



TITLE

TO UTILISE HYDROLOGICAL AND HYDRAULIC MODELLING TO SUPPORT THE PREDICTION OF FLUVIAL EROSION RISK IN AUCKLAND

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ABSTRACT

Sediment is recognised as a key contaminant in the New Zealand freshwater environment due to the major impact it has on water clarity, ecosystem habitat and biodiversity loss. The National Policy Statement for Freshwater (NPSFM), Te Mana o te Wai, and the New Zealand Coastal Policy Statement (NZCPS) require sediment to be actively managed and the level improved or at least maintained. In the past, land-based activities were perceived as the main source of sediment in the streams, however, recent studies in New Zealand have shown that in many river and stream systems, the main source of sediment is from stream erosion processes.

Whilst stream erosion is a natural process, human activities, such as deforestation in rural catchments and land development in urbanising catchments, is exacerbating the issue by altering catchment hydrology. As a result, Auckland's streams are becoming increasingly incised and prone to lateral bank failures, playing havoc with built infrastructure, and causing more sediment to be delivered to receiving environments across the region. It is predicted that continued widespread growth in Auckland coupled with climate change, will continue to worsen this issue.

In the past, in Healthy Waters, stream erosion was managed based on the operational needs, and it was always a challenge to manage and plan for stream erosion holistically. The aim of this presentation is to describe a programme that Healthy Waters is developing to proactively address stream erosion. In particular, the presentation highlights a way forward by integrating aspects of hydraulic and hydrological modelling results (so-called "Driving Forces") with geomorphology and natural material soil science (also known as "Resisting Forces") for the assessment of stream bank stability risks. Two recent case studies, including South Kaipara Erosion Risk Metrics and Angelo Stream Restoration Conceptual Design, will be presented to show how the hydrological and hydraulic results were applied to identify where the predicted stream erosion hotspots would occur. In addition to presenting the case studies, Healthy Waters would like to receive constructive feedback on how we can improve our current methodology to better use modelling data for more accurate stream bank erosion prediction and water quality improvement.



Modelling Group
WATER NEW ZEALAND



Keywords

Hydraulic model, stream bank erosion, sediment, water quality, Te Mana o te Wai, stormwater, geomorphology, management



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Declaration

Topic	Modelling to support outcomes
<input checked="" type="checkbox"/>	Can attend in person
<input type="checkbox"/>	Have permission / authority to speak on the topic
<input checked="" type="checkbox"/>	Have a backup speaker if they fall ill or cannot present



Abstract Guidelines

1. Abstract Guidelines

- Abstracts submitted must be between 300 – 500 words, excluding title and authors.
- Abstracts must use the template above
- Font used should be Times New Roman or Arial size 11.

2. Call for Abstracts closes 4pm, Tuesday 31st January 2023 and submitted to [Katrina Guy](#)

3. Abstract Selection

- Wider applicability
- Demonstrated results and conclusions
- Relevance to the current state of the industry
- Content, including innovation
- Clarity and quality

4. Abstract Acceptance

- If accepted into the programme, you will only have to submit a presentation. No paper is required.
- Final presentation will be due by **28th February 2023**

5. Presentation

- Powerpoint 16:9
- Slide Pack will be attached shortly