

Infrastructure New Zealand Position Paper: **Digital**



Current problem

New Zealand needs to fully adopt digitisation to drive higher productivity in the infrastructure sector

New Zealand is not effectively leveraging the value of digital, geospatial and data technologies to address our infrastructure deficit, resilience and decarbonisation priorities, or opportunities that deliver existing infrastructure investment more efficiently. Digital tools enable ongoing performance modelling and adaptation, allowing for performance optimisation of the built network and prioritisation of maintenance and renewals funding, but remain underutilised.

Significant benefits have been achieved overseas

Technological solutions like digital twins and underground asset mapping are not new and have seen success both here and overseas. However, diffusion of the technologies, and the provision of the high-quality data that is the bedrock of the value they provide, has been patchy. The challenge now is designing a system where stakeholders are incentivised to require, provide and use data to improve the provision of New Zealand's infrastructure.

Overseas, digital twin technology has cut months off the delivery of Cross River Rail in Brisbane and has contributed to improved asset mapping and management outcomes in Scotland. In the UK, the Centre for Digital Built Britain (CDBB) was a partnership between the Department for Business, Energy & Industrial Strategy (BEIS) and the University of Cambridge focussed on developing a national digital twin by bringing together smaller twin models in a nationally coordinated way. They found that every £1 invested in information management could potentially secure up to £6 of labour time savings.

In New Zealand, data is currently siloed, and a lack of coordination and interoperability of data standards is hampering progress. With record infrastructure investment underway, the time is now to move digital enablement forward. This will require strong leadership, and a willingness from the sector to collaborate.

In New Zealand, we have pockets of good work, but lack national consistency of direction

New Zealand has developed individual digital solutions capable of scaling nationally. However, ingrained and archaic funding and procurement practices in the infrastructure and construction industries, and a lack of collaboration between the public and private sectors make accessing these solutions difficult. New Zealand has a proud history of building digital tools post-disaster but these have been siloed by geography and a lack of vision for greater scale. These examples have spanned the country.

- Post-earthquake, the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) Geospatial Information System (GIS) team worked to deliver a complete geospatial dataset. However, after the Christchurch rebuild, the SCIRT programme was disestablished and learnings were not brought through to the subsequent Kaikōura earthquake or Cyclone Gabrielle responses.
- Currently, in Wellington, the Virtual Wellington digital twin programme and planned underground asset mapping work provide significant scale and an opportunity to learn from city-wide models.

Infrastructure New Zealand's Position

We have made some progress, but there is more to do

Local and central governments both have work underway, but we have failed to achieve national scale. Central Government should lead the way on data provision requirements, upskilling as a client of infrastructure and establishing a clear governance structure.

The Digital Strategy and the establishment of the inter-departmental Digital Executive Board has set the stage for improved integrated and standardised data collection and use and includes an action into 2025 to develop national digital twin infrastructure and interoperability – although this is not yet funded or committed into the work programme. Te Waihanga / the New Zealand Infrastructure Commission has also recommended that progress be made towards a national digital twin and is considering Aotearoa's readiness to mandate Building Information Management (BIM) techniques. Work to develop Asset Management Data Standards funded by Waka Kotahi / the New Zealand Transport Agency, Land Information New Zealand and Treasury has also progressed over the years, but there is a lack of ongoing resources, implementation plans and established governance structures in place to support their success.

Central Government leadership is needed

In New Zealand, local governments have the power to require subsurface asset location data as part of their corridor management functions, but central government leadership is needed to scale work underway.

As a major procurer, Government should apply a consistent approach to building and infrastructure development through its procurement rules. Agencies could require geospatial data collection and modelling for all new build and major renovations in their property portfolios. National consistency on the required data provision expectations and data standards on major projects would then be baked into contracts from the beginning, giving contractors the chance to build capacity to respond over time. This will require upskilling by Government as a client to ensure that the data provided will be utilised.

Progress on this programme of digitisation needs a home and clear governance arrangements. We recommend that Te Waihanga drives national consistency in this area by coordinating fragmented efforts to improve the data requirement and provision environment.



Key Recommendations

- New Zealand Government Procurement Rules for infrastructure include a requirement to return data to client agencies at the end of project delivery and to ring-fence on-going operating expenditure to procure software to access the data. Capability in Government agencies will need to improve to utilise this data effectively.
- Ongoing development of metadata standards for infrastructure are properly resourced and implemented.
- Clear governance arrangements are established, with Te Waihanga in a coordinating role, championing the collaboration required between the public and private sectors.