a] (sketchfab.com)
- Eastham Bridge 3D model by Bill Harvey <u>Associates Ltd (@bhal) [bb98c65]</u> (sketchfab.com)
- <u>Eastham Bridge | Worcestershire County</u>
   Council
- Bridge collapse driver: 'I couldn't believe what
   I was seeing' BBC News

