

A Tale of three bridges

By Gareth Guitry and Rebecca Johnson

Structural asset owners are increasingly faced with the challenge of determining the optimal replacement strategy for aging assets. On what basis should these decisions be made in 2023? Lowest net present value? Lowest present day cost? Level of service? Modal shift? Embodied carbon? Circular economies? This presentation discusses three ageing road bridges with three different strategies to provide ongoing service and resilience.

The case for replacement of bridges has historically been built upon the deteriorating asset condition and traditional net present value economics. Basing our decisions predominately on an economic view of asset custodianship is becoming an outdated concept for both clients and our communities.

Modern good governance principles for asset management need to elevate the social, cultural and environmental factors; hitherto regarded as a ‘nice to have’ but ultimately not an essential requirement. Increased emphasis is needed on preserving existing assets to reduce use of natural resources. This includes improving asset resilience to natural hazards, extending asset life, re-purposing and recycling.

This paper discusses recent management strategies for Waka Kotahi’s aging bridges, using example bridges from the Waikato region;

- Preventative resilience treatments to maximise long term asset value
- Partial asset replacement, where sufficient resilience remains within the retained portions
- Full asset replacement, where existing asset condition has deteriorated and resilience is compromised.

Bios - Gareth Guitry and Rebecca Johnson

Gareth has 20 years’ experience as a bridge asset manager, with the last ten years carrying leadership roles within Waka Kotahi’s largest structures management region. Gareth’s experience on this Waikato state highway network has provided insight into how the performance and resilience of large portfolios of aging assets can be optimised while also trading lightly on the planet.

Rebecca has three years’ experience as a structural engineer and structures asset manager working largely across the Waikato and Bay of Plenty State Highway networks. Rebecca’s experience includes undertaking bridge inspections, structural assessment and design, and development of bridge management plans.