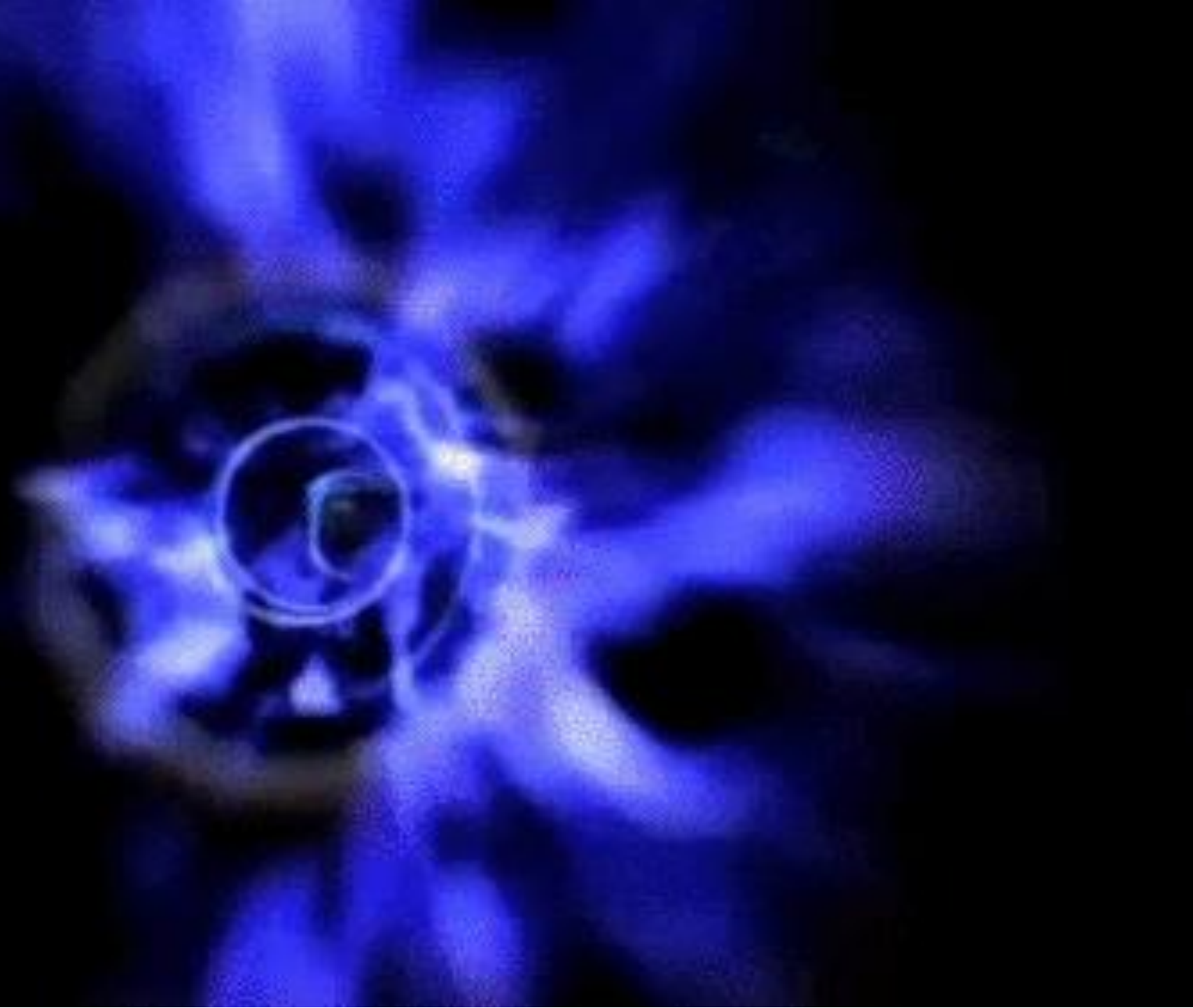


WATER NEW ZEALAND 2019

How to build a digital twin of water in Aotearoa New Zealand

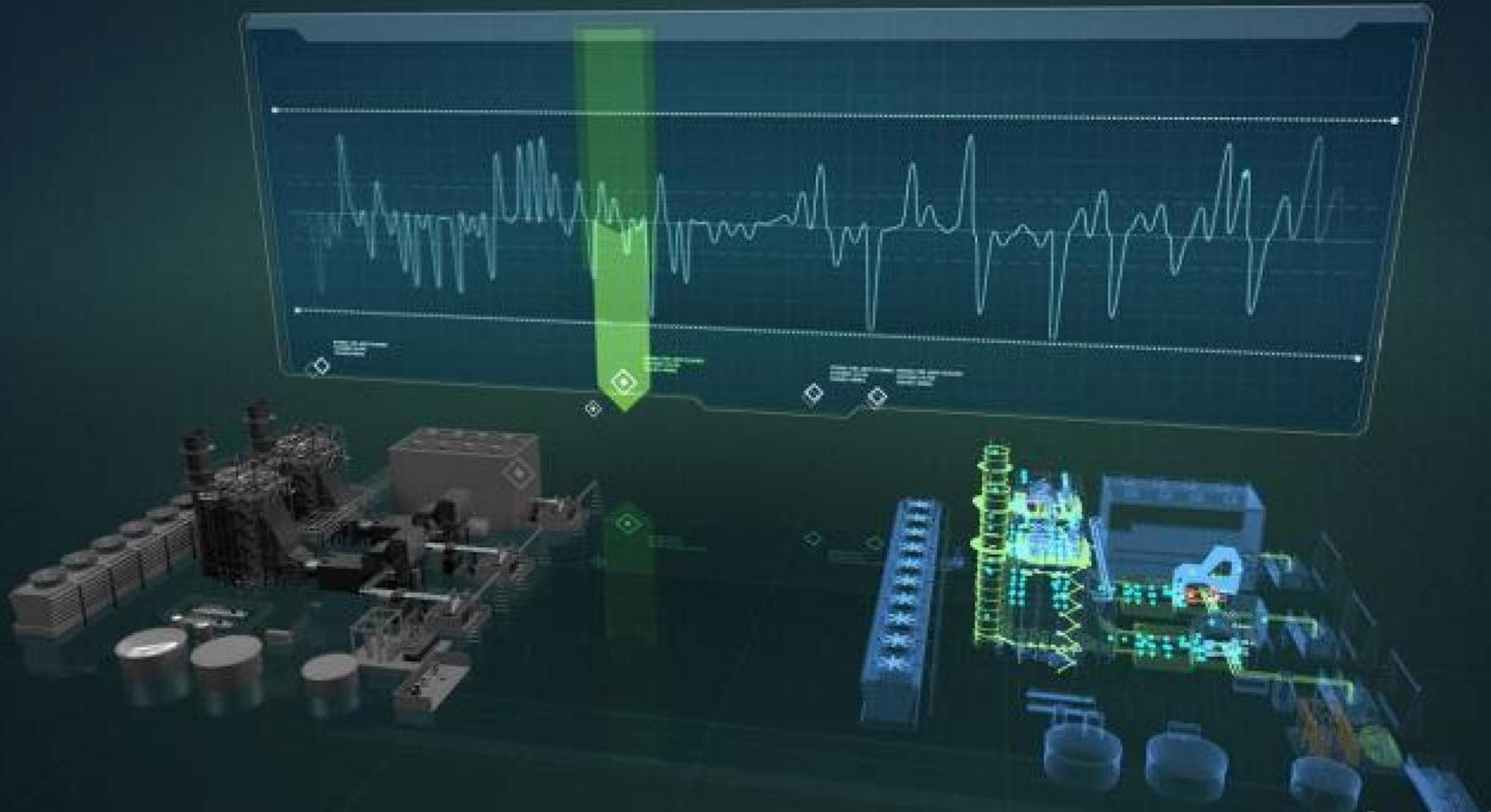
MICHAEL HOWDEN (BECA)



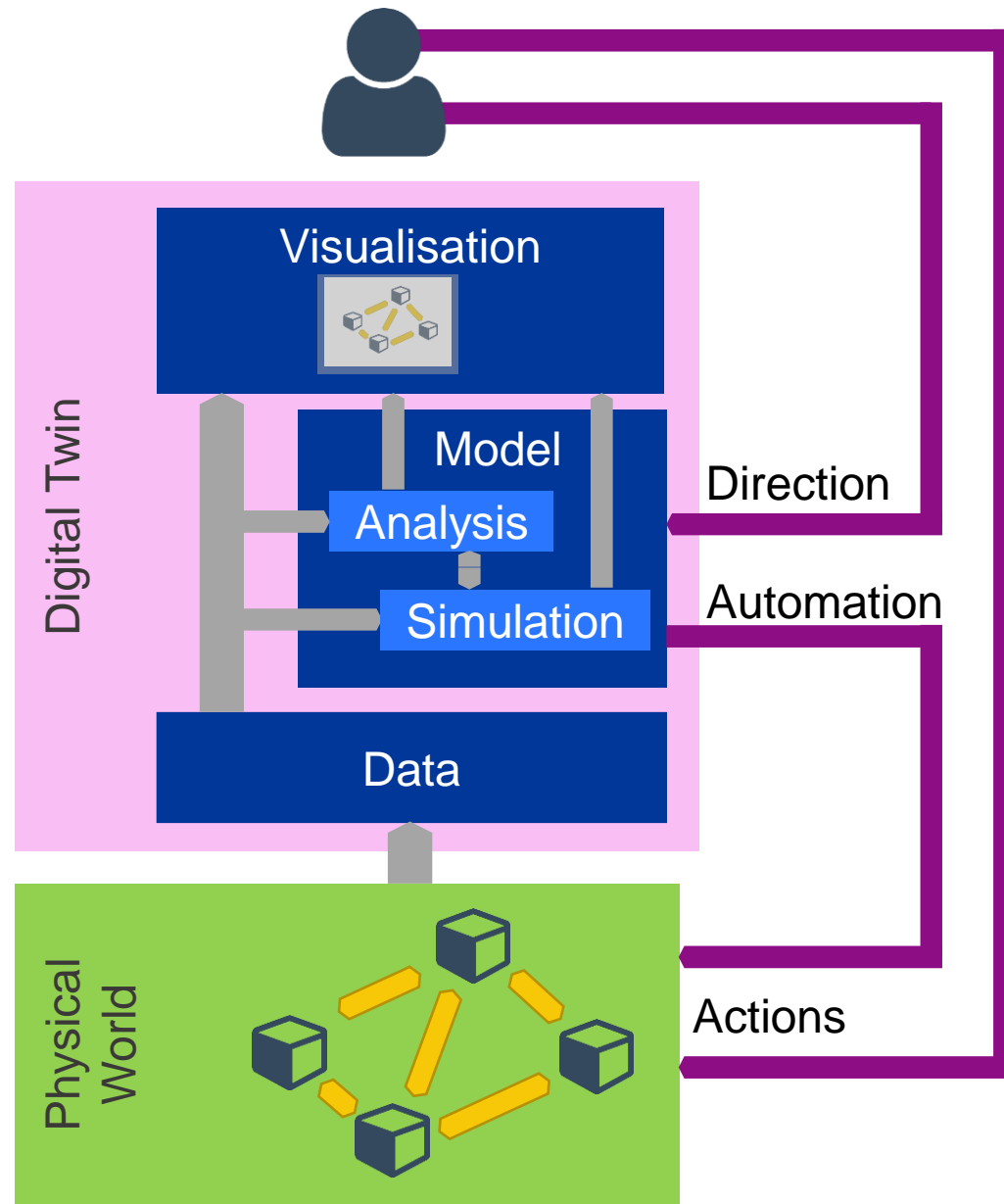
How we built a digital twin of water in Aotearoa New Zealand

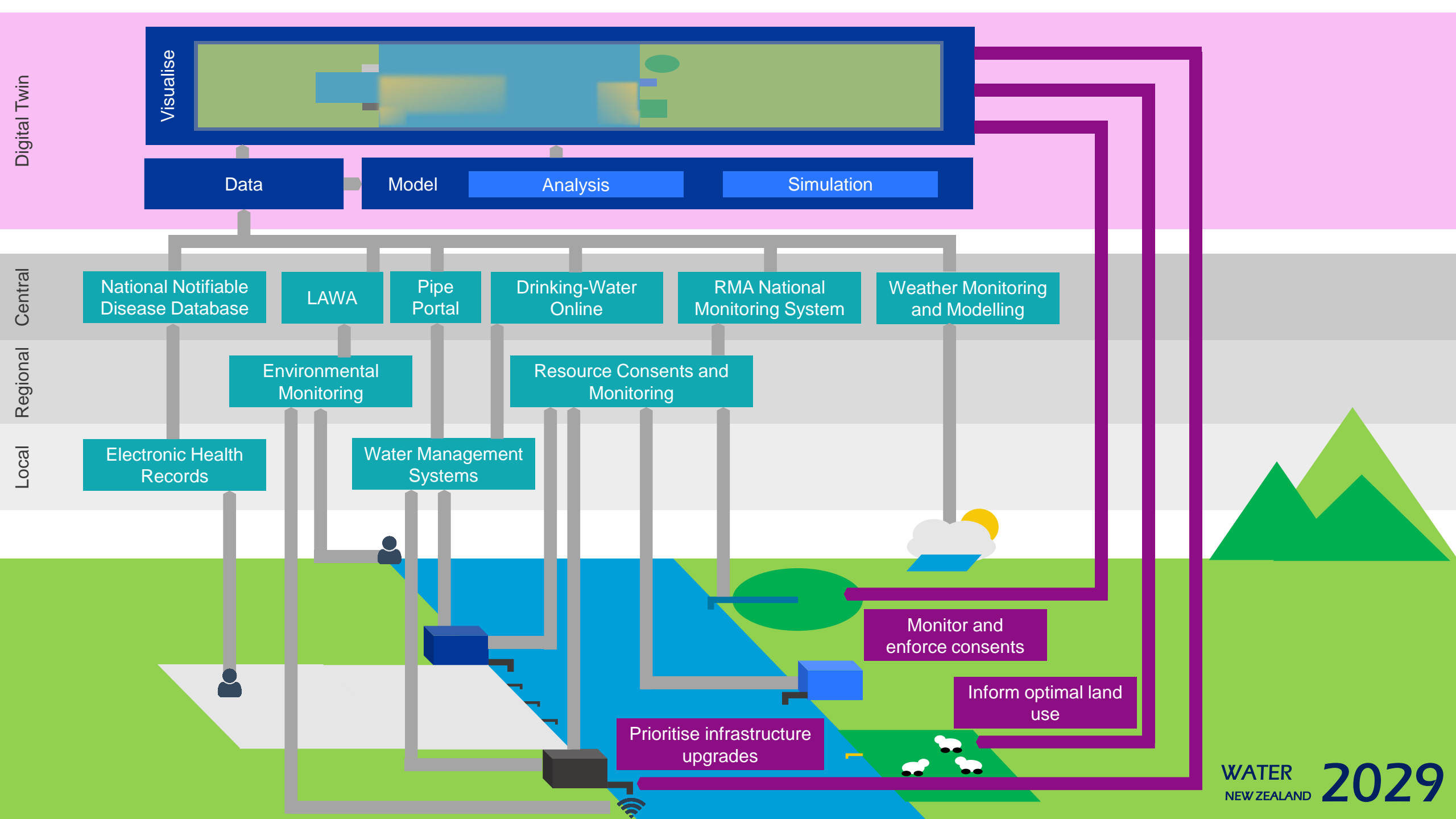
Michael Howden

- ▶ **2020** Water Services Bill + WaiReg Established
- ▶ **2021** New Drinking Water Standard
- ▶ **2022** National Policy Statement for Freshwater Management
- ▶ **2023** Wastewater Compliance reporting introduced
- ▶ **2025** Reforms to Local Government funding
- ▶ **2027** RMA Reform



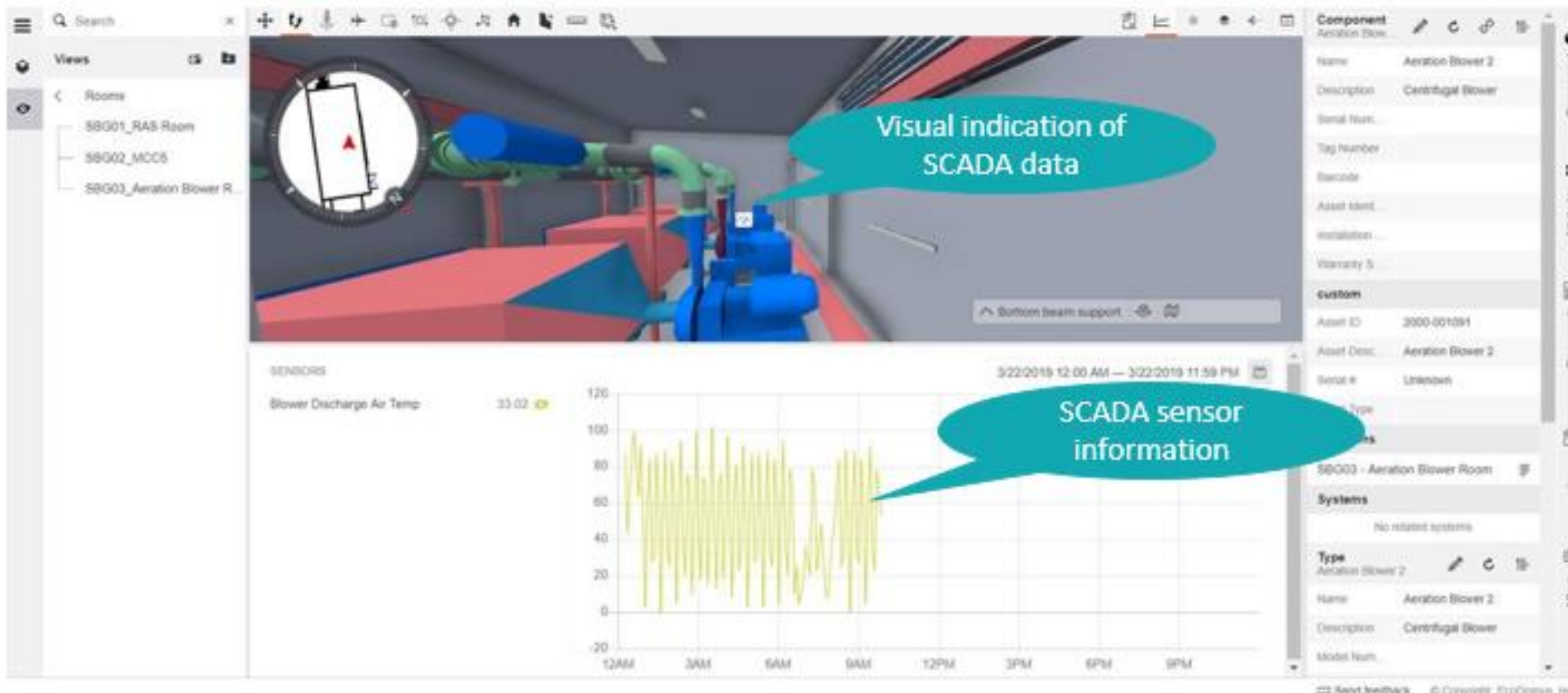
WATER **2029**
NEW ZEALAND





“

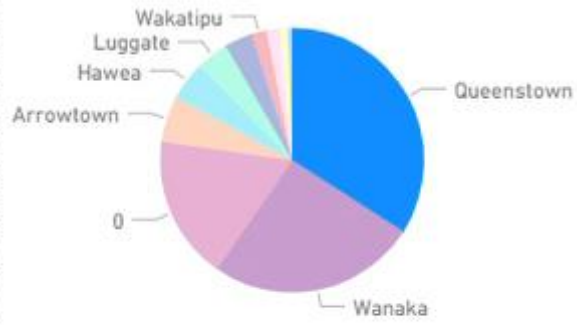
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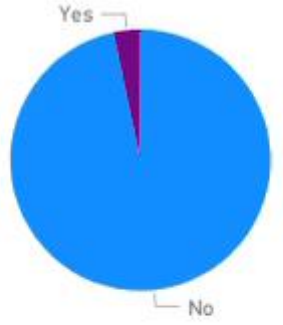
National Pipe Data Portal



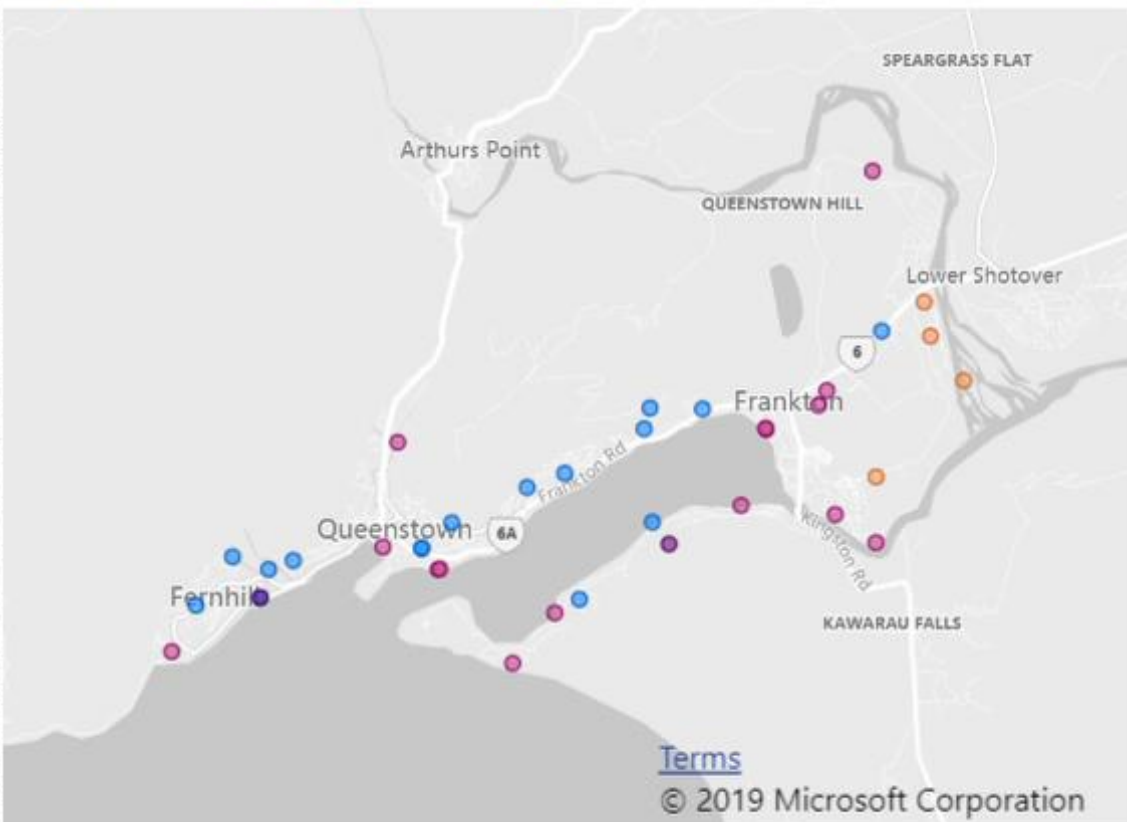
Count of Scheme



In Powerlink Export?



Type



ID

Date

Scheme

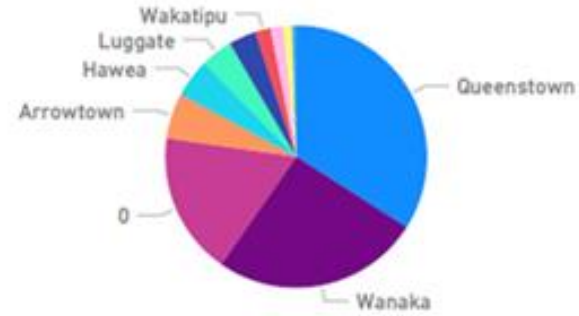
Type

Main Activity

M127061 - UV1 Red Dose

M127061 - UV1 Red Dose

Count of Scheme



In Powerlink Export?

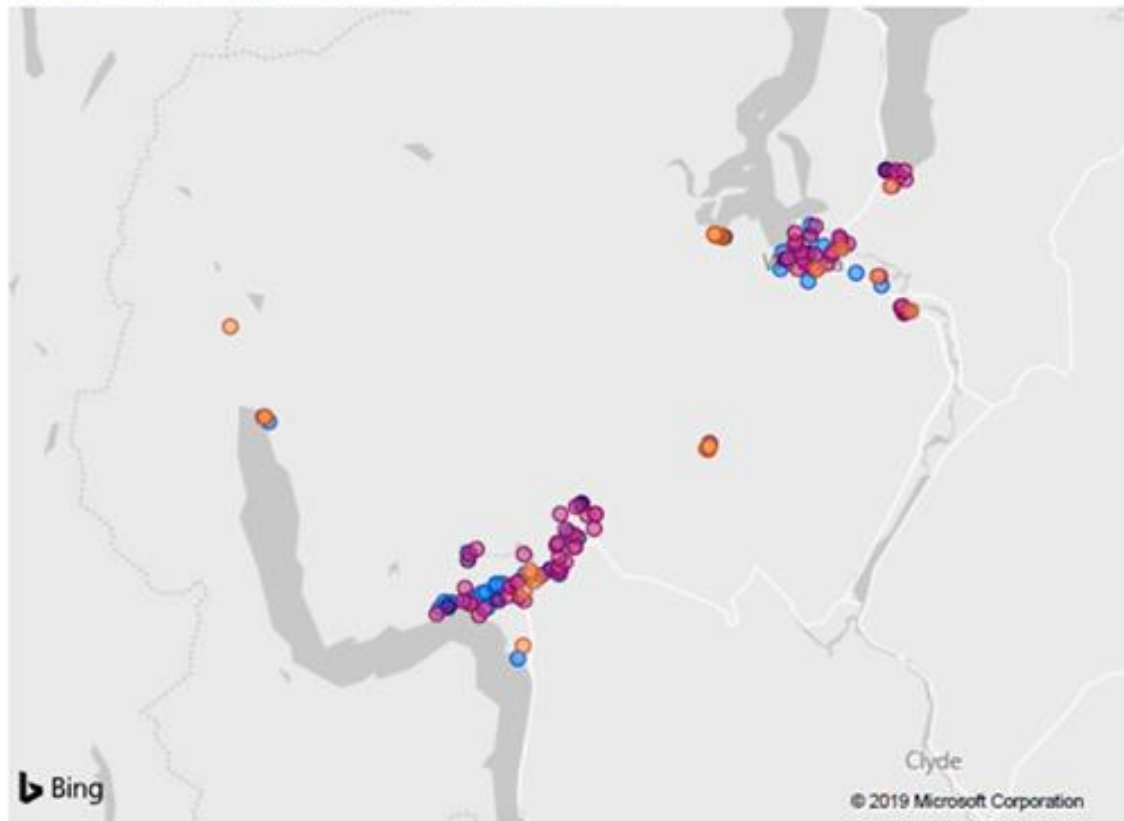


ID

Date: 9/05/2019 to 8/08/2019

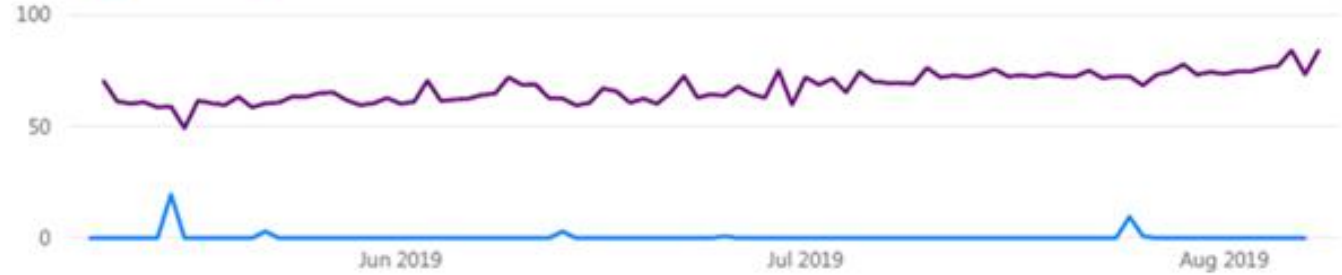
Scheme: All
 Type: All
 Main Activity: All

Type: ● W Pump Station ● WTP ● WW Pump Station ● WWTP



M127061 - UV1 Red Dose

Metric: ● UV2 Red Dose ● UVA Red Dose



M127061 - UV1 Red Dose

Metric: ● UV2 Red Dose ● UVA Red Dose

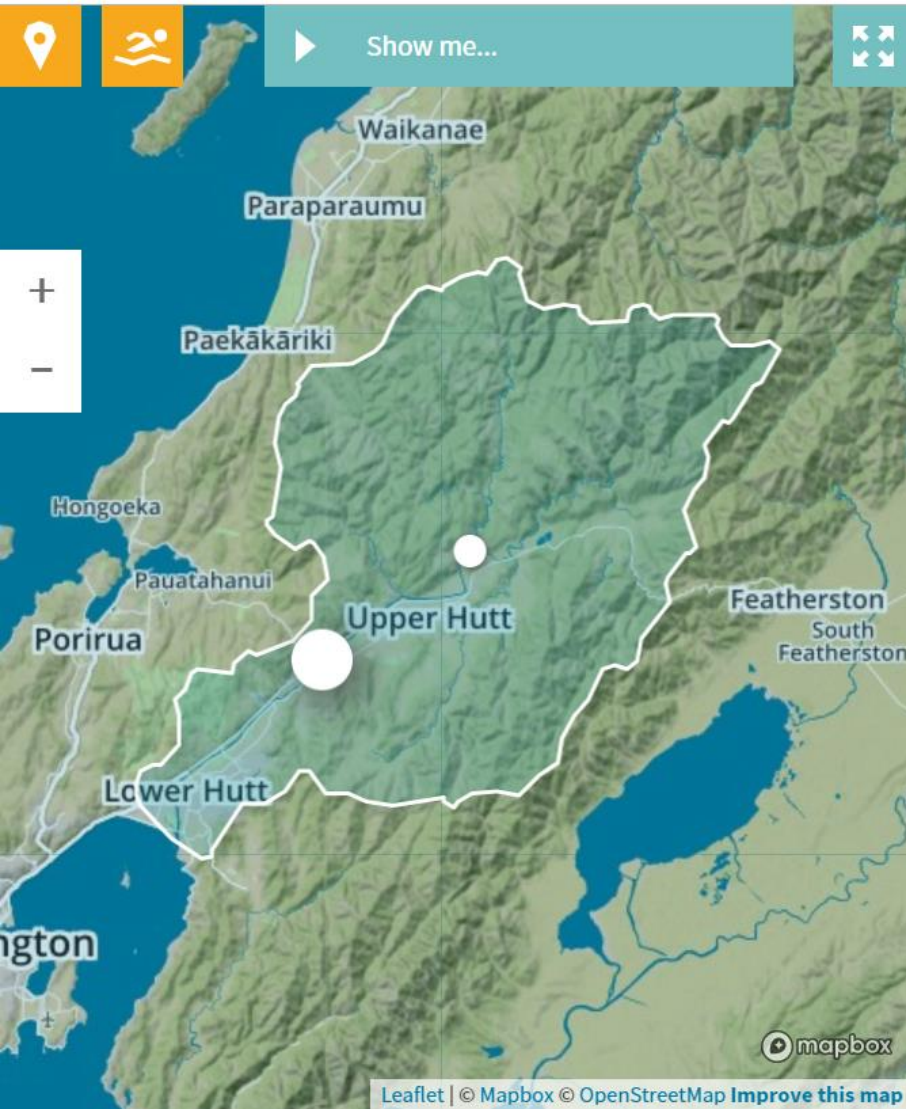




IMPACT OF SEA LEVEL RISES ON WELLINGTON

WATER
NEW ZEALAND 2029

Land Air Water Aotearoa (LAWA)



Can I Swim Here?

Live Data

Automatic 'live data' sampling

Some sites have telemetry monitoring systems in place that can provide up to the minute data. At this site the following live data measurements are available. Click on the data type for more information.

Flow



Latest sample:

10.27
m³/sec

13 Sep 2019
7:30 AM



WATER **2029**
NEW ZEALAND



My Drinking Water

Find out all you need to know about your drinking water



Search for your address, suburb or post code...

Go

12 Aylesford Street, Mairehau, Colesteen

As at 30 June 2018, Colesteen drinking water met the following requirements:

[More information](#) ^

✓ Health Act

- ✓ Lorem
 - Lorem ipsum dolor sit amet
 - Duis aute irure reprehenderit
- ✓ Ipsum
 - Lorem ipsum dolor sit amet
- ✓ Dolor
 - Lorem ipsum dolor sit amet
 - Duis aute irure reprehenderit

✓ Water Safety Plan

- ✓ Lorem
 - Lorem ipsum dolor sit amet
- ✓ Ipsum
 - Lorem ipsum dolor sit amet
 - Duis aute irure reprehenderit
- ✓ Dolor
 - Lorem ipsum dolor sit amet
 - Duis aute irure reprehenderit

✗ Drinking Water Standards

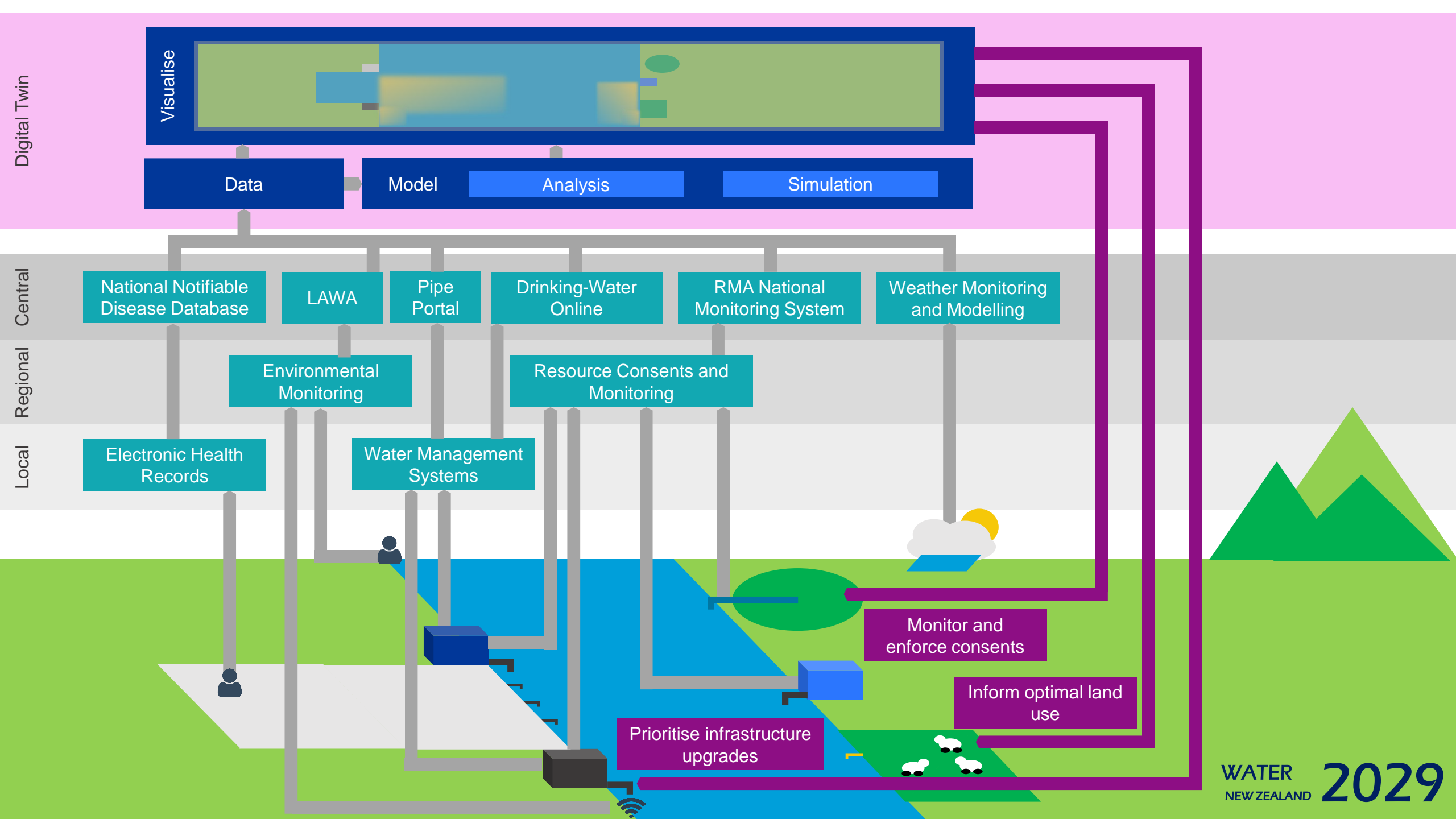
- ✓ Bacterial
- ✗ Protozoa
 - Your supplier did not attempt to meet these standards.
 - Your supplier did not have the equipment to meet these standards.
- ✗ Chemical
 - Your supplier did not take any samples to test for chemicals.
 - Your supplier had times where levels of chemicals which are too high were found in the system.
 - Your supplier did not use a registered lab to do their tests.

[From Source to Tap](#) >

[Standards & Legislation](#) >



WATER **2029**
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Digital Twin Success Factors



Purpose



Accurate



Governance



Timely



Complete



Trust



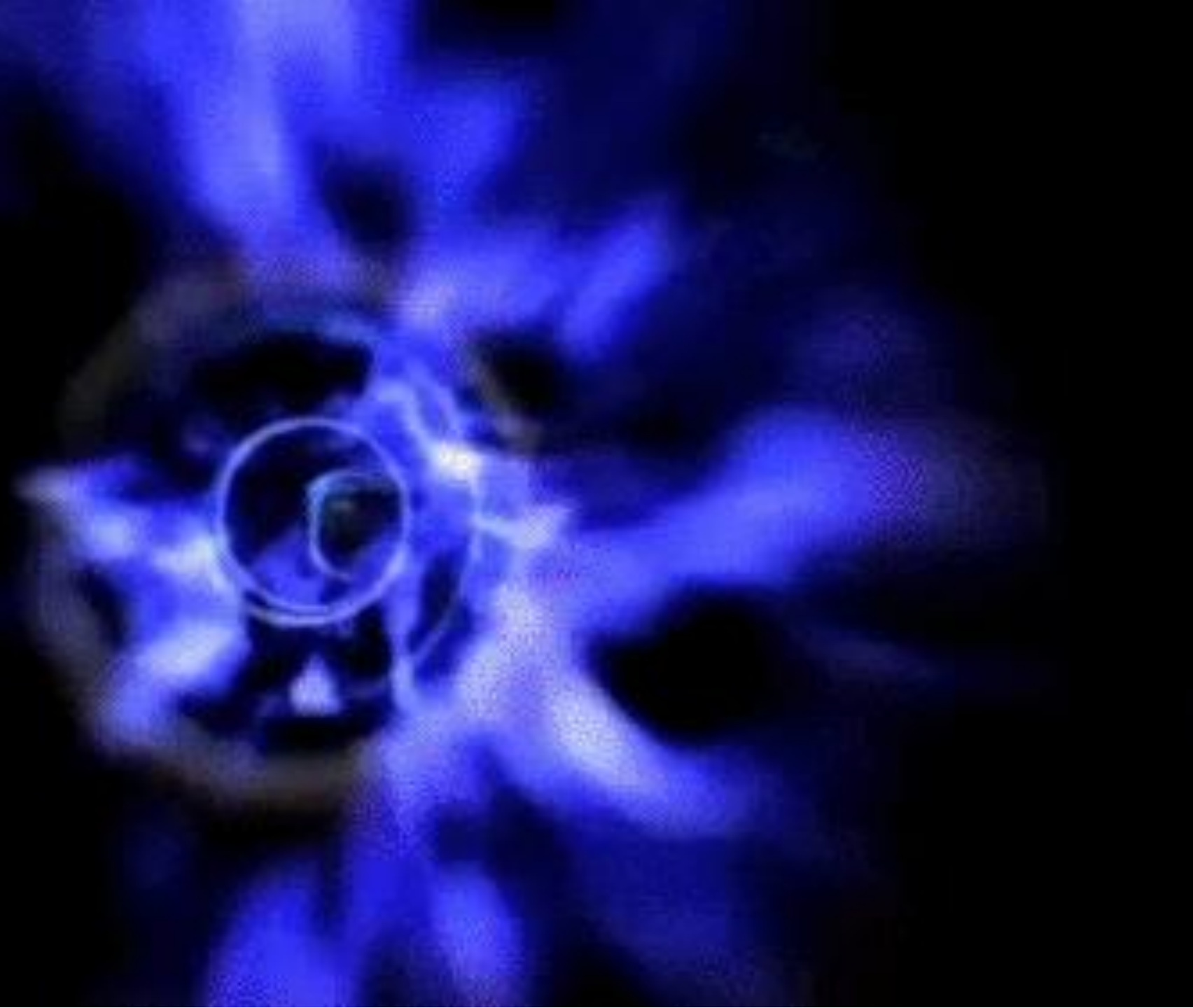
WATER **2029**
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WATER 2029
NEW ZEALAND



WATER 2029
NEW ZEALAND





Thank you

michael.howden@beca.com



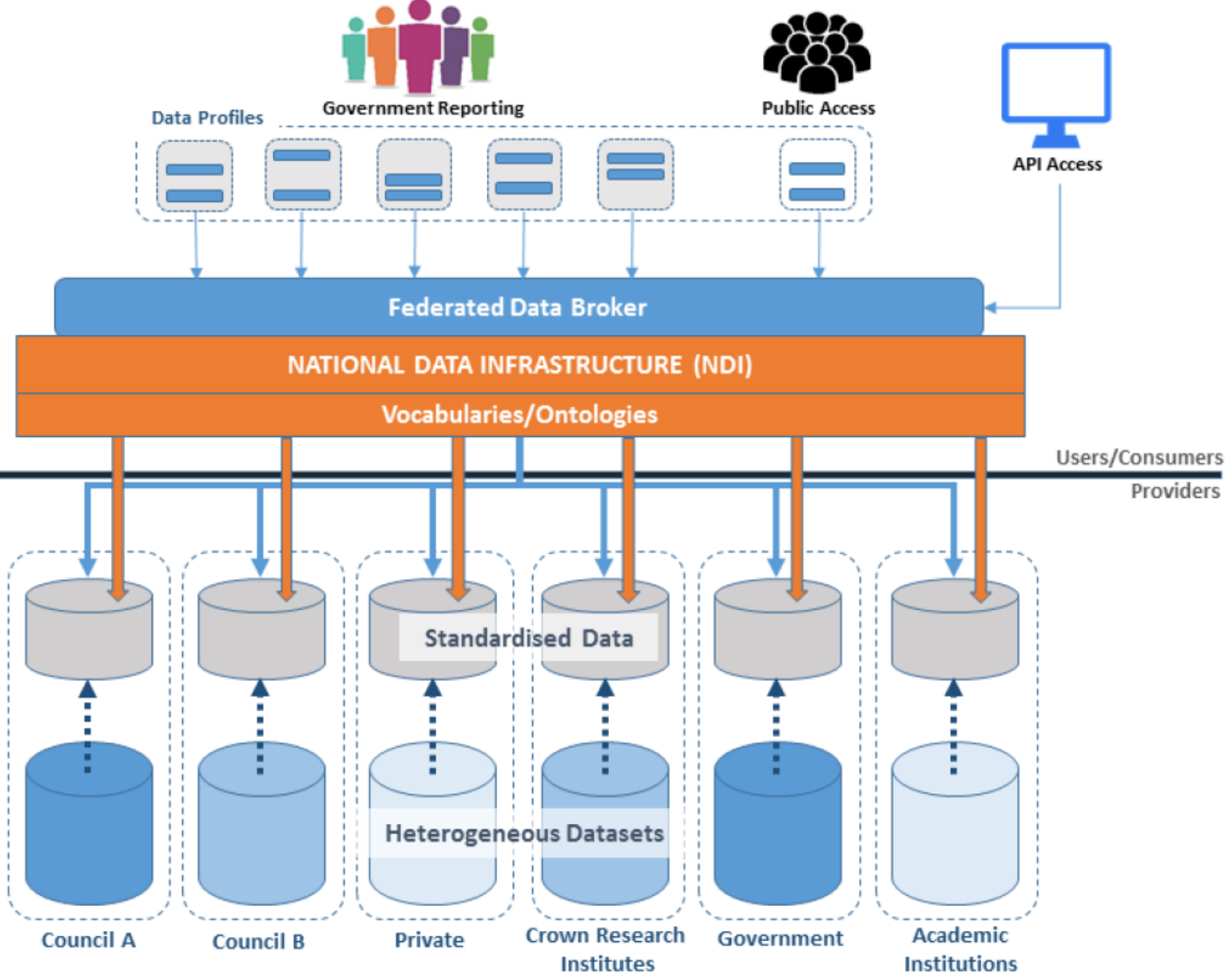
Data Profiles
Data filter consisting of constraints for validating required output.

Federated Data Broker
Middleware component that federates council semantic data services for discovery and access

NDI
Registries, APIs, URIs, Ontologies, NEII reference architecture
Ontologies: map to agreed vocabularies/ontologies to standardise data.

Standardised Data
Publish standardised river water data semantic after linking to ontologies

Heterogeneous Datasets
Each council's river water data store is maintained using business as usual processes.



Purpose:

Must have clear purpose

Public good

Must be used to deliver genuine public benefit in perpetuity

Value creation

Must enable value creation and performance improvement

Insight

Must provide determinable insight into the built environment

Trust:

Must be trustworthy

Security

Must enable security and be secure itself

Openness

Must be as open as possible

Quality

Must be built on data of an appropriate quality

Function:

Must function effectively

Federation

Must be based on a standard connected environment

Curation

Must have clear ownership, governance and regulation

Evolution

Must be able to adapt as technology and society evolve