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.”
Asset Management – Key References

- International Infrastructure Management Manual (IIMM)
- Asset Management Organisation Structure

Need a firm foundation!

Ref: IIMM, Figure 4.1.3 (2015)
### Structure Data – Purpose - Value

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>As Built drawings</td>
<td>Structural analysis or maintenance or operational needs</td>
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<tr>
<td>Consent information</td>
<td>Operational needs</td>
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<td>Bridge width/traffic volume</td>
<td>Safety analysis</td>
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<td>Bridge load capacity</td>
<td>Freight vehicle management</td>
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<td>Inspection reports</td>
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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
  o Improved transport safety
  o More reliable and efficient movement of people and goods.

• Maximised use and return on investment
  o Reduced long term maintenance operation and replacement costs.
  o Increased partnering for infrastructure maintenance delivery

• Community and customer focused services
  o Services that meet customer expectations.
  o Improved information to customers.

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

**Inclusive access**
Enabling all people to participate in society through access to social and economic opportunities, such as work, education, and healthcare.

**Healthy and safe people**
Protecting people from transport-related injuries and harmful pollution, and making active travel an attractive option.

**Economic prosperity**
Supporting economic activity via local, regional, and international connections, with efficient movements of people and products.

**Environmental sustainability**
Transitioning to net zero carbon 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.

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**
  o Be clear with Business Requirements
  o Be open to things not being perfect, work towards the best
  o Be wise with your development priorities, timing

• **Trusted, working relationships**
  o Collaboration; reliable people for the job, regular communications
  o Flexibility.
  o 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: natural disasters, climate change, structure failure
  - bridge monitoring: ensuring safer journeys for all New Zealand road users
  - ease of doing business in NZ: freight routes, HPMVs, travel time reliability

• **Breaking down silos**

• **Generating nationwide Structures Evidence Base**
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