



Taputeranga Marine Reserve
Image by Celia Wade-Brown

Blue Wellington By Celia Wade-Brown

Humans are attracted to waterfront properties, seaside holidays, ocean views, swimming and water sports although no other ape likes water at all. Economic reasons also led to cities on coasts – especially food supply and transport. Sixty percent of the world’s population lives in coastal areas. Sixty-five percent of cities above 2.5 million inhabitants are located along the world’s coasts, including megacities like London, New York, Shanghai, Accra, Rio de Janeiro, Mumbai and smaller cities like Wellington, the capital of New Zealand.

Inundation from sea level rise and greater storm intensity are already yesterday’s news. Their frequency may increase by a [factor of 100 in the coming century](#). There are existing threats like tsunami, land slips

and subsidence that climate change will exacerbate. These are all reasons why we must do everything possible to mitigate climate change and keep the global average temperature increase to less than 2 °C (3.6 °F) and pursue efforts to keep it to 1.5 °C (2.7 °F).

Moving from global to the local: what are the “blue issues” that Wellington has faced and how does our built/sea interface work? Sea level rise, urban growth, and stricter water quality rules challenge traditional engineering perspectives, yet they present opportunities to deliver smarter, holistic water management for a more liveable resilient city.

People originally migrated to here by sea. Māori have lived here for six or seven centuries,

arriving in their waka (canoes). According to Māori tradition, Whatonga, a chief of the Kurahaupo waka, was the first person to settle the lands at the southern end of the North Island, known as Te Upoko-o-te-Ika – “the head of the fish”. European settlers came on sailing ships in the 1840s and Wellington was designated the capital in 1865.

Wellington is a hilly peninsular city with a magnificent harbour and a rugged coastline facing one of the wildest stretches of ocean in the world – the Cook Strait. Settlement and transport patterns were constrained by this topography as roads and rail squeezed between hills and sea. This has resulted in the most compact and walkable city in Australasia.

In 1855, a dramatic 8.2

magnitude earthquake uplifted the coast by 1.5 metres, creating land for more settlement and a narrow strip around the harbour where road and rail now run. Brass markers show where the shoreline once was in the city. We’ve had more earthquakes this century, much milder than the Christchurch disaster in 2011. Centreport’s three major commercial buildings all had to be demolished after liquefaction including the most recent 2009 BNZ building once worth \$95 million. The commercial buildings had been controversial as they were a form of “commercial office sprawl” drawing workers away from the amenities of the compact city centre. Earthquakes have likely caused considerable damage to our underground infrastructure too.

Case Study – Great Harbour Way, Te Aranui o Pōneke

Most of Wellington’s harbour edge is in public ownership. Port infrastructure prevented access to downtown. Since container shipping changed dockside practice in the 1970s, the old warehouses were strengthened and transformed into apartments, museums and galleries. Now the inner-city waterfront is most people’s favourite place to walk. Increasing usage has its own problems with pinch spots causing some friction between walkers, runners, e-scooterers, cyclists and e-cyclists.

A little further north, the commercial port blocks access. Ten kilometres more, the state highway was widened almost a century ago, completely wiping out the final 1,500 metres of

a poor-quality pathway on the wrong side of the railway line. The tremendous news is that due to agreements between local government and Waka Kotahi, the NZ Transport agency, an excellent seaside path is being fast-tracked. What persuaded the Transport Agency to invest tens of millions and do a proper job? It was not the lack of walking access nor unsafe cycling provisions nor concern about emissions and wellbeing, although these matters now figure into government policy thanks to Labour and the Greens. It was the storms, projected sea level rise and tsunami threats to the vital rail and road lines; so, resilience won the day. Soon the 72km path will welcome commuters and tourists to revel in active healthy travel along all or part of Wellington’s spectacular harbour and coast.



Wellington Harbour
Image Credit: Wellington City Council

Case study – Taputeranga Marine Reserve

Located on Wellington’s south coast, the marine reserve has just enjoyed its tenth birthday. This is where I learnt to scuba dive in 2005. Sea-life in the marine reserve has burgeoned and the reserve is becoming increasingly popular as a destination for snorkellers, divers and people exploring the rock pools. It is also an important scientific and educational resource. Octopus, fish and stingrays have all increased in size and numbers. The kōura (crayfish) even behave differently, walking in clear sight rather than hiding within the cracks of the rocky reefs.

Taputeranga was the site of the world’s first Marine Bioblitz just before the reserve was gazetted and we found completely new species of diatom and nudibranch.

Orca and dolphins inspire kayakers, paddleboarders and walkers, both on the wilder south coast and right in the central harbour. One week the Interislander Ferry was delayed for hours from docking because a rare southern right whale, named Matariki after the star cluster that heralds Māori New Year, was frolicking near the docks.

The Future of Integrated Planning

Coastal cities have treated our oceans as liquid landfills and open sewers for centuries. These harmful impacts are combined with the multitude of threats to our oceans, such as industrial overfishing, excessive pollution and waste, and the severe impacts of climate change. Human and urban activities generate contaminants, which have increased in

step with population growth. Traditional piped stormwater networks efficiently move these contaminants to aquatic receiving environments.

Conventional stormwater management has traditionally focused on flood risk management. Urban development needs and flood issues have been dealt with by building pipes and burying streams and wetlands underground. However, pipes can disconnect communities from their natural environment, adversely affect biodiversity, and offend cultural values. They are also expensive to build and maintain. Māori usage of Wellington’s seven urban streams for different purposes was obliterated but is now acknowledged. Both [Waimapihi](#) and [Kumutoto](#) now have some recognition.



Crayfish
Image by Celia Wade-Brown

2015 Long Term Plan

The city’s biggest infrastructure asset is one that is rarely seen. It lies out of sight, underground. There, more than 2,700 kilometres of pipes and tunnels criss-cross the city, carrying water to homes, businesses, schools and hospitals, or carrying sewage to treatment plants or stormwater to the sea. Together, this network and associated assets are valued at around \$1.3 billion. Lay all of the pipes end to end and they would reach Sydney. Managing these assets is one of the biggest areas of the Council’s activity and each year we spend more than \$50 million to operate the city’s water, wastewater and stormwater networks and we invest more than \$25 million in new or upgraded assets. Through better management of these assets, we anticipate that we can make significant savings over the next few years, while maintaining service levels.

We will also focus on new urban growth in areas where existing water and stormwater networks already have enough capacity to deal with added demand.

Every year, millions of litres of stormwater are discharged into the city’s streams, harbour and coastal waters. That stormwater can contain contaminants, such as oils, paints, detergents, litter, animal droppings, and after heavy rainfall, sewage. The environmental impacts of stormwater runoff are monitored, and generally comply with resource consents and environmental standards.

In the next three years, we will introduce real-time monitoring of the stormwater network. This will enable us to measure flows of stormwater and pollutants into waterways, and allow us to manage flows when stormwater is causing environmental harm.

The city’s stormwater discharges have historically been contaminated with sewage as a result of interconnected sewers and storm drains because of historic design, current illegal cross connections, leaky joints, or old cracked pipes. While significant investment has been made in sewer management, recent data show contaminants above guidelines for aquatic life, and during storms drainage systems are inundated causing flooding and sewage overflows to the harbour. The wet weather overflow from the main trunk sewer and the faecal content at the outfalls remain at levels which are a concern for public health.

Wellington’s wastewater and stormwater systems have not fared well over the years since the first brick culverts diverted the city’s streams.

In 2012, Wellington’s Long Term Plan stated, “The city’s wastewater infrastructure is in good condition, and overflows of untreated wastewater into the environment are rare.” How wrong this staff assessment was! In 2020, Water NZ has reported that around a third of Wellington’s wastewater pipes are in poor or very poor condition. Billions of dollars are now needed to be spent in the short term to fix the problem. Many councils in

New Zealand are faced with politically unpalatable budgets to maintain, renew and upgrade old systems to match population, legislation and community expectations. Infrastructure upgrades are critical to ensuring the wastewater and stormwater networks protect public and environmental health, but these works will come at high cost. It will take time and considerable investment to fix the issues. Wellington is now far more aware of its connections to the marine world. Locally councils are beginning to look at the impacts on marine environments in their plans and visions for the future in such a way that the city environment becomes more

liveable and resilient. Only in 1998 did Wellington begin to treat rather than just sieve its wastewater.

Individual action will help, such as not using wet-wipes, keeping fat out of the wastewater system, not washing paint down drains, modest water usage, and ensuring any new plumbing correctly connects rainwater to the stormwater system and sewage to the sewage system.

Community-scale action, such as beach clean-ups, diving clean-ups and coastal planting, make a significant difference as well. However, central and local government will have to do far more.

Wellington City Council's water-sensitive urban development guidelines must move from

advisory to mandatory for new developments and retrofits. Decades of unofficial cross-connections, poor materials for pipes such as brick and asbestos that are vulnerable to earthquakes, rising sea levels and poorly maintained old landfills are all coming home to roost.

I'm delighted our current Minister Nanaia Mahuta is driving the most transformative and necessary reform of how our three waters are delivered and regulated in 30 years. Offering participating councils a stimulus package of \$761 million for immediate repairs, maintenance and renewals has been an effective strategy. With the first reading of the Water Services Bill in December 2020 Central Government has taken a decisive step towards ensuring safe drinking water and more efficient

wastewater and stormwater networks. Minister Mahuta has emphasised Māori knowledge and nature-based solutions will have a big part to play.

Climate change, specifically more extreme storms and sea level rise, adds hugely to the difficulties of cities improving the health of their blue belts. As well as specific action, policy and funding for the three waters, all levels of individual, community, business, local and central governments need to make dramatic cuts to emissions across all sectors. As the proverb says "He waka eke noa" –we are all in this canoe together.



Waka on Wellington Harbour
Image Credit: Wellington City Council

Celia Wade-Brown was Mayor of Wellington from 2010 – 2016 and previously held the Environment Portfolio as a Councillor. She is currently the Biodiversity Manager at Duntulm Carbon Farm, Wairarapa, Aotearoa New Zealand; propagating native plants, sequestering carbon and removing invasive predators. Ms Wade-Brown is an Advisory Board Member for the Biophilic Cities Network.

Resources

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Taranaki Wharf Jump Platform
Image Credit: Wellington City Council