Flood Resilient Aotearoa New Zealand:

POLICY BRIEF NO.3

Flood risk management and land use planning

The significance of spatial scale: Informing land use planning through effective flood hazard and risk mapping

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KEY MESSAGE

Effective land use planning for flood risk management in Aotearoa New Zealand hinges on the production and application of fit-for-purpose flood hazard and risk maps at the appropriate spatial scale. National guidance is crucial to ensure consistency and clarity in the development, selection and use of these maps across different government levels.

KEY FINDINGS

•Traditional land use planning relies on fixed hazard boundaries that don't reflect the dynamic and uncertain nature of future flooding.

•Many local authorities struggle to incorporate evolving climate projections due to outdated scenarios and limited technical capacity.

•Inconsistent approaches to flood risk assessment, mapping, and regulation across regions create confusion and weaken national resilience.

•Limited public understanding of modelling limitations and uncertainty affects decision-making and risk perception.

•Meaningful engagement with communities is critical for improving awareness, supporting adaptation, and enhancing flood resilience.

PROBLEM STATEMENT

In Aotearoa New Zealand, the integration of flood risk management and land use planning is hindered by inconsistent access to and use of flood hazard and risk maps at appropriate spatial scales. Without clear national guidance, regions vary in map detail and application, which can lead to inefficient planning, missed opportunities to prevent development in at-risk areas, and confusion among stakeholders.

Waikato river (above), Nelson city centre (below).
Source: https://www.nzfloodpics.co.nz

Policy Recommendations

1. As part of the proposed national flood modelling standards: Establish clear guidelines specifying the **appropriate spatial scales** for different land use planning objectives (e.g., strategic planning, district plans, resource consents, building codes). This guidance should outline the data requirements, precision levels, and limitations associated with each scale.

2. Enhance **transparency and communication of scale**: Local authorities should seek to clearly communicate the analysis scale of their flood hazard and risk maps to both planning practitioners and the public, including its implications and limitations for interpretation at different geographic levels. This could involve clear legends, metadata, and consistent educational and communication resources.

3. Promote a **multi-scale approach** to flood mapping: With the development of the national flood map, support flood maps at **multiple spatial scales** (national, regional, local, micro) to enable a more comprehensive understanding and management of flood risk across different planning levels.

4. Support **capacity building for detailed mapping:** Provide **resources and technical support** to local authorities, particularly those with limited capacity, to invest in developing fit-for-purpose flood hazard and risk maps at appropriate scales, especially micro-scale maps for urban and high-risk areas.

5. Establish standards for consenting processes: Develop standardised requirements for the level of detail and scale of flood hazard and risk assessments submitted as part of resource and building consent applications to ensure consistency and prevent the use of divergent models.

6. Integrate scale considerations into National Planning Standards: Ensure that the National Planning Standards explicitly address the importance of spatial scale in the context of natural hazard information, particularly flood risk, and its integration into resource management plans.

KEY RESEARCH OUTPUTS

Afsari Bajestani, S., Serrao-Neumann, S., Hanna, C., & Fu, X. (2024). Dealing with uncertainty in flood risk management and land use planning decisions: Insights from Aotearoa New Zealand. *Climate Risk Management*, *46*, 100666. https://doi.org/10.1016/j.crm.2024.100666

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