3 Waters pressure and how innovation can help

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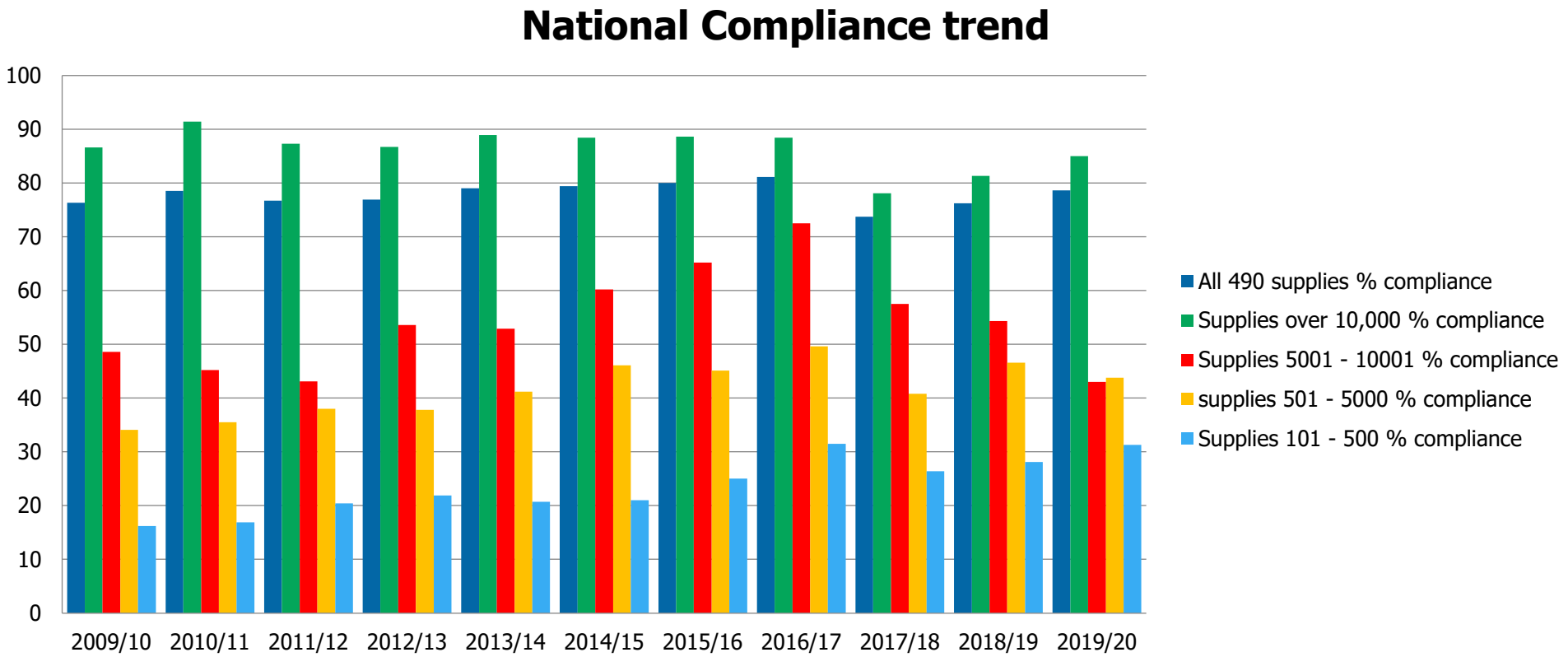
water NEW ZEALAND
The New Zealand Water & Wastes Association Waiora Aotearoa

Ka ora te wai, ka ora te whenua, ka ora ngā tāngata
If the water is healthy, the land is healthy, the people are healthy

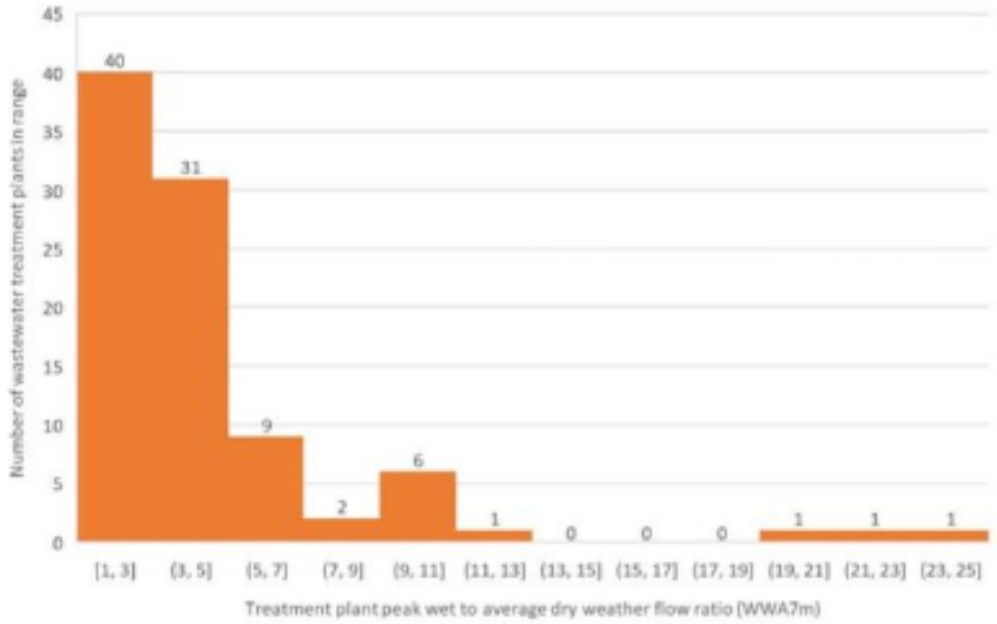
Drinking Water Compliance



7.3 Inflow and infiltration

Inflow and infiltration (I&I) are mechanisms by which stormwater and groundwater make their way into the wastewater network, commonly caused by cross connections or damaged pipes. High volumes of I&I put additional load on wastewater treatment plants, which can result in wastewater overflows to the environment in wet weather. Inflow and infiltration volumes also provide an indicator of the condition of pipelines. Peak wet to average dry weather flow ratios entering wastewater treatment plants serve as a proxy for inflow and infiltration into wastewater systems. The reported values entering wastewater treatment plants are shown in Figure 42.

Figure 42: Peak wet to average dry weather flow rations entering wastewater treatment plants

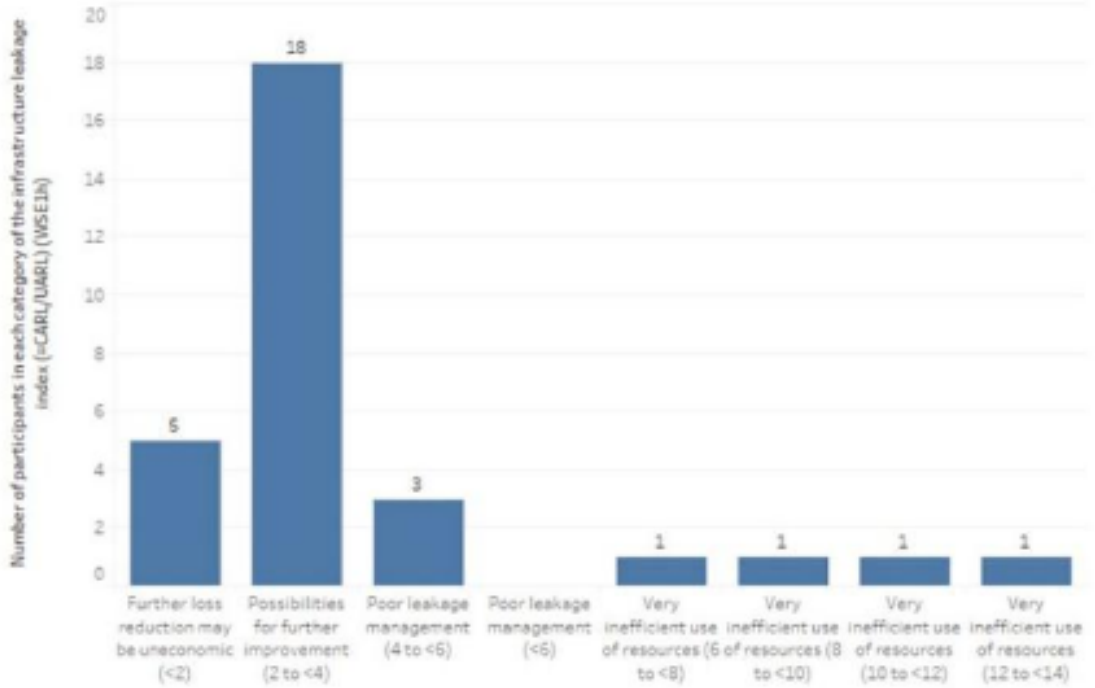


7.4 Water loss

In the 2020 fiscal year, participants lost 116 million cubic meters of water through their water supply systems, equivalent to over 47,000 Olympic-sized swimming pools. This constituted 21% of the 549 million cubic meters[9] of water supplied to systems with known water loss.

International experts recommend the Infrastructure Leakage Index (ILI) is used to compare water losses across different systems. ILI is determined by dividing current annual real water loss levels (CARL) by unavoidable annual real losses (UARL). The number of participants achieving each of the ILI performance bands contained in Water New Zealand's *Water Loss Guidelines* (Lambert & Taylor, 2010) is shown in Figure 43.

Figure 43: Water loss performance summary using the Infrastructure Leakage Index



Stormwater

- Metadata
- Floodable floors
- Rainfall and runoff guide

Pipe Guidance Material

There's a plethora of guides for managing pipelines. So many, that we thought the guides deserved a guide themselves. Here is a summary of documents in use you can access at:

www.waternz.org.nz/PipeGuidance

NAMS International Infrastructure Management Manual

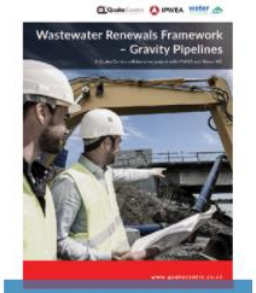
2015

Provides an overarching framework for asset management. It is not pipeline specific but is the widely employed approach for managing pipelines.

New Zealand Gravity Pipe Inspection Manual, Edition 4

2019

The manual provides a basis for undertaking inspections and condition assessments of gravity pipelines for asset management and renewal planning. Preliminary condition grades are aligned with the IIMM.



Wastewater Renewals Framework - Gravity Pipleines

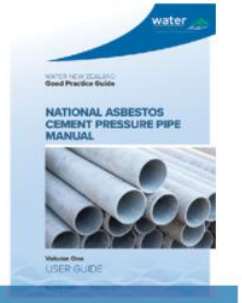
2018

A process to assist renewals planning of gravity wastewater pipelines. The output from this process is a works programme with forecasts of budgets, level of service predictions, risk and resilience profiles and monitoring and condition assessment programmes. The framework supports the IIMM by defining performance assessments and interventions specific to gravity pipelines.

Guideline for Assessing Technical Resilience of Three Waters Networks

2019

A guide for assessing and developing strategies to improve network resilience, inform pre-event planning and post-event emergency support and recovery. Resilience assessments can be fed into an overall asset management process as outlined in the IIMM.



National Asbestos Cement Pressure Pipe Manual

2017

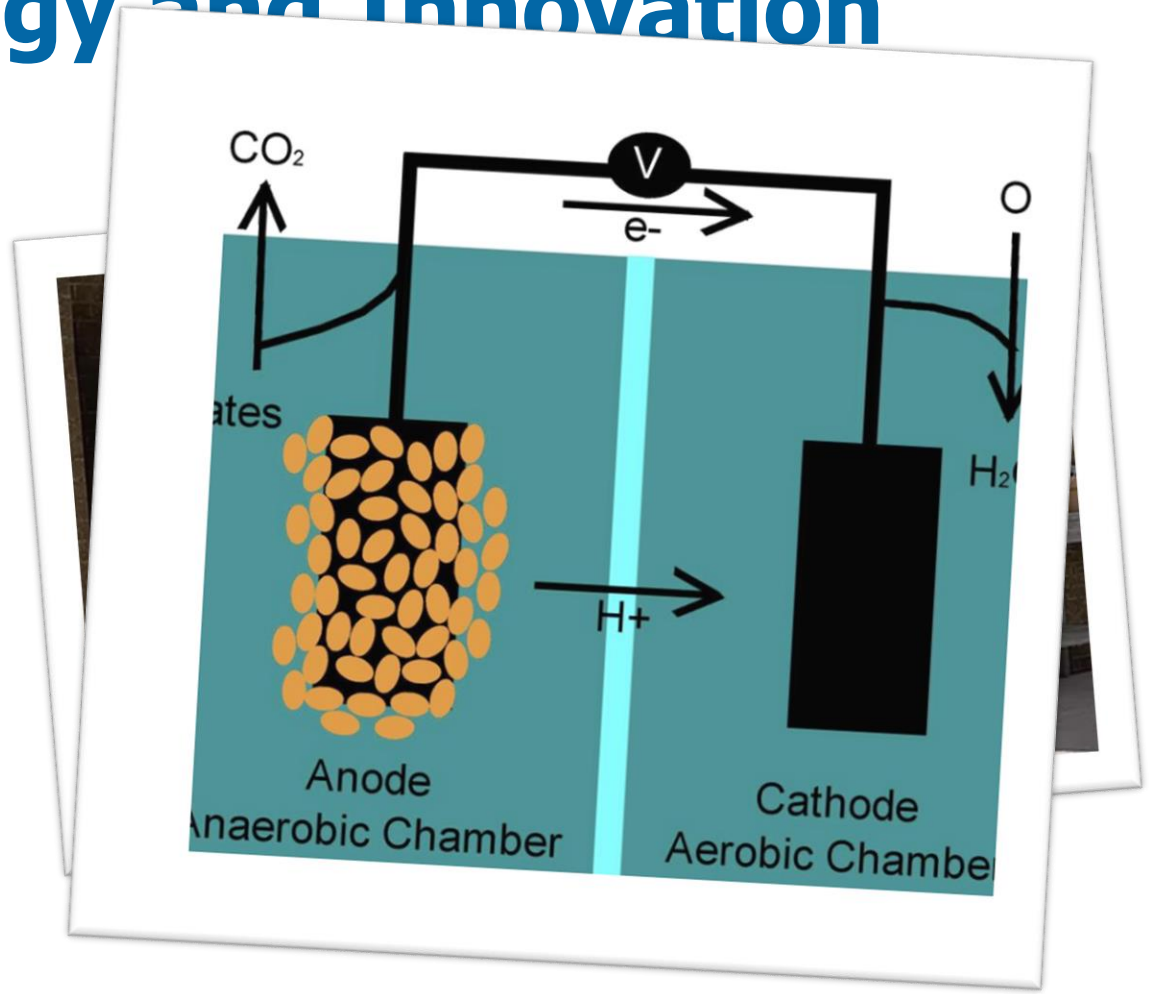
A guide and supporting calculator to assess the condition and likely remaining life of Asbestos Cement (AC) pressure pipelines. The manual also addresses health and safety aspects of handling of AC pipes.

Other Challenges

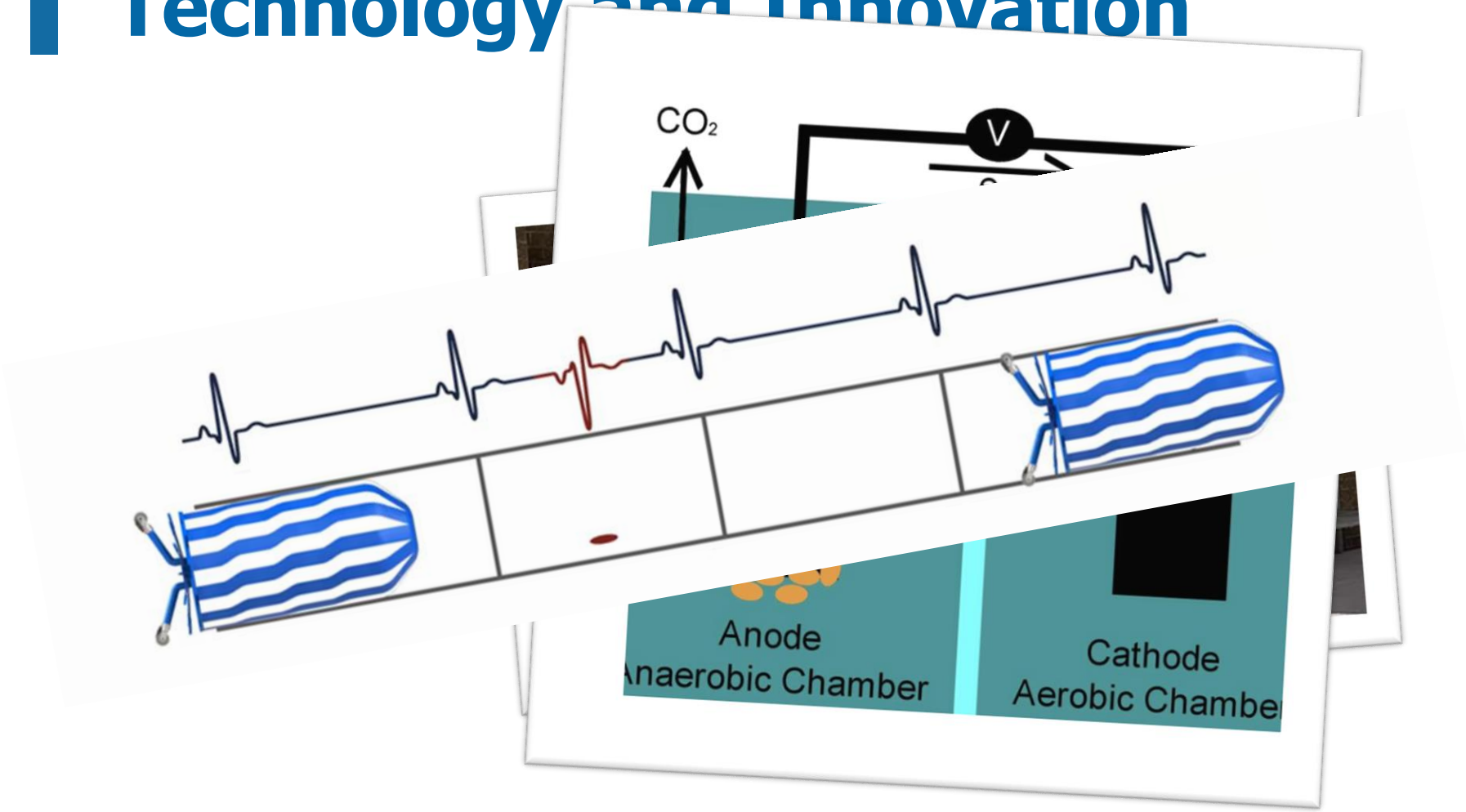
- WICS $120b - $185b in the next 30 years
- > 87,000 km of 3 waters pipes
- 224 Wastewater Treatment plants
- 349 Drinking Water Plants
- Hydrogen sulfide corroding concrete pipes
- Climate change impacts
- Wastewater high green house gas emissions
- Condition assessment of underground assets
- PFAS, emerging chemicals of concern
- microplastics

Technology and Innovation

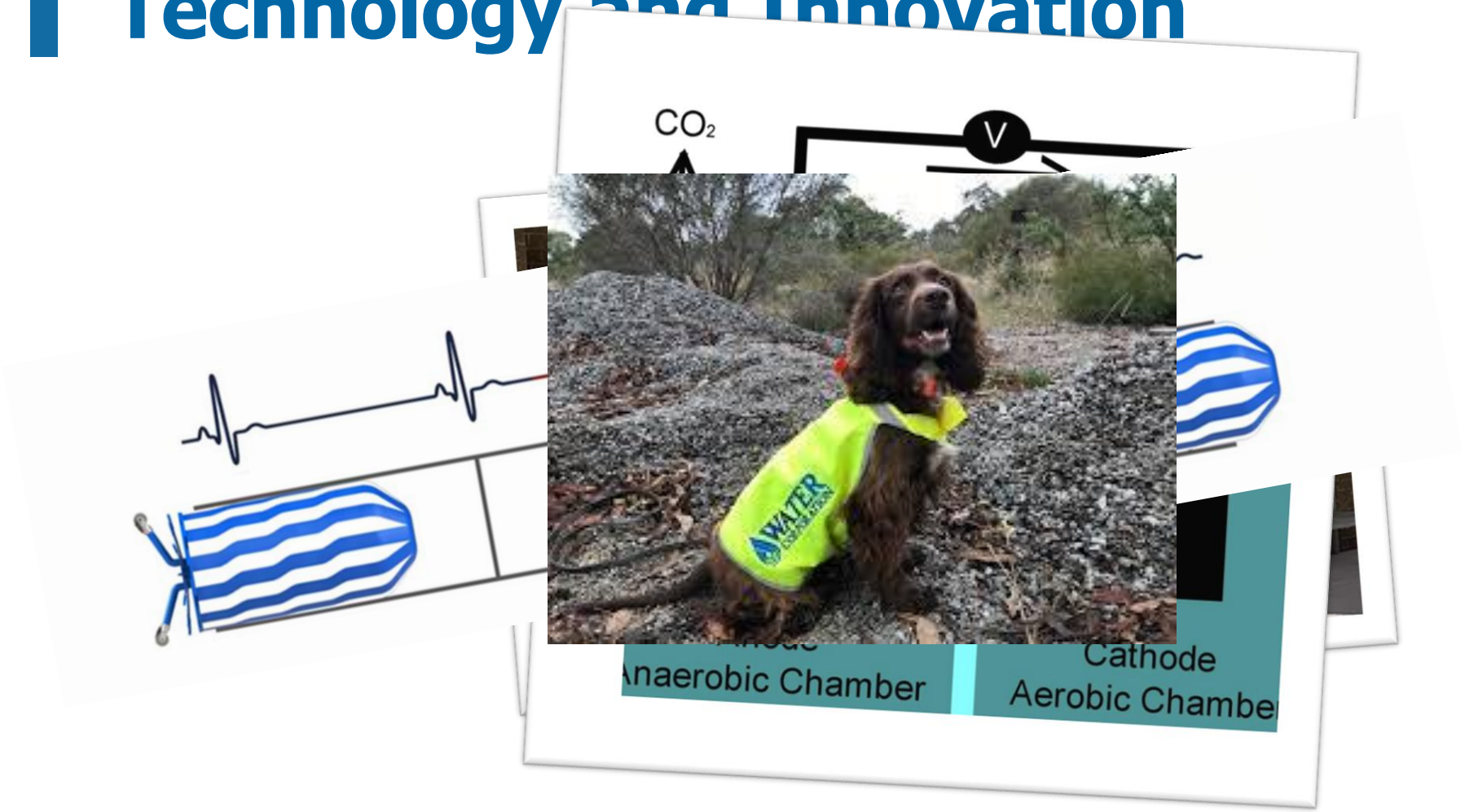
Technology and Innovation



Technology and Innovation



Technology and Innovation



"METHANE CRACKING" TO UNLOCK HYDROGEN + GRAPHITE FROM OZ WASTEWATER

Three-year deal signed with Hazer Group

The Western Australian Government has given its support for a country-first project that will see renewable hydrogen and graphite produced from wastewater.

Utility Water Corporation and ASX-listed technology development company, Hazer Group, signed a three-year deal to produce hydrogen and graphite from the Woodman Point wastewater treatment plant in Muster.

A target has been set to produce 100 tonnes of fuel-grade hydrogen and 380 tonnes of graphite a year.

Dutch plant to recover cellulose from used toilet paper in sewage

Utility Water Corporat…
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A target has been set to produce 100 tonnes of fuel-grade hydro…
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Dutch plant t[illegible]PACKING" TO
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Questions ??

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