

# Taking Action on Resilience

## Wellington's Story

Antony Cameron



Mark Kinvig



Wellington's water supply network is vulnerable

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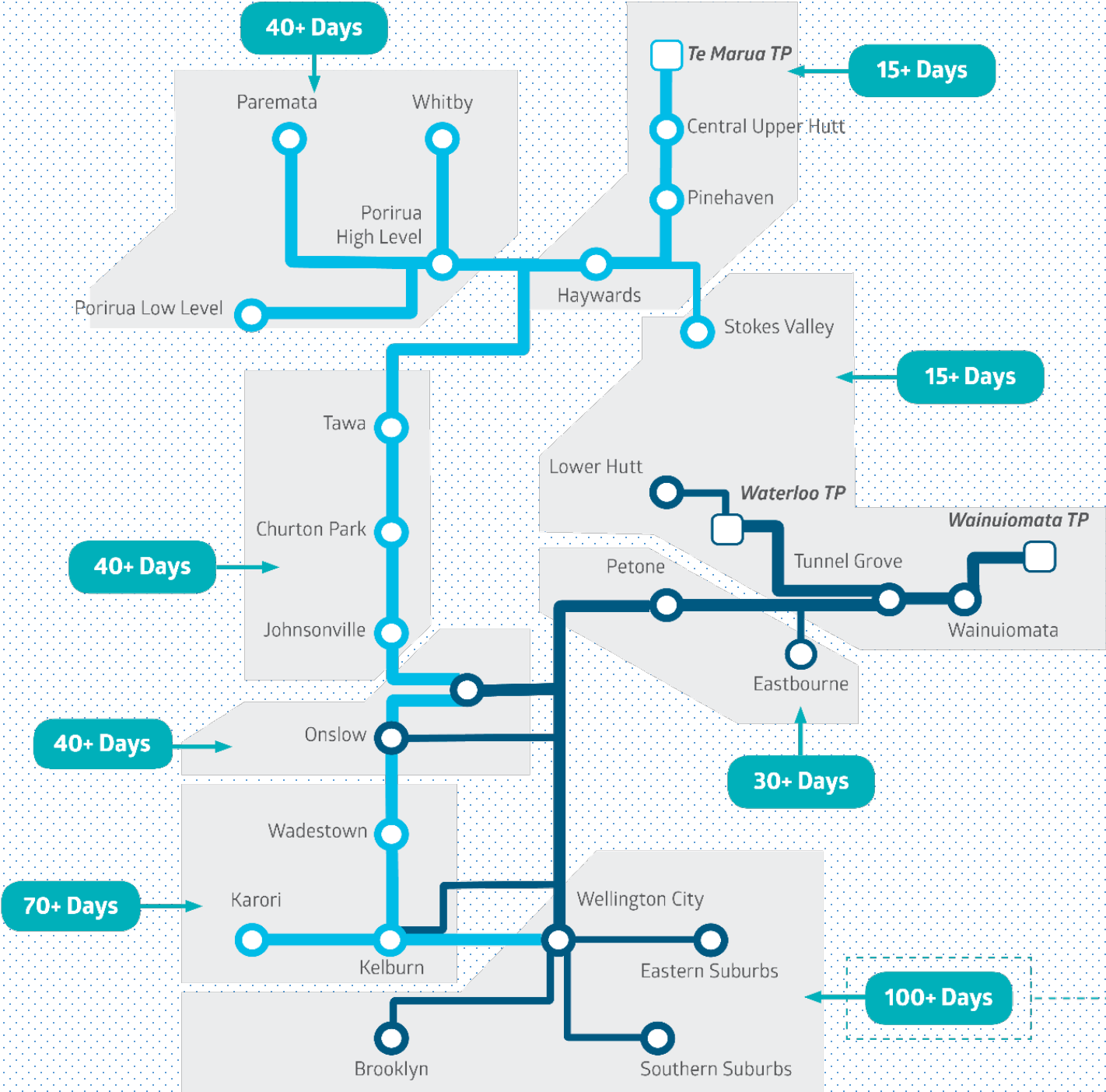
The Wellington  
Fault ruptured  
some 300 to 500  
years ago



Our local  
reminder

... and we can  
*still* see it from  
space

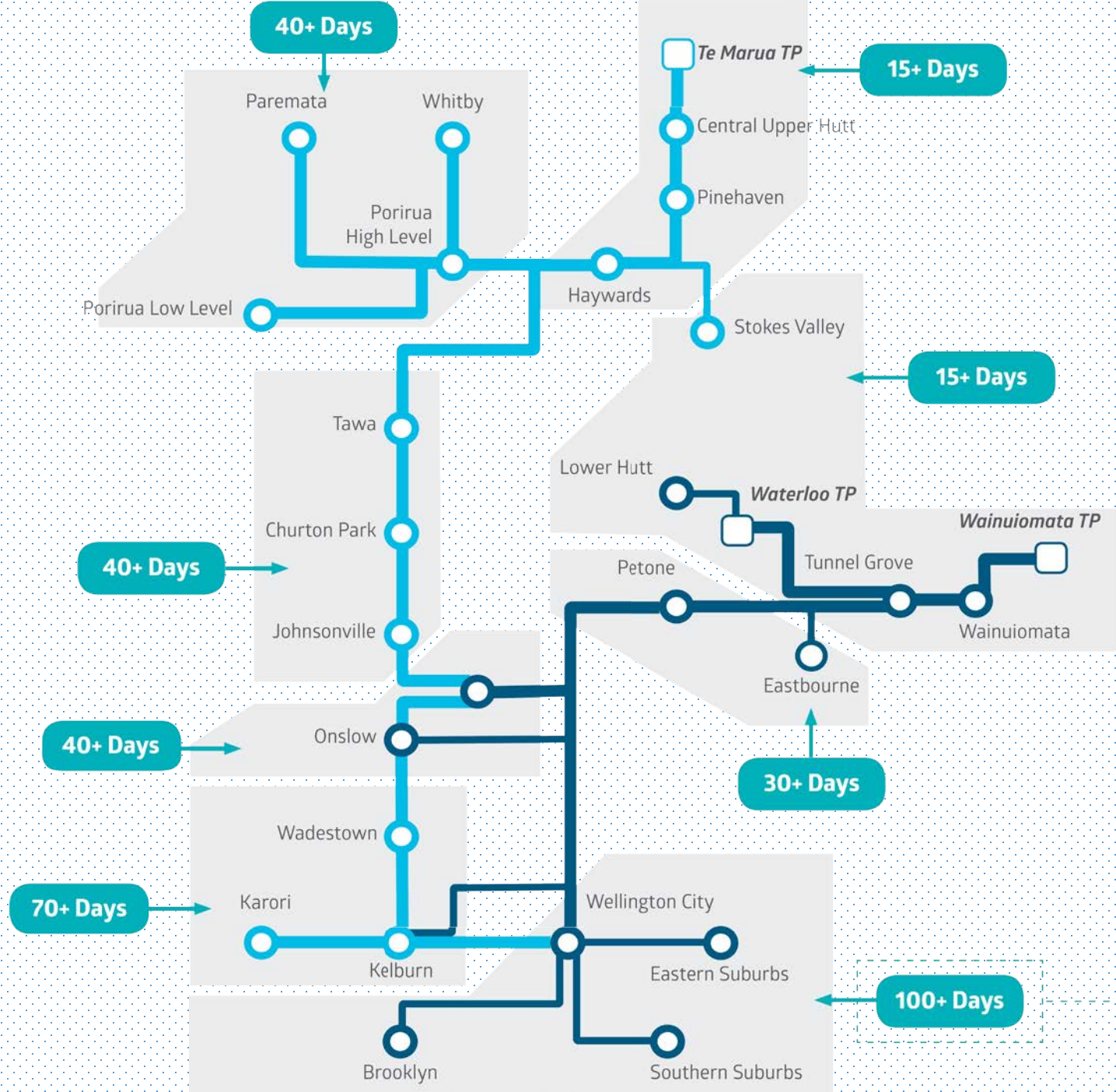
Why are we investing in resilience?



the problem

*Estimated time to restore network services to these areas.*

Why are we investing in resilience?



the problem

*Estimated time to restore network services to these areas.*



Household  
resilience

Store enough water



Operational  
response

Low cost quick-win  
solutions that provide  
access to water



Long term  
programme

**80-30-80**  
Water Supply  
Resilience

Making  
Communities  
Self Sufficient



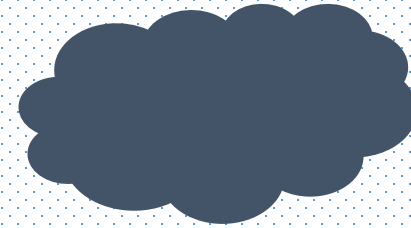
Household  
resilience

A resilient community knows  
how to look after itself.

- 💧 How much water to store now
- 💧 How to make water safe
- 💧 How to access more water

Communities are like Islands.




They need to be able to survive  
and function with only the things  
they have.



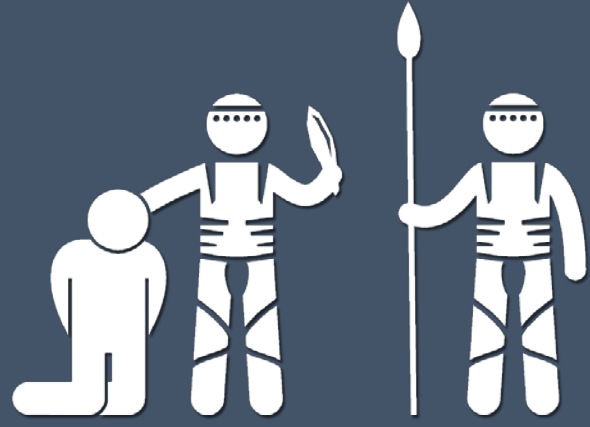
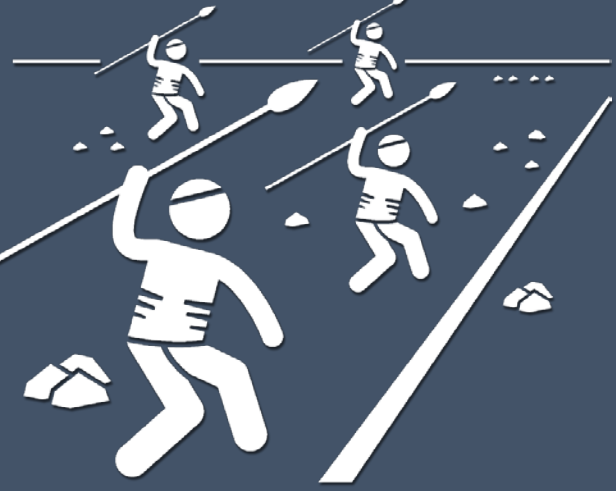
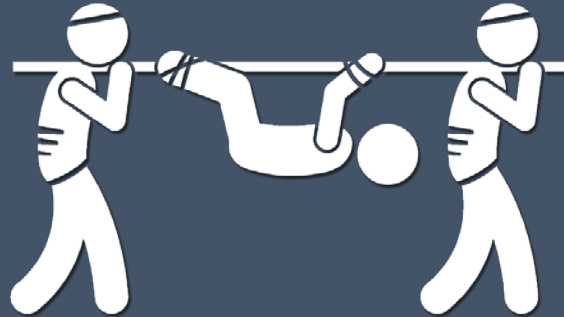
# What does a resilient community look like?

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## Overcome barriers

-  Motivation
-  Affordability
-  Accommodation type





Get your water storage sorted now!

Have you stored enough water for your family for 7 days?



Please don't forget about me!



CURRENT AVERAGE WATER USAGE PER DAY PER PERSON

220 Litres



\*Such as gardening, dishwashers, baths, and leaks.

<sup>†</sup> Ratio's based on "Water Use in Auckland Households (EC1356), BRANZ, October 2008"

HOW MUCH WATER DO YOU NEED AFTER AN EARTHQUAKE?

20 Litres per day for 1 person

If you store 20 litres of water (for one person for one day), you should be able to do the following:

- |               |                            |
|---------------|----------------------------|
| ✓ Drinking    | ✓ Sponge bath              |
| ✓ Cooking     | ✓ Clean wastewater buckets |
| ✓ Wash hands  | ✓ First Aid                |
| ✓ Pets        | ✗ Shower                   |
| ✓ Brush teeth | ✗ Laundry                  |
| ✓ Dishes      |                            |



3 Litres per day for 1 person

If you store 3 litres of water (for one person for one day), you should be able to do the following:

- |               |                            |
|---------------|----------------------------|
| ✓ Drinking    | ✗ Sponge bath              |
| ✓ Cooking     | ✗ Clean wastewater buckets |
| ✓ Wash hands  | ✗ First Aid                |
| ✗ Pets        | ✗ Shower                   |
| ✗ Brush teeth | ✗ Laundry                  |
| ✗ Dishes      |                            |



We recommend that you store enough water for your family for 7 days.



Household resilience

# EMERGENCY WATER DEMAND AND SUPPLY

## DAY 1 INITIAL POPULATIONS

### WCC

Churton Park/Johnsonville	12,554
Ngaio	15,559
Northland/Karori	8,910
Makara	994
Central Wellington	112,667
Haitaitai	12,663
Eastern WCC	10,598
Southern WCC	15,258
Happy Valley	1,099
Ohariu Valley	2,055

### PCC

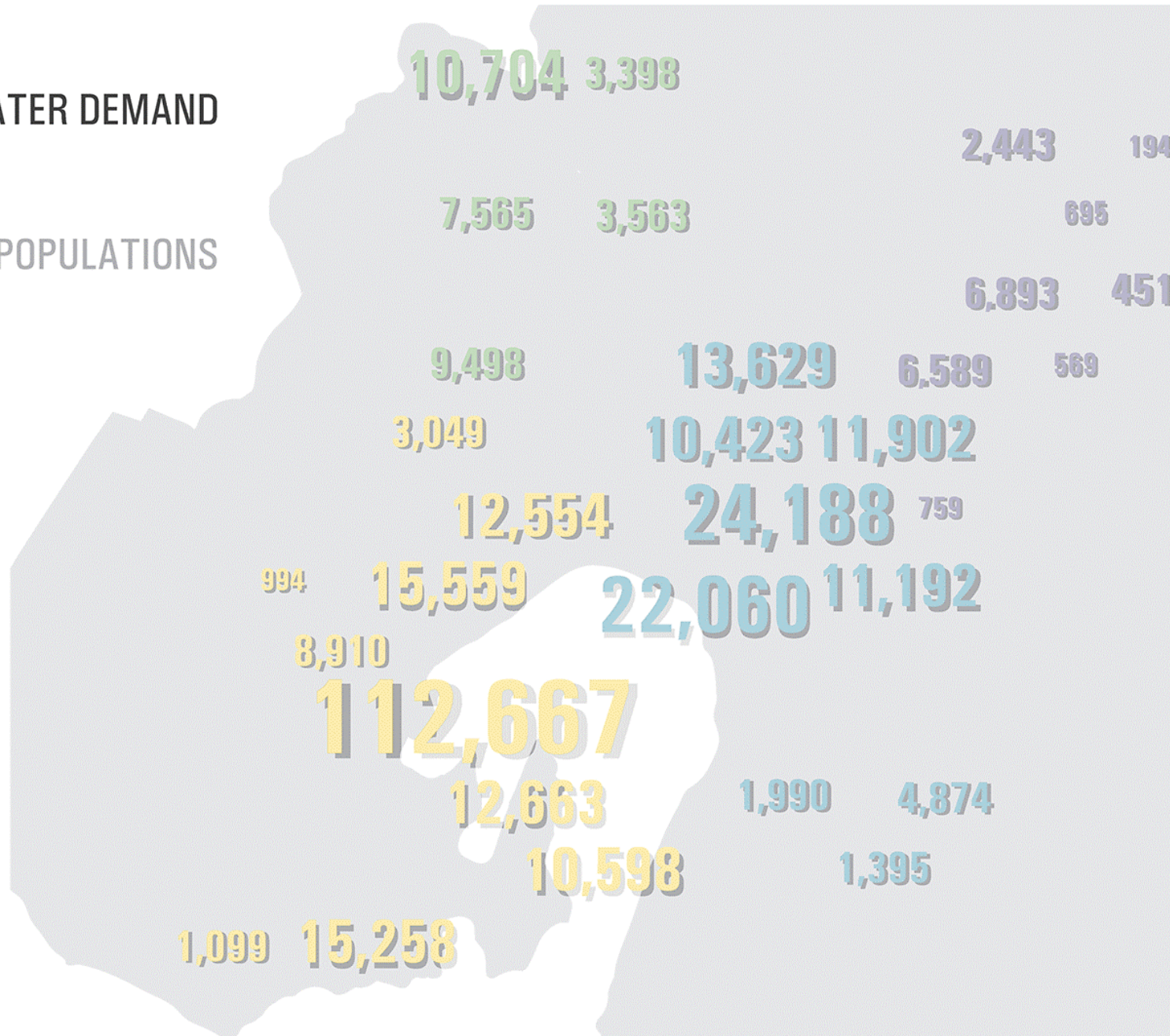
Western PCC	10,704
Plympton	3,398
Porirua	7,565
Pauatahanui	3,563
Tawa	9,498

### LHCC

Kelson	13,629
Western LH	10,423
Taitā/Stokes Valley	11,902
Lower Hutt	24,188
Petone/Seaview	22,060
Eastern LH	11,912
Eastbourne	1,990
Wainuiomata	4,874
Pencarrow	1,395

### UHCC

Kaitoke	194
Te Marua	965
Akatarawa	2,443
Upper Hutt	6,893
Rimutaka	451
Pakuratahi	569
Silverstream	6,589
Whitmans	759



# Making your water safe in an emergency



## WATER TREATMENT OPTIONS INCLUDE:

			
Boiling water	Bleach	Purification tablets	Filtration system

For purification tablets and filtration systems, refer to manufacturers instructions.

## HOW TO MAKE YOUR WATER SAFE

Your stored water may be unsafe to drink.

**Boil your water before use, either:** Bring the water to a rolling boil for one minute, or boil the kettle or jug until it switches off automatically.

**If you can't boil your water, you'll need to disinfect it.**



### DISINFECTING WITH BLEACH

#### Drinking

For drinking, cooking and brushing teeth:

**Ensure bleach is plain and unscented**  
(Don't use Janola as it contains detergents which makes it unsuitable for treating drinking water).

add  1/2 tsp <b>Bleach</b>	TO	 10 litres of Water (BUCKET)
add  5 drops <b>Bleach</b>	TO	 1 litre of Water

#### Cleaning

For general cleaning (dishes and hard surfaces) use:

<b>1 tsp</b> .....	1 litre
<b>1/4 cup</b> .....	10 litres
<b>Bleach</b>	<b>Water</b>

For heavy cleaning (floodwater, toilets or illness) use:

<b>1/4 cup</b> .....	1 litre
<b>2 cups</b> .....	10 litres
<b>Bleach</b>	<b>Water</b>



Household resilience

# How do we access more water?

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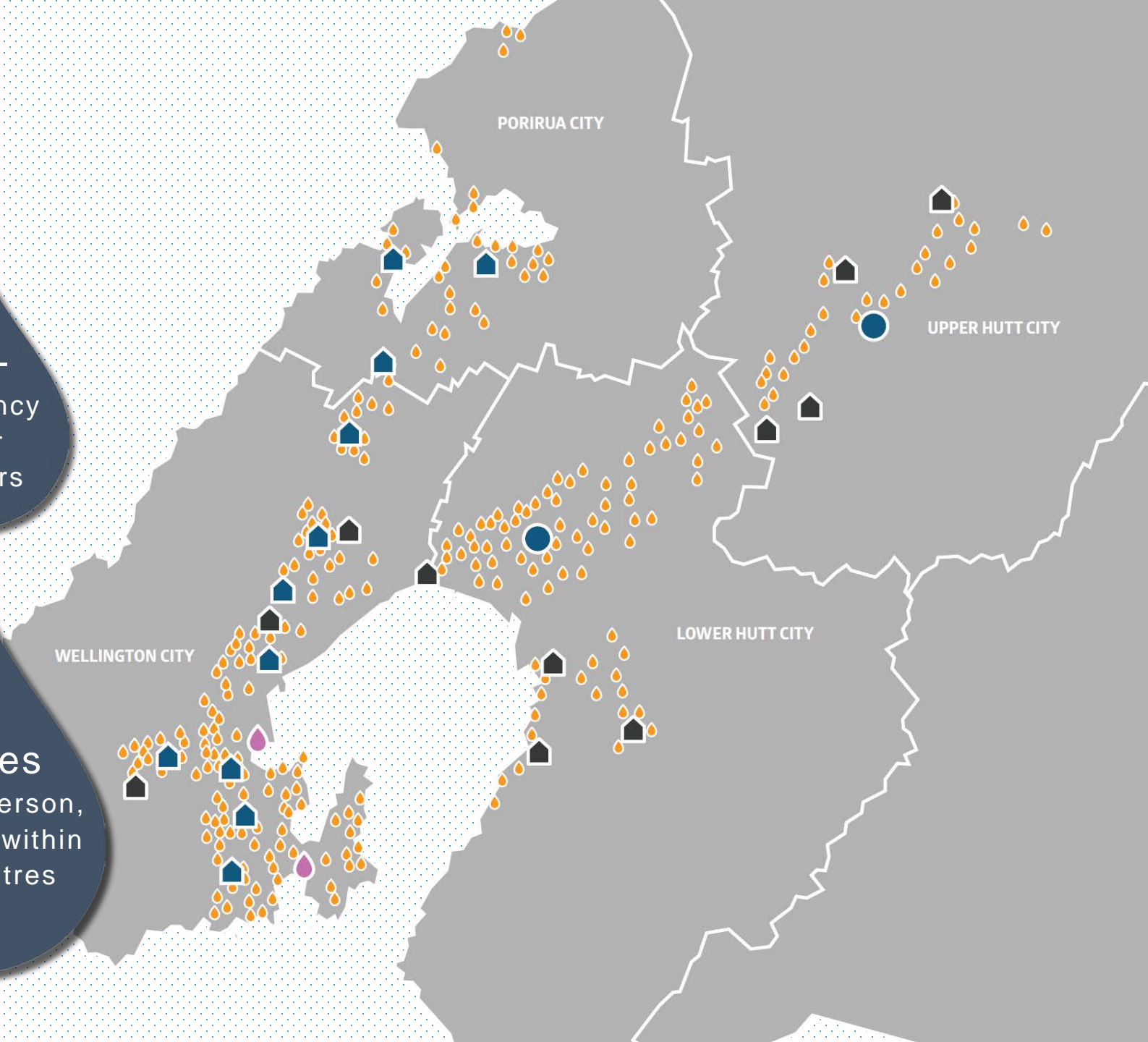
Low cost quick-win solutions that provide access to water

22  
Community  
Water  
Stations

300+  
Emergency  
Water  
Bladders

2  
Desalination  
Locations

20 litres  
for every person,  
every day, within  
1,000 metres



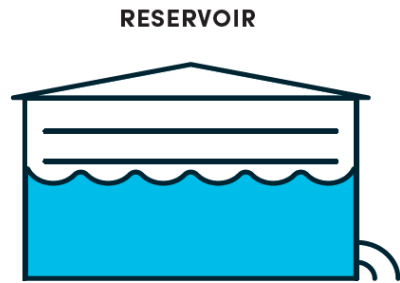
Community  
Infrastructure  
Resilience

# Islands and CIR



# PROVIDING EMERGENCY WATER

## 1. WATER SOURCES PROVIDE BASIC WATER NEEDS



120 Water Reservoirs

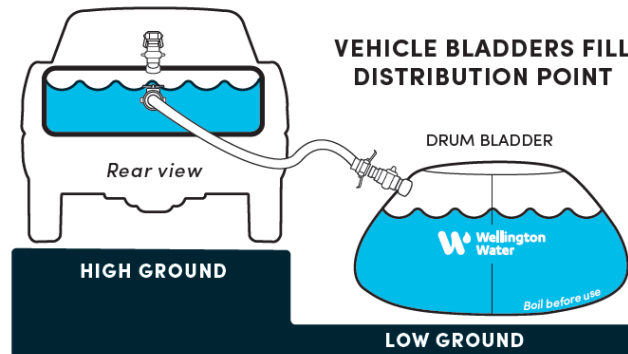
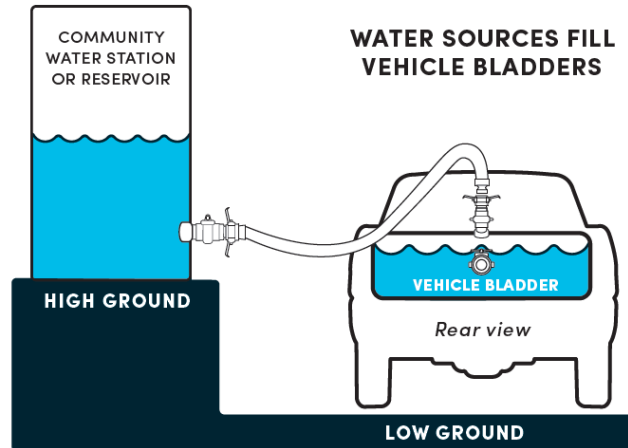
### COMMUNITY WATER STATION



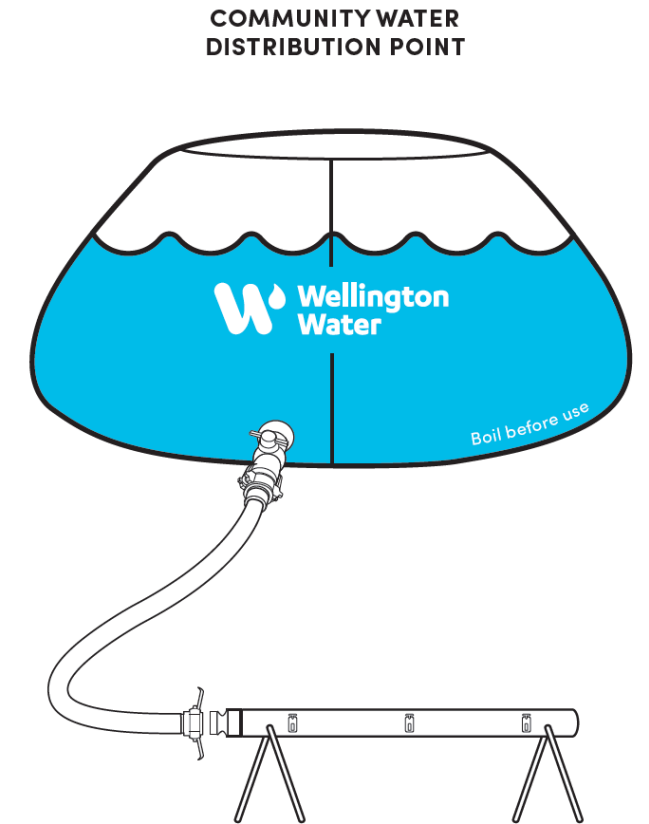
22 Community Water Stations

Residents can also collect water at these water sources.

## 2. MOBILE BLADDERS TRANSPORT WATER TO DISTRIBUTION POINTS



## 3. RESIDENTS COLLECT WATER FROM DISTRIBUTION POINTS



Distribution Points will be established within 500 to 1,000 metres of your home. These will provide 20 litres of water per person per day.

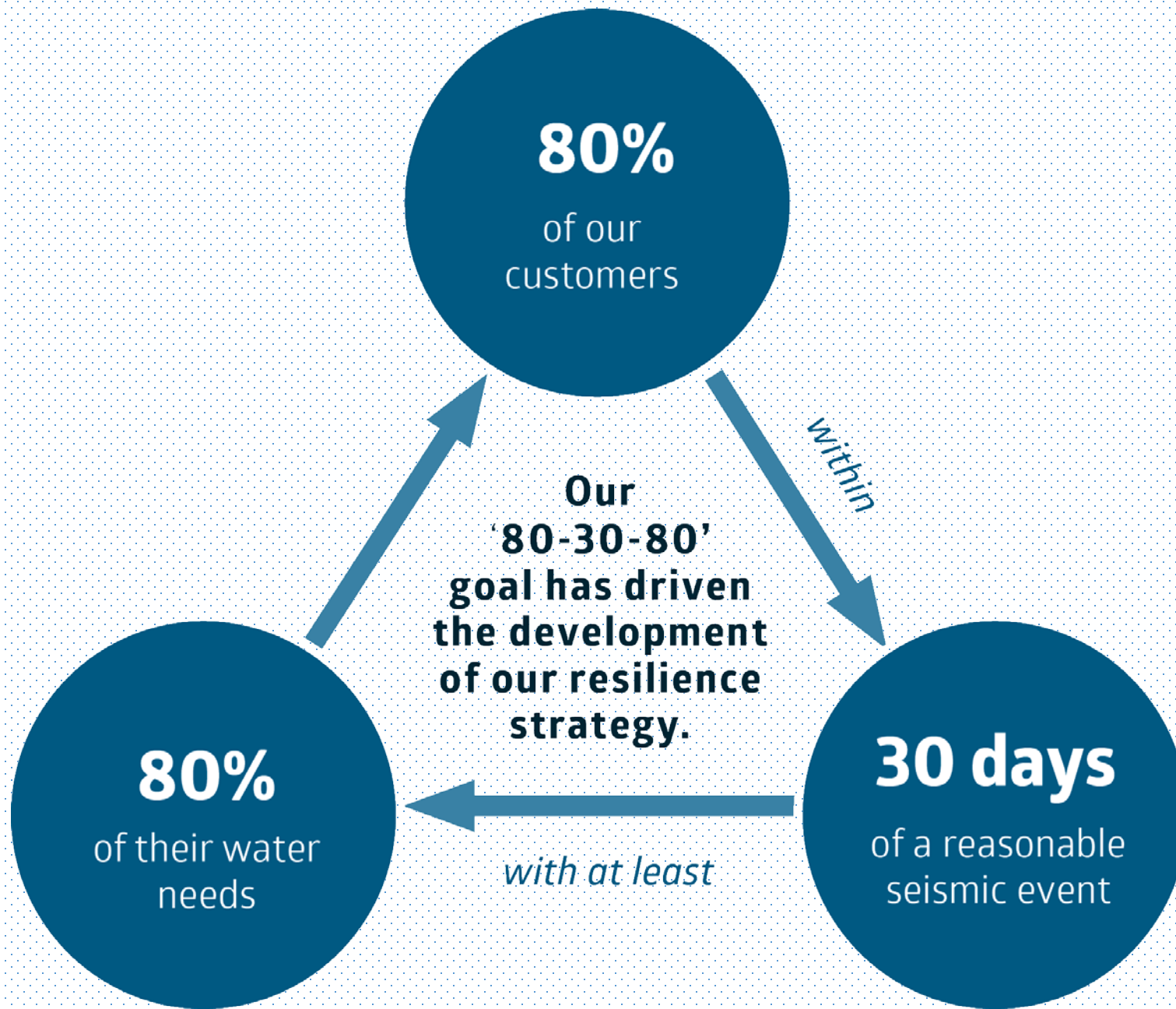


# What does the long term look like?

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Water supply resilience



## Wellington City

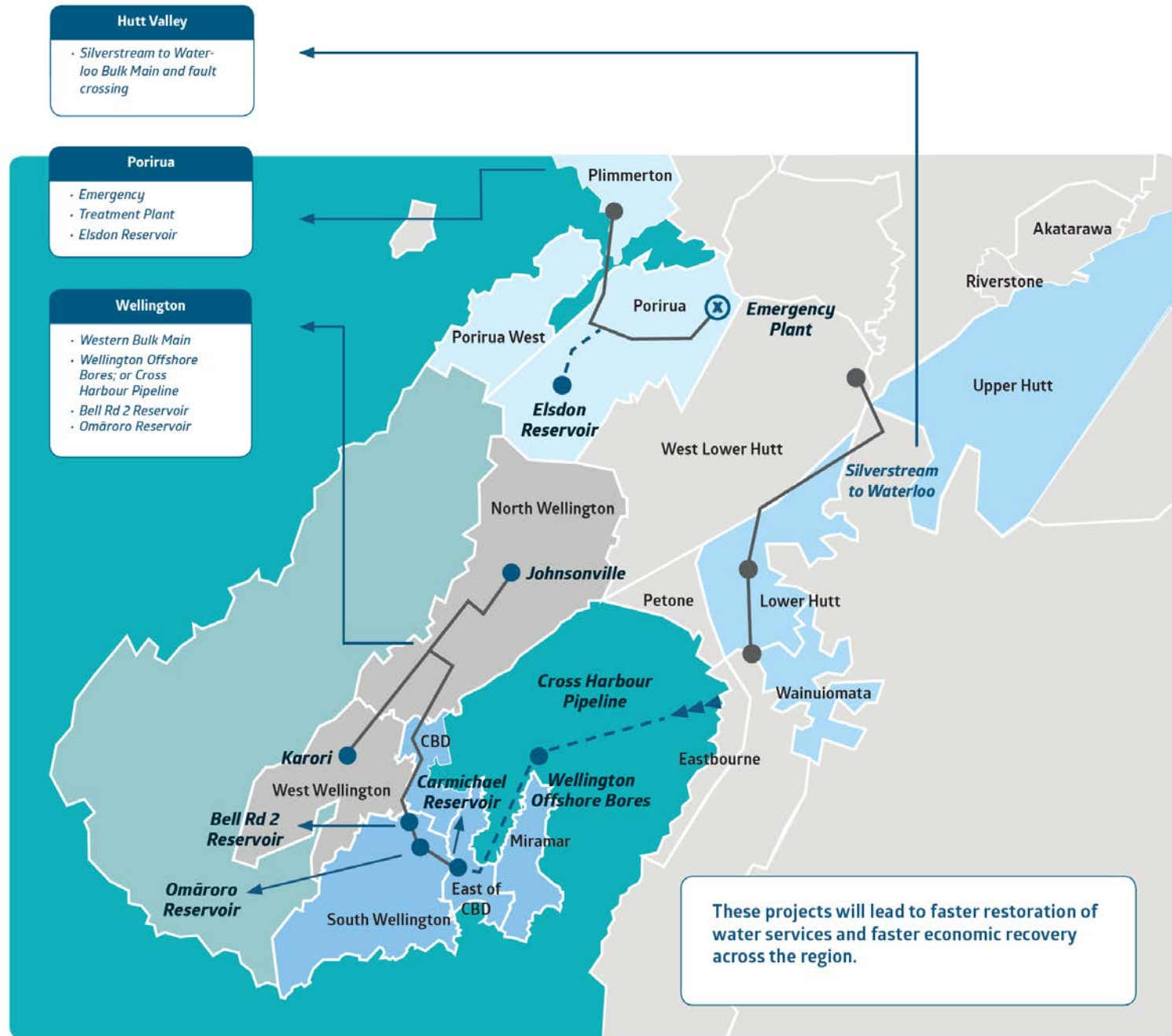
Accessing a new water source through the Wellington Offshore Bores, and developing a stronger network that links this water source with western Wellington.

## Porirua

Renewing the pipeline that supplies the city and connecting it with a small emergency water treatment plant so we can quickly restore water services.

## Hutt Valley

Investing in the Silverstream to Waterloo link so we can push water up or down the valley to either city.



Towards  
80-30-80

That's the start of our story  
*but by no means the end*

