

AUCKLAND REGIONWIDE FLOOD MODELLING

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ABSTRACT

Hydrologic/hydraulic modelling has been implemented in Auckland for decades, leading to a significant amount of flood data, which has provided eminent value in policy planning, stormwater management as well as development and design. To enable best value achieved in modelling, Auckland Council has an ongoing rotative modelling programme that aims to continuously improve and keep flood data current. However, due to factors such as priority changes, resource constraints and technical complexities, obvious gaps have been identified in Council's model data inventory, mostly issues such as model-currency, consistency, and accuracy.

With Auckland facing increased growth pressures, it is paramount for Council to have up-to-date flood data for land use planning and development controls. Auckland pressing needs a high confidence model of flood risk, which can be built in a relatively short timeframe and is capable of running different growth and climate change scenarios consistently. With more recent LiDAR and other new base data available, the regionwide flood modelling was initiated with the aim to provide consistent flood information across the entire Auckland region.

Due to the substantial project scale and different technical challenges, separate models were built for the rural and urban portions of the region. Both models are predominantly 2D and in comparison, the rural model represented close to a rapid flood approach, while the urban model represented framework modelling including trunk drainage systems. Each modelling exercise was split into two stages, with the first stage focusing on piloting and defining modelling methodology, and the second stage refining the model and producing flood risk data.

To meet the project objectives and achieve key outcomes required, innovation is critical at every aspect of the project. New modelling methodology has been developed and applied with a view into the future for potential further use of the model. QAQC and "ground truthing" is of great importance for the acceptance of the model outputs. The paper will dial into the details of key project challenges and how they are worked through for a successful delivery.

Data publication and sharing is also a key component for this modelling work. During the course of the project, a substantial volume of interim and final data was generated. To facilitate better data utilisation and to maximise project value, a new data sharing platform has been implemented which allowed practitioners to interrogate model output data timely and efficiently without having to sought for specialist input.

The regionwide flood modelling is one of its kind and is expected to be the best tool for strategic planning of Auckland on a regional scale. It updates the floodplain mapping for the entire region and provides valuable data for error checks and complements the detailed catchment models. At this stage the rural model is completed, and the project is near

completion for piloting the urban model. The entire project is planned to be finalised in approximately two years.

KEYWORDS

Flood data, data management, flood modelling, hydraulic modelling, strategic planning, catchment planning