Structure Asset Data – The Value it Generates

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Today's Presentation

- Structure Data Overview in New Zealand
- Asset Management Fundamentals
- Why Structure Data is Valuable
- Transport Outcomes Delivered
- Current Systems Used
- What the Future Holds



Structure Data in New Zealand – A Few Facts

- Over 4,000 major bridges and culverts on State Highway
- Around 15,000 when adding Local Road bridges
- Many thousands of Other Significant Structures e.g. walls, gantries, barriers
- Broad range of structure types
- accommodating environment, road user demand and safety
- State Highway Bridges + Major Culverts total value (2018):
 NZD \$13 billion





MOHAKA RIVER BRIDGE, HAWKES BAY



SH1 WAIANAKARUA SOUTH RIVER BRIDGE, CENTRAL OTAGO







SH6 KAWARAU RIVER (VICTORIA) BRIDGE, CENTRAL OTAGO

AUCKLAND HARBOUR BRIDGE



Asset Management – Key References

Management of Crown Assets

The Government's maiden Investment Statement (published in December 2010) states:

"if Government is to realise its economic goals and deliver better public services it is important to have effective management of Crown assets, and to make the best possible future investment decisions."



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Asset Management – Key References

• International Infrastructure Management Manual (IIMM)



Structure Data – Purpose - Value

Data Type	Purpose
As Built drawings	Structural analysis or maintenance or operational needs
Consent information	Operational needs
Bridge width/traffic volume	Safety analysis
Bridge load capacity	Freight vehicle management
Inspection reports	QA/Management purposes



Why is Structure Data so Valuable?

- 1. If you can't measure it then it doesn't exist
- 2. If you can't measure success then you are probably rewarding failure.
- 3. If you can't measure failure then you can't fix it.
- 4. If you can't measure results then you can't demonstrate good stewardship to stakeholders and customers
- 5. If you can't measure gaps then you can't justify funding for improvements

Ref: Barry Wright, National Structures Manager, New Zealand Transport Agency



Why is Structure Data so Valuable?

- 1. If you can't measure it then it doesn't exist
- * Reliable Data > Business Knowledge
- 1. If you can't measure success then you are probably rewarding failure.
- * Poor Data > Poor Business Knowledge > Costly Mistakes
- 3. If you can't measure failure then you can't fix it.
- * Accept Failure > Obtain and Maintain Reliable Data
- 4. If you can't measure results then you can't demonstrate good stewardship to stakeholders and customers
- * Reliable Data > Strong Reputation
- 5. If you can't measure gaps then you can't justify funding for improvements
- * Reliable Data > Robust Knowledge



Why is Structure Data so Valuable?

- 1. Accessibility to Reliable Data > **Reliable Results**
- 2. Reliable Results > Strong Motivation for Investment
- 3. Reliable Asset Investment > Better Transport Outcomes for New Zealand Road (Bridge) Users



Transport Outcomes Delivered

- Enhanced livability and connectivity between people, places, business and markets
- Improved transport safety
- More reliable and efficient movement of people and goods.
- Maximised use and return on investment
- Reduced long term maintenance operation and replacement costs.
- Increased partnering for infrastructure maintenance delivery
- Community and customer focused services
- Services that meet customer expectations.
- Improved information to customers.

Ref: Austroads, ABT6015 – Engineering Guide to Bridge Asset Management, Section 2.2 (2019, Draft Release)



Transport Outcomes Delivered

Inclusive access Healthy and safe people Protecting people from Enabling all people to participate in society through access to social transport-related injuries and harmful pollution, and and economic opportunities, such making active travel an as work, education, and healthcare. attractive option. A transport system that **Economic prosperity** improves wellbeing and Supporting economic activity liveability via local, regional, and **Environmental sustainability** international connections, with efficient movements of Transitioning to net zero carbon people and products. emissions, and maintaining or improving biodiversity, water quality, and air quality.

Resilience and security

Minimising and managing the risks from natural and human-made hazards, anticipating and adapting to emerging threats, and recovering effectively from disruptive events.

Ref: Ministry of Transport, Government Policy Statement (2018)



National Systems in Use – State Highway Bridges

- Highway Structures Information Management System (HSIMS)
- National structure data repository
- Asset Register, General and Detailed Structural Measurements
- Document Management, Inspection Reports
- Life Cycle Management via interactive dashboard (Power BI)

• OPermit

- Used for the routine processing of permits for overweight vehicles.
- Effects of vehicles on bridges are compared directly with capacities of bridge components.



Systems – Best Practice, Learning

• Keep it Simple

- Be clear with Business Requirements
- Be open to things not being perfect, work towards the best
- Be wise with your development priorities, timing
- Trusted, working relationships
- Collaboration; reliable people for the job, regular communications
- Flexibility.
- Focus on what matters most to the business.



What The Future Holds – Structures Data

- One asset system for all New Zealand Structures
- State Highways
- Local Roads
- Other Structures
- Smarter, "more intelligent" information:
- ease of response to events:
- bridge monitoring:
- ease of doing business in NZ:

natural disasters, climate change, structure failure ensuring safer journeys for all New Zealand road users freight routes, HPMVs, travel time reliability

- Breaking down silos
- Generating nationwide Structures Evidence Base



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