greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

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Progress in Implementing Porirua and Catchment Strategy and Action Plan

1. Purpose

To inform the Committee of progress towards implementing the Porirua Harbour and Catchment Strategy and Action Plan (the Strategy).

2. Background

Porirua Harbour is the largest estuary in the lower North Island and is well recognised for its ecological, cultural, aesthetic and recreational values. Porirua Harbour is comprised of two arms – the larger Pauatahanui Inlet and the Onepoto Arm.

Urban and rural development in the Porirua catchment over the past 150 years has had a detrimental impact on the health of the two estuaries, including increased rates of sedimentation and pollution.

In 2006, Porirua City Council formed the Porirua Harbour Programme and established the role of Harbour Coordinator and a long-term funding package.

In 2008, the four key stakeholders with responsibility for, or an interest in, the management of the Porirua Harbour formed a partnership to work together to produce the Porirua Harbour and Catchment Strategy. The four were Ngati Toa Rangatira, Porirua City Council, Wellington City Council and Greater Wellington Regional Council (GWRC). Additionally, agencies such as the NZ Transport Agency, Department of Conservation, Ministry of Fisheries and Regional Public Health were involved, as were the various community groups with an interest in the harbour.

Following a series of public seminars and consultation with various agencies the Strategy was refined to reflect the three big ecological issues facing the harbour:

- Excessive sedimentation rates – With the removal of vegetation from the catchment and the disturbance of soil during the construction of roads, houses and subdivisions, elevated levels of sediment are entering the harbour. Unless this rate is reduced, irreversible harm will occur to the ecological and recreational values of the harbour.

- Pollutants – Contaminants (e.g. nutrients, heavy metals, pathogens) enter the harbour as a result of a range of legal (e.g. zinc from roofs) and illegal (e.g. cross-connections between sewer and stormwater systems) processes. Contamination has implications for both human and ecological health.

- Ecological degradation – Sedimentation, pollution and direct harbour edge modification (e.g. for the construction of roads, railways etc.) have destroyed significant areas of the original estuary habitat. The reclamation of large areas of intertidal flats and a reduction in area of saltmarsh and seagrass habitats reduces the ability of the estuary to provide critical ecosystem services (e.g. flood and erosion protection, sediment and nutrient capture) and essential habitat for birds, fish and marine invertebrates.

The Strategy sets challenging targets for each of these areas and identifies a set of objectives and actions to achieve them. For instance, with respect to sedimentation the targets are:

- Interim: 50% reduction in current sediment inputs from all tributary streams by 2012

- Long Term: 1mm per year average sedimentation rate for both arms of the harbour (the current rate is approximately 6mm)

The Strategy was adopted by Ngati Toa Rangatira, Wellington City Council, Porirua City Council and Greater Wellington Regional Council in April 2012.

3. Implementation of the Strategy

GWRC contributes to the implementation of the Strategy by:

- Membership of the Porirua Harbour Programme Steering Group and various technical support groups relating to science and environmental education. The Steering Groups contains representatives of the four programme partners – the three Councils and Ngati Toa;

- Undertaking scientific monitoring and investigations to gain an understanding of the ecological and physical state of the harbour and the impacts of natural and human-induced changes. Delivering a range of programmes intended to mitigate the human impacts on the natural values of the harbour and, in some cases, restore depleted ecosystems.

3.1 Work programmes supporting the development and implementation of the Strategy

3.1.1 Scientific Monitoring and Investigations

Monitoring of Porirua Harbour and its catchment has been in place for more than 25 years. The early monitoring was largely limited to microbiological water quality at popular swimming and shellfish collection sites in the harbour together with stream flow and general water quality and ecological health of the harbour's three main tributaries (Porirua, Horokiri and Pauatahanui streams)

Since around 2004 GWRC's coastal monitoring programme expanded in scope and with Porirua Harbour identified as a key coastal environment in the Wellington region, this led to a series of scientific investigations. These included:

- Reconstruction of the sedimentation history of Pauatahanui Inlet in 2004, jointly funded with PCC

- Intertidal sediment quality and shellfish investigation with GNS Science focussing on trace metals and polycyclic aromatic hydrocarbons (2004)

- Subtidal sediment quality and benthic ecology investigation, with a focus on measuring the impacts of ongoing discharges of stormwater contaminants (baseline investigation in 2004, leading to the establishment of a subtidal monitoring programme and subsequent surveys in 2005, 2008 and 2010)

- Investigation of microbiological and trace metal contaminants in shellfish flesh as part of a wider regional shellfish investigation (2006)

- Multiple stormwater-related investigations, including assessments of urban stormwater quality, stormwater contaminants present in urban streams and in streambed sediments and stormwater contaminants present in surface estuarine sediments at the southern end of the Onepoto Arm and the mouths of Onepoto Stream, Duck Creek and Browns Stream (2009)

- A baseline broad scale survey of the types of substrate (eg, firm vs soft sand, mud, gravel) and vegetation (eg, macroalgal beds, seagrass beds, saltmarsh vegetation, exotic weeds) present throughout the intertidal areas of the Porirua Harbour (late 2007 with subsequent annual mapping of nuisance macroalgae cover)

- Fine-scale estuarine monitoring at two intertidal sites within each arm of the harbour, assessing sediment texture, sediment nutrients, organic content and toxic contamination, and sediment dwelling fauna and flora (annually since 2008 with more detailed surveys in the first three years to establish a baseline)

- Establishment of sedimentation plates at selected intertidal and subtidal locations to enable long-term monitoring of sedimentation rates (first plates installed in late 2007, with additional plates added over time)

Current ongoing monitoring in the harbour is based around fine scale sediment quality and ecological monitoring and five-yearly broad scale habitat surveys. Recreational water quality monitoring is also ongoing at three harbour sites, as is monitoring of stream flow and the general 'health' of the harbour's three main tributaries.

Additional monitoring and investigations initiated prior to the launch of the Porirua Harbour and Catchment Strategy were:

- Monitoring of general water quality (nutrients, chlorophyll *a*, turbidity and suspended sediment concentrations) at six locations in Porirua Harbour (monthly during both 2011 and 2012)

- Monitoring of water quality (including heavy metals) in Mitchell and Kenepuru streams (monthly over 2011/12)

- A study to assess the feasibility of seagrass restoration in the harbour in 2011/12

3.1.2 Delivery programmes

(a) Pauatahanui Vegetation Frameworks (PVF) programme

Established in 2006, this programme arose from the then focus on the Pauatahanui arm of the harbour only. The programme involves working with willing landowners in the Pauatahanui Inlet catchment by providing advice and financial incentives to retire erosion prone land and plant riparian margins. The programme is jointly funded by GWRC and PCC and is delivered by a contractor.

Since its inception the project has made significant progress:

- Projects have been undertaken or are occurring now with a total of 30 landowners

- 8,100m of new permanent fence has been constructed to protect riparian areas and wetlands

- 39,000 indigenous seedlings have been planted, predominantly in riparian areas. A further 9,500 will be planted under the PVF this winter, plus an additional 5,000 in Whitireia Park within the Onepoto catchment

- Funding for exotic forest projects on two properties in the upper Horokiri catchment has been facilitated under the Afforestation Grants Scheme. Projects include planting of a 50,000 exotic forest seedlings and shifting approximately 40 hectares of steep land from pasture to forestry. The co-ordinator is managing the planting of another 3,000 exotic seedlings (paid

for by the land owner) in conjunction with a 25ha steep land retirement project this winter

- Retirement of 40 hectares of scrubland and indigenous forest regeneration in the upper catchment. Some of this was achieved under the Afforestation Grants Scheme

- Covenanting underway for 6 hectares of mature lowland podocarp/tawa forest in the upper catchment

- Fencing and planting of approximately 1.5 km of the lower Horokiri Stream

- Fencing and planting of 900m of the lower Kakaho Stream and an additional 200m side stream

- Fencing to remove stock access from approximately 3.0 km of tributary streams

- Nine property plans have been completed or are underway covering 2,900 hectares, or around 26% of the catchment of Pauatahanui Inlet. Some of these plans have been funded from other work areas (e.g. GWRC Parks funding)

(b)   Guardians of Pauatahanui Inlet cockle count

Since 1992, the Guardians of Pauatahanui Inlet (GOPI) with the assistance of other community volunteers have undertaken eight surveys of the cockle populations within Pauatahanui Inlet. Cockles are a useful indicator of the health of the estuary and this triennial survey is building a valuable long-term dataset.

GWRC provides logistical and financial support for the project including funding the analysis of the results by NIWA.

Ngati Toa are currently considering a similar shellfish survey of the Onepoto Inlet and GWRC has agreed to support such a survey should it proceed.

3.2   New initiatives arising from the Strategy

3.2.1   Scientific Monitoring and Investigations

- During the development of the draft Porirua Harbour and Catchment Strategy, and since its launch in April 2012, GWRC convened three Porirua Harbour science workshops to prioritise science and monitoring needs for the harbour and its catchment. These workshops have been multi-agency and multi-disciplinary, engaging a range of terrestrial and aquatic scientists, as well as policy, consents and catchment management staff from GWRC, WCC and PCC.

- Having identified at the first science workshop in 2011 that sedimentation is the biggest environmental issue for Porirua Harbour, the primary science focus has been on determining how much sediment is coming into the

harbour and where it is coming from. This was initially achieved using the CLUES (Catchment Land Use for Environmental Sustainability) model to estimate subcatchment areas under different land use and the amount of sediment expected to be lost from those areas. This model indicated that the catchments of Horokiri, Pauatahanui and Porirua streams generate the most sediment inputs to the harbour. In response turbidity monitoring stations were installed in the lower reaches of these streams. These stations provide a continuous, real-time measure of turbidity in the streams. Automatic water sampling equipment has also been installed at these stations and is programmed to collect stream water samples during wet weather for suspended sediment analysis to calibrate the turbidity sensors. This monitoring is expected to continue for the next two to three years, after which time we should be able to accurately quantify sediment inputs to the harbour and use this information to inform limit-setting in the catchment.

- Spot stream water samples are also being collected during wet weather events from several locations in the Porirua Stream catchment, including the stream's tributaries (eg, Takapu and Kenepuru streams). These samples are tested for suspended sediment content[1] and will provide more detailed information on which subcatchments and associated land-uses are contributing the most sediment in this catchment.

- A 'Source-to-Sink' model was developed by NIWA to estimate where in the harbour incoming sediment would deposit and, following further installations in 2013, there are now 18 sediment plate sites spread throughout the harbour at which annual sedimentation rates are measured. These measurements are being used to validate or 'ground-truth' the Source-to-Sink model. It is anticipated that this model (which is currently being documented along with the CLUES modelling outputs) will ultimately be used as a tool to determine options to reduce sediment runoff from different subcatchments and achieve the sedimentation targets envisioned by the strategy.

3.2.2 Delivery programmes

(a) Pauatahanui Inlet ecological maintenance

GWRC have over a number of years undertaken extensive environmental weed control and revegetation in the salt marsh fringe from Kakaho estuary to the Pauatahanui Wildlife Reserve. In order to ensure this investment is not lost an ongoing environmental weed and pest animal control programme has been established across the area. Within the Pauatahanui Wildlife Reserve GWRC also provides site preparation and maintenance for the revegetation work in collaboration with Forest and Bird. This work commenced in summer 2013/14.

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[1] Microbiological and nutrient testing has also been carried out on some wet weather stream samples.

(b)   Te Onepoto Bay estuarine restoration programme

Te Onepoto Bay restoration programme will begin in winter 2014 to improve the ecological health in the Te Onepoto Arm. Revegetation of the estuary edge with saltmarsh and coastal plants will begin this year followed by revegetation of the areas in Te Onepoto wetland in 2015 and 2016.

(c)   Estuarine Restoration Options report

The Porirua Harbour Estuary Restoration Options report was completed in 2013 and identifies potential projects to improve the ecological health of the estuary with a particular emphasis on identifying projects with the potential for community involvement. The report has helped identify three projects for immediate implementation - Te Onepoto estuary and wetland, Porirua Stream mouth and environmental weed control in areas of Pauatahanui Inlet.

(d)   Porirua Stream mouth restoration plan

Proposals from suitably qualified consultants have been invited to develop an ecological restoration plan for the Porirua Stream Mouth and estuary. The enhancement will provide valuable habitat for estuarine fauna, improve local biodiversity and increase public awareness of and appreciation for the area. The consultant will be selected by mid-February and with implementation of the plan commencing in winter 2014.

(e)   Catchment Sediment Reduction plan

The Porirua Harbour Catchment Sediment Reduction Plan is in final stages of development. The plan identifies different possible approaches to reducing the loss of sediment from the harbour catchments. Using the recommendations from this report, staff will evaluate potential programmes, particularly those that might encourage landowners to retire land or change to alternative land uses or land management practices. The plan has also identified the potential for artificial wetlands to intercept sediment before it enters the harbour. Particular attention will also be paid to opportunities to further reduce sediment loss from lands owned or managed by GWRC, including Belmont Regional Park and Battle Hill Farm Forest Park.

(f)   School and Community Education

GWRC has facilitated meetings of parties involved in school and community education to share information about programmes in the catchment.

GWRC is also working with Enviroschools to use their network to make information about Porirua Harbour available to local schools so it can be integrated into their programmes. Enviroschools are planning a specific school event focusing on the Porirua harbour catchment which will be supported by GWRC.

4.   Communication

Every opportunity is taken to communicate all aspects of this collaborative project including the findings of scientific studies, the implementation of projects and any opportunities for community involvement.

Regular columns are published in the Kapi Mana news highlighting specific environmental issues such as contamination of stormwater systems from activities such as car-washing and the actions individuals can take to mitigate these.

5.   The decision-making process and significance

No decision is being sought in this report.

6.   Recommendations

That the Committee:

1.   ***Receives*** *the report.*

2.   ***Notes*** *the content of the report.*

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