



unison

The Powerlines People

www.unison.co.nz

Network Development Plan

Rotorua Region

Who we are...

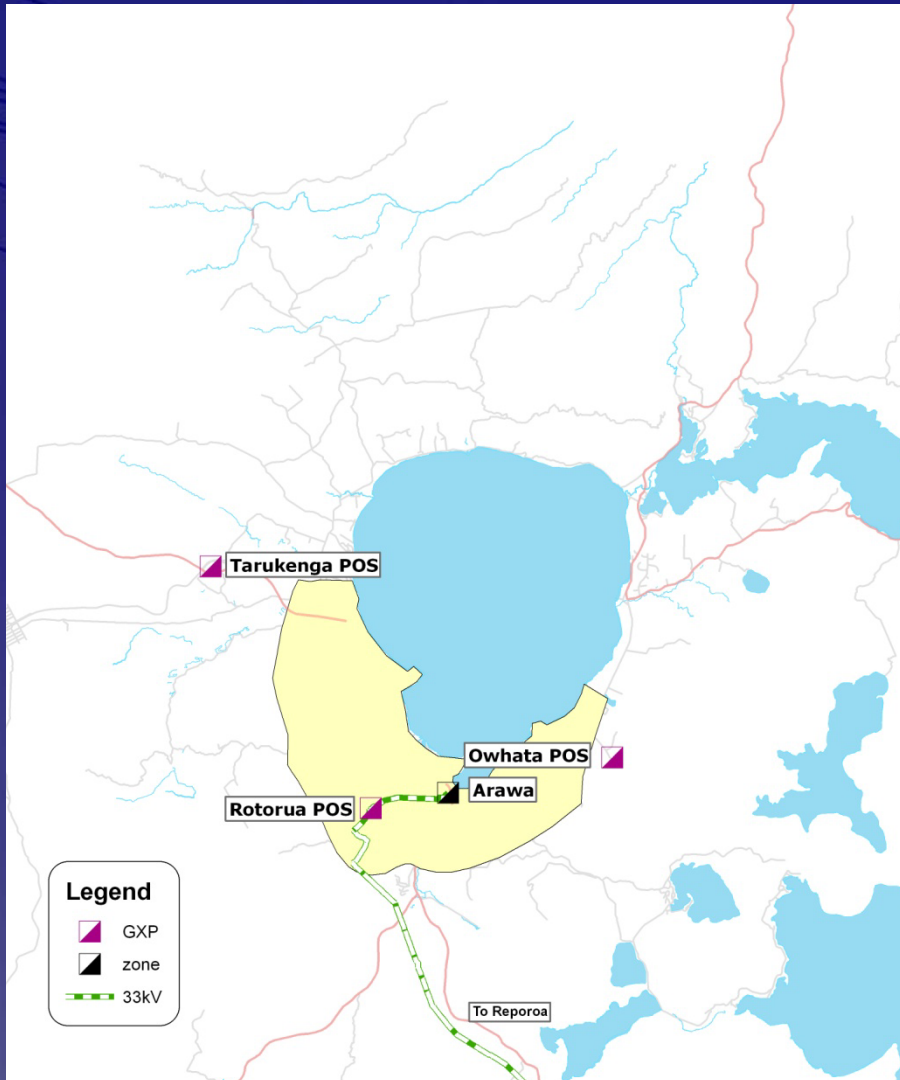
- Unison (formerly Hawke's Bay Network) is the 4th largest electricity lines company in NZ with total assets of almost \$520 million and a turnover of \$99 million.
- Unison owns, manages and operates the **Rotorua**, **Taupo** and **Hawke's Bay** electricity networks, and has a management contract for **Centralines**.
(Taupo and Rotorua acquired in 2003)
- We have been working with electricity in the Hawke's Bay region for over 80 years
- Unison is one of 28 Electricity Network Companies whose ownership structures include consumer trusts, community trusts, local bodies, co-operatives, offshore investors and share market listed (Vector and Horizon Networks).



History

- Unison acquired the electricity networks in Taupo & Rotorua in 2003
- Prior to acquisition, a number of different companies owned and operated the electricity network
- Historically, low level of CAPEX in augmenting network in the region

Network Architecture

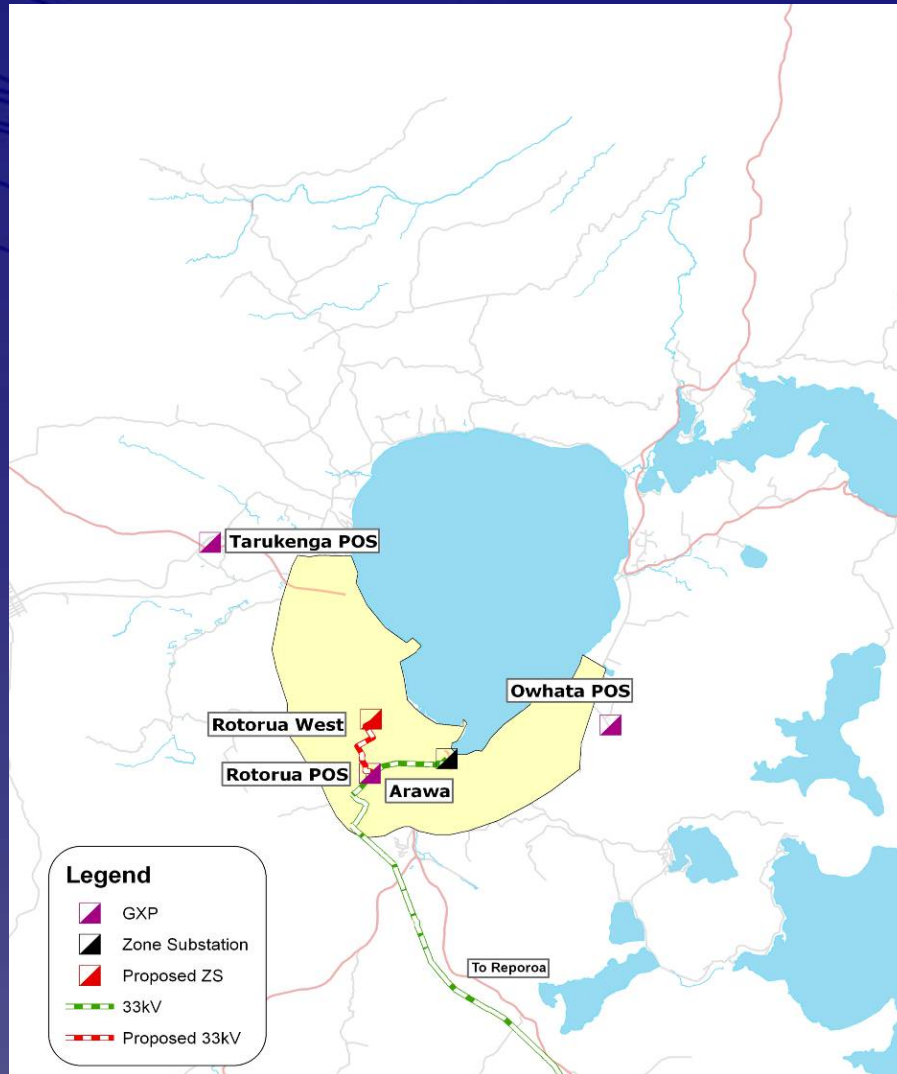


- Unison owned substations
 - Arawa
 - Fernleaf
 - Rainbow
- Transpower 11kV supply points
 - Owhata
 - Rotorua
 - Tarukenga
- Strong sub-transmission supply to urban Rotorua
- Radial sub-transmission supply to Reporoa

General Constraints

- Capacity is adequate at 33kV and 11kV under normal operation
- Security Levels are not compliant with Security Standards at some urban zone substations, feeders (i.e.: under n-1)
- Diminishing headroom on 33kV and 11kV networks due to:
 - High thermal conditions
 - Organic Growth
 - Lack of investment in augmentation projects
- Performance improving with automation
- Protection is adequate
- 11kV Voltage support is adequate
- Some areas with quality concerns (mainly rural consumers)

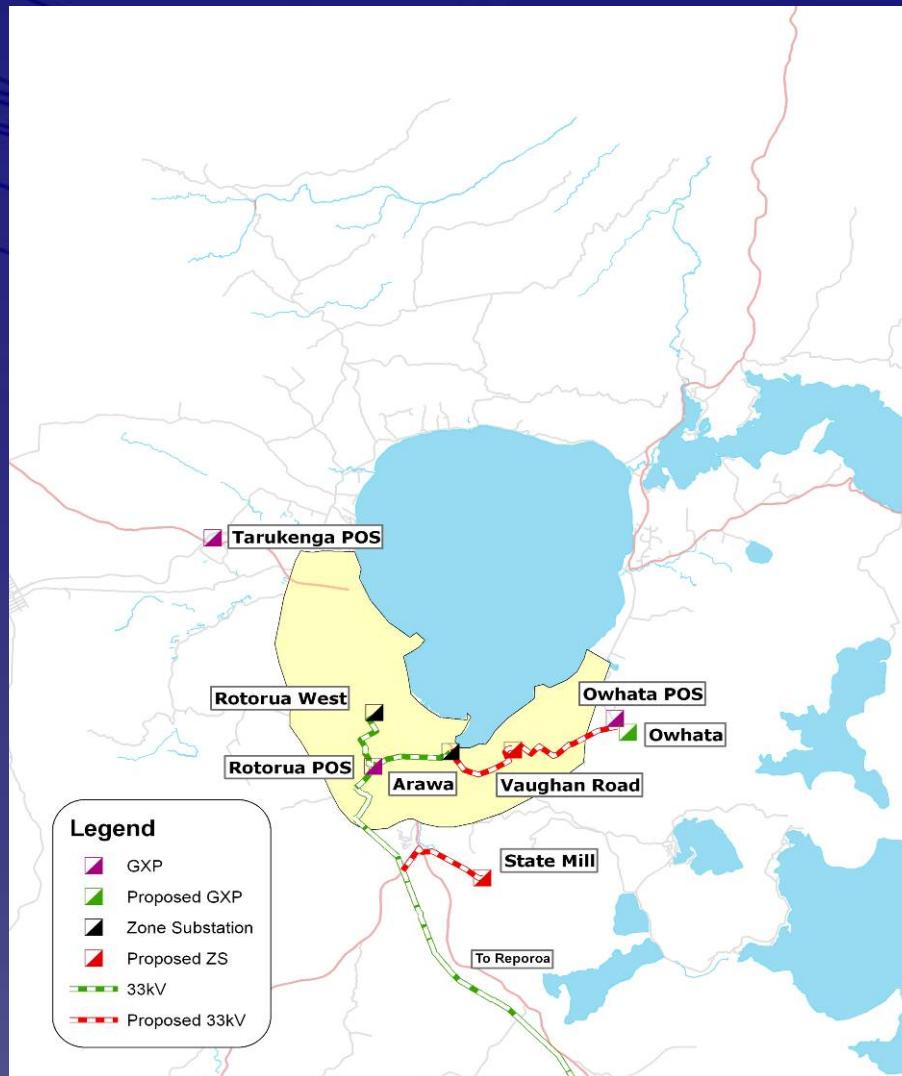
Augmentation Plan: 1-2 Years



2008-2010

- Establish zone substation at Biak Street (\$6m)
 - Two 33kV feeders
 - Two 33/11kV transformers
 - Six 11kV feeders
- Upgrade protection at Arawa

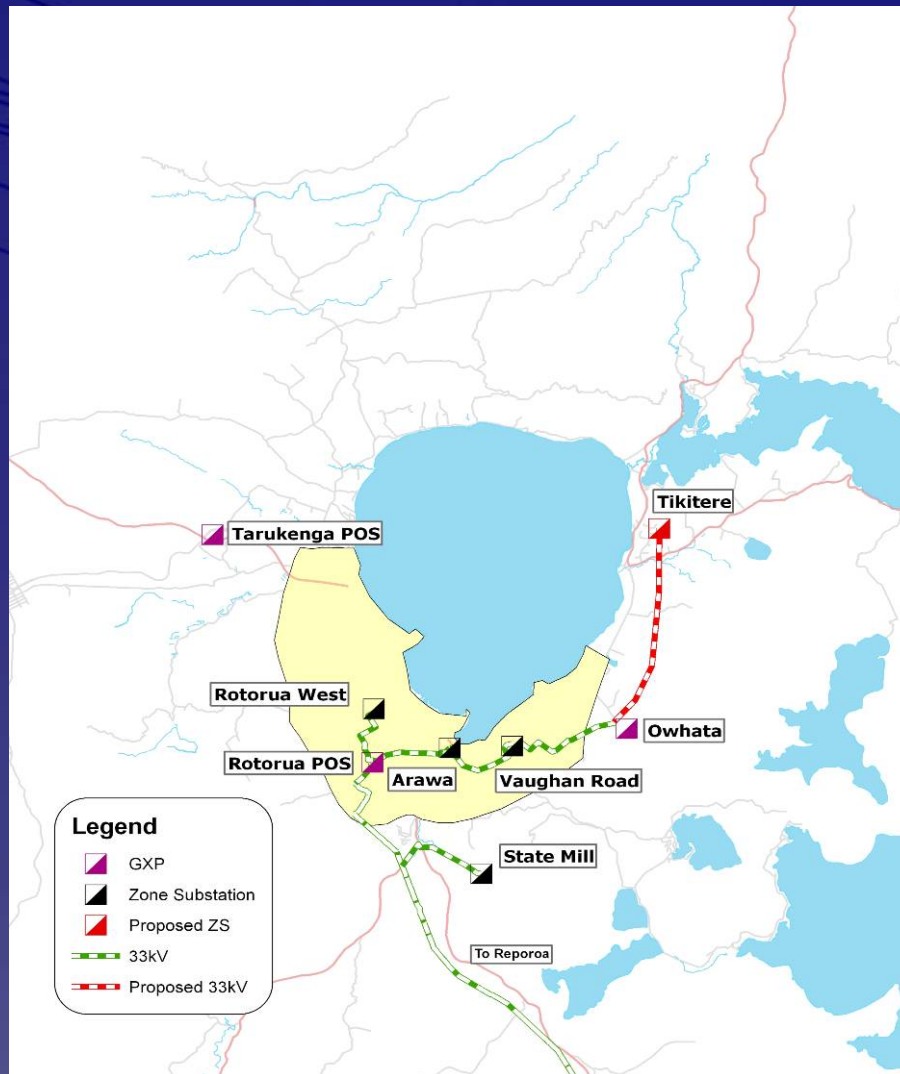
Augmentation Plan: 3-10 Years



2011-2017

- Reconfigure Rotorua 110kV bus.
- Establish zone substation at State Mill (Customer Request). Not yet confirmed.
- Establish 110/33kV connection at Owhata.
- Establish zone substation at Vaughan Road.
- Establish interconnection between Arawa and Vaughan Road zone substations.

Augmentation Plan: 10+ Years



2018-2030

- Establish zone substation at Tikitere.

Other Projects: On Going

- **Renewals**
 - Initiated via inspection program (age/condition)
 - Major conductor upgrades in rural areas to improve voltage support (Atiamuri, Okere)
- **Compliance**
 - Installation of voltage regulators for voltage support
 - Transformer Upgrades
 - LV Upgrades
- **Reliability**
 - Continuation with automated equipment
- **New Initiatives**
 - Investigation of SMART technology to improve reliability
 - Isolation of faulty sections of the network and auto-restoration of supply to elsewhere
 - Reduces outage times significantly compared to the modern technology used on the network



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