What state our national water assets?

The $26 billion question

Around the country, the 3 water services involve $26 billion worth of assets. Water New Zealand's annual performance review aims to benchmark their performance – as **Lesley Smith** reports.

The National Performance Review (The Review) is an annual review of the provision of New Zealand's drinking water, wastewater and stormwater services. The Review collates data from 41 council and council owned organisations responsible for jurisdictions covering 85 percent of New Zealand's population.

Participants manage over 79,000 kilometres of pipeline, 295 water and 190 wastewater treatment plants, 3512 pump stations and 1426 water supply reservoirs, with total assets valued at over $26 billion.

The Review benchmarks social, environmental and financial aspects of services delivered using these assets. What the report can tell us about two important aspects of these services, the condition of our pipes and how we are managing the demand for water, is covered here. A full list of data and findings is included in an annual report and summarised in a snap shot for decision makers, downloadable from: www.waternz.org.nz/NationalPerformanceReview.

What condition are our pipes in?

Pipeline condition is indicated by condition grading and pipeline age information. Median age of pipelines for water is 32 years, wastewater 39 years, and stormwater 34 years – comparable with the European average of 37 years. However, only limited inferences can be made from age information, as the remaining life of pipelines depends on material, surrounding soil and other factors. It is for this reason that pipeline condition assessments are conducted.

Participants used seven different standardised guidelines and numerous in-house methods for determining pipeline condition. The approaches that participants listed are shown in Figure 1. Condition assessments inform remaining asset life determination and prioritise renewals.

The majority of participants in The Review measure asset condition on a 1-to-5 scale, however the variety of approaches used to make these assessments limits the ability to make comparisons across jurisdictions. Comparable data could be used to improve pipe deterioration assessments – ensuring assets renewals are optimally timed.

Guidance documents are produced by Water New Zealand, the Institute of Public Works Engineers Australia (IPWEA) and New Zealand Asset Management Support. Water New Zealand is collaborating with IPWEA and the UC Quake Centre to scope a project on pipeline guidance that would harmonise existing approaches and fill gaps in knowledge to enable the optimal asset management of pipelines.

How are we managing water demand?

Water restrictions are a commonly employed demand management approach tool for reducing pressure on urban water supplies. Two thirds of participants in The Review issued water restrictions in 2014/15 indicating water demand management is important in a number of regions (Figure 2).

Water metering is increasingly being adopted to manage water demand and is now used by all but five participants in The Review for non-residential customers. Urban water metering is less common in a residential setting, with 22 participants having no or very low levels of residential metering.

With a number of councils moving to full-scale metering, there are many lessons to be shared. The previous issue of *Water* reviewed how recent water metering installations in Kapiti have been used to improve its tariff system. Waipa and Selwyn are among other councils now commencing roll out of residential meters across their districts.

Residential water use is also high relative to other available international benchmarks. Review participants use on average 275 litres per person per day, while other benchmarked averages range from 119 to 195. Context is important here. Per capita freshwater availability in parts of New Zealand is amongst the highest in the world which

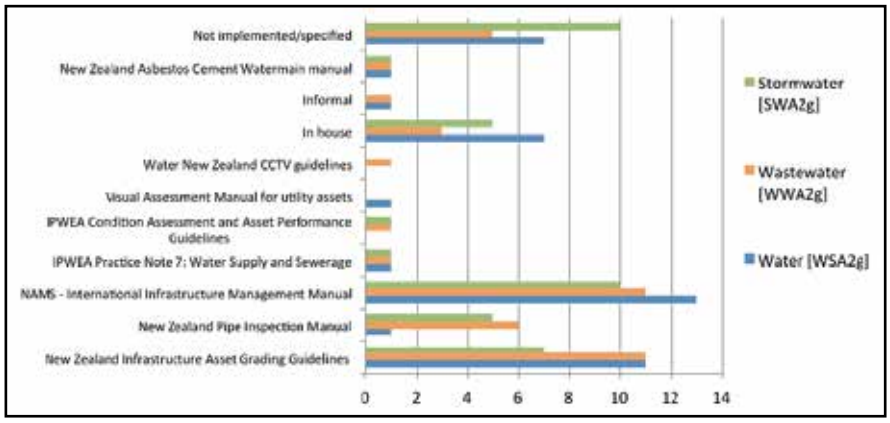

Figure 1: Approaches used for pipeline condition assessments.

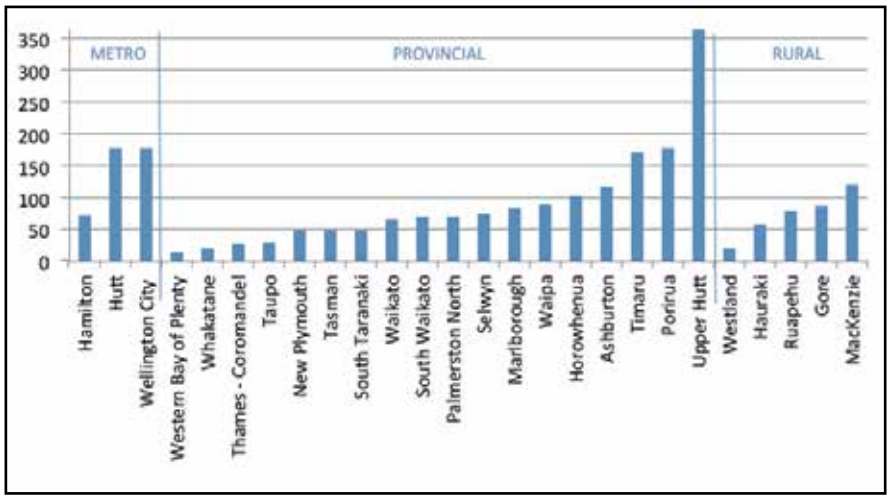

Figure 2: Regions issuing water restrictions and the number of days a year these were applied.

means that water scarcity is not always a driver for water efficiency.

Conversely, operational expenditure correlates with water use in all jurisdictions. In 2014-15, more than $90 million was spent by participants on operational expense categories that correlate with water supply volumes – energy, chemical and consumables and sludge disposal.

To facilitate knowledge transfer on best practice water efficiency Water New Zealand administers We Can, the Water Efficiency and Conservation Network. Details on the group and membership are available at www.waternz.org.nz.

There are opportunities to reduce water loss. Nearly one third of participants in the National Performance Review have yet to undertake a water loss efficiency assessment. Where assessments have been undertaken, the overall average values of current annual real losses show local water loss is high relative to international benchmarks. Infrastructure leakage index assessments suggest specific regions could reduce water loss, with 20 percent of participants who have undertaken an infrastructure leakage assessment having water loss considered 'high'.

Water loss efficiency assessments can be conducted using Benchloss Software and Water Loss Guidelines, both freely available for download from the Water New Zealand website: www.waternz.org.nz/library. Training on conducting an assessment is run from time to time and advertised through the website also.

Differences and similarities between regions

In the words of Alfred Nobel: "One can state, without exaggeration, that the observation of and the search for similarities and differences are the basis of all human knowledge."

Benchmarks teach us about our similarities and also our differences.

Similarities in water and wastewater networks enable us to identify common performance indicators. Differences in performance indicators are derived in three ways: though differences in service area characteristics, data definition interpretations, and performance variations.

Where possible, The Review provides data that benchmarks service area characteristics that influence performance. This includes the density of connections and types of customers served. However, other geographic and climatic characteristics cannot so easily be benchmarked; topography or rainfall for example. These factors will nonetheless affect benchmarked performance and are important lenses to apply when interpreting differences across regions.

Consistently applied data definitions are also essential for enabling meaningful performance comparisons. To this end, The Review process includes a participant workshop to align data definitions.

Concurrently, we are participating in a LINZ-led project to develop national metadata standards for the 3 waters infrastructure. Both these initiatives support the development of comparable national data on water, wastewater and stormwater infrastructure.

Beneath differences in data and innate differences in service area characteristics are differences in performance. These can derive from differences in operational practices, governance models, or staff skills.

The aim of The Review is to identify best practices in these areas and disseminate their adoption amongst participating councils. We welcome stakeholder input into this process. Enquiries or suggestions can be directed to: technical@waternz.org.nz. **WNZ**