greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

If calling please ask for: Democratic Services

30 November 2017

Environment Committee

Order Paper for the meeting of the Environment Committee to be held in the Council Chamber, Greater Wellington Regional Council, Level 2, 15 Walter Street, Te Aro, Wellington on:

Wednesday, 6 December 2017 at 10.00am

Membership

Cr Kedgley (Chair)
Cr Brash (Deputy)

Cr Blakeley
Cr Gaylor
Cr Laidlaw
Cr McKinnon
Cr Ponter
Cr Swain

Cr Donaldson
Cr Laban
Cr Lamason
Cr Ogden
Cr Staples

Peter Gawith

Ihaia Puketapu

Recommendations in reports are not to be construed as Council policy until adopted by Council

Environment Committee

Order Paper for meeting to be held on Wednesday, 6 December 2017 in the Council Chamber, Greater Wellington Regional Council, Level 2, 15 Walter Street, Te Aro, Wellington at 10.00am

Public Business

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Please note that these minutes remain unconfirmed until the meeting of the Environment Committee on 6 December 2017.

Report 17.439
1/11/2017
File: CCAB-10-398

Minutes of the Environment Committee meeting held on Wednesday, 1 November 2017 in the Nicholson Room, Copthorne Hotel, 100 Oriental Parade, Wellington at 10.02am

Present

Councillors Kedgley (Chair), Blakeley, Donaldson, Gaylor, Laban, Laidlaw, Lamason, McKinnon, Ogden, Ponter, Staples and Swain.

Peter Gawith

Public Business

1 **Apologies**

Moved *(Cr Kedgley/ Cr Laidlaw)*

That the Committee accepts the apology for absence from Councillor Brash.

The motion was **CARRIED**.

2 **Declarations of conflict of interest**

There were no declarations of conflict of interest.

3 **Public Participation**

There was no public participation.

4 **Confirmation of the public minutes of 20 September 2017**

Moved *(Cr Blakeley/ Cr Lamason)*

That the Committee confirms the public minutes of the meeting of 20 September 2017, Report 17.353.

The motion was **CARRIED.**

Noted Officers agreed to organise a further fieldtrip to Transmission Gully for Councillors.

Officers agreed to also invite Te Awarua-o-Porirua Whaitua members to the joint workshop with Te Upoko Taiao - Natural Resources Plan Committee.

5 **Flood Protection Asset Management Report 2017/18**

Colin Munn, Team Leader, Flood Protection Operations, spoke to the report.

Report 17.317 File ref: CCAB-10-385

Moved *(Cr Donaldson/ Cr Lamason)*

That the Committee:

1. *Receives the report.*
2. *Notes the content of the report.*
3. *Notes the confirmation of the 15 Scheme Advisory Committees and Friends Groups that assets have been maintained to their satisfaction.*
4. *Confirms that the 15 River Management Schemes in the region have been maintained to a satisfactory level.*

The motion was **CARRIED.**

6 **Floodplain Management Plan Implementation: Annual Progress Report to June 2017**

Alistair Allan, Team Leader, FMP Implementation, spoke to the report.

Report 17.394 File ref: CCAB-10-379

Moved *(Cr Lamason/ Cr Staples)*

That the Committee:

1. *Receives the report*
2. *Notes the content of the report*
3. *Recommends that a copy of the report be sent to the Region's territorial authorities*

The motion was **CARRIED.**

7 **Regional Pest Management Strategy 2002-2022: Operational Plan Report 2016/17**

Davor Bejakovich, Manager, Biosecurity, spoke to the report.

Report 17.428 File ref: CCAB-10-390

Moved *(Cr Laidlaw/ Cr Donaldson)*

That the Committee:

1. *Receives the report*
2. *Notes the content of the report*
3. *Approves the Operational Plan Report 2016/17 (Attachment 1) for the Regional Pest Management Strategy 2002-2022.*
4. *Notes that a copy of the Operational Plan Report 2016/17 will be forwarded to the relevant Ministers.*
5. *Notes that the Operational Plan Report 2016/17 will be made available for public inspection.*

The motion was **CARRIED.**

8 **Key Native Ecosystem Programme: Annual Report 2016/17**

Tim Porteous, Manager, Biodiversity, spoke to the report.

Report 17.420 File ref: CCAB-10-383

Moved *(Cr Staples/ Cr Blakeley)*

That the Committee:

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

The motion was **CARRIED.**

Noted Officers agreed to provide information to Councillors about lizard populations within the Wellington Region collected by the Department of Conservation.

The meeting adjourned at 11.23am and reconvened at 11.31am.

9 **Parks Network Plan Review 2017-18**

Fiona Colquhoun, Parks Planner, spoke to the report.

Report 17.424 File ref: CCAB-10-387

Moved *(Cr Laidlaw/ Cr Lamason)*

That the Committee:

1. *Receives the report*
2. *Notes the content of the report*
3. *Approves the proposed programme for the Park Network Plan review as set out in this report.*

The motion was **CARRIED**.

Noted Officers agreed to provide a copy of the communication plan for the review to Councillors once it has been completed.

10 **Whaitua Programme Update - November 2017**

Alastair Smaill, Project Manager, Whaitua, spoke to the report.

Report 17.405 File ref: CCAB-10-380

Moved *(Cr Donaldson/ Cr Blakeley)*

That the Committee:

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

The motion was **CARRIED.**

Noted Officers agreed to provide a copy of the terms of reference for the Whaitua Committees to Councillors prior to the joint Environment Committee and Te Upoko Taiao – Natural Resources Plan Committee workshop scheduled for 14 November 2017.

11 **Report on the Climate Change and Business Conference organised by the Environmental Defence Society**

Cr Kedgley, Chairperson, Environment Committee, and Cr Blakeley, spoke to the report.

Report 17.426 File ref: CCAB-10-389

Moved *(Cr Blakeley/ Cr Donaldson)*

That the Committee:

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

The motion was **CARRIED.**

Noted Officers agreed to arrange a visit for Committee members to the Wairarapa to look at farming methods being used in response to climate change.

12 **General Managers' report to the Environment Committee meeting 1 November 2017**

Report 17.384 File ref: CCAB-10-378

Moved *(Cr Blakeley/ Cr Ponter)*

That the Committee:

1. *Receives the report.*

2. *Notes the content of the report.*

The motion was **CARRIED.**

The meeting closed at 12.33pm.

Cr S Kedgley
(Chair)

Date:

Report	**17.482**
Date	23 November 2017
File	CCAB-10-441
Committee	**Environment Committee**
Author	**Nigel Corry, General Manager, Environment Management** **Wayne O'Donnell, General Manager, Catchment Management** **Luke Troy, General Manager, Strategy**

Action items from previous meetings

Attachment 1 lists items raised at Environment Committee meetings that require actions or follow-ups from officers. All action items include an outline of current status and a brief comment. Once the items have been completed and reported to the Committee they will be removed from the list.

No decision is being sought in this report. This report is for the Committee's information only.

Recommendations

That the Committee:

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

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

Report prepared by:	Report prepared by:	Report prepared by:
Nigel Corry General Manager. Environment Management	**Wayne O'Donnell** General Manager, Catchment Management	**Luke Troy** General Manager, Strategy

Attachment 1: Action items from previous meetings

Attachment 1 to Report 17.482

Action points from previous Environment Committee meetings

Meeting date	Action point	Status and comment
1 November 2017	**Noted** Officers agreed to organise a further fieldtrip to Transmission Gully for Councillors.	**Status:** *(awaiting action, under action, completed)* **Comments:** Officers discussing with NZTA and the JV with a view to having a fieldtrip February 2018.
1 November 2017	**Noted** Officers agreed to also invite Te Awarua-o-Porirua Whaitua members to the joint workshop with Te Upoko Taiao - Natural Resources Plan Committee.	**Status:** *(awaiting action, under action, completed)* **Comments:** Completed.
1 November 2017	**Noted** Officers agreed to provide information to Councillors about lizard populations within the Wellington Region collected by the Department of Conservation.	**Status:** *(under action)* **Comments:** Report to be included in Councillors Bulletin early December.
1 November 2017	**Noted** Officers agreed to provide a copy of the communication plan for the Parks Network Plan Review 2017-18 to Councillors once it has been completed.	**Status:** *(awaiting action, under action, completed)* **Comments:** Communications plan will be finalised and circulated to Councillors early December.
1 November 2017	**Noted** Officers agreed to provide a copy of the terms of reference for the Whaitua Committees to Councillors prior to the joint Environment Committee and Te Upoko Taiao – Natural Resources Plan Committee workshop scheduled for 14 November 2017.	**Status:** *Completed* **Comments:** Completed.

1 November 2017	**Noted** Officers agreed to arrange a visit for Committee members to the Wairarapa to look at farming methods being used in response to climate change.	**Status:** *Under action.* **Comments:** Being advanced as part of the Councillors' January 2018 retreat.

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Report	**2017.471**
Date	24 November 2017
File	ENPL-6-1806
Committee	**Environment Committee**
Author	**Penny Fairbrother, Senior Science Coordinator**

Are we meeting our environmental outcomes in the Wellington Harbour and Hutt Valley catchment?

1. Purpose

To discuss the state of the environment in the Wellington Harbour and Hutt Valley catchment, particularly with respect to whether we (GWRC) are achieving our desired environmental outcomes.

2. Background

Home of the capital and the most populous urban area in the Wellington Region, the Wellington Harbour and Hutt Valley catchment is home to nearly 70 percent of the people but makes up only 14 percent of the region's land area (1,183km^2). It includes Wellington, Upper Hutt and Hutt cities, and Wainuiomata.

The catchment is "water-rich" with Te Awa Kairangi/Hutt River, the Wainuiomata and Orongorongo rivers, as well as the Waiwhetu Aquifer (a natural underground reservoir beneath the Hutt Valley) supplying approximately 140 million litres of drinking water per day to the four main cities in the Region.

The Hutt River has its headwaters in Kaitoke Regional Park and flows south-west for 56 kilometres through the floodplains of Upper and Lower Hutt before emptying into the harbour. The river is an important fishery and highly valued for recreational uses.

Wellington Harbour (Te Whanganui ā Tara) is important for its cultural, ecological, economic and recreational values. It also acts as the 'sink' for urban and rural runoff from the entire Hutt Valley and much of Wellington City.

3. What are the environmental outcomes we are trying to achieve?

The Environment and Catchment Management groups have come up with

some shared outcomes that are the driving basis for our work. These are shown in **Figure 1** below.

All outcomes are inextricably linked, but some key points to note are:

- In terms of our operational activities, they are largely directly working towards achieving the two outcomes *Resilient community* (**refer section 5 of this report**) and *Healthy environment* (**refer section 6 of this report**).
- *Maintaining or improving water quality* (**refer section 7 of this report**) does not happen in isolation. Water quality is in fact driven by everything we do "Te uta te kai" (from the mountains to the sea). The diagram represents the fact that improving water quality is not something that can happen in isolation, but will be a result of everything else we do – most importantly, how we manage our land-based activities.
- To achieve all this, we (GWRC) cannot do this alone. Everyone has their part to play, so we must ensure that we have *engaged communities, participating communities, trusting partnerships* and *iwi are true partners.*
- Not all of the outcomes can be evaluated by traditional science measures. Determining whether we are being successful in achieving the community, partnership and iwi outcomes will require qualitative assessment. For the purposes of this report, comment has been made on how we are "partnering with iwi" (**refer section 7 of this report**) and how "communities are engaged and participating" (**refer section 8 of this report**).

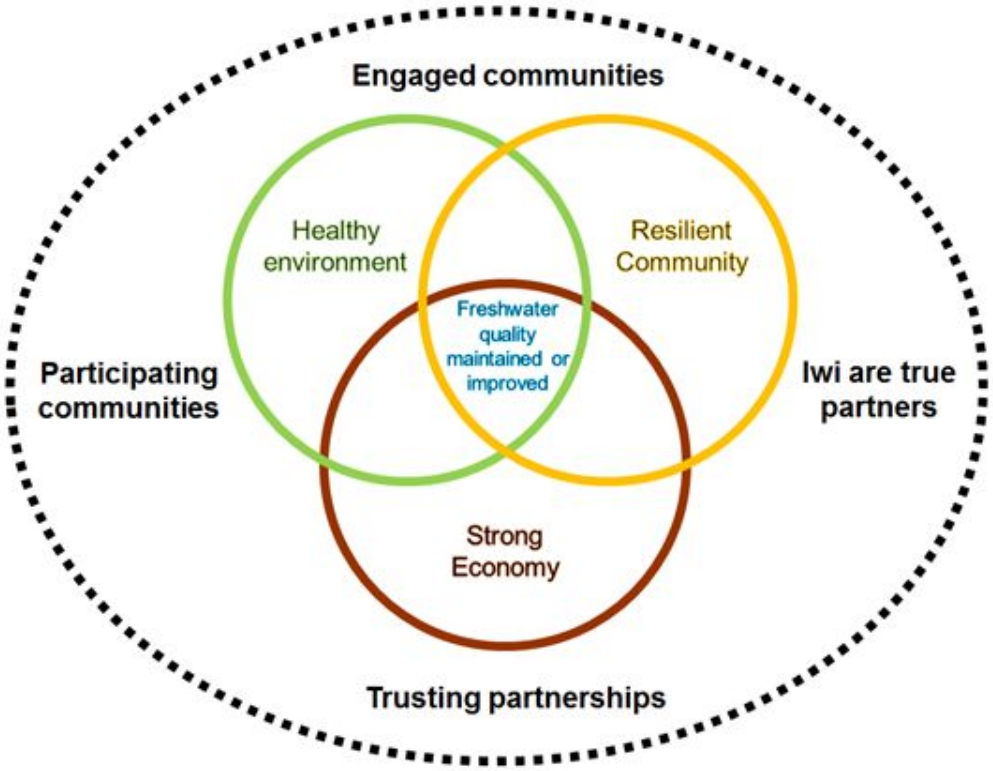

Figure 1. Environment and Catchment Management shared outcomes

4. Policy Context

The National Policy Statement for Freshwater Management (NPS-FM) was introduced in 2011, revised in 2014 and updated again 2017. Each iteration has tightened the national direction around freshwater quality, but the key message is that the overall quality of freshwater should be maintained or improved. The 2017 amendments strongly direct that water quality needs to be suitable for swimming more often.

GWRC's Regional Policy Statement (RPS) identifies regionally significant issues around the sustainable management of the region's natural and physical resources. The quality of water in rivers, streams, lakes, wetlands and groundwater is considered an issue of significance in the RPS (chapter 3.4). Both regional and district plans are required to give effect to the RPS.

The proposed Natural Resources Plan (pNRP) was developed in accordance with the Resource Management Act 1991 (RMA) and will replace the five existing Regional Plans. It sets out the objectives, policies and methods (including rules) for the use of the region's natural and physical resources.

Of particular interest for the Wellington Harbour and Hutt Valley catchment are the 2017 amendments to the RMA that raised the prominence of natural hazards in the Resource Management Act.

Section 6 of the RMA sets out matters of national importance that decision-makers must recognise and provide for, and previously there was no reference to natural hazards in this section. This meant that measures to manage risks of natural hazards were not always appropriately considered in planning and consenting decisions. Section 6 has been amended to add 'the management of significant risks from natural hazards'. The intent of this change is to provide an explicit mandate for decision-makers to manage significant risks from all natural hazards and supports:

- sections 30 and 31 of the RMA, which prescribe natural hazard management as functions of both regional councils and territorial authorities

- an amendment to section 106 of the RMA, which requires consideration of all risks from natural hazards in subdivision consent applications.

5. Environmental Outcome – Resilient Community

5.1 What does this mean?

This is about ensuring our communities are healthy, safe, prosperous and prepared. The key things we do in this regard are:

- Ensuring security of water supply for drinking and other needs
- Protection of homes and land against flooding and other natural hazards
- Working with communities to cope with the impacts of climate change
- Work with local councils to ensure air quality improves and meets national standards and guidelines.

5.2 Ensuring security of water supply for drinking and other needs

5.2.1 What the science is saying…

Waiwhetu Aquifer Contamination

The Waiwhetu Aquifer is of extreme importance for the supply of water to Wellington and the Hutt Valley, especially during dry periods when the rivers cannot sustain demand.

The aquifer had always been considered a secure water supply, however, in December 2016 Wellington Water Limited (WWL) detected changes in the water quality in the Knights Road wellfield. This included increasing counts of total coliforms and a number of detections of the indicator bacteria *E. coli*. As a result WWL instigated emergency chlorination of the Hutt City water supply which had until now been receiving untreated[1] drinking water through the Waterloo Water Treatment Plant.

Rainfall and water levels

Monitoring results from the 2016/17 year show that rainfall was above average across most of the area, with the months of November 2016 and April 2017 being particularly wet. **Figures 2** and **3** below show monthly rainfall totals recorded at Lower Hutt and Khandallah.

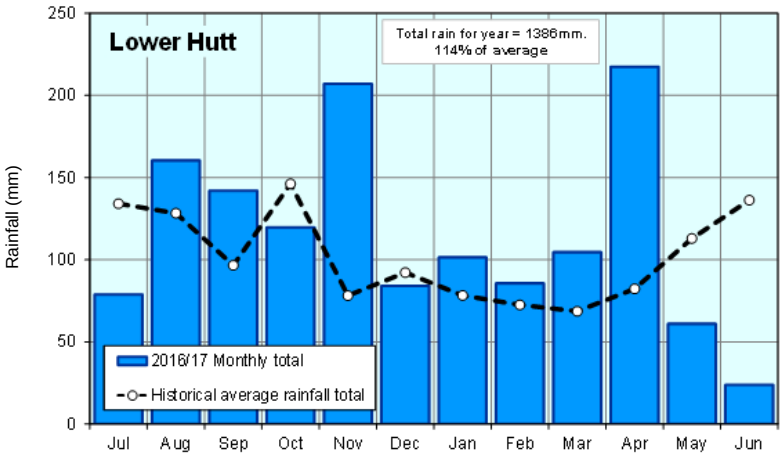

Figure 2. 2016/17 monthly rainfall totals in Lower Hutt

[1] Note that "untreated" in this sense refers to the water being untreated for bacterial contamination. However the water from the aquifer has a low pH meaning it is slightly corrosive – so has always been treated for this through a process of CO_2 stripping and lime addition.

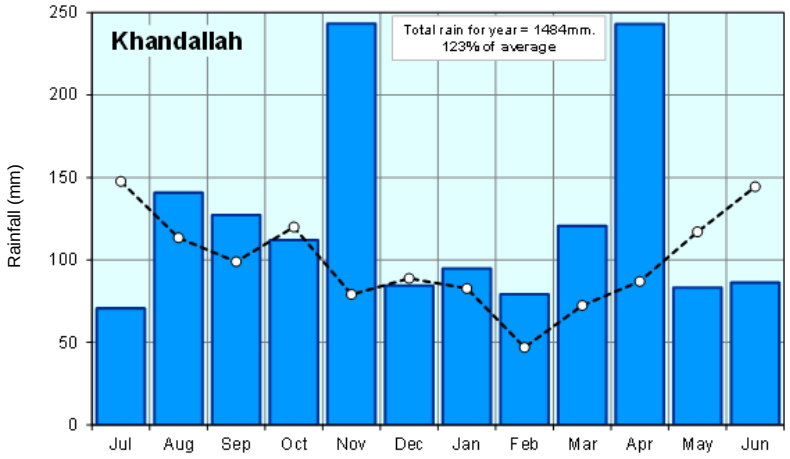

Figure 3. 2016/17 monthly rainfall totals in Khandallah

Unsurprisingly, river flows were also above average for much of the year. Two observations of note:

- For November 2016, the average flow in the Mangaroa River was the highest since records began in 1977
- On 15 November 2016 (the day after the Kaikoura earthquake) the Hutt River, Wainuiomata River and Waiwhetu Stream flooded.

The wetter than average conditions over summer and autumn meant river and stream levels did not reach any extreme lows and no restrictions were imposed on consented abstractions.

Figure 4 shows that groundwater levels in the Waiwhetu Aquifer were a bit below average for the first half of the 2016/17 year, but rose throughout December and January to above average levels. The water levels in the aquifer largely reflect rainfall patterns although there tends to be a bit of a lag – reflecting the time that deeper confined aquifers (like the Waiwhetu Aquifer) take to recharge.

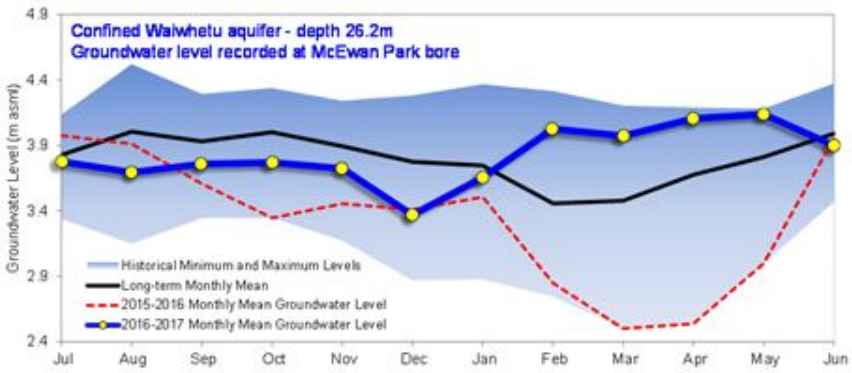

Figure 4. Groundwater levels in the Waiwhetu Aquifer

5.2.2 What are we doing about it?

Waiwhetu Aquifer Contamination

Following an initial investigation into the cause of the contamination, and coming to the conclusion that there is no "quick fix" to the problem, WWL presented a proposal to GWRC and Hutt City Council (HCC) to permanently treat water supplied from the Waiwhetu Aquifer. This proposal was accepted and WWL are now in the process of installing permanent chlorination and UV treatment infrastructure.

This event has highlighted the fact that we don't have as good an understanding of the Waiwhetu Aquifer as we thought, so we have initiated a programme of investigations to help fill gaps in our understanding of this important resource. We are working closely with WWL and have also engaged leading experts from across the industry to help with this work.

In addition to this, we have carried out a desktop analysis of all the bores drilled into the Waiwhetu Aquifer. The analysis included:

1. Checking the large number of geotech bores (used to check soil conditions for foundations and the like) to ensure these have been decommissioned correctly, and
2. Advising consent holders that take water from the aquifer to make sure their bore (and associated headworks) is secure and no contaminated water can enter it.

The findings have been presented to an expert panel and we are awaiting their advice on whether a more intensive investigation is required.

Water collection areas

The Hutt and Wainuiomata/Orongorongo water collection areas are rugged tracts of forests high in the catchment that are actively managed to minimise any threats to "raw" water quality. A healthy forest is the 'first line of defence' as it filters rainfall and minimises sediment runoff by holding the soil in place. By undertaking pest control in these areas we maintain the health of the forest and reduce the number of feral animals that could impact on water quality.

A range of monitoring techniques are used to determine how effective our pest control activities are. Recent data shows the forests are growing well, but some species are not regenerating because they are palatable to deer and goats. These species are also preferred by native birds and lizards and important to the forest structure. Continued hunting pressure is required to improve the diversity of seedlings that are regenerating.

Rata trees are a preferred food source for possums and a good indicator of the impact of this pest species. Our monitoring shows improvements in rata health in the Hutt water collection area over the past 13 years. This is especially the case for the last six years as possum numbers have been kept to very low levels during this time.

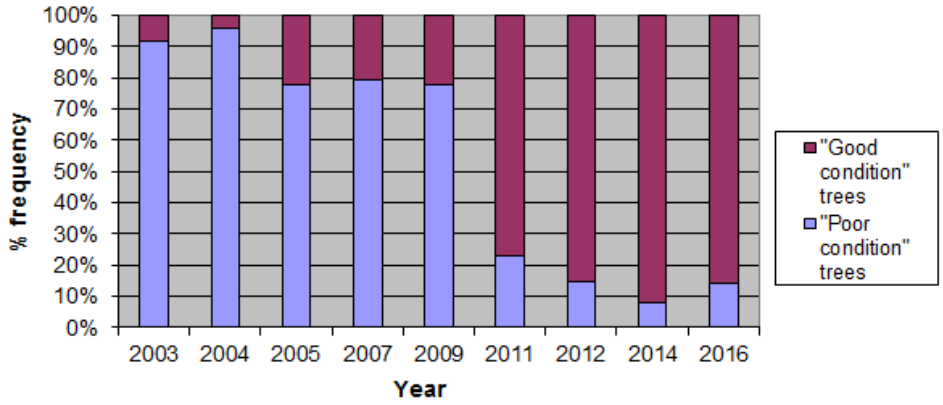

Figure 5. Monitoring shows significant improvement in rata health over the last 13 years as a result of possums being kept to very low levels

Water allocation

The amount of water allocated through resource consents in the Wellington and Hutt Valley area is very stable, with public water supply being by far the main user of surface and ground water. Water supply consents were granted in the late 1990's for the Hutt, Wainuiomata and Orongorongo catchments and do not expire to well into the 2030's. There are also three water bottling plants with consent to take water from the Upper Hutt or Waiwhetu aquifers, but none of these are operational at this time.

All consents have conditions that require the holders to reduce or cease taking water based on a minimum aquifer pressure or flow level. These are in place to protect the resource from irreversible salt water intrusion (in the case of the Waiwhetu Aquifer) or to protect ecological health (in the case of rivers and streams).

Figure 6 shows how much water has been allocated from the Hutt, Orongorongo and Wainuiomata rivers in relation to default allocation amounts in the pNRP. Theses default allocation amounts are based on the mean annual low flow in each river and provide an indication of how much water can be allocated **in relation to** how much is naturally available during summer (ie, when water levels are naturally lower).

All three rivers are fully allocated (which simply means the existing allocations are higher than the default allocation amounts). Existing allocation is only marginally higher than the default allocation for the Hutt River, but substantially higher for the Orongorongo and Wainuiomata rivers. These latter two have quite low summer flow rates. While this suggests the Orongorongo and Wainuiomata rivers are highly allocated relative to other waterways in the Region (and therefore warrant careful consideration through the whaitua process), these rivers should not at this stage be considered "over-allocated". Further technical evidence is required to better determine the appropriate allocation status.

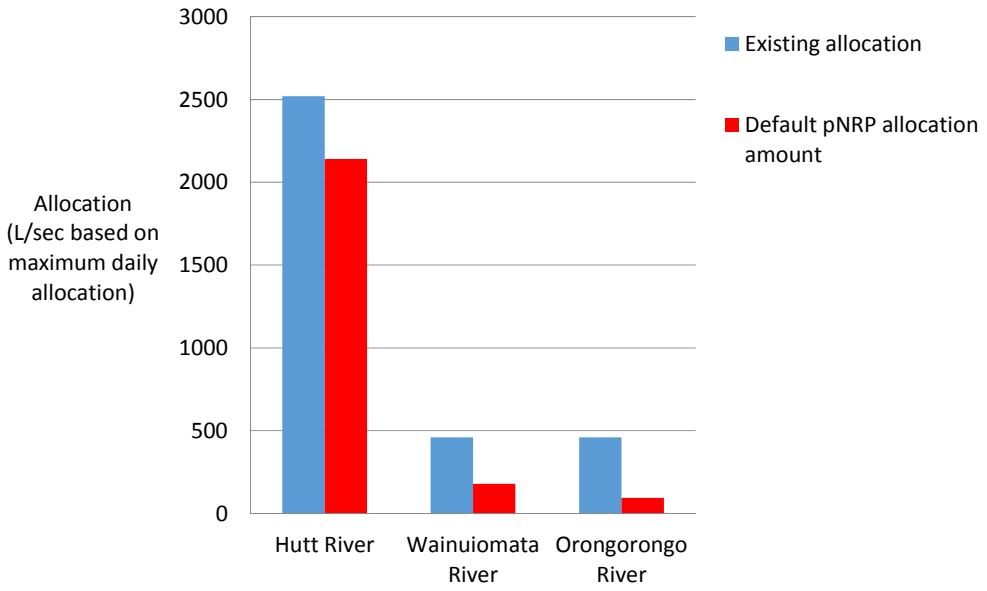

Figure 6. Surface water allocation status for the Hutt, Wainuiomata and Orongorongo rivers

With respect to groundwater, there are two aquifers in this area with specified allocation amounts in the pNRP. The Upper Hutt Aquifer is relatively small and low yielding while the Waiwhetu Aquifer is much larger. **Figure 7** shows that existing allocation amounts in both aquifers are lower than what is specified in the pNRP, therefore further groundwater is available for allocation.

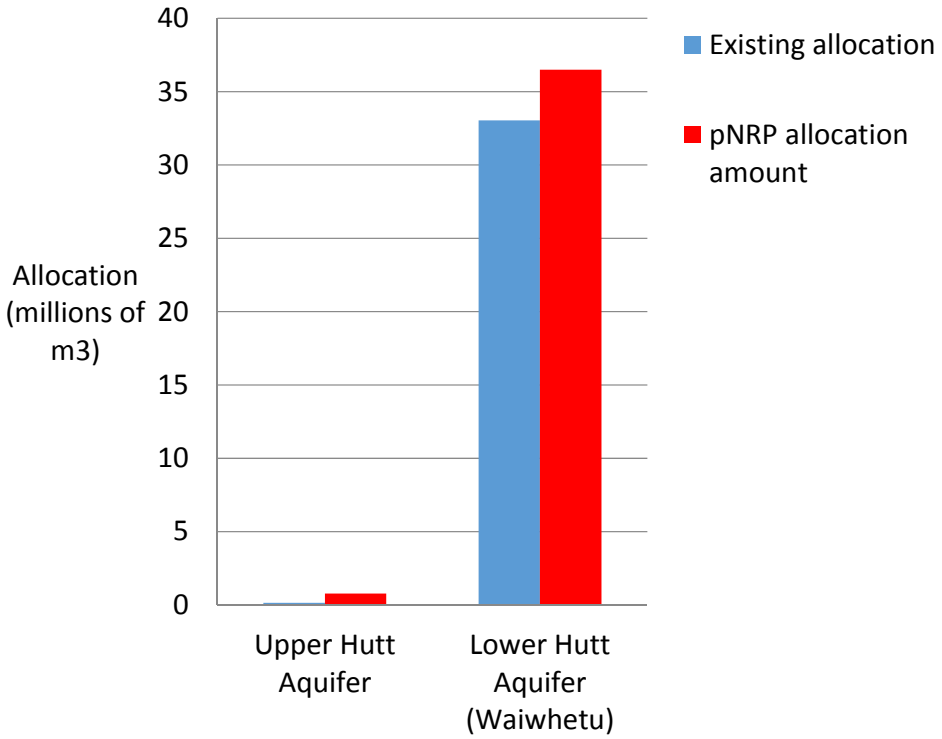

Figure 7. Groundwater allocation status for the Upper Hutt and Waiwhetu aquifers

The pNRP deals with over-allocation in a number of ways, including:

- *Prohibited activity for 'new' water* – under the pNRP, if adopted as currently written, any consent for a 'new' water take in a fully allocated catchment will be a prohibited activity. This does not apply to renewals of existing consents or where it is demonstrated as being essential for the health needs of people or stock drinking water.
- *Efficiency* – All renewals and new consents are required to demonstrate that the amount applied for is reasonable and will be used efficiently. In addition consent holders are increasingly using advanced technology such as soil moisture technology to ensure they are only irrigating when it is actually required.
- *Water metering* – All allocated takes over 5L/s are required to meter their actual water usage. Water meter records will help determine the actual needs of the consent holders and more closely align allocated takes with actual usage.
- *Attrition* - Allocation will be clawed back over time as consents are surrendered or renewed for lesser amounts (due to water meter records or efficiency tests showing less water is needed).

We know that dry summers can put major pressure on our aquifers and surface water bodies. While the Te Marua Storage lakes provide some buffer, managing demand in dry periods is critical. WWL manages this by promoting water conservation and sustainability, as well as imposing restrictions when required.

5.3 Protection of homes and land against flooding and other natural hazards

5.3.1 What the science is saying…

We monitor a number of rivers and streams for flood warning purposes. The table below shows the number of times flood warning alarms were activated over the previous three years.

Site	**2014/15**	**2015/16**	**2016/17**
Hutt River	4	2	8
Akatarawa River	4	4	7
Mangaroa River	0	0	2
Waiwhetu Stream	1	0	1
Wainuiomata River	1	1	2
Totals	**10**	**7**	**20**
Comment	Largely below average rainfall	Largely below average rainfall	Wetter than normal year

Any significant flood events?	14/5/2015 Korokoro Stream floods and closes SH2 at Petone. Very intense rainfall (50-year event)	No	15/11/2016 Hutt, Pakuratahi and Wainuiomata Rivers, and Waiwhetu Stream (5-year event) 2/2/2017 Akatarawa River (5-year event)

Results from 2016/17 have shown an increase in flood activity, however there has been no significant flood damage as a result.

A recent study undertaken by NIWA on regional climate change projections shows the western side of the Region is likely to become wetter (up to 10 percent more rainfall per year by 2090), and extreme rainfall events are likely to become more extreme and more common. This essentially means that storms are going to bigger and more frequent, with less rain in between. This pattern is only going to increase the risk from flooding.

5.3.2 What are we doing about it?

The floodplains of Upper and Lower Hutt are some of the most densely populated in New Zealand, and have had a long history of flooding and flood protection measures.

Te Awa Kairangi/Hutt River Floodplain Management Plan (FMP) was established in 2001 and covers the stretch of the river from Te Marua to the harbour. It sets out a combination of structural and non-structural measures to manage flood risks. We are part way through implementing the structural measures, and have delivered on most of the non-structural measures which include planning controls (through district plans) that restrict development in areas subject to a 1-in-100 year event.

The current RiverLink project, a partnership between GWRC, HCC and NZ Transport Agency (NZTA), will deliver better flood protection, better lifestyle and improved transport links for the people of central Lower Hutt. It includes a flood protection upgrade on the stretch of the river between the Kennedy Good and Ewen bridges and involves widening the river channel, raising the height of the stopbanks and improving floodway capacity at Melling Bridge. This will deliver an improvement in protection levels from a 1-in-65 year event to a 1-in-440 year event, even when allowing for the effects of climate change.

Residual flood risk resulting from an extreme flood event (one that is bigger than the stopbanks are designed to contain) or collapse of the stopbanks is currently managed through civil defence responses.

The Pinehaven Stream FMP was established in 2016 and covers the Pinehaven catchment down to the Hulls Creek confluence. Non-structural measures include delivering planning controls requiring development to be compatible with flood risk and restrictions on development in high risk areas. The structural measures will provide a 1-in-100 year event protection level.

Residual flood risk through civil defence responses and overflow paths as identified in the district plan.

In the Waiwhetu stream, works to prevent a repeat of the 2004 flooding were completed in 2009. This provides a 1-in-40 year event protection level to property in the lower Waiwhetu catchment. This catchment will be vulnerable to the effects from climate change (increased rainfall and sea level rise) however development of a FMP has been put on hold until FMP's for the Wairarapa are completed.

The Wainuiomata River is managed along part of its length, including stopbanks to protect existing urban development in the catchment. Outside of this river maintenance is carried out under the watercourses agreement.

Outside of these managed areas, the care and maintenance of watercourses is the responsibility of the landowner or local authority. However under the watercourses agreement with local authorities we undertake work to maintain clear flood ways. This is limited to the removal of obstructions in the river or stream channel and does not provide for erosion repairs or work to protect private properties or assets.

To assist landowners who are responsible for looking after rivers and streams outside of a managed area, we ensure landowners are aware of what they can do 'as of right', ie, without a resource consent. Where a consent is required, we offer one hour of free pre-application advice and can make a site visit to discuss the best way to achieve the outcome the landowner is looking for. The landowner may also be able to access our "isolated works" funding which subsidises up to 30 percent of the cost of flood or erosion protection works that serve a community benefit.

5.4 Working with communities to cope with the impacts of climate change

5.4.1 What the science is saying…

Climate change is undoubtedly the biggest environmental challenge we face and will affect everyone in the region.

By 2090 the Wellington and Hutt Valley area is expected to be 2-2.5 degrees warmer. There will be less (up to 5 percent per year) rainfall inland and more (up to 10 percent per year) rainfall on the coast. Extreme rainfall events are projected to become more extreme and more common. This essentially means that storms are going to be bigger and more frequent, with less rain in between. This adds to the risk of flooding, landslides and impacts from severe winds.

Probably the biggest threat to this area is the increase in the amount of rainfall during heavy rainfall events. **Figure 8** below shows the predicted changes in the amount of rain (as a percent) falling during "heavy rain days". There are increases projected over the entire area, particularly west and south of Wellington City where the increase in rainfall during a heavy rain event is expected to be greater than 25 percent.

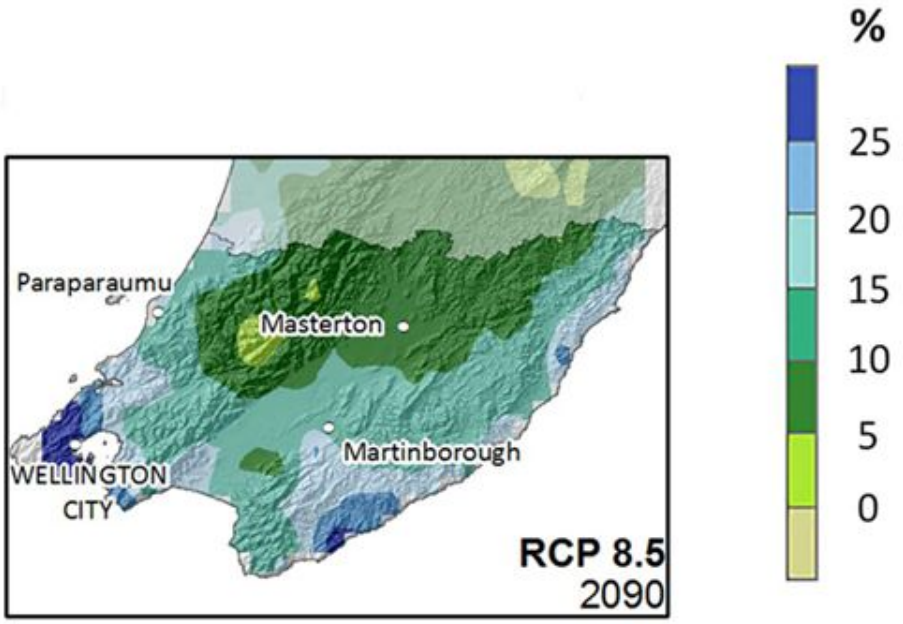

Figure 8. In Wellington City the amount of rain falling in a "heavy rain day" is projected to increase by greater than 25 percent by 2090

The combined effect of more rainfall and increased winds will significantly increase the risk of flooding and slips. Sea level rise will aggravate the problem in coastal areas, putting pressure on infrastructure and drastically increasing the risk of inundation. Conservative figures show that sea level is expected to rise by about a metre by the end of the century.

These projections are based on the most extreme climate change scenario, which is based on continued high emissions of greenhouse gases globally. While some of the effects of climate change are now inevitable due to the amount of greenhouse gases that have been emitted in the past, it is possible for the global community to avoid the worst impacts of climate change by rapidly reducing emissions over the coming years.

5.4.2 What are we doing about it?

A problem of this scale inevitably requires a response at both the national and regional level. One of our responses, as a regional council, was to develop a Climate Change Strategy which aligns and coordinates climate change actions across GWRC's responsibilities and operations.

Alongside the work we are doing to reduce our own emissions and influence emissions reductions across the region, we are also focussing on better understanding the **implications** of climate change impacts (like extreme rainfall events mixed with rising seas).

We recently released a report produced by NIWA that describes the climatic changes which may occur across the Region over the rest of this century. The report (available at www.gw.govt.nz/climate-change) discusses the predicted changes and outlines potential implications. The resolution at which the

information is presented (i.e. climate change mapping) sets this report apart from any others that have preceded it.

The information from the report will be used to inform GWRC's adaptation planning. Climate change projections have long been incorporated in our flood protection operations, and are being progressively integrated into all aspects of our work including (for example) transport, biodiversity biosecurity and parks.

The data from this report will also provide an important input to modelling and planning processes, for example the Wellington Harbour and Hutt Valley Whaitua process.

This and other studies we have commissioned (such as storm surge hazard modelling) also contribute significantly to the work stakeholders such as WWL, Wellington City Council (WCC) and HCC undertake as they work with communities to understand how best to respond to the challenges posed by climate change.

Consideration of climate change is now a core component of decision making at GWRC and we are adopting an adaptive planning approach across our operations.

5.5 Work with local councils to ensure air quality improves and meets national standards and guidelines

5.5.1 What the science is saying…

Most of the time air quality in Wellington and the Hutt Valley is good.

In Wellington, traffic places the greatest pressure on air quality. Our main monitoring station (on the corner of Willis St and SH1) shows:

- Levels of the key pollutants we measure; particulate matter (PM10), carbon monoxide and nitrogen dioxide, all meet national air quality standards
- Higher levels of traffic-related pollutants (such as carbon monoxide and nitrogen dioxide) compared to other areas of the region
- Pollutant levels are highest during mornings and evenings due to peak traffic flows as well as lower winds speeds generally occurring at these times.

It's important to remember that meeting air quality standards does not equal "zero harm" and that reducing traffic-related air pollution will be beneficial for the health of our communities. Traffic-related air pollution is expected to decrease as older vehicles are replaced by newer ones with improved emission reduction technologies, however this may be offset if traffic becomes more congested (ie, more vehicles on the road) and the proportion of diesel vehicles increase.

This is supported by regional and national trends which show that the decline in some traffic-related air pollutants over the last couple of decades appears to have slowed or stalled in recent years.

To better understand the impacts of traffic on air quality across our Region we've installed a new network of "test-tube" sites (see **figure 9** below) to track trends in nitrogen dioxide. So far we've found that levels of traffic-related air pollution in sheltered CBD streets are about three times higher than in the suburbs.

Figure 9. An air quality "test-tube" on Courtney Place

In Wainuiomata, and to a lesser extent in Upper Hutt, smoke from home fires containing particulate matter (see **figure 10** below) places the greatest pressure on air quality. Our monitoring results show:

- Levels of traffic-related pollutants (carbon monoxide and nitrogen dioxide) easily meet national standards and guidelines
- There were no breaches of the national standard for PM10
- Levels of PM10 improved between 2006 and 2012, but have not improved significantly since then
- Wainuiomata continues to have the occasional day where the World Health Organisation guideline for PM2.5 is not met.

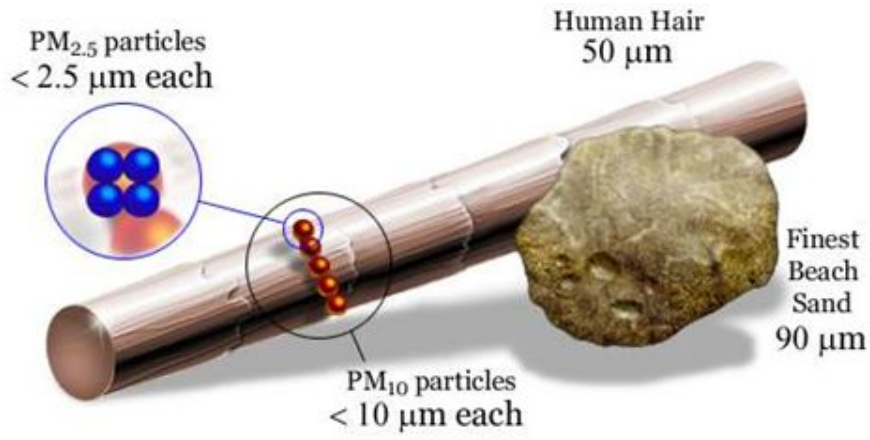

Figure 10. The size of particulate matter (particles in the air) in relation to a human hair – the smaller the particle the more deeply it can penetrate the lungs.

5.5.2 What are we doing about it?

Let's Get Wellington Moving is a joint initiative between GWRC, WCC and NZTA which aims to improve our transport system through central Wellington. One of the objectives of the project is to reduce congestion in the city which is expected to benefit air quality.

GWRC offers financial assistance (interest bearing targeted rate) to Wainuiomata residents for upgrading their old home fires to a National Environmental Standards (NES) approved wood burner or heat pump. Since the scheme began 167 residents have taken advantage of the offer.

Looking to the wider region, the Regional Land Transport Plan (2015) has a number of policies and initiatives that will contribute to achieving the regional target of reduced harmful pollutant emissions from transport.

6. Environmental Outcome – Healthy and Productive Environment

6.1 What does this mean?

This is about ensuring our environment is healthy and meets the needs of current and future generations. The key things we do in this regard are:

- Protect terrestrial environments against pests and enhance native biodiversity
- Protect, manage and restore wetlands
- Protect freshwater bodies and coastal waters against pollution.

6.2 Protect terrestrial environments against pests and enhance native biodiversity

6.2.1 What the science is saying…

A national monitoring and reporting system for terrestrial biodiversity has been developed and implemented in the Wellington Region. The system involves gathering data on plant, bird and pest animal species from plots located on an

8km x 8km grid. Monitoring began in 2014/15, and the figures below show results from the first three years of monitoring.

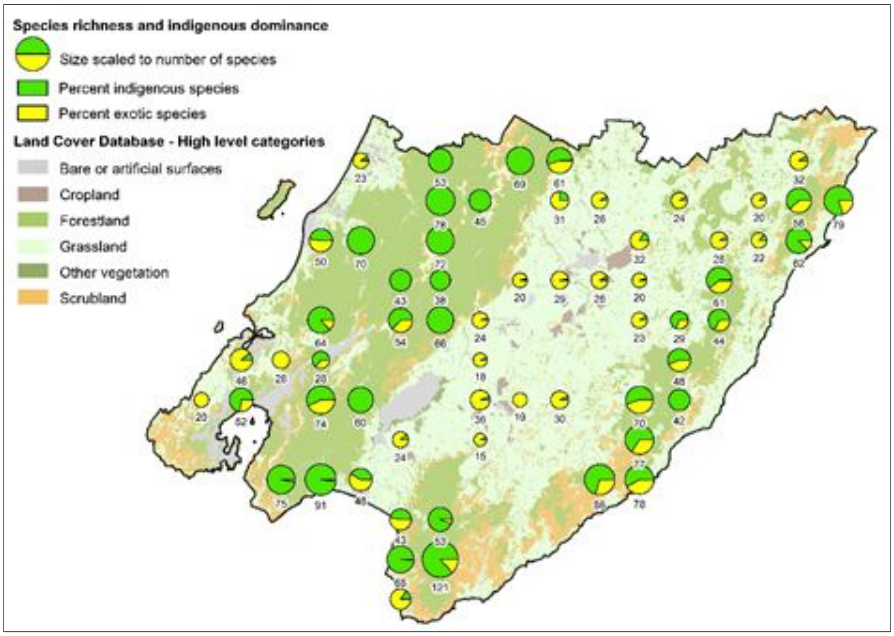

Figure 11. Plant species richness and indigenous dominance – Sites in Wellington and the Hutt Valley tend to have a moderate-high number of plant species and, perhaps surprisingly, are dominated by indigenous species.

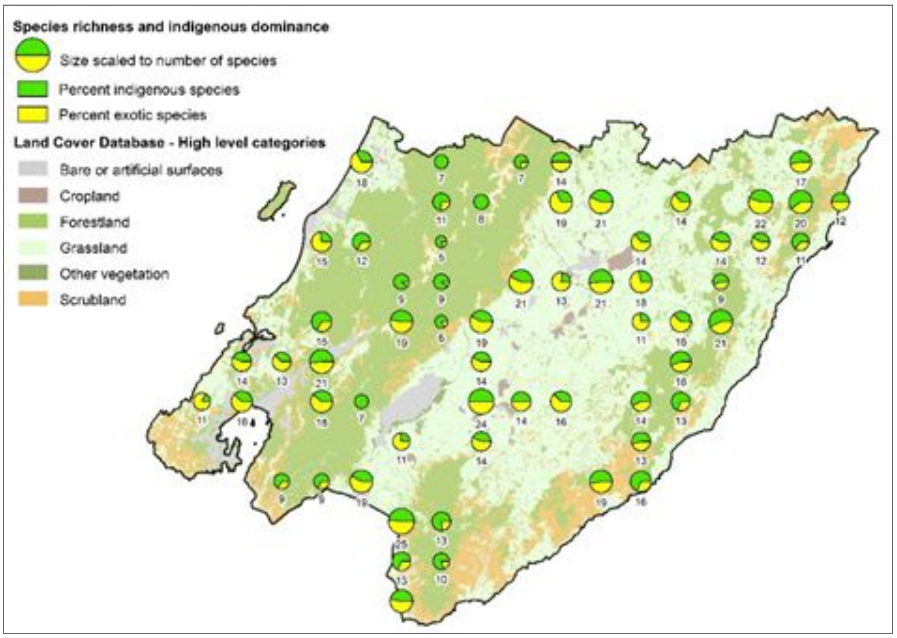

Figure 12. Bird species richness and indigenous dominance – The number of bird species at sites in Wellington and the Hutt Valley is variable, with some sites (particularly those in the Tararua Ranges) being dominated by indigenous species and others dominated by exotic species.

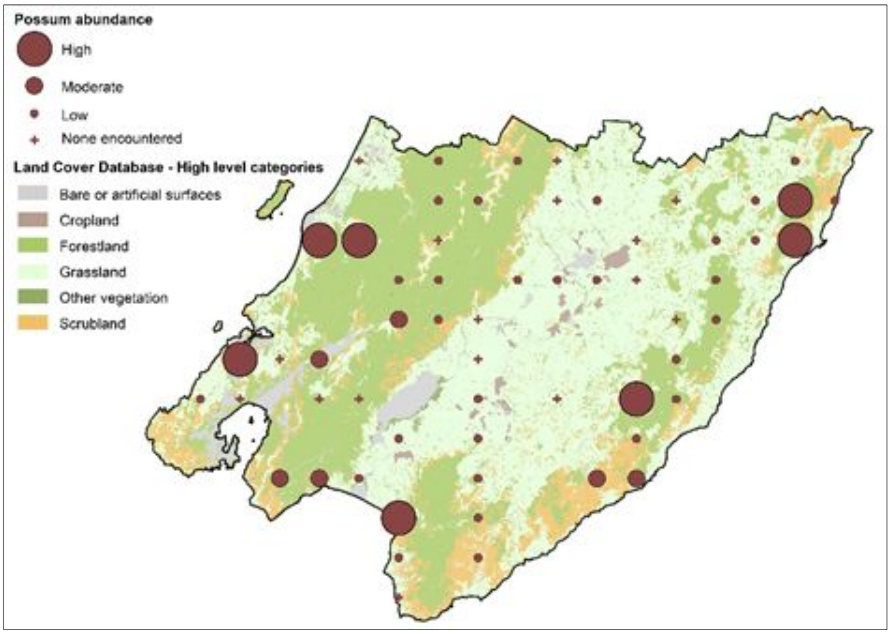

Figure 13. Possum densities in Wellington and the Hutt Valley are generally very low, although there are a handful of sites with moderate possum densities.

We also undertake annual bird surveys for WCC and UHCC to determine trends in city reserves, and undertake bird counts in the Wainuiomata Mainland Island and the Project Kaka area. Recent trends for selected bird species in three different areas are shown in **figure 14** below. The colour of the arrow relates to the bird species (in the coloured circles on the right), while the direction of the arrow shows the trend (up arrow = increasing numbers, down arrow = decreasing numbers and side arrow = staying the same).

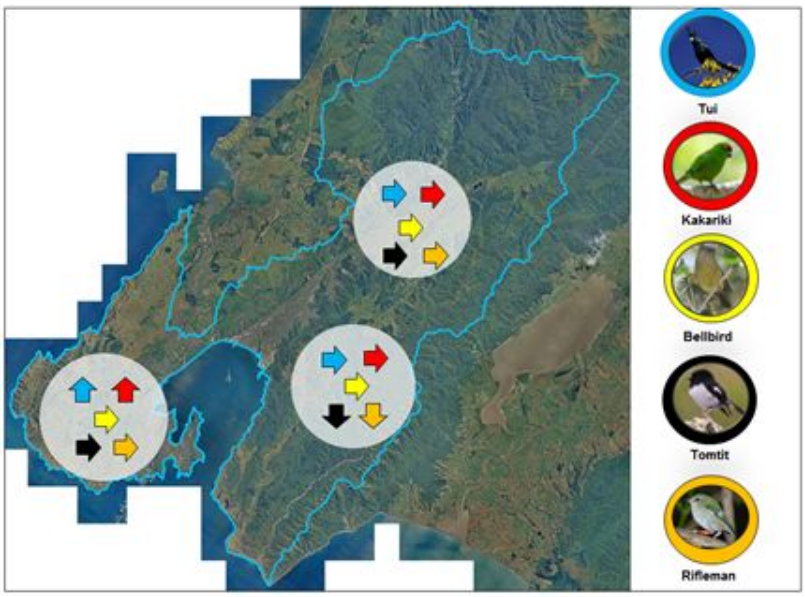

Figure 14. Tui and kakariki numbers are increasing in Wellington City while numbers of rifleman and tomtit have decreased in recent times in the Wainuiomata Mainland Island – largely as a result of the rat plagues caused by heavy fruiting of native trees.

6.2.2 What are we doing about it?

Our biosecurity work is guided by the GWRC Pest Management Strategy 2002-2022 and involves the control of unwanted plants and animals for environmental, economic and social reasons.

Most of our biosecurity activities in Wellington and the Hutt Valley revolve around Key Native Ecosystems (KNEs) and the Regional Possum Predator Control Programme (RPPCP). The RPPCP programme aims to maintain possums, previously controlled under the TBfree programme, at low levels.

We also provide pest control services to local authorities at sites of local significance and in local reserves.

Operational areas in the WCC catchment (and funded by WCC):	
Amesbury Reserve	Brooklyn/Mt Albert
Careys Gully	Denton Park/Polhill Reserve
Happy Valley East	Horokiwi Grenada
Houghton Bay-Southgate	Hutt Escarpment
Kaiwharawhara-Ngauranga	Karori Park
Makara Peak	Miramar Peninsula
Moa Point Coast-Tarakena Bay	Mount Victoria-Hataitai Park
Rural HALO	Seton Nossiter
Spicer Block	Tawa Reserves (Wilf Mexted Reserve, Redwood Bush Reserve, Pikitanga Reserve and Woodburn Drive Bush)
Te Ahumairangi Hill	Trelissick Park
WCC Tip Block	Wellington Botanical Gardens
Wellington South Coast	Western Wellington Forests
Wrights Hill	

Operational areas in the HCC catchment (funded by HCC):	
Haywards Scenic Reserve	Kelson Bush
Parangarahu Lakes	

Our KNE programme seeks to protect some of the best examples of original (pre-human) ecosystem types in the Wellington Region. It does this by managing, reducing or removing threats to their ecological values. KNE sites are managed in accordance with KNE plans prepared in collaboration with landowners, tangata whenua and other partners.

The Wellington and Hutt Valley area contains 18 KNE sites covering a total of nearly 44,000 hectares (around 37 percent of the catchment area).

KNE site	Area (hectares)
Akatarawa Forest	12,408
Hutt Water Collection Area	8,750
Wainuiomata/Orongorongo	7,364
Pakuratahi	7,179
Kaitoke Regional Park	2,702
East Harbour Northern Forest	1,646
Belmont-Korokoro	1,039
Western Wellington Forests	714
Belmont-Dry Creek	613
Parangarahu Lakes Area	468
Baring Head/Ōrua-pouanui	278
Keith George Memorial Park	161
Wi Tako Ngātata	153
Belmont-Speedy's	148
Wellington South Coast	143
Haywards Scenic Reserve	121
Kelson Bush	74
Trentham Memorial Park	14

Most of these are forested sites that encircle the Hutt Valley. Some cover large areas and contain multiple forest ecosystem types and significant wetland habitats (ie, Akatarawa Forest, the Hutt Water Collection Area, Pakuratahi and Wainuiomata/Orongorongo). Akatarawa Forest is the only forest in the region containing Hall's totara, pahautea and kamahi forest, and Trentham Memorial Park contains the only significant remnant of lowland forest in the Hutt Valley.

Figure 15. Barton's Bush in Trentham Memorial Park

Baring Head/Ōrua-pouanui, the Parangarahu Lakes and several sites on the south coast contain significant bird habitat. Baring Head is also a significant site for inanga spawning.

We also support the work of the Queen Elizabeth II (QEII) National Trust to secure the long-term protection of natural features on private land. In the Wellington and Hutt Valley area, 37 sites covering around 312ha have been legally protected (in perpetuity) under a QEII covenant. We provide up to $50,000 per year to protect and enhance native biodiversity on QEII covenanted sites across the region. Management activities include fencing to exclude stock and establishment of pest plant and animal control.

Opportunities are also being seized to incorporate native vegetation along river and stream corridors as part of our flood protection operational activities. As a rule of thumb, five percent of the value of any new project is spent on amenity and environmental enhancement, including improving biodiversity.

6.3 Protect, manage and restore wetlands

6.3.1 What the science is saying…

There are 24 wetlands in the Wellington and Hutt Valley area that have been scheduled as *significant* or *outstanding* in the pNRP. Twenty of these have more than 75 percent native plant content, with the remaining having more than 50 percent native plant content.

6.3.2 What are we doing about it?

Seven of these wetlands are actively managed as part of the KNE Programme.

These include the wetlands associated with Lake Kohangatera and Lake Kohangapiripiri (which are managed as part of the larger East Harbour Regional Park) which are nationally outstanding examples of coastal lakes and swamps. Most lakes of this type in New Zealand have been severely degraded by aquatic weeds, pest fish and nutriment enrichment.

However extensive and diverse communities of native plants still exist in lakes Kohangatera and Kohangapiripiri, and their associated wetlands. Major restoration activities include the aerial control of the invasive weed *Egeria densa*, control of other plant and animal pests and revegetation work. Bird banding and nest monitoring is also taking place.

Through our Wetland Programme, we are also working with private landowners to rejuvenate our wetlands. The programme aims to protect and/or restore wetlands by providing advice on restoration and incentives for landowners for restoration activities including pest animal and plant control, fencing and planting. Initial site visits have been made to four significant wetlands in the Wellington and Hutt Valley area.

6.4 Protect freshwater bodies and coastal waters against pollution

6.4.1 What the science is saying…

Rivers and streams

As shown by the table below, freshwater quality in rivers and streams in Wellington and the Hutt Valley is variable and a good example of how water quality is affected by land use. Sites rated as *Excellent* or *Good* are all in areas where the predominant land cover is indigenous forest, whereas sites rated *Poor* or *Fair* are all in areas where the predominant land cover is pasture or urban.

There is a reasonable relationship between water quality and the insects and bugs that live in the riverbed (as measured by the MCI – Macroinvertebrate Community Index). Sites that have *Excellent* or *Good* water quality also tend to be classed as *Excellent* or *Good* on the MCI. Similarly, sites with *Poor* or *Fair* water quality also tend be classed as *Poor* or *Fair* on the MCI.

Site Name	Dominant Land Cover	Substrate Type	Water Quality Grade	MCI Quality Class	Periphyton WCC (maximum)
Makara Stream at kennels	Pasture	Hard	Fair	Good	5
Karori Stream at Makara Peak	Urban	Hard	Fair	Fair	21
Kaiwharawhara Stream at Ngaio Gorge	Urban	Hard	Fair	Fair	70
Hutt River at Te Marua intake	Indigenous forest	Hard	Excellent	Excellent	5
Hutt River opposite Manor Park Golf Club	Indigenous forest	Hard	Excellent	Good	2
Hutt River at Boulcott	Indigenous forest	Hard	Excellent	Fair	16
Pakuratahi River downstream from Farm Creek	Indigenous forest	Hard	Excellent	Good	6
Mangaroa River at Te Marua	Pasture	Hard	Fair	Good	58
Akatarawa River at Hutt confluence	Indigenous forest	Hard	Excellent	Good	0
Whakatikei River at Riverstone	Indigenous forest	Hard	Excellent	Good	17
Wainuiomata River at Manuka Track	Indigenous forest	Hard	Good	Excellent	6
Wainuiomata River downstream from White Bridge	Indigenous forest	Hard	Good	Fair	42
Waiwhetu Stream at Whites Line East	Urban	Soft	Poor	Poor	Not measured

Looking at these sites through the National Objective Framework (NOF) lens (see table below) we can see that all sites meet the national bottom line for ammoniacal nitrogen and nitrate nitrogen.

Most sites (8 out of 13 or 62%) meet the bottom line for *E. coli*. Of those that don't, four are small urban streams which are likely being affected by poor stormwater and sewer infrastructure. The other site is in an area that is dominated by pastoral land use.

Of the four sites that were assessed for periphyton, all meet the national bottom line.

	NOF Attribute State			
Site Name	**Ammoniacal nitrogen**	**Nitrate Nitrogen**	***E. coli***	**Periphyton**
Makara Stream at kennels	A	A	E	Not yet assessed
Karori Stream at Makara Peak	A	B	E	Not yet assessed
Kaiwharawhara Stream at Ngaio Gorge	B	B	E	B
Hutt River at Te Marua intake	A	A	A	Not yet assessed
Hutt River opposite Manor Park Golf Club	A	A	B	Not yet assessed
Hutt River at Boulcott	A	A	B	A
Pakuratahi River downstream from Farm Creek	A	A	B	Not yet assessed
Mangaroa River at Te Marua	A	A	D	C
Akatarawa River at Hutt confluence	A	A	A	Not yet assessed
Whakatikei River at Riverstone	A	A	A	Not yet assessed
Wainuiomata River at Manuka Track	A	A	A	Not yet assessed
Wainuiomata River downstream from White Bridge	A	A	B	A
Waiwhetu Stream at Whites Line East	B	A	E	Not yet assessed

We also need to look at these sites through a pNRP lens. Table 3.4 in the pNRP outlines (using biological indicators) what a river would look like if it was in a "good" or "healthy" state, ie, it is fairly aspirational in nature.

Objective 25 of the pNRP states that where the objectives in Table 3.4 are not met, fresh water bodies are to be improved over time to meet the objective(s). It also states (policy 70) that where a fresh water body does not meet the objectives, point source discharges are to be managed in a way that does not make it any worse.

The table below shows six sites currently meet the invertebrate objective as per Table 3.4 in the pNRP. There are three further sites that come within five points of meeting the objective. It needs to be noted that water quality alone does not necessarily equate to healthy stream life. Other factors, such as habitat, are also important.

Site Name	River Class	Listed as significant?	MCI (3 year rolling median)	MCI target	Meeting pNRP objective?
Makara Stream at kennels	2	No	122.7	≥105	Yes
Karori Stream at Makara Peak	2	No	85.2	≥105	No
Kaiwharawhara Stream at Ngaio Gorge	2	No	81.9	≥105	No
Hutt River at Te Marua intake	1	No	138.2	≥120	Yes
Hutt River opposite Manor Park Golf Club	4	No	121.7	≥110	Yes
Hutt River at Boulcott	4	No	109.1	≥110	No
Pakuratahi River downstream from Farm Creek	1	Yes	120.7	≥130	No
Mangaroa River at Te Marua	1	No	115.2	≥120	No
Akatarawa River at Hutt confluence	1	Yes	128.4	≥130	No
Whakatikei River at Riverstone	4	No	123.2	≥110	Yes
Wainuiomata River at Manuka Track	1	Yes	130.9	≥130	Yes
Wainuiomata River downstream from White Bridge	4	No	111.2	≥110	Yes
Waiwhetu Stream at Whites Line East	6	No	57.3	≥100	No

River classes:

1 = Steep, hard sedimentary

2 = Mid-gradient, coastal, hard sedimentary

3 = Mid-gradient, soft sedimentary

4 = Lowland, large, draining ranges

5 = Lowland, large, draining plains and eastern Wairarapa

6 = Lowland, small

Owhiro Stream

The Owhiro Stream drains into Owhiro Bay (which forms part of the Taputeranga Marine Reserve) on the South Coast of Wellington. The catchment is primarily urban with small areas of farmland and contains a number of active landfills. Stormwater as well as landfill leachate currently discharge into the stream.

Water quality monitoring in the Brooklyn urban area (upstream of the T&T landfill) indicate stormwater contaminants consistently exceed trigger values for the protection of aquatic life. Downstream, landfill leachate contributes a range of contaminants to the stream.

There has been huge public concern about the state of this stream http://www.stuff.co.nz/environment/92132386/Whats-polluting-our-urban-harbours-and-streams. In response to this concern we have commissioned a review of all monitoring data that has been collected on this stream, and also held an open day in March at Owhiro Bay School. The open day highlighted the strong community interest and enthusiasm to become involved with improving the health of the stream. Opportunities are being discussed with key groups to determine what citizen science based initiatives can be implemented.

The stream is also highlighted in the global stormwater consent as a priority for investigation that will set out appropriate long-term management of urban-derived contaminants (refer to "What we are doing about it" below).

Lakes

We monitor two lakes in this area – Kohangatera and Kohangapiripiri. Lake Kohangatera is in excellent condition and ranked 15th best out of 259 lakes nationwide. In 2011 we recorded the presence of *E. Canadensis* (an invasive aquatic weed) for the first time. It does not appear to be a threat at this stage due to the natural salinity of the lake. Another weed, *Egeria densa*, is also present in Gollan's wetland at the northern end of the lake (refer section 8.3 above to see what we are doing about it).

Lake Kohangapiripiri is classed as being in a moderate condition and ranked 119th out of 259. A fish survey in 2013 suggest that access in and out of the lake is severely restricted and impacting on the breeding success of a number of indigenous fish species.

These lakes are monitored using the LakeSPI method, which takes into account the diversity and quality of indigenous plants as well as the degree of impact by invasive weed species. They were last monitored in February 2016 and the results are shown in the table below.

Lake	Native condition index (%)	Invasive condition index (%)	Overall LakeSPI	Class
Kohangatera	81	16	82	Excellent
Kohangapiripiri	36	61	40	Moderate

Estuaries

Estuaries are unique ecosystems that often support high biodiversity values. However they are particularly vulnerable to pollution as they are the sink into which our rivers and streams drain. They are also often subject to direct point source discharges such as stormwater and constructed wastewater outfalls. Two significant estuaries in this area are the Hutt Estuary on the Harbour and the Makara Estuary on the west coast.

The Makara Estuary is a moderate-sized lagoon type estuary at the mouth of the Makara River. The catchment area is a combination of pasture and forestry and also includes the Meridian Energy Wind Farm.

Surveys conducted as part of the Mill Creek wind turbine construction have found that much of the estuary is degraded (note that the wind turbine construction was not associated with these findings). High levels of sedimentation are resulting in a build-up of fine muds which are low in oxygen. As a result, the benthic fauna (the bugs and other animals that live in or on the sediment) biodiversity is low. The effects of erosion-related sedimentation are a concern for the long-term health of this estuary, but it does have the ability to recover IF a concerted effort is made to reduce sediment run-off.

Macroalgae growth continues to be a problem in **the Hutt Estuary**. However nuisance conditions such as rotting blankets of sea lettuce are highly localised and generally subtidal (occur below the low tide mark), indicating the estuary is being well flushed.

Overall the ecological condition of the estuary has been rated as moderate to poor and there has been no little or no change since 2010. Mud content and low sediment oxygenation are the key concerns for this estuary. The good news is that sedimentation rates are low and levels of stormwater contaminants are considered to be of “low risk”.

Figure 16: Macroalgae growth continues to be a problem in the Hutt Estuary

Wellington Harbour

We monitor sediment in Wellington Harbour for urban contaminants (such as metals and hydrocarbons which come from stormwater and road run-off) and legacy contaminants (such as DDT).

In the most recent survey (2016), a suite of emerging contaminants were analysed for the first time. These represent classes of chemicals, used in a wide range of industrial and household products, which are of growing concern. Although little is known about the ecological risk of these chemicals, very low (to non-detectable) concentrations were found.

Figure 17 below shows the key findings from these surveys.

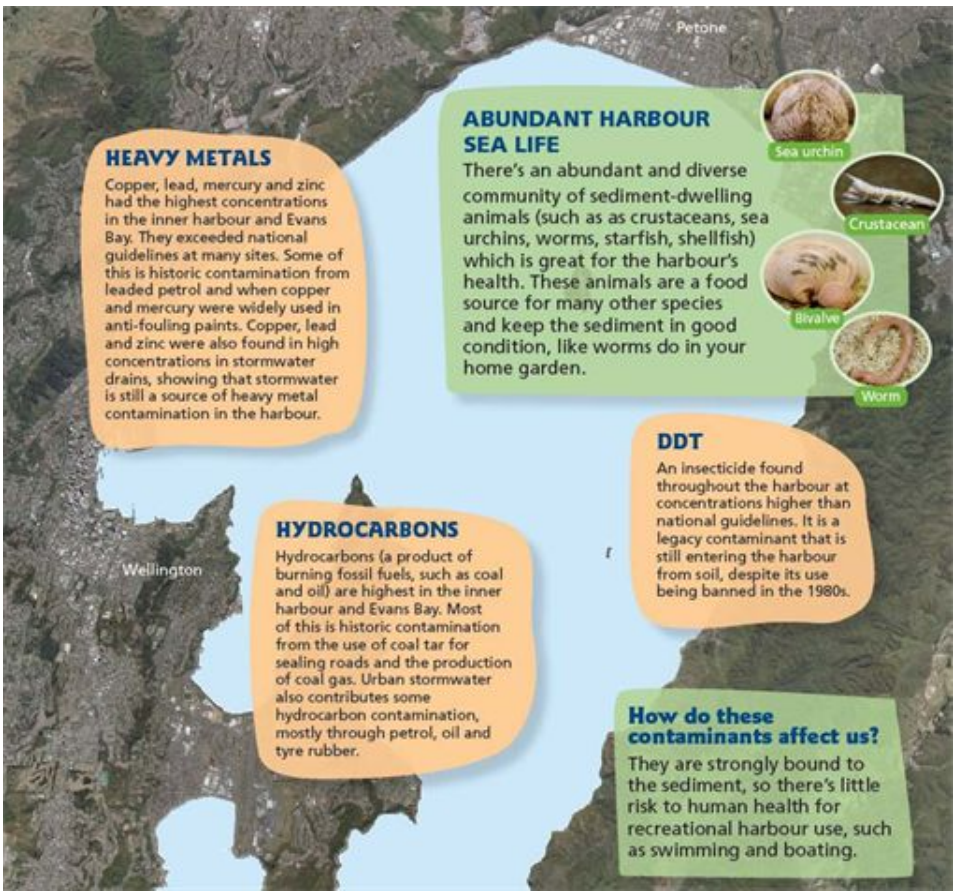

Figure 17: Levels of heavy metals, hydrocarbons and DDT exceed national guidelines at a number of sites and tend to be highest in the inner harbour

Groundwater quality

We monitor seven bores in the Wellington and Hutt Valley area. Apart from the Waiwhetu Aquifer (discussed in section 7.2), *E. coli* has been detected in one bore in Wainuiomata. This bore has had problems with *E. coli* contamination for a number of years, however the reason for this is unclear. The water from this bore is only used for irrigation purposes. Nitrate levels in all seven bores are consistently low.

Recreational water quality

From a recreational water quality perspective, water quality is generally pretty good over the summer, except in poor weather conditions. Heavy rain flushes contaminants from urban and rural land into water and can affect water quality for up to two days afterwards.

Despite being relatively wet, swimming water quality during the 2016/17 summer was still good most of the time. Only 41 samples out of 748 (5%) exceeded the guideline for safe swimming, and three quarters of these were rainfall related.

This area contains some of the best sites in the Region including Mahanga and Princess Bay in Wellington, and Te Awa Kairangi/Hutt River at Maoribank and Poets Park. It also contains some of the worst sites in the region, including

two inner harbour sites, two sites at Island Bay and Owhiro Bay. Previous investigations have identified human sewage as a source of contamination at these sites and WWL are working to improve the sewer and stormwater infrastructure in these areas.

The wetter conditions, and associated higher river flows, also meant that toxic algae growth was not a problem in the 2016/17 season. Although the presence of toxic algae was observed on a handful of occasions in the Pakuratahi, Akatarawa, Hutt and Wainuiomata rivers, the levels recorded were very low and no formal public health warnings were issued.

However this season is shaping up to be very different. With the warm temperatures and low rainfall we are already seeing high levels of toxic algae in the Hutt River. We have increased our communication activities to make people aware so they can keep themselves and their dogs safe. Read more about this in section 8.5.

6.4.2 What are we doing about it?

Working with local authorities on major consenting processes

Being a largely urban catchment, the main pressures on water quality are a result of the (well known) adverse impacts from stormwater runoff and wastewater overflows.

WCC have held consents for **stormwater discharges** to the marine environment since the late 1990's with the initial focus being on collecting information to understand effects. In 2008 Integrated Catchment Management Plans (ICMP's) were introduced in order to focus efforts where improvements (such as capacity upgrades, fixing old pipes, finding and fixing cross connections) are needed most.

The pNRP has seen a shift in the regulatory framework, which now requires territorial authorities to apply for consents for stormwater discharges to freshwater, as well as the marine environment.

It also introduced a two-stage consenting regime for stormwater discharges, which under rule 50 are a *Controlled Activity* requiring a 'global' consent (in order to promote a holistic approach to stormwater management). In July we received the Stage 1 application from WWL. The focus of this stage is on information collection to fill any knowledge gaps and determine the scale and intensity of the effects so that a long term management plan can be developed.

We are also working with WWL on a collaborative stormwater monitoring programme for the Wellington and Hutt Valley area. The information will be used for the global stormwater consent as well as our urban water quality investigations. This approach means that both agencies will benefit from cost efficiencies, improvements in data quality and better information sharing.

Wastewater is also a major player in the water quality picture in this area. The discharge quality from the wastewater treatment plants at Seaview, Moa Point and Karori are generally excellent. Prior to the 1990's discharges from the

plants at Moa Point and Seaview were simply screened and discharged straight to the ocean!

The issues we are seeing relate to the infrastructures capacity. In heavy rain there are often pump stations that overflow to stormwater drains or directly into rivers, streams or the oceans. This presents many risks to the environment, particularly in relation to public health and to mana whenua values.

WRIBO

A high-tech coastal water quality buoy was recently deployed in Wellington Harbour. This is a collaborative project between GWRC and NIWA and the result of several years of discussions and planning. The telemetered buoy, dubbed WRIBO (Wellington Region Integrated Buoy Observations), will help us understand the effects of the biggest freshwater inflow to the harbour – Te Awa Kairangi/Hutt River.

We envisage the data will be used for a wide range of purposes such as providing information to recreational harbour users, commercial users, large-scale model validation and consent processes.

Figure 18: It's a buoy! WRIBO stands three metres tall, is powered by solar panels and the most sophisticated of its kind in New Zealand.

The Riparian Programme

The Riparian Programme supports landowners to achieve water quality and biodiversity outcomes, and to be ready to comply with new rules in the pNRP around stock access to waterways.

The programme was developed in response to Method 12, a non-regulatory provision in the pNRP which directs GWRC to provide assistance to landowners in managing stock access to waterways. This method complements the rules and policies around livestock access and riparian management.

It involves the provision of advice (including assistance with developing Riparian Management Plans) as well as financial incentives for landowners to

manage the margins of streams and lakes on their properties (including fencing, plating and pest plant control). Part of the programme is also to work with landowners to identify waterways that meet the definitions for Category 1 and 2 surface water bodies.

Leading by example

GWRC manages several regional parks and forests in the Wellington and Hutt Valley area. Belmont Regional Park includes three stream catchments; Korokoro Stream, Speedy's Stream and Dry Creek. These are all tributaries of Te Awa Kairangi/Hutt River.

Since 2012 we have:

- Completely excluded the Dry Creek catchment from grazing
- Fenced off and retired from grazing the whole of the Korokoro catchment
- Retired from grazing large areas of the Speedy's Stream catchment.

7. Partnering with iwi

7.1 What does this mean?

This is about ensuring we have a true and trusted partnership with iwi at all levels including governance, decision-making and implementation. The key things we do in this regard are:

- Te Upoko Taiao – Natural Resources Plan Committee
- Whaitua committees
- Cultural health monitoring
- Involvement of kaitiaki in resource consenting processes.

7.2 Te Upoko Taiao – Natural Resources Plan Committee

Te Upoko Taiao (Natural Resources Plan Committee) was established in 2009. The purpose of Te Upoko Taiao is to promote the sustainable management of the region's natural and physical resources by overseeing GWRC's regulatory responsibilities in relation to resource management, including the review and development of regional plans.

The formation of Te Upoko Taiao enabled all matters pertinent to the regional plan review process to be reviewed and discussed by Council and mana whenua together. The result is that the pNRP both integrates mana whenua perspective and also specifies mana whenua values in objectives, policies, methods and schedules throughout the document.

Te Upoko Taiao also established a set of guiding principles to underpin the overall management approach of the pNRP:

1. *Ki uta ki tai (connectedness)* – Managing natural and physical resources in a holistic manner, recognising they are interconnected and reliant upon one another.
2. *Wairuatanga (identity)* – Recognition and respect for mauri and the intrinsic values of natural and physical features, and including the connections between natural processes and human cultures.

3. *Kaitiakitanga (guardianship)* – Recognition that we all have a part to play as guardians to maintain and enhance our natural and physical resources for current and future generations.
4. *Tō mātou whakapono (judgement based on knowledge)* – Recognition that our actions will be considered and justified by using the best available information and good judgement.
5. *Mahitahi (partnership)* – Partnership between Greater Wellington (Wellington Regional Council), iwi (mana whenua) and the community, based on a commitment to active engagement, good faith and a commonality of purpose.

7.3 Whaitua committees

Whaitua committees work in partnership with mana whenua to develop catchment-specific recommendations for the management of land and fresh water resources. The work of the committees is guided by the five principles noted in section 7.2 above. More about the role of the whaitua committees and the setup of the Wellington Harbour and Hutt Valley Whaitua Committee is outlined below in section 8.3.

7.4 Cultural health monitoring

A current project, the Regional Kaitiaki Monitoring Framework, is underway to develop a framework for undertaking cultural health monitoring in partnership with mana whenua and give effect to local kaitiakitanga.

This works towards meeting our obligations to iwi under the NPS-FM and the pNRP. Mahinga kai and Māori customary use are key shared objectives for several non-regulatory methods in the pNRP and we intend to use method 2 (kaitiaki monitoring and information strategy) to define mahinga kai and Māori customary use and how that will be monitored within each rohē.

In the Wellington and Hutt valley this means working with the relevant iwi groups and stakeholders as well as the whaitua committee to identify mana whenua values and needs. By taking the specific needs of the mana whenua of the area and developing cultural monitoring strategies we aim to encourage and support long-term cultural monitoring by kaitiaki. The framework will also address how cultural information can be reported.

7.5 Involvement of Kaitiaki in resource use processes

Our relationship with mana whenua is entering a new phase. Driven by method 26 under the pNRP, our current processes and practices for interacting on non-notified consents are evolving. In a joint forum with our iwi partners we developed a list of things that need to change in the way we interact with iwi on consents. We will be piloting some of these changes over the next six months. Examples of the changes include engaging kaitiaki to provide expert opinion on applications, cross-sharing of knowledge on how we assess an application and engaging more with regular applicants/consultants about why this is needed (including the value it can add to a proposal).

8. Communities are engaged and participating

8.1 What does this mean?

This is about ensuring our communities know what we do, understand how they can contribute, and are positively engaged and participating. The key things we do in this regard are:

- Mahi Waiora
- Whaitua committees
- Citizen Science
- Engagement and Education.

8.2 Mahi Waiora

Mahi Waiora is a new approach to how we work with landowners to improve water quality. It's about bringing together the Environment Management and Catchment Management groups so we can provide clear support and advice to landowners, helping them manage their land in a sustainable way.

Under the pNRP there will be changes to the rules around what landowners can do on their land, in particular the exclusion of stock from waterways and the protection of scheduled wetlands. To make sure they're ready and able to do the right thing, we need to deliver three things:

1. Training for everyone who interacts with landowners so they are empowered to represent GWRC as a whole, not just within the perspective of their role.
2. Developing further training, systems and tools to support staff to be able to improve how we work across our various functions, and see our work as part of the larger whole.
3. Work with industry groups and landowners to develop information about how the changes in the pNRP will affect them, why those changes are important and what support we can offer them to be ready to meet the new requirements.

More information about two the key programmes (the Wetland and Riparian programmes) are included in sections 6.3 and 6.4 above.

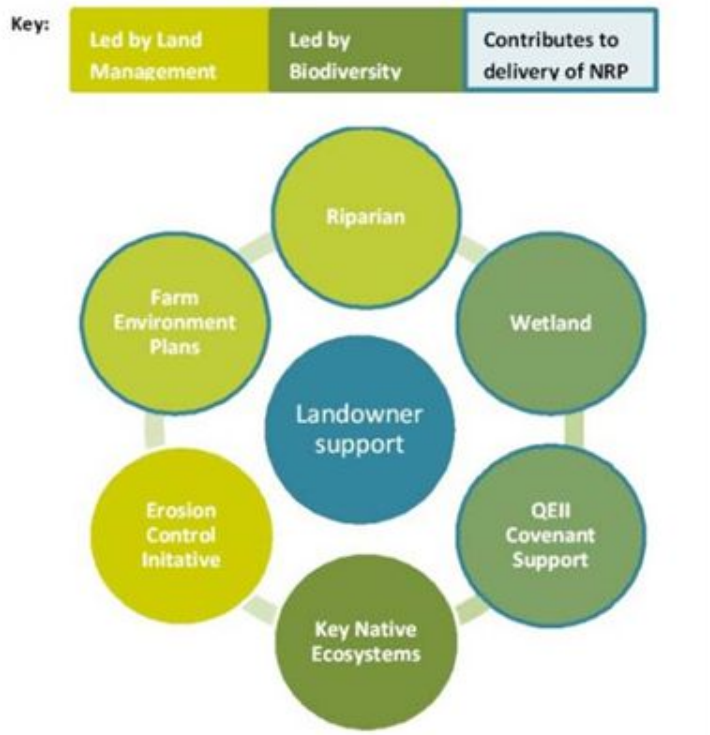

Figure 19. The six programmes which will help us deliver Methods 12 (sustainable land management practices) and 20 (wetlands) in the pNRP

8.3 Wellington and Hutt Valley Whaitua Committee

The whaitua process forms the basis of how we intend to implement the NPS-FM. The NPS-FM includes minimum standards for freshwater that Councils must seek to achieve, and requires overall water quality in a region to be maintained or improved. This is partly achieved via the setting of limits for each catchment.

Our process for setting catchment-based limits is through the pNRP and the whaitua committees. Whaitua committees are groups of local people responsible for developing a Whaitua Implementation Programme (WIP) in conjunction with their community. A WIP recommends how the people from that catchment want to manage their water now and for future generations through a range of integrated tools, policies and strategies.

The Wellington and Hutt Valley Whaitua Committee is due to be established in the first half of 2018. In the meantime, we are using the time to learn from our current experiences with the Ruamāhanga and Te Awarua-o-Porirua whaitua, as well as other New Zealand experiences.

8.4 Citizen Science

Citizen science is growing worldwide as a way of collecting extra data and information, and increasing scientific knowledge. Supporting citizen science will allow us to expand environmental monitoring activities in the Wellington Region (using a limited amount of funding and resources) while engaging more closely with our communities.

A draft Citizen Science Implementation Framework has been developed and will be tested using two pilot citizen science projects. One of these is in the Waiwhetu Stream with the Friends of Waiwhetu Stream (FoWS). The FoWS have undertaken a huge amount of restoration work (removal of cape pondweed and stream bank planting) in the upper part of the stream. The aim of the project is to assess the ecological benefits of this work including:

- Mapping the extension of suitable inanga spawning habitat, and
- Monitoring the responses of fish populations and macroinvertebrates.

We are also collaborating with WCC, MfE, Zealandia and Mountains to Sea Trust to deliver workshops and training in stream health assessment to a wider audience, given there is growing interest in freshwater citizen science. The workshops will cover the basics of citizen science, freshwater science, what is meant by "water quality" and simple techniques for stream health assessments.

8.5 Engagement and Education

We undertake a huge number of engagement and education activities, but possibly one of our more prominent education campaigns is called *Is it safe to swim?* www.gw.govt.nz/is-it-safe-to-swim

The campaign enables people to make informed choices about when and where to swim by checking for any water quality warnings on our interactive map http://mapping.gw.govt.nz/GW/RecWaterQualityMap/RecWaterQualityMap.htm

Another focus of the campaign is educating our communities about the two key factors affecting swimming water quality:

Rain – Swimming water quality in our rivers and at our beaches is actually pretty good over the summer, except in poor weather conditions. Heavy rain flushes contaminants from the land into water and we advise people not to swim for at least two days after rain, even if a site generally has good water quality.

Toxic algae – During summer low rainfall and higher water temperatures creates conditions where toxic algae can thrive. Toxic algae poses the biggest risk to dogs because it has a strong musty smell that dogs love, and they will try to eat it if they get the chance! Because toxic algae can be in some parts of the river and not others (and we can't monitor everywhere), we advise people that the best way to stay safe is to know what it looks like and make sure their dogs don't eat it. Two videos were produced to show people what to look out for:

- https://www.youtube.com/watch?v=WQ5vFEJ0RgY
- https://www.youtube.com/watch?v=u3cBoqVKw0o

The unseasonably warm temperatures and low rainfall means we are already seeing high levels of toxic algae in the Hutt River. We have ramped up our communication activities, which includes our regular "Tank Talks" which are used to engage with dog owners in a more friendly way (see example below).

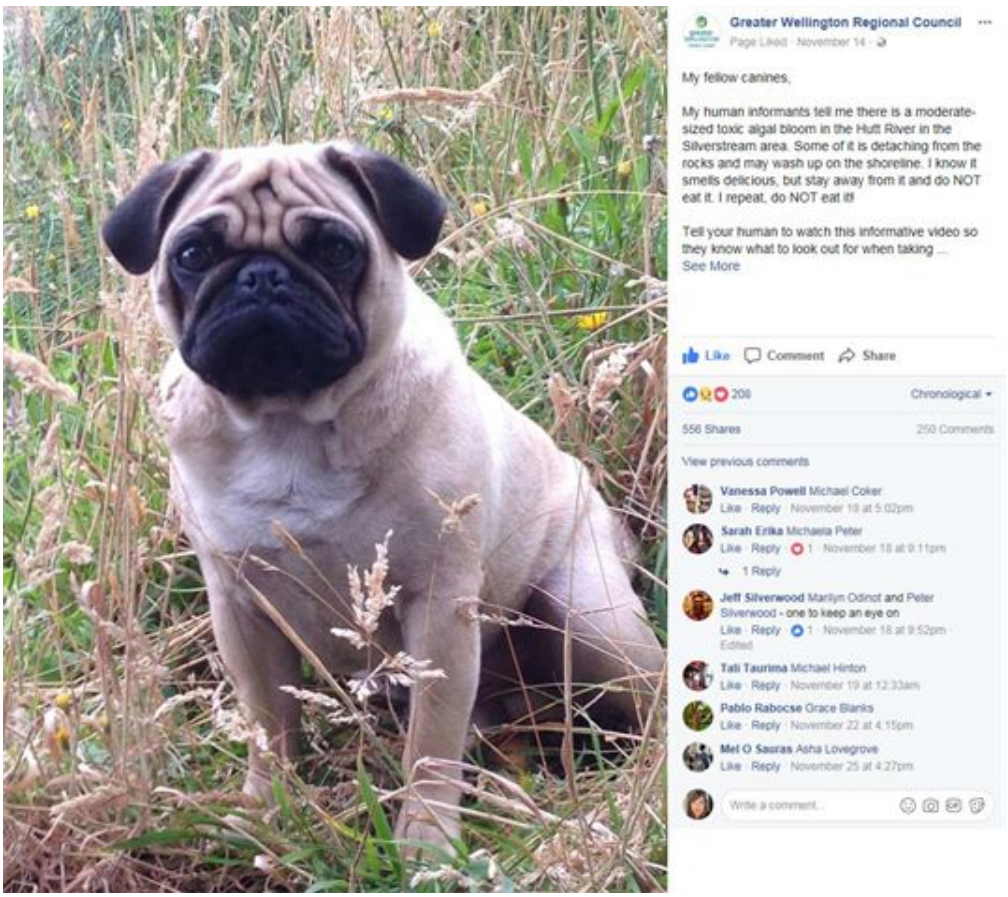

Figure 12: Tank looks like a cool dude but he is deadly serious about toxic algae

9. Environmental Outcome – Is freshwater quality being maintained or improved?

A report published in August has analysed water quality trends for rivers and lakes in the Wellington Region. For the Wellington and Hutt Valley area most of the analyses resulted in uncertain trends. The only notable trend was in **water clarity**. Approximately 70 percent of sites showed an improving ten-year trend in water clarity. Only one site (seven percent) showed a degrading trend.

A report released in May has analysed groundwater nitrate trends across the region. Out of nine bores analysed, one (in Upper Hutt) showed a meaningful increase in nitrate and one (in Lower Hutt) showed a meaningful decrease in nitrogen. The Upper Hutt bore is only used for emergency public supply, and median nitrate concentrations still easily meet the drinking water standard.

What is clear is that **it is our small urban streams that are in the worst shape**, and that this is largely a result of stormwater and sewer infrastructure issues. This can be compounded if they are also heavily channelised or modified, resulting in poor habitat – an essential component for healthy stream life. Leachate from landfills is also an issue for certain streams in this area.

It is also important to note that because groundwater can be very old (ie, it takes a long time to "travel through the system") and that groundwater in this area is strongly connected to surface water, we could be dealing with legacy contamination issues for some time.

Our estuaries are also at risk, which is not surprising as they act as the sink into which our rivers and streams drain and can be thought of as the "canary in the gold mine". The good news is that, at this stage, the degradation of these particular environments is still fully reversible.

What is apparent is that better water quality, and the associated healthy ecosystems that we want to achieve with it, will not happen overnight. Our water quality today is the result of over 100 years of mismanagement, and it will probably take a further 100 years to put it back to a healthy state.

It is only over the last 30 years or so that the thinking around the value of our freshwater resources has changed dramatically, and our actions are yet to fully catch up with our thinking. Restoring the health of our waterways needs to be thought of not as some short-term engineered 'corrective surgery', but as a life-long journey back toward 'healthy living'.

10. Moving forward

Maintaining and restoring water quality in the Wellington and Hutt Valley catchment will require a collaborative effort, particularly between ourselves, WWL and local authorities as the agencies responsible for managing water supply and disposal.

And while it will take some time to fix legacy contamination issues, we can make a difference right now by ensuring that any new urban developments are designed and built in a water-sensitive way.

Communities can also play their part, especially when it comes to understanding that what goes into stormwater drains goes directly into our rivers and seas. Improving our community's "water literacy", listening to what works for them and empowering them to behave responsibly will be paramount to success.

The process of creating behaviour change will be a long journey, one where mistakes will be made. The key will be working together, using a mix of non-regulatory and regulatory methods.

11. Communication

No communications are necessary. The subject matter of this report will be used to inform discussions with the Wellington and Hutt Valley Whaitua Committee.

12. Consideration of Climate Change

The matters addressed in this report have been considered by officers in accordance with the process set out in the GWRC Climate Change Consideration Guide.

Climate change mitigation (emissions reduction) and adaptation (adapting to impacts such as sea level rise) is further discussed in Section 5.4 of this report.

13. The decision being sought

No decision is being sought in this report.

The report is solely for the Environment Committee's information. A comprehensive understanding of the state of the environment, key pressures and issues, as well as what GWRC are doing to achieve our desired environmental outcomes, will help underpin future decision-making by the committee.

14. Recommendations

That the Committee:

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

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

Report prepared by:	Report approved by:	Report approved by:
Penny Fairbrother Senior Science Coordinator	**Nigel Corry** Environment Group Manager	**Wayne O'Donnell** Catchment Management Group Manager

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Report	**17.494**
Date	22 November 2017
File	CCAB-10-447
Committee	**Environment Committee**
Author	**Tracy Berghan, Principal Planning Advisor**

Floodplain management planning – principles update

1. Purpose

To update the Committee on the floodplain management planning principles that were approved by the Council in 2015 (Report 15.99).

2. Background

At a workshop on the 28 October 2014, the Strategy and Policy Committee discussed the report *Floodplain Management Planning – Principles* which is included as **Attachment 1** to this report. The workshop covered:

- The four principles that underlie GWRCs approach to floodplain management in the Region;
- The rationale behind the introduction and application of these principles; and
- Examples of relevant national and international research, guidance and policy directives that support their application.

In 2015, Council agreed that the four principles discussed at the workshop and detailed in section 2.1 below were representative of Greater Wellington Regional Council's current practice in its delivery of floodplain management planning in the region and approved the continued application of these principles in future floodplain management planning in the region.

3. Principles

Principle 1: Avoid building in areas at high risk of flood hazard

Avoiding the construction of residential and other buildings vulnerable to flooding in undeveloped urban and rural areas (i.e. a 'greenfields' situation) exposed to a high level of flood hazard is the most effective way of managing flood risk in these locations in the long-term. In areas subject to a lesser degree of flood hazard, activities and development should be appropriate to the circumstances and should not exacerbate flood risk.

Principle 2: Only consider new flood protection infrastructure where existing development is at risk

Where existing urban or rural land use and/or development (e.g. dwellings, irrigation infrastructure, dairy sheds) is subject to an unacceptable degree of flood risk the construction of new structural protection measures (e.g. stopbanks, elevating existing buildings) will be considered.[1]

Principle 3: Establish standards of flood protection relative to the degree of risk

In developing and implementing structural and non-structural measures within areas subject to flood risk, the following standards are to be applied by GWRC and, where relevant, city/district councils:

- Protection of all habitable buildings and urban areas
    - A minimum 1 in 100 year flood standard to floor levels for habitable buildings and new development within existing urban areas, along with provision of safe access.

- Stopbank protection
    - Where required to protect existing urban areas and associated land use, stopbanks will be constructed to achieve a minimum 1 in 100 year flood standard.

    - Where required to protect rural areas and associated land use, stopbanks are generally constructed up to a 1 in 20 year flood standard to alleviate frequent or nuisance flood events.

Principle 4: Plan for climate change in assessing the degree of flood hazard risk and in determining an appropriate response

GWRC will use the following allowances for climate change predicted to occur over the next 100 years in the design criteria for its flood hazard investigations.

The current allowances are:

- Increase in rainfall intensity 20%
- Sea Level Rise 0.8m

4. Comment

The floodplain management planning approach adopted by GWRC continues to represent an effective response to managing flood risk, and is premised on the core principles outlined above and also reflects the following:

- The evolving nature of GWRC's practice in preparing and implementing FMPs throughout the region and the corresponding lessons learnt; and

[1] The presence of property or infrastructure in an area subject to a 1 in 100 year flooding does not necessary justify intervention. Such intervention is only appropriate where there is an "unacceptable level of risk."

- The political and economic realities associated with any prospective change to GWRC's current approach to managing flood hazard risk (e.g. managed retreat vs building or upgrading flood protection structures).

The principles contained in this report reflect current practice and have been developed over time as part of the outcomes of the FMPs completed to date. These principles are not the final word on these issues, but they continue to represent a baseline that would not be compromised in an individual FMP without re-examining the principles as a whole. How the principles are applied in detail will vary within each FMP.

The principles also reinforce and complement the objectives and policies in the Regional Policy Statement (RPS) for the Wellington Region and GWRC's operational floodplain management guidelines.

5. Communication

The principles have been discussed as part of the FMP processes undertaken by GWRC and are referenced in various discussions between GWRC and TA council officers. Principles 1 and 3 are communicated through the RPS. RPS Policy 29 is a directive policy to avoid inappropriate subdivision development in areas at high risk from natural hazards and Policy 51 is a consideration policy which requires the minimisation of the risks and consequences of natural hazards, including the need to locate habitable floor areas and access routes above the 1 in 100 year flood level.

6. Consideration of Climate Change

The matter/s addressed in this report have been considered by officers in accordance with the process set out in the GWRC Climate Change Consideration Guide.

6.1 Mitigation assessment

Mitigation assessments are concerned with the effect of the matter on the climate (i.e. the greenhouse gas emissions generated or removed from the atmosphere as a consequence of the matter) and the actions taken to reduce, neutralise or enhance that effect.

The effect of the proposed principles on the climate are not considered significant, and will be addressed through GWRCs procurement process which is undergoing review in 2017 and will encourage suppliers and contractors to minimise emissions.

6.2 Adaptation assessment

Adaptation assessments relate to the impacts of climate change (e.g. sea level rise or an increase in extreme weather events), and the actions taken to address or avoid those impacts.

GWRC plans for climate change in assessing the degree of future flood hazard and in determining an appropriate response. There are only specific, limited situations in

which climate change is not relevant (for example, planning for present-day emergency management).

In terms of the wider, long term work of the Department which these principles support, assessing flood hazard and determining appropriate structural and/or non-structural responses in areas subject to flood risk, GWRC applies the following allowances for climate change predicted to occur over the next 100 years in the design criteria for flood hazard investigations which is the same as the principles above:

- Increases in rainfall intensity – 20%
- Sea level rise – 0.8m.

7. The decision-making process and significance

Officers recognise that the matters referenced in this report may have a high degree of importance to affected or interested parties.

The matter requiring decision in this report has been considered by officers against the requirements of Part 6 of the Local Government Act 2002 (the Act). Part 6 sets out the obligations of local authorities in relation to the making of decisions.

7.1 Significance of the decision

Part 6 requires Greater Wellington Regional Council to consider the significance of the decision. The term 'significance' has a statutory definition set out in the Act.

Officers have considered the significance of the matter, taking the Council's significance and engagement policy and decision-making guidelines into account. Officers recommend that the matter be considered to have low significance.

The decision is of low significance as the Committee, by approving this paper, is confirming the Greater Wellington Regional Council's current practice for the delivery of its flood protection responsibilities.

Officers do not consider that a formal record outlining consideration of the decision-making process is required in this instance.

7.2 Engagement

In accordance with the significance and engagement policy, no engagement on the matters for decision is required

8. Recommendations

That the Committee:

1. ***Receives** the report.*
2. ***Notes** the contents of the report.*

3. ***Endorses*** *the four principles that underlie GWRCs approach to floodplain management in the Region.*

Report prepared by:	Report approved by:	Report Approved by:
Tracy Berghan Principal Planner Advisor	**Graeme Campbell** Manager Flood Protection	**Wayne O'Donnell** Group Manager, Catchment Management

Attachment 1: Floodplain management planning – Principles (Background Paper)

Floodplain management planning - principles

2/3/2015

Greater Wellington Regional Council

Quality Information

Document Floodplain management planning – principles

Ref **Doc No 1366413 v11**

Prepared by Tracy Berghan

Reviewed by Mark Hooker

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
1	22/09/14		Tracy Berghan	
2	03/02/15		Tracy Berghan	
3	10/03/15		Tracy Berghan	

Table of Contents

1 Introduction

Floodplain management planning is an internationally recognised approach to managing flood risk, and one that generally comprises the following phases:

- Investigating and understanding the probability and consequences of flooding, and the economic, social, cultural and environmental values within a defined catchment;
- Identifying, evaluating and selecting a range of appropriate management options, with community input, to reduce flood risk; and
- Implementing a preferred option(s) for managing the flood risk in a way that ensures a co-ordinated response by relevant agencies and/or individuals.

The outcome of this process is a Floodplain Management Plan (FMP), a high-level strategic planning document prepared in collaboration with key local decision-makers and the relevant catchment community to identify agreed policies and options to manage flood risk.

The floodplain management approach described above was introduced in the mid 1990's and endorsed by Greater Wellington Regional Council (GWRC). Since that time five FMPs[1] have been finalised, two are nearing completion and work on a further two is currently underway.[2]

In light of the importance placed by GWRC on the effective management of flood risk in the region, the purpose of this report is to outline:

- Four core principles that underlie GWRCs approach to floodplain management in the region;
- The rationale behind the introduction and application of these principles; and
- Examples of relevant national and international research, guidance and policy directives that support their application.

2 Principles

The floodplain management planning approach adopted by GWRC represents an effective response to managing flood risk, and is premised on a set of core principles that reflect the following:

- The evolving nature of Council practice in preparing and implementing FMPs throughout the region and the corresponding lessons learnt; and

[1] These include the Hutt, Otaki and Waikanae River FMPs, the Porirua Stream Management Plan completed in the mid 1990's and the Waitohu Stream Study completed in 2006.

[2] In the Wairarapa, GWRC predominantly manages those rivers and streams which have River Schemes in place. In the balance of the region GWRC also manages in association with local Territorial Authorities the rivers and streams listed in the Watercourses Agreement [1991], with city and district councils assuming primary responsibility for smaller urban streams and stormwater channels located within their particular jurisdictions.

- The political and economic realities associated with any prospective change to GWRC's current approach to managing flood hazard risk (e.g. managed retreat vs building or upgrading flood protection structures).

The principles also reinforce and complement the objectives and policies in the Regional Policy Statement for the Wellington Region (RPS) and the Council's operational floodplain management guidelines.

The four core principles that underpin GWRC's approach to floodplain management planning are as follows:

- Avoid building in areas at high risk of flood hazard;
- Only consider new flood protection infrastructure where existing development is at risk;
- Establish standards of flood protection relative to the degree of risk; and
- Plan for climate change in assessing the degree of flood hazard risk and in determining an appropriate response.

The manner in which these principles are applied to specific catchments is largely determined in discussion with individual communities during the process of preparing a FMP. This process and discussion includes, for example, consideration of such matters as:

- What constitutes 'an unacceptable level of risk' to the local community and what are the structural and non-structural measures available to reduce exposure to these risks; and
- How estimates of potential flood damage are derived (e.g. current land use and potential future losses under existing development conditions vs increased development opportunities and economic growth resulting from the introduction of structural measures).[3]

2.1 Avoid building in areas at high risk of flood hazard

Avoiding the construction of residential and other buildings vulnerable to flooding in undeveloped urban and rural areas (i.e. a 'greenfields' situation) exposed to a high level of flood hazard is the most effective way of managing flood risk in these locations in the long-term. In areas subject to a lesser degree of flood hazard, activities and development should be appropriate to the circumstances and should not exacerbate flood risk.

2.2 Only consider new flood protection infrastructure where existing development is at risk

Where existing urban or rural land use and/or development (e.g. dwellings, irrigation infrastructure, dairy sheds) is subject to an unacceptable degree of flood risk the construction of new structural protection measures (e.g. stopbanks, elevating existing buildings) will be considered. This includes

[3] To date economic analysis undertaken for FMP purposes has not included an explicit objective of pursuing economic growth, as increased land-use intensity in areas subject to high flood hazard risk is not an outcome contemplated by GWRC due to the core principle that any building in these areas should be avoided

circumstances where, for instance, there is an elevated risk to human life or safety or where the impact on lifeline utilities or the local/regional economy is judged to be significant.

2.3 Establish standards of flood protection relative to the degree of risk

In designing and implementing structural and/or non-structural measures within areas subject to flood risk, the following standards are to be applied by GWRC and city/district councils:[4]

- Protection of all habitable buildings and urban areas
    - A minimum 1 in 100 year flood standard to floor levels for habitable buildings and new development within existing urban areas, along with provision of safe access.
- Stopbank protection
    - Where required to protect existing urban areas and associated land use, stopbanks will be constructed to achieve a minimum 1 in 100 year flood standard;
    - Where required to protect rural areas and associated land use, stopbanks are generally constructed up to a 1 in 20 year flood standard to alleviate frequent or nuisance flood events.

2.4 Plan for climate change in assessing the degree of flood hazard risk and in determining an appropriate response

In assessing flood hazard risk and determining appropriate structural and/or non-structural responses in areas subject to flood risk, GWRC will apply the following allowances for climate change predicted to occur over the next 100 years in the design criteria for its flood hazard investigations:

- Current allowances[5]
    - Increases in rainfall intensity - 20%.
    - Sea Level Rise - 0.8m.

3 Reasons for principles

The introduction and application of the abovementioned principles are based on a number of reasons, some of the more fundamental of which are as follows:[6]

3.1 Avoidance

The RPS contains a clear policy directive that inappropriate subdivision and development in areas at high risk from natural hazards is to be avoided,[7] and is therefore a matter that needs to be given

[4] These standards complement and reinforce the considerations to which particular regard must be had that are outlined in Policies 51 and 52 of the Regional Policy Statement for the Wellington Region (refer Appendix 2), particularly Policy 51(i) which relates to the need to locate habitable floor areas and access routes above the 1:100 year flood level, in identified flood hazard areas

[5] Refer memo WGN# 1256418 – Climate Change Design Parameters attached as Appendix 3

[6] Also refer to the supporting information included in Appendix 1

[7] RPS Policy 29; the associated explanation indicates that an area 'should be considered high risk if there is the potential for moderate to high levels of damage to the subdivision or development, including the buildings, infrastructure or land on which it is situated' (pg.109)

effect to in relevant district plans.[8] It also includes an associated regulatory method that stipulates that the process to amend district plans to implement this policy is to commence on, or prior to, the date on which city and district councils in the region commence a review of their district plan or relevant plan provisions.[9]

Determining what is 'inappropriate' (and conversely appropriate) subdivision and development in identified flood hazard risk areas will depend on the local context (e.g. rural vs rural areas).[10] However, inappropriate development in such areas would generally include, for example, activities that accommodate a high number of people, provide a critical service (e.g. medical, educational, emergency), or involve physical works (earthworks or vegetation clearance) that could obstruct natural overland flow paths (e.g. elevated roadways, embankments) or intensify the flow of water into natural or man-made drainage systems (e.g. vegetation removal, increase in hard surface area). Locating critical facilities and infrastructure in high hazard areas (e.g. hospitals, Civil Defence centres, substations, sensitive developments like housing for vulnerable people) would also be considered as inappropriate development.

By contrast appropriate development in flood risk areas would generally include, for example, activities and development which either involve no/limited human occupation of the area (e.g. farmland, passive open spaces, native habitats) or no significant physical works or structures being constructed. However, in some contexts it may also be appropriate to include activities and development that accommodate people where the level of identified flood hazard risk is satisfactorily recognised and responded to (e.g. minimum floor levels, setbacks/buffer areas).

The Supreme Court recently observed that the term 'avoid' was a strong word, meaning 'not allow' or 'prevent the occurrence of', and that the term 'inappropriate' needs to be considered and assessed against the characteristics of the environment that particular policies sought to preserve.[11]

It has also been noted that there appears to be an increased emphasis on engineered solutions in NZ which, while valid in many situations, may insufficiently manage the associated risks where design parameters are exceeded, thereby prompting consideration of avoidance of development in hazard prone areas.[12]

Consequently, a policy of avoidance clearly signals intent within areas of high hazard and averts the need for structural measures to be constructed to 'protect' subsequent development.

3.2 Flood Protection Infrastructure

The intent underpinning this principle is that new or future development in areas subject to flood hazard needs to take account of the hazard by either avoiding it altogether or mitigating the hazard if avoidance is unachievable (e.g. by raising the land or other methods that don't rely on the

[8] Section 75(3)(c) RMA
[9] Section 4.5.1 Regulatory Methods – Method 1: District Plan Implementation
[10] This would include an evaluation of the costs and benefits to assess the levels of acceptable risk within an area along with the impact of different management options
[11] *EDS v NZ King Salmon & Ors*, SC 82/2013 [2014] NZSC 38
[12] B Glavovic, W Saunders, J Becker (2010), *Realising the Potential of Land-use Planning to Reduce Hazard Risks* in NZ in The Australasian Journal of Disaster and Trauma Studies, Vol. 2010-1

construction of physical flood protection structures such as stopbanks).[13] This, in turn, avoids the emergence of a 'safe development' paradox.[14]

Although flood protection structures can be highly effective when appropriately used, a residual flood hazard still remains. In particular, structures can be overtopped by events outside their design capacity, and structural solutions can also impose a high upfront cost, ongoing maintenance costs, induce complacency by their presence, and result in increased impacts if they fail or are overtopped.

3.3 Standards

Although the Building Act and the Resource Management Act (RMA) both manage natural hazards, there are important distinctions between their respective statutory imperatives and the methods through which hazards are addressed. Under the RMA, local authorities are authorised to control the use of land or any actual or potential effects of the use, development or protection of land to avoid or mitigate natural hazards,[15] while the Building Act authorises territorial authorities to grant building consent on land subject to specific natural hazards with certain exceptions.[16]

It has been observed that there is a tendency for territorial authorities to rely on the assessment of proposed building construction under the Building Act to control development on land at risk from natural hazards instead of proactively managing the location of development through regional and district planning instruments.[17] Equally, it has been noted that caution should be exercised in relying on the Building Act as the primary method of regulating development in hazardous areas as only certain hazards may be taken into account when determining whether to grant a building consent (e.g. ground shaking from earthquakes).[18]

Although a minimum 1 in 100 year flood standard for buildings exceeds the 1 in 50 year standard referred to in the Building Code,[19] sections 68(2A) and 76(2A) of the RMA expressly empower local authorities to make rules for the protection of other property from surface water (e.g. flow diversion, debris build up) by enabling the requirement for people undertaking building work to achieve a more stringent standard than that contained in the Building Code.

The High Court has held that the purpose of these sections is to enable local authorities to impose controls over buildings to protect property from the effects of surface water, notwithstanding that the Building Code contains performance criteria covering this exact issue and provided that the

[13] Decisions by GWRC regarding the construction of structural measures are currently based on an evaluation of the impacts on present land/building/productive value; however, consideration of the future economic benefits/value of undertaking such measures may be applicable in future FMP processes
[14] This is a situation where provision of protection against a moderate flood hazard leads to development intensification and increased exposure to catastrophic hazard if an event exceeds the design standard or protective works are breached due to design and/or construction deficiencies (e.g.earthquake, flap gate malfunction)
[15] Sections 30(d)(v) & 31(b)(i) RMA respectively
[16] Section 71(1), Building Act 2004
[17] J Harker (2012), *Local Authority Liability for Developments in Areas Subject to Hazards* in NZ Journal of Environmental Law, pg.320
[18] J Harker, op cit, pg.321
[19] Clause E1.3.2, Building Regulations 1992

controls are created for a resource management purpose.[20] As natural hazard management is a specific functional responsibility of local authorities under sections 30(d)(v) and 31(b)(i) of the RMA the Court has noted that control of the use of land for the purpose of avoiding or mitigating natural hazards is within the powers of regional councils and territorial authorities, including the power to prohibit or restrict activities such as residential occupation and the erection of buildings.[21]

The High Court has also observed that where a territorial authority is facing a particular planning or resource management issue that necessitates the imposition of a requirement that goes beyond the Building Code, that the Building Act does not prevent this from occurring where such a departure is justified.[22]

Consequently, application of a 1 in 100 year design standard to urban areas and habitable buildings is not unreasonable, will increase the likelihood that such areas/development are resilient to inundation in the event that a stopbank is breached or overtopped and is consistent with NZ and international best practice.[23]

In addition to the reasons highlighted above the following factors are also important considerations in establishing appropriate standards of flood protection:

- There is no utility in constructing a stopbank that achieves less than a 1 in 100 year flood standard in an urban situation as structural measures designed and built in such circumstances need to be of a standard that affords effective flood protection given the level of public funding expended (i.e. a marginal increase in construction cost can result in an improved level of protection); and
- Access to insurance and mortgage finance is increasingly influenced by such factors as the level of exposure to flood risk, and financial and insurance institutions are requiring minimum standards of building performance to be satisfied (e.g. minimum protection or floor levels) to reduce potential exposure to flood damage.

3.4 Climate change

Research on the impact of climate change and how it might affect New Zealand strongly supports the position that rainfall intensity and sea level will increase in future, with the outstanding issue being the extent of the increase.[24] Currently GWRC applies the mid-range values specified in relevant technical guidance and will continue to rely on these until the guidelines are more specifically refined for the Wellington region based on further empirical research.

[20] *Building Industry Authority v Christchurch City Council* [1997] 1 NZLR 573
[21] *Canterbury Regional Council v Banks Peninsula District Council* [1995] 3 NZLR 189
[22] *Christchurch International Airport Limited v Christchurch City Council* [1997] NZRMA 145, 148 (HC)
[23] Refer section 4.3 of this report
[24] Refer, for example, PCE (2014), *Changing Climate and Rising Seas: Understanding the Science* and IPCC (2013), *Climate Change 2013: The Physical Science Basis*, Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change

GWRC will apply the design criteria set out in section 2.4 of this report to all future flood hazard assessment work, noting that a similar climate change allowance has already made for the review of the Waikanae FMP as well as the Waiohine and Pinehaven FMPs.[25]

[25] Also of note is that a 2800 m3/s design standard was selected for the Hutt River to allow for some climate change although not specifically for the criteria outlined in section 2.4 of this report; equally, at this stage no account for climate change has been included in the earlier work undertaken on the Waiwhetu and LWVDS reviews - Refer to report WGN#741469 – Climate Change

Appendix 1 - Supporting Information

The principles identified in section 2 are supported by a wide range of relevant national and international research, guidance and policy directives, examples of which are as follows:

4.1 Avoidance

Avoidance in areas of high risk is advocated by the following guidelines/research:

- Ericksen (1986), *Creating Flood Disasters* – Water & Soil Miscellaneous Publication No.77
    - The research paper suggests that land uses should be compatible with the projected flood risk, including open space for recreation, reserves, rural and similar uses in areas of high risk and housing (and other building development) in areas of little or no risk.
- Commonwealth of Australia (2000), *Floodplain Management in Australia – Best Practice Principles & Guidelines* (SCRAM Report No.73)
    - The report outlines a series of best practice principles for floodplain management in Australia, one of which is that land use needs to be appropriate to the level of hazard and should be carefully matched to both maximise the benefits of using the floodplain while minimising the risks and consequences of flooding.
- MfE (2008), *Meeting the Challenges of future flooding in New Zealand*
    - The review notes past reliance on protection works and that the focus on response and recovery needs to change so that future decisions place greater emphasis on flood hazard avoidance. It also observes that in the absence of improvements to the way in which flood risk is managed, future generations would likely become more vulnerable to flooding, experience greater losses and require escalating expenditure on response and recovery efforts.
- MfE (2010), *Preparing for Future Flooding – A Guide for Local Government*
    - The guide outlines a series of principles to manage flood risk including adopting a precautionary approach to minimise exposure to harm as much as possible when a plausible risk has been identified, and use of progressive risk reduction to ensure that new developments are not exposed to, or increase, flood risk over their intended lifetime and that the level of risk to existing development is progressively reduced.
- UK Department of Communities and Local Government (2012), *Technical Guidance to the National Planning Policy Framework*
    - The document provides guidance to local planning authorities to ensure effective implementation of the planning policy on development in areas at risk of flooding set out in the UK National Planning Policy Framework. In particular it emphasises that inappropriate development in areas at risk of flooding should be avoided by directing development away from high risk areas.
- Jha, Bloch & Lamond (2012), *Cities and Flooding – A Guide to Integrated Urban Flood Risk Management in the 21st Century*
    - The guide suggests that ideally buildings should be located to avoid flood risk, but notes that if this is unattainable flood resilience measures such as elevating or raising buildings above the flood level, or allowing buildings to rise with the floodwater could be considered.
- Quality Planning (2013), *Natural Hazards*

- The guidance note identifies 3 overarching principles that underpin a risk-based approach to planning for natural hazards, one of which is that natural hazards should be avoided by preventing building and development on known hazard areas.

4.2 Flood Protection Infrastructure

This principle is supported by the following guidelines/research/policies:

- Ericksen (1986), *Creating Flood Disasters* – Water & Soil Miscellaneous Publication No.77
  - The research paper notes that while measures such as stopbanks and flood-proofing buildings effectively reduce losses from less than design floods, they enhance the prospects for future disasters because eventually the 'protection' will fail against larger than anticipated floods;
  - The paper also observes that although river control works may present the best option for 'protecting' existing property, in most cases the opportunity exists for communities to implement complementary methods to reduce flood loss (e.g. land use management, insurance, emergency preparedness) and that these not only help to reduce losses to existing development but also to avert future disasters that river control works potentially create.
- Burby (2006), *Hurricane Katrina and the Paradoxes of Government Disaster Policy: Bringing About Wise Governmental Decisions for Hazardous Areas*
  - The article argues that there are two paradoxes at play which help to explain the devastation caused by Hurricane Katrina in New Orleans and which can be anticipated to contribute to similar disasters in future:
    - The safe development paradox – occurs when efforts to make an inherently hazardous area safe instead makes them highly susceptible to disasters of catastrophic proportions;
    - The local government paradox - occurs when local governments, whose citizens bear the brunt of suffering and financial loss when disasters occur, pay insufficient attention to threats posed by hazards when they allow hazardous areas to be intensively developed.
  - The article notes that these paradoxes, in the US context, account for the upward spiral in the frequency and magnitude of natural disasters, and if this trend is to be reduced or reversed that it will be necessary for local governments to share more of the burden through careful planning and management of development in hazardous areas and by assuming more of the financial responsibility for development at risk.
- MfE (2010, pg.30), *Preparing for Future Flooding – A Guide for Local Government*
  - The guide suggests that hard engineering solutions or structural treatment options to reduce the frequency of occurrence should be considered after natural flood management solutions[26] have been explored.
- Glavovic, (2014, pg.255), *Chapter 10: The 2004 Manawatu Floods, New Zealand - Integrating Flood Risk Reduction and Climate Change Adaptation* in Adapting to Climate Change: Lessons from Natural Hazards Planning

[26] Such solutions aim to slow the flow of water and to store water along catchments by maintaining or restoring natural land and water processes.

- This chapter notes that although the 2004 flood experience in the Manawatu underscores the importance of having structural flood protection in place for communities already situated in perilous locations, there is a need to move beyond reliance on structural measures as the consequences of any exceedance of the design standard is likely to be significant. It also suggests that this experience demonstrates that a flood risk avoidance strategy is imperative for 'greenfield' development, but that structural works are necessary for communities in low-lying areas and need to be complemented by non-structural measures.

4.3 Standards

This principle is supported by the following guidelines/research/policies:

- FEMA (1987), *Reducing Losses in High Risk Flood Hazard Areas – A Guidebook for Local Officials*
  - The guide suggests that, at a minimum, new construction or re-construction behind stopbanks unable to provide protection from a 1 in 100 year event should be elevated or flood-proofed.
- BC Ministry of Environment, Lands and Parks (1999), *Guidelines for Management of Flood Protection Works in British Columbia*
  - The guide notes that new flood protection works are to be designed and constructed to ensure efficient and effective operation to contain a 1 in 200 flood event and associated forces.
- NSW Department of Infrastructure, Planning & Natural Resources (2005) *Floodplain Development Manual – The Management of Flood Liable Land*
  - The manual suggests that flood planning levels are generally based on a 1 in 100 year flood. It also notes that while there is potential to vary this, any variation should only occur where it can be clearly demonstrated that the situation is exceptional.
- Queensland State Planning Policy 1/03 (2003), *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*
  - The policy requires planning schemes to nominate a flood event, referred to as a defined flood event, to determine land subject to flood related planning controls, with most councils nominating a 1 in 100 year flood event as a baseline to govern planning decisions.
- BC Ministry for the Environment (2004), *Flood Hazard Area Land Use Management Guidelines*
  - The guide suggests a range of construction requirements relating to residential land uses including a horizontal setback from a flood hazard to reduce the risk of erosion and allow access to equipment and a minimum vertical elevation above a flood hazard typically equivalent to a 1 in 200 year flood event.
- Waikato Regional Council (2013), *Proposed RPS – Control of Development within a Floodplain*
  - Policy 13.2.5 requires that subdivision, use and development only occurs in a floodplain with an annual exceedance level of 1% (and which is not defined as a High Risk Flood Zone) where any adverse effects of such an event on habitable buildings are avoided or mitigated.
- Horizon's Regional Council (2013), *Proposed One Plan – Development in Areas Prone to Flooding*

  - Policy 10-2(a) requires the Regional Council and Territorial Authorities to ensure, amongst other matters, that any structure or activity within a scheduled floodway is designed so that the effects on it of a 1 in 200 year event are avoided or mitigated.
  - Policy 10-2(d)(ia) further requires that in exercising decision making responsibilities under the policy that the Regional Council and Territorial Authorities ensure that occupied structures have a finished floor or ground level (including freeboard) above the 1 in 200 year flood level.
- Canterbury Regional Council (2013), *RPS – Development in Areas Subject to Inundation*
  - Policy 11.3.2 requires any new subdivision or development (excluding critical infrastructure) to be avoided in areas subject to inundation by a 1 in 200 year flood event unless there is no increased risk to life and, amongst other matters, new buildings have an appropriate floor level above the 1 in 200 design flood level.
  - The principal reasons and explanation for this policy and other policies in the Natural Hazards chapter of the RPS notes that most territorial authorities in Canterbury have adopted higher than Building Act minimum floor level controls in their district plans, based on 1 in 200 year or 1 in 500 year flood events.
- UK Department of Communities and Local Government (2014), *Planning Practice Guidance – Flood Risk and Coastal Change*
  - The practice guide notes that where a flood risk cannot be avoided, consideration should be given to constructing a building and its surrounds (at site level) above the level of a 1 in 100 year event.

4.4 Climate change

Adopted GWRC Climate Change Policy (refer to report WGN# 741469 – Climate Change and subsequent memo WGN# 1256418 – Climate Change Design Parameters attached as Appendix 3).

Appendix 2 – Relevant RPS Objectives and Policies

Table 8(a): Natural hazards objectives and titles of policies and methods to achieve the objectives

Objectives	Policy titles	Page	Method titles	Implementation (* lead authority)	Page
Objective 19 The risks and consequences to people, communities, their businesses, property and infrastructure from natural hazards and climate change effects are reduced.	Policy 29: Avoiding inappropriate subdivision and development in areas at high risk from natural hazards – district and regional plans	109	Method 1: District plan implementation	City and district councils	153
			Method 2: Regional plan implementation	Wellington Regional Council	153
			Method 14: Information about natural hazard and climate change effects	Wellington Regional Council*, city and district councils and Civil Defence Emergency Management Group	155
			Method 22: Information about areas at high risk from natural hazards	Wellington Regional Council* and city and district councils	157
			Also see – Coastal environment (Table 2) policy 3; Energy, infrastructure and waste (Table 3) policies 7 & 8; Fresh water (Table 4) policies 14 & 17; Natural hazards (Table 8b) policy 62; Regional form, design and function (Table 9) policies 30, 31 & 32 **and consider** – Coastal environment (Table 2) policies 35, 36 & 37; Energy, infrastructure and waste (Table 3) policy 39; Fresh water (Table 4) policy 43; Natural hazards (Table 8a) policies 51 & 52; Regional form, design and function (Table 9) policies 54, 55 & 56; Resource management with tangata whenua (Table 10) policies 48 & 49		
	Policy 51: Minimising the risks and consequences of natural hazards – consideration	130	Method 4: Resource consents, notices of requirement and when changing, varying or reviewing plans	Wellington Regional Council and city and district councils	153
			Method 14: Information about natural hazard and climate change effects	Wellington Regional Council*, city and district councils and Civil Defence Emergency Management Group	155
			Method 22: Information about areas at high risk from natural hazards	Wellington Regional Council* and city and district councils	157
			Also consider – Coastal environment (Table 2) policies 35, 36 & 37; Energy, infrastructure and waste (Table 3) policy 39; Fresh water (Table 4) policy 43; Natural hazards (Table 8a) policy 52; Regional form, design and function (Table 9) policies 54, 55 & 56; Resource management with tangata whenua (Table 10) policies 48 & 49		
Objective 20 Hazard mitigation measures, structural works and other activities do not increase the risk and consequences of natural hazard events.	Policy 52: Minimising adverse effects of hazard mitigation measures – consideration	131	Method 4: Resource consents, notices of requirement and when changing, varying or reviewing plans	Wellington Regional Council and city and district councils	153
			Method 14: Information about natural hazard and climate change effects	Wellington Regional Council*, city and district councils and Civil Defence Emergency Management Group	155
			Method 23: Information about natural features to protect property from natural hazards	Wellington Regional Council* and city and district councils	157
			Also consider – Coastal environment (Table 2) policies 35, 36 & 37; Energy, infrastructure and waste (Table 3) policy 39; Fresh water (Table 4) policy 43; Natural hazards (Table 8a) policy 51; Regional form, design and function (Table 9) policies 54, 55 & 56; Resource management with tangata whenua (Table 10) policies 48 & 49		

Objective	Policy titles	Page	Method titles	Implementation (* lead authority)	Page
Objective 21 Communities are more resilient to natural hazards, including the impacts of climate change, and people are better prepared for the consequences of natural hazard events.	Policy 29: Avoiding inappropriate subdivision and development in areas at high risk from natural hazards – district and regional plans	109	Method 1: District plan implementation	City and district councils	153
			Method 2: Regional plan implementation	Wellington Regional Council	153
			Method 14: Information about natural hazard and climate change effects	Wellington Regional Council*, city and district councils and Civil Defence Emergency Management Group	155
			Method 22: Information about areas at high risk from natural hazards	Wellington Regional Council* and city and district councils	157
			Also see – Coastal environment (Table 2) policy 3; Energy, infrastructure and waste (Table 3) policies 7 & 8; Fresh water (Table 4) policies 15 & 17; Natural hazards (Table 8b) policy 62; Regional form, design and function (Table 9) policies 30, 31 & 32 **and consider –** Coastal environment (Table 2) policies 35, 36 & 37; Energy, infrastructure and waste (Table 3) policy 39; Fresh water (Table 4) policy 43; Natural hazards (Table 8a) policies 51 & 52; Regional form, design and function (Table 9) policies 54, 55 & 56; Resource management with tangata whenua (Table 10) policies 48 & 49		
	Policy 51: Minimising the risks and consequences of natural hazards – consideration	130	Method 4: Resource consents, notices of requirement and when changing, varying or reviewing plans	Wellington Regional Council and city and district councils	153
			Method 14: Information about natural hazard and climate change effects	Wellington Regional Council*, city and district councils and Civil Defence Emergency Management Group	155
			Method 22: Information about areas at high risk from natural hazards	Wellington Regional Council* and city and district councils	157
			Also consider – Coastal environment (Table 2) policies 35, 36 & 37; Energy, infrastructure and waste (Table 3) policy 39; Fresh water (Table 4) policy 43; Natural hazards (Table 8a) policy 52; Regional form, design and function (Table 9) policies 54, 55 & 56; Resource management with tangata whenua (Table 10) policies 48 & 49		
	Policy 52: Minimising adverse effects of hazard mitigation measures – consideration	131	Method 4: Resource consents, notices of requirement and when changing, varying or reviewing plans	Wellington Regional Council and city and district councils	153
			Method 14: Information about natural hazard and climate change effects	Wellington Regional Council*, city and district councils and Civil Defence Emergency Management Group	155
			Method 23: Information about natural features to protect property from natural hazards	Wellington Regional Council* and city and district councils	157
			Also consider – Coastal environment (Table 2) policies 35, 36 & 37; Energy, infrastructure and waste (Table 3) policy 39; Fresh water (Table 4) policy 43; Natural hazards (Table 8a) policy 51; Regional form, design and function (Table 9) policies 54, 55 & 56; Resource management with tangata whenua (Table 10) policies 48 & 49		

Table 8(b): Allocation of functions for natural hazards in accordance with the Resource Management Act

Objective	Policy titles	Page	Method titles	Implementation (* lead authority)	Page
Section 62(1)(i)(i) "Content of regional policy statements".	Policy 62: Allocation of responsibilities for land use controls for natural hazards	140	Method 5: Allocation of responsibilities	Wellington Regional Council and city and district councils	154
			Also see – Natural hazards (Table 8a) policies 29, 51 & 52		

Appendix 3 – GWRC Climate Change Policy

greater WELLINGTON
REGIONAL COUNCIL

Report **10.82**
Date 22 February 2010
File N/50/02/05

Committee **Catchment Management Committee**
Author **James Flanagan, Senior Engineer**

Climate Change

1 Purpose

- To inform the council of the impacts of climate change on Flood Protections' Design Criteria and how we incorporate this into our ongoing investigation and flood risk management work.

- To recommend to council specific climate change design criteria for investigations and design work.

2 Significance of the decision

The matters for decision in this report do not trigger the significance policy of the Council or otherwise trigger section 76(3)(b) of the Local Government Act 2002.

3 Background

Scientific evidence and thinking points to an increase in global temperatures due to climate change. This increase in temperature has many implications for New Zealand. Implications of climate change have been evaluated by the Ministry for the Environment (MfE). The National Institute of Water and Atmospheric Research (NIWA) was the agency commissioned by MfE to evaluate the magnitude of these changes and their implications for New Zealand. Council does not have any specific policy with regards to flood protection design criteria taking into account climate change.

The increase in temperatures predicted by MfE for the end of this century will have a direct effect on two elements crucial to flood risk management and design of flood protection for the community.

- **Increased rainfall intensity**; As the air temperature increases the atmosphere is able to hold more moisture, leading to an increase in rainfall intensity. This has a direct effect on the amount of water flowing in our rivers and streams and hence the level of protection required and the depth and extent of the resulting flood hazard. An assumption is made (based on NIWA guidance) of an 8% increase in rainfall intensity per degree Celsius increase in temperature.

- **Sea level rise**; There has been a recorded increase in sea level for the last 100 years of approximately 200mm and this rate of rise is predicted to increase dramatically by the end of this century. This has a direct effect on flood hazard schemes close to the coastline and in particular for the larger schemes such as the Lower Valley Scheme in the Wairarapa, the Waiwhetu Stream, the Hutt, Waikanae and Otaki Rivers.

Direction from NIWA for predicted temperature increases are based on the Intergovernmental Panel on Climate Change (IPCC) 4th Assessment. The current modelling estimates that New Zealand is likely to experience an increase in temperature of 2°c by 2090. Eastern portions of the country which currently have a dry weather pattern are likely to experience drier conditions and the western parts of the country which generally experience wetter conditions on average. The predictions for sea level rise from the IPCC 4th assessment are between 0.18 and 0.59m. Recent recommendations from agencies suggest that 1m is more likely to be the sea level rise by 2100.

4 Discussion

Much has been written on the impact of climate change and how it might affect New Zealand. From all of this debate there is sufficient certainty that rainfall intensity and sea level will increase. The uncertainty is by how much. With much of the flood protection work influencing decisions about long term development it is recommended that an allowance for climate change is made for GW design work. The estimates made by all of the agencies give quite broad ranges for climate change whereas for GW design work we must use a specific number. For this reason we are recommending using the mid-range of the current assessments. GW should continue to use these numbers until National and International research refines the guidelines more specifically for the Wellington region.

The design criteria will be used in all future flood hazard assessment work. An allowance has already made for climate change, similar to those recommended in this report, for the WFMP review and for the Waiohine and Pinehaven flood hazard assessments. The Hutt River design standard was also chosen at the 2800 m^3/s level to allow for some climate change although not specifically for the criteria recommended in this report. The work undertaken earlier for the Waiwhetu and the LWVDS review does not take any account of climate change at this stage.

5 Criteria Selected

The two design criteria selected are as follows:

Increased Rainfall Intensity: for all floods of or greater than a 1 in 50 year return period, the increase in rainfall intensity to be used will be 16% based on a 2°c increase in temperature. The reason why this is applied to 50 year and greater return period floods is that the changes will take place over 80 to 90 years and hence the return period events need to be within a similar timeframe context.

Sea Level Rise: based on the top of the mid-level range identified by IPCC 4th assessment, the design sea level to be used is current sea level plus 0.5m.

6 Consultation

The design criteria for climate change will be clearly conveyed to the community as we proceed with flood hazard assessment work. No general press release is proposed at this stage.

7 Recommendations

That the Committee:

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

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

3. ***Notes** that any selected climate change design criteria will likely change over time.*

3. ***Endorses** the currently selected Design Criteria Selected being:*

   - *The increase in rainfall intensity to be used for calculation will be 16%*

   - *The Sea Level Rise to be used for calculation is 0.5m by 2100.*

Report prepared by:

James Flanagan
Senior Engineer

Report approved by:

Graeme Campbell
Manager Flood Protection

Wayne O'Donnell
General Manager, Catchment Management

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

MEMO

TO	Graeme Campbell, Manager Flood Protection
COPIED TO	Alistair Allan, Senior Project Engineer Iain Dawe, Senior Policy Analyst (Hazards)
FROM	James Flanagan
DATE	19 September 2013
FILE NUMBER	N/50/02/05-v1

Climate Change Design Parameters

After review of the regions flood vulnerability and climate change (as approved in Environmental Wellbeing Committee Report 13.720), a revised set of design criteria have been selected for use by Flood Protection. These revised criteria are to allow for increases in the effects of climate change.

Increased Rainfall Intensity

The temperature increase currently used by Flood Protection is 2 degrees Celsius by 2090, which is a 16% increase in rainfall intensity for design storms of greater than a 50 year return period. This rainfall intensity is now to be increased to 20%.

Increased Sea Level

The current allowance was for an increase of 0.5m in mean sea level by 2100. This increase in level is now to be 0.8m by 2100.

I recommend that these changes to the departments design parameters be approved and they be implemented as soon as possible (to be consistent with Report 13.720). It should be noted that increases that take into account the effects of climate change are likely to change again as the science and policies are still being refined,

Date: 19/09/13	Status: For approval
Requestor: James Flanagan	**Approver: Graeme Campbell**
Senior Engineer	Manager, Flood Protection

ATTACHMENT 1 TO REPORT 17

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Report **2017.454**
Date 1 December 2017
File CCAB-10-400

Committee **Environment**
Author **Pauline Hill, Kaitohutohu Matua/Senior Policy Advisor Te Hunga Whiriwhiri**

Marine and Coastal Area Act 2011 obligations

1. Purpose

To respond to a request from the Environment Committee to provide an overview of Greater Wellington Regional Council's (GWRC) key obligations under the Marine and Coastal Area (Takutai Moana) Act 2011 (MACA).

2. Background

2.1 The Act

MACA came into force in April 2011. The new Act implemented a 'no-ownership' regime over the marine and coastal area (with some limited exceptions) and introduced mechanisms to recognise the customary rights of iwi, hapū and whānau in the common marine and coastal area. Public access to the common marine and coastal area is guaranteed by the Act.[1] The marine and coastal area is the area between the mean high water springs and the outer limits of the territorial sea 12 nautical miles from shore. The common marine and coastal areas are the parts of the marine and coastal area that aren't in private ownership or part of a conservation area.

Since April 2017, GWRC has had MACA statutory obligations to engage with relevant Customary Marine Title (CT) applicants as a coastal consent applicant during the Phase one pre-consent lodgement phase. However, there are no statutory obligations for GWRC's coastal consent processing functions to be engaged in the MACA pre-consent lodgement processes during Phase one. The Phase two implications are more significant. The MACA requirements are discussed in more detail later in this briefing.

2.2 Iwi Leaders' concerns

In 2003, the Court of Appeal ruled that:

- Māori might be able to show customary ownership of areas of the marine and coastal area

[1] Office of Treaty Settlements website, Protecting the interests of all New Zealanders in the marine and coastal area" https://www.justice.govt.nz/maori-land-treaty/marine-and-coastal-area/

- The Māori Land Court had the power to consider this question and then recognise that ownership.

The government responded with the Foreshore and Seabed Act 2004. This Act gave the government legal ownership of the foreshore and seabed and extinguished Māori rights to have ownership claims investigated. After widespread protest from Māori, and criticism from the Waitangi Tribunal and the Human Rights Commission, the Foreshore and Seabed Act was abolished and replaced with the Marine and Coastal Area (Takutai Moana) Act 2011.

In 2010, Iwi Leaders criticised the MACA Bill because of its similarity to the Foreshore and Seabed Act. In November 2010, Ngāti Toa leader Matiu Rei reported the Iwi Leaders Forum's unified opposition to the MACA Bill following a hui at Takapuwāhia Marae. The Leaders argued the Bill set too high a bar for iwi to realistically claim customary rights to areas of the coast. They confirmed they would seek changes to the Bill through the select committee process.[2] That same month, Te Rūnanga o Ngāi Tahu criticised the MACA Bill in its submission to the Māori Affairs Select Committee. They considered the "test for establishing customary title set out in the Bill is discriminatory'. They argued it would be almost impossible for Ngāi Tahu, and virtually all other iwi, to meet.[3]

By 3 April 2017, hundreds of whānau, hapū and iwi leaders sought recognition of their customary rights. Refer to **Attachment 2** for further detail. The applications varied in scope and detail. One example is Cletus Maanu Paul's global claim to 'protect the rights of all Māori, and by definition, all citizens of New Zealand'. He also claimed on behalf of his whānau who had exercised customary rights to kaimoana for hundreds of years at Ohope.[4]

2.3 Impact on council's iwi partners

Council has long-standing, resilient relationships with six iwi partners that have evolved over more than 20 years:

- Ātiawa ki Whakarongotai Charitable Trust
- Ngā Hapū ō Ōtaki
- Ngāti Kahungunu ki Wairarapa Charitable Trust
- Port Nicholson Block Settlement Trust
- Rangitāne ō Wairarapa Inc
- Te Rūnanga o Toa Rangatira Inc.

Under MACA, GWRC is required to engage on coastal consents with more mana whenua representatives than it currently does. In addition to engaging with iwi partners, GWRC has to notify and seek the views of up to 20-30 mana whenua Customary Marine Title (CMT) applicants on a case–by–case basis before lodging the consent. While most of these

2 "Iwi Leaders confirm reservations about Marine Bill" November 15, 2010 (Source | Watea News)
3 Te Rūnanga o Ngai Tahu ki te Maori Affairs Select Committee 19 November 2010 On the Marine And Coastal Area (Takutai Moana) Bill 2010, Page 8
4 "Iwi leader makes foreshore and sea bed claim on behalf of all Maori" http://www.stuff.co.nz/national/92110692/iwi–leader–makes–foreshore–and–sea–bed–claim–on–behalf–of–all–maori

applicants have close whakapapa associations with each other and with one or more of GWRC's iwi partners, few have direct relationships with GWRC.

2.4 Overview recognition of Māori customary rights

Māori are able to claim recognition of two customary rights in the marine and coastal area under MACA. All 20-30 applicants with MACA interests in the Wellington region have sought recognition of both rights:

- **Customary Marine Title** (CMT). Recognition of customary interests in the common marine and coastal area. Provides an interest in land for iwi, hapū or whānau that is similar to ownership and exclusive possession. The rights are restricted (eg can't sell the area or exclude the New Zealand public from using it)[5]
- **Protected Customary Rights** (PCRs) Involves recognition of PCRs which allows certain traditional practices (eg launching a waka, gathering of hangi stones) in the common marine and coastal area to be exercised without undue regulatory constraint.[6]

There are two pathways for Māori to seek recognition of their MACA rights:

- **High Court**–16 (of 199 who applied nationwide)[7] sought recognition of their customary rights in the Wellington Region through this pathway
- **direct engagement with the Crown**–20 (of 381 who applied nationwide)[8] sought recognition of their customary rights in the Wellington region through this pathway. The Ministry of Justice (MoJ) has placed details of 12 of these applicants on its website and will post the rest once the applicants have provided all the required information
- approximately 9 (of 20-30) applicants have sought recognition through both pathways.[9]

The High Court and the Crown implement the same legal tests irrespective of the applicants' chosen pathway.

Table 1: High Court and the Crown legal tests for CMT and PCRs applications

CMT application legal tests	PCRs application legal tests
A CMT applicant group must demonstrate it: • holds part of the specified area in accordance with tikanga; and • has exclusively used and occupied the specified area, without substantial	A PCRs applicant group must demonstrate it: • has exercised a certain customary activity since 1840; and • continues to exercise that activity in accordance with tikanga by the applicant

5 OTS website Provisions For Protecting Customary Interests Information for local government 'Provisions for Protecting Customary interests' Page 6 https://www.justice.govt.nz/assets/Documents/Publications/MACA–provisions–for–protecting–customary–interests.pdf

6 OTS website Customary interests under the Marine & Coastal Area Act "Protected Customary Rights" https://www.justice.govt.nz/maori-land-treaty/marine-and-coastal-area/customary-interests-under-the-marine-and-coastal-area-act/

7 Courts of New Zealand, "Marine and Coastal Area (Takutai Moana) Act 2011 applications for recognition orders" https://www.courtsofnz.govt.nz/the–courts/high–court/high–court–lists/marine–and–coastal–area–takutai–moana–act–2011–applications–for–recognition–orders

8 Coastline claims 'not about ownership' – Māori 3 May 2017 http://www.radionz.co.nz/news/te–manu–korihi/329957/coastline–claims–%27not–about–ownership%27–maori

9 OTS website Provisions For Protecting Customary Interests Information for local government https://www.justice.govt.nz/maori–land–treaty/marine–and–coastal–area/

interruption, either: • from 1840 to the present day or from the time of a customary transfer until the present day.	group whether it continues to be exercised in exactly the same way or a similar way or evolves over time • is not extinguished as a matter of law

The High Court and the Crown will award the same rights to recognised CMT and PCR's applicants'. Further details on the rights are discussed later in this briefing.

There are two phases in the MACA recognition processes:

- **Pre–MACA rights recognition (Phase one)**–This phase has been effective from 3 April 2017 and will last until decisions on MACA applications are resolved. The focus is on coastal consent applicants and CMT applicants in the pre-consent lodgement period
- **Post–MACA rights recognition (Phase two)**–This Phase is initiated by the formal recognition of each CMT and PCR groups' claims of customary rights through the Court or the Crown.

2.4.1 What areas are involved?

There are multiple overlapping MACA applicants' interests among neighbouring whānau, hapū and iwi along the East and West coasts of the Wellington region. The Crown has divided the country into 10 regions. The applications with interests in the Wellington regions have been clustered under 2 groupings M and N. Refer to the **Attachment 3** map.

2.5 Applicant outcomes

To date, Ngati Pāhauwera is the only iwi that has progressed to the final stages of having their CMT rights recognised through the direct engagement with the Crown. The MoJ has also published the names of 13 applicants from February 2012 to April 2017 that the Minister for Treaty of Waitangi Settlements declined to engage with.[10] None of these applications had identified interests in the Wellington region.

Through the High Court, only one applicant has had their CMT rights granted albeit in a remote and discrete area of Southland.[11]

2.5.1 Ngāti Pāhauwera MACA overview

In 2017, the Minister for Treaty of Waitangi Negotiations, on behalf of the Crown, offered to enter into a recognition agreement with Ngāti Pāhauwera. After approximately 13 years of negotiations and other activities, the Crown recognised, in part, the CMT rights. However, the Minister was not satisfied the legal tests were met for PCRs or wāhi tapu protection rights. In July 2017, Ngāti Pāhauwera completed its iwi ratification of the Deed

10 OTS website Recognition agreements and orders https://www.justice.govt.nz/maori–land–treaty/marine–and–coastal–area/applications/agreements–and–orders/
11 Letter Buddle Finlay to Greater Wellington Regional Council "Marine and Coastal Area (Takutai Moana) Act" applications

of Agreement. The Crown is required to present a Bill to the House of Representatives to finalise this process within 12 months.[12]

The Hawkes Bay Regional Council (HBRC) has confirmed they were not invited to participate in the Ngāti Pāhauwera process. HBRC were notified approximately one year after the Minister had finalised the recognition agreement process.

2.6 Process challenges

Neither the High Court nor the MoJ prepared adequate systems to manage the unexpected large volume of MACA applications. This has resulted in information gaps that continue to create confusion and planning challenges for councils. Buddle Finlay is seeking clarification from the MoJ on GWRC's behalf on unresolved MACA questions including:

- What does the obligation to 'seek the views of an applicant for CMT' mean in practice?
- How can councils engage in the Crown direct MACA processes?
- What is the relative strength of overlapping iwi rights achieved through MACA and other legislation (eg Treaty of Waitangi settlement Acts)?

3. Comment

The two MACA phases enables GWRC to design measures to meet the immediate Phase one obligations and plan for the Phase two requirements in a more considered way. MACA obligations will significantly change the landscape in which GWRC engages with its iwi partners and the recognised CMT and PCRs groups.

4. Pre–MACA recognition (Phase one)

We are in Phase one now. If the Crown and High Court do not streamline their existing recognition processes, this Phase is likely to be protracted and last at least a decade.

4.1 GWRC's Phase one MACA resource consent obligations and activities

GWRC is a small player in the coastal consent environment. Table 2 confirms that in the past 5 years, 255 or 9% of the total number of consents GWRC received were coastal consents. Of the 255, only five (2%) were GWRC's coastal consents (Flood Protection 4, and Environmental Science 1).

12 OTS website Recognition agreements and orders https://www.justice.govt.nz/maori–land–treaty/marine–and–coastal–area/applications/agre ements–and–orders/

Table 2: Coastal consent applications 1 July 2012–30 June 2017

Year	No of coastal applications	Total no applications received	Percentage coastal applications
2012–2013	51	597	9%
2013–2014	42	556	8%
2014–2015	37	481	8%
2015–2016	63	584	11%
2016–2017	62	619	10%
TOTAL	**255**	**2837**	**9%**

In Phase one, council as a coastal consent applicant (primarily though the Flood Protection functions) shares the same MACA statutory obligations as other coastal applicants to **notify** and **seek the views** of relevant CMT applicants prior to lodging a consent.

This statutory obligation began in April 2017 and continues until the High Court or the Crown make final decisions on each individual MACA application. This means GWRC will engage with its iwi partners and relevant MACA groups before lodging any Flood Protection coastal consent or permit applications for the next decade.

4.1.1 New relationships under MACA

GWRC supports its iwi partners in helping them achieve their aspirations of mutual benefit. Currently, the MoJ website information suggests that two of GWRC's six iwi partners under the Memorandum of Partnership 2013 have sought recognition of their MACA rights:

- **Te Rūnanga o Toa Rangatira Inc** has confirmed they are one of eight remaining Crown direct applicants[13] whose information is yet to be posted on the MoJ website
- **Ātiawa ki Whakarongotai Charitable Trust** has applied through both the High Court and Crown direct pathways.

The extent to which GWRC's remaining four iwi partners are directly engaged in MACA processes will emerge once MoJ posts the remaining applicant information on its website.

4.1.2 Phase one: A potential West Coast MACA scenario

The new requirements could see one potential Wellington Region West Coast scenario for council as a coastal consent applicant:

13 Coastline claims 'not about ownership' – Māori 3 May 2017 http://www.radionz.co.nz/news/te–manu–korihi/329957/coastline–claims–%27not–about–ownership%27–maori

- Engaging early in the pre–consent lodgement phase with three iwi partners (Te Rūnanga o Toa Rangatira Inc, Ātiawa ki Whakarongotai Charitable Trust and Ngā Hapū o Otaki), and
- **Notifying** and **seeking the views** of up to 5 mana whenua CMT applicants in their own right (ie the Hongoeka community, Muaupoko Tribal Authority, Ngāti Raukawa ki te Tonga, Ātiawa ki te Upoko o te Ika Potiki Trust, Pomare and Rangihaeata whānau).

The requirement to seek the views of the Muaupoko Tribal Authority sets a precedent. For the first time, GWRC will engage with a mana whenua entity located outside of council's regional boundaries.

4.1.3 Phase one: GWRC support activities

As a resource consent regulator, GWRC has no statutory obligation to engage in any other coastal consent applicants' engagements with CMT applicants during Phase one.[14]

However, the following information has been provided online to inform other coastal applicants:

- A webpage to identify the new MACA obligations
- A link to the MoJ's website list of CMT applicants and support maps for the Crown direct applicants
- A list of the High Court applicants
- Advice for key customers (eg consultants) on the MACA processes.

5. Post–MACA recognition (Phase two)

For GWRC, Phase two will commence on a staggered basis as the Wellington region CMT and PCR application processes are successfully resolved through the Crown or the High Court. GWRC's current focus is on developing the systems and processes needed to respond effectively in Phase two. There are more complexities in managing the sensitive relationships as the recognised CMT and PCRs groups' influence increases in importance and scope. GWRC has begun discussing the implications of the new obligations and challenges with Ara Tahi.

5.1 Phase two: RMA resource consents

The recognised CMT and PCRs groups' rights will impact significantly on GWRC's coastal consent functions. Key consent issues are highlighted in Table 3.

Table 3: Recognised CMT and PCRs groups' rights

Recognised CMT groups' rights	Recognised PCRs groups' rights
RMA consent permission right Where an RMA permission right applies:	**PCRs coastal resource consent** GWRC must not grant a consent unless a PCR

14 OTS website Provisions For Protecting Customary Interests Information for local government "Provisions relating to CMT relating to regional councils" https://www.justice.govt.nz/assets/Documents/Publications/MACA-provisions-for-protecting-customary-interests.pdf

• CMT groups say yes or no to activities that need resource consents or permits in the area • it is an offence for activities to occur without written permission • recognised CMT groups may give or decline permission to grant a consent for activities in their CMT area on any grounds • CMT groups must notify council of its decisions • a CMT decision to give or to decline permission for an activity is not subject to appeal or objection.[15] • CMT groups have the right to be consulted on changes to Coastal Policy Statements • the interim ownership of taonga tūturu found in the area[16]	group has provided written approval for activity: • where controlled activities are wholly or partly carried out in a PCRs area • that will, or is likely to, have 'adverse effects that are more than minor' on the exercise of PCRs[17] A PCR is protected in three key ways: • no requirement for the holder to gain a resource consent to continue the activity • no resource consents for activities more than minor adverse effect on exercise of PCR, unless PCR group gives written approval • no plans, proposed plans or rules that describe activity as a permitted activity if it will, or is likely to, have adverse effect that's more than minor on a PCR

To ensure GWRC is well positioned to engage with recognised CMT and PCRs, we will extend our current iwi partners' focus to determine how activities might impact on MACA applicants' interests. GWRC's analysis will involve a combination of mātauranga Māori and science knowledge systems. Currently, GWRC is working with iwi partners to develop cultural health frameworks and indices which will help develop a broader understanding of the health and wellbeing of the region's water both freshwater and coastal.

5.1.1 Flood Protection consent example

Like other coastal consent applicants, GWRC's Flood Protection consent processes will be impacted by the rights of the recognised CMT groups. GWRC's role in the coastal marine area is primarily focused on its River Management Schemes. Currently GWRC holds resource consents that relate to Lake Onoke and the Lower Wairarapa Valley Development Scheme to extract and redeposit material.

GWRC's coastal permit renewal applications (part of the larger river management consent project) were notified in February 2017 and the process is still underway. This consent enables council to undertake operations and maintenance activities in the Waikanae River mouth, Waimeha Stream mouth and the Otaki River mouth for realignment, beach ripping and recontouring, clearance of flood debris, removal of beach vegetation, and maintenance of existing structures.

It is likely that the demand for current activities will continue into Phase two. This includes any associated excavation, movement and deposition of natural materials onto the foreshore, discharge of sediment and the damming and diversion of water at Waikanae and

15 Letter Buddle Finlay to Greater Wellington Regional Council "Marine and Coastal Area (Takutai Moana) Act" applications
16 OTS website Customary interests under the Marine & Coastal Area Act "Customary Marine Title" https://www.justice.govt.nz/maori-land-treaty/marine-and-coastal-area/customary-interests-under-the-marine-and-coastal-area-act/
17 OTS website Provisions For Protecting Customary Interests Information for local government "Provisions for Protecting Customary Interests" https://www.justice.govt.nz/assets/Documents/Publications/MACA–provisions–for–protecting–customary–interests.pdf

Otaki Rivers. Council also, at varying times, cuts river and stream mouths for flood protection and erosion purposes at the following locations: Waimeha Stream, Makara Stream, Waitohu Stream, Otaki River, Waikanae River and Lake Onoke.

5.2 Phase two: RMA Planning

MACA provides recognised CMT groups with the right to prepare a planning document in accordance with its tikanga. The purpose of the planning document is to:

- Identify issues relevant to the regulation and management of the CMT area
- Set out the regulatory and management objectives of the group for its CMT area
- Set out policies for achieving those objectives.

A recognised CMT group's planning document cannot include rules. Councils will have the flexibility to find the most efficient and effective methods for meeting the objectives and implementing the policies set out in the document.[18] MACA requires council to "recognise and provide for" or 'take into account' the matters identified in a CMT planning document within or outside a CMT area'.

5.2.1 Proposed Natural Resources example

MACA will not impact on the current schedule one hearings process for the proposed Natural Resources Plan (pNRP). There is no opportunity for new parties to join proceedings, have input into the schedule one hearings process, or to appeal the pNRP. Final decisions on the schedule one submissions are due by 31 July 2018. Subject to the outcomes of the appeal process, the pNRP will be effective at that point and will be fully operative by 2020.

However, the MACA implications on GWRC's future RMA planning processes are potentially significant and will bring changes to its iwi partner relationships. GWRC is required to recognise new titles and user rights in such areas. This includes ensuring that CMT groups are recognised in plans and policy statements. Under MACA, GWRC will have new relationships with mana whenua groupings that have specific rights and interests over spatially defined areas. These rights will require council to review existing regulation on the common coastal and marine area and engage with recognised CMT and PCRs groups in forming future policy and planning documents.

5.2.2 Whaitua example

The rolling plan changes for the pNRP whaitua process will require GWRC to respond to any CMT planning document or submissions from recognised CMT and PCRs groups as these occur. The MACA impact on pNRP whaitua processes and associated plan changes will be determined by the actual timing of completed High Court and Crown processes. Once finalised, obligations will come into effect that impact on the whaitua and associated plan change processes. The Ruamāhanga and Te Awarua–o–Porirua Whaitua

18 OTS website Provisions For Protecting Customary Interests Information for local government "Customary marine title group planning document, https://www.justice.govt.nz/assets/Documents/Publications/MACA-customary-marine-title-group-planning-document.pdf

Implementation Programmes (WIP) are expected to be completed and to enter the schedule one hearings process by mid–2018. It is unlikely the CMT or PCRs decisions will be finalised before the plan changes associated with these whaitua processes are notified and enter the schedule one hearings process.

The Wellington Harbour and Hutt Valley Whaitua is the third project underway. There are implications if CMT and PCRs applicants are recognised during the development of this, or any remaining, whaitua processes. The Kāpiti Coast and the Wairarapa Coast are the final two whaitua yet to begin. They have the most extensive coastlines of the region and are most likely to be affected by MACA because of their later planned time frames.

GWRC is not required to include CMT or PCRs representatives in its planning processes. Should it wish to do so, the scope and process will be determined in the context of the relationships council has with its iwi partners. GWRC expects the recognised CMT and PCRs groups and its iwi partners will decide how their engagement in council decision making on MACA issues will operate. This will operate within a framework of any practical and scope considerations of council's existing agreements or terms of reference.

5.3 Phase two: Protection of wāhi tapu

Under MACA, the RMA was amended so GWRC must not grant a resource consent contrary to the wāhi tapu conditions included in a CMT order or agreement. A recognised CMT has the ability to protect wāhi tapu or wāhi tapu areas through restrictions on public access. Such constraints on access are dependent on a CMT group providing evidence to establish its connection with the area in accordance with tikanga.

MACA enhances the protection that can already be provided under the RMA and Historic Places Act 1993. Restrictions on access cannot be imposed in an ad hoc manner. They must be attached as conditions to a CMT order or agreement with reasons. The conditions must set out the location of boundaries of the wāhi tapu area and any exemptions for specified individuals to carry out a PCR in the area.[19]

5.4 Other GWRC activities in the common coastal and marine area:

5.4.1 Climate change

As the climate changes extreme weather events increase in severity, this will compound issues related to sea level rise and coastal inundation. Coastal communities will want to respond to these impacts with a range of measures including building or strengthening fortifications, modifying coastal, estuarine and river environments and in some cases retreating. These activities are likely to result in an increase in consent applications over the next 10 to 20 years. Table 2 confirms that in the past 5 years, 255 (9%) of the notified and non-notified consent applications were coastal applications. The actual number increased gradually from 51 to 62 during that period.

19 OTS website Provisions For Protecting Customary Interests Information for local government 'Role of councils in respect of wähi tapu and wähi tapu area' https://www.justice.govt.nz/assets/Documents/Publications/MACA-provisions-for-protecting-customary-interests.pdf

Climate change will also impact on the kaitiaki responsibilities and daily lives of GWRC's iwi partners and recognised CMT and PCRs groups who live by the coast or water bodies. Whānau, hapū and iwi are already contemplating the implications of climate change on:

- The potential need to move marae from coastal areas to higher ground through a process of managed retreat
- Mahinga kai and other moana based cultural practices.

5.4.2 Environmental science

MACA does not impact on the scientific research or monitoring activities undertaken or funded by GWRC as they are classified as accommodated activities. GWRC is exempt from having to obtain a CMT group's permission for such activity.[20] The planning issues of this work programme are incorporated into the pNRP coastal plan aspects. GWRC's coastal functions include environment science monitoring activities that focus on:

- Estuaries, beach and rocky shore sites throughout the region for sediment quality and contamination, and invertebrate community health at various intervals
- Water quality and movement to measure the influence of the Hutt River on Wellington harbour. Council deployed a biophysical monitoring buoy in Wellington harbour under a coastal permit resource consent. This is a joint project with NIWA
- Recreational monitoring programme to forecast the risk of swimming and shellfish gathering after rain–council is developing a microbial forecast model for Porirua harbour
- Habitat mapping of intertidal areas of the Porirua harbour, Waikanae and Hutt estuaries every five years
- Rates of sedimentation in key estuaries.

6. The decision-making process and significance

No decision is being sought in this report.

This report responds to a request from the Committee for an update on the MACA obligations of GWRC.

6.1 Engagement

Engagement on this matter is unnecessary.

7. Recommendations

That the Committee:

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

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

20 OTS website Provisions For Protecting Customary Interests Information for local government 'Provisions for Protecting Customary interests' Page 8 https://www.justice.govt.nz/assets/Documents/Publications/MACA–provisions–for–protecting–customary–interests.pdf

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Attachment 1 Glossary
Attachment 2 Table of MACA applicants with interests in Greater Wellington Region.
Attachment 3 Map MACA groupings

Attachment 1: Glossary

Term	Meaning
Common marine and coastal area (CMCA)	Starts from the mean (average) high–tide mark (roughly the highest point washed by the tide) to 12 nautical miles offshore but excludes certain conservation areas and existing private titles (ie land owned by any person other than the Crown and includes Māori customary land and Māori freehold land).
Customary marine title (CMT)	Comes from a common law concept that recognises property rights of indigenous people that have continued since or before acquisition of Crown sovereignty to the present day. It is inalienable–the land cannot be sold–and cannot be converted to freehold title. Recognises the relationship that has existed, and will continue to exist, between iwi, hapū and whānau and the common marine and coastal area.
Customary marine title order	An order of the High Court recognising customary marine title.
Customary marine title recognition agreement	Defines the contents of the customary marine title. Most of the information will be collected by the applicant group and the Marine and Coastal Area team in the evidence–gathering Phase
Marine and coastal area.	Starts from the mean (average) high–tide mark (roughly the highest point washed by the tide) to 12 nautical miles offshore
Protected Customary Right (PCR)	Recognises and protects customary activities, uses and practices that are exercised in the common marine and coastal area (examples are collecting hangi stones or launching waka).
Protected Customary Right Area	Any part of the common marine and coastal area where a protected customary rights order or protected customary rights recognition agreement applies.
Protected Customary Right Order	An order of the High Court recognising protected customary rights of a group.

Attachment 2: Table of MACA applicants with interests in Greater Wellington Region. Excludes the eight applicants missing from the Ministry of Justice website.

	Name of Applicant	Area that is the subject of the Application	Group	GWRC Iwi partner	Engagement Type
1	Cletus Maanu Paul	Claim on behalf of all Māori	All groups A-S	Not applicable	High Court
2	Hapu of Utauta Parata and Hona Webber	Kapiti Island Coastal area from Arapawaiti Point at the north-west to Kurukohatu point in the North-east, including Tokahaki and Tokaiti points, then south along the eastern Kapiti shore to Wharekohu Point, including Motungarara Island, then west to Tahirimongo Point.	N	TBC	**Crown direct engagement only**
3	Hongoeka community (Tiratu Williams)	Hongoeka Blocks	N	Has an association with iwi partner Te Rūnanga o Toa Rangatira Inc	High Court
4	Muaupoko Tribal Authority Incorporated Society	Sinclair Head to northern side of the Rangitikei River including areas surrounding Kapiti Island, Motungarara Island, Tahoramaurea Island , Tokomapuna Island and Mana Island	N	Not applicable	High Court

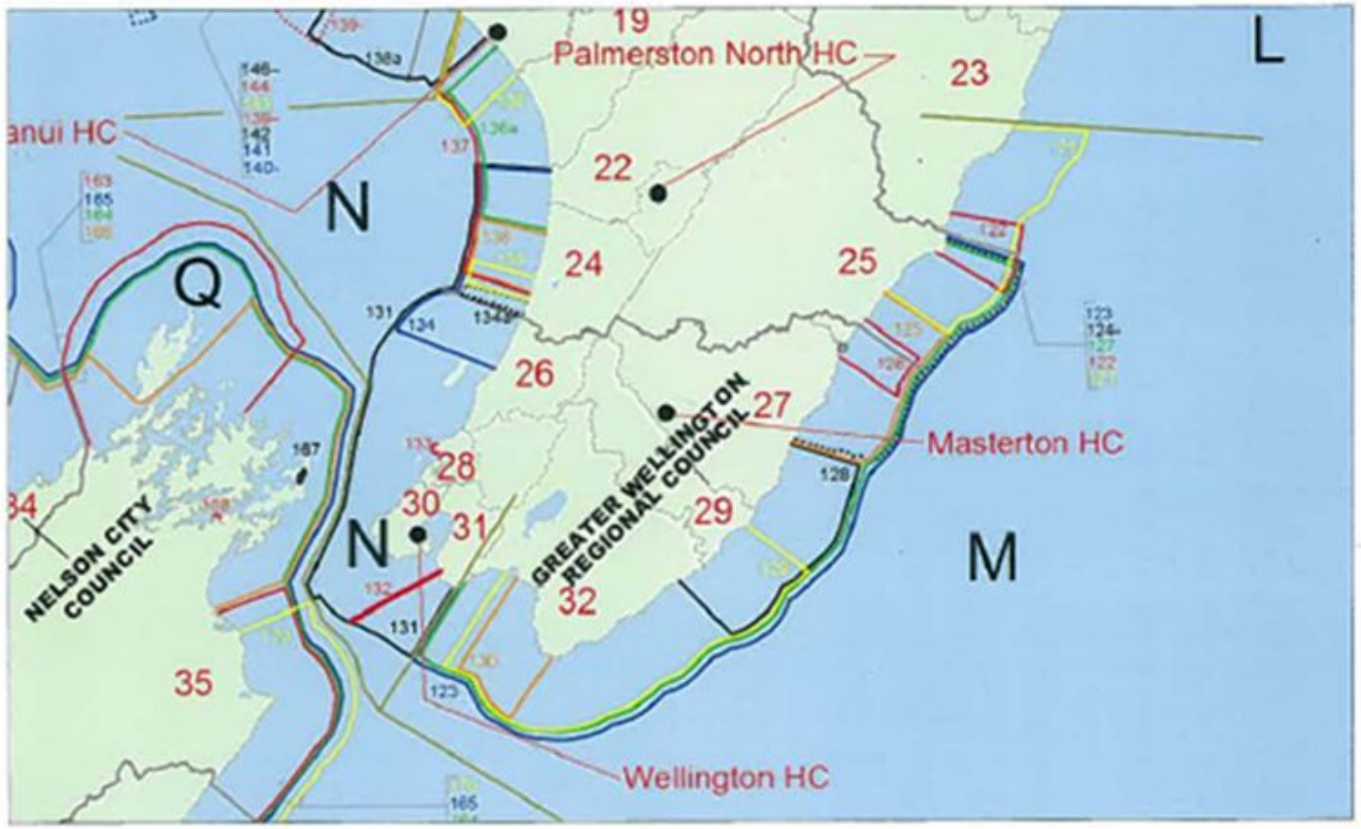
5	New Zealand Māori Council members (Rihari Dargaville)	All the coast line of New Zealand including off shore from to including adjacent islands.	All groups A-S	Not applicable	High Court
6	Ngai Tumapuhia-A-Rangi Māori Marae Committee Incorporated	East coast southern part North Island in Wairarapa, from the Whareama River in north to the mouth of Pahoao River in south, line from mean high water springs extending to outer limits of the Territorial Sea seaward.	M	Has an association with iwi partner Ngati Kahungunu ki Wairarapa Charitable Trust	**Dual engagement**
7	Ngati Hinewaka me ona Karangaranga Trust on behalf of Ngati Hinewaka	Marine coastal area between Lake Onoke and Flat Point	M	Has an association with iwi partner Ngati Kahungunu ki Wairarapa Charitable Trust	High Court
8	Ngati Kahungunu ki Wairarapa Tamaki nui-a-Rua Settlement Trust [filed by Braithwaite and Smail Limited]	Poroporo to Turakirae Head (North Poroporo latitude 40.44568 and longitude 176.62323 to south Turakirae Head latitude 41.43767 and longitude 174.91848)	M	Has an association with iwi partner Ngati Kahungunu ki Wairarapa Charitable Trust	**Dual engagement**
9	Ngati Raukawa ki te Tonga (Rachel Ann Selby)	From mouth of Rangitikei River to outer limits of the territorial sea; to the south by line extends from coast abutting Kukutauaki to outer limits of	N	This is one of council's 6 iwi partners represented by Nga Hapu o Otaki	High Court

		territorial sea.			
10	Papauma Marae Trustees on behalf of the original owners of Mataikona 1, 2 and 3 Blocks and their descendants [filed by Kahui Legal]	The common marine and coastal area contiguous, adjoining and abutting the Mataikona 1, 2 and 3 Blocks (marked 'A' on map attached to application)	M	Has an association with iwi partner Rangitane o Wairarapa Inc	**Dual engagement**
11	Pomare & Rangihaeta Whānau	Hongoeka Bay, 100m north of the Plimmerton Boating Club - along the mean high-water springs extending to a seaward boundary of 1000m straight line south point Mana Island, along coastline to Haukopua and Wairaka Point and Pukerua Bay from Wairaka Point to Fisherman's Table Restaurant	N		**Crown direct engagement only**
12	Rangitane Tū Mai Rā Trust Trustees on behalf of Rangitane o Wairarapa and Rangitane o Tamaki nui-a-rua iwi	Northward side line extends coast abutting Arataura (Poroporo) to outer limit territorial sea; and southward side by line extends from coast abutting Turakirae Point to limits territorial sea.	M	Has an association with iwi partner Rangitane o Wairarapa Inc	**Dual engagement**
13	Te Atiawa ki te Upoko o	Extending from Pipinui Point in	Not on the	Morrie Love (PNBST Trustee)	**Dual**

	te Ika a Māui Pōtiki Trust	the west of the lower North Island south and then east to Windy Point in the lower North Island.	Crown list but have public notice	confirmed this is a MIO of one of the iwi that PNBST represents	**engagement**
14	Te Atiawa ki Whakarongotai Charitable Trust on behalf of Ngā uri o te Atiawa ki Whakarongotai	Extends from landward boundary being outer limits of territorial sea of tribal boundary which is: Kukutauaki to Whareroa to Pukemore and to Maunganui northward to Kapakapanui and Pukeatua to Ngawahakangutu, then westward to Kukutauaki.	No group has been allocated due to difficulty locating one of the boundary points	This is one of council's 6 iwi partners	**Dual engagement**
15	Te Hika o Papauma (Rebecca Harper)	East coast of the south-western part of the North Island starting at Akitio River/ Cape Turnagain in north , south to Whareama River and extending 12 nautical miles seaward from boundary markers and all points in between	M	Has an association with iwi partner Rangitane o Wairarapa Inc	High Court
16	Te Hika o Pāpāuma Mandated Iwi Authority (Anita Broughton)	From Whareama River mouth up to Poroporo to the outer limits of the territorial sea.	M	Has an association with iwi partner Rangitane o Wairarapa Inc	**Dual engagement**
17	Te Rūnanga o Toa Rangatira Inc on behalf of		N	This is one of 6 GWRC iwi partners (NB copy of application received by	**Crown direct engagement**

	Ngati Toa Rangatira			GWRC but not posted on the MoJ website)	**only**
18	The Piere Whānau Trust and Te Hika Papauma	The area from Akitio River/Cape Turnagain following south to Whareama River. This area extends 12 nautical miles offshore between these two points.	M	Has an association with iwi partner Rangitane o Wairarapa Inc	**Crown direct engagement only**
19	Tukōkō and Ngaīti Moe (Kahura James Watene)	Coastline bounded by Lake Ferry and Mataikona , known as Cape Palliser, in southwest. The seaward extent of marine area extends to approximately half way between the North and South Islands and then to the edge of the territorial sea at 12 nautical miles.	M	Has an association with iwi partner Ngati Kahungunu ki Wairarapa	**Dual engagement**
20	Tupoki Takarangi Trust 1996 Trustees [filed by Kahui Legal]	Eastern boundary of Parangarahu Block 2B1 and western boundary of Parangarahu 2C Block (marked 'A' on map attached to application)	N	This is a whānau Trust arms distance but associated to PNBST BUT the lakes PNBST settlement redress	**Dual engagement**

Attachment 3: Map MACA groupings



greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Report	**2017.466**
Date	16 November 2017
File	CCAB-10-437
Committee	**Environment**
Author	**Susan Borrer, Engineer, Modelling**

Porirua City Council request for exception to sea level rise Climate Change Design Criteria

1. Purpose

To seek an exception to GWRC's Climate Change Design Criteria in response to a request from Porirua City Council (PCC) to allow for a 1.0m sea level rise in our Porirua stream flood modelling rather than the current 0.8m allowance.

2. Background

The existing GWRC criteria for climate change allowances dates from 2013 (see report 13.720 *Wellington Region – Flood Vulnerability and Climate Change Impacts Scoping* Study) and endorses the use of the following Climate Change Design Criteria:

- The increase in rainfall intensity to be used for calculation will be 20% by 2100
- The Sea Level Rise (SLR) to be used for calculation is 0.8m by 2100

GWRC Flood Protection and Wellington Water (WW) are currently producing updated flood hazard extents for the Porirua Stream and Porirua catchment stormwater systems, with the intention of combining these into a single flood hazard map for use in an upcoming PCC District Plan Change.

WW has adopted Climate Change Design Criteria for modelling stormwater flooding, which differ to those used by GWRC. The WW criteria specify a 16% increase in rainfall intensity, and a SLR of 1.0m.

In order to combine these maps sensibly, it is necessary that GWRC and WW use the same Climate Change Design Criteria for the mapping. PCC have requested that an exception be made to GWRC's criteria for the Porirua Stream to allow for a 1.0m SLR to be used, as this has a significant impact on stormwater flooding. WW have agreed to use the 20% rainfall intensity outlined in GWRC's criteria.

PCC's request is included in **Attachment 1**.

3. Comment

Adopting an allowance of up to 1.0 m sea level rise for a 100+ year time horizon is consistent with current Ministry for the Environment guidance and the requirements of the New Zealand Coastal Policy Statement. The MfE guidance is due to be updated in 2018.

GWRC plans to review its approach to sea level rise next year working towards a regionally-consistent approach as an outcome of the Natural Hazards Strategy.

4. Consideration of Climate Change

The matter requiring decision in this report has been considered by officers in accordance with the process set out in the GWRC Climate Change Consideration Guide.

4.1 Mitigation assessment

Mitigation assessments are concerned with the effect of the matter on the climate (i.e. the greenhouse gas emissions generated or removed from the atmosphere as a consequence of the matter) and the actions taken to reduce, neutralise or enhance that effect.

The matters that are the subject of this paper have no direct bearing on climate change mitigation and therefore a mitigation assessment is not required.

4.2 Adaptation assessment

Adaptation assessments relate to the impacts of climate change (e.g. sea level rise or an increase in extreme weather events), and the actions taken to address or avoid those impacts.

Climate change adaptation is the subject of this report and the recommendations are supported because of the more precautionary approach and that it establishes a more consistent approach with the other metropolitan areas managed by Wellington Water.

5. The decision-making process and significance

Officers recognise that the matters referenced in this report may have a high degree of importance to affected or interested parties.

The matter requiring decision in this report has been considered by officers against the requirements of Part 6 of the Local Government Act 2002 (the Act). Part 6 sets out the obligations of local authorities in relation to the making of decisions.

5.1 Significance of the decision

Part 6 requires Greater Wellington Regional Council to consider the significance of the decision. The term 'significance' has a statutory definition set out in the Act.

Officers have considered the significance of the matter, taking the Council's significance and engagement policy and decision-making guidelines into account. Officers recommend that the matter be considered to have low significance.

This report requests a minor exception to a GWRC design criteria and is within the technical guidance provided by MfE.

Officers do not consider that a formal record outlining consideration of the decision-making process is required in this instance.

5.2 Engagement

Engagement on the matters contained in this report aligns with the level of significance assessed. In accordance with the significance and engagement policy, no engagement on the matters for decision is required.

6. Recommendations

That the Committee:

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

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

3. ***Notes*** *that the existing sea level rise allowance for climate change design criteria is 0.8m by 2100.*

4. ***Approves*** *the use of a 1.0m sea level rise allowance for climate change by 2100 for the upcoming Porirua Stream flood hazard maps.*

Report prepared by:	Report approved by:	Report approved by:
Susan Borrer Engineer, Modelling	**Sharyn Westlake** Team Leader - Investigations, Strategy and Planning	**Graeme Campbell** Manager - Flood Protection

Report approved by:

Wayne O'Donnell
General Manager -
Catchment Management

Attachment 1 Request from Porirua City Council

Attachment 1 to Report 17.466

From: Nicola Etheridge <NEtheridge@pcc.govt.nz>
Sent: Thursday, 30 November 2017 9:44 a.m.
To: Susan Borrer
Cc: James Beban; Torrey McDonnell; Brett Osborne
Subject: GWRC climate change policy - request for exemption

Hi Susan

I'd like to formally request that Greater Wellington Regional Council make an exception to your climate change policy to allow the use of 1.0m Sea Level Rise on the Porirua Stream so that we can use the same parameters as Wellington Water which allows our maps to be combined. This would assist us greatly for planning purposes.

Regards
Nic Etheridge

Nic Etheridge
Environment & City Planning Manager
DDI: (04) 9171004 | **MOB:** 027 257 6836

"Porirua residents enjoy a relaxed, balanced lifestyle"

Report	**17.460**
Date	1 December 2017
File	CCAB-10-436
Committee	**Environment Committee**
Author	**Nigel Corry, General Manager, Environment Management** **Wayne O'Donnell, General Manager, Catchment Management** **Luke Troy, General Manager, Strategy**

General Managers' report to the Environment Committee meeting 6 December 2017

1. Purpose

To inform the Environment Committee of Greater Wellington Regional Council (GWRC) activities relating to the Committee's areas of responsibilities.

2. Catchment Management

2.1 Biosecurity

2.1.1 Pest Animals

Rook control Programme

The season's aerial rook control program has recently been completed with a further reduction in rook numbers. There are eight confirmed rookeries that were treated and only 16 active nests treated in total. There were 11 active rookeries last season and 33 active nests were treated in 2016. Horizons Regional Council treated 135 nests this season with a small reduction in nests treated from the previous year.

2.1.2 Pest Plants

Cape Tulip

Cape tulip (*Homeria calina*) is a National Interest Pest Response (NIPR) species and as such, the Ministry of Primary Industries (MPI) is responsible for eradicating the plant from New Zealand. This highly toxic pest plant was first discovered growing in Wellington in 1985. Cape tulip is very distinctive and after extensive newspaper and TV advertising a further 39 active sites of the plant were located in residential gardens around Wellington City and on the Kapiti Coast.

MPI has contracted this work out to GWRC and we have been managing the cape tulip eradication programme in the Region since 1989. The eradication programme has been very successful and to date the species has been eradicated from all but two sites. These last two properties are inspected twice annually and no plants have been found at either site since the last plants were removed in 2014. The sites will be inspected annually for another 2 years and if no further plants are found GWRC will have successfully eradicated cape tulip from all known sites in the Region.

2.1.3 Regional Possum and Predator Control Programme

Work is well advanced for the 2017/18 programme which covers 90,000 ha. Bioworks have completed control over 39,000 ha to date. Approximately 15,500 ha will be treated in the Wellington - Kapiti area and the remainder will be undertaken within the Masterton and Carterton districts.

2.2 Land Management

2.2.1 Akura Nursery

Staff, with assistance from the Customer Engagement team, are in the process of implementing the Akura Marketing Strategy. The Strategy will revitalise the nursery in terms of the brand, signage, promotion and advertising – a new fresh look.

2.2.2 Riparian Programme

The Riparian programme supports landowners to achieve water quality and biodiversity outcomes through the management of stock access to waterways. Part of this programme is to work with landowners to identify waterways and sites that meet the definition for Category 1 (sites of significance under the proposed Natural Resources Plan (pNRP)).

During this quarter, the Riparian project has focused on shifting the landowners forward along the behaviour change spectrum through to implementation of their stock exclusion plans.

A cross-departmental team have developed Livestock Access Plans (LAP's) for landowners whose Category 1 sites cannot be fenced in their entirety due to it not being practicable. These plans allow GWRC and landowners to agree on how the effect of infrequent livestock access will be managed so that the effects are less then minor.

2.2.3 Wellington Region Erosion Control Initiative (WRECI) Programme

Applications for WRECI afforestation and reversion grants for 2017/18 and 2018/19 were mailed out in September with applications recently closed. There was exceptionally strong demand from landowners for funding with 64 applications received, equating to over $1million of work.

A rigorous scoring process was used to highlight the highest priority projects which took into account - Land Use Capability (LUC), cost per hectare and connection to waterways.

As a result, 26 applications were approved across 9 properties with 175 hectares of erosion prone land to go into forestry or native reversion at a total budgeted works cost of $365,000.

One of the successful candidates for native reversion funding - a highly erodible gully system.

2.2.4 Farm Environment Plans (FEP)

The FEP programme continues to receive strong interest from landowners to enter into the programme possibly buoyed by an increase in conversations around stock exclusion and the ongoing work of the Ruamahanga and Te Awarua-o-Porirua Whaitua. Although interest from landowners wanting an FEP developed around Lake Wairarapa remains high, Land Management advisors will shortly begin to actively engage with farmers in the Parkvale catchment as it has been identified in the pNRP and the FEP programme strategy as a priority catchment.

Applications for the contestable fund have also been strong with close to $300,000 of on-farm work to improve water quality and biodiversity under consideration for approval.

2.2.5 Apiarist Contracts

A tender was run in September for Apiarists to place hives on three pieces of GWRC owned land. These were the Akura Nursery, Hiwinui Forest Reserve and Tauanui Forest Reserve. Each tenderer had to specify whether they wanted to place hives in a wintering period (from April to October) and/or a Manuka harvesting period (from November to March).

Six tenders were received from Wairarapa established apiarists. Greytown Honey will harvest Manuka honey and winter their bees at Hiwinui Forest reserve. Kiwi Bee Medical (Comvita) will harvest Manuka honey and winter their bees at Tauanui Forest Reserve. Manuka Health will winter their bees at Akura Nursery.

The contracts are over a three year period and were drafted by Duncan and Cotterill, a law firm who have had experience drafting honey contracts. The template contracts are now available to be used by any department within Greater Wellington who wish to engage with apiarists.

2.3 Flood Protection Implementation

2.3.1 Te Awa Kairangi/Hutt River, RiverLink

The RiverLink project has completed 2 of 3 planned workshops to discuss project scope, costs and cost sharing between the project partners based on the preliminary design. The project is on track to recommend to the Hutt Valley Flood Management Subcommittee a preliminary design, with which to proceed to the next stage of statutory approvals, in March 2018.

19 properties have been acquired, and a further 51 are in various stages of negotiation. 118 is the total current property requirement to deliver the flood protection outcomes for the RiverLink project. Hutt City Council has separately sought to acquire additional properties to assist delivery of its making places project. NZTA will identify their property requirements at a future date once they have completed their detailed business case process.

RiverLink community engagement has gained pace during the last month with continuation of the information space doing a scheduled circuit around Lower Hutt as well as at Hutt City Council's Highlight Festival.

Design work is progressing well for the Belmont Wetland Trial, test pits will be dug at this site in the near future to enable assessment of the ground conditions around the wetland site.

2.3.2 Te Awa Kairangi/Hutt River Environmental Strategy

The Hutt Valley Flood Management Subcommittee at its meeting on 11 November 2017 endorsed progression to public engagement for the draft Hutt River Environmental Strategy Action Plan.

A summary leaflet is being prepared to provide an overview of the strategy. Consultation with the community and key stakeholders will occur over the summer of 2018 (Jan to Mar), and a programme of community engagement activities is in development (including targeted workshops, social media posts, media advertisements, and a 'have your say' webpage). Structured engagement on the strategy will commence in 2018.

A summary document for the strategy is also being developed to assist with the consultation phase. We aim to receive feedback by the beginning of March 2018 and then to present a final draft for endorsement to the subcommittee in April 2018.

2.3.3 Pinehaven Stream

The Pinehaven Stream Floodplain Management plan recommends a package of stream capacity improvements to provide 1-in-25 year channel capacity and protection of habitable floor levels to a 1-in-100 year level including effects of climate change.

Wellington Water is project manager for delivery of the Pinehaven Stream Flood Capacity improvements. Preliminary design and modelling has been completed and an engagement plan is being developed to re-engage with properties adjacent to the areas of work, and to inform and update the wider Pinehaven and Silverstream communities.

Plan Change 42 includes controls for the management of the Mangaroa River and Pinehaven Stream Catchments. It looks to ensure development is compatible with flood risk, implement stormwater neutrality for new development (in the Pinehaven catchment) and control development in flood hazard areas. The further submission period for Plan Change 42 – Mangaroa and Pinehaven Flood Hazard Extents closed on 8 June 2017. Hearings were held in September 2017 and the outcome of this hearing process was anticipated prior to December 2017, but has now been deferred to the start of 2018.

The design team has prepared a consent strategy, consultation strategy and design and delivery programme for the Pinehaven Stream capacity improvements project. However, this has been paused until the Plan Change

Commissioners recommendation has been considered by Upper Hutt City Council. A decision is now not expected until February 2018.

2.3.4 Waikanae River, Jim Cooke Park

The Jim Cooke Park stopbank upgrade project earthworks have completed and a grass strike has been achieved and brought up to a mowable condition. The mitigation and enhancement planting plan is being finalised, supported by the Friends of Waikanae River.

Boundary alignment corrections and encroachments along the boundary of Jim Cooke Park continue to be addressed, fencing work has commenced.

Forty dangerous trees adjacent to the site are scheduled to be removed. These trees were identified as dangerous by KCDC, GWRC and the Kapiti Equestrian Centre Vaulting club. The trees contain a lot of dead wood that has been at times been dislodged in strong wind events creating a safety risk for the public land, there have been near miss incidents reported to KCDC by members of the public. The tree removal will be co-ordinated with walking track improvements along the boundary of the Kapiti Equestrian and Vaulting Centre facility.

2.3.5 Otaki River

As part of the Peka Peka to Ōtaki Expressway (PP2O) project an upgrade to the Chrystalls Extended Stopbank is required. This is to reduce the number of bridges required as part of the contract works. Raising the stopbank will benefit Otaki residents by improving the stopbank level of service by adding an allowance for future climate change effects. The programme for this work is being reviewed by the PP2O design team. GWRC will be involved with this project in ensuring these works are done appropriately as the stopbank is a GWRC asset.

2.3.6 Waitohu Stream

Work has recommenced to secure entry agreements needed to complete the South Waitohu Stopbank channel improvements and the Convent Road stopbank parts of the proposed Waitohu Flood Protection works. To date six of the 15 agreements required have been secured. The focus of recent agreement discussions has been with the Otaki and Porirua Trust Board which is one of the largest landowner parcels of land where the works will be carried out.

2.4 Operations, Delivery and Planning

2.4.1 Western Operations

The annual walkover of the Waikanae River took place on 3 November. Eighty members of the community including members of the Friends of the Waikanae River, GWRC and KCDC politicians and officers and other interested parties enjoyed a successful walk along the river to view projects completed during the last year and proposed activities for the coming year.

2.4.2 Asset Management and Operations Planning

Work has continued on the analysis of flood protection asset condition information to support annual asset management reports and inform

maintenance work programmes. There has been increased public interest in this information as a result of media reports.

Staff are leading a national river asset user group to develop and improve a code of practise to assess the performance of flood protection assets. Based on asset condition and criticality the asset performance tool is being used to spatially map flood risk impact and criticality.

2.4.3 River management resource consents

The ongoing focus has been meeting with submitters to resolve their submissions. We have had several meetings with Wellington Fish and Game and DoC to consider their specific concerns. DoC staff attended the Waikanae River walkover and we are now working through changes to draft consent conditions and the Code of Practice. Staff have also been in contact with iwi representatives regarding their submissions.

Work has continued on the Geoffrey Blundell Barrage Gates Consent renewal project. The key issue that has been identified through the work done to date is timing and the ability to meet the August 9, 2018 date for lodgement under Section 124 of the Resource Management Act 1991 (RMA), six months before the expiry date of the maintenance consents. We are working through issues that need to be resolved to achieve this date. They include, the future role of iwi in relation to Lake Wairarapa, the relationship with the wider Lowwer Wairarapa Valley Development Scheme (LWVDS) and wider changes that may come about through other GWRC processes including the pNRP and the Whaitua process.

Resource consent applications continue to be prepared for the Porirua Stream to renew the consent for gravel extraction in the lower reaches and to enable erosion repairs caused by flood damage. An ecological assessment for the affected reaches of the Porirua Stream has been undertaken in November 2017.

2.5 Investigations, Strategy and Planning

2.5.1 Porirua Stream

Peer review of the updated Porirua Stream hydraulic model is scheduled to be complete in December 2017. Community consultation on updated flood maps (in conjunction with Wellington Water) is scheduled for February 2018. Initial consultation with WCC and PCC on draft flood maps has been positive.

2.5.2 Mangaone Stream

The Mangaone Stream survey has been completed and Officers are currently compiling the information collected. Construction of the updated Mangaone hydraulic model is underway.

2.5.3 Waiohine FMP

The Waiohine FMP has now entered a new community-led phase to finalise the FMP, with the aim of producing a solution that has the support of the community. This involves a Project Team (meeting weekly) reporting to and receiving direction from a Steering Group (meeting approximately monthly). There have now been two Steering Group meetings and seven Project Team

meetings (at 6 December). Good progress is being made, particularly on the flood mapping, with preliminary mapping showing a reduction in the flood spread based on a good calibration to the 1990 flood and an upgraded model operating at a finer resolution. Other topics that have been considered or covered to date include planning horizons, hydrology, surveying, climate change, uncertainties, historical floods of note, and relevant standards/guidelines/policies.

This project is reported to Council via the Wairarapa Committee.

2.5.4 Te Kāuru Upper Ruamāhanga River FMP

Both work streams of FMP development – rural and Masterton urban – are continuing. The project team will present a revised Volume 1 and Volume 2 of the draft FMP to the Subcommittee at the workshop on 28 November for feedback and look for endorsement to proceed to public consultation. Early consultation with key stakeholders and landowners is occurring regarding key concepts in the FMP and where property will be significantly impacted.

Work continues on modelling the agreed Waipoua hydrology to feed into options development for Masterton. We are currently calibrating this new hydraulic model with the revised hydrology.

3. Biodiversity

3.1 Biodiversity Management

3.1.1 Key Native Ecosystem programme

With weather conditions around the region steadily improving, the KNE pest plant control program is well underway for the season. This year the Biosecurity pest plants team will conduct most of the pest plant control work required at the KNE sites instead of putting it out to contract, as it has been in the past.

The extra effort by Biosecurity staff and contractors installing additional bait along bait station lines (to reduce rat numbers) in the Wainuiomata Mainland Island (part of Wainuiomata/Orongorongo KNE site) has been well worth the effort. Rodent tracking rates have been reduced from 36% in August to 4% in November. This is a great result ahead of the bird breeding season.

Two new interpretation panels have been installed on the Pencarrow Coast within the Parangarahu Lakes Area KNE site. They are located in front of Lake Kohangapiripiri and by the Pencarrow Lighthouse and provide visitors with valuable information about protecting the coastal environment with a focus on the rare cushion plant fields and nesting tuturiwhatu/banded dotterels. Signs were developed by GWRC in collaboration with Taranaki Whānui, Mainland Island Restoration Operation (commonly known as MIRO), GWRC Parks and Hutt City Council.

Fig 1. New interpretation panels being installed in the Parangarahu Lakes Area KNE site

3.2 Biodiversity Advice and Advocacy

3.2.1 Collaborative Restoration: Te Awarua-o-Porirua Harbour and Catchment Project

GWRC is funding the Mountains to Sea Wellington Trust to support Ngati Toa to run a shellfish survey on Saturday 25 and Sunday 26 November. This survey will involve counting and measuring four culturally important shellfish species including mud whelks, cockles, bubus and pipis. This event is open to the public and has been publicised by GWRC through social media and media releases.

3.2.2 Biodiversity Advocacy

Staff participated in the hugely successful Koraunui School Bioblitz, which aimed to engage children in science by collecting baseline data on the environment in Stokes Valley. Over 500 students from seven schools participated in the day alongside 60 scientists and nature enthusiasts from across New Zealand. Biodiversity and Biosecurity department staff took students on bush walks at the Horoeka Scenic Reserve and helped them to identify native plants, and the pest animal display in the new Stokes Valley Community Hub was a star attraction.

4. Enabling Catchment Communities

A presentation by the Wairarapa Catchment Communities group will be provided to the Council meeting on 13 December 2017.

5. Environment Management

5.1 Harbours

7/8 November: staff from Harbour's department and other parts of Council attended Maritime NZ's renamed NZ Oil Spill Conference, (previously the Regional Council Workshop), a key theme of this year was incident response and leadership.

The Deputy Harbourmaster has taken part in several of the CDEM Emergency Operations Centre (EOC) Exercise Ngateri senarios and the Harbourmaster also took part in the Emergency Coordination Centre (ECC) exercise. Being able to use the port and harbour as a primary transport route after a significant earthquake has been identified as an area needing further planning and development.

As part of their open government approach, LINZ have supplied us with a set of electronic navigation charts for our Beacon Hill operating system. This is the first time they have supplied an end user directly (normally the charts go through the UK Hydrographic Office then a third party supplier) so we are working with them on establishing how this system might work for other New Zealand users.

Supplies have been arriving for our summer safety campgain, purchased with funds provided by Maritime NZ. These include waterproof cellphone bags, safety whistles and VHF radios.

Our vessel "Sea Care" was on the water for the Wellington City Council (WCC) Sky Show. There were few recreational boats due to the weather and the wind caused some other issues on the evening that the Rangers were instrumental in assisting with. We have subsequently met with the operator and WCC to look at how some of these issues can be avoided in the future. The future shows are likely to be in June or July as part of the Matariki celebrations.

15 November: a recreational craft hit a log at the harbour entrance and requested asisstance. They went to Seaview Marina with some assistance and were observed throughout by Beacon Hill. It was likely they hit a log from the Hutt River.

16 November: a local vessel, reportedly on autopilot, collided with the Seaview (oil) Wharf. This caused significant damage to the vessel and minimal damage to the wharf. This required inspection to confirm there was no damage to the oil pipelines.

22 November: a small boat sank while its occupant was diving near the Grandfather rocks in Porirua Harbour. The sole occupant and his dog were both safely recovered from a rock and the boat was recovered the following day.

The Harbour Rangers met with the security firm who has previously provided a presence on the launching area between the bridges at Mana. We have already started getting feedback about the problems in this area, something we expect to increase over summer.

The safer boating evening that was to be a combined event with Pete Lamb Fishing was cancelled due to low numbers, however Lowry Bay Yacht Club had a car boot sale on 25 November and a Harbour Ranger set up a safety display and carried out lifejacket testing.

The Oriental Bay swim rafts are scheduled to go back in the water on 29 November. Looking after the rafts, that are WCC owned (previously owned by the Oriental Bay resident's association), is a community service provided by the Harbours department.

5.2 Environmental Regulation

5.2.1 Water supply - Havelock North Inquiry response

We have almost completed a bore assessment exercise of (aquifer) water supply protection areas on the Kapiti Coast. We are also in the early phases of similar work within water supply protection areas in the Wairarapa. This is to determine whether the bores or land use related activities in proximity of bores present an unacceptable health risk to the water users from these supply schemes.

A regional forum is being set up to explore water supply challenges across the Region. The forum, involving Wellington Water, Regional Public Health, GWRC and all the Territorial Authorities, will be meeting for two scoping meetings prior to the end of the calendar year. The purpose of the forum initially will be to gain a shared understanding of the issues facing the sector from the various regulatory bodies - from source to tap.

We are currently working with Regional Public Health and the GWRC Customer Engagement Team to develop guidance for people within the Region who source water from private water supplies. The publication and communications will highlight the contamination risks to private water supplies, outline requirements to protect water quality by ensuring bore infrastructure is secure, and responsibilities to ensure private water supplies are

safe for use through monitoring and treatment. This material and communications are likely to be distributed in late 2017 or early 2018.

The Phase Two Havelock North Inquiry report from Department of Internal Affairs is still expected out before the end of the calendar year. The Office of the Auditor General is also focusing in on National Environmental Standard for Drinking Water implementation, and we will be meeting with them at the end of November. At this stage, we are well placed in our response to current and likely issues that may come out from the Inquiry.

And finally, next steps in our Waiwhetu Aquifer response work: we will be engaging an expert to look at the suspect bores that have been identified through the investigation work. The expert will advise what risk the bores pose and what is required to remediate or decommission any bores that pose a risk.

5.2.2 Kapiti Coast District Council (KCDC) – Water Supply (river recharge) project

It's been a big year for the River Recharge project, a major project for the supply of potable water to most of the district. The project sees treated river water supplied to the public and in turn bore water pumped and discharged back into the river to 'recharge' it – thereby maintaining environmental baseflows. This year sees the conclusion of the 'baseline' information collection phase of the consent, and the drawing together of three years' worth of baseline data across groundwater, surface water, wetlands and coastal streams. The data has been analysed and environmental control limits recommended to mitigate the effects on the Waikanae River and Aquifers. The completion of baseline monitoring has enabled the restriction within the consent of the proportion of actual bore water to river flow (set at 20% of river flow) to be removed. This reduces the likelihood of bore water being supplied to the public over the summer months. The compliance regime over the summer period now ramps up as we receive a large amount of monitoring data to check to ensure compliance with the consent and management plans. We have a very effective working relationship with KCDC, and are looking forward to this project's successful implementation in full this summer.

5.2.3 Carterton Wastewater re-consenting

Negotiations have been continuing between the applicant and GWRC over the final wording of conditions. Agreement is close and once finalised will result in the Carterton Watewater consent proceeding without the need for a hearing (as all the submitters on the proposal have now withdrawn their right, or do not wish to be heard).

5.2.4 T and T Landfill

With December approaching, we can confirm that the stormwater diversions works are all on track to be completed on time. We have also approved a change to the water sampling plan, which will see rain 'event' monitoring of the discharge from the site. This will provide information on the effectiveness of the stormwater diversion works, in reducing leachate entering the Owhiro Stream.

With the success of the first Councillors visit, we have another planned for mid-December. We will also be updating the community on the progress this

year onsite, and we are discussing the best forum to do this with the GWRC Customer Engagement team.

Works on one of the stormwater detention dam in one of the upper tributaries of the Owhiro Stream (November compliance inspection)

Leachate treatment wetland is slowly improving its effectiveness with the reduction in clean stormwater flows (November compliance inspection)

5.2.5 Roads of National Significance (RoNS) Projects

(a) Transmission Gully and PCC Link Roads

Dry conditions over the past month or so have allowed significant earthworks progress on site. The permanent diversion channels for Te Puka Stream and Horokiri Stream are under construction. The consent processing workload remains high presently, mainly associated with applications for additional Stage 2 earthworks, but applications have reduced and will continue to decline post-Christmas. The annual monitoring report for the project has been received and is being reviewed by GWRC. The earthworks Compliance Reference Group met in late November to discuss the construction programme and earthworks related performance matters. Discussions are occurring with CPB HEB JV regarding updates to the Ecological Monitoring and Management Plan and the Streams Mitigation Working Group continues to meet weekly to work through stream mitigation and design matters. A meeting will be held in December with CPB Contractors and HEB Construction joint venture (CPB HEB JV) to identify areas of risk that need to be managed for the upcoming earthworks season.

Access track construction, vegetation clearance, and culvert installation associated with the PCC link roads continues. Consent applications for redesign of Bridge 29 and additional earthworks are being processed.

Horokiri Stream permanent diversion channel under construction (view looking north towards Wainui Saddle)

(b) Peka Peka to Ōtaki

Enabling works continue and permanent work around the SH1 bridge in Otaki will commence late November, with certification of the associated SSEMP

preceding that. A determination has been issued confirming the relocation of the bulk of stream mitigation planting to private properties along the Jewel Stream is 'in general accordance' with the conditions of consent.

5.2.6 Porirua Pilot Project

The Porirua Wastewater collaboration project (known as the Porirua Pilot Project) between GWRC and Wellington Water Limited continues to develop a shared understanding of the complex wastewater issues in Te-Awarua-o-Porirua Whaitua. This quarter saw the group continue its preparation work for an options workshop in late November, where potential 'solutions' for both the

wastewater network and the plant issues will be workshopped with a wide group of stakeholders.

5.2.7 National Environmental Standards for Plantation Forestry

The National Environmental Standards for Plantation Forestry (NES-PF) will come into effect on 1 May 2018. Previously, the rules governing forestry activities were provided in district and regional council plans. These rules were designed to take into account local environmental conditions and community priorities. A new nationally consistent set of regulations has now been created which, it is hoped, will create more certainty and a more consistent level of environmental management.

The NES-PF permit core forestry activities provided there are no significant adverse environmental effects. Where the forest operator can't meet the regulatory requirements for a permitted activity under the NES-PF, the operator will need to apply for resource consent. At the same time, the regulations recognise that different rules may be needed to manage some specific local circumstances and give effect to other RMA national direction tools such as the National Policy Statement for Freshwater Management and the New Zealand Coastal Policy Statement. Councils will be able to impose stricter rules in unique and sensitive environments, including those with special significance to the community. The NES-PF covers eight core plantation forestry activities:

- Afforestation
- Pruning and thinning-to-waste
- Earthworks
- River crossings
- Forest quarrying
- Harvesting
- Mechanical land preparation
- Replanting

The regulations apply to any forest larger than one hectare that has been planted specifically for commercial purposes and harvest. This does not include, for example, trees grown for fruit, nut crops, shelter belts, or nurseries. There are also certain activities and effects that are not in the scope of the regulations. In most cases, the regulations do not cover plantation forestry activities that occur outside the boundaries of the forest land, such as the effects of logging trucks using public roads. Existing regional and district plan rules will continue to apply to the activities and effects that are outside the scope of the regulations; examples include, cultural and historic heritage, agrichemical use, burning, water yield and milling and processing activities.

New RMA provisions also allow councils to charge for monitoring permitted activities under the proposed NES-PF .

5.2.8 Significant Investigations and Enforcement

The Environmental Protection Team currently has a number of investigations underway into incident and non-compliance with moderate to high environmental effects. These include large scale illegal burning, effluent discharges and works in the bed of a stream.

There is one live case before the courts, a prosecution for works in the bed of a river. This is still waiting to proceed to trial.

5.3 Environmental Science

5.3.1 Land

Sixty-nine spotless crake and one marsh crake have been recorded in wetland bird surveys of three wetlands on the Kapiti Coast – Te Harakeke Wetland Complex, O-Te-Pua-Pukekou and Te Hapua Wetland Complex. This is an exciting find, as little is known about the distribution of these secretive wetland birds in the Wellington Region. All three wetlands are Key Native Ecosystem sites and are considered to be regionally important. Fishing surveys are also being completed and the discovery of mudfish at Te Hapua Wetland Complex indicates a previously unknown population of this threatened species. These findings show how important these larger remaining wetland fragments are as habitats for threatened species.

Brown mudfish found in Te Hapua Wetland Complex

A dune monitoring programme has been initiated this year. It will provide information about the state of the dune ecosystems, as well as the outcomes of management actions. The programme has also been designed to monitor the impacts of rising seas and increased storm surges on coastal communities that have been predicted by climate change models. In addition to scoring the condition of our dune ecosystems, we are looking to map the extent of their various communities, and to track the plant communities and the pest animals over time. This year, dunes at Peka Peka beach, Whitireia Park, Makara Beach and Red Rocks are being assessed.

5.3.2 Water

A focus on groundwater quality following the Havelock North enquiry has meant that scientific staff have been involved in a number of projects and meetings related to groundwater quality. These include the Waiwhetu aquifer investigations, community drinking water supply protection areas and regional drinking water quality collaboration workshops.

5.3.3 Recreational water quality

Working with Community Engagement we have developed a comprehensive Comms campaign for the summer Recreational Water Quality Programme which also aligns with the current Our Region campaign about water. The warm dry weather and low rainfall has already seen high levels of toxic algal growth in the Hutt River and we commenced the full toxic algae surveillance monitoring of the Hutt River bathing sites two weeks earlier than scheduled. We are proactively working with our partners and using social media to communicate up-to-date key messages about toxic algae to our communities.

Facebook post from 21 November about toxic algae in the Hutt River which has been shared over 400 times and reached in excess of 100,000 people

The full recreational water quality bathing season monitoring commences at the start of December, and will run through to the end of March, with weekly results being made available via the GWRC 'Is it safe to swim' interactive map, Facebook as well as Land, Air, Water Aotearoa (LAWA).

5.3.4 Working with communities

Planning for the Wellington Harbour/Hutt Valley Whaitua, due to start in 2018, is well underway. We engaged a consortium of experts to help explore learnings from our current experiences with the Ruamāhanga and Te Awarua-o-Porirua whaitua, as well as other New Zealand experiences. Following a number of interviews with key people, a workshop was held in November and a report from the consultants has now been received which proposes a new framework for the process.

We worked with Mountains to Sea, Zealandia, MfE and Wellington City Council to deliver a Freshwater Citizen Science workshop on November 18 at Zealandia. The aim of the workshop was to help interested participants identify their monitoring aims and objectives, discuss some freshwater science basics and provide a taster for some stream health assessments.

5.4 Environmental Policy

5.4.1 Wainuiomata North Structure Plan

Staff from Environment Policy and Strategic Transport Planning attended a Hutt City Council exercise to develop options for a long term development plan for the Wainuiomata North greenfield area. Some development is already occurring in adjacent residential zoned areas and one of the concerns is that there is no overall direction to ensure good outcomes for the area. Stormwater, both quality and quantity, is an issue for the development and potential effects on downstream residences, and concerns with poor street layout and connectivity were also highlighted in presentations.

The structure plan area is indicatively 88 hectares and the options developed allowed for a number of houses between 1200 and 1800 (some medium density areas) depending on uptake and density, both of which can be effectively completed in stages. At these levels, a village centre of a school, park and shops is feasible. Both options focused development on the valley floor with an encircling hill landscape and enhanced recreational opportunities. There was good agreement on suitable key transport routes and general street permeability ideas to provide for connections for vehicles, public transport and active transport modes. Acquisition of key areas for a possible village centre, green – blue recreational linkages and stormwater retention areas will be essential, set the framework and achieve an integrated outcome.

The implications of a possible future road link to the Hutt Valley, either to Whites Line East (and the Cross Valley Link) or to Naenae were assessed in the comparison of options but did not materially change the possible configuration of the key areas and roads in the structure plan. It would however have a number of advantages. Either link would decrease vehicle kilometres travelled from the structure plan area as well as providing an alternative road out of Wainuiomata for resilience purposes and increasing the desirability of Wainuiomata as a place to live.

A 'business as usual' development option and a preferred more intensive option were presented to Hutt City Councillors at the conclusion of the workshop with general agreement to proceed with further investigation.

5.4.2 Resource Management Act Planning Standards

The Ministry for the Environment are progressing on the design of national planning standards. Regional council policy and planning managers met with the MfE team to discuss the practicalities of the structure and content standards for regional plans and regional policy statements. A potential suite of definitions was also tabled.

We will be working closely with the Ministry to ensure the standards are practical, implementable and cost-effective.

5.4.3 Porirua City Council District Plan Review public engagement

GWRC officers attended district plan review public engagement sessions with PCC staff. This marks the start of the engagement process, which will run until public notification in 2019. PCC are approaching this engagement in a genuinely meaningful way and there will be a number of opportunities for GWRC to participate.

The sessions were well attended with wide ranging discussions covering:

- New development (scale, how, where, sympathetic design, village concept, rural and urban infill)
- Hazards and resilience
- Infrastructure (wastewater, stormwater, green design)
- A changing future following the opening of transmission gully
- Connections to the whaitua process
- Climate change.

5.5 Parks

5.5.1 Assets and maintenance general updates

- Helicopter lifting procurement: RFP responses are being assessed, with the aim of confirming two companies to service the Parks Assets programme.
- Radio systems improvement: testing of the MCS Push Wireless system has been completed across the region. Work is underway to extend field coverage, involving the deployment of temporary mini-repeaters at key sites (such as Mt Wainui in the Akatarawa Forest and Orongorongo).
- Planning for the five-yearly revaluation of Parks assets and land is underway. Independent valuers will be contracted for this task.

5.5.2 Regional Trails Framework

The report has been finalised and circulated to the 11 partners, who have agreed to fund the implementation of the Framework for the first three years. This includes a 0.5FTE and a number of initiatives starting in the second half of 2017-2018.

5.5.3 Remutaka Cycle Trail

The various partners and land managers continue to improve the quality of the trail to lift the overall standard. GWRC has been leading the collaboration with HCC, UHCC and the Department of Conservation to access MBIE Maintaining Great Rides funding for the entire trail.

Recent wins include:

- $70,000 in emergency funding to fix storm damage issue on the South Coast between Orongorongo Station and Ocean Beach.
- MBIE approving priority funding for two DOC projects: a bridge in Siberia Gully on the Remutaka Incline and over $200,000 for trail enhancements and realignment on the South Coast from Ocean Beach.

GWRC Parks also continues to work closely with WREDA to write a job description for the Regional Trails coordinator and to formalise governance for the Remutaka Cycle Trail.

5.5.4 Pakuratahi Forest

(a) Heritage structures

Resource consent has been granted for work to remedy a scoured historic culvert on the Rimutaka Rail Trail, near the Rifle Range. Works are scheduled to begin in December, weather permitting.

A large culvert on the Station Drive section of the Rimutaka Rail Trail is due for replacement over the next two months. The 21 metre long rusted out corrugated pipe will be replaced with a more durable high density polyethylene (HDPE) plastic version that will maintain access for management vehicles and forestry traffic. The pedestrian bridge over the historic rail bridge abutments just downstream of the defective culvert will be replaced in the new year, to comply with modern standards.

Maintenance and Construction rangers spent time with a Kiwirail bridge specialist to plan maintenance of the various hardwood timber bridges along the Rail Trail. A programme of invasive testing is underway on the highest risk structure (the Pakuratahi truss bridge) to diagnose the extent of rot in this structure.

This work is part of a site maintenance programme along the full length of the Rail Trail, carried out in accordance with the heritage conservation plan. Work includes removal of vegetation, lichen and mosses that pose a risk to the long term survival of these historic structures. Some of this work entails extensive cutbacks and/or spraying, so requires associated visitor communications.

5.5.5 East Harbour Regional Park

(a) Baring Head vehicle bridge

Detailed engineering and consenting work is underway on the new replacement vehicle bridge at Baring Head. The new bridge is proposed approximately 25m downstream from the existing site on the Wainuiomata River. Tendering is expected to begin shortly.

(b) Baring Head Lighthouse Complex

Construction has started on site, being project managed by Naylor Love, with removal of the asbestos roofs on the garage and generator building, installation of new colorsteel roofs and exterior building works. It is exciting to at last see some real progress on restoring the buildings on site.

As part of the Lighthouse development we have also installed a "Loo with a View". The temporary Norski wilderness toilet provides a much needed amenity for day visitors to the site.

From left: The historic generator building gets a new roof; loo with a view in situ

(c) Harbour Views Trail

This construction project has reconvened now that ground conditions have improved, and the team is working to complete the remaining two thirds of the alignment. We have received a number of enquiries from the local community about when this work will be completed.

5.5.6 Battle Hill Farm Forest Park

(a) RDA Arena

Removal of trees is underway. Once this complete the earthworks to create the level building site will begin. It is hoped the dry weather will continue allowing construction of the arena building to get underway in the New Year.

Felling large exotic trees in upper Abbotts Field to make way for the new covered arena

Six of RDA's riders took part in the Under 12 Pauatahanui Pony Club equestrian event recently. With the riders winning a total of thirty ribbons between them, they, their families and coaches shed many tears of pride and success. This was the first occasion that riders with disability had competed in

such an event. Having RDA located at Battle Hill has allowed this to happen and the Pauatahanui Pony Club should be given credit for making this opportunity available.

(b) Summit Loop track

The Bush Reserve/Summit Loop track has received a major makeover. Large sections of the track's surface have been repaired and metalled. Further work is planned, including track metalling by helicopter, and application of metal on sections in the farmed area - where the surface is damaged due to stock movement. An investigation is underway to realign fencing to better protect both the track and the KNE from livestock and enhance the revegetation process.

5.5.7 Queen Elizabeth Park

(a) Entranceway developments

The Mackay's Crossing entranceway redevelopment project will reach an important milestone on 2 December with the blessing and ceremonial opening of "Ramaroa" - the new visitor hub building. Final fitting out work is underway, including high speed data links sufficient to sustain this site should it be required for business continuity. Its distinctive design plays on the Park's heritage themes and has created a huge amount of public interest during its construction.

Landscaping development work will continue into the new year, along with visitor information and interpretive signage. Bookings are lined up already for the Kotare meeting room. The two resident Park Rangers will shift very soon into their new office building located within the complex.

The Paekakariki entrance is another popular node for visitors to QEP. The Wellington Road entrance has been prepared for the installation of a new electronic gate to take place prior to Christmas.

5.5.8 Maclean Trust Donation

Following two months of discussions, site visits and planning. an agreement was signed between the Maclean Trust and GWRC for the Trust to donate $300,000 towards the restoration of the park environment. This extremely generous gesture will see a total 25 hectares of Queen Elizabeth Park receive site scale weed control, around 100,000 trees planted by contractors and construction of a 1.5km walking and cycling track.

The scale of this project has been made possible through the GWRC investment in "low cost" planting restoration trials over the last four years at QEP and Whitireia Park. This has reduced the cost of planting to $8,500/ hectare (excluding weed control) compared to $25-$30,000/ hectare for traditional "bag" planting.

GWRC officers are working with specialist advisors to develop a restoration plan, control weeds and organise planting to start from winter 2018. The project will run for a total 6 years and includes three years of maintenance weed control for each year of planting to ensure the best chance of plant survival.

5.5.9 Belmont Regional Park

(a) Historic dams

The Woollen Mills Dam stabilisation project will restart in January 2018 with a focus on finishing work on the new fish passage chute. The project was on hold due to the spawning period on the Korokoro Stream.

Further upstream, the viewing area on the historic Korokoro Dam will be upgraded over the next quarter. A new safety barrier system will be installed to better protect the many visitors from the hazards of this site. Use of this area has grown noticeably due to track improvements within this valley.

Both of these two dams, together with the Birchville Dam are subject of a Dam Safety Action Plan project. This provides contingency plans for managing these dams in the case of major earthquakes, flooding or structural failure. The plan is expected to be completed in the next quarter.

5.5.10 Akatarawa Forest

A section of Cannon Point walkway, from near the Trig down towards Totara Park, has been upgraded. A remaining mid-section will be metalled in the new year. This work provides a more even and durable surface for the many visitors to the area.

6. Responses to public participation

1 November 2017

There was no public participation at this meeting.

7. The decision-making process and significance

No decision is being sought in this report.

7.1 Engagement

Engagement on this matter is not necessary.

8. Recommendations

That the Committee:

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

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

Report approved by:	Report approved by:	Report approved by:
Nigel Corry General Manager, Environment Management	**Wayne O'Donnell** General Manager, Catchment Management	**Luke Troy** General Manager, Strategy