

Flood Resilient

Aotearoa New Zealand:

Flood risk management and land use planning
POLICY BRIEF NO. 4

Planning for growth: We need a national urban modelling platform for flood risk management

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KEY MESSAGE

Achieving sustainable urban growth in Aotearoa New Zealand requires a multi-scenario approach to assessment of future flood risk. A national urban modelling platform to generate future scenarios for exposure to flood hazards is needed to help planners balance development needs with resilience to a changing climate.

PROBLEM STATEMENT

Planning for high urban growth while also managing the risks of future flood events requires insight into flood hazards under a changing climate, but also awareness of how the urban landscape and therefore exposure may change. Flood risk assessments based on future flood projections paired with current urban plans are failing to account for future exposure impacts, which means we are undervaluing the long-term costs of building in the wrong places and passing on the liability to future taxpayers.

KEY FINDINGS

- Changes in the urban landscape impact future exposure to flooding so must be accounted for in assessment and management of flood risk.
- Current growth projections under the NPS-UD have assumptions and timescales that are inconsistent with flood scenarios, so risks to future property and liabilities are undervalued.
- Urban growth modelling (UGM) can generate future urban scenarios that are fit-for-purpose for flood risk assessment.
- Flood projections can be integrated in UGM to demonstrate the effects of different flood mitigation and adaptation strategies.
- Prospects for UGM to inform flood risk assessment are impeded by low awareness, limited technical resources, and a lack of institutional advocacy.
- National leadership is needed to ensure access to modelling tools for a multi-scenario approach to long-term flood resilient planning.



Image: Edgecumbe April 2017. Source: NZ Flood Pics.

Policy Recommendations

1. Develop and implement **National Direction** for natural hazards and climate change planning (see Policy Brief 1). This should include guidance for developing future flood exposure scenarios based on:
 - a. Geospatial modelling of urban growth to generate scenarios that are consistent with the timescales and socioeconomic assumptions behind the climate scenarios that underpin flood hazard projections.
 - b. Integration of flood hazard and urban growth scenarios to allow investigation of alternative flood mitigation and adaptation strategies.
 - c. Ability to generate a range of integrated urban and flood scenarios to better characterise the uncertainties associated with a changing climate and our potential responses.
 - d. Inclusion of scenario maps in Future Development Strategies.
2. Support development of a **national urban modelling platform** to promote best practice and national consistency in land use data, modelling assumptions and methods. Co-development with regional and local authorities to ensure flexibility to reflect local conditions and fit-for-purpose outputs for flood risk assessment.
3. As a partner to the national climate projections for A-NZ, provide downscaled national and **regional socioeconomic projections** based on the same four SSPs, involving local stakeholders for construction of multi-scaled narratives.
4. Build **local capacity for model utilisation** by investing in training, technical support, and resources for local authorities with limited in-house modelling capability.
5. Encourage a **multi-scenario approach** to flood risk assessment that provides the insights required for practical decision-making, balancing development needs with resilience of urban environments to a changing climate.

REFERENCES

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