



## Welcome

Welcome to the second of three open days for the consenting and pipework design phase of the Prince of Wales Reservoir.

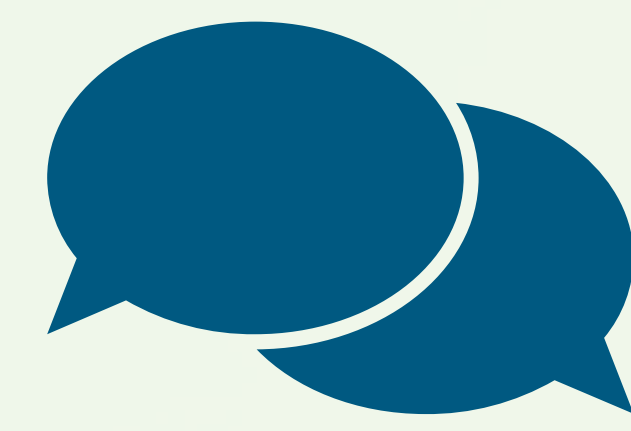
This is an opportunity for you to:



meet the team



find out more about the project and the needs it meets



be aware of the engagement and consultation process Wellington Water and Wellington City Council are following and provide any feedback.

You'll also be able to sign up for updates to keep in touch as the project progresses.

Please read through the information presented here today, ask the team any questions you have and take the opportunity to make a submission by visiting [www.wellingtonwater.co.nz/POW-reservoir](http://www.wellingtonwater.co.nz/POW-reservoir)



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## Other works planned for the area

As well as installing the Prince of Wales Reservoir inlet and outflow pipes along local streets (yellow lines on map), we have several other water network improvement projects planned for the area over the next few years.

These include:

- watermain renewals on Wallace Street (blue line on map)
- wastewater renewals on Wallace Street (red dashed line on map)
- stormwater pipe upgrade on Rolleston and Wallace Streets (green line on map)
- stage 1, 2, 3 of Papawai Stream rehabilitation complete, stage 4 underway
- investigating sewer flooding on Wright St (red cloud)
- replacing the Bell Road Reservoir.

Our aim is to co-ordinate these projects to minimise disruption, such as digging up roads to lay new pipes, as much as possible. For updates, keep an eye out on our website or sign up to our distribution list today.



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# Why Wellington City needs a new water reservoir

A new reservoir is needed to:

- provide resilient emergency water storage
- provide back-up water storage for operational reasons
- increase water storage to support business and residential growth.

Wellington's water is piped from the Hutt Valley, crossing major earthquake fault lines. If these pipelines are damaged in a large earthquake, parts of the city would be without water for up to 100 days.

The new 35 million litre reservoir will add capacity to Wellington's water storage network, significantly enhancing resilience to disaster events.

It will be built to modern seismic standards, ensuring it remains fully operational following a significant earthquake.

It will also enhance the operational resilience of the water supply network, allowing Wellington Water to undertake essential works on other reservoirs, pipes and network infrastructure with little impact on local water supply.

## So where are we at?

Wellington Water, on behalf of Wellington City Council, has lodged an application for approval to develop the new Prince of Wales/Omāroro reservoir under the Town Belt Act, the next steps are:

### Town Belt Act

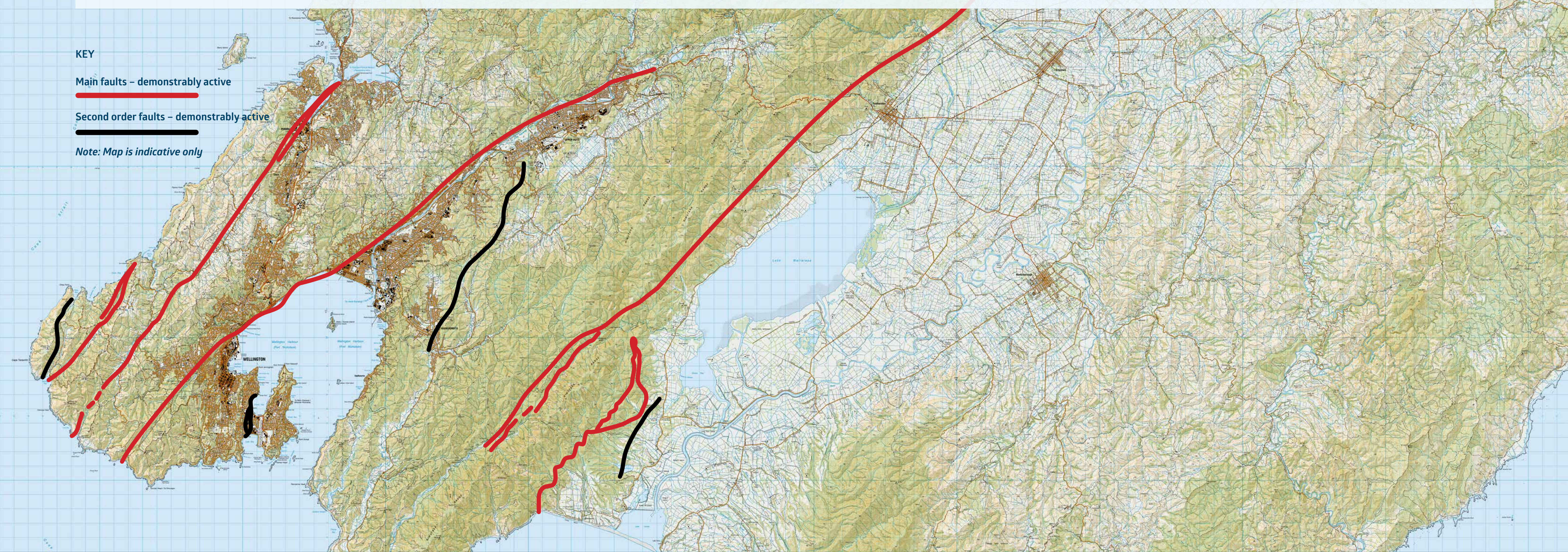
- consultation/ Submissions – close 17 July
- hearings during late July/August
- decision expected late August.

### The Resource Management Act

Wellington Water, on behalf of Wellington City Council, will lodge an application for approval to under the Resource Management Act later in 2017.

Subject to funding approval, the aim is to complete construction of the reservoir by 2020/21.

**You can find out more anytime at [www.wellingtonwater.co.nz/POW-reservoir](http://www.wellingtonwater.co.nz/POW-reservoir)  
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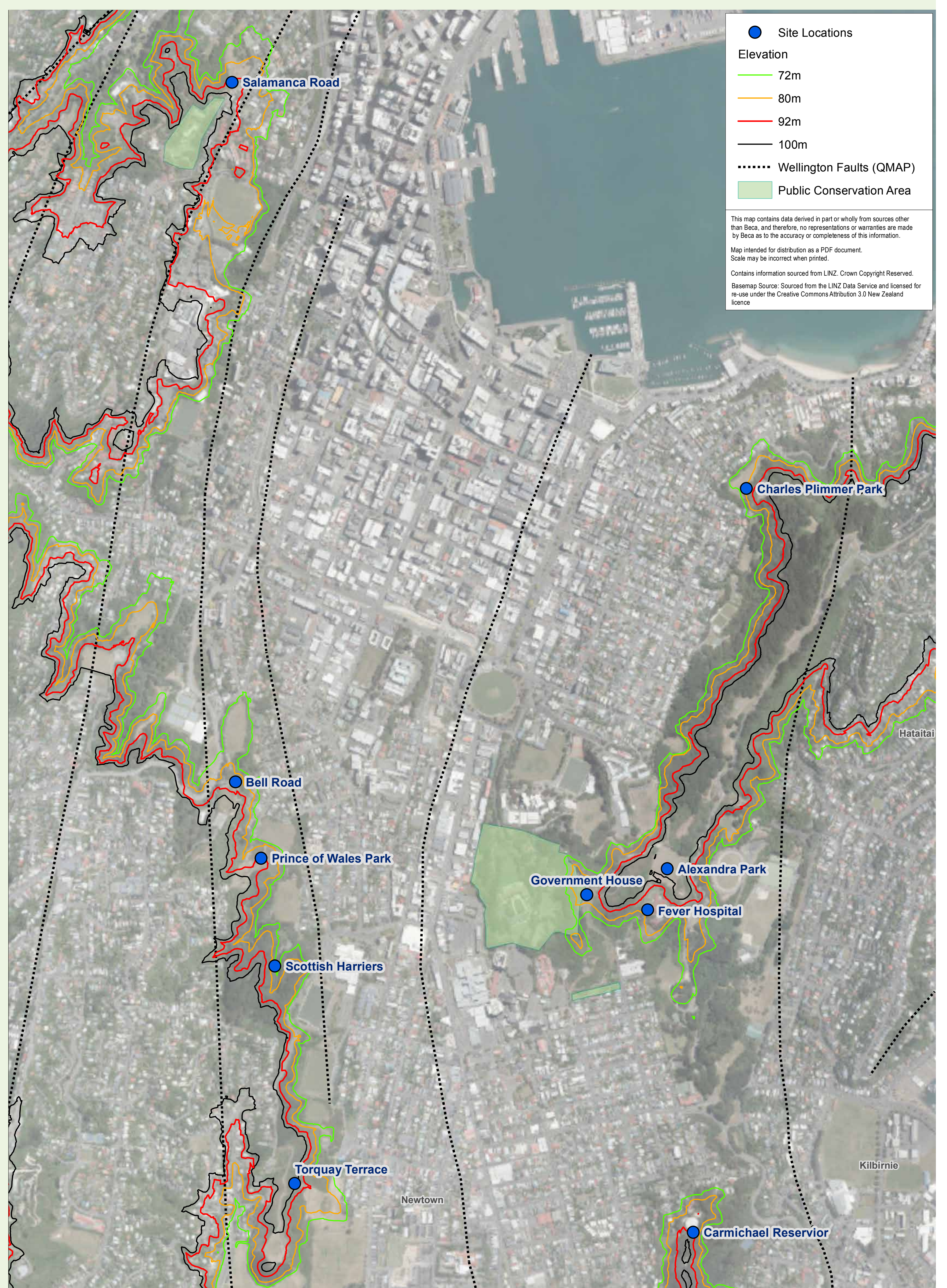
# Why has Prince of Wales Park been chosen as the site?

Various sites have been considered since studies in 2002, 2004 and 2011 identified the need for significant additional reservoir storage capacity.

A long initial list of 10 potential sites was eventually whittled down in 2011 to four sites for detailed investigation. All four sites were in the Town Belt because of the need to have a top water level of 92m above sea level (to make sure we can fill it and it provides acceptable pressure).

After considering a range of issues including constructability, economics, and social, environmental, and cultural effects, the Prince of Wales Park was selected as the preferred site for a new reservoir because it:

- is centrally located and close to the CBD and communities of Mount Cook and Newtown
- has minimal cultural impact
- requires minimal disturbance of valued vegetation and impact on sensitive ecological sites
- is close to the bulk water pipes
- has an elevation high enough for water supply purposes
- is accessible and suitable for construction purposes compared to the other options considered
- is not immediately adjacent to residential properties
- requires the least amount of soil to be excavated compared to the other options
- provides the ability to integrate the reservoir into the surrounding landscape with appropriate earthworks and landscape design (including by burying the reservoir).







# Acts and Plans covering development of the Prince of Wales/Omāroro Reservoir

Development of the Prince of Wales/Omāroro Reservoir is covered by two pieces of law and other local Plans. These include:

- The Wellington Town Belt Act 2016
- The Wellington Town Belt Management Plan 2013
- The Resource Management Act 1991
- The Wellington City District Plan
- Greater Wellington Regional Council's operative regional plan and the proposed Natural Resources Plan.

Wellington Water, on behalf of Wellington City Council, is currently seeking approval under the Wellington Town Belt Act (WTBA) to locate, construct, operate and manage the Prince of Wales/Omāroro Reservoir within the Town Belt on Prince of Wales Park.

As part of this process, Wellington City Council is required to engage and consult with the community about the proposal and to hear and consider community views in deciding whether or not this development should occur in the Town Belt.

The public consultation process required under the WTBA commenced on 12 June and runs until 17 July.

Any person can make a submission by visiting **[www.wellington.govt.nz/have-your-say/consultations](http://www.wellington.govt.nz/have-your-say/consultations)**

Wellington Water will also require consents under the Resource Management Act to construct and operate the new reservoir. This process will follow the Town Belt Act approval process later in 2017.

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# What does the development and construction of the Prince of Wales/Omāroro reservoir involve?

## Key Facts:

- the reservoir is a circular reservoir, approximately 67m in diameter, and 15m high containing 35 million litres of water
- the reservoir once completed will be fully buried
- site excavation, earthworks and construction activity will involve the excavation of approximately 56,000m<sup>3</sup>, or approximately 10,000 truckloads, of material
- 25,000m<sup>3</sup> of excavated material will be used to bury the completed reservoir
- approximately 16,000m<sup>3</sup> of excess excavated material may be used to raise the upper and lower playing fields
- approximately 15,000m<sup>3</sup>, or 2500 truckloads, of excess excavated material will need to be disposed off-site to landfill
- raising of the lower playing field may be used to improve flood management of Papawai Stream
- the buried reservoir site will be landscaped
- the project is expected to take three years to complete.





## Key Project Issues

All construction projects, no matter how large or small they are, create some issues such as noise and dust, traffic etc.

With a development as large as the Prince of Wales/Omāroro Reservoir, there are several challenges that require careful management or mitigation where possible.

As part of the Town Belt Act approval and Resource Management Act consenting processes we are required to identify the issues we need to address during the three-year construction phase.

Here are the issues we've identified:

### Construction

- sediment, erosion, dust control
- noise and vibration, associated with earthworks, construction and traffic
- traffic, particularly heavy trucks on Rolleston Street.

### Landscape, visual and recreational

- modification of the proposed reservoir site (excavation and burial)
- temporary closure of fields and access tracks
- modification of upper and lower fields, with material stockpiling and field raising.

### Ecological

- low, short-term impacts associated with removal of vegetation, mostly exotic and invasive species
- measures to protect Papawai Stream from sediment-laden runoff, with ongoing monitoring of any effects on water quality and/or aquatic ecology.

### Cultural

- there will be no impact, though an 'accidental discovery' protocol will be followed.

### Seismic Resilience

- structural and seismic engineering, building a resilient structure to service Wellington in the event of a major earthquake.





# How will the Prince of Wales/Omāroro reservoir development affect the Town Belt?

## Landscape, visual and recreational effects

Overall, impacts on the landscape will be temporary, resulting from excavation and removal of vegetation, temporary closure of access tracks and playing fields and use and modification of playing fields for material stockpiling and field raising.

Proposed management and mitigation measures:

- design ensures completed landform will resemble existing area, though more regular in shape
- landscaping and rehabilitation plan following completion will assimilate the site within surrounding area and support more diverse native and indigenous vegetation
- raised playing fields will be grassed and assimilated, with improved drainage reducing flood risk.

## Ecology

The ecological impacts are expected to be low in the short term. Proposed remedial action should result in long-term ecological benefits.

- most of the vegetation cleared will be exotic and invasive species
- the finished site will be planted with select native species, increasing native vegetation cover
- some planting will be low growing indigenous vegetation, this will retain views as well as providing habitat for lizards
- monitoring and management of planting will continue for five years after completion.

To protect the four ecologically valuable elements – the seral forest, winter flowering eucalypts and two streams (including Papawai) – mitigations include avoidance of development within these areas, remedial revegetation and monitoring, and design refinement to minimise impacts.



*Looking from spur toward harbour five years following construction*



# What are the impacts during construction of the Prince of Wales/Omāroro reservoir development?

## Traffic and Parking

Rolleston Street will be the main access to the site so the main impacts will be heavy vehicle movements and temporary removal of around 20 car parking spaces during construction.

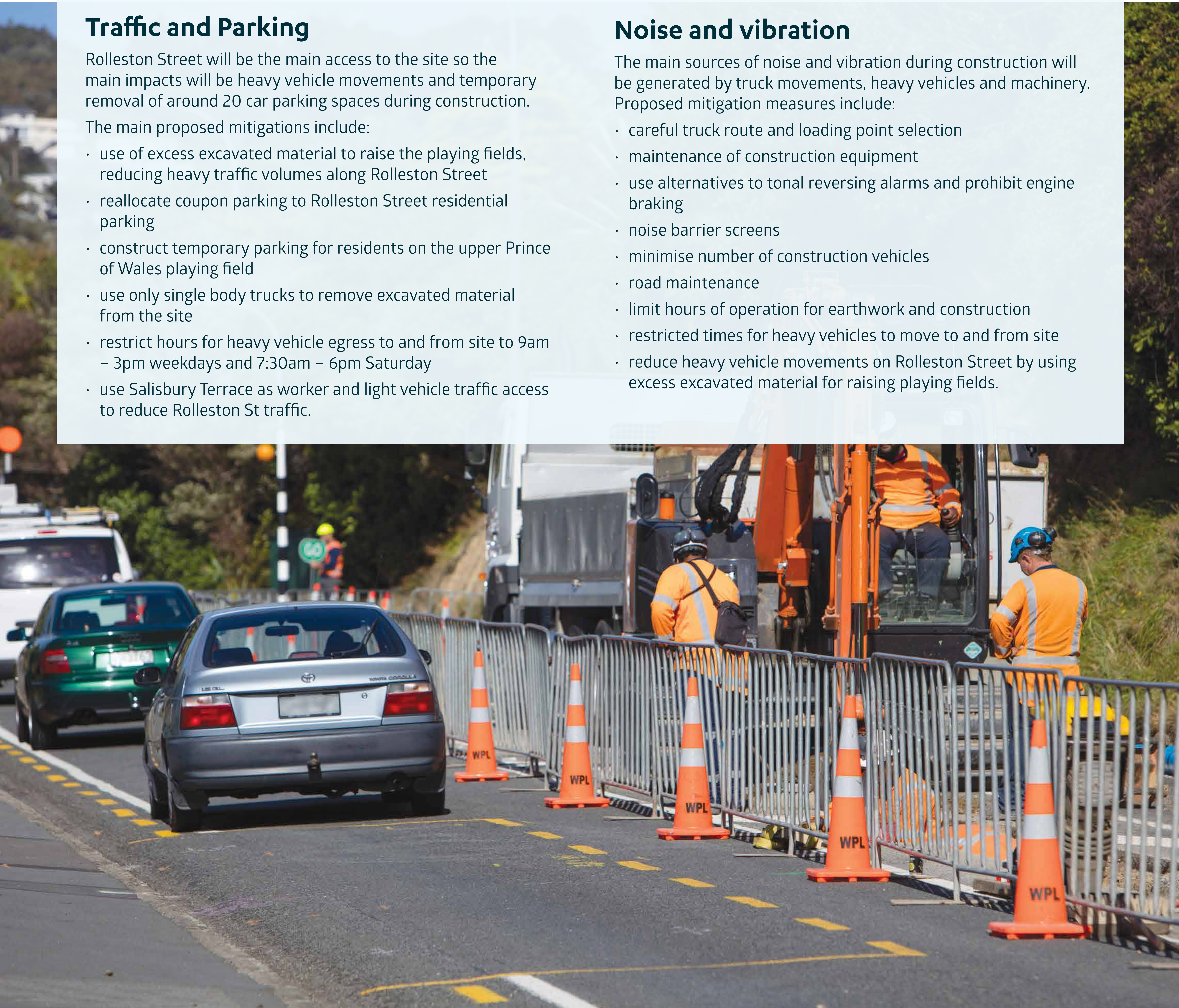
The main proposed mitigations include:

- use of excess excavated material to raise the playing fields, reducing heavy traffic volumes along Rolleston Street
- reallocate coupon parking to Rolleston Street residential parking
- construct temporary parking for residents on the upper Prince of Wales playing field
- use only single body trucks to remove excavated material from the site
- restrict hours for heavy vehicle egress to and from site to 9am – 3pm weekdays and 7:30am – 6pm Saturday
- use Salisbury Terrace as worker and light vehicle traffic access to reduce Rolleston St traffic.

## Noise and vibration

The main sources of noise and vibration during construction will be generated by truck movements, heavy vehicles and machinery. Proposed mitigation measures include:

- careful truck route and loading point selection
- maintenance of construction equipment
- use alternatives to tonal reversing alarms and prohibit engine braking
- noise barrier screens
- minimise number of construction vehicles
- road maintenance
- limit hours of operation for earthwork and construction
- restricted times for heavy vehicles to move to and from site
- reduce heavy vehicle movements on Rolleston Street by using excess excavated material for raising playing fields.





# What are the impacts during the Prince of Wales/Omāroro reservoir development?

## Earthworks

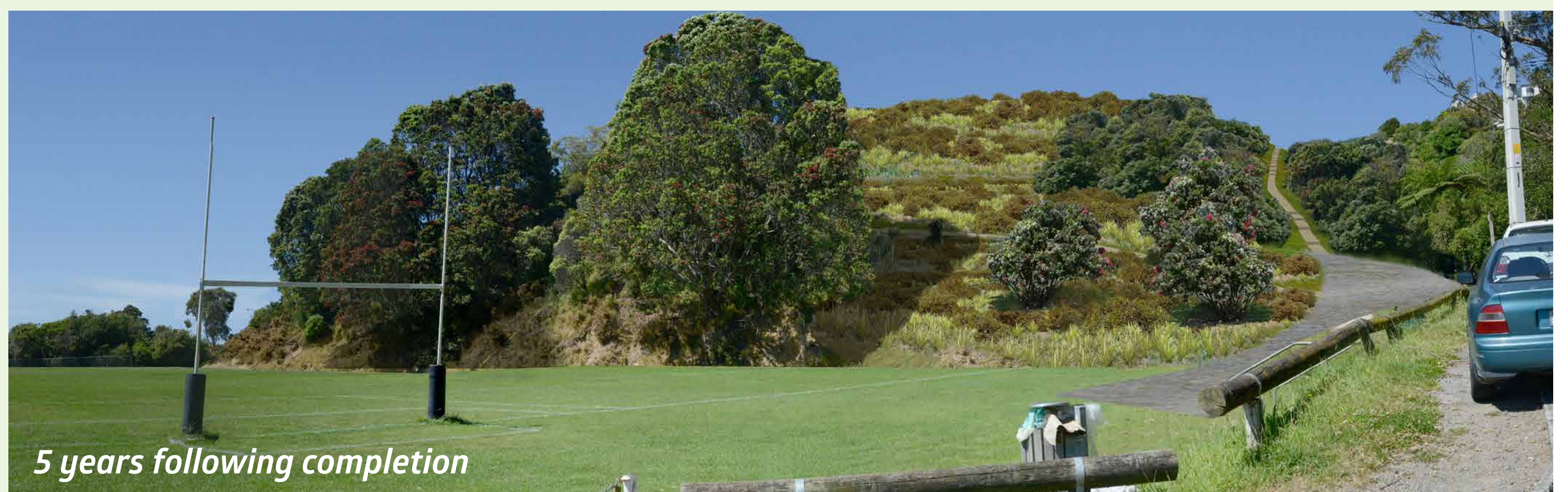
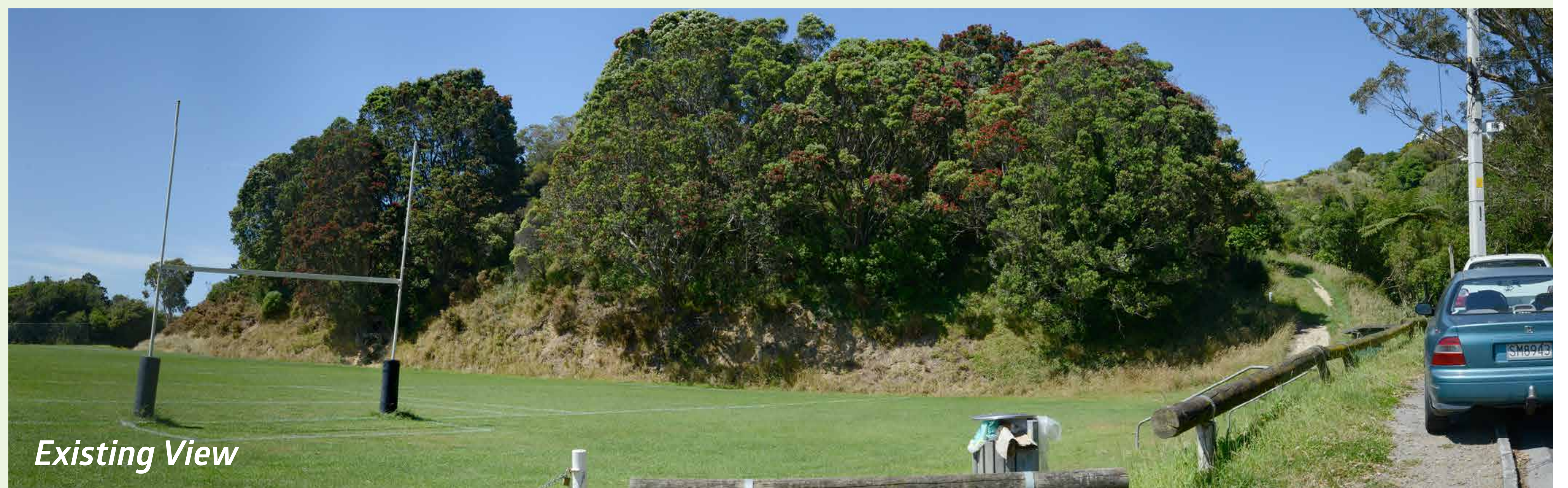
Erosion and sediment, and dust will be the main effects of earthworks.

Plans will be put in place at each stage of the development to manage and control any impacts. Proposed mitigation measures include:

- where playing fields are raised surface drainage is improved, reducing flood risk
- site accesses will be designed to reduce tracking of dirt onto residential roads
- manage runoff with drainage channels to reduce risk of sediment laden water reaching Papawai Stream
- clean water diversion channel above main excavation diverting runoff from excavation site
- dirty water diversion bund around the site as perimeter control and a silt fence
- sediment retention ponds
- minimise amount of soil exposed and cover stockpiles to reduce dust
- compact loose surface material
- minimise drop heights when loading and unloading vehicles
- minimise amount of soil exposed, and apply hydroseed or polymer to exposed stockpiles

On-going site monitoring will be undertaken to ensure control measures are installed and functioning correctly.

A residential engagement and complaints/response procedure will also be established.





# How will the Prince of Wales/Omāroro Reservoir perform in a major earthquake?

The proposed reservoir will be designed to withstand earthquake shaking prescribed by the New Zealand Building Code for structures with special post-disaster functions.

## Remain operational

In addition, it will be designed to remain operational (i.e., minimal loss of water and able to supply water with minimal or no repairs) for shaking of about 70% of the structural design level. Essential parts of hospitals are designed to the same standard which is about twice that for a normal office building.

This level of shaking is similar to that expected from a rupture of the Wellington Fault (predicted magnitude, 7.5), which GNS Science assesses as likely to be exceeded at least once every 1000 years on average.

## Retain water and cause no harm to people

For the higher structural design shaking, the reservoir may suffer damage, but must continue to retain water and not

collapse or cause harm to people. It may require repair following such an earthquake.

Shaking at this level would most likely be associated with the rupture of the subduction zone beneath Wellington (thought to be capable of a magnitude of about 8.2) and to occur about once every 2000 years<sup>1</sup> (on average, over a long period of time).

The risks to the community from structural failure is therefore considered to be extremely low.

In the unlikely event that the reservoir failed, the most likely effect would be cracking in the reservoir floor or walls which could result in a gradual loss or seepage of water.

If there is a major pipe failure in the network fed by the reservoir, automatic valves at the reservoir will respond to the sudden rush of water and shut off the network's supply.

<sup>1</sup> Updated Hazard and Risk Analysis for the Wellington Regional CDEM Group Plan, 2013.

