Ministry for the Environment
Manatū Mō Te Taiao

Transit NZ – climate change and the state highway network

Case Study 03

adaptation

What is the issue?

Climate change is expected to cause sea-level rise and increased frequency and intensity of storm events. The associated flooding would increase the risk of road closure or failure at culverts and bridges.

As the crown entity responsible for state highways, Transit New Zealand is required to assess and manage risks to New Zealand's transport network as well as ensure its sustainability.

Risk analysis has shown that sea-level rise is likely to be the biggest climate change risk to state highways. Transit NZ recognises it is prudent to consider climate change impacts in the design and planning of all major long-life infrastructures such as bridges, culverts and causeways that could be affected by climate change impacts within the structures' working life.

Securing state highways

The impacts of climate change are already being considered in the design and construction of some new state highway projects. For example, the new section of causeway for Auckland's Upper Harbour Corridor, State Highway 18 was built 0.3 metres higher than the existing causeway, which was then raised to match it. This was directly in response to predicted sea-level rise.

Transit NZ's current approach to planning is the result of a risk assessment on the state highway network that focuses on structures with a design life of 25 years or longer and where routine maintenance would be insufficient to manage adaptation. The approach encourages consideration of existing natural hazards likely to be exacerbated by climate change, in particular the risk to infrastructure with the longest life. During the design phase, it is recommended that consideration be given to future-proofing the design so that later retrofits are both feasible and cost-effective. When looking at construction and maintenance it is important to consider infrastructure that is at risk from the cumulative effects of multiple climate change impacts.

During the expansion of State Highway 18, it was raised an additional 0.3m to allow for predicted sea-level rise.

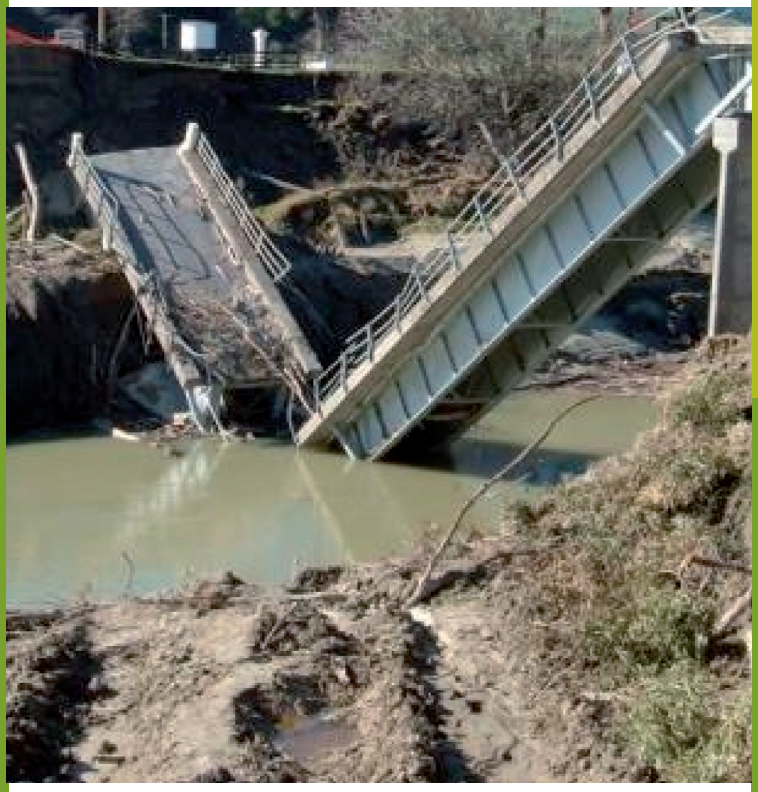
New Zealand Government

Building better bridges

After assessing its climate change position statement, Transit NZ decided it needed to do more to adequately protect bridges (and culverts with a design life of over 25 years) from the predicted impacts of climate change.

Transit NZ amended its bridge manual so that major new bridges and culverts will now have a design statement. The statement must include sufficient data to permit a full review of the impacts of climate change on the intensity and frequency of precipitation and sea-level for bridges and culverts serving at waterways, sea-coast and estuarine sites.

Transit NZ will also continue to regularly monitor climate change data and developments and review its response to climate change as appropriate.



Mangamahu Bridge near Wanganui: Increased frequency of extreme weather events could lead to more cases of bridges collapsing.

Find out more

Links to further information:

- **Transit New Zealand's approach to adaptation:** www.transit.govt.nz/planning/climate.jsp
- **Adapting to climate change:** www.mfe.govt.nz/issues/climate/adaptation/
- **Local Government New Zealand – Adapting to climate change workshops:** www.lgnz.co.nz/projects/ClimateChange/workshop.html
- **Climate change mitigation:** www.climatechange.govt.nz
- **Household sustainability:** www.sustainability.govt.nz

Publications:

- **Transit New Zealand's Bridge Manual:** www.transit.govt.nz/technical/

Ministry for the Environment publications:

- Climate change effects and impacts assessment
- Preparing for and adapting to climate change. Look ahead to the future

These are available on www.mfe.govt.nz/publications/climate/ and by emailing publications@mfe.govt.nz

Contacts:

Ministry for the Environment
Contact us for more information about climate change or new initiatives:

Phone: (04) 439 7400

Email: info@climatechange.govt.nz

Address: Ministry for the Environment, PO Box 10362, Wellington

Transit New Zealand

Phone: (04) 499 6600

sustainability.govt.nz