Maintaining Chlorine residuals for high quality water supply

WEARS Australia

Leaders in water research & engineering solutions for managing and maintaining water resources

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Overview

- Bringing the problems to the surface – Challenges for water authorities storing treated water.
- Securing water safety.
- In focus – Narromine Shire Council.
- How to fix the problem.

Bringing the problems to the surface

- Water treatment costs continue to rise along with increased demand for clean, consistent water.
- Water treatment losses are high if water quality can not be maintained in storage facilities.
- Water storage facilities provide further consistency challenges for water authorities:
  - Dead zones and aged water
  - Short circuiting
  - High treatment and disinfection rates
  - Stratification
  - Floor sediment and biological build-up

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Securing water safety

- Australian conditions make homogenous storage reliant on chemicals.
- High decay rates call for increased dosing due to sediment and ageing water.
- Reservoir design and use causes:
  - Tank short circuiting
  - Dead zones
  - Stratification
  - Common inlet/outlet
- Increased need to optimize reservoirs in the treatment and storage process.

CASE STUDY

Mr Doug Moorby

Manager of Engineering Operations, Narromine Shire Council

- Heart of the Macquarie Valley in central west NSW 5,224 km2 with a population of 6,800.
- Trangie (pop. 800), serviced by Trangie water supply network
  - 1 Reservoir
  - 4 Bores
  - 5 Chlorination systems
- Engaged WEARS to help reduce the historical inconsistencies in Trangie reservoir.

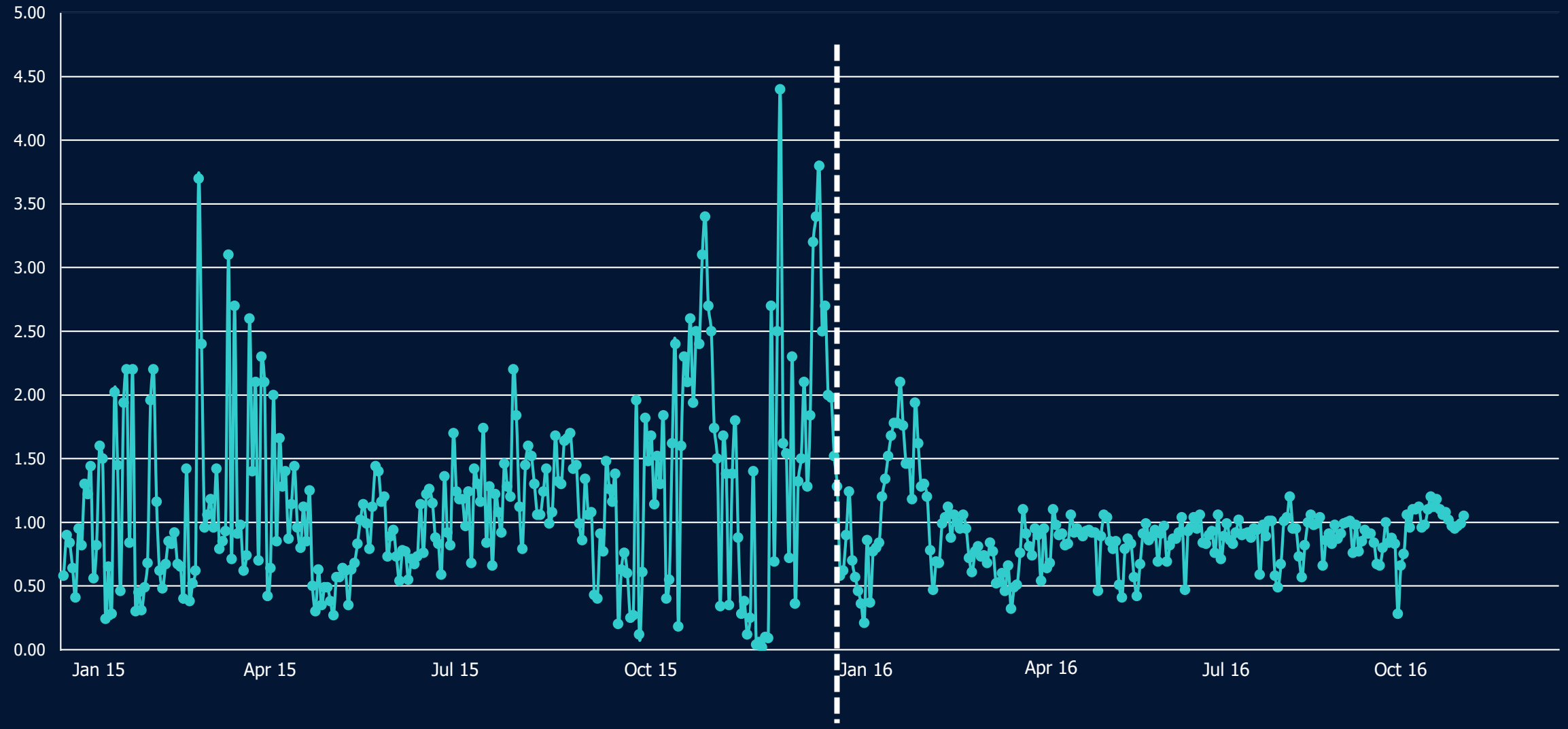
Trangie Reservoir

- Supply to 800 Residents with peak day demand of 3.8M/L and 2M/L storage
- Bore fed
- Historically inconsistent water quality, peaks and troughs
  - In 2015, 25% of free chlorine readings exceeded critical minimum or maximum control points
  - Stability difficult to achieve and maintain

Achieving Reservoir stability

- Installation of WEARS Resmix Vital in January 2016 with Chlorine dosing system
- Initial commissioning through January 2016
- Once stabilised, instances of free chlorine exceeding minimum or maximum control points reduced to 3% of readings.
- Reservoir is now consistent and stable with almost no sediment or chlorine atomisation

Trangie Free Chlorine (mg/L)



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Why Narromine chose the Resmix Vital

- Low energy solution, uses 90% less power then alternatives.

- Uses 0.5kW/hr to run and can be run on solar power

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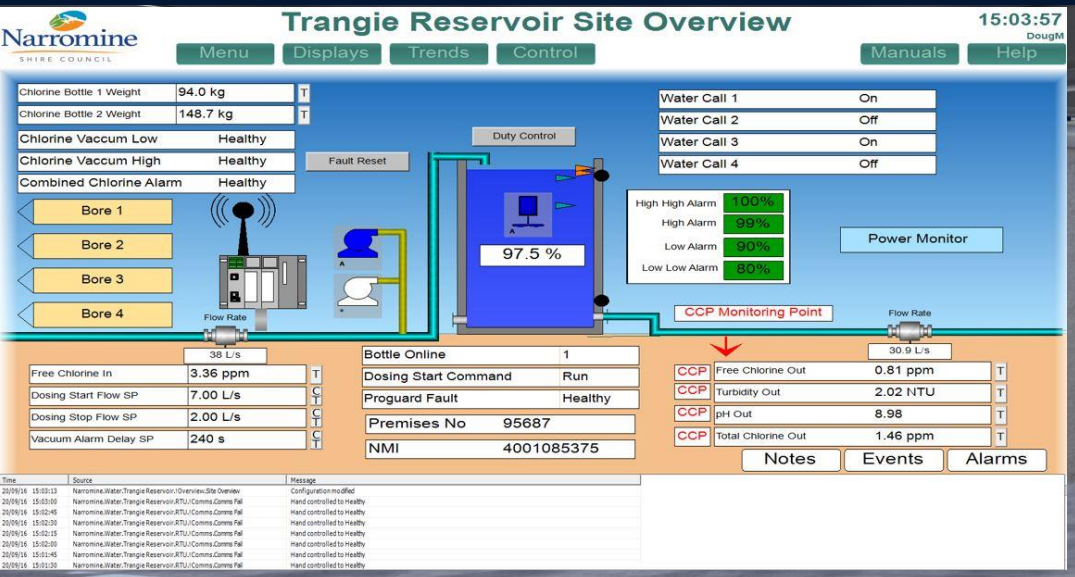
Why Narromine chose the Resmix Vital

- Top-down system takes surface water and pumps it to the design depth, eliminating stratification.
- Was the only solution that prevents dead spots and short circuiting, producing a stable and homogenized reservoir.

Why Narromine choose the Resmix Vital

- Significant reduction in dosing and adjustments, set and forget.



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