Omāroro Reservoir – Integrating a Monster into Wellington's Water Network

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ABSTRACT

Wellington's water supply relies on two bulk water pipelines running for approximately 70km along a seismic fault line. When a large earthquake hits, the city could be reliant on the water already stored within the city for quite a while.

The Omāroro Reservoir has been constructed to increase the volume of water on hand. Omāroro is a 35ML reservoir built on a hill in central Wellington and brought into service in late 2022. This is by far the largest storage reservoir in the region and connects into the existing network alongside two smaller reservoirs.

As might be expected, integrating such a large reservoir into an existing network changes the operation of the system significantly.

This provides challenges – the reservoir must operate smoothly with other existing reservoirs, the huge volume of water must turn over to avoid water quality issues, and it must be integrated into Wellington's bulk network "Optimiser" software, which controls bulk water pumps across the region according to (amongst other things) power spot prices.

The new reservoir also provides opportunities. There are some long-standing issues with water supply to Wellington City which have been difficult to address. There are times when some reservoirs do not replenish properly. There are direct connections from the bulk network to local reticulation, which constitute water quality risks. There are large pressure fluctuations in some parts of the network, which exacerbate high water loss and high watermain burst rates.

Wellington Water recognised a network change on the scale required to integrate this large reservoir into the network could provide a chance to look at these issues again. Ahead of commissioning, Stantec was engaged to use the calibrated network model of Wellington city to identify how this change might best be utilised to not only ensure the reservoir works well, but to improve operation of the network as a whole.

In this presentation we will explain how the calibrated water network model was used to identify the causes of Wellington's existing issues, to use the opportunity provided by the integration of the Omāroro Reservoir to resolve them, and the lessons learned from the journey.

Keywords

Resilience, Water Security, Water Network Planning.

Declaration

Topic	Choose an item.
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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 shortley