



Country / City	New Zealand / Christchurch
University / School	Lincoln University / School of Landscape Architecture
Academic year	4th Year
Title of the project	Playing with Fire
Authors	Sean Eustace

TECHNICAL DOSSIER

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Authors	Sean Eustace
Title of the course	Major Design
Academic year	4th Year
Teaching Staff	Don Royds
Department	School of Landscape Architecture
University	Lincoln University



Written statement, short description of the project in English, no more than 250 words

Project Vision:

The peri-urban landscape of Christchurch's Port Hills will become an intelligently functioning system which reduces the risk of a wildfire igniting and reduces the harm caused should wildfire occur. The landscape will also function as an educational tool, providing immersive experiences which engage users with the dangers of wildfire and precautionary measures they can take at the community and individual level.

The goals of the project are to reduce the chance of a wildfire igniting, to mitigate environmental conditions which contribute to the intensity, spread, and rate of movement of a wildfire, and to reduce the amount of people, property, and natural resources that would be threatened should a wildfire occur.

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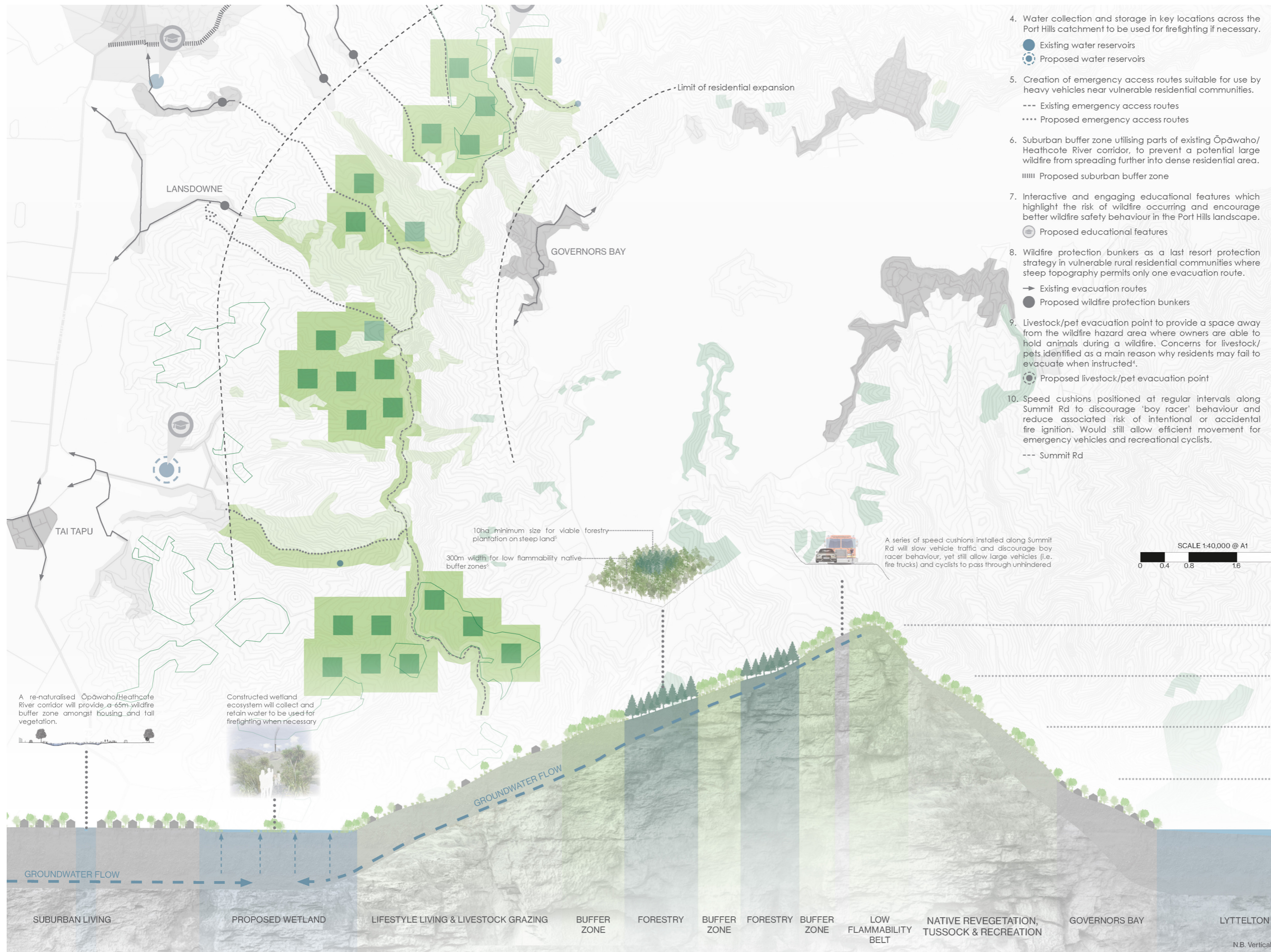
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CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

Barcelona September 2020
SCHOOL PRIZE



4. Water collection and storage in key locations across the Port Hills catchment to be used for firefighting if necessary.
 - Existing water reservoirs
 - Proposed water reservoirs
5. Creation of emergency access routes suitable for use by heavy vehicles near vulnerable residential communities.
 - Existing emergency access routes
 - Proposed emergency access routes
6. Suburban buffer zone utilising parts of existing Ōpāwaho/Heathcote River corridor, to prevent a potential large wildfire from spreading further into dense residential area.
 - ||||| Proposed suburban buffer zone
7. Interactive and engaging educational features which highlight the risk of wildfire occurring and encourage better wildfire safety behaviour in the Port Hills landscape.
 - Proposed educational features
8. Wildfire protection bunkers as a last resort protection strategy in vulnerable rural residential communities where steep topography permits only one evacuation route.
 - Existing evacuation routes
 - Proposed wildfire protection bunkers
9. Livestock/pet evacuation point to provide a space away from the wildfire hazard area where owners are able to hold animals during a wildfire. Concerns for livestock/pets identified as a main reason why residents may fail to evacuate when instructed⁴.
 - Proposed livestock/pet evacuation point
10. Speed cushions positioned at regular intervals along Summit Rd to discourage 'boy racer' behaviour and reduce associated risk of intentional or accidental fire ignition. Would still allow efficient movement for emergency vehicles and recreational cyclists.
 - Summit Rd

A re-naturalised Ōpāwaho/Heathcote River corridor will provide a 65m wildfire buffer zone amongst housing and tall vegetation.

Constructed wetland ecosystem will collect and retain water to be used for firefighting when necessary

10ha minimum size for viable forestry plantation on steep land⁵
300m width for low flammability native buffer zones⁶

A series of speed cushions installed along Summit Rd will slow vehicle traffic and discourage boy racer behaviour, yet still allow large vehicles (i.e. fire trucks) and cyclists to pass through unhindered

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3 WATER TERRACES

One of the site's four environmental indicators these grass and concrete terraces encourage wetland visitors to engage with the water that is such an important part of the Port Hills landscape. The level of water in the wetland basins correlates directly with the level of moisture in the surrounding environment and is therefore one aspect which contributes to wildfire risk. Five levels of coloured concrete provide a visual translation of this risk and frequent visitors, such as nearby residents, will soon develop an appreciation for when wildfire risk is at its highest.

4 MINI MOUNDS

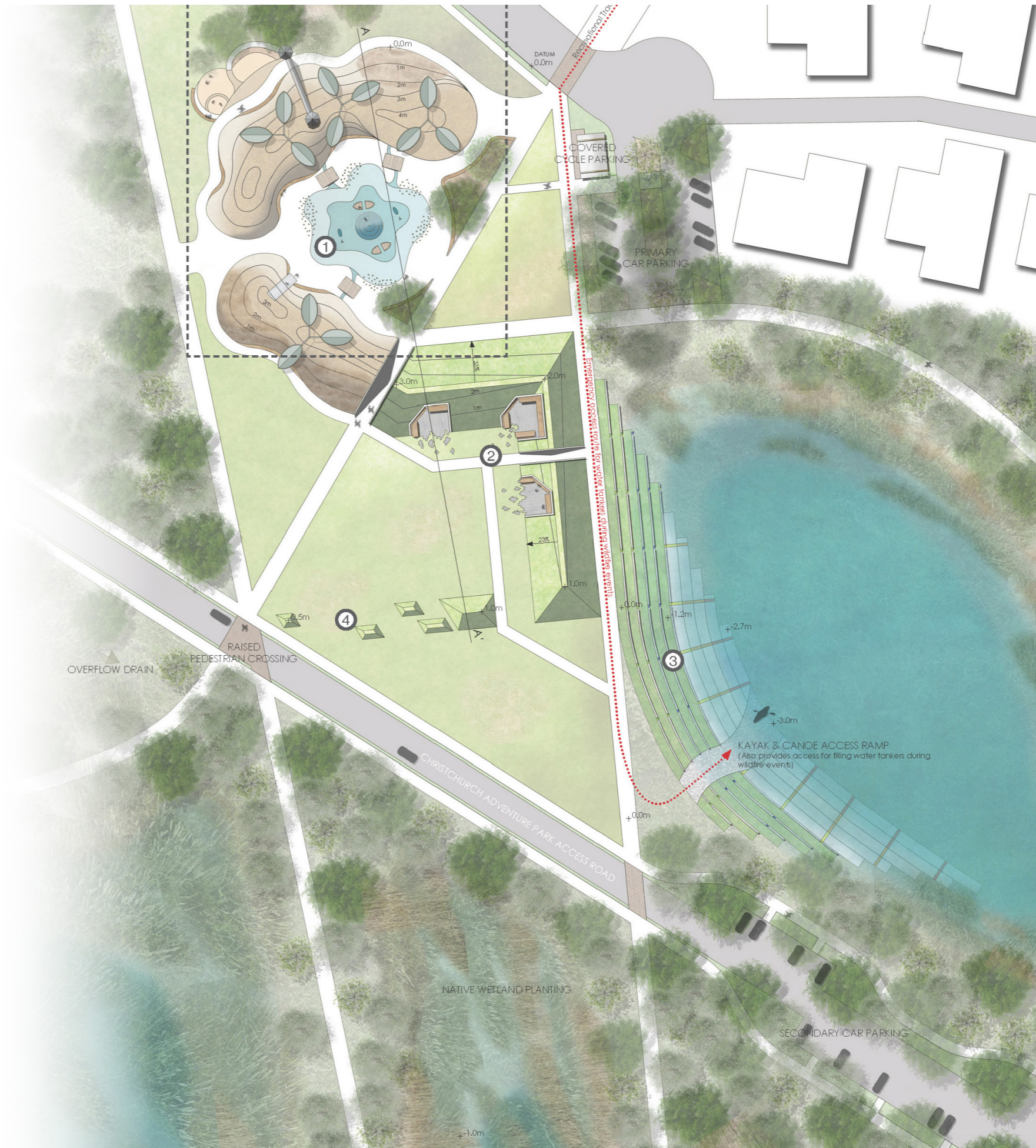
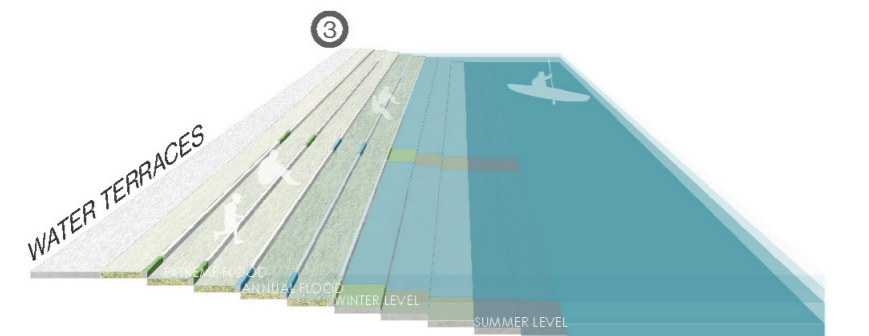
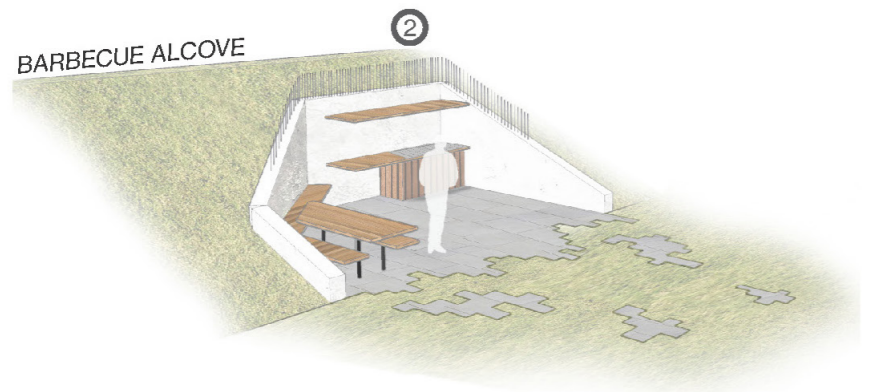
As the mound form tapers off into the wetland a series of four small grass mounds, 0.5m in height, protrude from the earth. These provide a feature for visitors to sit or lie against, gazing directly towards The Remnant Reminder sculpture on the hill 600m away. At night when the sculpture is lit up, visitors from across Christchurch will flock with blankets and sleeping bags to view the swaying branches glowing against the night sky.

DESIGN MEANING



The form of the playground and barbecue/picnic area is largely inspired by the form of Banks Peninsula, with two harbours (the water play area and the barbecue alcoves) nestled amongst steep hills (continuous mound form) providing shelter and refuge from the elements.

Continuous suburban expansion into the Port Hills wildland landscape is one of the main factors increasing the harm caused when wildfire occurs. The intention for this part of the site is to create a gateway to the Port Hills which marks the threshold between suburban and wildland and encourages people to consider what is appropriate in each landscape, both in terms of land use and wildfire safety behaviour.



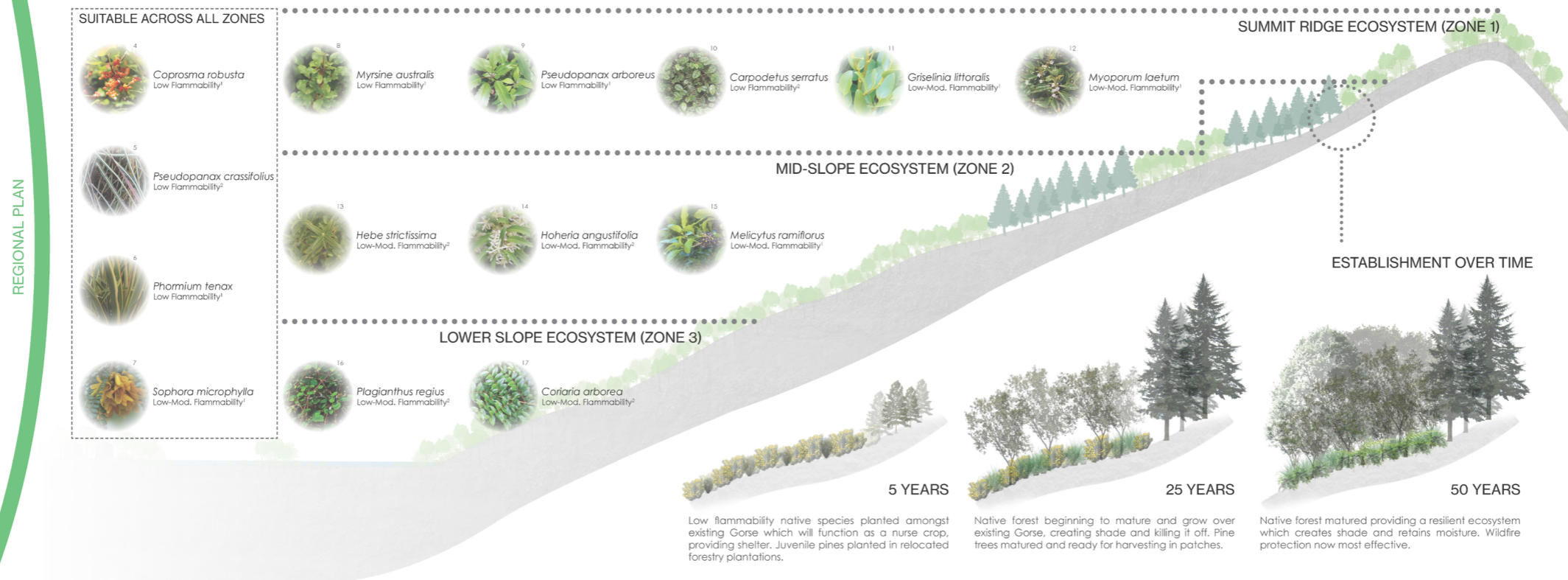


PREVENTING THE IGNITION AND SPREAD OF WILDFIRE - LOW FLAMMABILITY NATIVE REVEGETATION STRATEGY

The current mix of vegetation found across the Port Hills landscape contributes significantly to the area's high level of wildfire hazard. Vast expanses of gorse provide a highly flammable fuel source and large pine forestry plantations provide an enormous volume of combustible material for a raging wildfire to feed off.

Revegetation of the entire Port Hills landscape is not currently a viable option; therefore revegetation will be implemented in targeted areas where it will have the greatest impact. These areas include the Summit Road corridor (high ignition risk from vehicles and recreational users), 300m wide buffer zones around reduced size forestry plantations, and "Green Fingers" extending down four key valleys where moisture and shade is most prevalent resulting in the best plant establishment conditions.

In order for planting across such large areas to establish and thrive without continued human intervention, species need to be well suited to the distinct ecosystems and climatic conditions found at the various elevations of the Port Hills landscape.

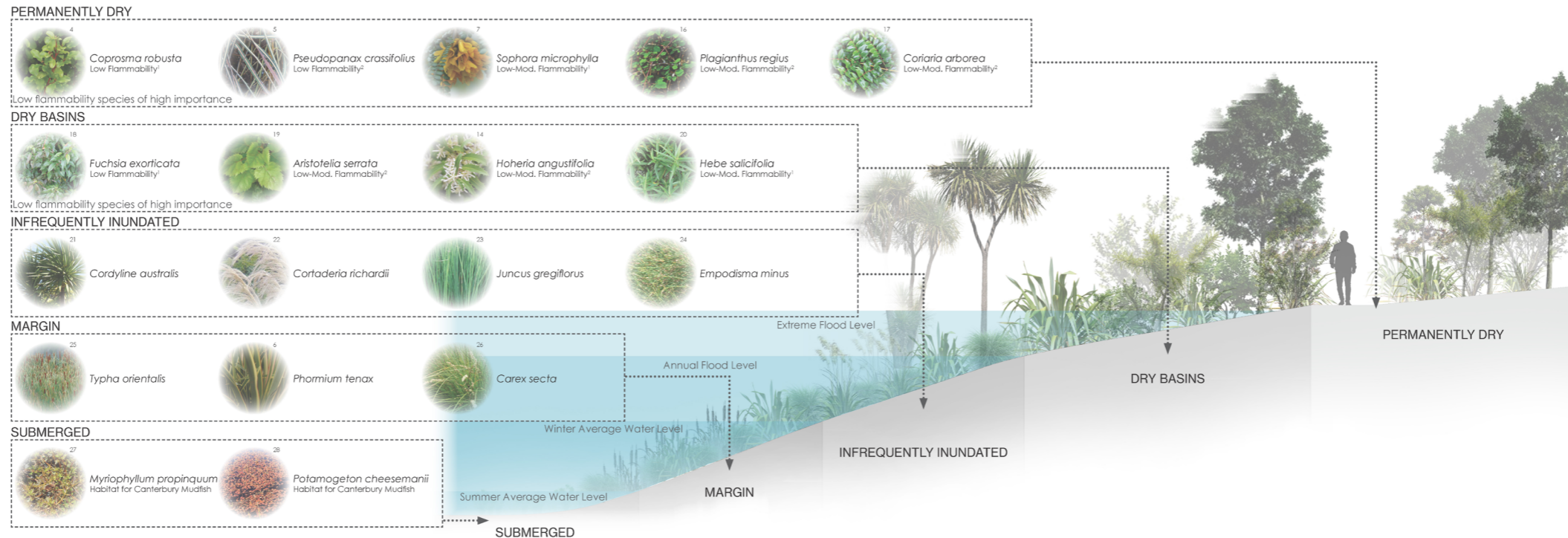


COLLECTING AND RETAINING WATER – WETLAND ECOSYSTEM STRATEGY

A constructed wetland in the Cashmere/Warleys Valley will provide a number of ecological, recreational, and flood prevention benefits; in addition to providing a nearby water source for the filling of helicopter buckets and water tankers during wildfire events.

Wildfire in the Port Hills primarily occurs over the summer months when water levels in the wetland will be at their lowest; therefore a healthy wetland ecosystem is necessary to provide shade and prevent valuable water from evaporating from the deepest basins.

One common challenge in wetlands with fluctuating water levels is the presence of mosquitoes. With a popular playground space, barbecue/picnic area, and residential property all within the vicinity of the wetland it is of utmost importance to manage this potential problem. Planting in the 'Submerged Zone' has been selected to provide habitat for Canterbury Mudfish which prey on mosquito larvae¹.



MASTER PLAN