

Aotea and Takapūwāhia Reservoir Project
Summary Document



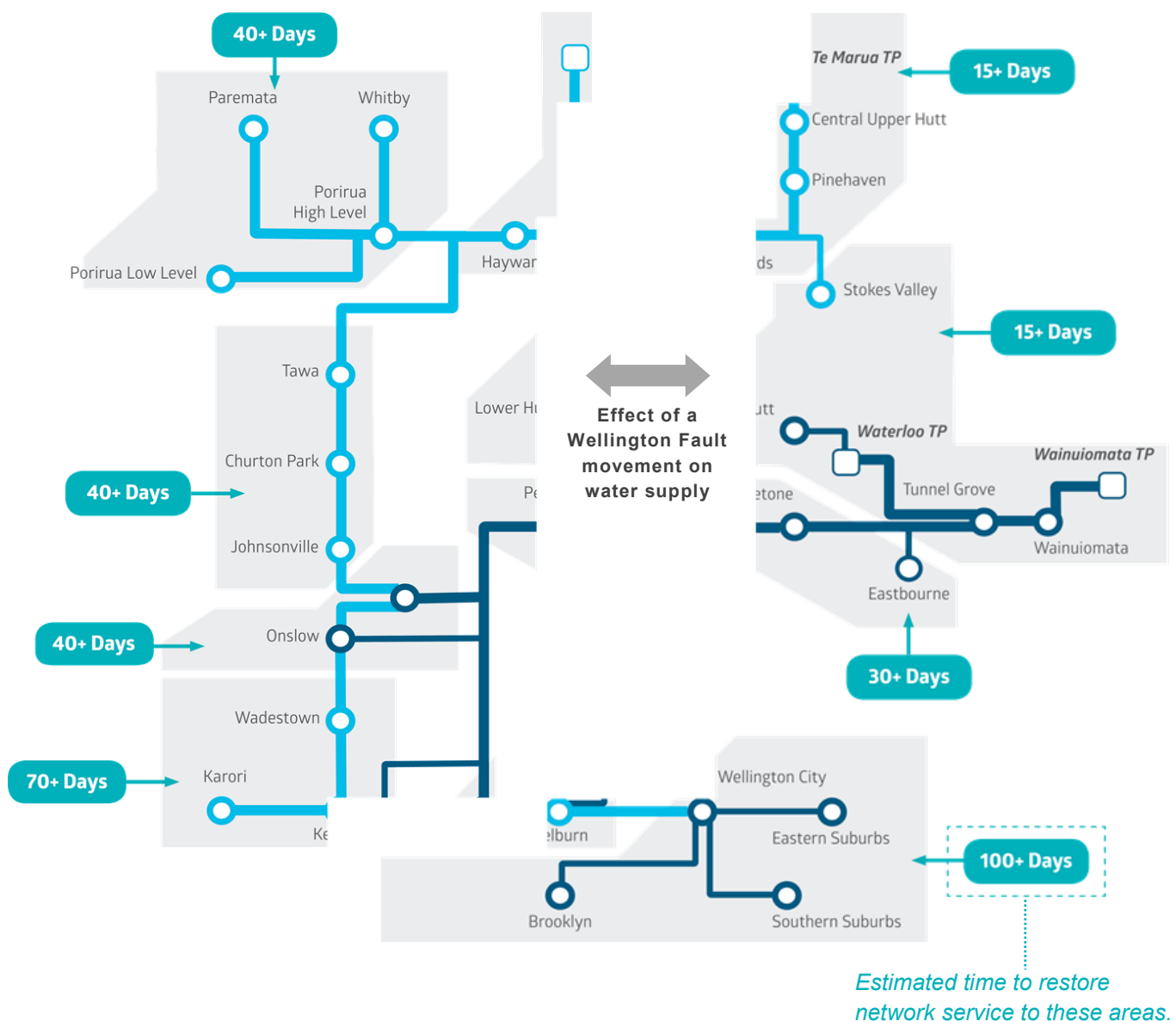
Why Resilience?

Wellington's water supply network is vulnerable and could leave many parts of the region without water for up to 100 days following a disaster such as a major earthquake. Movement of the main Wellington Fault or other fault lines in the region could result in significant adverse effects to the water supply network.

We are investing heavily over the next 30 years to reduce network water supply restoration times from 100 days to less than 30 in all parts of the region.

In the next 5-10 years we're prioritising major Bulk Water projects to improve the region's resilience to seismic events, make the network less likely to be disrupted on a day-to-day basis (for network maintenance, repair and upgrade works) and provide for population growth. We will also focus on finding alternative sources of water, and provide new ways to improve the speed and nature of emergency response and repairs.

These investments are being prioritised to address the problem pictured below.



Porirua's Water Supply

PORIRUA'S WATER SUPPLY

The Porirua Low Level Zone is the largest single supply zone in Porirua (covering Porirua City, Porirua East, Kenepuru, Takapūwāhia and Titahi Bay). It serves nearly 20,000 of the near 60,000 Porirua residents as well as commercial and industrial activities.

Every day this zone consumes an average of 7 million litres of water, but during times of peak water use, consumption may exceed 15 million litres a day.

Six key reservoirs feed the Low Level Zone, the largest being Porirua Low Level #2 which is fed directly from the Porirua Branch Bulk Supply system. On any given day, there is currently 36 hours average-daily-demand storage in-zone to manage a significant network event.

Porirua City Council (PCC) and Wellington Water have identified that additional reservoir capacity is needed within Porirua City to provide an operationally and seismically resilient water supply network and to meet current and future water supply demands associated with projected residential and business growth.

Additional water supply storage is also required to enhance the zone's resilience to both temporary and significant water supply disruption events such as earthquakes. To guide our long term investment strategy in resilience, we have developed and agreed that our network should be sufficiently prepared to provide the following levels of service against the most significant event - a large earthquake in the Wellington region.

Days 1 to 7

Emergency
State

People and businesses will be self-sufficient, relying on their own stored water supplies, their communities, and Civil Defence centres.

Days 8 to 30

Survival &
Stability

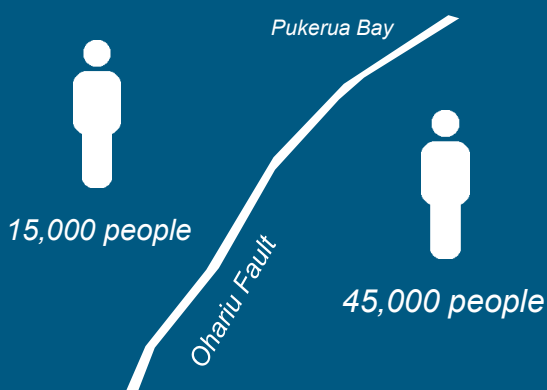
Residents collect up to 20 litres per person per day from Distribution Points while Critical Customers begin to receive water to their boundary.

From Day 30

Restoration
& Recovery

The region moves toward restoration of normal service through provision of reliable reticulated supplies.

How vulnerable?



The Ohariu Fault separates 15,000 people in West Porirua and Pukerua Bay from the rest of Porirua City. To the East, the Otaki Fault runs along Takapu Valley directly under supply lines from Te Marua and Ngauranga.

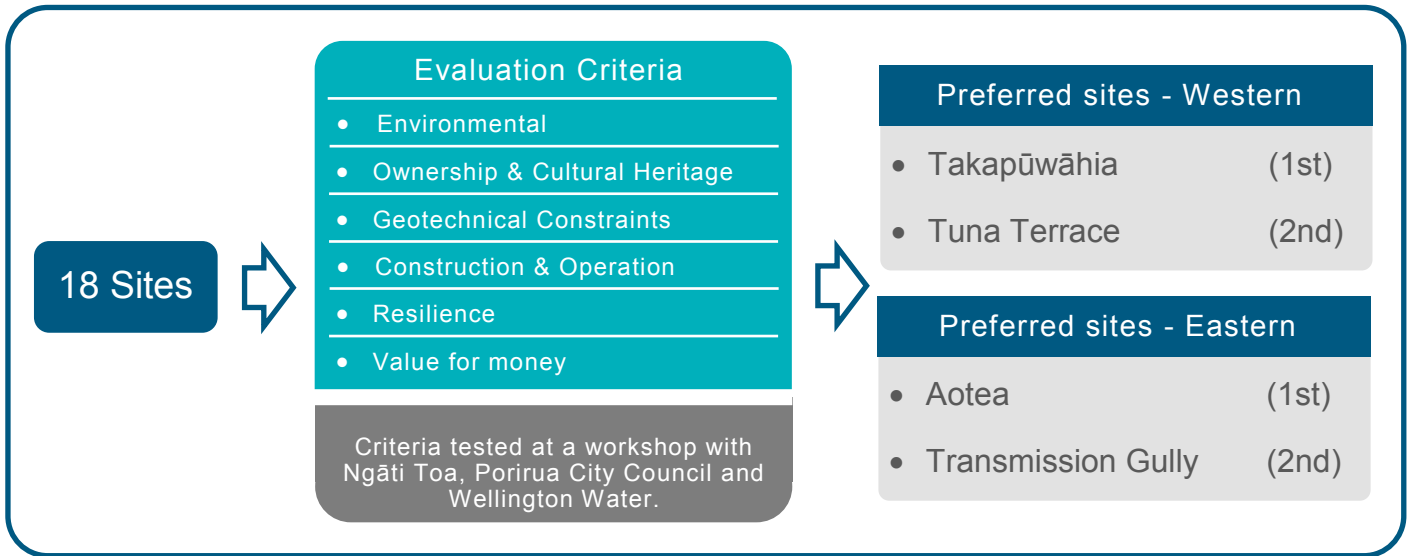
Porirua City is supplied by a single branch which itself is considered vulnerable.

It will take over two months to restore Bulk Water services to the major reservoirs in Porirua City and a further month or more to restore reticulation to residents across the city.

Reservoir Selection Process

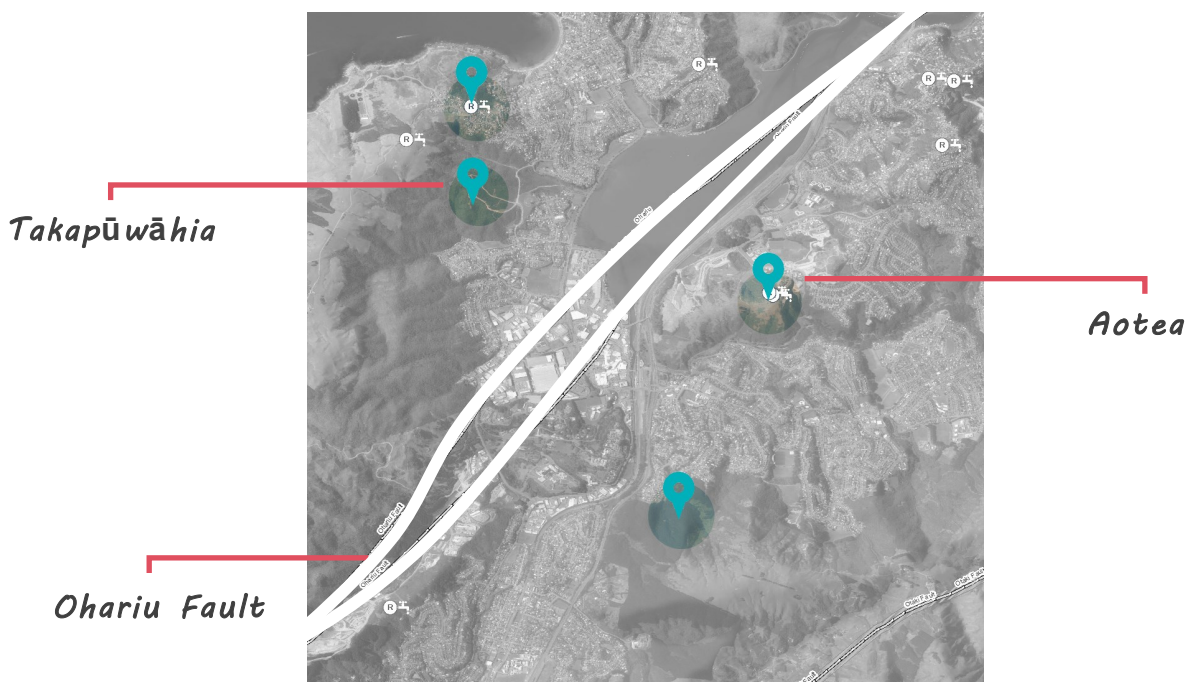
Wellington Water undertook a review of all possible sites that could potentially accommodate a future reservoir which were at the same elevation as the existing Porirua Low Level zone reservoirs*. This resulted in identification of 18 sites that were brought forward into a Multi Criteria Analysis (MCA) process.

**Reservoirs must be at the same elevation otherwise pumping equipment is required, increasing annual operational costs.*



The review identified a need to develop two separate reservoirs to mitigate seismic and operational risks:

- One large reservoir should be developed to the East of the Ohariu Fault as this supports a larger population including industrial, commercial and medical facilities.
- One small reservoir should be developed to the West of the Ohariu Fault as there is a smaller population in this area.
- The four preferred sites in relation to each other and the Ohariu Fault (in its two known splinters) are outlined below.



Takapūwāhia Site - West of Fault Line

- Only identified site in urban zone (others in protection areas).
- The area is partially covered in bush and has some ecological values associated with the land. The land is also used for passive recreation.
- Access to all sites is needed across private land to the east. This land has multiple land owners and cultural values.
- Significant extension and upgrade of the existing infrastructure would be required to service this site.



Culturally sensitive area but low development risk in the long run. Good greenfield location.

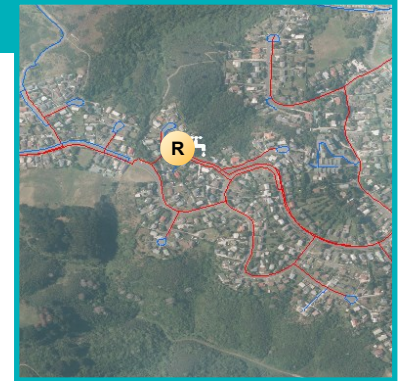


Tuna Terrace Site - West of Fault Line

- Either a duplicate reservoir or a replacement reservoir could be developed.
- Land around the existing reservoir is designated for the purpose of water storage.
- Reservoir replacement could potentially be accommodated by the designation.
- Reservoir duplication is likely to impact the immediate neighbours.
- Construction of a reservoir at this location, likely requires purchase of an existing dwelling.



Requires land purchase. Requires construction mitigation as in middle of residential area.



Aotea Site - East of Fault Line

- Already two reservoirs in this location.
 - Effect of an additional reservoir would not be as significant as using a green field site.
 - Land around the reservoir has not yet been built up.
 - Visual effects highly likely to be able to be mitigated.
 - There are no ecological values associated with this site.
 - The site is privately owned with no known cultural heritage values.
- Access to this site for construction and long term maintenance already exists.



Immediate buildability. Low risk development.



Transmission Gully Site - East of Fault Line

- The site is a highly modified environment due to development of Transmission Gully.
- Visual effects of the construction of the reservoir are likely to be accepted as part of the overall modification of this area.
- Approval will be needed from the NZ Transport Agency and TGM's development consortium to work within the designation but conditions on access and not interfering with the construction and operation of TGM are expected.



Likely to be delayed until TG completed. Low development risk in the long run.



Rationalisation

Aotea Reservoir

Four options were considered for the Aotea site. The four options were:

- 1 a new 9 ML reservoir and strengthening of both existing reservoirs;
- 2 a new 11.3 ML reservoir, demolition of the older 1956 Reservoir #1 and strengthening of the 1973 Reservoir #2.
- 3 a new 13.5 ML reservoir, strengthening of the older 1956 Reservoir #1 and demolition of the 1973 Reservoir #2; and
- 4 a new 15.8 ML reservoir and demolition of both existing reservoirs.

Assessed against operational resilience, seismic resilience, maintenance, overall site development, land acquisition, and construction costs, option 2 is considered the preferred option as it provides the best value for money in delivering operational and seismic resilience to Porirua.

Takapūwāhia Reservoir

The rationalisation for the Takapūwāhia is yet to be completed. The size of the reservoir is likely to be between 3-5 ML.

What next?

Aotea Reservoir

- Public announcement about plans to build the reservoir - 8th February
- Public consultation - 4th April to 1st May
- Public open days - 11th and 14th April
- Lodge Notice of Requirement (NOR) - June 2018
- Provisional construction date of 2021/22

Takapūwāhia Reservoir

- Public announcement about plans to build the reservoir - 8th February
- Continue to engage with Ngāti Toa
- Undertake further investigations into potential reservoir sites
- Provisional construction date of 2028/29

Appendix A - Regional Growth

PORIRUA GROWTH AREAS

Estimated population growth 2013/2043*:

11,143

Areas identified for growth:

Nothern growth project area

Whitby

Kenepuru

WELLINGTON CITY GROWTH AREAS

Estimated population growth 2013/2043*:

52,497

Areas identified for growth:

Lower Stebbings, Lincolnshire Farm

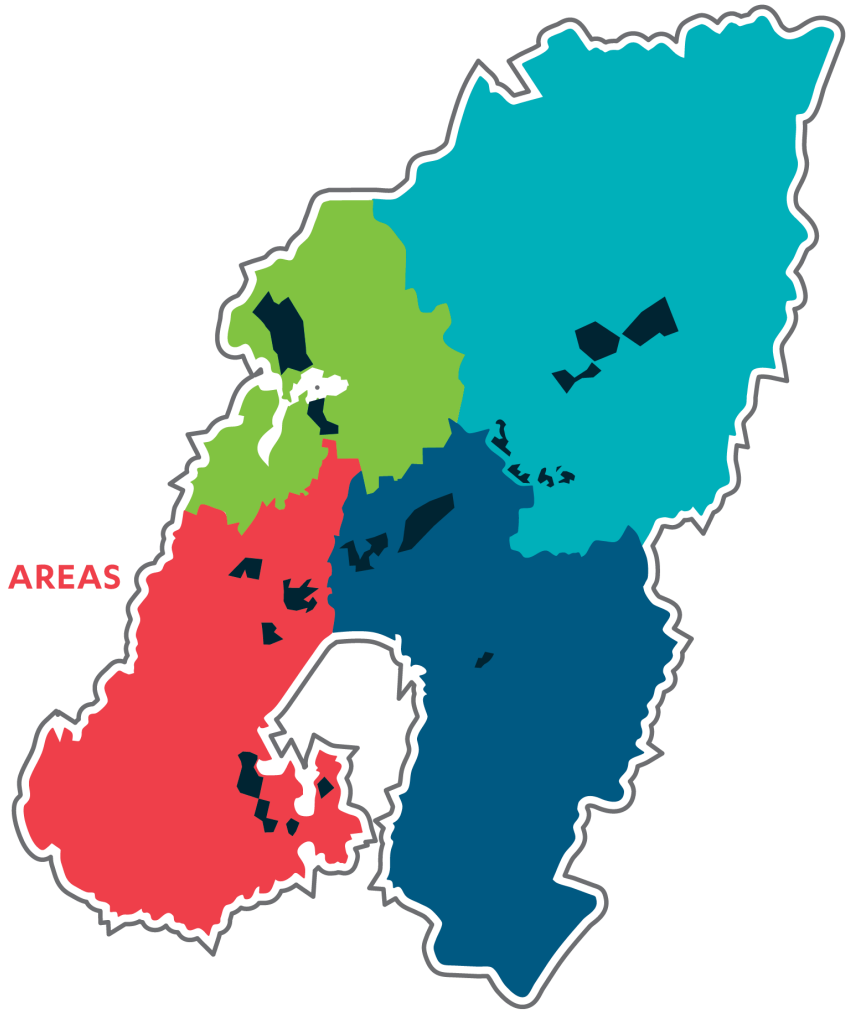
Johnsonville

Thorndon, Central Wellington, Te Aro

Adelaide Road, Newtown

Kilbirnie

Miramar (Shelly Bay, Mt Crawford)



LOWER HUTT GROWTH AREAS

Estimated population growth 2013/2043*:

8,684

Areas identified for growth:

CBD/Urban Intensification

Greenfield (Western Hills, Wainuiomata)

UPPER HUTT GROWTH AREAS

Estimated population growth 2013/2043*:

8,606

Areas identified for growth:

CBD Intensification

Maymorn

Wallaceville

Guildford/Pinehaven