

Title Te Awarua-o-Porirua Whaitua Information Phase
summary report

Author Te Awarua-o-Porirua Whaitua Project Team

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Contact Te Awarua-o-Porirua Whaitua Committee

PO Box 11646, Wellington 6142

poriruawhaitua@gw.govt.nz

T 0800 496 734

F 04 385 6960

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1 Introduction

1.1 Purpose

This report summarises the information provided to Te Awarua-o-Porirua Whaitua Committee between April and November 2015 during the 'information phase' of the whaitua process. This material helps to create a picture of the state and pressures of land and water resources and management within Te Awarua-o-Porirua whaitua at this point in time.

1.2 Outline

The material in this report is sourced from the presentations and reports provided so far to the Committee and is structured loosely in accordance with the order the Committee received these.

This report summarises this material in the following order⁷

1. Policy framework
2. Local government roles
3. People, land and water
4. Using the land
5. Three waters infrastructure

A full list of reports and presentations, including links to them on the whaitua website, is provided in Appendix 1.

It should be noted that some presentations provided different information on the same topic, depending on the data set and boundaries used. Where possible, these differences have been resolved; other differences, such as inconsistent naming of sub-catchments, will be resolved in early 2016 with the development of a consolidated data set for Te Awarua-o-Porirua whaitua and mapping of this data in an integrated GIS map document.

2 Policy framework

The task of Te Awarua-o-Porirua Whaitua Committee is framed by a series of high-level policy documents that all sit underneath the Resource Management Act 1991 (the RMA). The RMA promotes the sustainable management of natural and physical resources.

2.1 National Policy Statement for Freshwater Management 2014 (NPS-FM)

The most critical of these policy documents is the NPS-FM which asks communities and councils to identify what they wish to achieve in water quality and therefore how to achieve it. The key directives of the NPS-FM are to¹

- Maintain or improve water quality in fresh water bodies
- Safeguard ecosystem health and human health
- Reflect tangata whenua values in the management of fresh water
- Set objectives, and limits to achieve these objectives, for all freshwater bodies
- Use integrated catchment management approaches in managing fresh water
- Avoid over allocation of resources and remedy it where it has already occurred
- Ensure allocation and use of water is efficient

All regional councils have till 2025 to implement the NPS-FM in full. Regional councils must also report on the progressive implementation of the requirements of the NPS-FM.¹ Each whaitua process in the Wellington will establish water quality and quantity limits to meet the requirements of the NPS-FM.

2.2 New Zealand Coastal Policy Statement 2010 (NZCPS)

The work of the Committee will also be shaped by the NZCPS. This document provides national direction on how the coast and coastal environment should be managed around New Zealand. Important policy directions in the NZCPS that the WIP will need to respond to include¹

- involving tangata whenua in coastal resource management decision-making
- integrated management of the coast and activities that impact the coastal environment
- protecting indigenous biodiversity
- improving water quality where it is impacting cultural values, ecosystem and human health
- managing activities on the land that generate sediment and other contaminants for their impact on the coast
- ensuring good management practice to discharges that contain contaminants including wastewater overflows and stormwater

¹ The Wellington Regional Council progressive implementation programme can be found here¹ <http://www.gw.govt.nz/nps-implementation-timetable/>

2.3 Regional Policy Statement for the Wellington Region 2013 (RPS)

The RPS provides important statutory messages that will shape the Committee's WIP as the RPS policy direction must be given effect to by councils at the time of any regional plan or district plan changes. The key directions of the RPS for the whaitua process are⁷

- promoting of compact, well-designed and sustainable regional form
- managing the effects of development in rural areas
- integrating land use and transportation
- promoting discharges of wastewater to land
- minimising adverse effects of stormwater from new subdivision and development

2.4 Proposed Natural Resources Plan for the Wellington Region (PNRP)

The PNRP was publically notified on 31 July 2015 and sets out objectives, policies, rules and other methods for the sustainable management of natural resources in the Wellington region. The PNRP anticipates each whaitua process by setting out whaitua chapters to be populated by the provisions resulting from each committee's Whaitua Implementation Programme. The key policy directions in the PNRP for the whaitua process are⁷

- using an integrated catchment management approach
- providing opportunities for partnerships with iwi, communities and territorial authorities
- supporting regional economic well-being
- maintaining or improving water quality and improve water use efficiency

The PNRP provides the regional planning framework for each whaitua process to complete with rules and methods for managing land and water in a local context.

2.5 Porirua Harbour Strategy and Action Plan (PHS)

The PHS is a non-statutory document that articulates goals for the health of the harbour and catchment for a range of agencies to work towards.² Developed by four key partners (PCC, WCC, GWRC and Ngāti Toa Rangatira) together with the community and nine agencies, the PHS aims to reduce pollutants and sedimentation entering the harbour and to improve the harbour and catchment's ecological health. The strategy and action plan is reviewed every three years; implementation is overseen by the statutory body, Te Awarua-o-Porirua Harbour and Catchment Joint Committee. Table 1 lists the PHS objectives and targets. The next strategy review is scheduled for 2018.

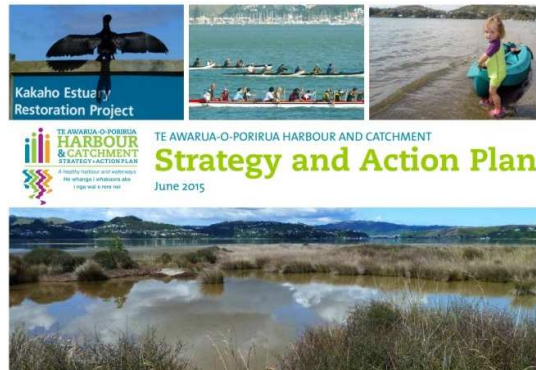


Table 1. Objectives and targets of the Porirua Harbour Strategy and Action Plan

PHS objectives	Targets	By
Reduce sedimentation rates	Interim 50% reduction in inputs	2021
	Long-term reduction to 1mm per year on average (natural rate)	2031
Reduce pollutants	Suitability for recreation beach grade of at least 'Good'	2021
	Improved kaimoana safety from selected gathering locations	2021
	Maintain or reduce nitrogen levels and nuisance algal coverage	2021
	Significant reduction in toxicants from Porirua Stream and Semple Street outfall	2016
	Maintain or reduce zinc and other heavy metals to at/ below ANZECC 'low' guideline	2021
Restore ecological health	Significant reduction in litter accumulations	2016
	Establish saltmarsh cover in suitable locations	2021
	Significantly expand seagrass distribution	2021
	Implement sustainable land use plans and riparian protection on regional parks	2016
	Establish riparian plant cover along majority of stream lengths	2031
Improve stream and harbour bed communities to accepted 'healthy' levels	2031	

² <http://www.pcc.govt.nz/Theme/ModuleLayout/GetImage.aspx?imageid=e4ba42c9-30c8-4a94-b9aa-5173d3fb5b8b&downloadnow=true>

3 Local government roles

3.1 Local authorities

The Porirua City Council (PCC), Wellington City Council (WCC) and Wellington Regional Council (WRC) each have responsibilities for delivering the requirements of the Local Government Act 2002 (LGA) and the Resource Management Act 1991 (RMA) within the whaitua. There are a number of requirements under each Act, with some of the key directions being

- to meet the current and future needs of communities for good quality infrastructure, local public service and performance of regulatory functions in a cost-effective manner (LGA)
- to prepare Long Term Plans to describe how this will be achieved in accordance with the outcomes desired by the local community and in an integrated, long-term and accountable manner (LGA)
- to ensure the sustainable management of natural and physical resources (RMA)
- to prepare policy statements and plans (both district and regional) to achieve sustainable management to achieve sustainable management (RMA)

3.2 Wellington Water Limited

Wellington Water Limited (WWL) was formed in 2014 following PCC and the WRC Bulk Water department joining the then Capacity Infrastructure Limited. WWL is a council-controlled organisation for WCC, PCC and WRC as well as for the Hutt and Upper Hutt City Councils. The 'three waters' (wastewater, stormwater and water supply) infrastructure within the whaitua are all managed by WWL. WWL plays significant role in urban water management as the organisation responsible for asset management planning, development, operation and maintenance of the three water assets. WWL's links investment and long term planning to their identified 'three waters outcomes' - safe drinking water, respect for the environment and resilient now and into the future.

4 People, land and water

4.1 History and archaeology

Te Awarua-o-Porirua has long been a favoured area for settlement because of rich kaimoana and the strategic location at the edge of the Cook Strait. Archaeological records indicate a predominance of occupation around the coast and harbour margins. Evidence from the Pauatahanui Inlet shows people settled there between AD 1450 and 1650 living off shellfish, flounder, fish from outside the harbour and birds from the forest. Earlier settlements by Ngai Tara and Ngāti Ira were replaced by Ngāti Toa in the 1820s. Settlements built by Ngāti Toa in the 19th century tended to be domestic settlements on the flat lands near the coast for access to food and other resources, with pā located nearby for defence.

The catchment was scene to a number of battles and campaigns including involving the famous leaders of Ngāti Toa, Te Rauparaha and Te Rangihaeata, including during the New Zealand wars. By the 1830s and 1840s, Māori were joined by whalers around coastal areas such as Mana Island, Plimmerton and Paremata. Native forest began to be felled and the catchment converted to farm land. By 1885, the main trunk railway ran from Wellington north through Porirua.

The 20th century saw significant change, particularly from the 1950s onwards with the establishment of the 'dormitory' city of Porirua to provide housing for those working in Wellington, and substantial state housing developments around Porirua East, Tawa and Titahi Bay. This period also saw extensive reclamation of the harbour at the Porirua Stream mouth and the arrival of some key industrial activities, including Todd Motors in 1975. Mana Marina, at the point where the two arms of the harbour meet, was built in the mid-1980s. From the 1970s onwards, areas around the Pauatahanui Inlet began to be developed converted to suburbia, with large areas like Aotea being developed in a surge in the early 2000s. In 2015, the Te Rūnanga o Toa Rangatira Treaty of Waitangi settlement was signed between Ngāti Toa and the Crown.

4.2 People of the whaitua

Ngāti Toa Rangatira

Ngāti Toa Rangatira, mana whenua of the whaitua, welcomed the Committee onto the Takupuwahia Marae on two occasions to share stories of their history and as kaitiaki of the harbour and catchment. Members of the iwi spoke of cultural health monitoring, historic and ongoing cultural use, particularly of the coast, and the history of iwi and its whareniui at Takapuwhia. The Committee also took in the *Whiti Te Rā – The story of Ngāti Toa Rangatira* exhibition at Te Papa where Ngāti Toa are currently the iwi in residence. This follows on from the 2012 signing of a Deed of Settlement between the Crown and Te Runanga o Toa Rangatira to settle all Treaty of Waitangi claims made by the iwi.

Demographics

The population of Te Awarua-o-Porirua stretches across two territorial boundaries (Porirua and Wellington City Councils) and numbers nearly 78,000 people. The iwi Ngāti Toa are mana whenua, with the whaitua also being home to many Māori from outside the rohe.

Compared to the rest of the Wellington region, the whaitua population is generally young with a greater proportion of people under 20 than the regional spread.³ There is a higher proportion of couples with children in the whaitua than in the region. The number of people living in the whaitua that were born overseas is about the same as the regional proportion at around 24%.

How do people of the whaitua identify?

Pakeha/European	63%
Māori	16%
Pasifika	18%
Asian	11%

Where were the people of the whaitua born?

New Zealand	Approx. 76%
United Kingdom	6.2%
Samoa	4%
South Africa	1.4%
Australia	1.2%
China	1.2%
Fiji	1.2%
Philippines	1.2%

4.3 Geography

The landscape of the whaitua has been greatly modified by human settlement. Reclamation of parts of the Harbour (mainly in the Onepoto arm) and streams for transport infrastructure and urban development, modification of stream channels for flood protection and removal of native vegetation cover have resulted in the greatest changes to the landscape. Much of the Harbour edges and stream mouths have been significantly modified by reclamation, earthworks and the building of the railway line and state highways. On the open coast line stretching towards Mana Island, Titahi Bay's fossilised forest appears at each low tide, providing a sense of the forests that once covered the whaitua landscape.

Whaitua land and seascapes

- 21,300ha in size
- Once two forested river valleys which filled in when sea levels rose 8,000 years ago
- Features steep and rolling topography with erodible soils and lots of streams
- Te Awarua-o-Porirua Harbour is largest estuary in lower North Island – Pauatahanui is 524ha and Onepoto is 283ha in size
- Around 65% of the harbour remains underwater at low tide, unusual for most NZ estuaries
- Three major fault lines – Ohariu, Pukerua and Moonshine – run north to south through the harbour and catchment
- Farming, bush and forestry in the upper Pauatahanui Inlet and much of the Onepoto catchments; urban development around the harbour, throughout the Porirua Stream catchment, and some open coastal areas (e.g. Titahi Bay and Pukerua Bay)
- Incorporates three local authorities – Porirua City Council, Wellington City Council and Wellington Regional Council

³ Information is taken from <http://profile.idnz.co.nz/greater-wellington>

Aerial imagery (Figure 1 and 2) annotated by Mal Green as part of the presentation on sedimentation in the catchment is shown below, indicating how geology and hydrodynamics create distinct depositional areas within the two harbour arms.⁴

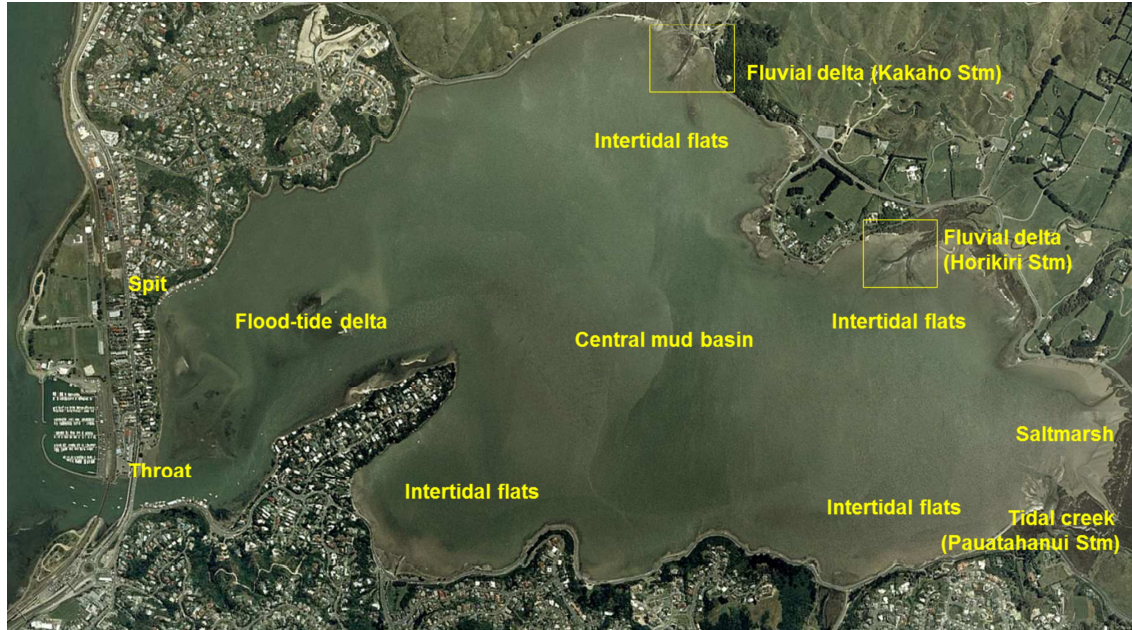


Figure 1. Major features of the Pauatahanui Inlet of Te Awarua-o-Porirua Harbour

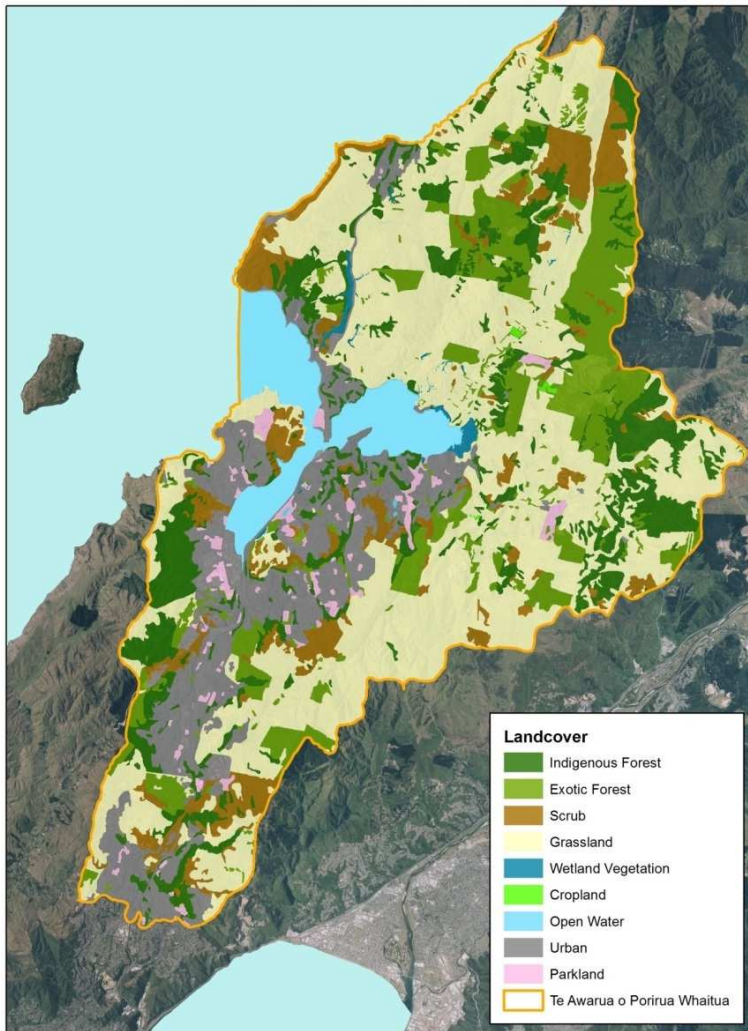


Figure 2. Major features of the Onepoto Arm of Te Awarua-o-Porirua Harbour

⁴ See full presentation http://gwrc_live_cms/assets/Environment-Management/Whaitua/Te-Awarua-o-Porirua/PRESENTATION-Sediments-in-Porirua-Harbour-by-Malcolm-Green-NIWA-27-August-2015.pdf

4.4 Existing land use

Porirua City was originally developed as a satellite suburb to Wellington with extensive state housing development and motorway expansion beginning in the 1950s. The city celebrated its fiftieth year in 2015. The Porirua Stream catchment is more urbanised than the Pauatahanui arm, though overall close to 75% of the whaitua area is pasture, exotic or native vegetation (see Table 2). Figure 3 shows the range of land cover types in the whaitua, which closely equates to land use.⁵ Most urban land cover is residential or commercial land, with major industrial areas around the lower Takapu Stream, east of the Porirua City CBD and south of the Taupo Swamp near Plimmerton.



Land use type	Proportion of whaitua land use (%)
Urban	16
Pasture	45
Scrub	7
Indigenous forest	15
Park land ⁶	2
Exotic forest	14
Wetland	1

Table 2. Proportion of land cover type in Te Awarua-o-Porirua whaitua

Figure 3. Land cover types in whaitua

⁵ Data from New Zealand's Landcover Database v3.0

⁶ Excludes regional parks

4.5 Fresh and coastal water quality

Fresh and coastal waters in the whaitua are impacted by contaminants that can broadly be characterised as sediment, nutrients, pathogens and toxicants. Contaminants are generated from range of uses of land, both current and historical, and the way we transport water away from people and property, whether rainwater (via stormwater systems) or wastewater via piped infrastructure. Typical of many urban areas, the whaitua has particular problems with faecal contaminants reaching both coastal and fresh water bodies. The depositional nature of the harbour means that contaminants can remain in the harbour for some time or even permanently. In particular, some contaminants such as phosphorus, heavy metals and pesticides bind to sediment meaning they can be very slow to flush from the harbour system or will not leave the harbour at all.

Table 3 below describes the major trends seen in regularly monitored fresh water sites in the whaitua over the nine years to 2015. The increase in *E. coli* levels in all four regularly monitored sites is particularly marked, with analysis indicating that contamination has increased at each site 6-14% per year over the last nine years.

Table 3. Trends in fresh water quality in Te Awarua-o-Porirua 2006-2015⁷

Trend	Where?
Improvement	
Decreasing soluble and total nitrogen	Porirua Stream at Glenside Porirua Stream at Wall Park
Decreasing phosphorus	Porirua Stream at Wall Park Pauatahanui Stream at Elmwood Bridge
No trend	
Stable but high dissolved copper and zinc	Porirua Stream at Glenside Porirua Stream at Wall Park
Worsening	
Increasing nitrogen	Horokiri Stream at Snodgrass
Increasing <i>E. coli</i>	Horokiri Stream at Snodgrass Pauatahanui Stream at Elmwood Bridge Porirua Stream at Glenside Porirua Stream at Wall Park

⁷ Based on WRC's Rivers State of the Environment monitoring data. For full technical details on this data see http://gwrc_live/cms/assets/Plans--Publications/Regional-Plan-Review/Whaitua/Water-quality-and-ecological-health-in-Te-Awarua-o-Porirua-committe-meeting-14-September-2015.pdf

Known fresh water quality pressures

Using the attribute bands in the National Objectives Framework (NOF) (Appendix 2 of the NPS-FM), the four fresh water sites regularly monitored in the whaitua generally show good or excellent results. However, the national bottom line for 'secondary contact' with water is currently not met in the Porirua Stream at Wall Park (see Table 4 and Figure 4). None of these four sites meets the 'minimum acceptable state' for primary contact with water. More recent but short-term monitoring has indicated the Kenepuru Stream and Browns Stream are also likely to fail to meet the NOF bottom line for secondary contact.

Table 4. Assessment of regularly monitored sites in Te Awarua-o-Porirua whaitua against NOF bands

Grades A, B or C indicate Excellent, Good or Fair states of health respectively; D indicates a Poor state of health

Site name	NOF band ⁸				Likely periphyton band ⁹
	Nitrate (toxicity)		<i>E. coli</i>		
	Median	95 th percentile	Secondary contact	Primary contact ¹⁰	
Horokiri Stream at Snodgrass	A	A	B	D	A/B
Pauatahanui Stream at Elmwood Bridge	A	A	B	D	B/C
Porirua Stream at Glenside Overhead Cables	A	B	B	D	A/B
Porirua Stream at Wall Park	A	A	D	D	A/B

Known coastal water pressures

Overall, the harbour is considered to be in 'moderate' health. The Onepoto Arm is in poorer health than the Pauatahanui Inlet, with localised areas of contamination in marine sediments, particularly those in the south-western area of Onepoto Arm. Contaminants here include heavy metals, petroleum derivatives (PAHs) and pesticides, some of which are present in levels above 'early warning' guidelines. Ecosystems around the harbour are impacted by high sedimentation rates, pollutants and habitat loss. Sea grass is potentially also impacted by high nutrient levels.

Faecal contamination impacting the suitability of coastal water for swimming is an issue around the whaitua. In particular three sites consistently show 'poor' grades for suitability for recreation – the Onepoto Arm at the rowing club, Titahi Bay at South End, and Plimmerton Beach South (see Figure 5). These areas are affected by contaminants delivered there by stormwater and wastewater infrastructure.

⁸ Excepting periphyton and primary contact, all assessments based on monitoring Jul 2013 to Jun 2015

⁹ This assessment is indicative only as there is insufficient data to sufficiently benchmark

¹⁰ Based on assessment of data between 2008-2013

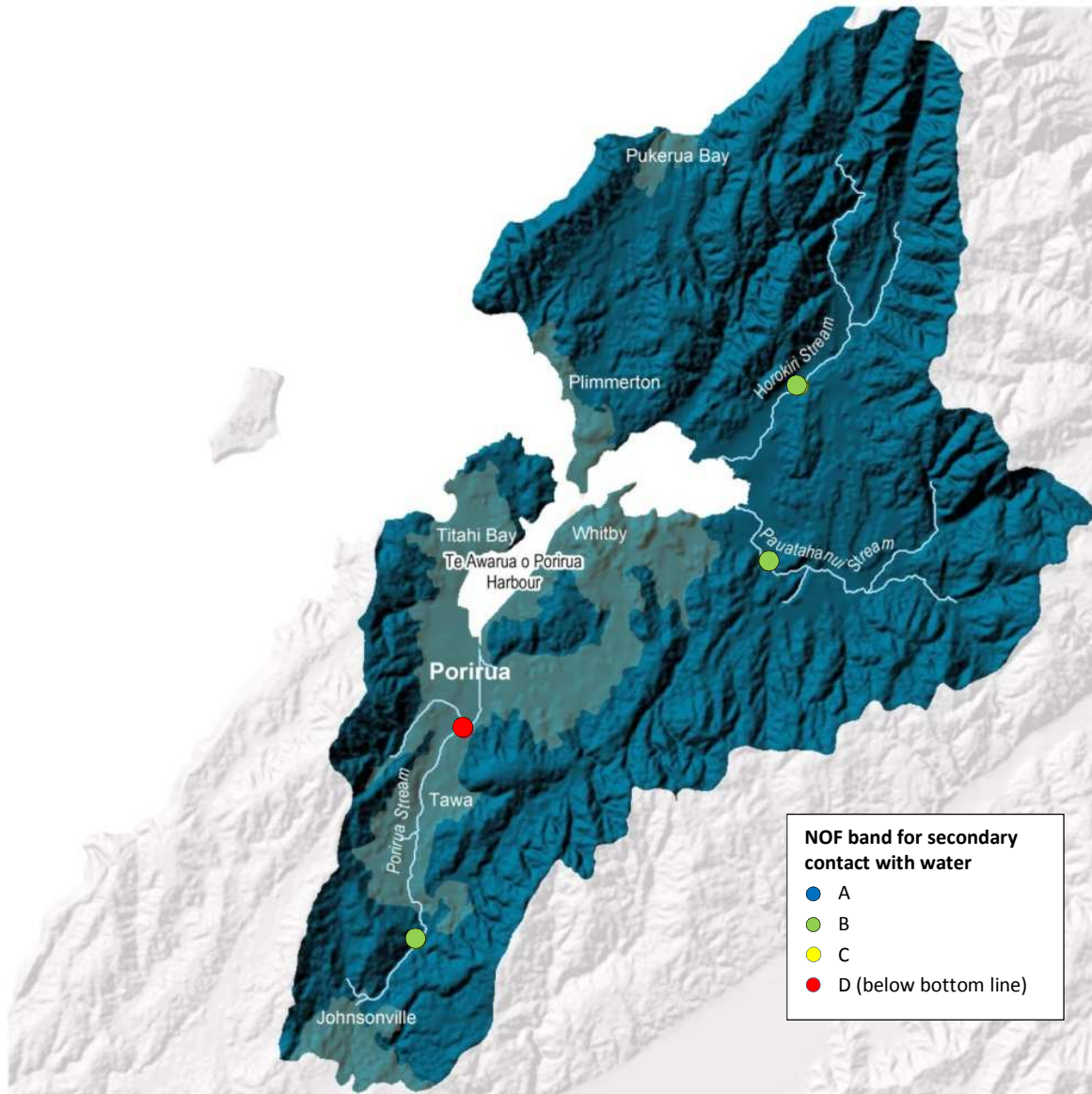


Figure 4. Fresh water sites in the whaitua assessed against NOF *E. coli* bands for secondary contact with water

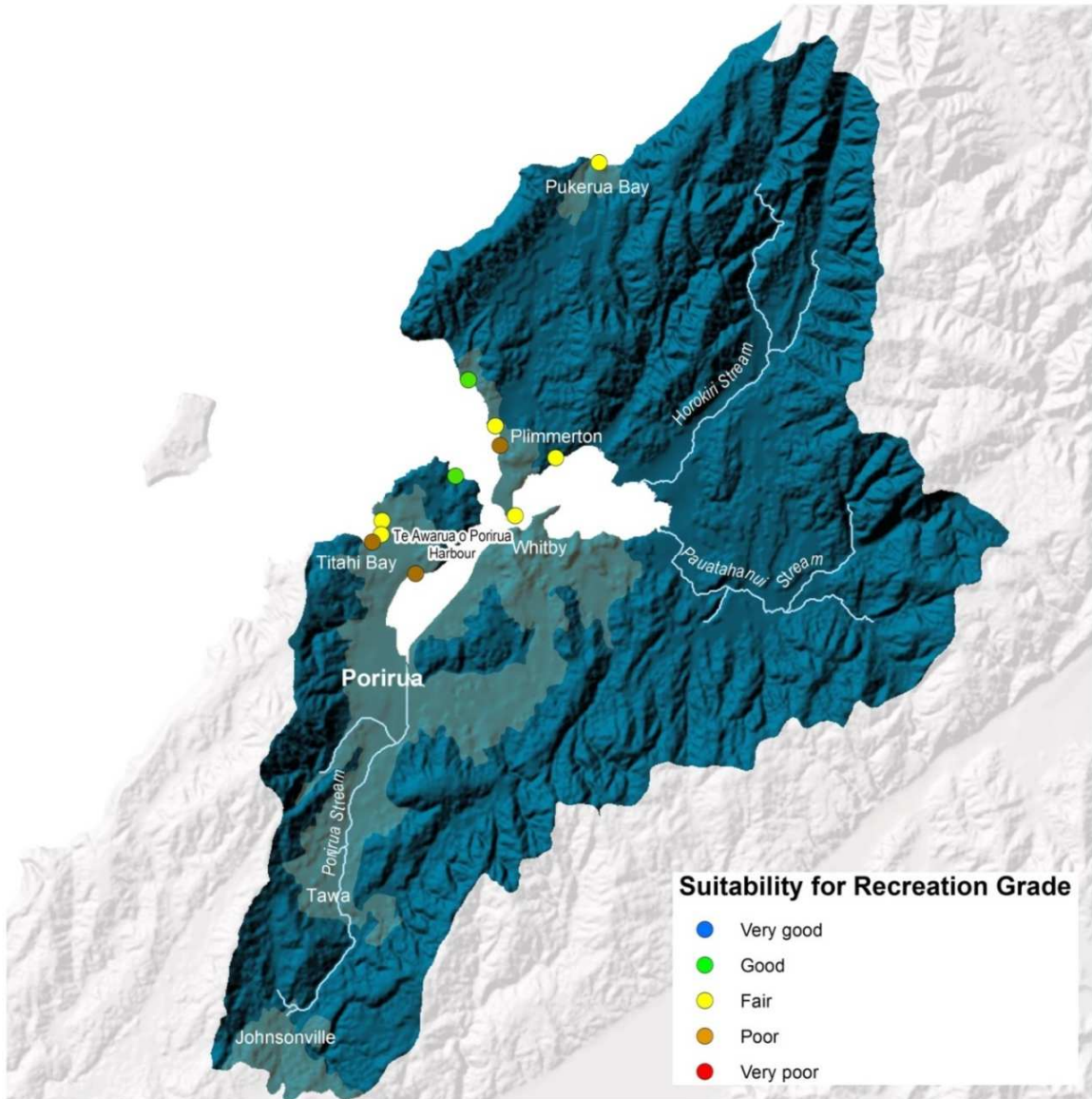


Figure 5. Coastal water sites in the whaitua assessed for suitability for recreation grades

Sedimentation and sediment health

Erosion and sedimentation are a particular issue in the whaitua given the depositional and sensitive nature of the harbour, with relatively erodible and high colluvium soils and an increase in sediment being delivered to the harbour as a result of changes in the way people use land. Studies of bathymetric data indicate sedimentation rates in the 25 years leading to 2009 averaged between 5mm and 9mm per year over the Onepoto and Pauatahanui arms, respectively. This compares to an estimated 'pre-catchment disturbance' sedimentation rate of between 0.1mm and 1mm per year. The Pauatahanui Inlet central mud basin and intertidal flats around Browns Bay have seen the highest sedimentation rates.

Increased sedimentation can impact

- ecosystem health by creating anoxic conditions, change substrate and light conditions and therefore fish, shellfish and algae species composition and health
- mauri
- recreational experience through reduced water clarity and unpleasant underfoot conditions
- shellfish beds reducing kai moana
- lead to the premature loss of the harbour through infilling

Increasingly, it is recognised that heavy rainfall delivers disproportionately high loads of sediment to the Harbour. For example, during the May 2015 flood the three largest catchments, Horokiri, Pauatahanui and Porirua delivered more sediment than was recorded in 2013 and 2014 combined.

Table 5 shows the relative health of sediments in the Onepoto and Pauatahanui arms of the Harbour.

Table 5. Attributes of sediment quality in Te Awarua-o-Porirua Harbour

Attribute	Onepoto arm		Pauatahanui arm	
	Intertidal	Subtidal	Intertidal	Subtidal
Mud content	Low-moderate	Very high	Low-moderate	Very high
Organic content	Low	Moderate-high	Low	Moderate-high
Sediment oxygenation	Moderate	Moderate-high	Moderate	Moderate-high
Nutrients (N&P)	Low-moderate	-	Low-moderate	-
Toxicants	Very low (some hotspots)	Zinc, copper, lead, DDT	Very low	DDT

4.6 Hydrology and water allocation

Te Awarua-o-Porirua whaitua is characterised by rolling to steep topography. Many streams, including three major stream catchments, are over 3000 hectares. Key stream catchments are shown in Figure 6.

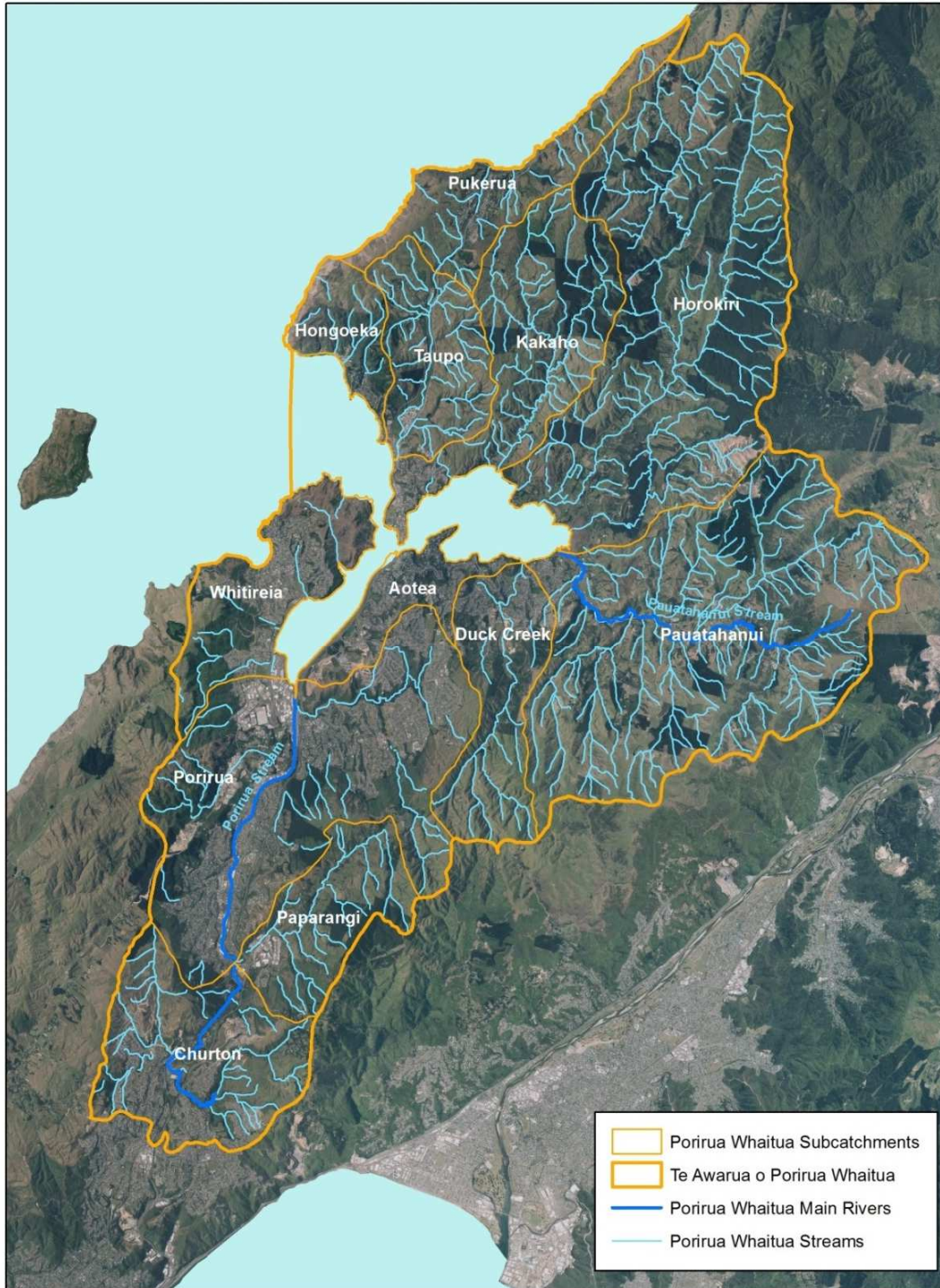


Figure 6. Major stream catchments of Te Awarua-o-Porirua

Flooding is the most frequently occurring hazard in the whaitua with a number of flood detention structures built as part of flood control measures. Streams in the lower parts of the whaitua have been altered for flood management purposes, most particularly the Porirua Stream which is constrained to a straightened and stop-banked channel at the bottom of the catchment. Table 6 describes the major fresh water hydrological features of the catchment.

Table 6. Fresh water hydrological features of Te Awarua-o-Porirua whaitua

Feature	Name	Description
Major stream catchments	Horokiri Stream	3290ha catchment Mix of pasture and forestry
	Pauatahanui Stream	Mix of pasture land and forestry in the upper catchment to pasture with some residential and commercial in the lower catchment
	Porirua Stream	5300ha catchment Extensive channel modifications in parts Lower reaches surrounded by some housing, light industry and the Porirua CBD and managed for flood protection purposes Five major tributaries feed in - Kenepuru, Mitchell, Belmont, Takapu and Stebbings streams
Wetlands	Taupo Swamp and Stream	30ha of nationally significant harakeke wetland
Lagoons (partly saline)	Papakowhai	Manmade or modified
	Aotea	Tidal to varying degrees and controlled by culvert size connected to Onepoto Arm
	Okowai	Low energy, depositional, contaminated environments
Artificial water bodies	Whitby Lakes Papakowhai Reserves Lakes	Man-made, ornamental lakes
Flood management structures	Cannons Creek Lakes	Two lakes over 8ha valley Designed as flood detention and attenuation basins Have filled with sediment over time, particularly following May 2015 floods, currently have little detention capacity
	Stebbing's Dam	Flood detention dam for land development in Stebbings Valley
	Seton Nossiter Dam	Flood detention dam for land development in Belmont Stream catchment
	Porirua Stream debris arrestor (Glenside)	Railway iron construction to capture debris for regular removal

There are no significant groundwater aquifers in the whaitua meaning all current water takes are from streams. There are six water take consents currently issued in the whaitua, far fewer in number than in the other whaitua in the region. These water takes are predominantly used for irrigation purposes and are typically for small operations (e.g. golf course irrigation).

4.7 Biodiversity

Indigenous biodiversity in Te Awarua-o-Porirua whaitua has suffered substantial decline since the arrival of Māori and Pakeha, including the loss of most of the once substantial forest cover (see Figure 7). Today, there remain many highly valued sites within the catchment, including a number of wetlands including the regionally significant Taupo Swamp. Streams support a range of native fish species. The harbour is an important home to a range of fish species across many life stages and the harbour and coastal margins provide habitat for many native bird species.

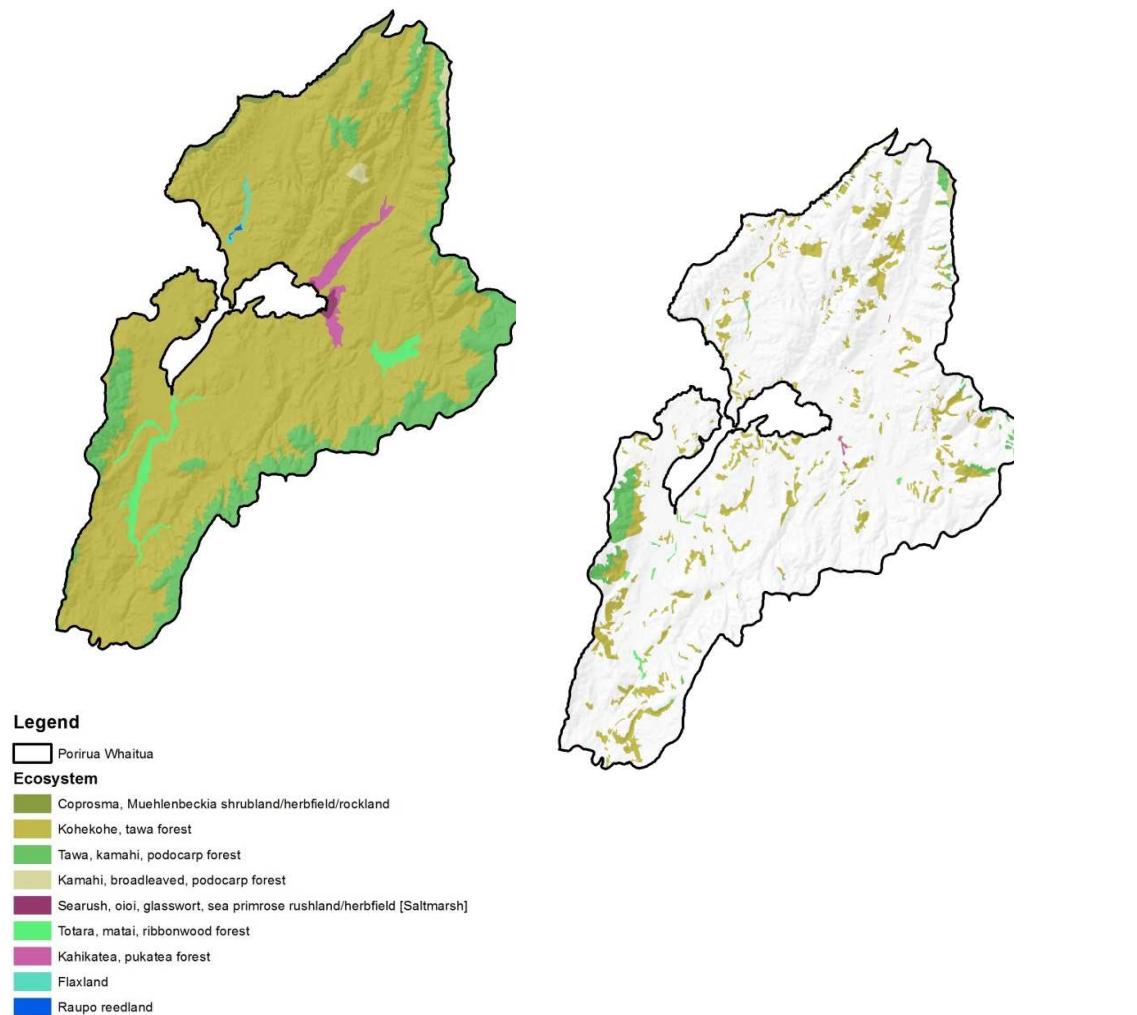


Figure 7. Terrestrial vegetation of the whaitua before Māori and Pakeha arrival (left); remnant native terrestrial vegetation of the whaitua (right).

Key factors affecting ecosystem health in the whaitua include

- Elevated levels of heavy metals and other toxic contaminants from urban stormwater runoff
- Reduced habitat including from channelisation, lack of riparian vegetation, barriers to fish passage
- Increased sediment deposition on stream beds and the harbour affecting invertebrate, plant and shellfish communities
- Elevated nutrient levels from discharges from stormwater and wastewater infrastructure

Impacts of land development have meant macroinvertebrate community health in fresh water ranges from good to poor, with poor stream health typically toward the bottom of urbanised catchments (see Figure 8). Some headwater streams are under pressure from land development for subdivision meaning they are lost to piping and reclamation – an estimated 4.7km of streams were lost per year in the five years to 2008.

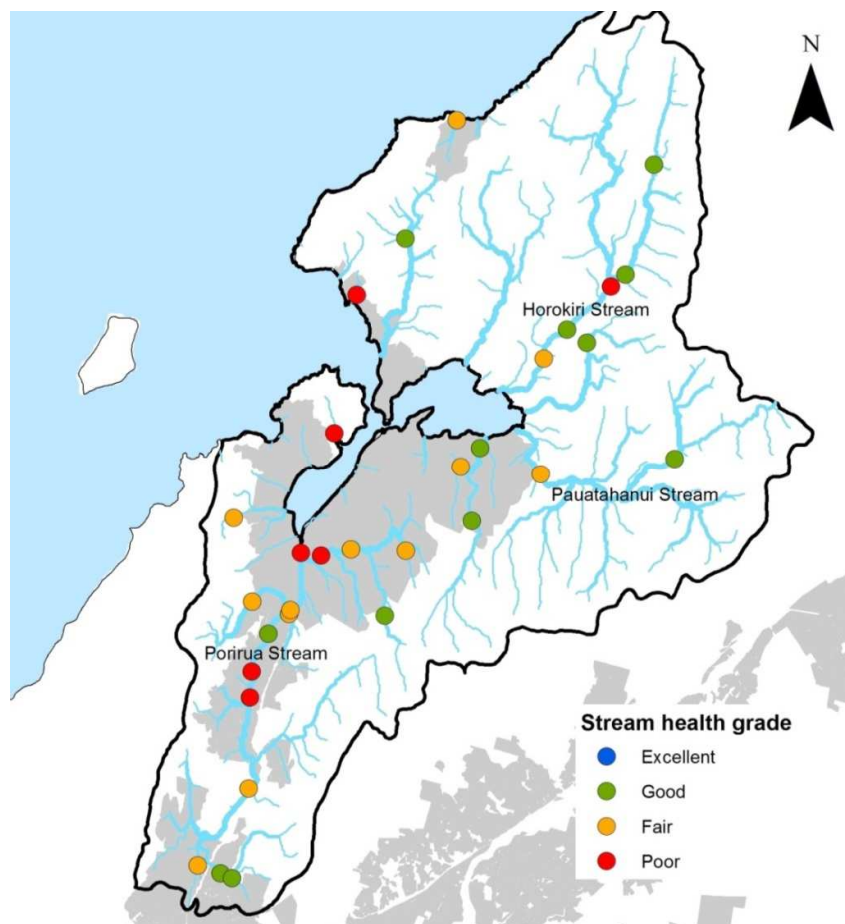


Figure 8. Te Awarua-o-Porirua whaitua stream health grades based on macroinvertebrate community health

4.8 Recreational uses of the harbour and streams

Water-based recreation in Te Awarua-o-Porirua whaitua focuses predominantly on the marine environment. The harbour and its immediate surrounds are used for many activities, including swimming, kayaking, waka ama, water skiing, wind surfing, picnicking and bird watching. Users include recreational organisations, educational groups and commercial recreation providers, as well as the wider community from both within and beyond the whaitua boundaries. While the harbour and open coast are often the focus of recreational activities in the whaitua, fresh water bodies are also important for walking and picnicking, whitebaiting and, historically, eeling.

Known pressures on recreational and cultural uses of the harbour and streams include¹¹

- Health issues from recreating in water, including at South Plimmerton Beach, Porirua Rowing Club and Titahi Bay
- Shifting sand banks and bar make harbour and bar entrance navigation difficult
- Shellfish are impacted by contaminants, with health warnings against collecting shellfish at Porirua Stream mouth, Semple Street outfall, Titahi Bay Road and Browns Bay
- Berth availability for vessels is limited and no suitable areas identified for expansion
- Harbour edge access limited or not suitable for walking and cycling
- Impacts on the amenity of the harbour and streams from litter and odour



Figure 9. Around the whaitua¹¹ Te Awarua-o-Porirua Committee standing at Strugnell farm, looking towards Pauatahanui Inlet; Dolly Varden Reserve; Kayaking on the Pauatahanui Inlet; Titahi Bay fossil forest¹¹

¹¹ Sourced from <http://juliansrockandiceblog.blogspot.co.nz/2013/03/titahi-bay-geology.html>

5 Using land

5.1 Forestry

Exotic forestry makes up around 14% of land use by area in the whaitua, about the same land area taken up each by indigenous forest and urban land uses. Forestry typically occurs on steeper slopes and higher in the catchments of the Porirua, Pauatahanui and Horokiri Streams. In general, water quality of streams and rivers under exotic forest shows good water quality compared to urban and pastoral land uses. Forestry also provides a range of ecosystem services, including mitigating flood risk, regulating nutrient supply, providing some habitat for indigenous biodiversity and space for recreation.

The key risk for forestry operations in terms of water quality comes during the harvest phase when sediment is released from activities including road and landing construction and disturbance of slopes from harvesting methods. These issues are exacerbated by historic practices of planting up to stream edges and poor practice in planting layout for the harvesting process. During and immediately following harvest are also high risk periods for erosion and landslides which can deliver sudden high loads of sediment. Increasingly the forestry industry is promoting good practice through industry codes¹².

5.2 Urban growth and development

The demand for new houses in the broader Wellington metropolitan area is heavily concentrated in Te Awarua-o-Porirua whaitua.

Porirua City area

Land use development in the PCC area is characterised by a number of factors¹²

- Council's 'city of villages' strategic approach
- Access and connectivity to Wellington
- Ease of access to public transport
- The harbour and its sensitivity
- Hills and soils constrain pastoral farming
- Concentration of greenfield subdivision
- Residential demand for coastal views and access
- Construction of Transmission Gully Highway

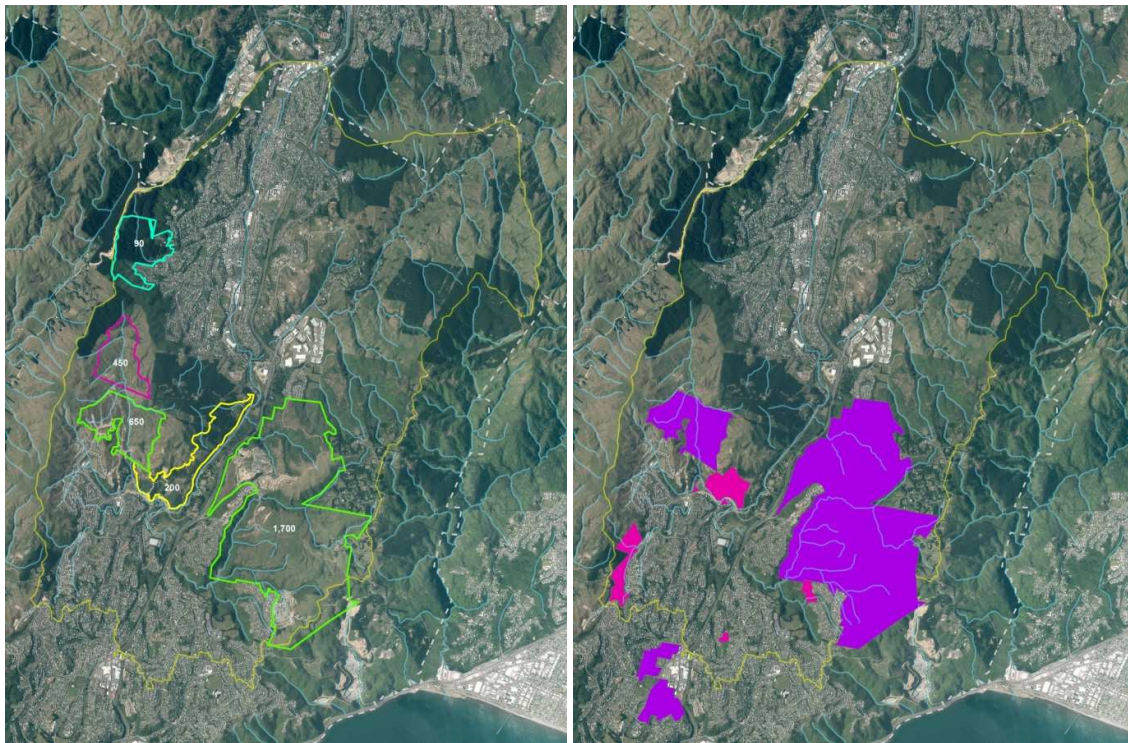
While development of low density suburban housing is regularly provided for within the PCC boundaries, there is increasing demand for high density housing and rural residential properties, both of which the PCC area lack. Planned growth is often directed by structure planning, though

¹² For example, <http://www.nzfoa.org.nz/resources/file-libraries-resources/codes-of-practice/44-environmental-code-of-practice/file>

growth in some identified areas (e.g. Judgeford and the Northern Growth area) is potentially constrained by limited infrastructure provision, most particularly in regards to the wastewater network. There are no special housing development areas (SHDAs) currently identified with the PCC boundaries.

Wellington city area

Within WCC area, the top of the Porirua Stream catchment has seen substantial growth in mainly residential housing over the past 10 years. The Northern Growth Framework (NGF), encompassing the area between Newlands and Grenada North, sets out how residential, commercial and road development will be laid out over the coming decade, eventually providing for 1700 houses (see Figure 10). There are four SHDAs within the WCC boundaries of the whaitua, being areas at Lower Stebbings Valley, Glenside, Ohariu Valley Road and that within the NGF at Lincolnshire Farms/Woodridge (Figure 11).¹³ Road development proposals within this area include the Petone to Grenada link, options for which track through the Lincolnshire Farms area from Horokiwi and the Korokoro Stream valley.



Figures 10 and 11. Identified growth areas within WCC area of whaitua (left); WCC Special Housing Development Areas (right)

¹³ For further information, see <http://wellington.govt.nz/services/environment-and-waste/urban-development/housing-accord/special-housing-areas>

6 Three waters infrastructure

The PCC and WCC water infrastructure in the whaitua is managed for the councils by Wellington Water Limited (WWL).¹⁴ Three waters infrastructure includes stormwater, wastewater and water supply assets and in Te Awarua-o-Porirua has a value in the many hundreds of millions of dollars. Information from WWL on the three waters assets of the whaitua (including those areas of WCC outside the whaitua boundaries) is summarised in the table below. This shows that the PCC assets (which fall entirely within the whaitua) have value in proportion with the population of PCC, but have a much greater length of three waters pipelines proportionately than WCC, HCC and UHCC.

Table 7. Porirua City Council and Wellington City Council three waters summary data

	PCC	WCC	PCC as proportion of 4 TAs (%)	WCC as proportion of 4 TAs (%)
Asset value	\$323m	\$1340m	13	55
Population	53000	197600	13	50
Connections	18220	69030	13	50
Pipelines	1017 km	2946 km	29	45
Pumping stations	80	98	29	35
Reservoirs	18	74	14	56

6.1 Wastewater network

The PCC has 45 pump stations around the wastewater network, a comparatively high number due to the rolling topography, location of treatment and discharge facilities and the spread out nature of the suburbs. When the weather is dry, the wastewater network is designed to handle waste volumes for the next 30 years. In wet weather, high infiltration and inflow rates into the wastewater network from the stormwater network, groundwater and water bodies mean overflows occur around the whaitua, including at pump stations, manholes and at the treatment plant south of Titahi Bay.

Overflows are expected in most city infrastructure during high rainfall. For instance, the Wellington and Christchurch city councils expect that wastewater infrastructure should perform to the standard of no more than four overflows per location per year. Recent installation of monitoring and reporting systems to understand the nature of flows in the wastewater network mean WWL has more detailed information for addressing issues and planning for the long term upgrade of wastewater conveyance and treatment systems. This will help establish the current overflow standards around Porirua city. PCC has allocated \$28m in the Long Term Plan 2015-2025 for capacity upgrades at the Porirua Wastewater Treatment Plant.

¹⁴ <http://wellingtonwater.co.nz/>

6.2 Stormwater network

The stormwater network of the whaitua comprises many localised piped and not piped parts, often discharging in to local streams before discharging to the harbour or the open coast. Stormwater systems carry rainwater quickly away from urbanised areas, protecting people and property from flooding, but also carrying contaminants and causing erosive damage on the way. In rural areas of the whaitua there are less impervious surfaces, meaning that rainfall tends to soak away into soil or follow natural overland flow paths, meaning less contamination and fewer erosion and scour issues from stormwater volumes.

As much of the suburban area around the harbour is low lying, maintaining the capacity in stormwater pipes to carry water away during rain is critical. To retain this carrying capacity, wa stop valves have been placed on a number of outlets around the catchment. Wa stop valves, however, present issues when installed on pipes that are piped former streams as they tend to prevent fish passage.

6.3 Water supply network

There are no municipal water supply catchment areas or abstraction points in the whaitua area, with all municipal drinking water supplies being piped in from the Hutt Valley and Wainuiomata supplies. Daily water consumption in PCC is lower than that of WCC, being 308L per capita in PCC compared to 359L per capita in WCC.

7 Conclusion and next stages

This report marks the end of the Information Phase for Te Awarua-o-Porirua Whaitua Committee, but not the end of information being provided. In 2016, the project team will continue to work with the Committee to identify information gaps and work to address these. The Committee has already identified a need for information on a range of topics, including on the construction and operation of Transmission Gully, ecosystem services, land use development tools and mechanisms, stormwater and wastewater infrastructure performance and future infrastructure development.

The information from this phase has also been further synthesised with other knowledge into a map of the whaitua showing issues and characteristics of each sub-catchment – this can be seen in Appendix 2.¹⁵ Into the New Year, the project team will continue to work to fill the information gaps and find ways of illustrating the constraints, challenges and opportunities in land and water management in the whaitua for the Whaitua Committee.

¹⁵ With thanks go to Keith Calder for this work

Appendix 1

Meetings, workshops and fieldtrips of Te Awarua-o-Porirua Whaitua Committee February to December 2015

All presentations by Te Awarua-o-Porirua whaitua project team staff, unless indicated otherwise.

Date	Location of meeting	Report or presentation
INTRODUCTION PHASE		
18 February	Takapuwahia Marae	Introduction and presentations by Ngāti Toa Rangatira
INFORMATION PHASE		
9 April	Gear Homestead	REPORT` Roles of Regional and Territorial Councils REPORT` Overview of the National Policy Statement for Freshwater Management 2014 REPORT` Overview of the New Zealand Coastal Policy Statement 2010 REPORT` Key points of the Porirua Harbour and Catchment Strategy and Action Plan 2012
22 April	FIELDTRIP` Porirua Stream catchment	
6 May	FIELDTRIP` Pauatahanui catchment	
28 May	Porirua City Council chambers	REPORT` Te Awarua-o-Porirua Whaitua – History and archaeology REPORT` The physical geography of Te Awarua-o-Porirua whaitua REPORT` Te Awarua-o-Porirua Whaitua – Recreational uses PRESENTATION` Demographics
2 July	Pataka	PRESENTATION` Wellington Water story¹⁶ PRESENTATION` Proposed Natural Resources Plan for the Wellington Region (1) PRESENTATION` Collaborative modelling project¹⁷
23 July	Plimmerton Hall	WORKSHOP` Development of public engagement and communications plan (1)
27 July	Takapuwahia Marae	Presentations on cultural health monitoring, cultural use, iwi projects and the iwi and wharenui history ¹⁸
13 August	FIELDTRIP` Te Ngāti Toa exhibition, Te Papa	
27 August	Judgeford Golf Course	REPORT` Contaminants in Te Awarua-o-Porirua whaitua PRESENTATION` Sediments in Porirua Harbour¹⁹ PRESENTATION` Storm and wastewater in Te Awarua-o-Porirua Whaitua²⁰ PRESENTATION` Proposed Natural Resources Plan for the

¹⁶ Presented by Colin Crampton, Wellington Water Limited

¹⁷ Presented by Natasha Tomic, Wellington Regional Council

¹⁸ Presented by members of Ngāti Toa Rangatira

¹⁹ Presented by Mal Green, NIWA

²⁰ Presented by Tim Strang and Rob Blakemore, Wellington Water Limited

		Wellington region (2) ²¹
14 September	Linden Social Centre	REPORT Hydrology and Water Allocation in Te Awarua-o-Porirua ²² REPORT Water quality and ecological health in Te Awarua-o-Porirua REPORT Biodiversity of Te Awarua-o-Porirua Whaitua
23 September	Tawa Community Centre	WORKSHOP Development of public engagement and communications plan (2) WORKSHOP Overall work programme
6 October	Churton Park Community Centre	PRESENTATION Porirua Catchment development growth – Wellington City Council ²³ PRESENTATION Porirua City development and growth – Porirua City Council ²⁴ PRESENTATION Regional planning and urban development
29 October	Mana Cruising Club	PRESENTATION Forestry and freshwater The role of commercial planation forestry in the status of our water quality ²⁵ WORKSHOP Summary of information phase
24 November	Anchor Church, Whitby	WORKSHOP Development of public engagement and communications plan (3)
DELIBERATION PHASE		
3 December	Plimmerton Boat Club	PRESENTATION Values and attributes WORKSHOP Planning for values and attributes work

²¹ Presented by Jonathan Streat, Wellington Regional Council

²² Presented by Mike Thompson, Wellington Regional Council

²³ Presented by Nathan Stocker, Wellington City Council

²⁴ Presented by Matt Trlin, Porirua City Council

²⁵ Presented by Kit Richards, PF Olsen Limited

Appendix 2

TE AWARUA-O-PORIRUA WHAITUA CATCHMENTS v1A 30.10.15

PORIRUA HARBOUR CATCHMENT AREA

MAIN CHARACTERISTICS AND ISSUES

[THE INFORMATION PRESENTED HERE IS THE AUTHOR'S. ANY ERRORS & OMISSIONS ARE HIS ALONE]

