

# Placing a value on keeping road bridges in good order

Finishing touches are being made to a new decision support tool for bridges to help asset managers assess risk and direct funds more effectively.

Beta testing has been completed for a new Structures Asset Valuation & Investment decision support tool, which is set to be released in the next couple of months ready for a Whole of Government accounts process starting next April.

The software builds upon an original Structures Asset Management Planning Toolkit published several years ago by the Department for Transport and The Chartered Institute of Public Finance & Accountancy to help local authorities manage their assets.

UK Bridges Board and Bridge Owners Forum member Keith Harwood, who is behind the new tool says: "The previous toolkit was a proof of concept as to how you could do both asset management planning and valuation required as part of the Whole of Government accounts.

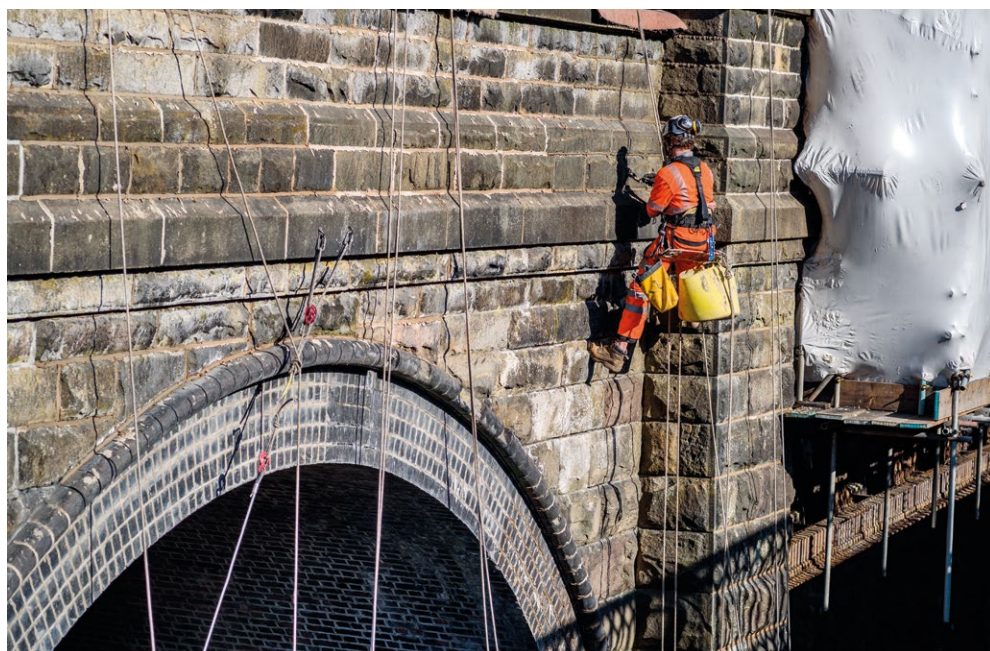
"It was published in such way to allow software developers to evolve bridge asset database products to include decision support functionality," adds Keith, who is Hertfordshire County Council's head of profession and technical lead for highway structures.

**What follows is a discussion between Keith Harwood (KH, pictured) and Justin Ward (JW) about the new Structures Asset Valuation & Investment decision support tool.**

**JW: So why is there a need for a new tool?**



**KH:** In developing our plans for managing the bridge stock in Hertfordshire we were using the existing toolkit, but some of the



↑ **New software aims to help better manage bridges**

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functions did not do quite what we wanted. It needed pushing a little further to answer the questions we pose as bridge managers.

So we modified the original tool and developed an updated Decision Support Tool with three separate elements to it. These were:

- Valuation;
- Long term asset management planning;
- Short term planning

**JW: Does short term planning represent new thinking?**

**KH:** Yes. The longer term (30 year) analysis was based on an annual cycle of prioritisation, cost calculation, repair and deterioration; repeated in subsequent years.

What we did was to pull out the shorter term element and in effect build a succinct five year works plan.

This has been very useful in practice as we are now able to use the toolkit to rank and prioritise all the bridge repairs; giving us a numerical basis to plan systematically, analyse condition data and apply deterioration and cost models.

It supports engineering judgement but ensures that nothing is missed. This makes the decision support tool useful for understanding data quality.

From these developments it soon became clear we had a tool that could be useful across the UK. This is where the UK Bridges Board, supported by the Department for Transport, was able to help by providing funding to turn the tool into a presentable and shareable product.

**JW: Why is valuation important?**

**KH:** Placing a value on highways structures puts them on the same footing as other assets managed by

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the Council, such as schools and property which are already valued on a commercial basis. This put the maintenance spend on bridges in perspective with respect to the value of the assets you are maintaining.

We refined the valuation model in collaboration with the Highways Asset Management Financial Information Group. The gross replacement cost of our bridge stock is currently just over £1Bn.

**JW: How has the focus on risk increased?**

**KH:** Condition and condition targets are not what you should be focusing on. If your car is rusty it's not the rust itself that is a problem.

What matters is the consequence of the rust: is the car unsafe on the road, or might bits fall off and cause an accident? The risk on the network is what you should be looking for, although condition is, to some extent, a proxy for risk.

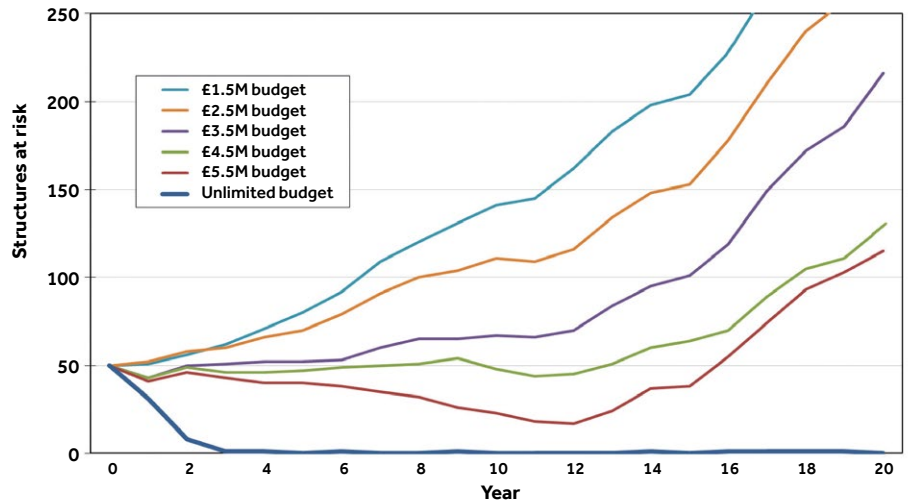
Valuation allowed us to compete on an equal footing with other asset types, and risk based analysis allowed us to illustrate the long term link between funding and network risk profile. The result was a doubling of the annual capital maintenance budget for Hertfordshire structures.

**JW: Can you elaborate?**

**KH:** The risks associated with vehicles driving beside a parapet in poor condition or beneath a bridge deck with spalling concrete, for instance, need to be managed.

These examples would be associated with a higher level of risk and therefore considered more important to fix than a problem on an abutment that is remote from the carriageway.

For many years we have collected a lot of condition data on bridges from principal and general inspections. The process of calculating Bridge Condition Indicators includes the



↑ Additional funding can help to reduce the number of structures at risk of falling into decline SAVI

concept of 'importance'. So for instance, a deck is considered more important than drainage as it is holding up the bridge.

You cannot get away from looking at condition – and this is still a focus – but the new tool places more emphasis on the risks associated with a bridge's condition. We are not here to have wonderfully painted bridges, we are here to keep the network safe in a cost effective way. Maintenance targets should be based on risk rather than underlying condition.

**JW: Are there any other risks?**

**KH:** Operational risk, in terms of road closures, is another factor as is the risk of cost escalation. Typically a defect will get more expensive if it is left.

Using the tool, you can model the whole of life costs associated with different maintenance strategies.

It is clear that, broadly speaking, elements of a bridge in worst condition are likely to rank highly in terms of priority for repair.

But when you look at the safety risk first and

then the cost escalation risk, you have a stronger justification for the decisions you make.

Painting a bridge may give the greatest value for money, as steel left unpainted could result in repair costs escalating very rapidly.

But a bridge deck failure would be prioritised due to its safety implications.

**JW: How else has the new toolkit been useful?**

**KH:** The most useful part to us in the county was the use of a risk score and to connect this to the annual budget. Back in 2013 we were concerned that there was insufficient funding for bridges.

They deteriorate slowly so there was not such an obvious and immediate need – as there might be for potholes and social care – so they did not get the focus required.

With the new Decision Support Tool we are able to demonstrate how the risk profile of the network would get worse with reduced funding, so the relationship between risk and funding is much clearer.

## Stephen Fidler named as new roads group Chair

Department for Transport's director of local transport Stephen Fidler OBE has taken over from Graham Pendlebury as Chair of the UK Roads Liaison Group.

Stephen has also been appointed by DfT Ministers as the next UK First Delegate to the World Road Association (PIARC).



↑ Stephen Fidler

Regarding his appointment as UKRLG Chair, Stephen said: "It's a real privilege to return to work on local transport, with virtually every journey – for pedestrians, cyclists, cars and by bus – starting

and ending on the local road network.

"Given the challenges and opportunities we are facing – from climate change to autonomous vehicles – how DfT, the devolved administrations, local government and the supply chain work together has never been more important.

"UKRLG and its boards have a vital role to play in sharing innovations and good practice from across the country, and beyond."

Stephen is an accomplished and highly regarded senior civil servant at the Department for Transport. He has delivered major policy and legislative reforms at DfT, worked extensively alongside ministers at Cabinet level and has



↑ Nearly all trips start or end on local roads

been a transport policy adviser in the Prime Minister's office.

Stephen's work was recognised by the award of an OBE in Her Majesty The Queen's New Year Honours List 2019.