



greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

If calling please ask for: Democratic Services

16 September 2019

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:

Thursday, 19 September 2019 at 9.30am

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

Barbie Barton

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 Thursday, 19 September 2019
in the Council Chamber, Greater Wellington Regional Council, Level 2,
15 Walter Street, Te Aro, Wellington at 9.30am**

Public Business

| | | Page No |
|-----|---|--------------------------|
| 1. | Apologies | |
| 2. | Declarations of conflict of interest | |
| 3. | Public participation | |
| 4. | Confirmation of the minutes of 8 August 2019 | Report 19.330 3 |
| 5. | Confirmation of the minutes of the Hutt Valley Flood Management Subcommittee meeting of 6 August 2019 | Report 19.329 8 |
| 6. | Confirmation of the minutes of the Hutt Valley Flood Management Subcommittee meeting of 12 September 2019 | Report 19.411 11 |
| 7. | Resource Management National Direction – Year of Delivery (part 1) | Report 19.410 12 |
| 8. | Climate Change update | Report 19.417 31 |
| 9. | ‘Supporting Electric Vehicles in the Wellington Region’ Advisory Report | Report 19.413 36 |
| 10. | Flood Protection Annual Asset Management Report 2019 | Report 19.416 83 |
| 11. | Floodplain Management Plan Implementation : Annual Progress Report to June 2019 | Report 19.381 104 |
| 12. | Regional Pest Management Plan 2019-39: Operational Plan 2019/20 | Report 19.415 122 |
| 13. | Coastal Erosion Plan at Queen Elizabeth Park | Report 19.420 150 |
| 14. | General Managers' Report to the Environment Committee on 19 September 2019 | Report 19.382 172 |



greater WELLINGTON

REGIONAL COUNCIL

Te Pane Matua Taiao

Report 19.330

8 August 2019

File: CCAB-10-760

Minutes of the Environment Committee meeting held on Thursday 8 August 2019 in the Council Chamber, Greater Wellington Regional Council, Level 2, 15 Walter Street, Te Aro, Wellington at 9.30am.

Present

Councillors Kedgley (Chair), Blakeley, Brash (Deputy Chair), Donaldson, Gaylor, Lamason, McKinnon, Ogden (from 9.33am), Ponter, Swain, Staples. Barbie Barton and Ihaia Puketapu.

Public Business

1 Apologies

Moved

(Cr Donaldson/ Cr Lamason)

That the Council accepts the apologies for absence from Crs Laban and Laidlaw.

The motion was **CARRIED**.

2 Declarations of conflict of interest

There were no declarations of conflict of interest.

3 Public Participation

Robin Gunston, establishment chair of Steering Committee, Waikanae ki Uta ki Tai Programme, spoke to its structure, aims and its relationship to GWRC whaitua processes regarding the Waikanae River.

Tracey Ultra spoke to the environmental impacts of water extraction in the Hutt Valley.

Angela McLeod spoke about the water extraction in the Hutt Valley.

Chris Parkin spoke about Climate Change and the water bottling consent in the Hutt Valley.

Paul Lambert spoke to the Climate Change report, water bottling consent in the Hutt Valley and for a climate emergency.

Pat van Berkel spoke to the water extraction consent in the Hutt Valley.

4 **Confirmation of the public minutes of 20 June 2019**

Moved (Cr Gaylor/ Cr Donaldson)

That the Committee confirms the public minutes of the meeting of 20 June 2019, Report 19.275.

The motion was **CARRIED**.

5 **Confirmation of the minutes for Te Kāuru Upper Ruamahanga River FMP Subcommittee**

Moved (Cr Staples/ Cr Donaldson)

That the Committee confirms the public minutes of the meeting of 11 June 2019, Report 19.252.

The motion was **CARRIED**.

6 **Action items from previous meetings**

Report 19.291 File ref: CCAB-10-738

Moved (Cr Kedgley/ Cr Swain)

That the Committee:

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

The motion was **CARRIED**.

7 **Whaitua quarterly update - presentation from Whaitua Te Whanganui-a-Tara Committee**

Co-Chairs Kara Puketapu-Dentice and Louise Askin gave an oral update.

They spoke of the need to frame and understand their purpose and reason, so went to Matiu/Somes Island. They decided on kawa – a Māori way of doing things and developed a statement of understanding:

- Life
- Water
- Collective role
- Connections and relationships

The Co-Chairs explained that they have two years to go through the process and have a co-governance approach with mana whenua.

Their focus is on water quantity and quality. They explained that there are many streams that are now pipes so we have lost our connection and relationship with water, particularly with population increase and the effects of development.

They intend to draw on the work of the Te Awarua-o-Porirua Whaitua Committee.

The Co-Chairs explained that they want to translate the recommendations into actions and influence the Long Term Plan, with the intention of having the community invested in the process to facilitate continued maintenance.

The meeting adjourned at 10.39am after item 7 and resumed at 10.56am. Cr Ponter returned at 10.58am. Cr McKinnon returned at 11.00am.

8 What is a Climate Emergency? (Information Paper)

Andrea Brandon, Programme Lead Climate Change, and Jake Roos, Climate Change Advisor, spoke to the report.

Report 19.292

File ref: CCHSTR-5-64

Moved

(Cr Brash/ Cr Blakeley)

That the Committee:

- 1. Receives the report.*
- 2. Notes the content of the report.*
- 3. Notes that GWRC is holding an emissions reduction target workshop on 9 August.*
- 4. Notes that a full paper will be prepared to go to Council on 21 August.*
- 5. Requests officers to prepare a report on declaring a climate emergency for the next Council meeting on 21 August 2019, including in the report consideration of the costs of action and inaction.*

The motion was **CARRIED**.

9 Climate Change Working Group Update

Suze Keith, Climate Change Advisor, and Andrea Brandon, Climate Change Programme Lead spoke to the report.

Report 19.311

File ref: CCHSTR-5-80

Moved

(Cr Blakeley/ Cr Brash)

That the Committee:

- 1. Receives the report.*

2. *Notes the content of the report.*

The motion was **CARRIED**.

10 **Water management system and water bottling consents**

Al Cross, General Manager, Environment Management, and Shaun Andrewartha, Manager, Environment Regulation, spoke to the report.

Report 19.323

File ref: CCAB-10-749

Moved

(Cr Donaldson/ Cr Blakeley)

That the Committee:

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

The motion was **CARRIED**.

11 **Use of the streamlined planning process – Plimmerton Farm rezoning**

Report 19.310

File ref: CCAB-10-751

Moved

(Cr Brash/ Cr Donaldson)

That the Committee:

1. *Receives the report.*
2. *Notes the content of the report.*
3. *Notes that officers recommend supporting Porirua City Council's application for a streamlined planning process via a letter to the Minister for the Environment.*
4. *Notes that this approach does not preclude our ability to ensure the regional planning framework is implemented in a robust manner.*
5. *Approves the recommendation to provide a letter of support to the Minister for the Environment for Porirua City Council's application to use a streamlined planning process for the Proposed Plimmerton Farms Plan Change.*

The motion was **CARRIED**.

12 **General Managers' Report to the Environment Committee**

Report 19.300

File ref: CCAB-10-747

Moved

(Cr Kedgley/ Cr Swain)

That the Committee:

1. *Receives the report.*

2. *Notes the content of the report.*

The motion was **CARRIED**.

The meeting closed at 1.12pm.

Cr S Kedgley
(Chair)

Date:



greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Report 19.329

06/08/2019

File: CCAB-14-547

Minutes of the Hutt Valley Flood Management Subcommittee meeting held in the Council Chamber, Upper Hutt City Council, 838-842 Fergusson Drive, Upper Hutt on Tuesday, 6 August 2019 at 4:32pm

Present

Councillors Lamason (Chair), Laban, Ogden (from 4.36pm), and Swain (Greater Wellington Regional Council); Mayor Wallace and Deputy Mayor Bassett (Hutt City Council); Mayor Guppy and Councillors Swales (from 4.56pm) and Taylor (Upper Hutt City Council).

Public Business

1 Apologies

Moved

(Mayor Wallace/ Cr Taylor)

That the Subcommittee accepts the apologies for absence from Councillors Kedgley, Laidlaw and Milne, and the apology for lateness from Cr Swales.

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 minutes of 14 May 2014**

Moved

(Deputy Mayor Bassett/ Mayor Wallace)

That the Subcommittee confirms the minutes of 14 May 2019, Report 19.192.

The motion was **CARRIED**.

5 **Action items from previous meetings**

Alistair Allan, Team Leader, Flood Management Plan Implementation, spoke to the report.

Report 19.313

File: CCAB-14-539

Moved

(Cr Taylor/ Cr Laban)

That the Subcommittee:

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

The motion was **CARRIED**.

Noted: The Committee noted that the status of the first action item should be recorded as “In progress”.

Noted: Cr Ogden arrived at 4.36pm during the above item.

General

6 **Hutt Valley Flood Management Projects Report**

Alistair Allan, Team Leader, Flood Management Plan Implementation, spoke to the report.

Report 19.305

File: CCAB-14-538

Moved

(Cr Taylor/ Cr Laban)

That the Subcommittee:

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

The motion was **CARRIED**.

7 **Rock Investigations – Progress Update No 2**

Alistair Allan, Team Leader, Flood Management Plan Implementation, spoke to the report.

Report 19.241

File: CCAB-14-542

Moved

(Cr Taylor/ Cr Laban)

That the Subcommittee:

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

The motion was **CARRIED**.

Noted: Cr Swales arrived at 4.56pm during the above item.

RiverLink

8 RiverLink Project Manager's Report

Martin White, Project Director, RiverLink, spoke to the report.

Report 19.304

File: CCAB-14-537

Moved

(Deputy Mayor Bassett/ Mayor Wallace)

That the Subcommittee:

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

The motion was **CARRIED**.

The meeting closed at 5.20pm

Cr P Lamason
(Chair)

Date:



greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Please note these minutes remain unconfirmed until the Environment Committee on 19 September 2019.

Report 19.411

12/09/2019

File: CCAB-10-778

Minutes of the Hutt Valley Flood Management Subcommittee meeting held on Thursday, 12 September 2019, in the Council Chamber, Hutt City Council, 30 Laings Road, Lower Hutt, at 4.30pm

This meeting lapsed 30 minutes after its scheduled commencement due to the fact that a quorum was unable to be achieved within 30 minutes of the scheduled commencement time.

The members present at the time of the meeting's lapse were:

| | |
|----------------------|---------------------------------------|
| Cr Lamason | (Greater Wellington Regional Council) |
| Deputy Mayor Bassett | (Hutt City Council) |
| Mayor Guppy | (Upper Hutt City Council) |
| Cr Ogden | (Greater Wellington Regional Council) |
| Cr Swain | (Greater Wellington Regional Council) |
| Cr Swales | (Upper Hutt City Council) |
| Cr Taylor | (Upper Hutt City Council) |

Apologies for absence had been tendered by Councillors Laban, Laidlaw and Kedgley (Greater Wellington Regional Council), and Mayor Wallace (Hutt City Council).

Cr S Kedgley
Committee Chair

Date:



| | |
|------------------|--|
| Report | 2019.410 |
| Date | 11 September 2019 |
| File | CCAB-10-775 |
| Committee | Environment |
| Authors | Environmental Policy department |

Resource Management National Direction - Year of Delivery (Part 1)

1. Purpose

Purpose of this paper is to inform the Environment Committee (the Committee) of three pieces of Resource Management Act 1991 (RMA) national direction which have been released for comment as discussion documents. It will provide an overview of the key features, their potential impact and a recommendation for a process to approve the submissions.

2. Background

The Government's proposals

Central Government has released three discussion documents covering two proposed national policy statements and a package of freshwater reforms. These are:

- A new National Policy Statement on Highly Productive Land (NPS-HPL)¹
- A rewritten National Policy Statement on Urban Development (NPS-UD)²
- A package of freshwater proposals which include³:
 - A rewritten National Policy Statement -Freshwater Management (NPS-FM)
 - a new National Environmental Standard Freshwater (NES FW)

¹ <https://www.mpi.govt.nz/dmsdocument/36624-discussion-document-on-a-proposed-national-policy-statement-for-highly-productive-land>

² <https://www.mfe.govt.nz/publications/towns-and-cities/planning-successful-cities-discussion-document-proposed-national>

³ <https://www.mfe.govt.nz/publications/fresh-water/action-healthy-waterways-discussion-document-national-direction-our>

- new regulations to deal with stock in waterways (RMA s360 regulations)
- amendments to the RMA to which will require and provide for fast-track freshwater plan making
- a further proposal to update the drinking water sources NES, and a new NES for Wastewater (NES-WW) to set default conditions on wastewater consents.

There will also be additional proposals released later this year, including a new proposed National Policy Statement on Indigenous Biodiversity, a new NES on waste tyre disposal, wider resource management reform and climate change reforms.

Submissions to government are due on the 10 of October 2019 for the first two NPS's and the 17 of October 2019 for the freshwater package. The key features of each proposal are outlined below and key areas for Council submissions. We are seeking approval in principle, to submit on the proposals and an approval process.

Alignment with our current direction

We are in a process of significant change. The whaitua process, our response to climate change and building resilient communities is transforming our relationship with land and water. Our iwi partners and communities expect more from us, and we are shifting to a new way of working.

The set of proposals from government accelerate this process of change and no doubt represents the biggest shift in land and water management in a generation.

Even though we are relatively well placed with our existing whaitua programme; speeding up of these processes means additional planning, consultation, monitoring and reporting work will be required. This will pose a significant implementation challenge for us leading to some hard decisions regarding our resource allocation. Our partners and communities will also face similar challenges. Significantly improving our land and water management will come at a cost for Councils, partners, stakeholders and our communities.

An overview of each proposal is set out below, together with how the proposals affect our work and the main points of a Greater Wellington Regional Council (GWRC) submission.

3. National Policy Statement for Highly Productive Land (NPS-HPL)

Overview of the proposals

The direction for this new NPS is to protect highly productive land from inappropriate subdivision, use and development – it does not require absolute protection but sets up a framework to protect such land, if required:

- Regional councils are to identify areas of highly productive land using given criteria – with the default areas being Land Use Capability (LUC) I, II and III.
- Places most of the requirements onto district plans to assess and amend their zoning and subdivision rules and requirements.
- Urban expansion is not to be located on highly productive land unless there is a shortage of development capacity to meet demand and it is demonstrated that this is the most appropriate option.
- Seeks to avoid fragmentation of highly productive land (e.g. subdivision into lifestyle blocks).

How these proposals affect our work

A programme of work will be required to amend the Regional Policy Statement, within three years, to identify highly productive land and amend existing provisions to prioritise and protect it from inappropriate subdivision, use and development. This will involve mapping and analysis in the first instance.

Overview of key submission points

- The submission would support the approach to identify and protect highly productive soils in the region.
- There is a need for the government to develop an appropriate tool and update datasets used to identify highly productive land.
- The identification of highly productive soils needs to be coordinated and funded at the national level to ensure consistency in implementation with local authority support.
- The NPS would apply to areas identified for future urban growth in non-statutory plans (e.g. Urban Growth Strategies and Future Development Strategies). Existing urban growth strategies may need to be reviewed.
- The proposal seeks feedback on the default measures for highly productive land (LUC I & II vs. LUC I, II & III). The latter is more extensive and will cover the Ruamāhanga Valley and most of northern Kāpiti. Wider coverage, may be appropriate especially given the focus on fragmentation.
- Support the consideration of a new classification system that focuses on Land Use Suitability (as opposed to Land Use Capability). This will enable the integration of water quality issues.

4. National Policy Statement for Urban Development (NPS-UD)

Overview of the proposals

The proposed NPS-UD replaces the existing National Policy Statement-Urban Development Capacity (2016) (NPS-UDC) which required councils to assess and provide data for urban development needs, existing housing and business capacity and feasibility of development. The proposal looks to address the lack of acknowledgment in the RMA for the built environment/urban development as a nationally important consideration.

Though now a proposed NPS for ‘urban development’ rather than ‘urban development capacity’, the proposal is still focused on enabling Councils to provide for assessed capacity - numbers and types of houses and business land. The new NPS directs Councils to provide for higher density development and includes policies to be directly included in statements and plans.

The concept of ‘quality urban environment’ is introduced which addresses some, but not all, aspects of sustainable urban development in the context of the four well beings. The objective is focused on the physical layout and the type and number of homes and businesses, not the broader aspects of a quality urban environment including the concept of a living city and its interaction with the natural world. As an example, urban areas contribute 70 percent of all human induced greenhouse gas emissions, and one of the five aims of the Government’s Urban Growth Agenda is to reduce emissions but there is little in the proposed NPS-UD that will contribute to lowering emissions. Low carbon, climate-resilient development should be a key principle in urban development but is missing.

How these proposals affect our work

The distinction between high and medium growth urban regions is removed and replaced with provisions and requirements for major urban centres, of which Wellington is one. The area includes the five main urban centres including Kāpiti, but does not include the Wairarapa. GWRC is required to directly insert policies to enable intensification into the RPS.

Major urban centres are now required to produce a future development strategy (FDS) which has many of the considerations or characteristics of a regional spatial plan and supports the Regional Growth Framework which is underway.

The direction towards requiring both district and regional plans to enable urban development will help district councils to amend their plans with less opportunity for litigation, and reduce the need for GWRC to “defend” the RPS.

There are some proposals around greenfield development which need to be considered further for the implications on our regional functions. We will continue to advocate for development which builds on opportunities and recognises environmental constraints.

Some options are presented for proposals that would be directly incorporated into District Plans, including enabling intensification around frequent public

transport services, and restricting the ability to impose minimum parking requirements which support our Regional Land Transport Plan (RLTP) objectives.

Data collection and assessment is still a major requirement and reporting is intended to align with LTP and other funding processes.

Overview of key submission points

- The submission would support the changes outlined in the section above and the provision of national direction.
- Objective 2 describes a 'quality urban environment' in a non-exhaustive list. It addresses aspects of the built environment such as community building and connectivity as well as types of houses but it fails to place urban development in the physical environment, to reference urban design principles and to address all four well-beings.
- The preamble lists other considerations such as using ecologically sensitive design and promoting resilience to natural hazards but the preamble has no legal weight in decision making. The policies that inform decisions on urban development and intensified development are intended to achieve this objective. In order to do so we consider there should be a reference in the policies to documents/national direction which describe other aspects of a quality urban environment.
- There is still limited connection to the interaction with other national direction. The new requirement for district councils to address the cumulative effects of land use on waterbodies (from the proposed NPS-FM) needs to be given support in this NPS.
- There is direction to include iwi and hapū and in some circumstances whanau in identifying aspirations for urban development. We are concerned that lack of capacity in these groups will prevent meaningful engagement and the ability to deliver on iwi aspirations.
- Three yearly updates for the FDS and housing and business land capacity assessments are required to align with LTP, funding mechanisms and other documents. The proposal needs to clearly identify that these are updates, not full reviews, as these processes are time and resource hungry.
- There is a concern particularly for our territorial authority partners that the ability of regulation alone to meet the aspirations for a quality urban environment and urban development is not acknowledged. Many aspects cannot be met by regulation, such as business aspects of economies of scale and access to suppliers.

5. Freshwater proposals

Overview of the proposals

The government's proposed freshwater package is a result of a systemic failure to manage land and water in a sustainable way. This is a failure that sits at all levels – central government, local government, industry and households. We consider that this represents a shift from a generation of under-investment to playing catch-up and ultimately future proofing our management approaches.

The freshwater package covers a wide range of changes:

- Strengthen and clarify the requirement to manage freshwater in a way that gives effect to Te Mana o Te Wai; this refers to the integrated and holistic health and wellbeing of waters as a continuum from the mountains to the sea.
- Set and clarify policy direction for water and land management which introduces a hierarchy of water management:
 1. The health and well-being of waterbodies and freshwater ecosystems
 2. The essential health needs of people
 3. The ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.
- Introduces a new freshwater planning process that will require councils to have new plans in place no later than 2025.
- Strengthen the requirement to identify and reflect Māori values in freshwater planning, with two options set out in this document for feedback.
- Broaden the focus of national direction and planning to a more holistic view of ecosystem health and require better monitoring and reporting.
- New attributes (indicators of ecosystem health) to be monitored and maintained or improved:
 1. nutrients (nitrogen and phosphorus)
 2. sediment
 3. fish and macroinvertebrate numbers
 4. lake macrophytes (amount of native or invasive plants)
 5. river ecosystem metabolism
 6. dissolved oxygen in rivers and lakes.

- Higher standard for swimming in summer.
- Protect urban and rural wetlands and streams.
- Protect threatened indigenous freshwater species.
- Provide for fish passage.
- Improvements to setting minimum water flows and reporting on water use.
- Strengthen requirements to assess and control risks to drinking water sources.
- Improve ecosystem health by better managing stormwater and wastewater.
- Set minimum standards for wastewater discharges and overflows and require all operators to follow good practice risk management.
- Improving farm practices and ensuring all farmers and growers have a plan to manage risks to freshwater.
- Tightly restrict any further intensification of land use through interim measures until all regions have operative freshwater management plans.
- Reduce nitrogen loss in catchments with high nitrate/nitrogen levels through interim measures until all regions have operative freshwater management plans.
- Exclude stock from waterways.
- Apply standards for intensive winter grazing, feedlots and stock holding areas.

A summary of specific proposals is set out in [Attachment 1](#).

How these proposals affect our work

Our direction remains the same, but it's proposed to be wider and faster

The proposed direction does support the current framing of the PNRP and our approach in the whaitua. In many ways, the proposals support our policy position in the urban environment.

The key differences are that it is wider in scope (with specific direction to District Plans, for example) and it needs to be completed faster than we had envisaged (for instance, the introduction of a NES regime, and all Regional Plan decisions needing to be complete (operative) by 2025).

Implementation will be a challenge

There is no doubt that there are significant implementation challenges with the proposals. They will add to our existing workloads and require us to move into

areas where we have traditionally stepped lightly (e.g. management of urban development, protection of urban streams and harbours, and managing the effects of stormwater and wastewater).

Additional implementation considerations would be required across, broadly:

- Additional planning and policy resources to deliver the required changes to the Regional Policy Statement and Natural Resources Plan faster
- Additional science resources to undertake significantly more comprehensive monitoring and reporting, and provide support to the planning processes
- Additional regulation resources to ensure compliance with rules, including new consenting processes for farming
- Additional land management resources to work with farmers on farm plans, stock exclusion and consenting requirements.

At a recent Ministry for Environment (MfE) Council Forum, the Minister was clear in his response to a question about resourcing and affordability of these changes – local government should use the existing funding mechanisms that are open to them (such as general rates, development contributions for territorial authorities and targeted rates).

The whitua programme is robust but will need to be speeded up

The whitua programme would need to be significantly accelerated to meet a revised deadline of 2021/2022. We had intended to *start* Kāpiti and Eastern Hills in 2021/2022 but they would need to be completed by then. This will allow us time to develop regional planning variations and changes ready for the new centralised water hearing process in 2023.

Fewer appeals via the centralised hearing process noted below will expedite the planning process but will put more emphasis ensuring a robust process and getting firm agreement by parties in the whitua process itself.

We will also need to review the completed Whitua Implementation Programmes (Ruamāhanga and Te Awarua-o-Porirua to ensure they meet the new requirements (especially additions to the National Objectives Framework).

There may be a knock-on effect to regional plan appeals

The PNRP appeals process will continue. In order to avoid the situation whereby an appeal may progress that is inconsistent with proposed national direction the Court may allow for some appeals to be “held over”. We are seeking legal opinion on whether this is possible.

We will be required to use the new centralised water-planning hearing process

It is proposed that a new Schedule 1 hearing process must be used for all water-related plan variations and changes. This will mean ‘holding back’ on the Ruamāhanga and Porirua variations to enter this new process in alignment

with the other three whitua. In effect, there will be one large plan change to give effect to the new NPS-FM.

Any opportunity to ‘go early’ to notify a variation (for Ruamāhanga and/or Porirua) before any changes to the Resource Management Act are made is highly unlikely due to the tight timeframes.

The advantage with using this new process is that appeal rights will be curtailed in order to meet the 2025 deadline – water vision, objectives, limits etc. must be operative in plans by this date.

Significant increases in monitoring and reporting requirements

Monitoring requirements have been significantly increased (resulting in **daily** monitoring in some cases). A sector approach will be required to ensure consistency with water quality and quantity accounting.

Councils will be required to report against five components of ecosystem health: aquatic life, habitat, water quality, water quantity and ecological processes.

We suggest pushing back on weekly and daily monitoring requirements for pathogens. We are of the view that a modelling approach (as is used in Auckland) is much more effective in managing risk. Modelling allows us to advise people of health risk *before* they swim; whereas monitoring tells them of the risk *after* the fact.

Farm planning and stock exclusion will be regulated

The government proposes a regulatory approach to farm plans. This is contrasted with the non-regulatory approach recommended by the Ruamāhanga whitua committee. This will add a significant consenting burden on our farming community and on our regulatory staff. It will be critical to implement this on the ground in a way that meets the desired outcome of community. This can be done but will require significant support to farmers.

The stock exclusion provisions in the proposals are not consistent with those provisions in the decision version of the PNRP. We will be analysing the significance of this further to inform Council’s submission.

Enormous pressure will be placed on the capacity of our iwi partners

The water package proposals alone places large emphasis on developing a regional vision for freshwater with mana whenua. The other two pieces of proposed national direction also enable closer development with mana whenua. This means that central government will need to significantly invest in iwi capacity and capability to enable iwi, hapū and whānau to partner and participate in these processes.

Overview of key submission points

GWRC support the intent of the proposals and welcomes strong national direction

- Support for over-arching intent of the proposals – actual strong national direction that we have needed for many years
- Support clarifying Te Mana o te Wai and introducing a hierarchy for water management
- Wording of the rewritten NPS-FM is clearer and more direct
- Support expanding the National Objective Framework; reflects the direction that our completed Whaitua Implementation Programmes have gone. But urban contaminants (e.g. metals) have still not been included and should be
- Support for direction to district plans regarding the cumulative environmental effects of urban development
- Support for strong direction regarding wetland protection and stream reclamation; this lines up with the recommendations from the whaitua process. Although the NES-FW provides an out-clause that reduces certainty.

Current whaitua processes should continue

- Support the continuation of the values, objectives and limit setting process and use of the National Objectives Framework
- We will continue to use our whaitua programme as a means to understand community and iwi values to set objectives and limits
- We will leverage off existing completed Whaitua Implementation Programmes to ensure the new requirements are met.

Timeframes are very tight but welcome more streamlined processes

- While the intent is supported, timeframes are very tight which will put pressure on our (and others) ability to deliver
- Support the introduction of a new centralised water planning hearing process; express concern about the practical application of this (e.g. is there the capacity nationally for hearing commissioners, planners or other experts?).

Monitoring and reporting requirements go too far

- Oppose the extensive requirements for sampling (weekly and daily for primary contact sites) on the grounds that it does not meet current best practice

- Weekly and daily sampling is unnecessary and outdated – it’s always looking into the past rather than looking forward as a risk-based system should do
- Suggest a modelling approach as an alternative that has been proved to be very successful in Auckland
- Suggest a consistent treatment of monitoring across the suite of proposals. Language is currently internally inconsistent
- Regular public reporting is supported but so is access to up-to-date information via LAWA and other means. The public should not have to wait for annual freshwater reporting.

Water bottling in the NES-FW

Based on previous discussions at Environment Committee, we could seek to have water bottling regulated through the National Environmental Standard.

6. Communication

No external communication is proposed as an outcome of the consideration of this report.

7. Consideration of climate change

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

7.1 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.

Officers have considered the effect of the matter on the climate. Officers recommend that the matter will have no effect.

Officers note that the matter does not affect the Council’s interests in the Emissions Trading Scheme (ETS) or the Permanent Forest Sink Initiative (PFSI)

7.2 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.

8. 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 matters requiring decision in this report have 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.

8.1 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.

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

8.2 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.

9. Recommendations

That the Environment Committee:

1. *Receives the report.*
2. *Notes the content of the report.*
3. *Approves the Council submission points in principle, subject to further input to the draft submission by Environment Committee members, and final sign-off by Environment Committee Chair and Council Chair.*

Report prepared by:

Lucy Harper
Tim Sharp
Alastair Smaill
Caroline Watson

Report approved by:

Matt Hickman
Manager – Environmental
Policy

Report approved by:

Al Cross
General Manager –
Environment Group

[Attachment 1](#): Summary of Freshwater Proposals

Attachment 1 to Report 19.410

Attachment 1: Summary of Freshwater Proposals

The following are the required changes to the **Regional Policy Statement**:

- Must include Te Mana o te Wai objective in RPS:

“The management of freshwater in our region must be carried out in a manner that gives effect to Te Mana o te Wai, as it is described in the National Policy Statement for Freshwater Management 2019 and understood locally”

Where Te Mana o te Wai refers to the fundamental value of water and the importance of prioritising the health and wellbeing of water before providing for human needs and wants.

- Must develop and articulate a *long-term vision* that gives effect to Te Mana o te Wai. This vision must:
 - be developed through discussion with communities and mana whenua about their long-term wishes for waterbodies in the region
 - be informed by an understanding of the history, and current pressures on, waterbodies in the region
 - express what communities and mana whenua want their waterbodies to be like in the future.
- Must be changed to the extent needed to provide for the integrated management of the effects of:
 - The use and development of land on freshwater
 - The use and development of land and freshwater on sensitive receiving environments.
- Must include this objective in relation to **District Plans**:

“District Plans must include objectives, policies, and methods to avoid, remedy, or mitigate the cumulative adverse effects of land use on freshwater bodies, freshwater ecosystems, and sensitive receiving environments resulting from urban development”
- Must include this objective in relation to wetlands:

“The loss or degradation of all or any part of a natural inland wetland is avoided”

(must also be read subject to any rules that give effect to the NES-FW)
- Must (and in plans) include objectives, policies or methods that provide for and encourage the restoration of inland wetlands.
- Must include this objective in relation to streams:

“The extent and ecosystem health of rivers and streams in the region, and their associated freshwater ecosystems, are at least maintained”

(must also be read subject to any rules that give effect to the NES-FW)

- Must (and in plans) ensure that the following do not result in a net loss in the extent or ecosystem health of the stream:
 - Permanently diverting a stream
 - Culverting a stream.
- Must (and in plans) ensure that the infilling of river or stream beds is avoided, unless there are no other practicable alternative methods.

Final decision on changes to the RPS and Regional Plan must be publicly notified no later than 31 December 2025.

The following are the changes to the **Regional Plan**:

- Must include as an objective the environmental outcomes identified or described in relation to:
 - identifying FMU’s including:
 - primary contact sites
 - location of threatened species
 - outstanding waterbodies
 - inland wetlands.
 - identifying values that apply to each FMU
 - for each FMU, environmental outcomes for:
 - The value of Ecosystem Health
 - The value of Human Contact
 - The values of Mahinga Kai and Threatened Species
 - Any other values.
- Limits on resource use as rules in order to move from the current attribute state to the target attribute state.
- Limits are required for:
 - Phytoplankton
 - Periphyton

- Total Nitrogen
 - Total Phosphorus
 - Dissolved inorganic nitrogen ('DIN')
 - Dissolved reactive phosphorus ('DRP')
 - Ammonia toxicity
 - Nitrate (toxicity)
 - Dissolved Oxygen
 - Suspended fine sediment
 - Escherichia coli (E.coli)
 - Cyanobacteria.
- Action Plans are required for:
 - Macroinvertebrates
 - Fish (rivers)
 - Submerged plants (natives)
 - Submerged plants (invasive species)
 - Deposited fine sediment
 - Dissolved Oxygen
 - Lake-bottom Dissolved Oxygen
 - Mid-hypolimnetic Dissolved Oxygen
 - Ecosystem metabolism
 - Escherichia coli (E.coli) (primary contact sites).
 - Take limits (total volume or total volume rate) as a rule by setting environmental flows and levels for each FMU and must be expressed in terms of water level, flow rate and variability of flow.
 - Must include objectives, policies or methods in the RPS and plans that provide for and encourage the restoration of inland wetlands.
 - Must change RPS and plan to ensure that the following do not result in a net loss in the extent or ecosystem health of the stream:
 - Permanently diverting a stream

- Culverting a stream.
- Must change RPS and plan to ensure that the infilling of river or stream beds is avoided, unless there are no other practicable alternative methods.
- Include aquatic life objectives to achieve diversity and abundance of fish in all or specified streams
- Must change plan to have regard to a number of criteria when considering an application for a consent relating to an instream structure
- Must change plan to include criteria for:
 - Deciding application to approve transfers of water take permits
 - Deciding how to improve and maximise the efficient allocation of water.
- Must identify in plan methods to encourage the efficient use of water.

In addition to the above, the NPS-FM includes new content for District Plans

- Every territorial authority must include objectives, policies, and methods in its district plan to avoid, remedy, or mitigate the cumulative adverse effects of land use resulting from urban development on water bodies and sensitive receiving environments.

Changes to monitoring and reporting?

- Every regional council must establish methods for monitoring progress towards achieving target attribute states and identified environmental outcomes for values and components [in each FMU]. This must include:
 - Measures of health of indigenous flora and fauna; and
 - Mātauranga Māori.
- If a regional council detects a trend indicating deterioration it must prepare an action plan. This must include:
 - The causes of the deterioration
 - Methods to address those causes
 - An evaluation of the effectiveness of the methods and
 - Processes to review and adjust.
- In order to achieve the target attribute states for the attributes in Appendix 2A (attributes requiring limits), regional councils may prepare and publish an action plan
- In order to achieve the target attribute states for the attributes in Appendix 2B (attributes requiring action plans), regional councils must prepare and publish an action plan

- Every regional council must identify and map natural inland wetlands – and maintain an inventory
- Every regional council must develop and undertake a monitoring plan to monitor the condition of its natural inland wetlands.
- For every primary contact site in an FMU, regional councils must identify a sampling site or sites representative of the site or number of sites
- Between 1 November and 31 March each year every regional council must undertake **weekly** sampling at primary contact sites for E.coli. But:
 - If >260 per 100ml defaults to **daily** sampling
 - If >540 per 100ml must inform public.
- Every regional council must operate for every FMU:
 - A freshwater quality accounting system
 - A freshwater quantity accounting system.
- Every regional council must produce a report annually on freshwater management
- Every 5 years every regional council must assess the freshwater management in its region and produce a synthesis report on it.

NES-FW rules

- Wetlands:
 - Vegetation destruction within 10m of a natural wetland is non-complying (unless for restoration, education, hydro, flood control, national significant infrastructure)
 - Earth disturbance within 10m of a natural wetland is non-complying (unless for restoration, education, hydro, flood control, national significant infrastructure)
 - Earth disturbance for drainage within 100m of a natural wetland is non-complying (unless for restoration, flood control, national significant infrastructure)
 - Earth disturbance for drainage in any part of a natural wetland is prohibited
 - Water take activities that results in a change in water level to the wetland are generally non-complying if resulting in greater than 0.1m change beyond the wetland's annual median water level.
- River bed infilling (stream reclamation):

- Discretionary if for restoration, nationally significant infrastructure, flood prevention or “for which there are no practical alternative methods of enabling the activity to take place”
- Non-complying for any other case.
- Fish passage:
 - Construction of culvert permitted activity (with long list of conditions)
 - If not permitted then it is discretionary with additional matters for discretion.
 - Construction of a weir is permitted (with list of conditions)
 - If not permitted then it is discretionary with additional matters for discretion.
 - Construction of passive flap gate is non-complying.
- Farming:
 - Feedlots – discretionary activity, must be 50m away from a waterbody
 - Sacrifice paddocks – permitted if sited at least 50m away from waterbodies
 - Stockholding areas (more than 30 days in a 12 month period, or more than 10 consecutive days) – restricted discretionary if measures to control run-off (discretionary if the latter is not met)
 - Intensive winter grazing – permitted if on low slope, not over 30ha, not a critical source area, 5m vegetated strip between a water body or drainage ditch. If not permitted then restricted discretionary.
 - Intensification (for where limits have not been set):
 - Winter grazing within certain areas – discretionary (needs a farm plan, activity will not increase average discharges of contaminants)
 - Irrigated farming – any increase permitted is for 10ha or less. More than 10ha is discretionary (needs a farm plan, activity will not increase average discharges of contaminants)
 - High-risk land use changes (conversion to dairy support, conversion to dairy, from forestry to pastoral) – permitted if less than 10ha. Discretionary if greater than 10ha (needs a farm plan, activity will not increase average discharges of contaminants)
 - Land use change to commercial vegetable production – permitted if area of land is comparable to land within the FMU. Discretionary if increases vegetable footprint (needs a farm plan, activity will not increase average discharges of contaminants).
 - Farm Plans:

- Within 2 years - all farms within the Parkvale catchment.
- By end 2025 – all farms.
- Content prescribed, must be prepared by qualified person, must be audited by qualified person.
- Additional proposal for nitrogen in Parkvale – essentially requiring Overseer and low slope farming and all dairy farming is a controlled activity if exceeds threshold value for nitrogen loss. Discretionary if below threshold value. Regional councils responsible for calculating threshold values.

Stock exclusion regulations

- Dairy and beef cattle, and pigs are not permitted to cross water bodies except by a dedicated culverted or bridged cross point
- Split into low slope and non-low slope land
- For low slope:
 - Wetlands: covers dairy, dairy support, pigs, beef cattle and deer: 5m setback on average. 2021 for wetlands identified in plans, 2023 for all other. Any new pastoral system: immediately.
 - Rivers greater than 1m and lakes: all 5m on average with different timing:
 - Dairy and dairy support, cattle and pigs: 1 July 2021
 - Beef cattle and deer: 1 July 2023
 - Any new pastoral system: immediately.
- For non-low slope:
 - Wetlands: covers dairy, dairy support, pigs, beef cattle and deer: 5m setback on average. 2021 for wetlands identified in plans, 2023 for all other. Any new pastoral system: immediately.
 - Rivers greater than 1m and lakes: all 5m on average with different timing:
 - Dairy cattle and pigs: 1 July 2021
 - Beef cattle, dairy support cattle and deer depends on stocking rate (>14 SU/ha at farm scale or >18 SU/ha at paddock scale): 1 July 2023
 - Any new pastoral system: immediately.



Report 2019.417
Date 10 September 2019
File CCAB-10-785

Committee Environment
Author Andrea Brandon, Climate Change Programme Lead
Suze Keith, Climate Change Advisor

Climate Change update

1 Purpose

To update the Environment Committee following the latest meetings of the Wellington Region Climate Change Working Group and the Greater Wellington Regional Council Climate Change Working Group.

2 Background

The Wellington Region Climate Change Working Group (WRCCWG) was established in 2017. Greater Wellington Regional Council (GWRC) convenes and chairs the group, which comprises a councillor from each council across the region and three iwi members nominated by Ara Tahi. GWRC also has a Climate Change Working Group. This group meets every 6-8 weeks to discuss climate change matters. The Committee has requested regular updates on the two working groups.

On 21 August 2019, GWRC declared a 'climate emergency' and formally established a target for GWRC as an organisation to become 'carbon neutral' by 2030. These announcements are backed by two action plans, a Corporate Carbon Neutrality Action Plan, and a Regional Climate Emergency Action Plan. These decisions signal a step change in how GWRC addresses the climate crisis, an area where government leadership is crucial and the closing window of opportunity to prevent the worst effects demands an extraordinary response.

These two climate change working groups will play a critical role in assisting GWRC to develop and achieve its action plans.

3 Updates from working groups

3.1 Wellington Region Climate Change Working Group

The WRCCWG provides a forum for councils and iwi to network, discuss issues, share information and, where appropriate, achieve a consistent approach across all

jurisdictions on climate change mitigation (reducing greenhouse gas emissions) and adaptation (preparing for impacts such as sea level rise, drought and enhanced natural hazards effects). The WRCCWG is supported by two officer-level groups, the Low Carbon Transition Steering Group (mitigation) and the Natural Hazards Strategy Working Group. It also has formed a sub-group of both councillors and officers to develop a plan for community-led coastal adaptation planning.

A meeting for this group was held on Friday, 6 September 2019. The Hon James Shaw, Minister for Climate Change, attended the session and spoke to the group on the Climate Change Response (Zero Carbon) Amendment Bill (Zero Carbon Bill), currently before parliament and the role of local government in achieving the targets. Questions and answers followed.

GWRC's 21 August decisions were discussed, including the two ten point plans and how we might work together as a region. Cr Blakeley provided a progress report on the release of the coastal vulnerability assessment report and next steps for the coastal adaptation sub-group were discussed.

3.2 Greater Wellington Regional Council Climate Change Working Group

The group met on 5 August 2019. The group discussed ethical investments, the Government's electric vehicle policy, GWRC's carbon neutral target and climate emergency, and the Coastal Vulnerability Assessment Report

GWRC does not have any investments but the Local Government Funding Agency is preparing to issue green bonds, intended to encourage sustainability and to support climate-related or other types of special environmental projects.

The group discussed the Government's electric vehicle policy on the Clean Car Standard and Clean Car Discount and GWRC's submission on this. The group noted that the Regional Electric Vehicle Support Strategy has been approved and adopted by Masterton District Council (MDC). It was agreed to present this to the Environment Committee at today's meeting in a separate report.

The group discussed the carbon neutrality workshop held on 9 August 2019, and also the report and recommendations regarding declaration of a climate emergency. A draft declaration, based on that of the Wellington City Council, was suggested for the paper going to the full Council.

The Coastal Vulnerability Assessment Report had been released and Cr Blakeley had participated in an interview with Tom Hunt from Stuff/DomPost who was also getting the reaction of Hutt City Council and Kāpiti Coast District Council mayors.

4 Other updates

4.1 GWRC

The Zero Carbon Workshop was held at Queen Elizabeth Park (QEP) on 9 August with participants including Councillors, Executive Leadership Team (ELT) and a range of officers from across the organisation. The workshop, facilitated by Rod Oram, covered off the science and what others are doing globally, and locally, through to how we can drive action ourselves. A consensus building exercise

culminated in an agreement for the organisation to have net zero emissions by 2030.

At the 21 August 2019 meeting, Council agreed to the target and declaring a climate emergency, and signed off on two ten point plans, one for the carbon neutrality goal for the organisation and the other covering the wider goals for regional mitigation and adaptation. There has been a media release and our external website has been updated to include this information¹.

GWRC publically released the Preparing Coastal Communities for Climate Change report on 6 August 2019², following its presentation to the 21 June 2019 Mayoral Forum. The report has maps showing the vulnerability of the Wellington region's coastline (excluding Wellington City) to sea level rise, storm surge and other factors. The Mayoral Forum requested legal opinions on obligations to refer to this report and the Sea Level Rise Tool³ on Land Information Memorandums (LIM). Opinions differed amongst them, but majority agreed: that it is not mandatory to make reference to the report in a LIM, but that the Sea Level Rise Tool should be referred to in a LIM.

GWRC, represented by Crs Blakeley, Brash and Kedgley, attended Parliament's Environment Select Committee to speak to GWRC's submission to the Climate Change Response (Zero Carbon) Amendment Bill. The Government received close to 10,000 submissions on the proposed Bill.

4.2 Wellington Water

Wellington Water Limited (WWL) held a Climate Change Workshop on July 12 (involving the WWL Committee representatives from all 6 councils including South Wairarapa as well as 2 iwi - Ngāti Toa Rangatira and Te Atiawa and the Board chair and members). The outcome was that WWL (the Board) will report back to the Committee with a considered view for options, approaches, implementation and costings for mitigation and adaptation measures, including the consequences of doing nothing. It will have a framework for evaluation. The Chief Executive Colin Crampton advised the work will be ongoing with regular updates to the Committee so that good communications can occur with all stakeholders.

Also discussed were draft principles that included partnership with mana whenua, coherency and consistency across all entities, transparency (taking the community with us within an ethical framework), taking a regional approach, leadership in partnership with stakeholders, recognising that mana whenua and councils are at different stages and understanding the costs of inaction.

¹ <http://www.gwrc.govt.nz/climate-change/>

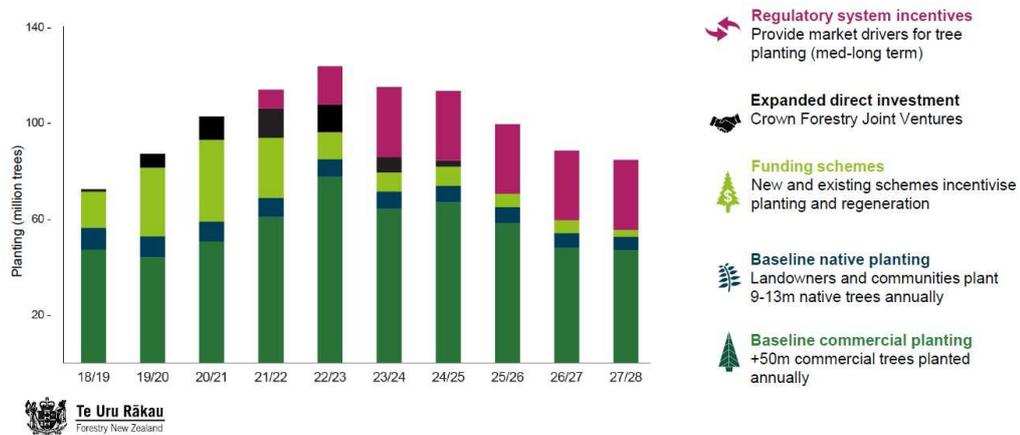
² <http://www.gwrc.govt.nz/assets/Uploads/Wellington-Regional-Coastal-Vulnerability-AssessmentJune-2019Final.pdf>

³ <https://mapping1.gw.govt.nz/GW/SLR/>

4.3 One Billion Trees

A Forest Framework for the Wellington region has been drafted to help the region maximise benefits from afforestation and take advantage of the Government’s One Billion Trees (1BT) programme.

Pathway to One Billion Trees



Main points:

- High interest from Wairarapa Economic Development Group
- While the report doesn’t have a direct carbon lens, the framework provides multiple perspectives in determining the right tree in the right place – for example native ecosystems, erosion, threats, market-led considerations
- Agreed that it would be helpful to extend this further to be able to plan for carbon sequestration outcomes on both council and private land, that there was potential to seek funding to plan this work through the 1BT Programme as it is beyond current council resourcing
- Referring to the diagram above - Pathway to One Billion Trees – discussion noted short-lived “cash for trees” available under 1BT, shown below in the Funding Schemes portions of funding. Longer-term regional opportunities aligning with 1BT will likely be centred on market drivers to stimulate domestic action rather than “cash for trees”.

5 Communication

No external communication is proposed as an outcome of the consideration of this report.

6 Consideration of climate change

The matters addressed in this report have been considered by officers in accordance with the process set out in the Greater Wellington’s Climate Change Consideration

Guide. Because this report addresses the actions of Greater Wellington’s Climate Change Strategy directly, climate change assessments are not required.

7 The decision-making process and significance

The matters requiring decision in this report have been considered by officers against the requirements of Part 6 of the Local Government Act 2002 (the Act).

7.1 Significance of the decision

Part 6 requires GWRC 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.

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

7.2 Engagement

No engagement is required.

8 Recommendations

That the Committee:

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

| | | | |
|------------------------------------|------------------------|--|------------------------------|
| Report prepared by: | Report prepared by: | Report approved by: | Report approved by: |
| Andrea Brandon | Suze Keith | Tracy Plane | Luke Troy |
| Programme Lead – Climate Change | Climate Change Advisor | Manager, Strategic and Corporate Planning | General Manager, Strategy |



Report 2019.413
Date 6 September 2019
File CCAB-10-780

Committee Environment Committee
Author Jake Roos, Climate Change Advisor

'Supporting Electric Vehicles in the Wellington Region' Advisory Report

1. Purpose

To seek endorsement of the Environment Committee for the 'Supporting Electric Vehicles in the Wellington Region' Advisory Report, so that it may in turn be used to inform Greater Wellington Regional Council's (GWRC's) plans for reducing greenhouse gas emissions from the council and the region.

2. Background

On 21 August 2019, Council declared a 'climate emergency' and formally established a target for GWRC as an organisation to become 'carbon neutral' by 2030. These announcements are backed by two action plans, a Corporate Carbon Neutrality Action Plan, and a Regional Climate Emergency Action Plan. These decisions signal a step change in how GWRC addresses the climate crisis, an area where government leadership is crucial and the closing window of opportunity to prevent the worst effects demands an extraordinary response.

Prior to this, GWRC has been supporting the uptake of electric vehicles for some time for example by adopting of its 'EV First' fleet policy in 2016 and by providing secretariat for the Regional EV Working Group.

In 2018 that group (specifically the councils and electricity network companies within it) commissioned the development of a recommended strategy to replace its informal co-ordination plan, with the aim that each organisation would endorse it and build the suggested actions and recommended approaches into their organisations plans as they see fit. Its purpose is to clarify the position and role of each of our organisations with respect to aiding EV development, and to demonstrate to all stakeholders that they are taking a joined-up approach.

The scope of the strategy involved all road vehicles, including heavy vehicles and commercial vehicles. The report focusses on EVs specifically as it the main technology available right now that has the potential to decarbonise the majority of road transport, but places it in a hierarchy including other critical approaches including public and active transport. The recommended strategy is written so as not to exclude other emerging technologies, such as hydrogen-fuelled vehicles, which may well have a role too. Rapid decarbonisation is the overall rationale for intervention.

The work was presented at the 15 March 2019 Wellington Region Climate Change Working Group in the form of a complete strategy and they recommended that their member councils customise and adopt it. Only Masterton District Council has done this so far. Consequently the original document has been reconfigured as an advisory report so it may be endorsed by organisations rather than adopted, as this will allow it to be more easily aligned with their other related strategies and action plans (for example those for emissions reduction generally).

3. Comment

The recommended strategy is encapsulated on pages 36 and 37 of the document ([Attachment 1](#)), where the vision, pathway, approaches, principles, levels of ambition and targets are all described.

The targets proposed are that the organisations' vehicle light fleets are 50% EV by the end of 2024 and 100% are EV or renewably powered by 2030 (this includes plug-in hybrids as well as full battery electrics).

[Attachment 2](#) has an analysis of these targets with respect to the GWRC fleet, including vehicle age and whether an EV options are presently available in that vehicle class. This shows that provided all opportunities to replace fossil-fuelled vehicles are taken when they reach 10 years of age and that an EV ute option becomes available within the next few years, these targets can be achieved.

Various other measures are suggested, not all of which are relevant to GWRC. It is proposed that officers and / or Council will consider whether to adopt these measures in due course, alongside GWRC's other carbon reduction action plans.

4. Communication

Public communication and to key stakeholders regarding the document's endorsement and contents will be developed through the Regional EV Working Group once some of those other organisations that commissioned it have endorsed the document. Council officers will also have the document formatted to a professional standard before it is publicised.

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.

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. Consideration of climate change

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

The matter will naturally have implications for climate change mitigation, as that is the purpose of supporting EV adoption. However, there is no specific amount of greenhouse gas pollution at stake on the basis of acceptance or rejection of the recommendations. The matter has no direct implications in relation to climate change adaptation.

Officers note that the matter does not affect the Council's interests in the Emissions Trading Scheme (ETS) and the Permanent Forest Sink Initiative (PFSI).

7. Recommendations

That the Committee:

- 1. Receives the report.*
- 2. Notes the content of the report.*
- 3. Endorses the advisory report and the recommended strategy it describes (Attachment 1)*

4. *Requests officers to give consideration to the suggested measures in the advisory report including how they can be integrated with GWRC's Corporate Carbon Neutrality Action Plan, Regional Climate Mitigation Plan and/or other plans, where appropriate.*

Jake Roos
Climate Change Advisor

Tracy Plane
Strategic and Corporate
Planning Manager

Luke Troy
General Manager Strategy

Attachment 1: Supporting EVs in the Wellington Region – Advisory Report

Attachment 2: GWRC fleet analysis

Supporting EVs in the Wellington Region – Advisory Report

Prepared by Jake Roos Consulting Ltd with assistance from Reytina Limited (Liz Yeaman)

for

The consortium of Wellington Electricity, Electra, Wellington City Council, Greater Wellington Regional Council, Hutt City Council, Upper Hutt City Council, Porirua City Council, Kāpiti Coast District Council, Masterton District Council, Carterton District Council and South Wairarapa District Council.

**Version 1.5.8
2019-09-06**

www.jakeroosconsulting.co.nz

www.reytina.co.nz

Contents

| | | |
|-----------|--|----|
| 0.1 | Acknowledgements..... | 4 |
| 0.2 | Executive Summary..... | 5 |
| 0.2.1 | Purpose | 5 |
| 0.2.2 | Key Findings | 5 |
| 0.2.3 | Recommended strategy summary..... | 6 |
| Section 1 | Introduction | 7 |
| 1.1 | Background | 7 |
| 1.2 | Rationale | 7 |
| 1.2.1 | EVs are critical to decarbonising road transport | 8 |
| 1.3 | EVs reduce air pollution..... | 9 |
| 1.4 | Present distribution of EVs in Wellington Region..... | 10 |
| 1.5 | Projections of EV numbers in Wellington to 2024..... | 10 |
| 1.6 | Summary of findings | 11 |
| 1.7 | Box –Electric vehicle promotion and funding..... | 12 |
| Section 2 | Issues and analysis | 13 |
| 2.1 | Demand for EVs | 13 |
| 2.1.1 | Summary of findings | 14 |
| 2.2 | Supply of EVs..... | 15 |
| 2.2.1 | Summary of findings | 15 |
| 2.3 | AC (slow) charging and potential grid impact..... | 16 |
| 2.3.1 | Summary of findings | 17 |
| 2.3.2 | Box – Vehicle to Grid..... | 17 |
| 2.5 | On-street residential charging | 19 |
| 2.5.1 | Summary of findings | 20 |
| 2.6 | BOX: EV incentives versus public transport and active modes..... | 20 |
| 2.7 | Demand for public charging infrastructure | 22 |
| 2.7.1 | Public AC (slow) charging..... | 23 |
| 2.7.2 | Fast charging..... | 24 |
| 2.7.3 | 'Ultrafast' charging..... | 24 |
| 2.7.4 | Regional differences in charging needs | 25 |
| 2.8 | BOX: Portland, Oregon USA | 27 |
| 2.9 | Buses | 28 |
| 2.9.1 | NZ Bus | 28 |
| 2.9.2 | Tranzit | 28 |
| 2.9.3 | Analysis | 29 |
| 2.9.4 | Summary of findings | 29 |

| | | |
|-----------|---|----|
| 2.10 | Box - EV refuse collection trucks..... | 30 |
| 2.11 | Taxis and private hire vehicles (e.g. Uber and Lyft)..... | 31 |
| 2.11.1 | Summary of findings | 31 |
| 2.12 | Delivery vans and other commercial vehicles | 32 |
| 2.12.1 | Summary of findings | 32 |
| 2.13 | Case study: City of Sacramento, California, USA | 33 |
| 2.14 | Car share schemes | 34 |
| 2.15 | Workplace AC charging..... | 34 |
| 2.16 | Battery reuse and recycling | 34 |
| Section 3 | Recommended Strategy..... | 36 |
| 3.1 | Vision..... | 36 |
| 3.2 | Pathway..... | 36 |
| 3.3 | Approaches | 36 |
| 3.4 | Principles..... | 36 |
| 3.5 | Ambition and Targets..... | 37 |
| 3.6 | Suggested measures | 38 |
| 3.7 | References | 40 |
| | | |
| | Figure 1 – greenhouse gas projection for transport sector | 9 |
| | Figure 2 – scenarios for EV adoption in the Wellington Region | 11 |
| | Figure 3: Most important EV incentives according to Norwegian EV owners from 2017 survey. Question: Select the 3 most important EV incentives. ^{viii} | 14 |
| | Figure 4 – CleanTechnica and Greenway’s recommended charging infrastructure mix..... | 23 |
| | Figure 5: Portland’s transportation hierarchy for people movement | 27 |
| | | |
| | Table 1 – EV ownership rates and number of public DC fast chargers in the Wellington Region..... | 10 |
| | Table 2: EV numbers and public chargers for a selection of countries..... | 22 |
| | Table 3: estimated range of future public charging needs | 23 |
| | Table 4: Fixed network costs per DC fast charger per day for different load groups and network areas | 25 |

0.1 Acknowledgements

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0.2 Executive Summary

0.2.1 Purpose

The purpose of this report is to aid the Wellington Region stakeholder organisations (specifically the nine councils and three electricity network companies in the region) in taking a coordinated approach to supporting EV adoption in the period 2019-2024, in line with an overarching long-term vision of a Wellington Region where use of fossil fuels for road transport have been eliminated and replaced with vehicles powered with renewable energy.

The report has a recommended set of policies, principles, approaches and targets for signee organisations to endorse, and suggested actions for signees to implement in co-ordination and co-operation with other stakeholders. This will allow all parties to take a consistent approach to achieve the vision. The suggested actions are based on our current understanding of the issues and their remedies, and these may be updated as certain actions are completed, further experience and knowledge is gained or circumstances change.

The recommendations are intended to complement Government targets and programmes for promoting EVs and reducing emissions, not be a substitute for them.

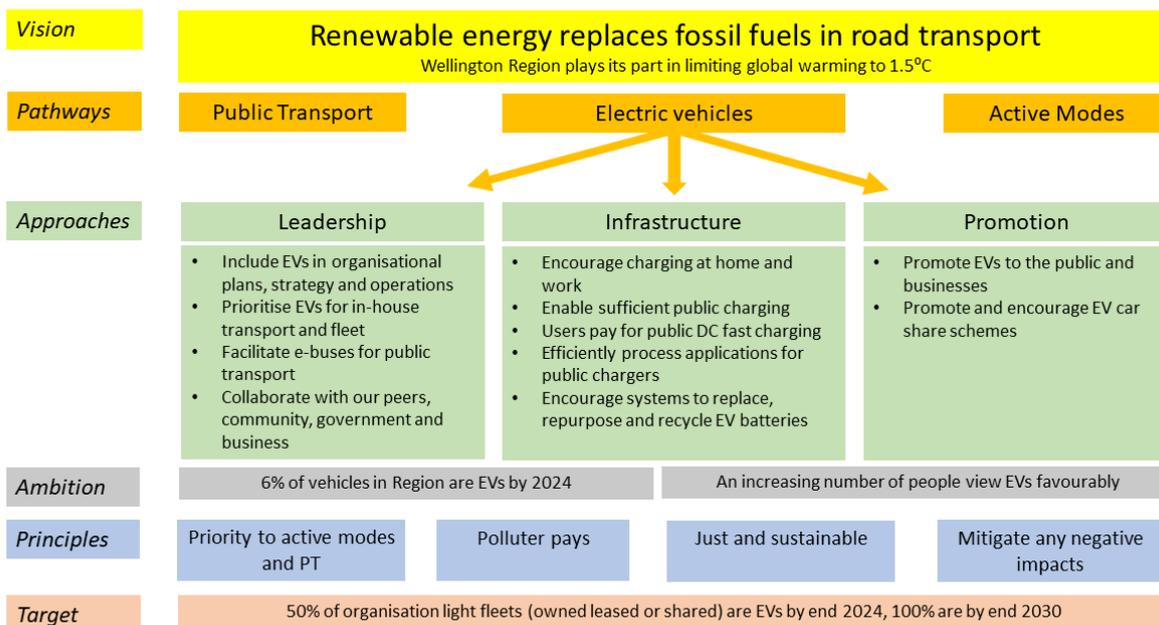
0.2.2 Key Findings

- It is estimated that there will be between 5,000 and 9,000 battery electric vehicles in Wellington Region by mid-2021, and between 15,000 and 28,000 (3.9 and 6.7% of all vehicles) will be EVs by mid-2024. Around 30% of these will be plug-in hybrids (PHEVs) and 70% fully battery electric (BEVs).
- The estimated number of public DC fast chargers required to support this is between 50 and 90 in 2021 and 150 and 280 in 2024. Up to ten times these numbers of public AC chargers (mostly at destinations for shopping, tourism and hospitality) may also be desirable.
- Measures to address upfront cost of EVs are critical to stimulate demand and supply – all can have an advocacy role to government for policies that address this. Prioritising EVs within large organisations for fleet purchases and/or business travel can also help increase supply in the new and second-hand markets.
- A diverse array of supporting measures from a variety of organisations is helpful for boosting EV uptake, and provides 'insurance' against uptake slowing should conditions change, for example the end of the road user charges exemption for EVs.
- Overnight home charging is the cheapest and most convenient method of EV charging for household vehicles.
- As such, it is important to address the issue of EV charging for households without off street parking. This will require a variety of approaches.
- Home charging of household EVs is not likely to exceed the capacity of electricity networks provided load diversity is maintained, although there may be isolated 'hot-spots' to deal with.
- EV incentives do not appear to have a significant impact on use of active transport modes and public transport, but care should be taken in their design to avoid this nonetheless.
- Local authorities and network companies have an important role in ensuring that applications to install public charging infrastructure are handled in a consistent and efficient manner so as not to inhibit its development.

- Significant investment in charging infrastructure is needed to support BEV buses, particularly in depots and also fast charging on route, although the need for the latter can be minimised over time through improving battery efficiency and bus design.
- DC fast charging requires a premium price to recover costs because of the ongoing expense of purchasing the required electrical capacity to accommodate large peaks in demand, so relying on this heavily for meeting the majority of charging needs of an EV is not desirable.
- It is important that time spent charging does not conflict with vehicle utilisation, particularly for commercial vehicles, such as couriers and taxis, which are typically more highly utilised than household vehicles.
- While the batteries from electric vehicles can have a useful second life in stationary applications, they still have the potential to add to e-waste in the future if systems and regulations are not established to avoid it. These must be developed and implemented in the near future as the EV fleet grows and the first wave of EVs ages. Central government involvement in this is essential to set up the regulatory framework.

0.2.3 Recommended strategy summary

Supporting EVs in the Wellington Region – Recommended Strategy



Section 1 Introduction

1.1 Background

This project is an initiative of the Wellington Region Electric Vehicle Working Group (REV-WG). This group is comprised of officers from councils across the region and other interested organisations from both the public and private sector. The group operates as a coordinating mechanism for the promotion of electric vehicles (EVs) generally and in relation to the development of charging infrastructure specifically. 'EVs' for the purposes of this group and document is defined as road-registered battery electric vehicles (BEVs) and plug-in hybrids (PHEVs) of all sizes, both private and commercial. To be an EV, a vehicle must be able to be recharged with an external source of electricity.¹

The purpose of this report is to aid the Wellington Region stakeholder organisations (specifically the nine councils and three electricity network companies in the region) in taking a coordinated approach to supporting EV adoption in the period 2019-2024, in line with an overarching long-term vision of a Wellington Region where use of fossil fuels for road transport have been eliminated and replaced with vehicles powered with renewable energy.

The report builds on the existing work of REV-WG including their six-monthly co-ordination updates published on the Greater Wellington Regional Council's website², and existing guidance for local authorities published by EECA in 2018 'Driving a Low Emissions Economy – How Local Authorities can support and promote electric vehicles'¹. Current information on the development of EVs in New Zealand can be found in the NZ EV Guide, which is updated monthly³.

Support for EV uptake is part of a broader effort to move to a low (and eventually net-zero) emissions economy to reduce the drivers of climate change. EVs can be supplied by renewable energy sources so provide an option to 'decarbonise' transport in Wellington, in concert with other methods.

The Central Government target for EVs is for 64,000 to be on the road nationally by the end of 2021, charting an exponential rate of growth to this point⁴. Local government, electrical utilities and other large public and private sector organisations can play important roles in achieving this, for example by helping provide whatever charging infrastructure is needed, and by using EVs themselves. The report focusses on the period to 2021, and considers what is likely to happen and be needed in the following three years to 2024. The report also sets durable, long term guiding principles for the signee organisations and other stakeholders to use indefinitely.

1.2 Rationale

In order to reach net zero emissions nationally and globally, the transport sector must be addressed. This has been recognised by NZ Government and various expert advisory bodies, including GLOBE-NZⁱⁱ and the Productivity Commissionⁱⁱⁱ. Elected leaders of 47 local authorities, including all of those in the Wellington Region, have also recognised this by signing the Local Government Leaders Climate Change Declaration in 2017, which says that they will reduce their own emissions and that of their

¹ <https://www.transport.govt.nz/multi-modal/climatechange/electric-vehicles/>

² <http://www.gw.govt.nz/electric-vehicles>

³ <http://electricheaven.nz>

⁴ <https://www.transport.govt.nz/multi-modal/climatechange/electric-vehicles/>

communities through shifting to electric vehicles⁵. For further discussion of the rationale for local authority involvement, see the EECA guideⁱ.

Electricity network (distribution) companies also have a critical role to play in decarbonising the economy, including the transition to EVs, for the obvious reason that they provide the infrastructure to supply end users with electricity, which increasingly will be generated from renewable sources. In the Wellington Region, Electra distributes electricity to the Kāpiti Coast District, PowerCo distributes to the Wairarapa, and Wellington Electricity (WE*) serves Wellington City, Porirua and the Hutt Valley.

1.2.1 EVs are critical to decarbonising road transport

Greenhouse emissions must begin to reduce within the next few years order to have any realistic prospect of staying within the 1.5 degree C warming limit specified by the international Paris Agreement⁶. Net emissions globally must be halved by 2030 and reach zero by 2050 to make exceeding 1.5 degree C very unlikely. The Government ratified the Paris Agreement, but presently its policies (and those of all other countries) are not consistent with limited warming to either 1.5 or 2.0 degrees C. If efforts globally are not scaled up to the required level by 2020, the window of opportunity to meet either of these goals will be missed. This will lead to a radically different global and local climate in the second half of the century, as modelling for the region carried out by NIWA in 2017 shows^{iv}.

Modelling by the Ministry of Transport (MoT) carried out in 2015 shows that based on their projections of EV numbers, the substitution of petrol and diesel vehicles will start to reduce the total emissions from the transport sector by 2023-24. The delay is a result of the overall growth in the vehicle fleet and total number of vehicle kilometres travelled (VKT) – the rate of EV adoption (in concert with any improvement in fuel efficiency) must first exceed this growth before it has a net effect. It can be seen from this modelling that by 2030 road transport emissions have declined only slightly, and have reduced by only around a third from their peak by 2040. It should be these projections chart a 35% increase in VKT nationally between 2016 and 2036, whereas modelling for the Let's Get Wellington Moving project projected a maximum increase of 22% for the same period^v. This would suggest EV adoption would have a greater impact on overall transport emissions in the Region than the national modelling indicates.

⁵ <http://www.lgnz.co.nz/assets/Uploads/Climate-Change-Declaration-updated-17-November-2017.pdf>

⁶ <https://www.ipcc.ch/sr15/chapter/summary-for-policy-makers/>

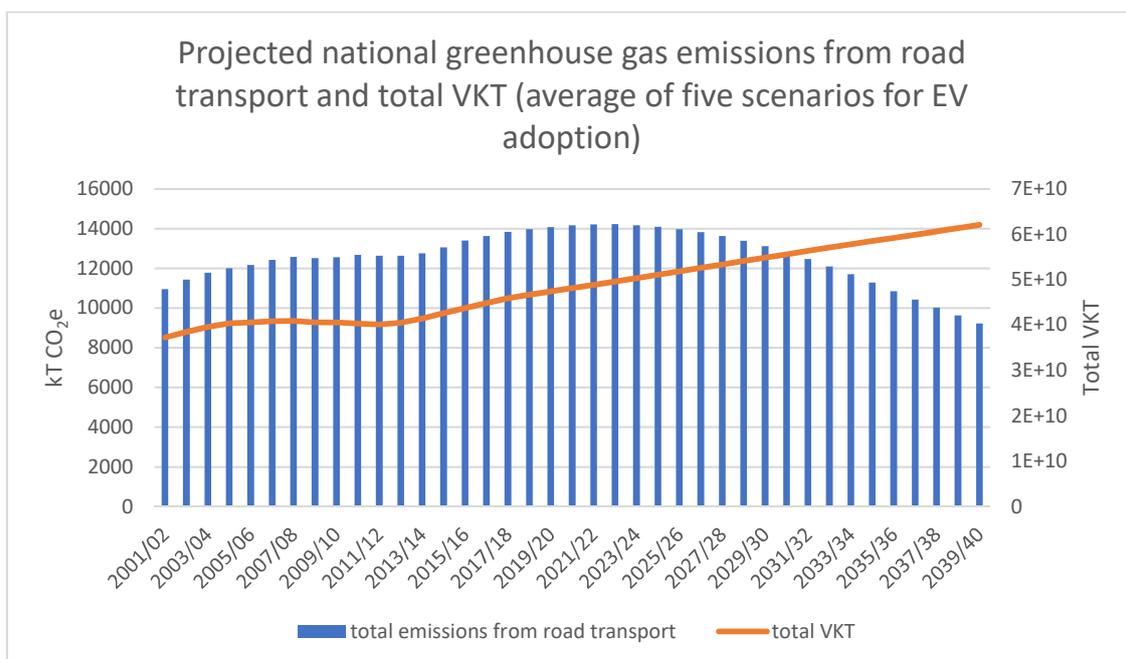


Figure 1 – greenhouse gas projection for transport sector

The Productivity Commission in their 2018 report on moving to a low carbon economyⁱⁱⁱ highlighted any new fossil fuelled vehicles bought now ‘lock-in’ a significant volume of cumulative emissions over their lifetime, shrinking New Zealand’s remaining emissions budget and creating a higher future emissions price across the economy. The average of age of light passenger vehicle fleet in NZ is over 14 years. Accounting for this, they concluded nearly all new registered vehicles must be EV from 2030.

The 2017 report by Vivid Economics on ‘Net-Zero NZ’ for the Globe-NZ group reached similar conclusions, but said that almost all new cars sales must be EV from the 2020s to keep on track to a net-zero greenhouse gas emissions goal for 2050 without resorting to scrapping fossil fuelled vehicles before the end of their useful life.

Both the Productivity Commission and Vivid Economics identified light vehicles as relatively straightforward to decarbonise compared to other sectors, meaning that it did not make sense to decarbonise these slowly and make up the shortfall in other sectors.

The Ministry of Transport modelled five different scenarios for EV uptake for the whole of New Zealand, which it used to base their target for 2021 on. The average of these scenarios projects 58,500 EVs in NZ in by the middle of 2021 and 180,800 by the middle of 2024. The middle scenario forecasts two-thirds of new cars added to the fleet in 2030 are EVs (53% BEV, 13% PHEV) and 90% are by 2040.

1.3 EVs reduce air pollution

In addition to reducing greenhouse gas emissions, the replacement of diesel vehicles with electric can reduce air pollution. Diesel engines are much higher emitters of harmful air pollutants, such as fine particles, nitrogen oxides and black carbon, than petrol engines. Electric drive systems do not produce these pollutants at all, however it should be noted that all kinds of vehicles produce some particulate pollution from tyre and brake pad wear. Local improvements to air quality from switching from diesel to electric vehicles will be of greatest benefit on streets which currently have a high

proportion of diesel vehicles and a high pedestrian, worker or housing density resulting in greater human exposure to pollution with detriments to human health. Replacing diesel buses and other diesel vehicles on routes in the CBD will be particularly important.

The 2012 Health and Air Pollution in New Zealand study^{vi} estimated that the social costs of air pollution in New Zealand were \$4.28 billion per year. The study estimated that air pollution from motor vehicles results in 13 premature deaths per year in the Wellington region. The social costs motor vehicle pollution in the Wellington Region were estimated at \$48 million per year. 22% of the anthropogenic sources of these costs can be attributed to air pollution from motor vehicles. The social costs of air pollution from motor vehicles in the Wellington region is estimated at \$18 million per year.

1.4 Present distribution of EVs in Wellington Region

Wellington as a region presently has the greatest number of EVs per head of population (3.1 EVs per 1000 people) in the country. The distribution of EVs within the region is shown in the table below.

| Area | EV registrations at 30-01-19 | Population estimate 30-06-18 | EVs per 1000 people | Number of DC fast charging devices Jan 2019 | EVs per fast charger |
|--------------------------|------------------------------|------------------------------|---------------------|---|----------------------|
| Wellington City | 816 | 216300 | 3.8 | 6 | 136 |
| Hutt City | 311 | 105900 | 2.9 | 3 | 104 |
| Porirua City | 156 | 56800 | 2.7 | 1 | 156 |
| Upper Hutt City | 142 | 43700 | 3.2 | 1 | 142 |
| Kapiti Coast District | 129 | 53200 | 2.4 | 3 | 43 |
| South Wairarapa District | 39 | 10450 | 3.7 | 1 | 39 |
| Masterton District | 30 | 25700 | 1.2 | 1 | 30 |
| Carterton District | 17 | 9340 | 1.8 | 0 | N/A |
| Wairarapa (combined) | 86 | 45490 | 1.9 | 2 | 43 |
| Wellington Region | 1640 | 521390 | 3.1 | 16 | 103 |

Table 1 – EV ownership rates and number of public DC fast chargers in the Wellington Region.

Wellington City and South Wairarapa have the highest rates of ownership, followed by Upper Hutt and Lower Hutt. There is no obvious correlation between ownership rates and the number of public DC fast chargers. The lowest rate of EV ownership is in Masterton District, which due to its rural nature and distance from Wellington means a limited vehicle range presents more of a barrier compared to other areas.

1.5 Projections of EV numbers in Wellington to 2024

Upper and lower estimates for the number of EVs in Wellington have been derived from the highest and lowest of MoT’s scenarios, using the national average EV ownership rate and present Wellington Region ownership rate. The scenarios give a range of between 5,000 and 9,000 EVs in Wellington Region by mid-2021, and between 15,000 and 28,000 EVs in Wellington Region by mid-2024. Around 30% of these are projected to be PHEVs, and 70% are BEVs. Expressed as a percentage of the fleet, the range is from 1.3% to 2.3% by mid-2021, and from 3.9% to 6.7% by mid-2024.

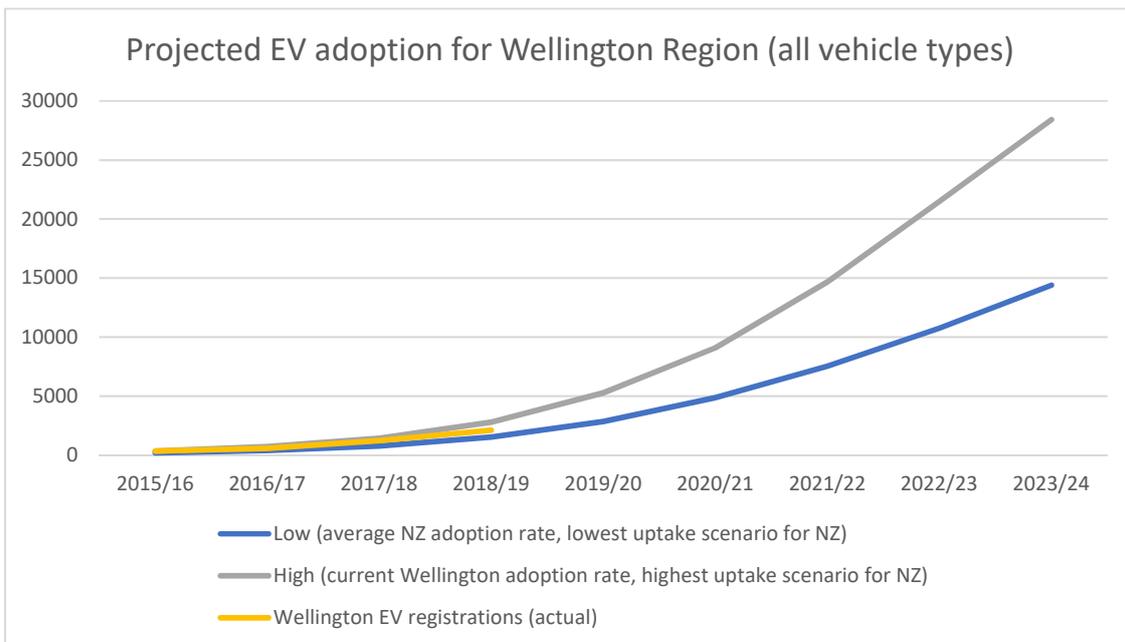


Figure 2 – scenarios for EV adoption in the Wellington Region

MoT’s projections also estimate the share of each vehicle type amongst the total number of EVs. The average of the five scenarios show 8% of EVs by the end of 2024 are vans and utes, and there are 200 BEV buses nationally. Further data can be found on the MoT website⁷.

1.6 Summary of findings

The costs of carbon emissions and air pollution associated with use of fossil fuelled vehicles are not paid for by their users – they are transferred to wider society in the forms of environmental damage and poor health. This means they have an artificial financial advantage compared to EVs, which are not as harmful. This creates a strong rationale for intervention on the part of Government to address this market failure. Present MoT projections of EV adoption on which the government EV target is based are not consistent with the road transport sector contributing as much as is required of it to meet the goal of becoming net-zero emissions by 2050. Local authorities, electricity network companies and the private sector can advocate to central government for stronger policies and assist with implementation to help ensure the full potential of EVs to cut emissions is realised, along with other measures to reduce the growth in vehicle kilometres travelled, which will also contribute to lowering emissions. By winding down their own purchase of fossil fuel vehicles, organisations can prevent the ‘lock-in’ of future greenhouse gas emissions over the vehicles’ life, which may be over 20 years.

⁷ <https://www.transport.govt.nz/mot-resources/vehicle-fleet-statistics/monthly-electric-and-hybrid-light-vehicle-registrations-2/>

1.7 Box –Electric vehicle promotion and funding

The government via EECA operates the Low Emission Vehicle (LEV) contestable fund to assist the implementation of EV related projects provided they fit certain criteria including their strategic aims and investment focus. Rounds are run twice per year. Local authorities and electricity network companies can and have successfully bid for this funding.

EECA alongside EV owner association the Better NZ Trust and industry association Drive Electric undertake to promote EVs to the public and businesses, both through the media and at test drive events⁸. Partnerships with other parties are useful to them to increase the scale and reach of these efforts, and Wellington councils have collaborated with them in this way before. EECA monitors the success of these efforts with regular representative surveys. Results from late 2018 show 55% of the public view EVs favourably.

⁸ <https://www.electricvehicles.govt.nz/>

Section 2 Issues and analysis

There are a number of perceived, actual or potential barriers to EV uptake. These will be discussed in turn with reference to existing research and experience locally and internationally, with analysis and summary of key findings that will be used to inform the recommend policies and suggested actions in this report.

2.1 Demand for EVs

There are many reasons for people and organisations to purchase EVs – such as reduced operating costs and the environmental benefits. These benefits create demand, however achieving high levels of EV adoption means motivating increasing numbers of people to make the switch, which will require an increasingly compelling proposition, up to a certain point. Once EVs are ubiquitous, outright bans on the sale of fossil-fuelled vehicles can be used achieve a full change-over, and many countries' governments have already signalled when they intend to bring in such restrictions⁹.

Norway has the highest percentage of EV market share in the world, and highest rate of ownership per capita, as a result of a concerted effort on the part of their government^{vii}. As of November 2018, Norway had 190,000 BEVs and 90,000 PHEVs on their roads after experiencing year-on-year doubling of the number from very low levels at the beginning of the decade^{viii}. EVs went from 4.2% of new car sales there in 2011 to 49% in 2018. There are many similarities between Norway and NZ, making their experience instructive, given where they are now is approximately where NZ aims to be in five years' time.

In the 2017 paper 'Charging infrastructure experiences in Norway - the worlds most advanced EV market'^{ix}, the authors from the Norwegian EV Association concluded that measures that lowered the initial purchase cost of EVs were key drivers to creating demand for EVs, for the simple and obvious reason that by eliminating the difference in purchase cost between EVs and petrol and diesel vehicles, it made them as affordable at the point of purchase and more overall attractive, when the other benefits were considered. Exemption from road tolls and other local incentives correlated well with variances in EV uptake across the country, suggesting these incentives played a role as well.

In 2017, the Norwegian EV Owners association surveyed their members, gaining 12,000 responses. They asked respondents to select the three most important incentives offered by the government to them for owning an EV. Exemptions from sales tax (their GST), road tolls and car purchase tax were rated the most important (see Figure 3). Reasons 1 and 3 are incentives that address the initial purchase costs. Slightly lower rated was lower annual road tax and low electricity cost, which along with no road tolls are measures that lower ongoing costs for operating a vehicle. The presence of a network of charging stations, a measure related to practicality and convenience, rather than cost, was ranked sixth.

New Zealand's incentives for EVs are very limited by comparison. The main measure, the exemption of EVs from road user charges (RUCs) is scheduled to end for light EVs on 31 December 2021¹⁰. For light EVs the exemption is worth around \$600 per year on average. For heavy EVs the exemption to Road User Charges ends when heavy EVs make up 2% of the heavy vehicle fleet. For heavy EVs this exemption is worth \$5,000-80,000 or more per year depending on the vehicle size and utilisation.

⁹ https://en.wikipedia.org/wiki/List_of_countries_banning_fossil_fuel_vehicles

¹⁰ <https://www.transport.govt.nz/multi-modal/climatechange/electric-vehicles/>

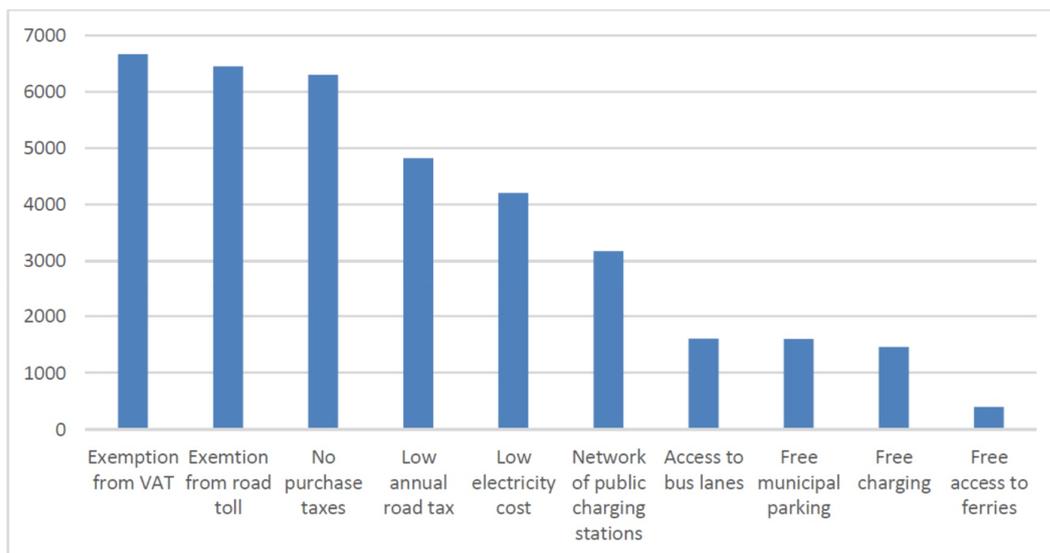


Figure 3: Most important EV incentives according to Norwegian EV owners from 2017 survey. Question: Select the 3 most important EV incentives.^{viii}

2.1.1 Summary of findings

Councils and electricity network companies in NZ cannot adjust or introduce taxes or introduce regulation in relation to the sale of vehicles in general or EVs in particular. However, they may take an advocacy role for such measures with central government. It is within the power of councils as road controlling authorities and providers of parking to introduce local incentives for EVs. A diverse array of incentives is desirable to continue to stimulate demand and build consumer confidence.

2.2 Supply of EVs

Presently two-thirds of all EVs in the country are second Nissan Leafs imported from Japan. These vehicles, which are typically only a few years old, are available in a price range which is affordable to many NZ consumers, which helps explain their popularity. NZ presently has around 5% of all Nissan Leafs originally sold new into the Japanese market, and this percentage has increased over time. It seems unlikely that this supply will be cut off, but on its own is unlikely to be sufficient. Meeting the demand for EVs will require a greater variety of EV makes, models and vehicle types to be available in the country at an affordable price, to satisfy the requirements of different owners. EVs sold new into NZ also have a greater level of after-sales support from the vehicle manufacturers, which is desirable also, particularly with regard to battery replacement.

However, NZ is not alone in attempting to convert its fleet, and may struggle to obtain a diversity of EV models in sufficient quantities from international vehicle manufacturers while they scale up production. In Norway, consumers have pre-ordered an estimated 30,000 EVs from international car-makers, indicating how supply is presently falling short of demand there¹¹. Norway has used a direct approach to addressing purchase price, adjusting sales taxes on cars to make EVs cheaper to buy relative to petrol and diesel vehicles.

Another policy mechanism that could be used to encourage EV supply is a vehicle fuel economy standard. A vehicle fuel economy standard requires manufacturers/importers of light vehicles to have the average fuel efficiency of the vehicles they import and sell to be at or below a certain level of CO₂ per 100 km. This encourages them to offer, market and price a greater variety of EV and fuel-efficient vehicles to help meet the standard.

New Zealand and Australia do not have vehicle efficiency standards, unlike Japan, EU, South Korea, USA, Canada, India, China, Brazil, Mexico and Saudi Arabia.

As EV supply is constrained globally, manufacturers may prioritise supply of their EVs to countries where they need them to help meet a fuel economy standard.

2.2.1 Summary of findings

The presence of incentives in the country has a role to play in attracting supplies of EVs from abroad, as well stimulating demand, although supply is likely to lag behind demand. Measures to address upfront cost are key, as previously discussed. By committing to convert their organisation's fleets to EV, organisations help increase supply by encouraging vehicle suppliers to support the NZ market, and eventually providing a supply of affordable EVs to the second-hand market within NZ when they are ready to sell them on.

BOX: Greater Wellington Regional Council has an 'EV first' policy for fleet purchases, and Wellington Electricity has already converted its light vehicle fleet to EV. A group of 34 large NZ corporates committed in 2016 to convert 30% of their fleets by the end of 2019¹².

¹¹ <https://insideevs.com/examine-electric-car-pre-orders-norway/>

¹² <http://www.scoop.co.nz/stories/BU1610/S00454/commitment-will-boost-nz-ev-numbers-by-more-than-75.htm>

2.3 AC (slow) charging and potential grid impact

All EVs can recharge using their onboard AC charger. The rate of charging is limited by the capacity of the charger and power supply it is connected to. AC charging is often called 'slow' charging, with the slowest rate being at 8A (1.8kW) using a common three-pin power socket, typically used by private owners for overnight charging at home. Faster 16A and 32A charging is also affordable and practical in a domestic situation, but requires a modest amount of effort and expenditure on the part of owners to set this up. Half of the participants in the Wellington Electricity EV Charging Trial^x reported they used an three-pin household socket for home charging, and in Norway, 63% of EV owners do^{ix}. For those households or businesses with off-street parking, using AC overnight is the cheapest and most convenient method of EV charging. The US Department of Energy EV Project found home AC charging accounted for 86% of the energy delivered to EVs^{xi}.

For a light passenger EV, the amount of range that can be added in ten hours of AC charging is approximately 100km at 8A, 200km at 16A, and 400km at 32A, assuming they have sufficiently large batteries. Data from the NZ Household Travel Survey shows 95% of household vehicles in the Wellington Region are driven less than 116 km/day^{xii}. The average is 40 km/day, meaning that on average most light EVs only need to be charged for a few hours each day.

Clearly overnight AC charging is and will remain the predominant method for EV charging for the foreseeable future for household EVs. The question of what impact this will have on electricity distribution networks has been investigated in NZ and abroad.

Electricity networks are designed to manage a peak in demand for electricity, which typically occurs in the morning and evening in residential areas. EV charging, once common, will increase these peaks, possibly exceeding the tolerances of networks. Conversely, charging may be spread across the day, reducing impact and improving utilisation and return on investment of networks. EVs could even be used to support the grid at peak times (known as 'vehicle to grid' or V2G). Real world studies and experience provide considerable assurance that EV charging will not have a detrimental effect on grid stability.

My Electric Avenue 2012-2015, OFGEM, United Kingdom^{xiii}

In this project 100 households were given a Nissan Leaf EV. They were grouped in 10 clusters across the UK. All households had 16A charging facilities installed in their homes and were extensively monitored. The study found EV charging increases after-diversity maximum demand (ADMD)¹³ by 1kW.

Modelling showed that across Britain, 32% of low voltage (residential) networks will require intervention of some kind when 40% – 70% of customers have EVs, based on 16A charging being the norm. However, the study also successfully trialled the use of a system 'Espirit' to manage EV charging load across multiple households, reducing the cluster's peak demand at low cost. The trial participants found letting Espirit manage their charging was not a significant imposition.

The EV Project 2009-2013, US Department of Energy

¹³ After diversity maximum demand (ADMD) is the aggregate maximum electricity demand at any one time of many individual connections to an electricity network, given as an average of all connections. An electricity network must be designed to meet ADMD whenever it should occur, with a margin of error. 'Demand-side' measures such as load shifting can be used to reduce ADMD.

This study including monitoring of over 8,000 EV households, and included the installation of a mature charging infrastructure (home, workplace and public) for them to use. The home chargers were rated at 16A-equivalent.^{xi}

This study of the EV Project data showed the ADMD of all residential EV chargers spread across the country was 1.0kW on weekdays (and 0.8kW on weekends)^{xiv}. There were differences between regions. For example the ADMD in Nashville, where they did not have time of use electricity pricing to motivate people to charge off-peak, was 1.1kW at 8pm. In San Francisco, where households could get a cheaper electricity price after midnight, the ADMD was 1.3kW at 1am.

EV Charging Trial 2017, Wellington Electricity^x

This trial involving 92 EV-owning households found that home EV charging by owners in the Wellington Electricity Supply area increased ADMD by 0.5 - 0.8kW, which is within the capacity of the majority of low voltage networks. Half of the trial participants used an 8A socket for home charging (1.8kW). Most charged off peak even when they did not receive a reduced price for this, and some changed their behaviour in response to information about the public benefits of charging off-peak. A greater proportion of EV consumers who received time-of use electricity pricing charged their vehicles outside peak periods that those that did not. The majority of participants were comfortable with the idea of having the timing of home charging managed for them by a third party to reduce peak demand.

2.3.1 Summary of findings

These real-world studies found that the diversity of home charging behaviours across multiple households greatly reduces the impact on electricity networks compared to what it would be if all EVs were charged at exactly the same time. It is clearly important that this diversity is maintained, which can be achieved via electricity pricing and non-intrusive services to co-ordinate charging, but it would appear that the majority of existing residential electricity networks will be able to cope with very high levels of EV penetration. This is further supported by the experience in Norway, where no significant issues of this kind have arisen so far from home charging in urban areas, with the exception that some remote, rural holiday destinations have experienced issues from recharging during peaks in visitor numbers. Care should be taken by utilities and councils to identify and address such 'hot spots'.

2.3.2 Box – Vehicle to Grid

Vehicle-to-grid (V2G) EV chargers (and similarly equipped vehicles) facilitate energy flow both to and from an EV, allowing it to act as a rechargeable energy source. When connected to a V2G charger at home or work, charge from an EV can be used as a cheaper power source when electricity prices are at their peak, reducing peaks in electrical demand. It may eventually be able to be used to power homes during power outages.

V2G has to be managed in a way that ensures the EV owner still has enough energy to drive when and where they want. The purpose of V2G is to boost the resilience and flexibility for the electricity network during peak demand while also giving EV owners a financial benefit through reduced electricity costs and/or a payment for the service their battery provides.

The technology is in use in Japan¹⁴ and network company Vector is conducting a trial of V2G in Auckland.¹⁵

¹⁴ http://www.nichicon.co.jp/english/product_news/new124.html

¹⁵ <https://www.vector.co.nz/articles/vector-set-to-unleash-power-of-evs-via-two-way-cha>

2.5 On-street residential charging

While home AC charging is the cheapest and most convenient option for those that are in detached or semi-detached homes, accounting for the majority of households in the region, there are many households where this is not available. One in four dwellings in Wellington City lack off-street parking. Also apartment dwellers and other people in rental accommodation may not be able to arrange a charging point with their landlord or body corporate. People in such situations need viable alternatives in order to successfully operate their own EV.

In 2015 consultants working for Transport for London (a city where 85% of dwellings lack off-street parking) extensively studied these options, including existing approaches in use across Europe^{xv}. Those they judged were effective and deliverable were:

- Public, bookable on-street AC charging stations, located in residential areas
- Basic, secure sockets installed on street furniture outside EV owners' homes (this is being implemented in Germany by a private company Ubitricity, and in the London Borough of Southwark by the company char.gy)
- Running a lead from the home to the street over the footpath and covering it with secured matting (allowed in Amsterdam)
- Relying on public DC-fast charging, away from home
- Alternative arrangements nearby to home— e.g. using sharing apps, accessing commercial parking outside of business hours.

Each option has its own pros and cons. The consultants saw the greatest potential in creating 'socket networks'. DC fast charging was also seen as very important, though the higher cost and lower convenience of this meant it was ranked lower.

Subsequently, the UK government has created a funding programme via their national Energy Saving Trust (EST) and local authorities to establish residential on-street chargers. The fund is in its second year and only three projects have been implemented so far. The reasons for this given by EST were other residents objecting during consultation; the street works required were too expensive; and electricity network operator objections. Also for various reasons the projects also take a long time to implement. The criteria of the fund have been changed to include nearby local authority off-street carparks, with the chargers being available for public use during the day and residents' only at night, in order to avoid conflict with neighbours over the limited parking space outside their homes^{xvi}. As of early 2019, there were approximately 700 'slow' chargers in Greater London¹⁶.

Amsterdam's City Authority has a dedicated EV Charging Infrastructure bureau. They provide on-street EV charging points when they are requested (for overnight use by residents, so-called 'pillow', chargers). The target for the end of 2018 was to have 4,000 of these chargers installed. The chargers provide data to the municipality, which they use to co-ordinate further development of the network. The City has also developed clusters of chargers in some neighborhoods¹⁷.

Wellington City Council has secured 50% funding with EECA's Low Emission Vehicle Contestable Fund for trialing on-street charging in 25 residential streets, which will be operational later in 2019. Given almost 20,000 homes in Wellington City lack off street parking, and could be reliant on such a scheme being expanded, the learnings of this trial will be valuable to guiding the future of the city's charging network.

¹⁶ <https://www.zap-map.com/statistics/>

¹⁷ <https://cleantechnica.com/2017/11/14/amsterdams-electric-vehicle-leadership-cleantechnica-video/>

2.5.1 Summary of findings

It is perhaps unsurprising that allocating space in the public realm for the exclusive use of a limited number of people is contentious, especially when such space is scarce. However the experience of cities such as Amsterdam shows that this resistance can be overcome if the municipality is committed to EVs and the general public understands and accepts the reasons why.

Support for private use of EVs must be part of a package of measures for personal mobility whose primary focus is on alternatives to private car ownership, such as walking, cycling, e-mobility and public transport for the majority of journeys, and access to electric car-share schemes and rentals when necessary. See the case study on the City of Portland's EV Strategy and its transport hierarchy on page 27.

Regarding new apartments, when parking is provided, councils can require charging to be provided alongside them to avoid any problems getting it installed in the future. This is recommended by the Norwegian EV Association^{ix}.

Councils themselves are also providers of rental accommodation. Councils could allocate charging bays in shared council housing resident car parks when residents request them, or pro-actively.

2.6 BOX: EV incentives versus public transport and active modes

In providing incentives for EVs, will public authorities inadvertently attract travellers away from more preferred modes such as active and public transport? There is a dearth of research on this topic. However a 2015 masters thesis by Eric Nygaard^{xvii} on Norwegian EV uptake and substitution effect for other modes found that:

"The tests conducted on the data sample indicate minor, but statistically significant EV substitution effects on public and manual transportation for commuting. Although some respondents decreased their use of public and active transportation, the median use did not change. 70% and 86% respectively held on to their public and manual transportation habits when they became EV owners. Moreover, the tests indicated no significant EV substitution of public and manual transport for everyday activities or long journeys. The implication is that EVs only to a limited extent substitute public and manual transportation, and when substitution takes place it is mainly for trips to and from work... In light of the strong link between car use and timesaving versus public transport, increasing the frequency and convenience of public transport could help offset this effect."

This finding is generally reassuring that any effect is limited. However, it is still useful to consider carefully the design of any incentives or policy measures for EVs with such potential effects in mind, and mitigate them if possible.

In Oslo, after a decade implementing strong incentives for EVs such as free parking, free charging, free use of toll roads and use of bus lanes to complement government policies for EVs, EVs make up 57% of all new car sales (45% BEV and 12% PHEV) there. Because of this success, the municipality is now rolling back some of these incentives (such as free charging and the road toll exemption). EV cars are not exempt from their plans to make their inner-city car-free and more people-centric. However, electric delivery vehicles will be permitted access¹⁸.

¹⁸ <https://www.citylab.com/environment/2018/12/norway-electric-vehicle-models-incentives-car-free-oslo/578932/>

2.7 Demand for public charging infrastructure

The number of public charging stations relative to EV fleet size has been examined for a selection of different countries. See the table below:

| | As at... | BEVs | PHEVs | Total EVs | DC fast chargers | All public chargers | BEVs per DC fast charger | EVs per DC fast charger | EVs per public charger |
|-------------|----------|--------|--------|-----------|------------------|---------------------|--------------------------|-------------------------|------------------------|
| Norway | Oct-18 | 190000 | 90000 | 280000 | 1600 | 10600 | 119 | 175 | 26 |
| Netherlands | Dec-17 | 20000 | 100000 | 120000 | 750 | 32000 | 27 | 160 | 4 |
| UK | Dec-18 | 60792 | 138765 | 199557 | 1900 | 19000 | 32 | 105 | 11 |
| Germany | Dec-18 | 105115 | 89629 | 194744 | unknown | 16,100 | - | - | 12 |
| USA | Dec-18 | 630000 | 480000 | 1110000 | 8244 | 57586 | 76 | 135 | 19 |
| New Zealand | Jan-18 | 9140 | 2927 | 12067 | 148 | 447 | 62 | 82 | 27 |

Table 2: EV numbers and public chargers for a selection of countries

Norway has the highest number of EVs per DC fast charger and the second highest per all public chargers. This reinforces the finding of the Norwegian EV Association^{ix} that beyond a certain point, the provision of charging infrastructure is not the main driver of EV uptake, rather, it is other policies. While the spread of BEVs per fast charger is very wide, per all EVs it is within a factor of 2.1, suggesting this is a better guide to charging needs. Interestingly, New Zealand has the fewest EVs per fast charger of the group, which is perhaps related to the early stage of EV adoption in the country which coupled with the widely dispersed population requires a relatively widely-dispersed but lightly-used network of chargers.

The number of EVs per public charger is within a factor of 2.5, if the Netherlands is excluded. The Netherlands has a very low number of EVs per public chargers per EV, but it is unusual in that it has a very high proportion of PHEVs. Given the small size of battery packs in PHEVs, arguably they have a reduced need for fast charging. Also the Dutch municipalities have had a strong focus on installing on-street residential 'pillow' (overnight) chargers in their cities (see the case study on Amsterdam in the previous section). These are technically public chargers, so have skewed the numbers somewhat compared to the other countries.

Guidance for municipalities in Europe assembled by consultants Cleantechnica and Greenway with the help of a working group of charging infrastructure professionals^{xviii} recommended a 'rule of thumb' of one DC fast charger per 100 EVs, and one public¹⁹ AC charger per 10 EVs. This rule appears to be broadly consistent with Table 2. The mix of charging types they recommend is illustrated below.

¹⁹ 'Public' chargers include those which are reserved for patrons such as at hospitality and retail businesses, but excludes workplace chargers for employees.

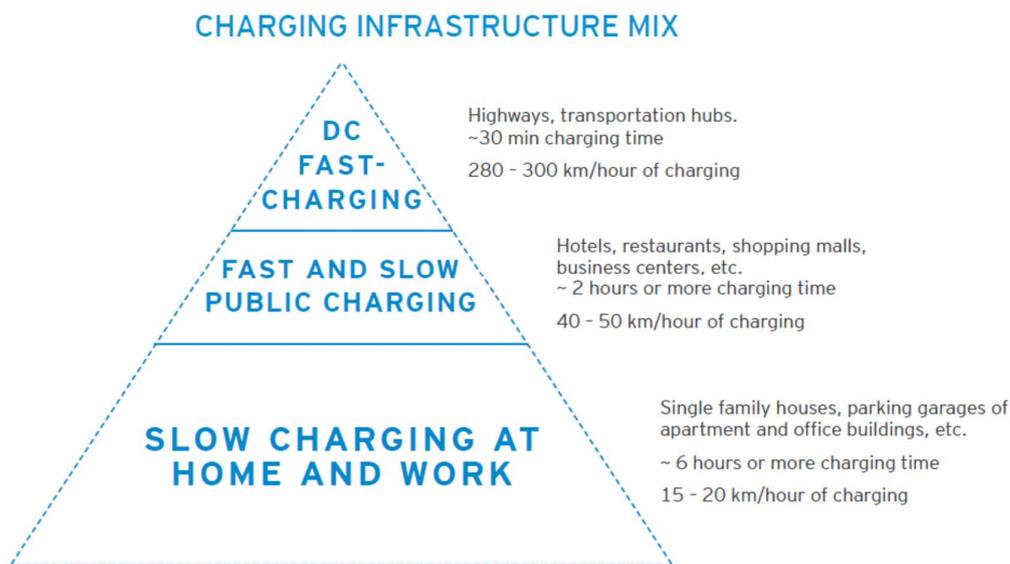


Figure 4 – CleanTechnica and Greenway’s recommended charging infrastructure mix.

Applying the ‘rule of thumb’ of one DC fast charger per 100 EVs and one public AC charger per 10 EVs, the range of possible public charging requirements for Wellington Region is summarised below.

| | EVs | AC chargers (3 - 22kW) | DC fast chargers (25 - 50kW) | Total capacity (MW) |
|----------|-----------------|------------------------|------------------------------|---------------------|
| Jan 2019 | 1,640 | 39* | 16 | ~1 |
| Jun 2021 | 5,000 - 9,000 | 500 - 900 | 50 - 90 | 6 - 11 |
| Jun 2024 | 15,000 - 28,000 | 1,500 - 2,800 | 150 - 280 | 18 - 34 |

* Note that the majority of these public chargers are at hotels and campgrounds

Table 3: estimated range of future public charging needs

2.7.1 Public AC (slow) charging

Public AC chargers are useful in areas where EVs will dwell for long periods, given the relatively long charging times associated with them. Such locations are airports, hotels, holiday parks, shopping and entertainment premises, and parking complexes near to these places. There is a business case for the owners of these premises to provide charging as a value-add service to patrons, similar to ‘free wi-fi’. Private property is already likely to have an adequate electricity supply for AC charging, so the incremental cost of installing and operating a charging point is often low. As such, there is limited need for public sector involvement, other than promotion, unless they themselves are the public parking provider.

Electric car share schemes may also wish to install public AC charging on-street to support their fleet of vehicles. This network could also potentially be used by others. Potentially there could be other private companies wishing to install AC charging (e.g. as a standalone business). However, the costs and business risks associated with a third party installing and operating an AC charger on-street relative to the return can be challenging. Road controlling authorities can help by having clearly laid out policies and processes for applications for public chargers, and by co-ordinating with electricity network companies to identify the areas where electricity supplies for chargers can be established at least cost. These systems would be equally useful for applications to install DC fast chargers.

2.7.2 Fast charging

DC fast charging (namely charging at rates higher than 25kW) is critical for extending the range of EVs on long journeys, especially for those EVs that have smaller battery packs, such as the Gen 1 and Gen 2 Nissan Leafs. They may also be the main means of recharging for those EV owners without off-street parking, as previously discussed. Referring specifically in relation to household vehicles, as EVs with larger battery packs become more common, the number of fast chargers that are required relative to the total number of EVs in the country can be expected to reduce, given it is possible to add hundreds of kilometres of range to a light EV using overnight charging. (This does not include taxis, couriers and other commercial vehicles, that typically have higher utilisation rates than household vehicles – see the following sections for further discussion) However, in the interim, we can expect demand for fast charging to increase roughly in line with the total number of EVs.

Citizen science organisation 'Flip the Fleet' surveyed of 102 EV owners in New Zealand about fast charging in 2018^{ix}. It found that the sample group almost unanimously thought that more fast chargers were required. The most desirable characteristic of fast charging (determined via a choice experiment) was found to be immediate and predictable access. The authors recommended the introduction of usage fees to fast chargers that are presently free to discourage unnecessary use of chargers by EV owners that could charge at home, and to support the expansion of fast charging on a commercial basis. This is the same recommendation made by the Norwegian EV Association^{ix}, but in any case, all public fast chargers in the Wellington Region already require payment to the provider Charge.Net. The authors also suggested that a greater number and variety of chargers should be made available at presently congested sites. Charge.Net did this in 2018 at their chargers at the Vivian St Z station and at the Dowse, putting a 25kW unit alongside the existing 50kW unit at each. The available electrical capacity (or the upfront investment in upgrades to get more) is a constraint on further development. Queuing will increasingly be a problem if the development of fast charging infrastructure does not keep pace with the number of vehicles. Another potential constraint is the suitability of the placement and configuration of fast chargers for larger vehicles (e.g. commercial vehicles, campervans and motor homes), or those users with special mobility requirements. However, this may not necessarily slow households from adopting EVs significantly overall as most people will be able to charge at home^{ix}.

Goldman Sachs^{xx} estimated the potential market for DC fast charging infrastructure in their report 2017 report 'EVs: From Pump to Plug'. They estimated globally that overnight home charging would account for 80% of all charging, and DC fast charging would be 6%, with the remainder being AC charging at workplaces or other destinations. Following from this, the report authors estimated that while the distribution of fast charging stations must be similar to filling stations, their utilisation will be around 10 times lower (around 20 customers per day), meaning a significant margin above operating costs must be charged to recover the capital costs and make a profit. This can be observed in NZ presently, where fast charging using commercial chargers is approximately three to four times more expensive than charging at home. Despite this, presently DC fast charging is still around one third cheaper than petrol to drive an equivalent distance. However, the end of the RUC exemption for EVs would significantly reduce this difference.

2.7.3 'Ultrafast' charging

In the near future, new EVs will be capable of fast charging at rates much higher than the present norm of 50kW (e.g. at 350kW, seven times faster). In theory this will allow EVs to be recharged in a similar fashion to how petrol and diesel cars are refilled, within a few minutes. However, the

electrical capacity that will be needed at such 'ultrafast' charging stations, assuming there are multiple units at each site as there are at filling stations, will be substantial.

To gain a better understanding of the capability and costs of the electricity network to accommodate ultrafast charging stations, estimates were obtained for hypothetical installations at logical locations for a hub of either four or eight 350kW charging units.

- Cnr Arthur and Taranaki Street, Te Aro – Lowest cost option: \$750K +/- 20%
- 140 Hutt Rd, Kaiwharawhara – Lowest cost option: \$400K +/- 20%

In addition, network companies typically charge commercial clients per kW of their supply's connection, capacity and annual maximum demand, as well as per unit of electricity (In the Wellington Region, only Electra does not). For the Wellington Electricity (WE*) network area, a 350kW supply would cost between \$100 and \$150 per day in such 'fixed' fees, depending on whether it fell into the highest or second highest load group. See table below for a comparison. These costs would have to be recovered from users e.g. 20 users/unit/day means \$5.00 -\$7.50 per customer, on top of energy costs, capital cost recovery and any other expenses.

| Load group | Fast (50kW) | | | Ultrafast (350kW) | | |
|----------------|-------------|----------|-----------------------|-------------------|-----------|-----------------------|
| | WE* | PowerCo | Electra ²⁰ | WE* | PowerCo | Electra ²⁰ |
| <300kVA | \$ 11.35 | \$ 62.87 | \$ 1.64 | N/A | N/A | N/A |
| 300 - 1500 kVA | \$ 35.90 | \$ 45.14 | \$ 1.64 | \$ 104.36 | \$ 315.99 | \$ 1.64 |
| >1500kVA | \$ 21.46 | \$ 35.90 | \$ 1.64 | \$ 149.87 | \$ 230.52 | \$ 1.64 |

Table 4: Fixed network costs per DC fast charger per day for different load groups and network areas²¹

Given this, ultrafast charging may only be profitable where utilisation is very high, meaning in locations where it is especially useful (so it can command a premium price) and there are many potential customers – e.g. in the middle of long-distance journeys on arterial routes. Therefore, they seem unlikely to supplant the network of regular DC fast chargers, but rather occupy a niche of their own.

2.7.4 Regional differences in charging needs

Each of Wellington's districts have different characteristics which will influence the type, amount and distribution of public charging infrastructure that they need.

Wellington

As previously discussed, the quarter of properties lacking residential off-street parking in Wellington City is the most striking difference with other areas, and Wellington is the 'end of the line' for many journeys, including interregional ones, and receives high volumes of commuter traffic on weekdays. Wellington City will therefore need more public chargers on a per capita basis relative to other parts of the region. Providing charging facilities at popular destinations, the airport and ferry terminal, or on the ferries themselves is therefore a key consideration. Significant growth in the central city of both residential and commercial development is expected, meaning issues relating to car-parking and air pollution will become more acute if not addressed. Electric car-share schemes, amongst other measures, present a possible remedy to both.

²⁰ Electra recovers their costs mainly on the energy component of their charges. As these are volume based, a lightly used fast charging station will face lower overall electricity costs in their supply area compared to the WE* and PowerCo areas. The difference with the other areas will be lower if utilisation is higher.

²¹ Calculations assume transformer capacity is perfectly matched to peak demand and the power factor is 1. Based on network pricing schedules valid for 1 April 2018 to 30 March 2019.

Hutt City, Upper Hutt, Porirua and Kāpiti

As suburban districts, these areas have a very high prevalence of residential off-street parking. They are relatively close to Wellington itself, meaning fast charging should not be needed for visits to the city in the majority of EV models presently available. Also major arterial routes pass through these areas, meaning their charging facilities may be needed by visitors more frequently than locals.

These areas do not presently have a significant proportion of apartment dwellers, but these will increase with time as the urban density increases. This presents a significant opportunity to ensure that EV charging facilities are required as part of new medium and high-density development.

Wairarapa districts

These districts are relatively large and rural, so public charging (both AC and DC) in the main settlements would enable residents living in outlying areas to more easily operate EVs. Tourist destinations such as Castlepoint and Martinborough, although not on major routes, would benefit from having charging facilities for visitors. As a sparsely populated area, there is naturally a greater need for cars for personal transport, meaning EVs will have greater importance in emissions reduction plans relative to other low-emissions modes such as public transport. The availability of longer range EVs and utility EVs would assist the Wairarapa with adopting this technology.

2.8 BOX: Portland, Oregon USA

The City of Portland's 2017 Electric Vehicle Strategy²² focuses on electrification of the public transit system, shared vehicles and the private automobiles that remain in use, and is one of many strategies the City is taking to reduce carbon emissions from the transportation sector. Their transportation hierarchy shows the priority order of different modes:

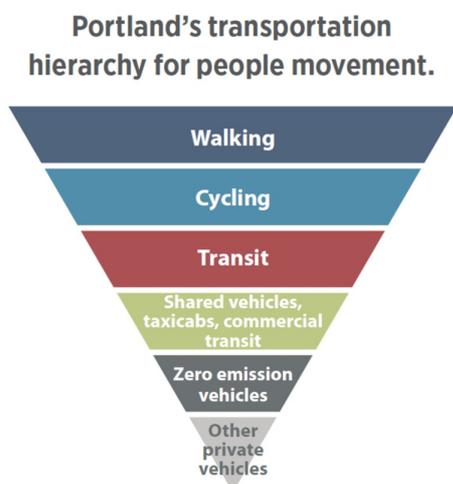


Figure 5: Portland's transportation hierarchy for people movement

This strategy also seeks to maximize the benefits of air quality and affordability for low-income residents and parts of Portland that are the most dependent on private vehicles.

The explicit goals of the strategy are to:

- Replace at least 10,000 gas- or diesel-powered vehicles with electric vehicles in their County.
- Increase access to electric vehicle charging infrastructure by doubling the number of 'Level 2' (AC) and DC Fast Chargers available to the public.
- Increase access to affordable electric vehicle transportation options for low-income populations and communities of colour.

- Maximize the air quality and cost savings benefits of electric vehicles for low-income populations and communities of colour.
- Add 60 electric vehicles to the City's fleet to increase the percentage of electric vehicles from 20 to 30 percent.
- Prioritize the electrification of shared use vehicles, bikes and buses to reduce the need for personal vehicle ownership.
- Encourage the electrification of automated vehicles to improve safety and mobility options for people who don't drive.

The City of Portland prioritizes charging infrastructure in areas of Portland that have:

- Fewer existing public charging stations.
- Limited access to frequent transit and bike routes.
- Higher proportions of multifamily housing and garage-free homes.
- Large businesses with employees commuting long distances.
- Residents with higher average vehicle miles travelled.
- Destinations (recreation sites, event venues, etc.) people tend to travel longer distances to access.

The strategy has actions relating to establishing charging infrastructure in a wide variety and type of locations, adoption of EVs into fleets, promotion, gathering information and supporting innovation.

²² <https://www.portlandoregon.gov/bps/article/619275>

2.9 Buses

Electrification of buses in the Wellington Region has begun with the two major public transport contracts in the Region.

2.9.1 NZ Bus

NZ Bus have 160 buses operating at any one time in the region. They already have a single BEV bus in service and are working with the Regional Council on introducing more. Their BEV buses will have three axles so which allows them to carry batteries with a capacity of 300kWh and still fall within the cheaper 'General Access' Road User Charges category. This higher battery capacity means there is no need for fast charging while on route. NZ Bus estimates each BEV bus will use 180kWh of energy per day on average. The difference in daily requirements and battery size is an allowance for battery degradation over time and operational contingencies.

The buses can carry 75 passengers maximum and have air conditioning. Their energy efficiency is 1.3kWh/km (air conditioning increases energy consumption by 30%).

NZ Bus plan to use 150kW AC chargers in their depots using a smart dispatch system to coordinate charging. They have two depots, one in Karori and one in Rongotai. Initially there will be around 20 BEV buses at the former and 30 at the latter. The main issue NZ Bus sees is grid capacity at the depots and the cost of electrical upgrades – the entire cost of the upgrade needs to be recouped within the contract period, as there is no certainty of income beyond that period (10 years). The EECA grant NZ Bus have already received is for depot infrastructure does not cover the full cost of transformer upgrades.^{xxi}

Assuming all buses would be charged by 180kWh each within an eight-hour window with a flat profile, using as many chargers as required, the depot charging capacity requirement for 57 BEV buses is estimated to be 1.4MW. For 160 buses it is 3.8MW.

2.9.2 Tranzit

Over the total Greater Wellington Region, Tranzit operate 60% of the total fleet, around 265 buses.

As of early 2019, there are ten BEV double-decker buses in the Tranzit fleet, and there are plans to expand this by 10 more in 2020 and 12 in 2021 (32 by the end of 2021). Their BEV buses are dual axle and do not have air conditioning. They carry up to 80 passengers and are not as long as a three axle bus, making them more manoeuvrable.

The buses are equipped with between 109 and 161kWh of batteries and these can be recharged in the depot at Rongotai in 3-4 hours using their 30kW chargers.

The BEV buses have a range of 100km which limits their utilisation, hence they are deployed at peak times (rather than all day) and/or on short routes. On-route fast charging is essential for extending their daily range. Tranzit are experimenting with for weight saving options to increase range and stay on general access RUCs. Ultimately they want their buses capable of 250km and being on duty for up to 20hrs per day. The majority of buses in their fleet drive 150-200km per day.

The electrical capacity at Rongotai Depot is at maximum. However staff believe by staggering charging times they could double the number of EV buses charging there. Tranzit's other depot sites in Grenada and Hutt Valley were selected based partly on the electrical capacity for charging.

The Island Bay bus fast charger is rated at 450kW and using it BEV buses can be charged from 20% to fully charged in 12 minutes.^{xxii}

Assuming all of Transit's buses would be charged 90kWh within an eight-hour window with a flat profile using as many chargers as required, the depot charging capacity requirement for 32 BEV buses is estimated to be 0.4MW. For 235 buses it is estimated at 2.8MW. This would be only half of their charging requirement. The remainder would be on-route fast charging.

Transit's estimate is for ten to fifteen 450kW fast chargers to support their share of an all-electric bus fleet in Wellington, a total of capacity/peak electrical demand of between 4.5MW and 6.8MW. Calculations suggest that this number of 450kW chargers would need to be in use for 4 hours per day on average to deliver all the required energy. Each charger would need to be used by an average of 19 buses per day. This is a high level of utilisation and would need to be co-ordinated carefully.

Transit should be able to increase the range of their vehicles without increasing their weight as battery efficiency (kWh/kg) improves.

2.9.3 Analysis

NZ Bus and Transit are taking markedly different strategies to EV buses. Both methods will require significant investment in charging infrastructure and grid capacity at key locations. However, Transit's model will require 29 to 37kW of charging capacity per bus (17 to 25kW on route and 12kW in-depot), spread across up to 19 locations. NZ Bus's model will require approximately 24kW of charging capacity per bus at just two locations.

A study by Element Energy estimated that in order to electrify Auckland's bus fleet, the existing 15 bus depots in Auckland collectively would need \$32M in electrical upgrades for recharging, assuming the buses were exclusively charged in-depot.^{xxiii} This gives an indication of the scale of the investment that is needed. Element Energy's model could be used to produce an estimate of costs for Wellington bus depots.

Regarding fast charging locations, it would be better for buses to have a number of short, fast top-ups throughout the day to avoid queues in the middle of the day, when battery levels across all buses that had a full overnight charge in the depot would be getting low. Bus fast chargers need to be provided on areas of routes where buses can connect to them quickly and automatically and achieve a high level of utilisation. Fast chargers would be less useful at the tops of hills as fully charging the buses there would forego the energy that would be recovered from regenerative braking as the buses went back downhill. Another consideration is that changes to bus routes may mean fast chargers and the attendant electricity infrastructure are no longer in the most effective locations, incurring significant capital costs to re-establish them.

2.9.4 Summary of findings

As the contract holder, the Regional Council are in a position to accelerate adoption of BEV buses. This would presently require a larger capital investment than for diesel, but analysis by Bloomberg²³ shows BEV buses already can have a lower total cost of ownership than a diesel bus, depending on the method of charging and daily usage, meaning the cost to ratepayers over the asset life is not necessarily more. There will be a long-term requirement for an increased electrical capacity at the depots to support BEV buses, longer than a single 10-year contract cycle with a bus operator (as the increased capacity will be useful for far longer than ten years). This raises the question who should own these assets.

²³ <https://about.bnef.com/blog/electric-buses-cities-driving-towards-cleaner-air-lower-co2/>

BOX: Santiago in Chile has added 200 BEV buses to its fleet. Two different electricity utilities each own 100 of the buses and lease them to the bus operators along with the supporting charging infrastructure.²⁴

2.10 Box - EV refuse collection trucks

Palmerston North City Council purchased two purpose-built EVs to replace two leased refuse trucks. These began work in 2018 on kerbside collections for solid waste (3600kg payload) and glass (1900kg payload).

The Energy Efficiency and Conservation Authority (EECA) contributed half of the cost of the trucks – more than \$300,000 of the \$736,000 – from its low emission vehicles contestable fund.

An on-site co-generation plant at the Resource Recovery Park generates electricity is being used to recharge the trucks, which have a 180km range.

This follows Kāpiti Coast District Council, which has been operating an all-electric refuse collection truck since 2013, and Waste Management who introduced battery electric vehicles to their collection fleet in 2017.

²⁴ <https://insideevs.com/boat-electric-byd-buses-arrives-chile/>

2.11 Taxis and private hire vehicles (e.g. Uber and Lyft)

Taxis and private hire vehicles are operated by owner-drivers. There are an estimated 2,500 taxis and 3,000 private hire vehicles in Wellington. (For the purposes of brevity hereafter they will all just be referred to as 'taxis'). Taxis have a greater level of utilisation than regular private light vehicles, an average of 150km/day in Wellington for a full-time driver, but will occasionally they will drive much further^{xixiv}, and average is higher for shared taxis that operate two or more shifts per day. Taxi operators are very focussed on vehicle operating costs, which is why nearly all taxis in Wellington are hybrids. BEVs appeal to taxi companies because of the further operational savings which are possible, but capital cost is still a major barrier. Around 10% of the taxi fleet is replaced each year.

Most taxi drivers own their vehicle and take it home at night – there is no central taxi depot where they could be kept and charged. Anecdotally most taxi drivers live in flats and do not have access to overnight charging. This means to operate BEVs as taxis, they would currently be dependent on public fast charging facilities.

Taxi company Greencabs had seven Nissan Leafs operating in Wellington in 2017, but reduced this to four in 2018 because of queues for fast charging at Vivian St fast charger. Drivers cannot afford to have long periods off-duty during the day for charging because of the lost fares and income.

In London, new taxis need to be 'zero-emission capable' (a definition that includes all BEVs and some PHEVs) to be licensed for the first time, but this does not apply to renewed licenses.²⁵ This is part of an effort to address air pollution in London.

Transport for London (TfL)'s strategy for EV taxis includes the development of their fast charging network, with some charging points reserved exclusively for taxis. There are also dedicated on-street parking bays for EV taxis.

TfL are helping to fund a Government-led Plug-in Taxi Grant, which will give taxi drivers up to £7,500 off the price of a new e-taxi. They also encourage taxi drivers with EVs to apply for government/council grants to have charging points installed on-street near their homes, which mostly do not have off-street parking.

2.11.1 Summary of findings

Given their focus on operating costs, and the precedent of the taxi fleet becoming nearly exclusively hybrid, taxis may be an area that could adopt EVs relatively quickly, provided certain barriers can be overcome, namely affordable and convenient charging. The issues with this are essentially the same as for all potential EV owners that lack off-street parking, with the added challenge that being utilised more highly, the cost and convenience factors for taxis are even more important.

²⁵ <https://tfl.gov.uk/info-for/taxis-and-private-hire/emissions-standards-for-taxis>

2.12 Delivery vans and other commercial vehicles

The two major freight companies in NZ, Frieightways and NZ Post, in most cases use contractors for courier deliveries and line haul functions and majority of these are contractors owner-drivers who take their vehicles home when off-duty. There is 10% growth in parcel volumes each year, meaning the courier fleet is growing too, and this growth will presently all be met with petrol and diesel vehicles.

NZ Post is presently running five BEV courier vans which their contractors can try for free. They have committed to becoming net zero emissions as an organisation by 2030. The average mileage of their couriers is around 100 km/day, and they have 200 courier vans in the Wellington Region. They are investigating the practicality of home charging for their courier drivers. This is part of a review of how their present contractor payment model can be changed to be suitable for BEV. NZ Post sees the public sector giving clear direction to industry as important. Dialogue with industry is important as well as providing incentives to help drive the transition to EVs.^{xxv}

If BEV courier vans cannot be charged by their owners at home, they must be charged in the depot. Vans are loaded in the depot several times each day, adding up to a few hours of idle time in total. This is sufficient time to recharge, provided charging facilities are located in the loading areas. Recharging a 3.6T BEV van enough to add 120km of range (120km/day for deliveries plus 35km/day for commuting) in 2 hours would require a 22kW charger. Providing these for a fleet of vans is likely to exceed the electrical capacity available at depots. Overnight charging in the depot would require less electrical capacity (because recharging could be done over eight hours instead of two) and therefore be significantly cheaper, but this is a major change from the present model of vehicle management – courier drivers would need to commute to work by some other means and would not have as much access to their van. Similar to taxis, couriers using public fast charging is also at odds with their profitability in terms of operating costs and/or income as jobs would be forgone while the vehicle recharges. Overnight home charging (at 7kW/32A) would be the best option if it can be achieved.

In London, LoCity is an industry led group set up to help commercial vehicle operators switch to alternative fuelled vehicles including EVs to go beyond the requirements of London's new Ultra-Low Emissions Zone, which will start in 2020.

LoCity sees the lack of a clear policy framework beyond 2020 to drive change as the key issue. NZ also lacks a policy framework for this sector– there are EV targets for the country but no obligation on commercial fleet operators to do anything.

2.12.1 Summary of findings

LoCity's recommendations that are relevant to the Wellington/NZ context are:

- Industry stakeholders should engage with policymakers to help define targets, timescales and measures that will support market development and reduce emissions
- Fleet operators and infrastructure providers should work together to align timings and locations of EV adoption and charging infrastructure deployment.
- Fleet operators and infrastructure providers should engage with and participate in trials of innovative technologies to demonstrate real-world applicability and provide evidence of cost and emissions savings.^{xxvi}

2.13 Case study: City of Sacramento, California, USA

In 1994, Sacramento City Council adopted a policy that first established the City's EV Parking Program, providing free or discounted parking and charging to EV drivers. The original charging infrastructure supporting this effort was installed in both the City parking garages. This was the City's first program to specifically encourage EVs. The City continues to operate the program, providing free or reduced-cost parking for 316 participants as of August 2017. Participants receive free parking until EV parking transactions exceed 5% of overall parking transactions in any one garage, at which point all EV program participants for that garage will be charged 50% of regular parking fees for the garage.²⁶

In early 2017, the Sacramento 'air quality district' launched the Our Community CarShare program, a low-income ZEV car share program. The city council is supporting the program with construction of two EV chargers dedicated for the program. Funded by the California Greenhouse Gas Reduction Fund and operated by Zipcar, 300 free memberships are available to residents of three affordable housing developments in Sacramento. Many residents at these locations do not own vehicles, and personal transportation can be a challenge. With the program, residents now have up to nine free hours weekly to use an all-electric Kia Soul.

As part of the Sacramento Area Plug-in Electric Vehicle (PEV) Collaborative, a partnership of local and regional agencies including the electric utility and community partners, the City recently participated in developing the county-wide Electric Vehicle Readiness and Infrastructure Plan (2017)²⁷. The primary focus of the plan was to identify the number and types of chargers to meet public needs while avoiding an excess of chargers, and they did a detailed forecasting exercise of charging need in 2036 to support this. The plan informs the City's 2017 EV Strategy and includes a number of recommendations for its member organisations including:

- Setting targets for EV adoption into their own fleets,
- Priority parking for EVs at partner facilities (e.g. municipal car parks),
- Adding EV charging requirements to building codes and permitting
- Funding incentives for people to replace high emissions vehicles with low emissions vehicles (part of existing air quality improvement programmes)
- Providing EV infrastructure including carshare schemes to disadvantaged communities or the common destinations of people living in those communities,
- Sharing information about the utilisation of EV chargers to identify gaps
- Funding installation of chargers (the electricity utility is offering US\$1,500 grants towards the cost of installing charging infrastructure)
- Setting annual targets for fleet and employee EV use for 2018 through 2025 that reflect the county's portion of the state-wide EV targets
- providing incentives for employees to use EVs

²⁶ <http://www.cityofsacramento.org/ev>

²⁷ <http://www.cityofsacramento.org/-/media/Corporate/Files/Public-Works/Electric-Vehicles/Sac-County-EV-Inf-Plan.pdf?la=en>

2.14 Car share schemes

Car share schemes can offer a way for organisations and individuals to use EVs without buying them. The higher levels of utilisation a car-share scheme typically achieves (over 20%, compared to 3% for a privately-owned vehicle) means the advantage in operating costs with an EV can compensate the scheme operator for the presently-higher purchase cost. For every shared-car added to a city, 9 to 13 vehicles are taken off the road^{xxvii}, so they help address parking and congestion issues as well. Christchurch City Council was able to shed 54 light petrol vehicles from its fleet immediately when it joined YooGo Share, an all-electric car-share scheme.

MEVO operates a car-share scheme in Wellington using plug-in hybrid Audi E-Trons at present. Their goal is to eventually transition to a fully battery electric fleet, but the convenience of access to charging points for users is a constraint. They have been focussing on establishing charging points (32A/7kW AC) on private land, because of the greater ease of implementation compared to in the road reserve. The hosts of these chargers do not pass on the cost of the electricity to MEVO as it is not expensive enough to warrant it. Other EV owners can use these charging points. Car-share users can be incentivised to plug the vehicles into chargers by receiving a credit or some other financial advantage from doing so.^{xxviii}

MEVO has a free-floating parking arrangement with Wellington City Council, which is convenient for users as they do not need to make a separate payment to WCC for this: The cost of parking is recovered as part of the car-share usage fee.

2.15 Workplace AC charging

The US Department of Energy EV Project found that BEVs that had access to workplace charging only got 2% of their energy from public charging facilities – the rest was from home and workplace charging. For comparison, the EVs without workplace charging got 14% of their energy from public facilities^{xi}. A separate study in the US found workplaces that provided EV charging increased the ownership of EVs amongst their staff by 20%^{xxix}. While employers have an important role to play in encouraging their staff to use non-car modes to get to work, there are some locations and circumstances where car-use for commuting is unavoidable. Furthermore, as EVs age, their batteries cannot hold as much charge and their range reduces. While the batteries can be replaced, it may be that many potential owners cannot afford to do this. If workplace charging is provided, these low-range vehicles could be a viable and low-cost way for some staff to commute. It would also reduce the demands on public charging facilities.

2.16 Battery reuse and recycling

When an EV's battery pack has degraded to the point that the vehicle is not useful due to reduced range, the pack can be replaced. The old battery pack is not useless however – it will still retain a large portion of its original energy storage capacity. Furthermore, many of the individual cells making up the battery pack may be in good condition. Combined with other 'good' cells from other packs, these can be used to make a reconditioned pack that may be reinstalled in a vehicle. The cells can also be used to build a pack for stationary applications, such as off-grid power, back-up power for data centres, to store solar energy or to stabilise electricity networks and manage peaks in demand for electricity. This is already occurring. For example, Nissan subsidiary the 4R Energy Group sells stationary battery packs made from repurposed Leaf batteries, ranging from very small to utility scale. Repurposed EV batteries could even be used to reduce the electrical capacity needed for DC fast charging stations.

However, eventually batteries will have no further use in their original form. They contain a mixture of valuable elements, some of them potentially hazardous, which means they should not be put into landfill. It is possible to recycle the batteries by crushing and smelting them, and there are companies in larger countries such as the USA that already do this.²⁸

To ensure the full potential of used EV batteries is realised, and that they do not add to the e-waste problem, regulation requiring product stewardship is required to encourage industry to develop systems to deal with the issue. Such regulations need to apply to second-hand vehicle importers as well as New Zealand new vehicles. Local authorities, as part of their advocacy efforts to central government relating to waste and recycling generally, can call for such regulation. Electricity network companies may also be able to help by using repurposed EV batteries for network management purposes.

²⁸ <https://www.cnet.com/roadshow/news/for-dead-ev-batteries-reuse-comes-before-recycle/>

Section 3 Recommended Strategy

3.1 Vision

A Wellington Region where use of fossil fuels for road transport have been eliminated and replaced with vehicles powered with renewable energy. This decarbonisation will be achieved on a timescale consistent with the road transport sector playing its part in limiting global warming to within 1.5 degrees C.

3.2 Pathway

Replace (or convert) the existing vehicle fleet in the Wellington Region with electric vehicles, in concert with other low emissions approaches. Namely these are greater use of active modes and public transport and other methods if they present an equal or greater opportunity to reduce emissions. Plug-in hybrid vehicles will be supported in the interim, but this support will be phased out as the range and affordability of battery electric vehicles improves.

3.3 Approaches

Our organisation will support the rapid transition of the road vehicle fleet in NZ to battery electric technology using our direct influence and by working with others. Other low emissions vehicle technologies will be also supported provided they present an equal or greater opportunity to reduce emissions.

Wellington Region local government and electricity network companies have key roles in providing leadership, supporting the development of infrastructure and in promotion.

It is recommended that they:

- Incorporate EVs in organisational planning, strategy and operations
 - Prioritise EVs (owned, leased or shared) in fleet procurement decisions
 - Efficiently process applications to establish public EV chargers
- Work to enable sufficient public charging infrastructure coverage and capacity
- Promote EVs to the public and businesses
- Encourage EV charging facilities in homes, businesses and other key destinations
- Encourage increased use and development of EV car share schemes
- Collaborate with our peers, community, central government and businesses to encourage EV uptake
- Encourage the development of systems to replace, repurpose and recycle EV batteries
- Support requiring for payment for DC fast charging to ensure the resource is used fairly and efficiently
- Monitor and evaluate the effectiveness of any interventions
- Facilitate uptake of battery-electric buses for public transport

3.4 Principles

- The transition to an EV fleet is just and sustainable transport including EVs are accessible to disadvantaged communities.

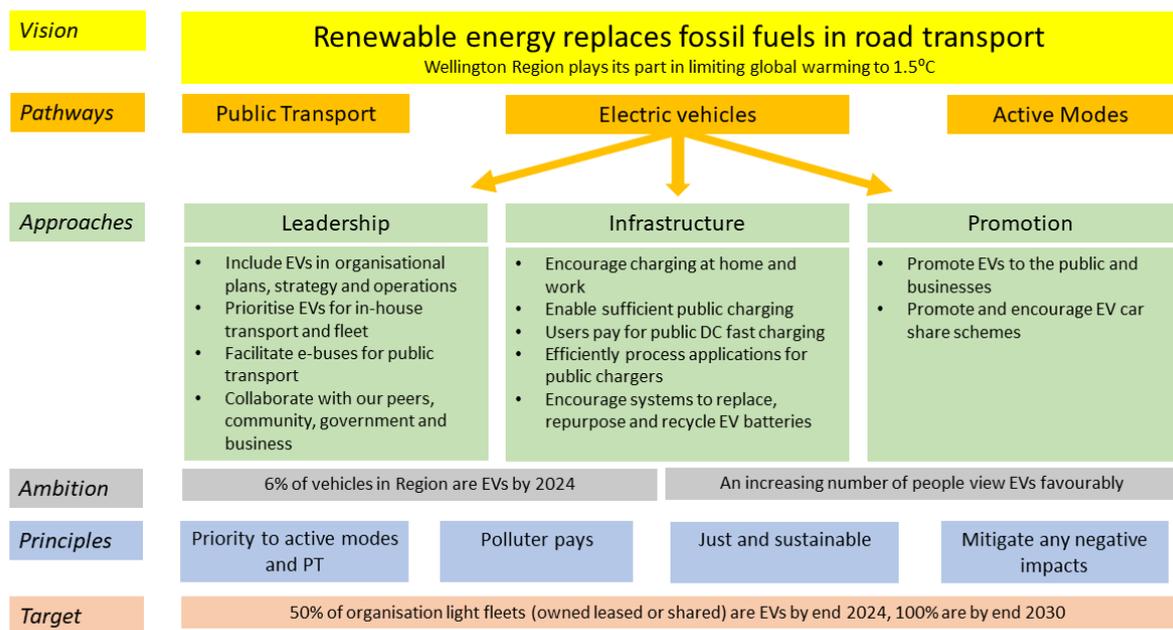
- The 'polluter pays': that cross-subsidy is justified from polluting activities to less polluting activities, in this case from use of fossil-fuelled vehicles to EVs.
- Promotion of EVs must be done in a way that does not significantly affect the objectives of increased use of public transport and active travel i.e. is consistent with the transportation hierarchy for people movement (see Figure 5).
- Any potential negative impacts of increased use of EVs will be mitigated (e.g. battery disposal, depletion of finite resources).

3.5 Ambition and Targets

This recommended strategy explicitly acknowledges that the agencies it is for cannot drive overall EV uptake in the Region to a significant degree, but can play an important role in supporting it. Given this, the recommended levels of ambition relating to these overall outcomes are:

- 6% of vehicles in the region will be EV by mid-2024 (Monitored by REV-WG using MoT data)
- An increasing proportion of people in the region view EVs favourably (Monitored by EECA)

Supporting EVs in the Wellington Region – Recommended Strategy



3.6 Suggested measures

- It is recommended that the Wellington Region local authorities and electricity network companies consider the following measures and implement those they wish to implement in support of the recommended strategy and its aims. Undertake a fleet audit and optimisation review to identify opportunities for EVs and use of corporate car-share schemes by 2020.
- Implement an EV first policy (i.e. purchase or lease EVs for fleet renewals unless not fit for purpose), by 2021.
- Rapidly transition fleet to EV by means of direct purchase, lease and/or use of a shared fleet. 50% EV fleet by end 2024, 100% EV fleet by 2030.
- Update procurement requirements to reward the use of EVs (by 2020), and require the use of EVs by contractors as part of procurement policies and processes (50% by 2024, and 100% by 2030).
- Co-ordinate with other organisations in the Regional EV Working Group to advocate to central government and others for stronger policies to help drive the uptake of EVs, increase supplies of renewable electricity to power EVs and address potential issues with the reuse and recycling of EV batteries.
- Develop and introduce organisational policies and systems for the efficient processing of requests to install EV chargers on public land in collaboration with other agencies to ensure there is a consistent approach across the region by 2020.
- Support further work through the Regional EV Working Group to plan the deployment of charging infrastructure and co-ordinate its development.
- Undertake regular promotional activities related to EVs – for example helping facilitate EV test-drive events.
- Provide EV charging facilities for our own organisations' employees at their place of work, where parking is provided.
- Undertake pilot projects to gain familiarity with new EV related technologies of strategic significance, for example grid management involving repurposed EV batteries, vehicle to grid, neighbourhood charging management and/or new EV types and classes (e.g. utility vehicles including trucks).
- (Councils) Support e-mobility in planning requirements for all new development, including medium density and apartment dwellings, commercial, retail and in upgrades to inner-city streets. This means requiring AC charging points with a proportion of any new car parks provided in any development and/or requiring electric car sharing in certain cases.
- (Councils) Help provide EV infrastructure that is useful to disadvantaged communities – e.g. help facilitate car share schemes in those communities and AC charging at common destinations.
- (Councils) Provide priority parking for EVs (not necessarily with charging facilities) at public parking facilities.
- (Councils) Waive resident parking permit application fees for households with EVs.

- (Councils) Provide EV charging facilities at council housing where parking is already provided. Installation may be demand-led.
- (Councils) Encourage workplace charging infrastructure with large employers to help ensure older EVs with less range are still viable.
- (Councils) Encourage private businesses to provide EV charging to customers.
- (Councils) Where possible, provide land for the establishment of DC fast charging and EV car sharing schemes.

- (Network companies) Review peak pricing approaches, and consider changes to avoid unnecessarily discouraging the roll-out of DC fast charging infrastructure – such pricing may be transitional.

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Attachment 2 to Report 19.413

GWRC fleet analysis for EV transition

Using a fleet list from October 2018, the number of vehicles that could be replaced with EVs¹ by 2024 and by 2030 was examined, given the recommended strategy for supporting EV uptake developed for the Wellington Region EV Working Group (attachment 1) has targets of 50% EV and 100% EVs in the fleet by those dates respectively.

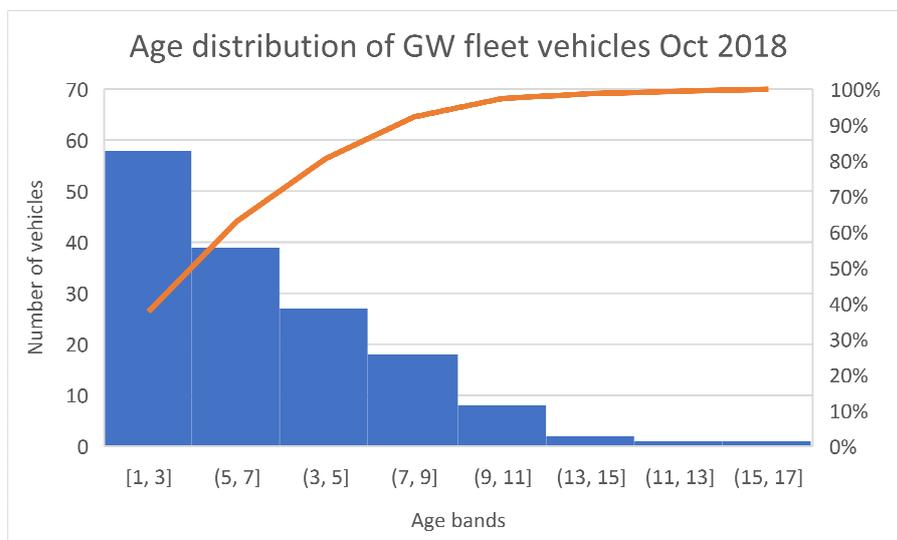
The rule applied was those vehicles that would reach an age of 10 years by those dates would be converted to EV. The potential for fleet rationalisation (to reduce the total number of vehicles) was not examined, although there is likely to be the potential to do this, as corporate vehicle fleets are typically underutilised.

In October 2018, the GW corporate fleet was composed of the following:

| Type | Number | EVs currently available in this class in NZ |
|--------------|------------|--|
| Cars | 21 | Nissan Leaf, Hyundai Ioniq, VW e-Golf, Kia Soul, Renault Zoe, BMW i3 |
| Small SUV | 13 | Hyundai Kona, Kia Niro |
| Regular SUV | 16 | Mitsubishi Outlander PHEV |
| Small van | 2 | Nissan eNV 200, Renault Kangoo |
| Large van | 1 | LDV EV80 |
| Utes | 100 | - |
| TOTAL | 153 | |

As the table also shows, EVs are available in all classes except utes, which make up the two-thirds of the fleet at present. However EV ute products have been announced by various manufacturers including Great Wall, Rivian and Ford, albeit without firm release dates yet.

29 are pool vehicles, the remainder were allocated to a specific staff member or team. 97% of vehicles are under 10 years old (see distribution below).



Assuming a maximum age at replacement of 10 years, 43 out of 53 the non-ute fleet vehicles could be EVs by 2024 (up from the 10 EVs that GWRC has at present). Naturally all of these non-utes could

¹ The term 'EVs' in this case includes both battery EVs (BEVs) and plug-in hybrid EVs (PHEVs)

be EVs by 2030, as this is over 10 years away. Note that GWRC already has an EV first policy, so it is assumed this level of attainment represents a minimum.

If it is assumed that EV utes become available in 2020, 46 utes could be replaced with EVs between 2021 and 2024 as this is the number of existing utes that will reach 10 years of age during this period. Across all vehicle types this would mean 58% of the fleet would be EV in 2024, and it would lead to a 100% EV fleet by end 2030. This and other scenarios are described in the table below.²

| Year EV utes become available in NZ | Number of EV utes in fleet by end 2024 | Percent fleet EV by end 2024 | Number of EV utes in fleet by end 2030 | Percent fleet EV by end 2030 |
|-------------------------------------|--|------------------------------|--|------------------------------|
| 2020 | 46 | 58% | 93 | 100% |
| 2021 | 36 | 52% | 83 | 93% |
| 2022 | 32 | 49% | 79 | 91% |
| 2023 | 16 | 39% | 63 | 80% |
| 2024 | 8 | 33% | 55 | 75% |
| 2025 | 0 | 28% | 47 | 70% |

It seems very likely that EV utes will be available in NZ by 2022, making a target of a 50% EV fleet by 2024 highly achievable by simply targeting EV changeover at replacement, but a 100% EV fleet by 2030 would not occur naturally through replacement at 10 years should EV utes not be available until after 2020.

However, there are other options that could help achieve a 100% EV fleet target by 2030:

- Over this time period we can expect that the price of EVs will continue to drop relative to fossil-fuelled vehicles. It is possible that earlier replacement of some vehicles is justifiable simply on cost grounds, because of the lower operating costs of EVs. The government’s announced ‘Clean Car Discount’ would also help.
- Rationalisation of the fleet could allow for early sell-on of some fossil-fuelled vehicles, and the resulting increased utilisation of the fleet could improve the economic case for EVs, due to their lower operating costs.
- A fleet review is also likely to identify that some utes could be replaced by other classes of vehicle in which EVs are available– i.e. it may be that there is no need for utes to be used in some of the roles that they are at present.
- Some ute replacements could be deferred, should EV ute manufacturers confirm NZ release dates that are within a reasonable timeframe (e.g. defer some 2020 ute replacements until 2021).
- Business models such as shared corporate fleets (fleet as a service/pay-as-you-drive) could enable an earlier change over.

² Other assumptions to note:

- The capabilities of EVs, for example with regard to range, are fit for GWRC’s purposes in the particular roles that they are needed.
- That sufficient charging capacity to support an EV fleet is available at GWRC premises or publically.

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Date 11 September 2019
File CCAB-10-784

Committee Environment Committee
Author Colin Munn, Team Leader, Ops, Delivery and Planning

Flood Protection Annual Asset Management Report 2019

1. Purpose

To advise the Environment Committee (the Committee) that the 15 River Management Schemes in the Greater Wellington Region have been assessed and that identified issues are satisfactorily being addressed through maintenance and improvement programmes.

To advise the Committee of progress made with the asset management system, the overall performance and physical condition of the flood protection infrastructural assets, and information on future improvements.

2. Background

The Greater Wellington Regional Council (GWRC) Flood Protection Department (the Department) is responsible for flood protection and erosion control assets, including infrastructure, land and property, located on 15 river schemes across the region. These assets have a total combined value of \$386 million¹ and provide flood protection to the communities located on these floodplains and infrastructure supporting the whole region.

The Department has established a comprehensive asset management system, which demonstrates that the service level of our infrastructural assets is being maintained in an efficient and cost-effective manner, will perform as designed and where required, and are being enhanced.

The Committee has overall responsibility to monitor the maintenance and improvement of these assets on behalf of the Council. The Committee relies on feedback from the various Subcommittees, Scheme Advisory committees and Friends Groups to confirm flood protection assets are being satisfactorily maintained to the agreed service level.

3. Asset Condition 2019

Asset condition is a measure of the physical state of the asset and is assessed visually by staff on an annual basis. Consistency between assessors is achieved through the application of guidance documents. Asset condition does not identify the criticality of the asset or whether the asset meets a service level or design standard; this is determined through application of the asset performance code of practice, which is explained in section 4.

¹ As at June 2017.

Monitoring asset condition enables us to predict and plan maintenance, forecast renewal requirements and develop effective, proactive work programmes. This is essential to managing flood risk, because it influences the likelihood of asset failure, and therefore the performance of the assets, to ensure they achieve required service levels.

3.1 Regional summary

In general, the condition of flood protection assets across the 15 schemes are being maintained and the number of assets that are rated in Very Good (1) to Moderate (3) condition has increased from last year as shown in Table 1 below. A detailed summary of asset condition is included in [Attachment 1](#).

Table 1. Comparison of asset condition by year.

| Year | 2019 | | 2018 | | 2017 | |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Asset Condition Rating Scores | Ratio | Count | Ratio | Count | Ratio | Count |
| 1 - V. Good | 92% | 575 | 88% | 577 | 89% | 699 |
| 2 - Good | | 3860 | | 3423 | | 3067 |
| 3 - Moderate | | 1316 | | 1538 | | 1786 |
| 4 - Poor | 8% | 449 | 12% | 560 | 11% | 684 |
| 5 - V. Poor | | 60 | | 104 | | 54 |
| Totals | 100% | 6260 | 100% | 6202 | 100% | 6290 |

The condition of flood protection assets in 2019 is predominantly very good; and 92% are rated 1 to 3, with only 8% in a poor to very poor condition (rated 4 to 5).

From 2018 to 2019 the number of poor, very poor and moderate condition assets have all decreased, and this is reflected in the increase of assets in good condition. Planned maintenance work has improved these condition ratings; whilst minor floods and other factors have reduced the condition of some assets.

4. Asset Performance

4.1 Introduction

The Department has adopted and advanced a comprehensive, risk-based framework that has been developed by New Zealand river managers to assess the performance of flood protection assets. Asset performance is a measure of confidence that an asset or group of assets will provide the required level of service, whilst assessing the potential risks posed to the community. Asset performance is assessed using the Asset Performance Assessment Code of Practice², which is applied to individual river schemes by performing assessments using the Asset Performance Tool (the Tool). Upon completion, assessments produce a risk profile for each river.

Asset performance is risk-based, assessing both the probability and consequence of failure of a group of assets within a discrete reach of river. Assessing probability of failure includes analysing the structural strength of stopbanks (*intrinsic strength*), the *capacity* of the channel to attenuate flood flows, and the physical *condition* of flood protection assets (section 4). The consequence of failure reviews the risks posed to the community and the environment from failure of a design flood event equivalent to the required service level. Once a probability and a consequence of failure has been obtained for each reach, a risk level is assigned to that reach, from ‘very low’ to ‘very high’ (Figure 1). A schematic breakdown of the Tool is presented below.

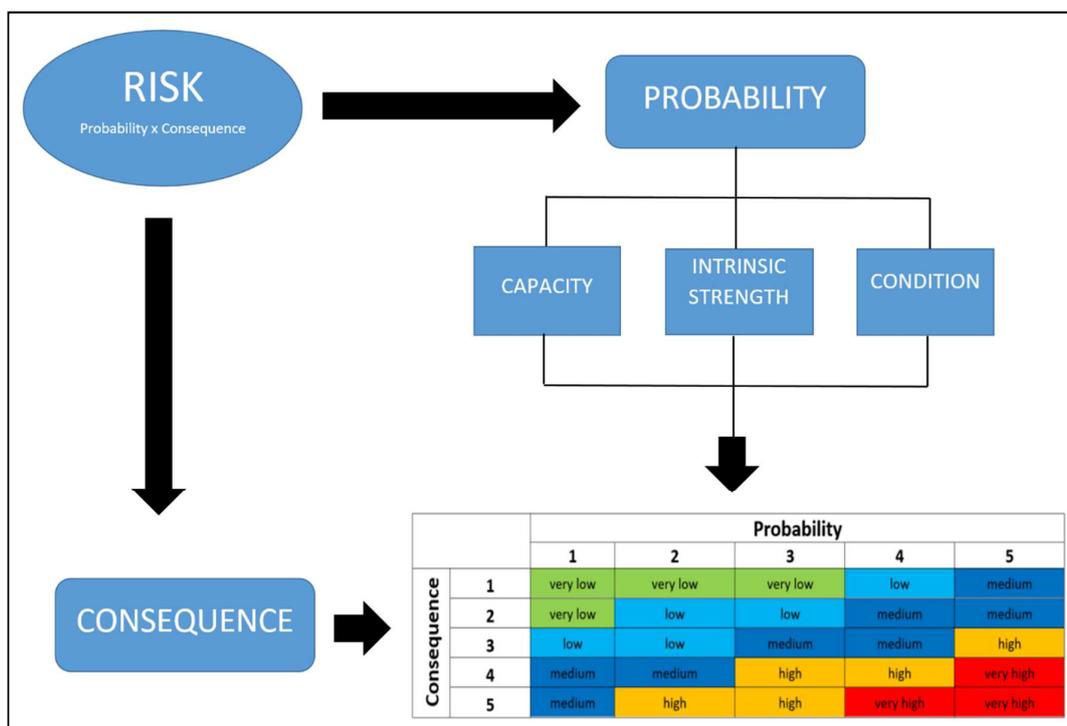


Figure 1. Schematic breakdown of the Asset Performance Tool, including various components that contribute to the asset performance assessment

² The Asset Performance Assessment Code of Practice is a framework developed by Waugh Infrastructure, for the River Managers Special Interest Group. The framework uses international best practice regarding infrastructure asset management, and allows the overall performance of flood protection assets to be assessed in relation to their required level of service and the consequences posed to the community. This Code of Practice has been endorsed by all River Managers and is currently being applied to River Schemes across the country.

4.2 Summary of Asset Performance

In general, the performance of flood protection assets in the Wellington Region are assessed as retaining Very Low to Medium flood risk. The trend from the previous year’s performance assessments can be seen in Table 2 below.

Table 2. Comparison of asset performance by year.

| Year | 2019 | | 2018 | |
|-------------------------------|------|----------------|------|----------------|
| Asset Performance Risk Scores | % | Cross-Sections | % | Cross-Sections |
| Very Low | 89.1 | 563 | 87.6 | 536 |
| Low | | 439 | | 441 |
| Medium | | 557 | | 555 |
| High | 10.9 | 151 | 12.4 | 170 |
| Very High | | 39 | | 47 |
| Totals | 100 | 1749 | 100 | 1749 |

The performance of flood protection assets in 2019 is predominantly very good; and 89.1% of discrete reaches have been assessed as having Very Low to Medium risk, with only 10.9% of reaches assessed as High to Very High risk.

From 2018 to 2019 the number of High and Very High risk areas have both decreased.. The improvement in the condition of the assets as seen in Table 1 has been the primary factor in reducing the High and Very High risk areas.

4.3 Asset Criticality

In accordance with international best practice, critical assets are defined as those which have a high consequence of failure (International Infrastructure Management Manual, 2015), and thus, critical failure modes are those which have the highest consequences.

Assets do not work in isolation, they typically belong to part of an asset system, which itself is a collection of assets that interact or are interconnected. Asset systems can be distinguished as being critical in the same way individual assets can. Therefore, the Department confirms the definitions for a critical asset and critical asset system as follows:

*“A **critical asset system** is any section of river that has been assessed as having high or very high risk in accordance with the Asset Performance Code of Practice.”*

*“A **critical asset** is an asset, located within a critical asset system, which if it were to fail would result in failure of the asset system.”*

Critical assets systems are identified using the asset performance assessments, and critical assets within those systems are identified based on the high consequence of asset failure. Other assets which are not included within the asset performance assessments, but have been deemed critical due to their consequence of failure, are the detention dams such as the Porirua Stream Detention Dams and the Geoffrey Blundell Barrage Gates.

The current condition of the critical assets are summarised in Table 3.

Table 3. Comparison of asset condition and asset performance for critical assets.

| Risk Score | Critical Asset | 1 Very Good | 2 Good | 3 Moderate | 4 Poor | 5 Very Poor | Totals |
|------------|-------------------|----------------|------------|---------------|-----------|----------------|-------------|
| High | Floodgate | 2 | | 1 | | | 10 |
| | Floodwall | 6 | 1 | | | | 7 |
| | Stopbank | 72 | 50 | 11 | 9 | | 142 |
| Very High | Floodgate | | | | | | |
| | Floodwall | 11 | 7 | | | | 18 |
| | Stopbank | 23 | 21 | | 1 | | 45 |
| N/A | Detention Dams | 1 | 1 | | | | 2 |
| N/A | Barrage Gates | 1 | | 1 | | | 2 |
| | Totals | 116 | 80 | 13 | 10 | 0 | 226 |
| | % of Total | 51% | 35% | 6% | 4% | 0% | 100% |

There are 10 stopbank assets that have been rated in poor condition that are critical assets.

These critical assets are:

Waipoua River XS 8 & 10 Both Banks – Stopbank Vegetation

Waiohine River XS32, 35-36 D/S Rail Bridge, right bank – Stopbank Vegetation

Otaki River XS200-250, D/S SH1, Left Bank – Stopbank Vegetation

Measures to improve the condition of these assets are detailed in Table 4 and will be treated as priority items in the 2019-20 work programs.

4.4 Summary of High and Very High Risk Areas

There are a number of reaches across the region that have been assessed as having ‘high’ or ‘very high’ risk. This risk can be attributed to one or more of the following failure modes as highlighted in Figure 1: capacity, intrinsic strength, condition, or consequence. Table 4 identifies these high risk areas, describes the risk of failure, and identifies a proposed measure or remediation for improving the risk or asset condition within the high risk areas.

Table 4. High and Very High risk areas with associated failure modes.

| River XS Bank | Failure Mode(s) | Description | Probability of Failure | Consequence of Failure | Risk Score | Measure/ Remediation 2019 |
|---|-------------------------------------|---|------------------------|------------------------|------------|---|
| Hutt City Centre XS310-430 Right bank | Capacity; Intrinsic Strength | Stopbank will overtop from 2800 cumec event. Stopbank intrinsic strength is ‘average’ | 5 | 5 | Very High | RiverLink project will retreat, raise and improve flood protection infrastructure. |
| Hutt City Centre XS310-490 Left Bank | Capacity; Intrinsic Strength | Stopbank will overtop from 2800 cumec event. Stopbank intrinsic strength is ‘average’ | 5 | 5 | Very High | RiverLink project will retreat, raise and improve flood protection infrastructure. |
| Moonshine XS1790-1820 Left Bank | Capacity; Intrinsic Strength | Stopbank will overtop from 2800 cumec event. Stability of stopbank is average. | 5 | 5 | Very High | Improvement works identified in Hutt River FMP. Work budgeted and programmed from 2032. |
| Waipoua, XS 8 & 10, Both banks | Capacity | Stopbank and bank edge will overtop from 1% AEP + CC | 5 | 5 | Very High | Issue being considered by Te Kāuru FMP Waipoua Urban Reach investigations |
| Waingawa XS 30, Left bank | Capacity | Water supply pipeline at risk of erosion | 4 | 4 | High | Will be considered in Te Kāuru FMP implementation programme. |
| Hutt, 100-130, Woollen Mills, Left Bank | Intrinsic Strength and/or Condition | Stopbank intrinsic strength and surface is average. Poor berm. | 3 | 5 | High | Improvement works identified in Hutt River FMP. Work budgeted and programmed from 2028. |
| Waipoua, XS 7 & 9 Both banks | Capacity | Stopbank will overtop from 1% AEP + CC. | 3 | 5 | High | Issue being considered by Te Kāuru FMP Waipoua Urban Reach |

| | | | | | | |
|--|--------------------------------------|--|---|---|-------------|--|
| Ōtaki, XS450-511, Chrystalls | Capacity | Stopbank will overtop during 1% AEP + CC | 4 | 4 | High | Stopbank improvements to be undertaken in conjunction with PP2O project. |
| Ōtaki, XS370-380, Chrystalls, Right bank | Capacity | Channel capacity reduced during bridge construction | 3 | 4 | High | Capacity will be restored following completion of PP2O project. . |
| Ōtaki, XS200-250, D/S of SH1, Left Bank | Capacity | Stopbank at risk of failure from 5% AEP | 5 | 3 | High | Included in Ōtaki FMP Review project. |
| Waikanae, XS 220, 250, 260 & 290, Jim Cook Park | Condition | Gravel aggradation reduces channel capacity | 3 | 4 | High | Monitored through gravel investigations and operational work program. |
| Waikanae, XS 175 & 190, Greenaway | Condition | River assets to be improved | 3 | 4 | High | Operational work program to improve condition. |
| Waikanae, XS 60, 70, & 95, Otaihanga Domain | Capacity | Stopbank + floodwall will overtop from 10% and 1% AEP | 5 | 3 | High | Investigation work required to confirm floodwall capacity. |
| Wainuiomata, XS1185 & 1220, Wood St, Left Bank | Capacity/ Condition | Stopbank may overtop from 1% AEP / Inadequate bank edge assets | 3 | 4 | High | Combination of investigation and operational work required. |
| Wainuiomata, XS1250- 1300, Main Rd bridge, RB | Capacity | River will overtop banks during 1% AEP event. | 5 | 3 | High | Further investigation work required. |
| Waiohine, XS 20, Fullers Bend, Right bank | Capacity | Stopbank will overtop during 1% AEP event | 5 | 3 | High | Included in Waiohine FPM project. |
| Ruamāhanga XS 257, Rathkeale | Intrinsic Strength | Inadequate information on stopbank design. Poor intrinsic strength | 5 | 3 | High | Will be considered in Te Kāuru FPM implementation programme. |
| Ruamāhanga XS 238, Waipoua confluence | Capacity | River will overtop banks during 1% AEP event | 5 | 3 | High | Will be considered in Te Kāuru FPM implementation programme. |
| Waiohine, XS32, 35-36, D/S rail bridge, right bank | Condition / Intrinsic Strength | Stopbank surface is average / intrinsic strength is average | 3 | 4 | High | Will be considered in Te Kāuru FPM implementation programme. |

Maps showing the location of the high and very high risk areas are included in [Attachment 2](#).

5. **Asset Management highlights and future challenges**

Asset Management continues to be a focus for the department and good progress is being made with projects and in system and business process improvements.

Highlights for the year were:

- Implementation of the Asset Performance Code of Practice and associated Asset Performance Tool (APT).
- Re-defining and adjusting our data structure for complex and critical assets based on critical components and consequence of failure.
- Continuing improvements to the quality of data through cleansing and rationalisation of the SAP Plant Maintenance and GIS asset databases as a result of condition assessments.
- Improvements to our mobile applications for data collection.

Looking to the future, the department is in a period of ongoing change driven by a number of factors, including:

- Implementing the Asset Management Plan (AMP) to focus on the service the assets provide rather than the physical assets themselves;
- Using the information to prioritise operational, investigation and capital work programmes;
- Improving quality assurance and staff training; Actively identifying improvements in business systems and processes.

6. **Community Engagement**

Across the region, 15 river schemes are managed by the Flood Protection Department. Staff report on these schemes to Council subcommittees, Scheme Advisory Committees or Friends Groups. To date the following groups have met and confirmed that their respective river schemes have been maintained to their satisfaction.

- Lower Ruamāhanga Floodplain Management Advisory Committee
- Waingawa River Advisory Committee
- Upper Ruamāhanga River Mt Bruce Advisory Committee
- Upper Ruamāhanga River Te Ore Ore Advisory Committee
- Upper Ruamāhanga River Gladstone Advisory Committee
- Waipoua River Advisory Committee
- Taueru River Advisory Committees
- Whangaehu River Advisory Committee
- Kopuaranga River Advisory Committee
- Friends of the Waikanae River

The following groups are scheduled to meet during the next two months and it is anticipated that they will also confirm their support.

- Hutt Valley Flood Management Subcommittee - 12 September 2019
- Waiohine FPM Steering Group – End of September 2019
- Friends of the Otaki River AGM - 31 October 2019

7. Scheme Budgets and Flood Damage Reserves

A summary of the individual river schemes and total flood damage reserves are detailed in **Table 5**. While minor damage was incurred during recent flood events, this was funded from maintenance budgets without calling on contingency funds.

| Scheme | June 2019 | | |
|--|------------------|---------------------------------|-------------------|
| | Scheme Reserve | Major Flood Investment Reserves | Total Reserves |
| Lower Valley | 2,039,682 | 1,539,417 | 3,579,099 |
| Waiohine | 717,879 | 50,772 | 768,651 |
| Mount Bruce | 81,556 | 11,508 | 93,064 |
| Upper Mangatarere | 38,853 | | 38,853 |
| Te Ore Ore | 356,403 | 11,508 | 367,911 |
| Gladstone | 66,076 | 11,508 | 77,584 |
| Waingawa | 191,221 | 33,848 | 225,069 |
| Waipoua | 248,350 | 33,848 | 282,199 |
| Kopuranga | 2,776 | | 2,776 |
| Taueru | 5,890 | | 5,890 |
| Whangaeahu | 8,498 | | 8,498 |
| Eastern River Total | 3,757,185 | 1,692,411 | 5,449,595 |
| Western Rivers Total | 2,527,454 | 1,692,411 | 4,219,864 |
| Sub Total of River Schemes Reserves | 6,284,639 | 3,384,821 | 9,669,460 |
| GW Flood Contingency Reserve | 2,817,372 | | 2,817,372 |
| GW Major Flood Investment | | 3,384,821 | 3,384,821 |
| Total River Schemes Reserves | 9,102,011 | 6,769,642 | 15,871,653 |

Table 5. Scheme reserves to June 2019.

8. Consideration of Climate Change

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

8.1 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 any further works associated with the assets discussed in this report, and commissioned by GWRC, are subject to GWRC's corporate sustainability policy and/or procurement process, the latter of which is undergoing review and will encourage suppliers and contractors to minimise emissions.

8.2 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.

Officers have considered the impacts of climate change in relation to the matter. The assets discussed in this report were developed over an extensive period of time, during which climate change projections (e.g. rainfall intensity, sea level rise etc.) have evolved with the scientific community's understanding of how climate change will affect the Wellington region. Climate change projections were incorporated into the modelling that underpins relevant management plans and asset designs at the time they were developed.

9. The Decision-making Process and Significance

The matters requiring decision in this report have been considered by officers against the requirements of Part 6 of the Local Government Act 2002.

9.1 Significance of the decision

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

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

9.2 Engagement

Engagement on the matters contained in this report aligns with the level of significance assessed. Engagement has been undertaken in the Wairarapa River Advisory Committees, the Hutt Valley Flood Management Subcommittee and the Kāpiti river Friends' Groups. In accordance with the significance and engagement policy, no further engagement on the matters for decision is required.

10. Recommendations

That the Committee:

- 1. Receives the report.*
- 2. Notes the content of the report.*
- 3. Notes the Scheme Advisory Committees and Friends Groups have confirmed that assets have been maintained to their satisfaction.*
- 4. Notes the advice from officers that the 15 River Management Schemes in the Greater Wellington Region have been assessed and that identified issues are satisfactorily being addressed through maintenance and improvement programmes.*

Report prepared by:

Report approved by:

Report approved by

Colin Munn
Team Leader, Operations

Graeme Campbell
Manager, Flood Protection

Wayne O'Donnell
General Manager,
Catchment Management

Attachment 1: Asset Condition

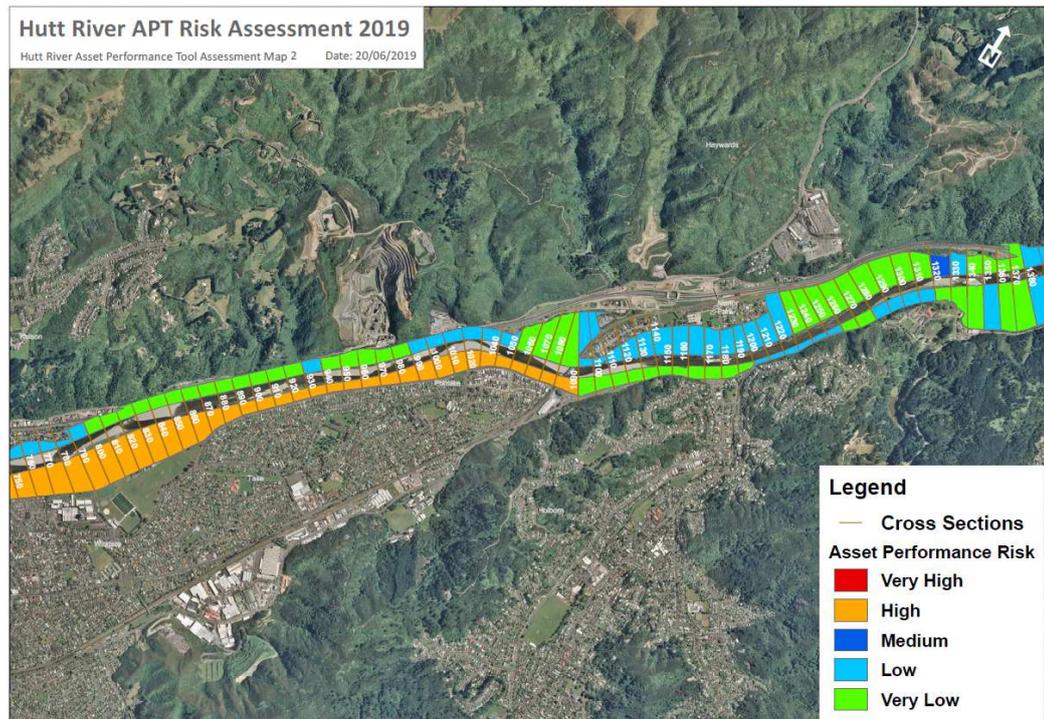
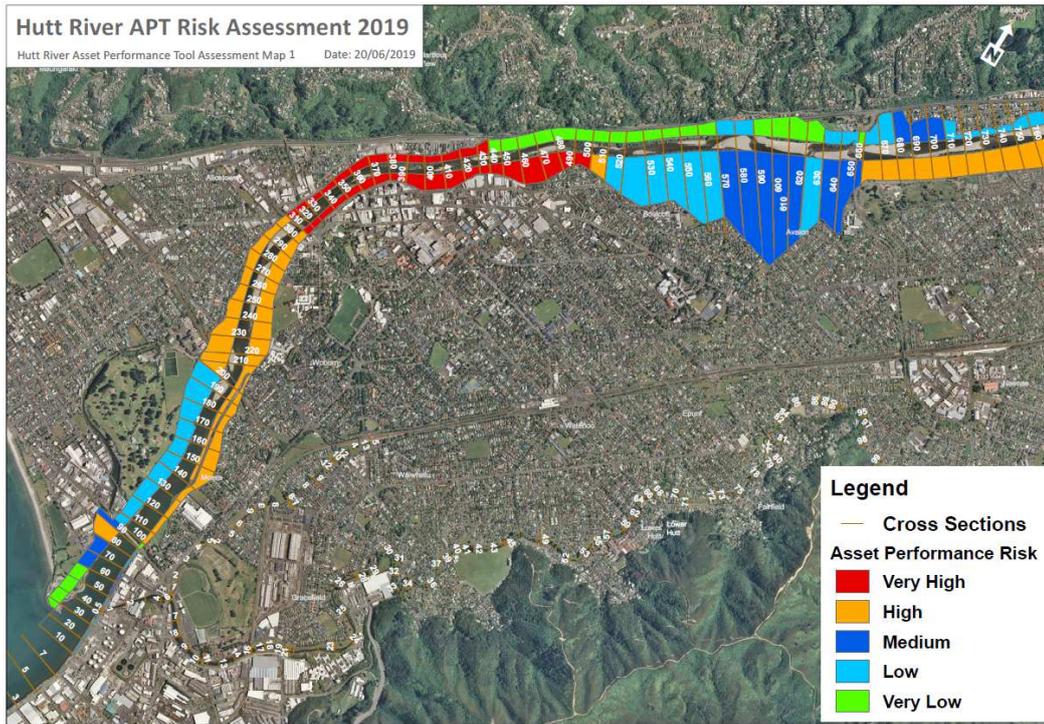
Attachment 2: Asset Performance maps

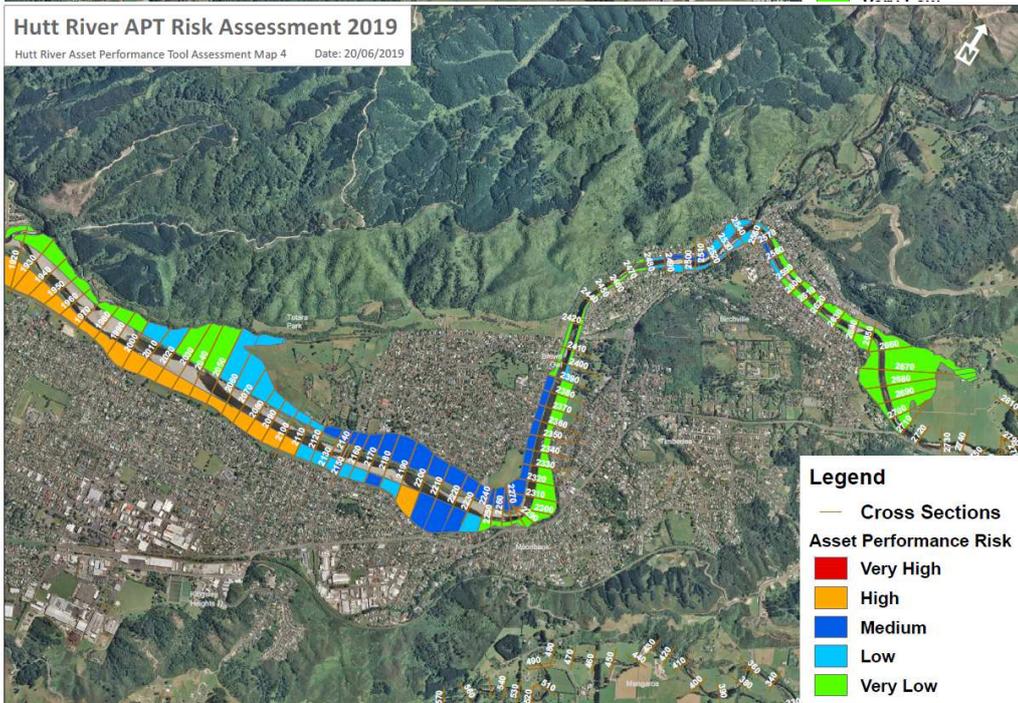
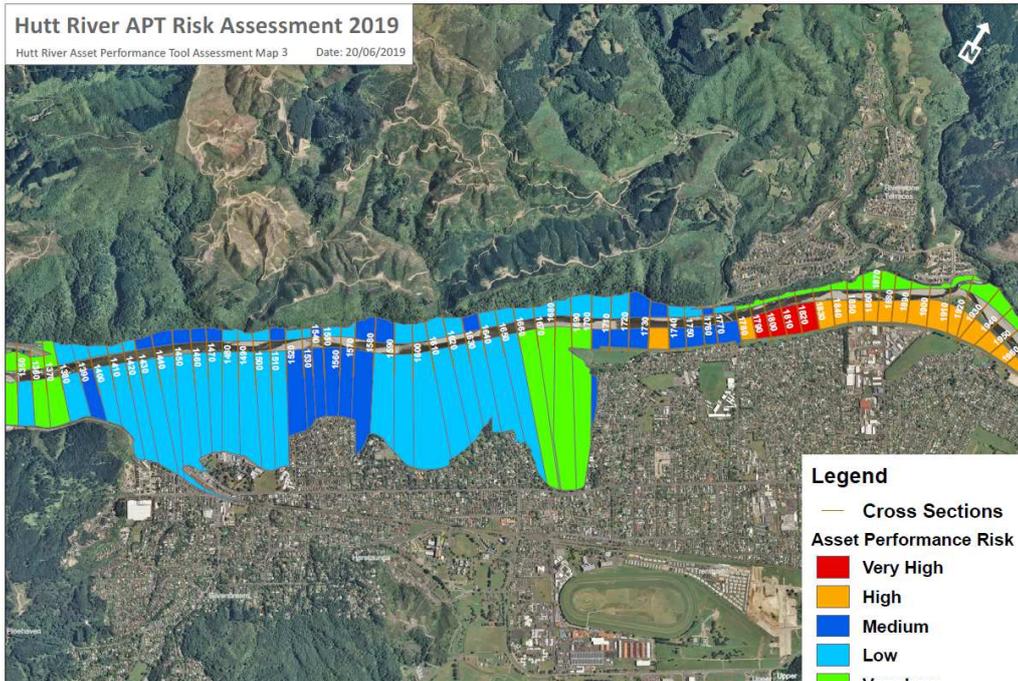
2019 Asset Condition by Type

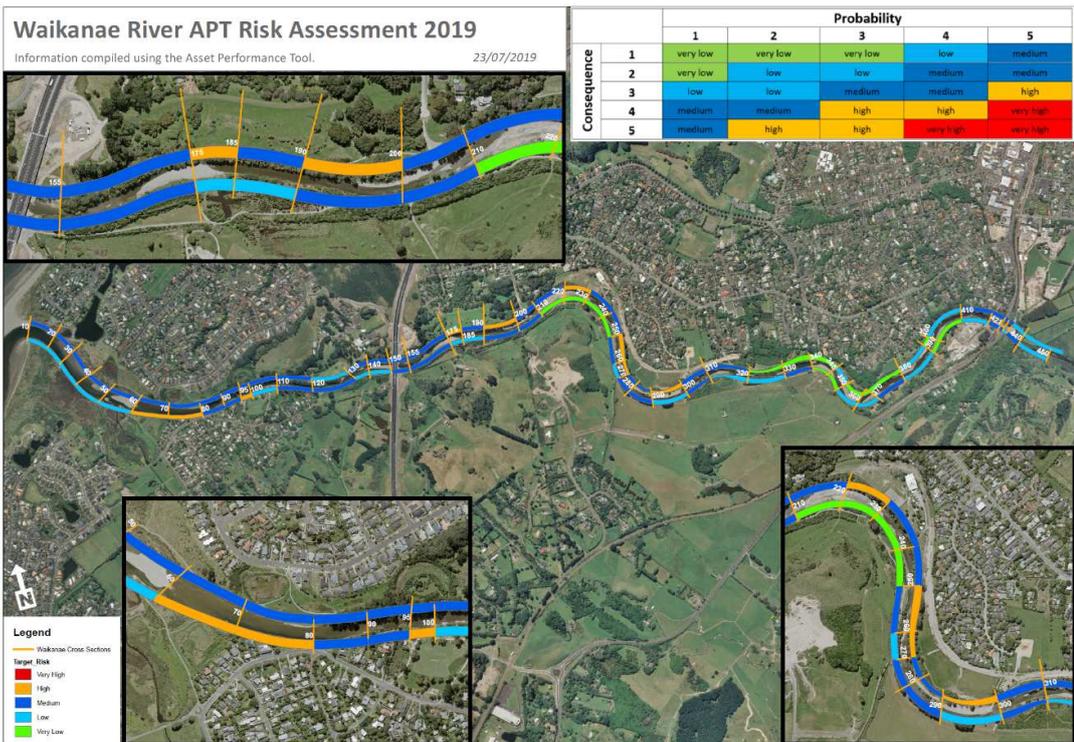
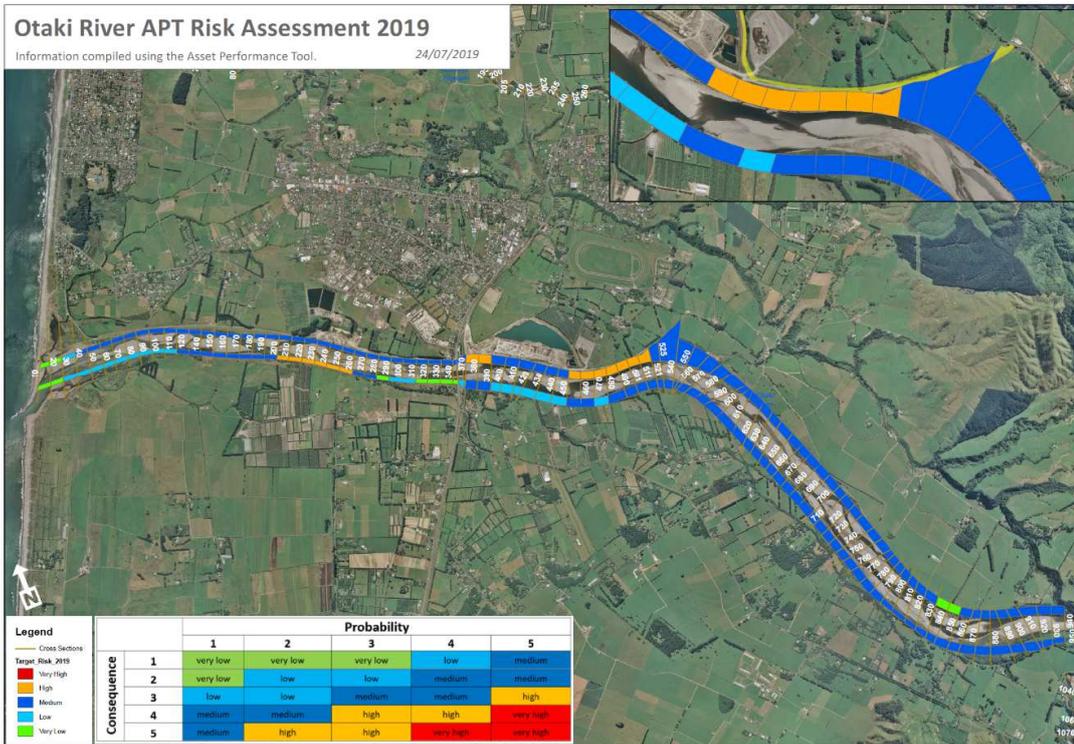
| Asset Group | Asset Type | 1 – V. Good | 2 – Good | 3 - Moderate | 4 - Poor | 5 – V. Poor | Totals |
|------------------------|---------------------|-------------|-------------|--------------|------------|-------------|-------------|
| Individual Structures | BARRAGE GATE | 1 | | 1 | | | 2 |
| | BRIDGE | 4 | 5 | | | | 9 |
| | CULVERT | 6 | 27 | 5 | | 2 | 40 |
| | DETENTION DAM | 1 | 1 | | | | 2 |
| | DIVERSION CUT | | 2 | | | | 2 |
| | DRAIN | 25 | 43 | 12 | 1 | | 81 |
| | DROP STRUCTURE | 1 | 1 | | | | 2 |
| | DUCKSBILL STRUCTURE | 1 | | | | | 1 |
| | FLOODGATE | 13 | 78 | 31 | 15 | 3 | 140 |
| | FLOODWALL | 27 | 9 | | | | 36 |
| | FLOODWAYS | | 13 | | | | 13 |
| | STOPBANK | 143 | 463 | 176 | 113 | 8 | 903 |
| | TRAINING BANK | 1 | 11 | 1 | | | 13 |
| | WINGWALL | 4 | 3 | 1 | | | 8 |
| | Total | | 227 | 656 | 227 | 129 | 13 |
| Channel | CHANNEL | 150 | 690 | 192 | 29 | | 1061 |
| | WEIR | | 15 | 4 | 1 | | 20 |
| | Total | 150 | 705 | 196 | 30 | 0 | 1081 |
| Berms - Amenity | FENCE | 3 | 25 | 15 | 2 | 1 | 46 |
| | GATE | 6 | 7 | | | | 13 |
| | NATIVE PLANTING | 21 | 50 | 37 | 3 | | 111 |
| | SEAT | 9 | 14 | | 1 | | 24 |
| | SIGN | 13 | 12 | 5 | 2 | | 32 |
| | TRACK | 91 | 409 | 33 | 5 | | 538 |
| | Total | 143 | 517 | 90 | 13 | 1 | 764 |
| Bank Edge - Vegetative | DEBRIS ARRESTOR | 6 | 7 | 2 | 1 | 2 | 18 |
| | DEBRIS FENCE | 1 | 242 | 116 | 57 | 17 | 433 |
| | WILLOW | 12 | 489 | 375 | 156 | 16 | 1048 |
| | Total | 19 | 738 | 493 | 214 | 35 | 1499 |
| Bank Edge - Structural | BLOCKLINE | 5 | 15 | 12 | 4 | | 36 |
| | DEMOLITION LINE | | 1 | 10 | 4 | | 15 |
| | FASCINE | | 2 | | | | 2 |
| | FENCE RAIL IRON NET | | 8 | 13 | 2 | | 23 |
| | GROYNE | 14 | 949 | 235 | 41 | 11 | 1250 |
| | RETAINING WALL | | 5 | 1 | 1 | | 7 |
| | RIPRAP | 15 | 260 | 38 | 11 | | 324 |
| | ROCK MATTRESS | 2 | 4 | 1 | | | 7 |
| | Total | 36 | 1244 | 310 | 63 | 11 | 1664 |
| Grand Total | | 575 | 3860 | 1316 | 449 | 60 | 6260 |

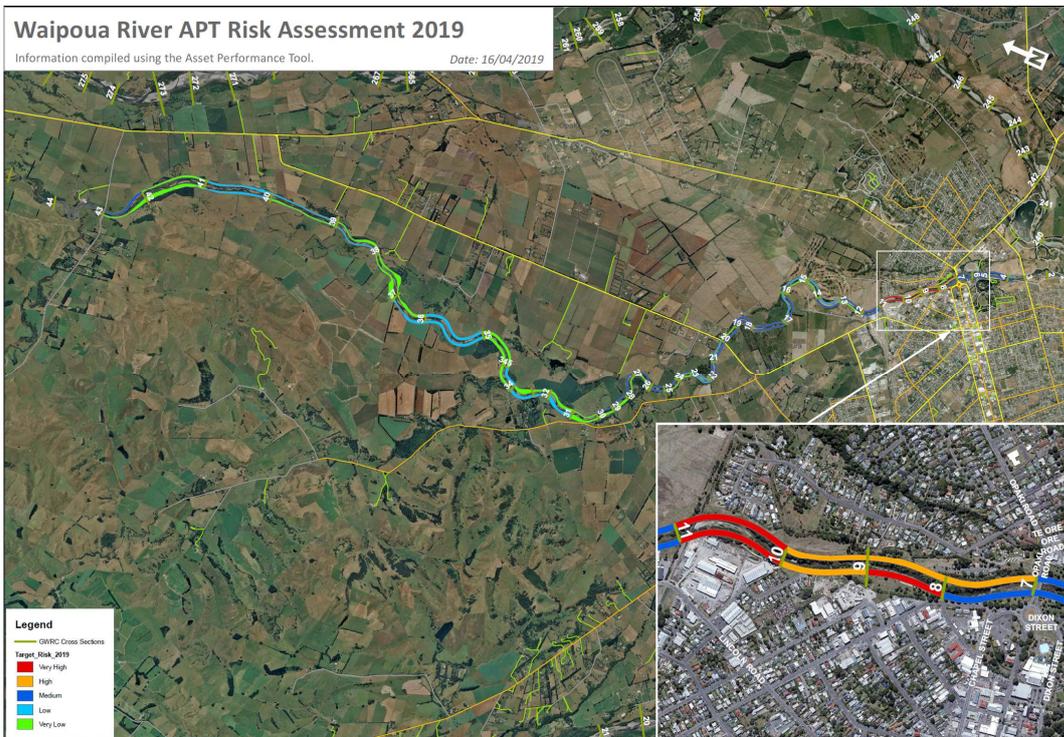
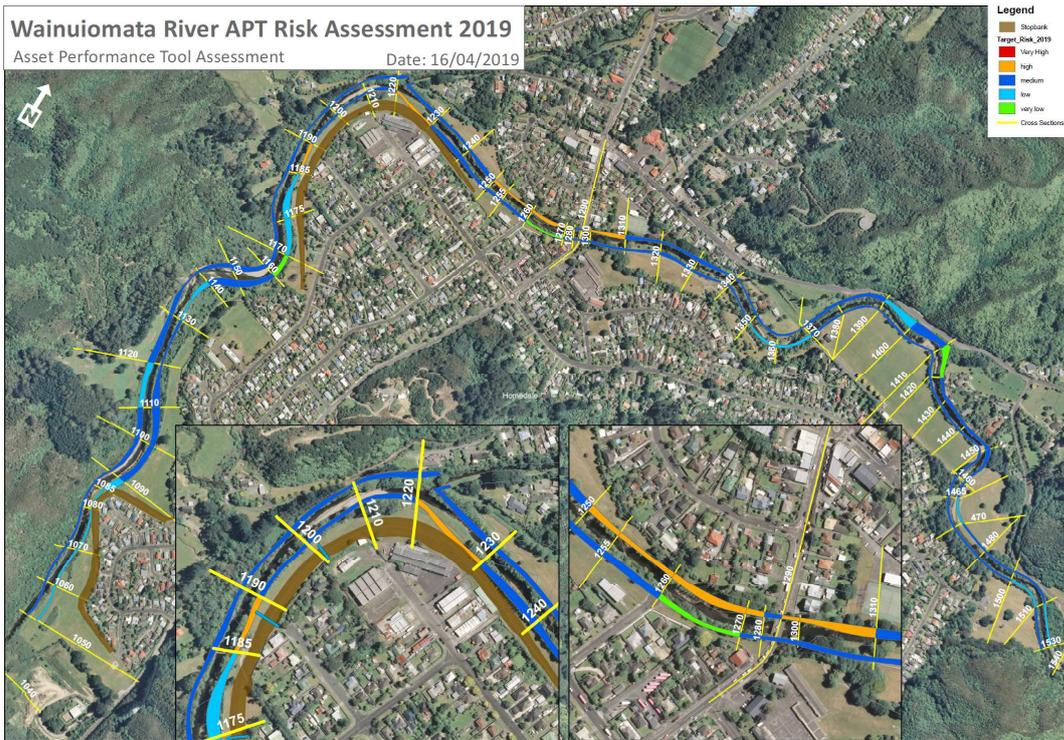
Attachment 2 to Report 19.416

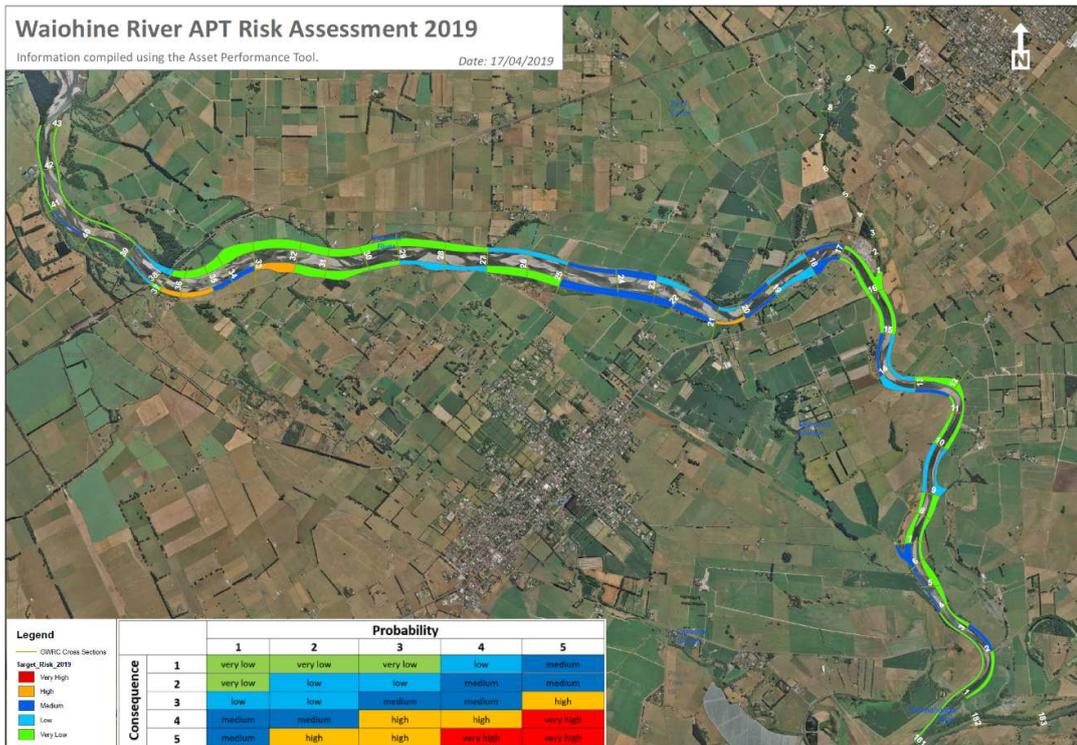
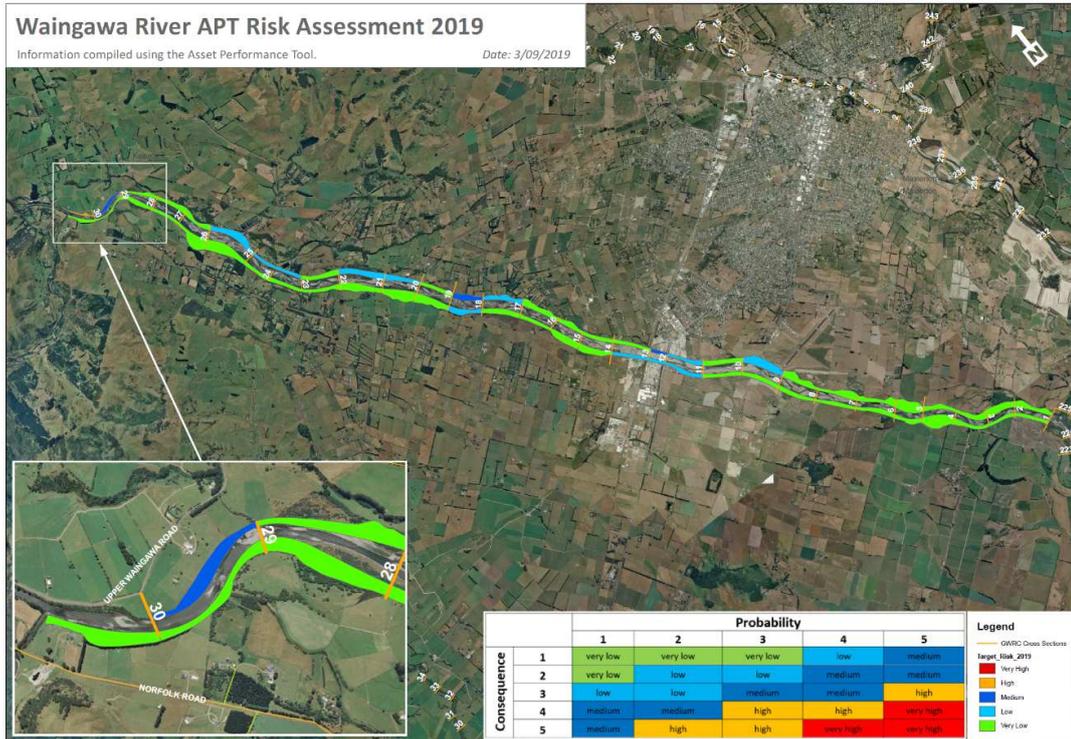
Asset Performance Maps

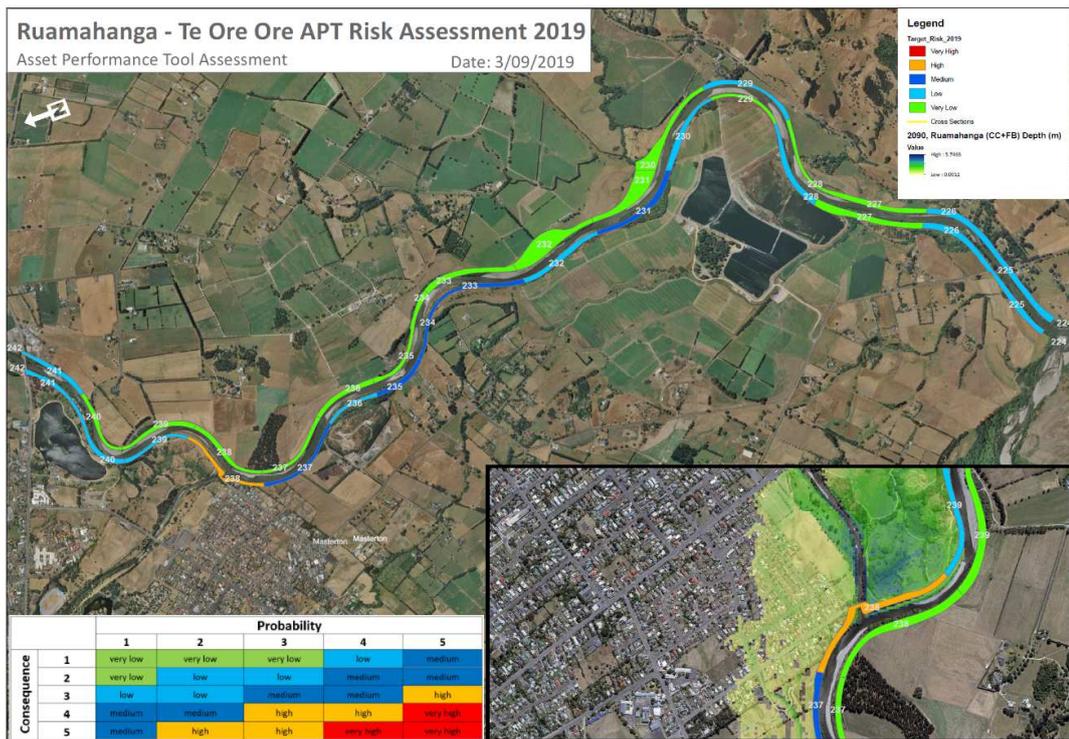
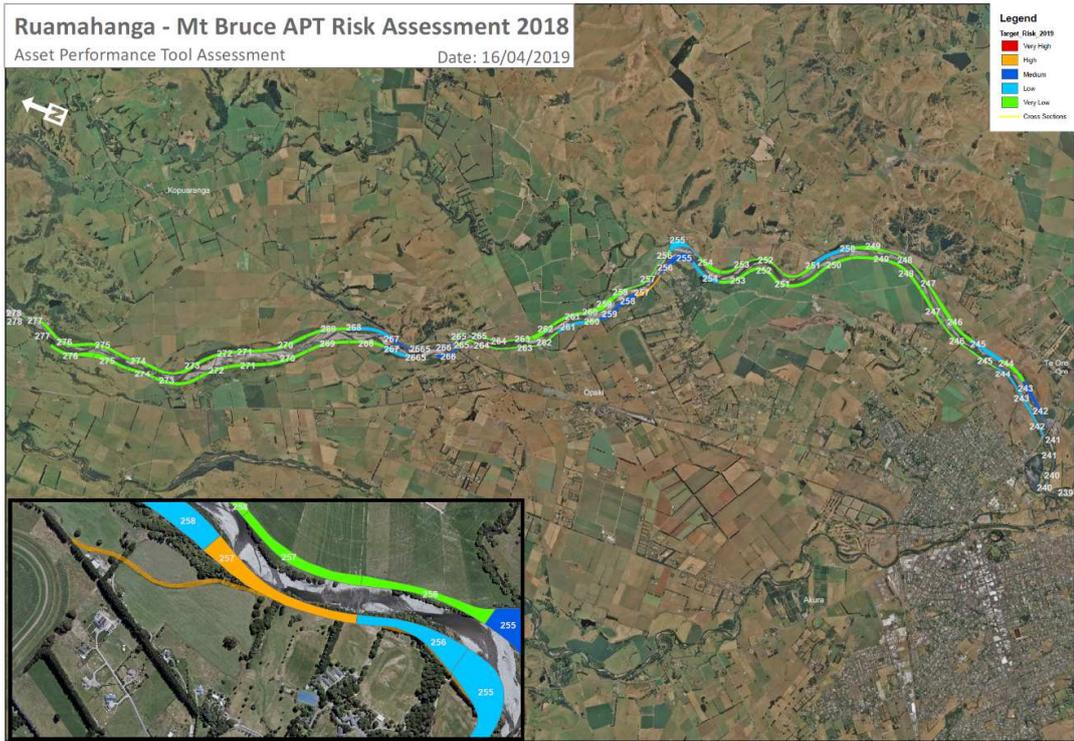


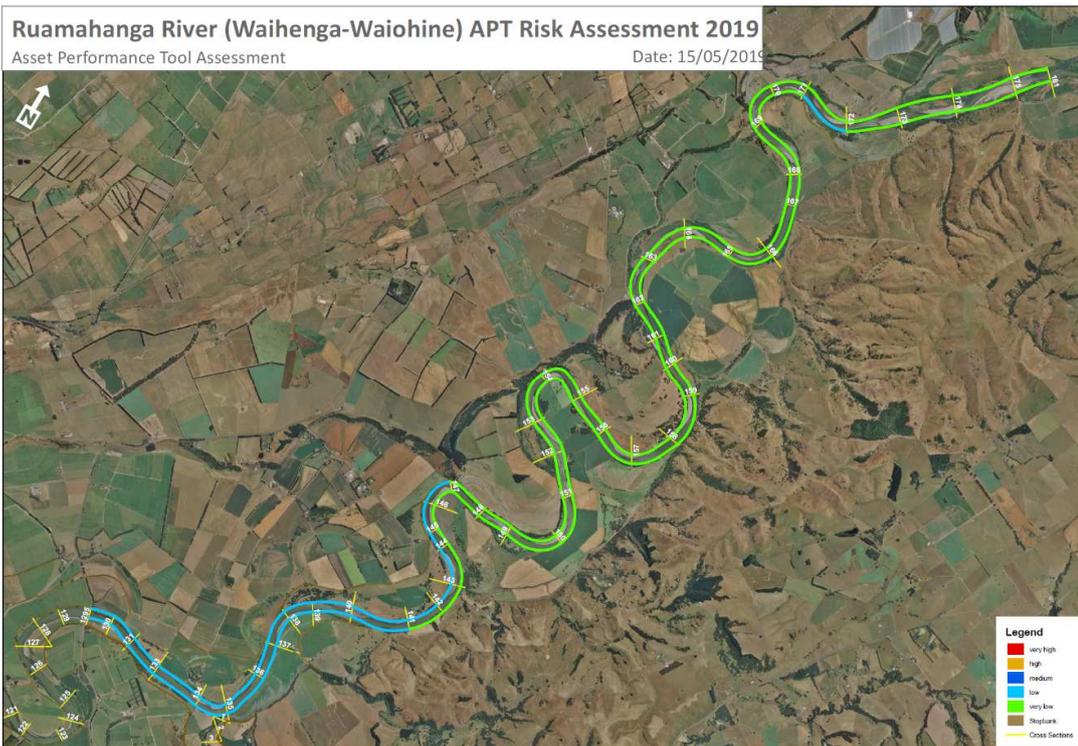
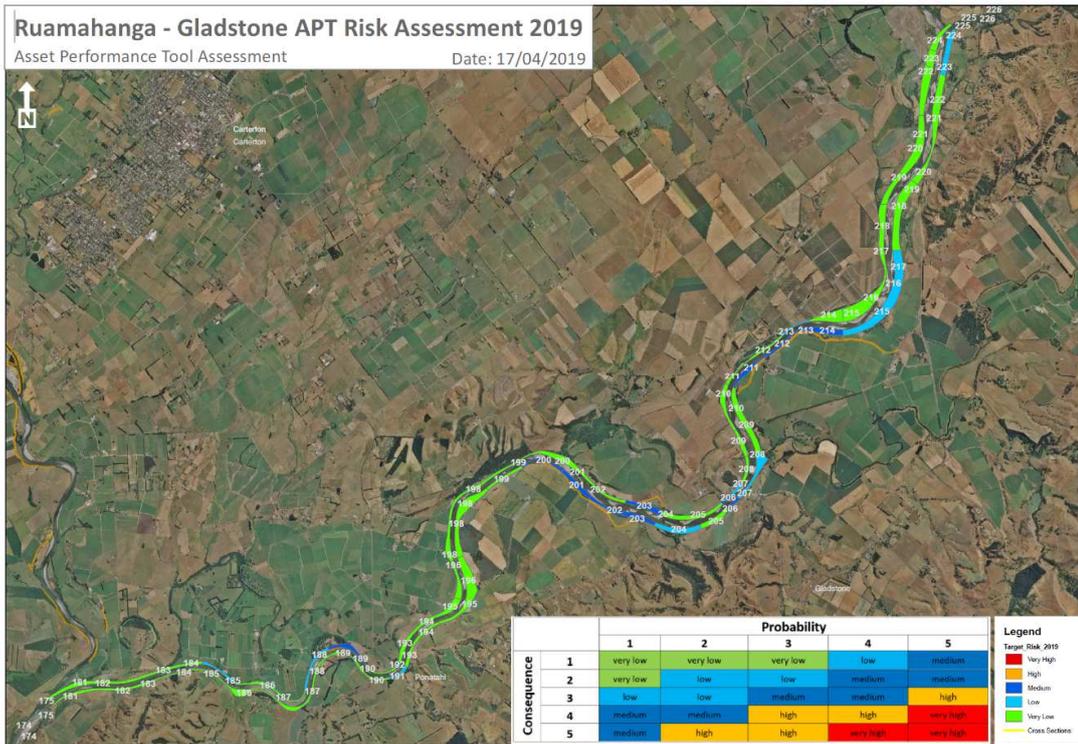


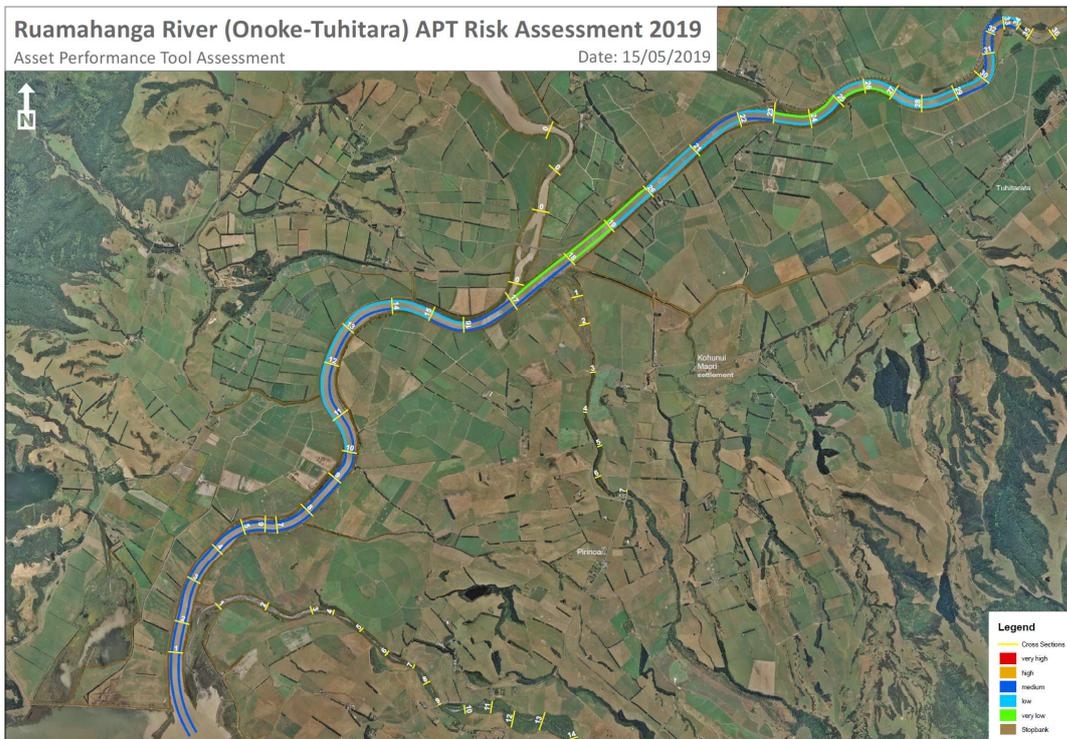
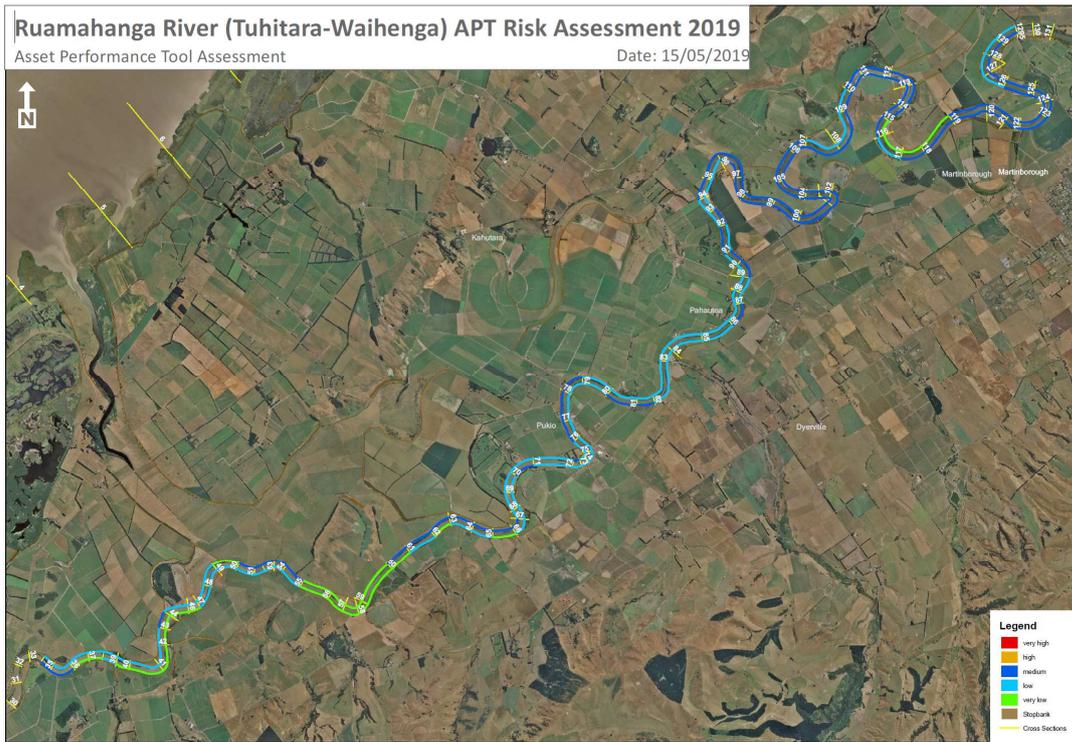


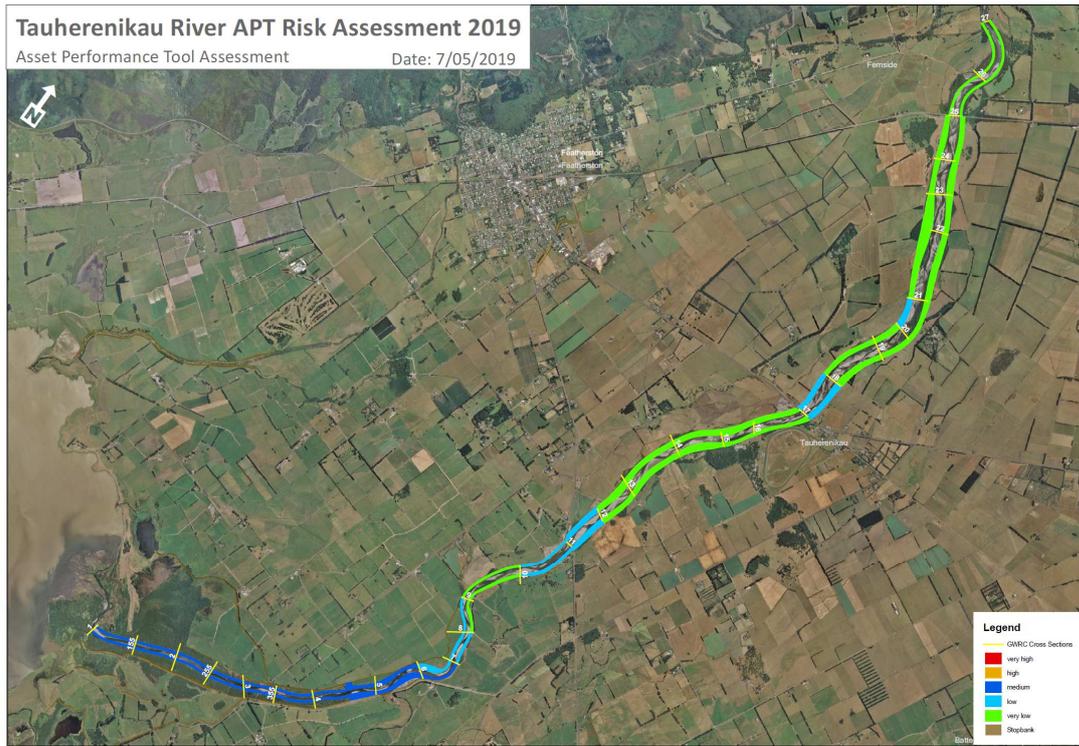














Report 19.381
Date 22 August 2019
File CCAB-10-765

Committee Environment
Author Alistair J N Allan, Team Leader, FMP Implementation

Floodplain Management Plan Implementation : Annual Progress Report to June 2019

1. Purpose

To advise the Environment Committee of progress made to June 2019, in implementing the Hutt, Ōtaki, Waikanae and Pinehaven Floodplain Management Plans (FMP), the Lower Wairarapa Valley Development Scheme (LWVDS), Te Kāuru FMP and the Waiohine River FMP.

2. Background

This is the seventeenth (17) annual report on the implementation of the Western Floodplain Management Plans and the twelfth (12) annual report on the Wairarapa capital works.

2.1 Western Floodplain Management Plans

The Hutt, Ōtaki, Waikanae and Pinehaven Floodplain Management Plans (western FMPs) were completed in 2001, 1998, 1997 and 2016 respectively. They recommend structural, non-structural and environmental measures to reduce the flood risk to the respective floodplains and improve the environment. Greater Wellington Regional Council (GWRC) has adopted a 40-year time frame to fully implement the four FMPs. Implementation of the FMPs commenced in 2000.

The river and stopbank works adjacent to the Hutt City Centre have been repackaged as the joint organisation RiverLink project which is identified as a separate project for GWRC within the 2018-2028 LTP.

A review of the Ōtaki FMP continues. Work on this review is not expected to be completed until the end of 2019, at which point implementation of projects will be recommenced. An exception to this is the Waitohu stream channel and Convent Road stopbank project which has continued alongside the review.

2.2 Wairarapa Capital Works

2.2.1 LWVDS

A major review of the LWVDS, completed in 2006, recommended a structural upgrade programme to improve the security of the flood defences in the lower Wairarapa valley. The original programme was for implementation over eight years, commencing in 2007/08. Generally the work involved strengthening river bank protections and upgrading stopbanks on the Ruamāhanga and Tauherenikau Rivers. In 2011, Council approved the extension of the programme of works, which have been extended until 2021.

2.2.2 Waiohine FMP

The Waiohine FMP development process was restarted in a joint process with the community. The FMP development was completed in 2018/19 as forecast and has continued into 2019/20, led by the Waiohine Action Group.

Implementation will commence once the FMP is completed. The 2018-2028 Long Term Plan includes funding for delivery of these outcomes following agreement of the FMP.

2.2.3 Te Kāuru Upper Ruamāhanga FMP

The process for developing an FMP for the upper Ruamāhanga floodplain commenced in 2013/14. The FMP has now been completed and has been endorsed by council.

In completing the FMP, elements of the urban reach of the Waipoua were left unconfirmed and we are continuing to work with the community to confirm what works, if any, will be undertaken in this area.

Two of the outcomes of the FMP related to funding will need to be considered as part of the next Long Term Plan (LTP). Firstly, a shift to catchment wide rating base for the currently targeted local share. This is a shift from the current situation where a proportion of the local share is rated on properties considered to be directly benefiting from the flood and erosion works. The second outcome needing to be considered is the funding of a riparian management officer to assist with the establishment and management of vegetation buffers along the rivers, funding for this position will need to be sought as part of the LTP process.

The 2018-2028 LTP includes funding estimates developed in 2017/18 ahead of the completion of the FMP.

3. Summary Progress

3.1 Floodplain Management Plan Implementation

3.1.1 Implementation Progress

The following table shows percentage of FMP structural measures implemented as a percentage of progress to 100% completion of the recommendations within the respective floodplain management plans.

| FMP or Scheme | Baseline % 2018 LTP | Target % Complete 2018/2019 | % Completed in 2018/2019 | Actual % Complete to June 2019 | |
|---------------|---------------------|-----------------------------|--------------------------|--------------------------------|--------------------|
| Hutt | 33% | 33% | 0% | 33% | Achieved |
| Ōtaki | 47% | 47% | 0% | 47% | Achieved |
| Waikanae | 45% | 56% | 9% | 56% | Achieved |
| LWVDS | 88% | 94% | 2% | 90% | Partially Achieved |
| Pinehaven | 0% | 0% | 0% | 0% | NA |

3.1.2 Financial

The following table compares forecast spend at creation of each FMP with spend to date in delivery of the FMP. Costs incurred include design, property and construction costs related to each FMP.

| River | Original FMP Total 40 year estimate (\$M) ^{1,2} | Expenditure to June 2019(\$M) ² | budget forecast 2018 to 2028 (\$M) ² | Total forecast expenditure to 2028 |
|---------------------------|--|--|---|------------------------------------|
| Hutt | 118.6 ¹ | 92.4 | 100.0 | 192.4 |
| Ōtaki | 18.3 ¹ | 8.5 | 12.8 | 21.3 |
| Waikanae | 13.4 ¹ | 7.9 | 6.2 | 14.2 |
| Pinehaven | 5.3 ¹ | 1.5 | 5.2 | 6.7 |
| Total western FMPS | 155.6 | 110.3 | 124.3 | 234.6 |
| LWVDS | 10.9 ¹ | 7.9 | 29.7 | 37.5 |
| Total Wairarapa | 10.9 | 7.9 | 29.7 | 37.5 |
| Total | 166.5 | 118.2 | 154.0 | 272.2 |

Notes:

- Hutt 1999 (estimate \$78.00M), Ōtaki 1998 (estimate \$12.07M), Waikanae 1997 (estimate \$8.69M) and LWVDS 2007(estimate \$8.8M), Pinehaven 2014 (estimate \$5M).
- All figures have been indexed to 2019 dollar values using reserve bank CPI calculator (index value based on 30 June of year. No inflation included for year estimate originated. General CPI values have been used)

4. Key deliverables 2018-2019 Te Whaitua o Te Whanganui-a-Tara (Hutt Valley and adjacent catchments) Pinehaven Stream Floodplain Management Plan, Upper Hutt

The Pinehaven stream floodplain management plan was developed by Upper Hutt City Council (UHCC) and GWRC. It includes a range of recommended measures, including non-structural planning measures and structural measures that aim to provide a 1-in-25 year in channel capacity for the stream channel downstream of Pinehaven Reserve and a 1-in-100 year return period flood event protection to habitable floor levels within the catchment.

| Target | Result | Achieved |
|--|---|--------------------|
| Support Upper Hutt City Council (UHCC) through its Plan Change 42 process within environment court | Plan change 42 became operative | Achieved |
| Design and implementation of the channel capacity improvements for the Pinehaven FMP | Design progress for the channel capacity works completed in June 2019, however preparation for consent lodgement was delayed due to environment court process for Plan Change 42 Revised programme forecasts consent lodgement in Q2 2019/20 | Partially Achieved |
| Implementing upgrades to monitoring and gauging networks | Flood warning review project completed and work underway to identify gauging sites and forecasting model improvements | Partially Achieved |

4.1.2 Hutt River Floodplain Management Plan - Te Awa Kairangi

The Hutt River Floodplain Management Plan (HRFMP), adopted by Council in 2001, provides a co-ordinated plan to upgrade the existing infrastructure, provide new infrastructure and adopt a range of other non-structural measures to provide for improved flood hazard management and flood protection.

An Environmental Strategy action plan update was completed in August 2018, superseding the 2001 version, this included an action plan component to more clearly prioritise environmental and community outcomes.

| Target | Result | Achieved |
|--|---|-----------------|
| Strengthening our relationships with manawhenua partners through our implementation projects | RiverLink Project Management Board established inclusive of membership Taranaki Whanui and Ngati Toa Rangitira as board members with full voting powers. | Achieved |
| Other work | Detail | Status |
| Gibbons St Erosion Protection | Erosion resulting from small flood events eroded the heavy vehicle bypass for SH2 near to its intersection with Gibbons St. GWRC led the repair of this work under a cost share arrangement with New Zealand Transport Agency (NZTA) | Completed |
| Port Road Erosion Protection | GWRC and Hutt City Council (HCC) have together worked towards addressing erosion concerns of businesses and property owners in the Seaview area near Port Road, Lower Hutt. HCC has completed temporary (10 year estimated life) repair work to a section of the erosion protection at this location. GWRC is currently looking at feasibility of bringing forward work programmed in the FMP currently forecast to commence in 2031. | In Progress |
| Te Awa Kairangi – Hutt River Environmental Strategy Action Plan | Design work has commenced to address trail connection improvements at identified points along the Hutt River Trail, this includes consideration of stream crossings at Hulls Creek Whiranaki Stream (in conjunction with UHCC), and at Manor Park | In Progress |

4.1.3 Waiwhetu Stream

No floodplain management plan has been developed for the Waiwhetu Stream. GWRC and HCC continue stream management activities along the length of the stream, and support the Friends of Waiwhetu Stream group with stream, environment and amenity enhancements.

| Other work | Detail | Status |
|---|--|-------------|
| Friends of Waiwhetu Stream weed mat trial | GWRC, HCC and Friends of Waiwhetu Stream have commenced a trial of alternate weed management/weed mat trials along a reach of the Waiwhetu Stream. This aims to identify alternate weed mat materials that will eliminate or reduce use of plastic type weedmats | In progress |

4.1.4 RiverLink, Te awa kairangi/Hutt River

RiverLink is a transformational partnership project for Hutt City. The development partners are GWRC, HCC, NZTA, Taranaki Whanui, and Ngati Toa Rangitira.

RiverLink contains elements of the Hutt River Floodplain Management Plan (HRFMP) which are the primary driver of GWRC’s interests in delivering RiverLink.

It has been separately identified as a LTP priority programme, and therefore is reported separately to the remainder of the HRFMP.

The planning and design for the RiverLink project (City Centre stopbank and channel improvements) commenced in October 2012. The preliminary design for RiverLink has been adopted by HCC and GWRC who have included funding to deliver the project in their respective long term plans. The adoption of the preliminary design was a major milestone for the project which delivers on the urban design aspirations of HCC and the LTP priority outcome of Regional Resilience for GWRC. The project also supports or has positioned itself to be able to support delivery across several of GWRC’s other LTP priorities, Freshwater Quality and Biodiversity, Regional Leadership and Public Transport.

The construction phase of this project is currently forecast for commencement in 2021. However, programme alignment with HCC and NZTA will determine the final construction programme. Land purchase for the RiverLink project and strategic land purchase at other critical locations in the Hutt River are continuing.

The benefits in terms of flood damages saved are estimated at 35% of the total benefits the HRFMP will deliver. The benefits on the basis of flood damages saved will be 66% when the flood protection upgrade and Melling Bridge replacement components of the RiverLink project are completed.

| Target | Result | Achieved |
|---|--|-----------------|
| RiverLink - Commencement of detail design and consenting phase | RiverLink consenting and design phase commenced with appointment of consultant team to develop on behalf of the project partnership | Achieved |
| RiverLink - Continue property acquisition (willing buyer/willing seller approach) for project in alignment with property strategy | 77 of 118 properties acquired | Achieved |
| RiverLink - Development of design of a trial storm-water treatment wetland at Belmont to test methods and management techniques | Design completed Consent granted Construction programme in place for 2019/20 | Achieved |
| Other work | Detail | Status |
| Establishment of RiverLink Project Management Board | RiverLink partnership had been operating under an informal partnership agreement between GWRC, HCC and NZTA. Following a review of the RiverLink delivery process a partnership agreement was developed between the funding partners, and a project management board including GWRC, HCC, NZTA, Taranaki Whanui, Ngati Toa established to direct project delivery. | Completed |
| Establishment of RiverLink Project Office | The RiverLink Project board recruited a project director to deliver RiverLink. The project director has recruited a project manager and is scoping additional roles required for project delivery | In progress |
| RiverLink Geotechnical Ground Investigations | Investigations of subsurface geology are underway to inform design and consenting stage. This is a contract that delivers information required for NZTA, HCC and GWRC design components | In progress |

| | | |
|-----------------------------------|---|-----------|
| Summer Engagement Programme 18/19 | The engagement programme aims to connect RiverLink with the communities of Hutt City and to showcase Te Awa Kairangi as a treasure at the heart of Hutt City. It covered everything from toxic algae to the riverbank market to transport linkages and city growth in a fun, family friendly environment. | Completed |
|-----------------------------------|---|-----------|

4.2 Kāpiti Coast

4.2.1 Waikanae River, Waikanae

The Waikanae River Floodplain Management Plan (WRFMP), originally adopted by Council in 1997, provides a co-ordinated plan to upgrade existing historic infrastructure, provide new infrastructure, and adopt a range of other non-structural measures to provide improved flood hazard management and flood protection.

The WRFMP was reviewed and updated between 2009 and 2012, and the FMP republished in 2013. It provides the basis for the current development and operational work programmes managed by the Flood Protection Department.

The WRFMP also includes an Environmental Strategy which identifies actions to reduce any adverse effects that may result from flood mitigation works, and to preserve and enhance the landscape, heritage, ecological and recreational values on the floodplain.

| Target | Result | Achieved |
|--|--|------------------------------|
| Jim Cooke Park - Completion of amenity and environmental enhancement aspects linked to completed stopbank reconstruction project | Grass cover to stopbank has been continuously improved. Dangerous trees have been felled alongside river trail, planting plan has been completed. Trail improvements being developed in conjunction with KCDC and will complete next year. Outstanding items and consent conditions (reporting on planting success etc) are expected to be closed out by mid 2022. | Ongoing - Partially Achieved |
| Addendum of action plan to the Waikanae River Environmental Strategy to establish project programme that will delivery strategy outcomes | Resources for this work were diverted into the Waikanae ki Uta ki Tai project initiated by Department of Conservation | Not Achieved |

| | | |
|--|--|---|
| Strengthening our relationships with manawhenua partners through our implementation projects | No change to current relationship with Te Atiawa ki Whakarongotai | Maintained current levels of engagement |
| Other work | Detail | Status |
| Waikanae River Erosion – XS 255 | River erosion is occurring within an area identified as river corridor at XS255. Options to address this erosion have been produced and the erosion is being monitored. | Ongoing |
| Waikanae River ki Uta ki Tai project | Department of Conservation has initiated a mountains to sea plan development. Resources allocated to the development of an addendum to the Waikanae River Environmental Strategy have been diverted into supporting this project | Ongoing |

4.2.2 Ōtaki River, Otaki

The Ōtaki River Floodplain Management Plan (ORFMP), adopted by Council in 1998, provides a co-ordinated plan to upgrade existing historic infrastructure, provide new infrastructure, and adopt a range of other non-structural measures to provide improved flood hazard management and flood protection.

The ORFMP objective was to reduce losses from flooding in a sustainable manner, and protect and enhance the natural and cultural values of the river system. The FMP includes an Environmental Strategy. A review of the ORFMP is currently taking place.

| Target | Result | Achieved |
|---|--|--------------------|
| Progressing with land entry negotiations for the lower Waitohu Stream channel works and review of the designs for channel and stopbank upgrades | No additional land entry negotiations were advanced Design review has reprogrammed work and brought together design process targeting both regional resilience and freshwater quality & biodiversity outcomes and developed alternate options for addressing the flood risks that better meet these objectives. | Partially Achieved |

| | | |
|--|--|--|
| Strengthening our relationships with manawhenua partners through our implementation projects | Established and ongoing support provided for regular operational and project delivery discussions with Nga Hapu o Otaki in line with JMA principles. | Improved engagement and partnership outcomes |
| Other work | Detail | Status |
| Support for GWRC led Mahi Waiora Project | Mahi Waiora project seeks to improve freshwater quality outcomes for the Waitohu Stream. | In Progress |

5.2 Ruamāhanga Whaitua Catchment

4.2.3 Lower Wairarapa Valley Development Scheme

| Target | Result | Achieved |
|--|--|--------------------|
| Assessment of the Tauherenikau River Gravel build up criticality | Recommended interim works focusing on vegetation control, gravel management and improvements to flood warning system for landowners adjacent to delta area. Recommended flood model updates and specific targeted investigations relating to sections of current channel and stopbanks. | Achieved |
| Ruamāhanga River Erosion protection works | Dakins Road erosion protection works completed | Achieved |
| Completion of Pukio East Dairy Ltd stopbank relocation project | Construction of Phase 1 has completed including; new cow race and tracks, relocation of vehicle access, construction of new stopbanks, topsoiling and regrassing | Partially Achieved |

| | | |
|---|---|--------------------|
| Continuation of Whakawhirirwhiri Stream Improvement Works | Completed downstream works, property access issues have prevented progress with other works. Assessor considering future course of action. | Partially Achieved |
| Other work | Detail | Status |
| Geoffrey Blundell Barrage Gates | Design work for replacement steel corbels Installation of new safety signage Renewal consent approved to 2027 Second consent for continued operation has been lodged | Ongoing |

4.2.4 Te Kāuru, Upper Ruamāhanga Floodplain Management Plan

The Te Kāuru Upper Ruamāhanga Floodplain Management Plan (TKFMP), encompasses the Upper Ruamāhanga catchment, including the Upper reaches of the Ruamāhanga River, Waipoua River, Waingawa River, Taueru River, Whangaehu River and Kopuaranga River.

This FMP shifts the focus of river maintenance towards use vegetated buffers and away from mechanical intervention in the river to tackle erosion. The design buffers will be allowed to erode when and where appropriate.

This FMP also proposes provision of erosion control works at priority locations, and a planned planting programme increase for erosion control and river enhancement.

A work programme for implementing Te Kāuru FMP is currently being developed.

5. Programme 2019/2020

5.1 LTP Targets

The following table includes LTP targets set in 2018 LTP.

| FMP or Scheme | Baseline % 2018 LTP | Achieved in 2018/2019 | Target % Complete 2019/2020 |
|---------------|---------------------|-----------------------|-----------------------------|
| Hutt | 33% | 33% | 33% |
| Ōtaki | 47% | 47% | 47% |
| Waikanae | 45% | 56% | 56% |
| LWVDS | 88% | 90% | 99% |
| Pinehaven | 0% | 0% | 33% |

5.2 LTP Priorities

- RiverLink
- Implement outcomes of floodplain management plans for Otaki, Waikanae, Hutt Rivers, Pinehaven Stream and the Lower Wairarapa Valley Development Scheme Improvements
- Implement outcomes of the Hutt, Otaki, Waikanae, and Pinehaven Environmental Strategies and supporting community groups to enhance river environments

5.3 Specific planned work for 2019/20

The following table includes key work planned for 2019/20. It is not a complete listing of all work being carried out across the region, and does not include work that may be required to address storm and flood damage.

| Catchment | River/FMP | Details |
|---------------------|--|--|
| Te Whanganui-a-Tara | Te Awa Kairangi/Hutt River FMP | <ul style="list-style-type: none"> • RiverLink design and consents progress • RiverLink property acquisitions • Pinehaven Stream design and consents • Environmental strategy trail connections • Gauging and monitoring improvements • Port Road erosion, design, consents and procurement for construction |
| Kāpiti | Ōtaki River | <ul style="list-style-type: none"> • Waitohu stream convent road flooding issues design and consents • Otaki Lakes management plan outline • Mahi Waiora project support, Waitohu Stream |
| Ruamāhanga | Te Kāuru and Lower Wairarapa Valley Development Scheme | <ul style="list-style-type: none"> • Recruitment for FMP implementation delivery officer • Te Kāuru FMP Implementation programme development • Development of LWVDS 10 year programme (2021-2031) • Whakawhiriwhiri stream works • Pukio East Dairy Ltd completion works |
| Porirua | Porirua Stream | <ul style="list-style-type: none"> • Culvert replacement at Setton Nossiter Dam |

| | | |
|----------|-----|---|
| Regional | N/A | <ul style="list-style-type: none"> • Preparation for LTP 2021-2031 • Procurement process improvements • Programme and project management process improvements • Integrated Catchment, Environment and te Hungawhiriwhiri outcomes support |
|----------|-----|---|

6. Communication

This report is written primarily for GWRC purposes. However, a copy will be sent to Territorial Authorities in the Region for their information.

7. Consideration of Climate Change

No decision is being sought in this report.

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.

7.1 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 any works progressed under these plans and commissioned by GWRC will be addressed via GWRC’s procurement process which is undergoing review in 2017 and will encourage suppliers and contractors to minimise emissions.

7.2 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 projections have been incorporated into the modelling that underpins the Floodplain Management Plans and designs of new flood protection projects, and is therefore an integral component of the associated designs and operational works.

8. The decision-making process and significance

No decision is being sought in this report.

This report provides an update on progress made with implementing the floodplain management projects and confirms that we are meeting the service improvement plans set out in the Council’s Long Term Plan.

8.1 Engagement

Engagement on this matter is unnecessary.

9. Recommendations

That the Committee:

1. *Receives the report.*
2. *Notes the content of the report.*
3. *Agrees that a copy of the report be sent to the Wellington Region's Territorial Authorities.*

Report prepared by:

Alistair J N Allan
Team Leader, FMP
Implementation

Report approved by:

Graeme Campbell
Manager, Flood Protection

Report approved by:

Wayne O'Donnell
General Manager, Catchment
Management

Attachment 1 [Hutt FMP Summary Progress Table](#)

Attachment 2 [Otaki FMP Summary Progress Table](#)

Attachment 3 [Waikanae FMP Summary Progress Table](#)

Attachment 4 [LWVDS Development Work Summary Progress Table](#)

Updated 02 September 2019

| TOTALS IMPLEMENTATION HUTT FMP | | | | | Date AMP | COST \$M 2001 FMP | Target % at completion | | | Percent Complete to date |
|--------------------------------|--|--|--|--|-----------|-------------------|------------------------|--|--|--------------------------|
| | | | | | 2000-2051 | \$77.76 | 100.00% | | | 33.01% |

REACH 1 : River Mouth to Estuary Bridge

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 4.69% | STAGE | % Complete (0 = not complete, 0.5 Part complete, 1 = complete) | 0.00% | HRFMP (Page #) |
|---------------------------|-------|----------|---------------|------------|-------------------|--------|-------|--|-------|----------------|
| River Mouth Channel Works | | 1 | 6 | after 2010 | 2032-2035 | \$3.65 | 4.69% | | 0.00% | 52 |

REACH 2 : Estuary Bridge to Ava Rail Bridge

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 17.16% | STAGE | | 6.71% | HRFMP (Page #) |
|--|-------|----------|---------------|------------|--------------------------------------|--------|-------|--------------|-------|----------------|
| Shandon golf course (RB) stopbank | | 2 | 2 | after 2010 | Ava Woolen Mills (2028-2034) | \$1.72 | 2.21% | | 0.00% | 54 |
| Light rock protection works (Estuary to Ava rail bridge) | | 2 | 2 | after 2010 | Ava Woolen Mills (2028-2034) | \$0.43 | 0.55% | Partial Work | 0.5 | 54 |
| Woolen mills (Estuary to Ava LB) stopbank | | 2 | 6 | after 2010 | Ava Woolen Mills (2028-2034) | \$3.99 | 5.13% | | 0.00% | 54 |
| Relocation and rock lining (Estuary to Ava LB) | | 2 | 6 | after 2010 | Ava Woolen Mills (2028-2034) | \$2.20 | 2.83% | | 0.00% | 54 |
| Ava rail bridge investigations | | 2 | 1 | 2000-2002 | Alicetown Strand Project (2000-2010) | \$0.23 | 0.30% | Complete | 1 | 54 |
| Ava rail bridge waterway improvements | | 2 | 1 | 2003-2008 | Alicetown Strand Project (2000-2010) | \$4.77 | 6.13% | Complete | 1 | 54 |

REACH 3 : Ava Rail Bridge to Ewen Bridge

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 38.14% | STAGE | | 12.35% | HRFMP (Page #) |
|---|-------|----------|---------------|------------|--------------------------------------|--------|--------|-----------|--------|----------------|
| Strand park (Ava to Ewen RB) river realignment and land purchase | | 3 | 3 | 2000-2005 | Alicetown Strand Project (2000-2010) | \$4.48 | 5.76% | Complete | 1 | 56 |
| Strand park stopbank upgrade (Ava to Ewen LB) | | 3 | 1 | 2000-2010 | Alicetown Strand Project (2000-2010) | \$2.64 | 3.40% | Complete | 1 | 56 |
| Tama Street stopbank upgrade (Ava to Ewen RB) | | 3 | 3 | 2000-2010 | Alicetown Strand Project (2000-2010) | \$2.48 | 3.19% | Complete | 1 | 56 |
| Melling Bridge investigations | | 3 | 3 | 2001-2002 | RiverLink (2015-2028) | \$0.06 | 0.08% | In Design | | 56 |
| Daly Street (Ewen to Melling RB) stopbank upgrade and land purchase | | 3 | 1 | 2008+ | RiverLink (2015-2028) | \$4.61 | 5.93% | In Design | | 56 |
| Marsden Bend (RB) channel works | | 3 | 3 | after 2010 | RiverLink (2015-2028) | \$1.91 | 2.46% | In Design | | 56 |
| Pharazyn St (Ewen to Melling RB) stopbank | | 3 | 3 | after 2010 | RiverLink (2015-2028) | \$3.70 | 4.76% | In Design | | 56 |
| Riverside car park channel works (LB) and light protection works (Ewen to Melling LB) | | 3 | 1 | after 2010 | RiverLink (2015-2028) | \$1.78 | 2.29% | In Design | | 56 |
| Land for Melling Bridge Upgrade | | 3 | 14 | after 2010 | RiverLink (2015-2028) | \$8.00 | 10.29% | In Design | | 56 |

REACH 4 : Melling Bridge to Kennedy Good Bridge

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 11.75% | STAGE | | 9.99% | HRFMP (Page #) |
|---|-------|----------|---------------|------------|-----------------------|--------|-------|-----------|-------|----------------|
| Mellins to Kennedy Good Bridge channel works | | 4 | 1 | after 2010 | RiverLink (2015-2028) | \$1.11 | 1.43% | In Design | | 58 |
| Mellins Bridge (RB) stopbank upgrade | | 4 | 3 | after 2010 | RiverLink (2015-2028) | \$0.26 | 0.33% | In Design | | 58 |
| Boulcott Golf Course (LB) stopbank upgrade and land compensator | | 4 | 1 | after 2005 | Boulcott (2010-2013) | \$5.44 | 7.00% | Complete | 1 | 58 |
| Connolly Street (LB) stopbank and land purchase | | 4 | 1 | after 2010 | Boulcott (2010-2013) | \$2.33 | 3.00% | Complete | 1 | 58 |

REACH 5 : Kennedy Good Bridge to Pomare Rail Bridge

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 5.61% | STAGE | | 0.91% | HRFMP (Page #) |
|---|-------|----------|---------------|------------|------------------------|--------|-------|--------------|-------|----------------|
| Kennedy Good Bridge to Pomare (LB) stopbank upgrade | | 5 | 4 | after 2010 | KGB Pomare (2037-2042) | \$0.86 | 1.11% | | 0.00% | 60 |
| Vegetation at Kennedy Good Bridge to Pomare rail bridge (LB/RB) | | 5 | 14 | after 2010 | KGB Pomare (2037-2042) | \$1.63 | 2.10% | | 0.00% | 60 |
| House Raising at Belmont to 1900 | | 5 | 8 | after 2010 | KGB Pomare (2037-2042) | \$0.45 | 0.58% | | 0.00% | 60 |
| Rock protection at Belmont, Nash St. and Pomare Rail Bridge (LB/RB) | | 5 | 4 | after 2010 | KGB Pomare (2037-2042) | \$1.42 | 1.83% | Partial Work | 0.5 | 60 |

REACH 6 : Pomare Rail Bridge to Silverstream Bridge

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 2.98% | STAGE | | 0.00% | HRFMP (Page #) |
|---|-------|----------|---------------|------------|-------------------------------|--------|-------|--|-------|----------------|
| Pomare rail bridge to Silverstream Bridge channel works (LB/RB) | | 6 | 13 | after 2010 | Manor Park Pomare (2041-2051) | \$1.34 | 1.72% | | 0.00% | 62 |
| Manor Park stopbanks to 2300 | | 6 | 13 | after 2010 | Manor Park Pomare (2041-2051) | \$0.98 | 1.26% | | 0.00% | 62 |

REACH 7 : Silverstream Bridges to Moonshine Bridge

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 5.85% | STAGE | | 0.60% | HRFMP (Page #) |
|--|-------|----------|---------------|------------|------------------------------------|--------|-------|----------|-------|----------------|
| Moonshine Bridge investigations | | 7 | 10 | 2001-2002 | Trentham to Whakatikei (2032-2036) | \$0.06 | 0.08% | | 0.00% | 64 |
| Moonshine bridge waterway upgrade | | 7 | 10 | after 2010 | Trentham to Whakatikei (2032-2036) | \$3.31 | 4.26% | | 0.00% | 64 |
| Whirinaki Crescent stopbank to 2300 | | 7 | 5 | 2004-2006 | Trentham to Whakatikei (2032-2036) | \$0.47 | 0.60% | Complete | 1 | 64 |
| Trentham to Whakatikei stopbank (part) | | 7 | 8 | after 2010 | Trentham to Whakatikei (2032-2036) | \$0.71 | 0.91% | | 0.00% | 64 |

REACH 8 : Moonshine Bridge to Whakatikei River

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 2.89% | STAGE | | 0.00% | HRFMP (Page #) |
|--|-------|----------|---------------|------------|------------------------------------|--------|-------|--|-------|----------------|
| Trentham to Whakatikei (LB) stopbank (part) | | 8 | 8 | after 2010 | Trentham to Whakatikei (2032-2036) | \$2.00 | 2.57% | | 0.00% | 66 |
| Moonshine to Maoribank (LB) channel works (part) | | 8 | 10 | after 2010 | Trentham to Whakatikei (2032-2036) | \$0.25 | 0.32% | | 0.00% | 66 |

REACH 9 : Whakatikei River to Norbert St. Footbridge

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 8.31% | STAGE | | 0.00% | HRFMP (Page #) |
|---|-------|----------|---------------|------------|-------------------|--------|-------|--|-------|----------------|
| Totara park stopbanks to 2300 | | 9 | 10 | after 2010 | NOT IN AMP | \$1.42 | 1.83% | | 0.00% | 68 |
| Elbow park channel upgrade | | 9 | 10 | after 2010 | NOT IN AMP | \$1.41 | 1.81% | | 0.00% | 68 |
| Whakatikei to Maoribank (LB) stopbank | | 9 | 10 | after 2010 | NOT IN AMP | \$0.28 | 0.36% | | 0.00% | 68 |
| Moonshine to Maoribank channel works (part) | | 9 | 10 | after 2010 | NOT IN AMP | \$3.35 | 4.31% | | 0.00% | 68 |

REACH 10 : Norbert St. Footbridge to Gemstone Drive

| WORK REQUIREMENT | REACH | PRIORITY | DATE 2001 FMP | DATE AMP | COST \$M 2001 FMP | 2.61% | STAGE | | 2.45% | HRFMP (Page #) |
|--|-------|----------|---------------|-----------|-------------------|--------|-------|--------------|-------|----------------|
| Norbert Street footbridge to Akatarawa Channel works | | 10 | 14 | 2004-2005 | 2037-2042 | \$0.34 | 0.44% | Complete | 1 | 70 |
| Akatarawa Road (LB) floodwall at 1900 | | 10 | 12 | 2004-2005 | 2037-2042 | \$0.72 | 0.93% | Complete | 1 | 70 |
| Gemstone Drive channel works to 1900 | | 10 | 12 | 2005-2006 | 2037-2042 | \$0.64 | 0.82% | Complete | 1 | 70 |
| Gemstone Drive (LB) stopbank to 1900 | | 10 | 12 | 2005-2006 | 2037-2042 | \$0.15 | 0.19% | Complete | 1 | 70 |
| Bridge Road House Raising to 1900 | | 10 | 7 | 2003-2007 | NOT IN AMP | \$0.18 | 0.23% | Partial Work | 0.3 | 70 |

Attachment 2 to Report 19.381

UPDATED 29 August 2019

| TOTALS IMPLEMENTATION OTAKI FMP | | | | | COST \$M FMP | Target % at Completion | Percent Complete to date | | |
|--|--|--|--|--|-------------------------|-----------------------------------|-------------------------------------|--|---------------|
| | | | | | \$6.58 | 100.00% | | | 46.53% |

REACH 1 : Mouth to SH1

| WORK REQUIREMENT | NAME IN LTP BUDGETS | REACH | PRIORITY | DATE AMP | COST \$M 1997 FMP | 48.04% | STAGE | % Complete | 13.58% |
|---|--|--------------|-----------------|-----------------|------------------------------|---------------|--------------|-------------------|---------------|
| Rangiuru - Floodgates Kapiti Lane | | 1 | IN REVIEW | IN REVIEW | \$0.12 | 1.82% | COMPLETE | 1 | 1.82% |
| North bank stopbank - minor reconstruction | North Stopbank Improvements (Mouth to SH1) | 1 | IN REVIEW | IN REVIEW | \$0.03 | 0.38% | | | 0.00% |
| North bank stopbank - deferred maintenance | North Stopbank Improvements (Mouth to SH1) | 1 | IN REVIEW | IN REVIEW | \$0.14 | 2.05% | | | 0.00% |
| Seaward Stopbank Extension - Atkinson Ave | | 1 | IN REVIEW | IN REVIEW | \$0.01 | 0.20% | | | 0.00% |
| Rangiuru House Raising | | 1 | IN REVIEW | IN REVIEW | \$0.65 | 9.82% | | | 0.00% |
| Lethbridge House Raising | | 1 | IN REVIEW | IN REVIEW | \$0.05 | 0.83% | | | 0.00% |
| Southbank stopbank - deferred maintenance | Otaki South Stopbank Land and Otaki South Stop | 1 | IN REVIEW | IN REVIEW | \$0.60 | 9.17% | COMPLETE | 1 | 9.17% |
| Mangapouri House Raising | | 1 | IN REVIEW | IN REVIEW | \$0.32 | 4.87% | | | 0.00% |
| Mangapouri Stream - Culvert and channel works | | 1 | IN REVIEW | IN REVIEW | \$1.07 | 16.31% | | | 0.00% |
| Katihiku Floodgates | | 1 | IN REVIEW | IN REVIEW | \$0.17 | 2.58% | COMPLETE | 1 | 2.58% |

REACH 2 : Chrystalls to Gorge

| WORK REQUIREMENT | | REACH | PRIORITY | DATE AMP | COST \$M 1997 FMP | 37.10% | STAGE | | 32.95% |
|--------------------------------------|--|--------------|-----------------|-----------------|------------------------------|---------------|--------------|---|---------------|
| Chrystalls Stopbank | | 2 | IN REVIEW | IN REVIEW | \$0.33 | 5.03% | COMPLETE | 1 | 5.03% |
| Chrystalls Extended Stopbank | | 2 | IN REVIEW | IN REVIEW | \$1.03 | 15.60% | COMPLETE | 1 | 15.60% |
| Harpers Stopbank | | 2 | IN REVIEW | IN REVIEW | \$0.27 | 4.15% | | | 0.00% |
| Lower Lutz and Upper Hughes Stopbank | | 2 | IN REVIEW | IN REVIEW | \$0.81 | 12.32% | COMPLETE | 1 | 12.32% |

REACH 3 : Waitohu Stream

| WORK REQUIREMENT | | REACH | PRIORITY | DATE AMP | COST \$M 1997 FMP | 14.86% | STAGE | % Complete | 0.00% |
|---|--|--------------|-----------------|-----------------|------------------------------|---------------|--------------|-------------------|--------------|
| South Waitohu - House Raising | | 3 | | 2018-2034 | \$0.15 | 2.26% | | | 0.00% |
| Old Coach Road - bridge raising and deflector stopbanks | | 3 | | 2018-2021 | \$0.40 | 6.02% | In Design | | 0.00% |
| South Waitohu Stopbank - Tasman Road | | 3 | | 2022-2030 | \$0.43 | 6.58% | | | 0.00% |

Attachment 3 to Report 19.381

Updated 29 August 2019

| TOTALS IMPLEMENTATION WAIKANAЕ FMP | | | | COST \$M FMP | Target % Complete | Percent Complete to Date |
|---|--|--|--|---------------------|--------------------------|---------------------------------|
| | | | | \$3.63 | 100.00% | 63.68% |

| WORK PLANNED IN FMP | NAMED IN LTP BUDGETS | REACH | PRIORITY | DATE AMP | COST \$M FMP | 100.00% | STAGE | % Complete | 63.68% |
|-----------------------------------|------------------------------|--------------|-----------------|-----------------|---------------------|----------------|--------------|-------------------|---------------|
| Otaihanga House Raising 1 | | 1 | | | \$0.40 | 11.03% | COMPLETE | 1 | 11.03% |
| Otaihanga Road Raising | | 1 | | 2027-2028 | \$0.14 | 3.86% | | | 0.00% |
| Otaihanga House Raising 2 | | 1 | | | \$0.13 | 3.45% | COMPLETE | 1 | 3.45% |
| Otaihanga Domain Stopbank | | 1 | | | \$0.18 | 5.07% | COMPLETE | 1 | 5.07% |
| Kauri Puriri Stopbank | | 1 | | | \$0.89 | 24.66% | COMPLETE | 1 | 24.66% |
| Greenaway Road - Lodge Relocation | | 1 | | | \$0.12 | 3.42% | COMPLETE | 1 | 3.42% |
| Greenaway Road - Road Raising | | 1 | | | \$0.04 | 0.99% | COMPLETE | 1 | 0.99% |
| Chillingworth Stopbank | | 1 | | | \$0.23 | 6.29% | COMPLETE | 1 | 6.29% |
| Jim Cooke Park Stopbank Upgrade | | 1 | | | \$0.14 | 3.94% | COMPLETE | 1 | 3.94% |
| Jim Cooke Park - Retaining Wall | | 1 | | | \$0.18 | 4.83% | COMPLETE | 1 | 4.83% |
| Waikanae Beach - Lengthen Field | Waikanae FMP Remaining Works | 1 | 1 | 2021-2025 | \$0.43 | 11.83% | | | 0.00% |
| Waikanae Beach - Golf Course St | Waikanae FMP Remaining Works | 1 | 2 | 2025-2032 | \$0.72 | 19.72% | | | 0.00% |
| Jim Cooke Park - Ring Bank Lion | Waikanae FMP Remaining Works | 1 | 3 | 2033-2034 | \$0.03 | 0.91% | | | 0.00% |

Note - house raising was excluded from LTP measure for the Waikanae FMP structural measures implemented. House raising is not considered a structural implementation measure.

| LWVDS Percent Complete - Aug 2019 (Does not include rebudgets and adjustments for 19/20 FY) | | | | | | | | | | | | | | | | | |
|---|--------------------------------------|---------------------------------|----------------|----------------|----------------|----------------|------------------|------------------|----------------|----------------|------------------|---------------|----------------|--------------------|--------------------|----------------|------------------|
| Item | Location | Work | Spent to date | | | | | Revised Schedule | | | | | 2020/21 | Forecast for 6 yrs | Total for 11 years | | |
| | | | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | | | | 2017/18 | 2018/19 |
| Reach 1- Tauherenikau River | | | | | | | | | | | | | | | | | |
| 1 | | Upgrade of stopbanks | 73,580 | 119,776 | | | | | | | | | | | | 0 | 193,356 |
| 2 | | Rock groyne(Xs 20-21RB) | | | | | | | | | | | | | | 0 | 0 |
| 3 | | Boulder groyne (RC - LB) | | | | | | | | | | | | | | 0 | 0 |
| 4 | | Boulder groyne (Donald - LB) | | | | | | | | | | | | | | 0 | 0 |
| 5 | | Bufferzone planting | | | | 47,696 | | | | | | | | | | 0 | 47,696 |
| 6 | | Delta Investigation | | | | | | | | | | | 50,000 | 50,000 | | 100,000 | 100,000 |
| Reach 2- Tributary Rivers | | | | | | | | | | | | | | | | | |
| 7 | Turanganui | Stopbank upgrade | | | | | | 402,000 | 470,000 | | | | | | | 872,000 | 872,000 |
| 8 | Taunui | Fencing & planting | | 19,325 | | 2,554 | | | | | | | | | | 0 | 21,879 |
| 9 | | Land/stopbank/fencing | | | 446,266 | | | 71,500 | | | | | 335,000 | | | 406,500 | 852,766 |
| Reach 3 - Waiohine to Waihenga | | | | | | | | | | | | | | | | | |
| 10 | | Planting | | | 3,520 | | | | | | | | | | | 0 | 3,520 |
| 11 | | Fencing | | | 1,218 | | | | | | | | | | | 0 | 1,218 |
| 12 | | Rock/boulder groyne/retards | | 172,617 | 180,827 | 98,600 | | | | | | | | | | 0 | 452,044 |
| 13 | | Boulder groyne U/s Shelton | | | | | | 4,500 | | | | | | | | 4,500 | 4,500 |
| 14 | | Boulder groyne Wildes | | | | | | 35,000 | | | | | | | | 35,000 | 35,000 |
| 15 | | Boulder groyne Guscott | | | | | | | | | | | | | | 0 | 0 |
| | | Clumps/boulders Tuckers | | | | | | | | | | | | | | 90,000 | 90,000 |
| 16 | | Boulder groyne Herricks | | | | | 14,827 | | | | | | | | | 0 | 14,827 |
| 17 | | Upgrade S/B Kershaw | | | | | | | | | | | | | | 0 | 0 |
| | | Boulder groyne Handyside | | | | | | | 9,000 | | | | | | | 9,000 | 9,000 |
| | | Boulder groyne Ashton | | | | | | 10,500 | | | | | | | | 10,500 | 10,500 |
| 18 | | Develop Tawaha Spilway | | | | | | | | | | | | | | 0 | 0 |
| Reach 4 - Waihenga to Tuhitarata | | | | | | | | | | | | | | | | | |
| 19 | A Herrick's - LB | S/b setback 20m | 25,500 | | | | | | | | | | | | | 0 | 25,500 |
| | Tawaha Spillway Culvert | Culvert upgrade | | | | | | | 70,000 | | | | | | | 70,000 | 70,000 |
| 20 | X-sect 126i 121 - RB - L B Osborne | Remove overburden | | | | | | | | | | | | | | 0 | 0 |
| 21 | X-sect 120 - RB - L B Osborne | Boulder groyne | | | | | | | | | | | | | | 0 | 0 |
| 22 | X-sect 122 - LB - SWDC | Boulder groyne | | 20,952 | | | | | | | | | | | | 0 | 20,952 |
| | X-sect 119/120 - RB - Alpe | Battering/Boulders | | | | | | 20,000 | 15,000 | | | | | | | 35,000 | 35,000 |
| | X-sect 119 - RB - Alpe | Flood Gate | | | | | | 20,000 | | | | | | | | 20,000 | 20,000 |
| | X-sect 113/114 - RB - Alpe | W.Cabing/Boulder | | | | | | | 50,000 | | | | | | | 50,000 | 50,000 |
| 23 | X-sect 114 to 109 - LB - Colton | Remove overburden | | | | | | | | | | | | | | 0 | 0 |
| 24 | X-sect 113 - RB - B L George | Boulder groyne | | | | | | | | | | | | | | 0 | 0 |
| 25 | X-sect 111 - RB - A J Barton | S/b setback 20m or b/groyne | | | | 8,636 | | | | | | | | | | 0 | 8,636 |
| 26 | X-sect 108 - P Smith | Boulder groyne | | | | | | | | | | | | | | 0 | 0 |
| 27 | X-sect 107 to 104 - P Smith | Remove overburden | | | | | | | | | | | | | | 0 | 0 |
| 28 | X-sect 101 - LB - Tim Wall | S/b setback 20m + b/groyne | 103,250 | 75,127 | | 36,172 | | | | | | | | | | 0 | 214,549 |
| 29 | X-sect 100 - LB - Tim Wall | Boulder groyne | 60,350 | | | | | | | | | | | | | 0 | 60,350 |
| 30 | X-sect 96 - RB - John Bargh | Boulder groyne | 65,000 | | | | | 11,000 | | | | | | | | 11,000 | 76,000 |
| 31 | X-sect 94 - RB - Leo Vollebregt | Boulder groyne | 51,420 | | | | | | | | | | | | | 0 | 51,420 |
| 32 | X-sect 92 - LB - Tim wall | Boulder groyne | 83,950 | | | | | 10,000 | | | | | | | | 10,000 | 93,950 |
| 33 | X-sect 87- RB - Morris Edwards | Boulder groyne | 81,200 | | | | | | | | | | | | | 0 | 81,200 |
| | X-sect 86- 87- RB - Wilson | Purchase property | | | | | | | 430,000 | | | | | | | 430,000 | 430,000 |
| 34 | X-sect 84 - RB - Owen Butcher | Rock berm (rip rap) | 98,750 | 144,209 | 21,305 | | | | | | | | | | | 0 | 264,264 |
| 35 | X-sect 80 to 81 - LB - Bill Herrick | Remove overburden | | | | | | | | | | | | | | 0 | 0 |
| 36 | X-sect 80 to 81 - RB - Pahautea Road | Remove overburden | | | | | | | | | | | | | | 0 | 0 |
| 37 | X-sect 74 to 78 - Tobin | S/b setback | | | | 481,549 | 909,574 | | | | | | | | | 0 | 1,391,123 |
| 38 | X-sect 77 - RB - Florus Bosch | Boulder groyne | 130,650 | | | | | | | | | | | | | 0 | 130,650 |
| 39 | X-sect 72 to 75 - LB - Bill Herrick | S/b setback 20m | | | | | | | | | | | 250,000 | 240,000 | 115,000 | 90,000 | 695,000 |
| 40 | X-sect 72 to 68 - LB - Bill Herrick | Remove overburden | | | | | | | 60,000 | | | | | | | 60,000 | 60,000 |
| 41 | X-sect 82 to 68 - RB - G Vollebregt | Remove overburden | | | | | | | 40,000 | | | | | | | 40,000 | 40,000 |
| 42 | X-sect 66 - LB - Bill Herrick | Benching/groyne | | 35,854 | | | | | | | | | | | | 0 | 35,854 |
| 43 | X-sect 42 - RB - Land Corp | Boulder groyne | | | 31,571 | | | | | | | | | | | 0 | 31,571 |
| 44 | X-sect 36 - RB - Parkinson | Benching/groyne | | 36,168 | | | | | | | | | | | | 0 | 36,168 |
| | Scott Simmonds | Scour protection | | | | | | | 95,000 | 20,000 | | | | | | 115,000 | 115,000 |
| | Ruamahanga | Boulder Protection | | | | | | | | | | | 100,000 | | | 100,000 | 100,000 |
| 45 | Whaka Stream upgrade | Regrade, remove trees, culverts | | | | | | 55,000 | 231,000 | 170,000 | 120,525 | 50,000 | | 100,000 | 274,000 | 900,525 | 900,525 |
| Reach 5 - Tuhitarata to Onoke | | | | | | | | | | | | | | | | | |
| 46 | Ranking 1 | Boulder rip rap | 101,850 | 82,640 | 68,137 | 57,680 | 69,045 | 52,000 | 92,000 | 10,000 | 60,000 | | | | | 214,000 | 593,352 |
| 47 | Ranking 3 | Planting the slope | | 1,690 | 26,813 | 32,197 | 18,915 | 35,000 | 20,000 | 7,000 | | | | | | 62,000 | 141,615 |
| 48 | Puals Bank | boulder rip rap | | | | | 27,691 | 60,000 | | | | | | | | 60,000 | 87,691 |
| 49 | Upgrade stopbanks | | | | | | | 21,000 | | | | | | | | 21,000 | 21,000 |
| | Barrage Control Upgrade | | | | | | | | | 230,000 | | | | | | 230,000 | 230,000 |
| 50 | Barrage downstream | Remove build up | | 44,270 | | | | | | | | | | | | 0 | 44,270 |
| Total cost | | | 875,500 | 752,628 | 779,657 | 765,084 | 1,040,052 | 444,000 | 775,500 | 752,000 | 1,105,525 | 70,000 | 585,000 | 390,000 | 439,000 | 90,000 | 4,651,025 |
| % Work Programme for Year | | | 9.88% | 8.49% | 8.80% | 8.63% | 11.73% | 5.01% | 8.75% | 8.48% | 12.47% | 0.79% | 6.60% | 4.40% | 4.95% | 1.02% | 1.00 |
| Cumulative % for Work Programme | | | 9.88% | 18.37% | 27.16% | 35.80% | 47.53% | 52.54% | 61.29% | 69.77% | 82.24% | 83.03% | 89.63% | 94.03% | 98.98% | 100.00% | |



Report 2019.415
Date 9 September 2019
File ENPL-9-277

Committee Environment
Author Davor Bejakovich, Manager, Biosecurity

Regional Pest Management Plan 2019-39: Operational Plan 2019/20

1. Purpose

To seek adoption of the 2019/20 Operational Plan (the Plan) for the implementation of the Regional Pest Management Plan 2019-2039 (RPMP).

2. Background

The Council approved the Regional Pest Management Plan 2019–2039 (RPMP) on 2 July 2019, following a formal review of the Regional Pest Management Strategy 2002-2022 by the Biosecurity Department.

Operational Plans are prepared annually for Committee approval, followed by an annual report on performance against the objectives. An Operational Plan Report on the success of the Strategy for 2018/19 will be available in November 2019.

The Biosecurity Act 1993 specifies a number of requirements for an Operational Plan. The Council must:

- Review the Plan annually and, if deemed appropriate, amend it
- Provide a copy of the Plan to the responsible Minister or the Council
- Prepare an annual report on the Plan, including the effectiveness of implementation, not later than five months after the end of each financial year
- Make copies of the Plan and annual report available to the public.

3. The Operational Plan

The proposed Operational Plan 2019/20 is attached as [Attachment 1](#).

During 2019/20 Biosecurity resources will continue to be focused on the key aspects of strategy implementation. These include:

- Exclusion and Eradication species, all of which are capable of becoming significant regional pests if establishment occurs
- Ensuring that Sustained Control and Progressive Containment pests are maintained or decreased within their current infestation zones
- Continuing the extensive site-led biodiversity programmes in Key Native Ecosystems (KNE) across private land, local authority reserves and regional parks
- Implementation of the ninth year of the expanding Regional Possum and Predator Control Programme
- Working with landowners, care groups, iwi, local and national government on a range of regional and national projects.

The successful KNE programme continues to protect and enhance the best sites of biodiversity in the Wellington Region. It is equally important for building and maintaining relationships with private landowners and Territorial Local Authorities (TLA) within the region. Alongside the KNE programme there are formal agreements to deliver additional pest control for a number of TLAs.

Public awareness and education remains an important aspect of implementing the Strategy. A range of paper and electronic resources are available to the public, with Biosecurity staff continuing to give presentations to schools and community and interest groups on RPMP related topics.

4. Communication

The Biosecurity Act requires that copies of the Operational Plan be made available to the public. An electronic version of the document will be available on the GWRC website and a printed version is available upon request.

5. Consideration of Climate Change

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

5.1 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.

Operational emissions associated with biosecurity operations are measured and reported via the GWRC Carbon Inventory and subject to the emissions reduction initiatives set out in the GWRC Corporate Sustainability Action Plan.

GWRC's role in enabling forests in the region to draw CO₂ down from the atmosphere (carbon sequestration) is significant. Biosecurity operations contribute to protecting native forest and vegetation by maintaining large scale pest animal management programmes.

Possum control and KNE programmes help maintain the carbon sequestration capacity of forests located within the 129,000 ha under GWRC control (the KNE programme encompasses 48,000 ha of mostly forest ecosystems and regional possum control covers over 186,000 ha of the region). Trees planted through biodiversity and parks programmes along with erosion control initiatives have resulted in thousands of new trees being planted each year.

5.2 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.

Biosecurity threats are expected to increase as the climate in the Wellington region continues to change. Future challenges will include new exotic pests, weeds and diseases which have previously not been able to flourish becoming established. The potential establishment of subtropical pests and current seasonal immigrants are of greatest concern, along with taxa that are already recognised as high risk.

The Operational Plan that is the subject of this paper is considered sufficient to address climate change induced changes in the dynamics of pest species over the coming year.

Subsequent Operational Plans will address threats identified in the Regional Pest Management Plan, as well as options for managing the effects climate change is expected to have on the Department's operations (for example severe weather can impact service delivery of aerial and ground based pest control).

6. The decision-making process and significance

The matter requiring decision in this report has been considered by officers against the requirements of Part 6 of the Local Government Act 2002.

6.1 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. The matter can be considered to have low significance.

The Council is required to prepare an annual RPMP Operational Plan under Section 100B of the Biosecurity Act 1993. There is no formal requirement to have the Operational Plan approved by the Council, but it is considered

appropriate to do so. This aligns with the Council’s support of biosecurity matters in the region and transparency of expenditure.

7. Recommendations

That the Committee:

1. **Receives** the report.
2. **Notes** the content of the report
3. **Approves** the proposed Operational Plan 2019/20 (Attachment 1) for the Regional Pest Management Plan 2019-2039.

Report prepared by:

Report Approved by:

Report Approved by:

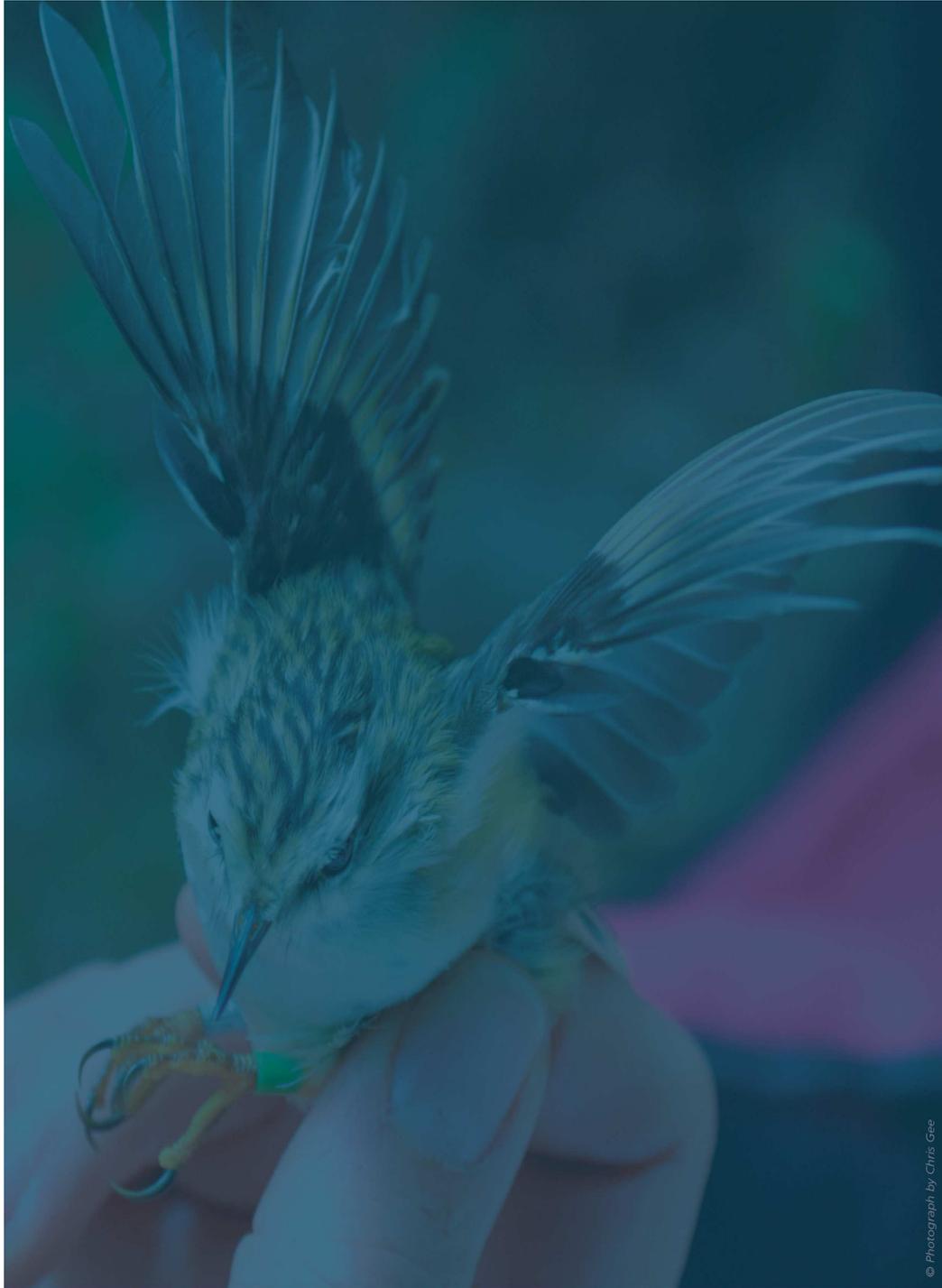
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Attachment 1: Regional Pest Management Strategy – Operational Plan 2019/20

Attachment 1 to Report 19.415



**REGIONAL PEST MANAGEMENT
PLAN 2019-2039
OPERATIONAL PLAN 2019/20**



| | |
|--|----|
| Contents | 2 |
| 1.Introduction | 4 |
| 1.1 Background | 4 |
| 1.2 Linkage to the Regional Pest Management Plan | 4 |
| 1.3 Implementation | 4 |
| 1.4 Review | 5 |
| 1.5 Integration with Annual Plan | 5 |
| 1.6 Integration with GWRC biodiversity activities | 5 |
| 1.7 Areas of responsibility | 5 |
| 1.8 How the pest species are decided | 6 |
| 1.9 Species in the Operational Plan | 7 |
| 1.10 Pest Control Methods | 7 |
| 1.Pest Animals | 8 |
| 2.1 Performance Targets and Measures | 8 |
| 2.1.1 Wallaby | 8 |
| 2.1.2 Rook | 8 |
| 2.1.3 Feral rabbit | 9 |
| 2.1.4 Wasps | 10 |
| 2.1.5 European hedgehog | 10 |
| 2.1.6 Feral deer | 10 |
| 2.1.7 Feral goat | 11 |
| 2.1.8 Magpie | 11 |
| 2.1.9 Mustelids | 11 |
| 2.1.10 Pest cat | 12 |
| 2.1.11 Possum | 12 |
| 2.1.12 Regional Possum Predator Control Programme | 13 |
| 2.1.13 Rats | 13 |
| 2.1.14 Advice, Education and Engagement | 14 |
| 2.Pest Plants | 15 |
| 3.1 Performance Targets and Measures | 15 |
| 3.1.1 Alligator weed, Chilean Needle Grass, Nassella Tussock | 15 |
| 3.1.2 Moth Plant | 15 |
| 3.1.3 Senegal tea | 16 |
| 3.1.4 Spartina | 16 |
| 3.1.5 Velvetleaf | 16 |
| 3.1.6 Woolly Nightshade | 17 |
| 3.1.7 Purple Loosestrife | 17 |

| | |
|---|----|
| 3.1.8 Wilding conifers – European larch, Douglas fir and pine species | 17 |
| 3.1.9 Blue Passionflower | 18 |
| 3.1.10 Boneseed | 18 |
| 3.1.11 Climbing Spindleberry | 18 |
| 3.1.12 Eelgrass | 19 |
| 3.1.13 Banana Passionfruit, Cathedral Bells, Old Mans Beard | 19 |
| 3.1.14 Key Native Ecosystem’s, Reserves and Forest Health (Pest Plants) | 20 |
| 3.1.15 Biocontrol | 20 |
| 3.1.16 Surveillance and Engagement | 21 |
| 3.Anticipated Costs | 21 |
| 4.Implementation Report | 21 |
| Appendices | 22 |
| Appendix 1: Chemical Controls in use by GWRC to implement the RPMP | 22 |
| Appendix 2: Modified McLean Scale | 23 |

1. Introduction

1.1 Background

Greater Wellington Regional Council (GWRC) biosecurity activities involve the control of unwanted plants and animals for environmental, economic and social and cultural reasons:

- **Environmental:** Many of New Zealand's native plants and animals cannot co-exist with introduced species. In areas of high biodiversity value, pest plants and pest animals need to be controlled to protect vulnerable ecosystems
- **Economic:** The impact of pest plants and pest animals leads to considerable economic loss in many of New Zealand's primary industries. Pest management is essential to the success of industries such as agriculture
- **Social:** Pest organisms create a range of social problems within our communities. Pest plants and pest animals cause a considerable nuisance in many aspects of rural and urban life, inhibiting the ability of people to enjoy their property, lifestyle and wellbeing
- **Cultural:** Activities carried out under the RPMP provide for the protection of the relationship between Maori and their ancestral lands, waters, sites, wahi tapu and taonga, and the protection of those aspects from the adverse effects of pests.

The Greater Wellington Regional Council Pest Management Plan 2019 – 2039 (the RPMP) was prepared in accordance with the Biosecurity Act 1993, and became operative on 2nd July 2019.

1.2 Linkage to the Regional Pest Management Plan

This Operational Plan has been prepared in accordance with section 100B of the Biosecurity Act 1993. This plan identifies and outlines the nature and scope of activities GWRC intends to undertake in the implementation of its Regional Pest Management Plan for the financial year 2019/20.

The RPMP contains objectives specific to individual pests and outlines the means by which GWRC, as the Management Agency, will achieve those objectives.

The RPMP has clearly defined rules to be met by all land occupiers. GWRC has responsibility to ensure land occupiers are aware of, and meet, their obligations for pest management on their properties. GWRC can also undertake pest control operations where there is recognised regional benefit.

1.3 Implementation

The purpose of this plan is to implement the RPMP region-wide by:

- **Minimising the actual and potential adverse or unintended effects associated with the specified organisms;**

- **Eradicating certain organisms, reduce the extent of others, and contain those species that are already well established;**
- **Enabling monitoring for the presence of declared pests in the Wellington region.**

1.4 Review

This plan will be reviewed and reported on annually. The plan may be amended to ensure that the objectives of the RPMP will be achieved within its terms. Section 100G of the Biosecurity Act allows GWRC to make minor changes to the RPMP, provided that it is satisfied that the changes will not have any significant effects on the rights and obligations of any persons.

1.5 Integration with Annual Plan

As far as practicable, the Operational Plan has been integrated with GWRC's Annual Plan. The Annual Plan sets the overall priorities and work programmes for the organisation and provides an overview of related pest management activities for the 2019/20 year. Implementation costs are included in the Annual Plan.

1.6 Integration with GWRC biodiversity activities

GWRC has responsibilities to manage biodiversity under the Resource Management Act 1991. Various council programmes that contribute to the management of biodiversity have been consolidated into the Biodiversity Department. Biodiversity related activities and the role of the Biodiversity Department are guided by the Greater Wellington Biodiversity Strategy 2011-21.

The management of high value biodiversity areas across the region is coordinated by the Biodiversity Department. Pest plant and pest animal control is a key method for managing native biodiversity, requiring ongoing investment of council resources, with a significant amount allocated to the Key Native Ecosystems programme. This programme focuses on managing the areas of highest biodiversity value, predominately through ongoing coordinated pest control for sites. Implementation of this programme is undertaken by the Biosecurity Department.

This work is complemented by other efforts such as fencing to exclude farm stock and advocating for legal protection under QEII and other covenanting agencies

1.7 Areas of responsibility

This plan and the RPMP are based on the following core areas of GWRC's responsibility:

- **Regulation (standards and enforcement)**

Standards, rules and restrictions are set and compliance enforced with penalties, when and where necessary.

- **Inspection**

Regular property inspections ensure that rules and regulations are being met and changes in pest densities are determined over time.

- **Monitoring**

Undertaking monitoring for pests in the region to determine their presence, distribution and effects, and to measure the extent to which the objectives of the RPMP are being achieved.

- **Direct control**

Funding and undertaking pest control in some circumstances as a service for regional benefit.

- **Advice and education**

Free advice is given to raise awareness of pest problems and to provide land occupiers with the information to control their own pests.

- **Community initiatives**

Guidance and support is provided for community driven initiatives to control pests.

- **Cost recovery**

A full cost recovery operational service is available for pest control.

- **Biological control**

As approved biological control agents become available, GWRC may elect to utilise them. Biocontrol is currently a key tool in the management of rabbits and various pest plant and other harmful species.

1.8 How the pest species are decided

A cost-benefit analysis (CBA) is undertaken for all species proposed for the RPMP. This process decides what control, if any, is to be undertaken and what level of management is needed for the species. The CBA works in conjunction with the invasion curve, which designates the different management programmes.

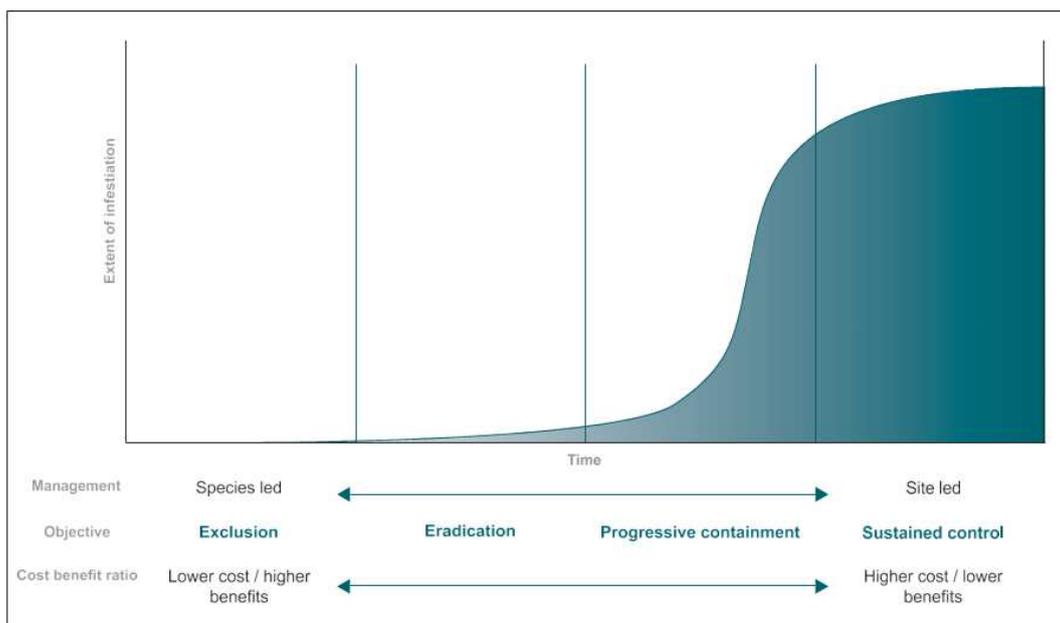


Figure 1: Phases of a pest through time in relation to its appropriate management. Adapted from Greater Wellington’s Regional Pest Management Plan, published May 2019.

| Infestation phase | Phase characteristics | Management programmes |
|-------------------|--|-------------------------|
| Absent | Pest not yet established in the Wellington region, or, all known sites are eradicated. | Exclusion |
| Lag | Pest numbers low, rate of population increase low, distribution limited. | Eradication |
| Explosion | Rapid growth in population size and range | Progressive Containment |
| Established | Pest fills most of available habitat | Sustained Control |
| | | Site led |

1.9 Species in the Operational Plan

The species in the plan are generally collated by category, but individual species or projects with a considerable investment or public interest are listed separately to provide greater transparency of expenditure.

1.10 Pest Control Methods

Greater Wellington Regional Council uses a range of methods and tools to control pest plants and pest animals within the region. All control operations are undertaken by trained staff, contractors or volunteers using industry accepted best practice techniques. This methodology considers environmental and humane factors alongside cost-effectiveness and practicality. Chemical based pest control methods are utilised only when non-chemical methods are impractical or inadequate. All GWRC control operations aim to minimise the amount of chemical used in the natural environment. For a full list of the pesticides used by GWRC refer to Appendix 1.

2. Pest Animals

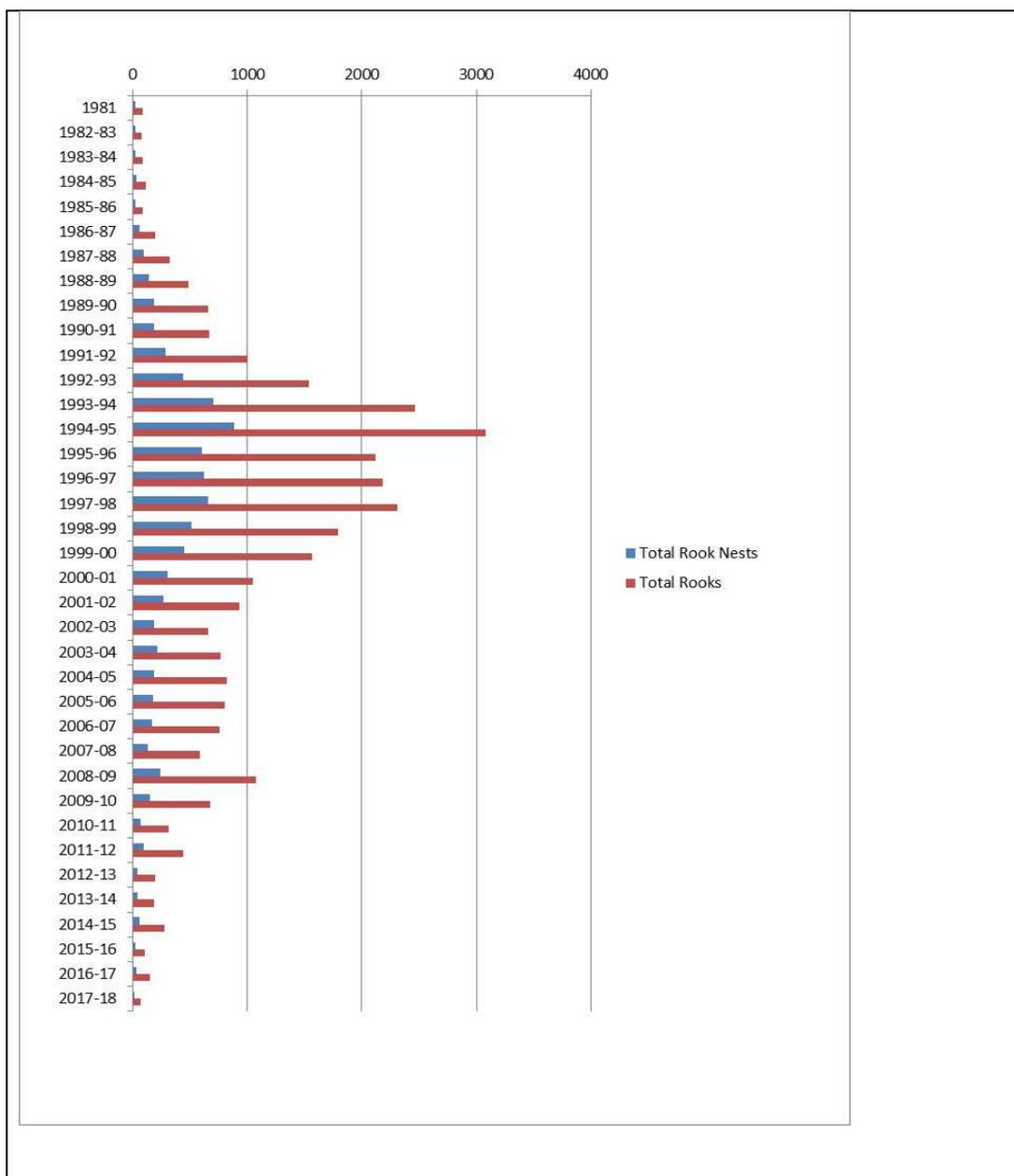
2.1 Performance targets and measures

2.1.1 Wallaby (*Macropus rufogriseus rufogriseus*, *Macropus eugenii*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|--|--|-------------------------|-------------------|----------|
| Objective | Prevent the establishment of wallabies in the Wellington region. | | | |
| Targets | Conduct searches in areas vulnerable to infestation following reported sightings or reports of illegal releases. Eradication of exclusion species will be attempted by GW in conjunction with relevant Crown agencies and stakeholders where practicable. | | | |
| Programme trend: Detected in the region, but not established. | | | | |

2.1.2 Rook (*Corvus frugilegus*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|-------------------|--|-------------------------|-------------------|----------|
| Objectives | Eradicate all rooks from the region; Have no active rookeries within 10 years of the commencement of the RPMP. | | | |
| Targets | Survey rook populations annually in areas where they are known to exist, and where new infestations are reported. Inspect pet shops, online sales and rook keepers for the sale and/or breeding of rooks. Encourage Horizons Regional Council to actively pursue management of rooks within their regions that complements Greater Wellington’s eradication programme. Support appropriate research initiatives, including biological control should it become available. Undertake direct control by service delivery where rooks are known to exist. | | | |



2.1.3 Feral rabbit (*Oryctolagus cuniculus*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|--|-------------------------|-------------------|----------|
| Objective | Sustainably control rabbits to ensure that population levels are maintained below Level 5 on the Modified McLean Rabbit Infestation Scale 2012. | | | |
| Targets | Determine and report on rabbit densities and population trends in high to extreme rabbit-prone areas using: <ul style="list-style-type: none"> • The Modified McLean Rabbit Infestation Scale 2012; • Night counts at historic monitoring sites. Monitor the effectiveness and rate of spread of biological control agents through blood sampling. Provide a referral or cost recovery service to land owners/occupiers who | | | |

| | |
|--|--|
| | <p>request rabbit control.</p> <p>Release biological control agents for the control of feral rabbits when appropriate.</p> <p>Support research initiatives including biological control.</p> |
|--|--|

2.1.4 Wasps (common, German, Australian paper, Asian paper)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|---|-------------------------|-------------------|----------|
| Objective | Sustainable control of wasps in the Wellington region. | | | |
| Targets | <p>Report the times and general locations of common, German and paper wasp complaints in the Wellington region through client data base information.</p> <p>Release biological control agents for the control of wasps where appropriate.</p> <p>Support research initiatives into the human health impacts of wasps in the Wellington region, such as continuing to support Landcare Research Ltd.</p> | | | |

2.1.5 European hedgehog (*Erinaceus europaeus occidentalis*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|---|-------------------------|-------------------|----------|
| Objective | Sustainably control hedgehogs in KNE areas and TA reserves within the Wellington region. | | | |
| Targets | <p>Undertake inspections, monitoring and surveillance within selected KNE's to determine the presence of hedgehogs with tracking tunnels.</p> <p>Undertake direct control of hedgehogs by service delivery within KNE's as part of the integrated management of those areas, to levels that protect the biodiversity values of the areas.</p> <p>Provide a cost recovery service in actively managed TA reserves in agreement with the associated TA.</p> | | | |

2.1.6 Feral deer (fallow, red and sika)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|--|-------------------------|-------------------|----------|
| Objective | Sustainably control feral deer in KNE areas and on TA reserves within the Wellington region as requested. | | | |
| Targets | <p>Undertake direct control by service delivery of feral deer in KNE's as part of the integrated management of those areas, to levels that protect the biodiversity values of the areas.</p> <p>Provide a cost recovery service in actively managed TA reserves in agreement with the associated TA.</p> | | | |

2.1.7 Feral goat (*Capra hircus*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|---|-------------------------|-------------------|----------|
| Objective | Sustainably control feral goats in KNE areas and on TA reserves within the Wellington region. | | | |
| Targets | <p>Undertake direct control by service delivery of feral goats in KNE's as part of the integrated management of those areas, to levels that protect the biodiversity values of the areas.</p> <p>Provide a cost recovery service in actively managed TA reserves in agreement with the associated TA.</p> <p>Make the public aware of their responsibilities when housing domestic goats.</p> | | | |

2.1.8 Magpie (*Gymnorhina tibicen tibicen*, *G. tibicen hypoleuca*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|--|-------------------------|-------------------|----------|
| Objective | Control aggressive / nuisance magpies to protect the public, and reduce the effects of magpies on the natural environment in the Wellington region through the loan of traps. | | | |
| Targets | <p>Undertake direct control of magpies by service delivery within 10 working days where there is known to be a threat of injury to members of the public, or complaints are made to that effect.</p> <p>Respond to land owners/occupiers wanting to undertake magpie control within 15 working days of receiving a request for information and/or assistance. Provide control tools as they become available.</p> <p>Provide advice, education and assistance to occupiers wanting to undertake magpie control.</p> <p>Support appropriate research initiatives into magpie impacts.</p> | | | |

2.1.9 Mustelids (ferrets, stoats, weasels)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|-------------------|---|-------------------------|-------------------|----------|
| Objectives | Sustainably control mustelids in KNE areas and TA reserves. | | | |
| Targets | <p>Eradicate mustelids on land contained within the boundaries of Predator Free Wellington initiatives.</p> <p>Undertake inspections, monitoring and surveillance in KNE areas and on land contained within the Predator Free Wellington initiative, to determine the presence of new infestations and status in pre- and post-eradication sites.</p> <p>Undertake direct control of mustelids in KNE's as part of the integrated management of those areas, to levels that protect the biodiversity values of the areas.</p> | | | |

| | |
|--|---|
| | <p>Support and/or undertake control in conjunction with Predator Free Wellington project partners.</p> <p>Provide a cost recovery service in actively managed TA reserves in agreement with the associated TA.</p> <p>Enforce restrictions on the sale, breeding, distribution and exhibition of mustelids.</p> |
|--|---|

2.1.10 Pest cat (*Felis catus*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|---|-------------------------|-------------------|----------|
| Objective | Sustainably control pest cats in KNE areas and on TA reserves within the Wellington region. | | | |
| Targets | <p>Undertake inspections, monitoring and surveillance in KNE areas and actively managed TA reserves, to determine the presence of pest cats and status of existing or historical sites of cat colonies.</p> <p>Undertake direct control of pest cats within KNE’s as part of the integrated management of those areas, to levels that protect the biodiversity values of the areas.</p> <p>Provide a cost recovery service in actively managed TA reserves in agreement with the associated TA.</p> <p>Provide information and advice on the impacts of pest cats and best-practice control methods, particularly to communities near KNE’s and TA reserves.</p> <p>Enforce prohibitions on cat colonies and abandonment.</p> | | | |

2.1.11 Possum (*Trichosurus vulpecula*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|-------------------|---|-------------------------|-------------------|----------|
| Objectives | Eradicate possums on land contained within the boundaries of the Predator Free Wellington initiative. | | | |
| Targets | <p>Control possums in KNE’s and TA reserves to reduce the impacts on the biodiversity and cultural and economic values in the Wellington region</p> <p>Undertake inspections, monitoring and surveillance on land contained within the Predator Free Wellington initiative, to determine the presence of new infestations and status in pre- and post-eradication sites.</p> <p>Support and/or undertake control in conjunction with Predator Free Wellington project partners.</p> <p>Undertake direct control by service delivery in KNE’s and other sites of ecological significance in agreement with the land owners/occupiers.</p> <p>Provide a cost recovery service in actively managed TA reserves in agreement with the associated TA.</p> <p>Support research initiatives, including biological control.</p> | | | |

2.1.12 Regional Possum Predator Control Programme

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|----------------------------|---|-------------------------|-------------------|----------|
| Objective | The RPPCP is a pest management initiative that aims to control possums and other predators that are serious threats to our native biodiversity and economy. Possum populations on land treated within the RPPCP are maintained at a Residual Trap Catch (RTC) rate (or equivalent) of 5 percent or less. | | | |
| Operations overview | GW will manage all operational activities. | | | |
| Target | <p>Approximately 180,000 ha within the Wellington Region have been declared Bovine Tb free and are included within the RPPCP.</p> <p>Establish and maintain possum control programmes, in collaboration with landowners, in areas that have historically received bovine Tb vector control and now meet OSPRI’s criteria to be declared Tb free.</p> <p>In the 2019/20 year it is proposed to treat 95,000 ha of possum control and 4,300 ha of mustelid control.</p> | | | |

2.1.13 Rats (*Rattus norvegicus*, *R. rattus*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|-------------------|---|-------------------------|-------------------|----------|
| Objectives | Sustainably control rats in KNE areas and TA reserves. | | | |
| Targets | <p>Eradicate rats on land contained within the boundaries of the Predator Free Wellington initiative.</p> <p>Undertake inspections, monitoring and surveillance in KNE areas, and on land contained within the boundaries of the Predator Free Wellington initiative, to determine the presence of new infestations and status in pre- and post-eradication sites.</p> <p>Undertake direct control of rats in KNE’s as part of the integrated management of those areas, to levels that protect the biodiversity values of the areas (e.g. 5 percent tracking rate).</p> <p>Support and/or undertake control in conjunction with Predator Free Wellington project partners.</p> <p>Provide a cost recovery service in actively managed TA reserves in agreement with the associated TA.</p> <p>Assist in the release of biocontrol agents for rats where appropriate.</p> | | | |

2.1.14 Advice, Education and Engagement

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|--|--|-------------------------|-------------------|----------|
| <p>Objective</p> <p>Targets</p> | <p>To support pest animal management in the region by enabling public and communities to achieve healthy environments, by reducing the adverse effects of pest animals.</p> <p>Provide a referral or cost recovery service to occupiers who require pest animal control.</p> <p>Ensure occupiers can access information about their responsibilities for pest animal control by keeping communication material up to date.</p> <p>Provide information and advice to the public regarding pest animal identification, impacts and control, through website information and site inspections.</p> <p>Advise and support community groups undertaking pest animal control.</p> <p>Attend events and undertake publicity campaigns to increase public awareness.</p> | | | |

3. Pest Plants

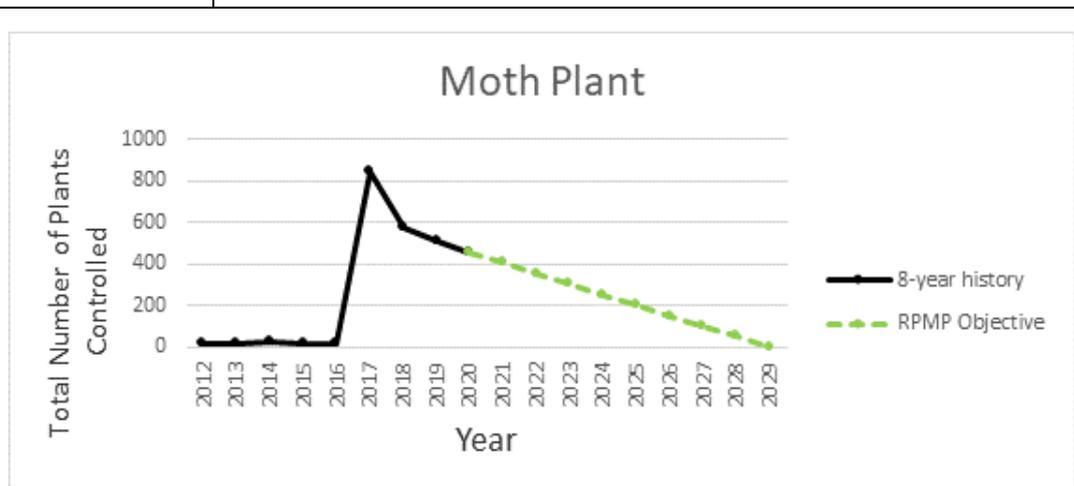
3.1 Performance targets and measures

3.1.1 Alligator weed (*Alternanthera philoxeroides*), Chilean needle grass (*Nassella neesiana*), *Nassella tussock* (*Nassella trichotoma*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|--|---|-------------------------|-------------------|----------|
| Objective | Prevent the establishment of these species in the Wellington region. | | | |
| Targets | Prioritise preferred habitat areas in preparation to carrying out surveillance activities. Determine pathway endpoints for infestation from sites outside of the area and prioritise surveying these properties first. Focus on advocacy, create content to be distributed. Promote targeted advertising. Incorporate promotional material into letter drops for other targeted surveys involving the same habitat. Develop partnerships with other organisations and community groups that have expertise or an interest in protecting the environment. | | | |
| Programme trend: Species not yet established. | | | | |

3.1.2 Moth plant (*Araujia hortorum*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|---|-------------------------|-------------------|----------|
| Objective | Destroy all known infestations of these species within the Wellington region, prior to seed set. | | | |
| Targets | Undertake direct control by service delivery at all known sites. Assessment of existing infestation points to decide whether any surveys are necessary. Inspection and delimit regime to be carried out at all known sites. | | | |



3.1.3 Senegal tea (*Gymnocoronis spilanthoides*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|---|--|-------------------------|-------------------|----------|
| Objective | Destroy all known infestations of these species within the Wellington region, prior to seed set. | | | |
| Targets | Undertake direct control by service delivery at all known sites. Assessment of existing infestation points to decide whether any surveys are necessary. Inspection and delimit regime to be carried out at all known sites. Apply a catchment approach to surveillance activities, starting at the headwaters of target areas. Liaise with TLA's regarding any management activities that may affect spread. | | | |
| Programme trend: Lack of prior data as species is new to this programme. | | | | |

3.1.4 *Spartina* (*Spartina anglica*, *S. alterniflora*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|--|---|-------------------------|-------------------|----------|
| Objective | Destroy all known infestations of these species within the Wellington region, prior to seed set. | | | |
| Targets | Undertake direct control by service delivery at all known sites. Assessment of existing infestation points to decide whether any surveys are necessary. Inspection and delimit regime to be carried out at all known sites. | | | |
| Programme trend: Lack of prior data as species is new to the programme. | | | | |

3.1.5 Velvetleaf (*Abutilon theophrasti*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|---|--|-------------------------|-------------------|----------|
| Objective | Destroy all known infestations of these species within the Wellington region, prior to seed set. | | | |
| Targets | Undertake direct control by service delivery at all known sites. Assessment of existing infestation points to decide whether any surveys are necessary. Inspection and delimit regime to be carried out at all known sites. All active infestation points visited three times annually at six weekly intervals point. Determine whether cultivation in year two to encourage any seed bank to germinate is beneficial. | | | |
| Programme trend: Lack of prior data as species is new to this programme. | | | | |

3.1.6 Woolly nightshade (*Solanum mauritianum*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------|-------------------|----------|------|----------------|----------------|------|----|--|------|----|--|------|-----|--|------|-----|--|------|----|--|------|----|--|------|----|--|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|---|---|------|---|---|------|---|---|------|---|---|------|---|---|------|---|---|
| Objective | Destroy all known infestations of these species within the Wellington region, prior to seed set. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Targets | Undertake direct control by service delivery at all known sites. Assessment of existing infestation points to decide whether any surveys are necessary. Inspection and delimit regime to be carried out at all known sites. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <caption>Woolly Nightshade - Number of Plants Controlled</caption> <thead> <tr> <th>Year</th> <th>8-year history</th> <th>RPMP Objective</th> </tr> </thead> <tbody> <tr><td>2012</td><td>90</td><td></td></tr> <tr><td>2013</td><td>90</td><td></td></tr> <tr><td>2014</td><td>160</td><td></td></tr> <tr><td>2015</td><td>240</td><td></td></tr> <tr><td>2016</td><td>20</td><td></td></tr> <tr><td>2017</td><td>10</td><td></td></tr> <tr><td>2018</td><td>45</td><td></td></tr> <tr><td>2019</td><td>30</td><td>30</td></tr> <tr><td>2020</td><td>25</td><td>25</td></tr> <tr><td>2021</td><td>20</td><td>20</td></tr> <tr><td>2022</td><td>15</td><td>15</td></tr> <tr><td>2023</td><td>10</td><td>10</td></tr> <tr><td>2024</td><td>5</td><td>5</td></tr> <tr><td>2025</td><td>2</td><td>2</td></tr> <tr><td>2026</td><td>1</td><td>1</td></tr> <tr><td>2027</td><td>0</td><td>0</td></tr> <tr><td>2028</td><td>0</td><td>0</td></tr> <tr><td>2029</td><td>0</td><td>0</td></tr> </tbody> </table> | | | | | Year | 8-year history | RPMP Objective | 2012 | 90 | | 2013 | 90 | | 2014 | 160 | | 2015 | 240 | | 2016 | 20 | | 2017 | 10 | | 2018 | 45 | | 2019 | 30 | 30 | 2020 | 25 | 25 | 2021 | 20 | 20 | 2022 | 15 | 15 | 2023 | 10 | 10 | 2024 | 5 | 5 | 2025 | 2 | 2 | 2026 | 1 | 1 | 2027 | 0 | 0 | 2028 | 0 | 0 | 2029 | 0 | 0 |
| Year | 8-year history | RPMP Objective | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2012 | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2013 | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2014 | 160 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2015 | 240 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2016 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2017 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2018 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2019 | 30 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2020 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2021 | 20 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2022 | 15 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2023 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2024 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2025 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2026 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2027 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2028 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2029 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

3.1.7 Purple loosestrife (*Lythrum salicaria*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|---|---|-------------------------|-------------------|----------|
| Objective | Progressively contain and reduce the geographic distribution or extent of purple loosestrife in wetlands or waterbodies identified as specific outstanding waterbodies and wetlands in the Proposed Natural Resources Plan for the Wellington Region (Schedules A1-3, B, C1-2). | | | |
| Target | Undertake the initial direct control of purple loosestrife by service delivery at wetland and waterbody sites classified as natural, significant or outstanding. | | | |
| Programme trend: Lack of prior data as species is new to this programme. | | | | |

3.1.8 Wilding conifers – European larch (*Larix decidua*), Douglas fir (*Pseudotsuga menziesii*) and pine species (*Pinus* spp.)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|---|-------------------------|-------------------|----------|
| Objective | Progressively contain and reduce the geographic distribution or extent of wilding conifers in the high risk areas of the alpine and sub-alpine zone of Remutaka Ranges. | | | |

| | |
|---|--|
| Target | Undertake the initial direct control of wilding conifers by service delivery at sites classified as natural, significant, outstanding or high value. |
| Programme trend: Lack of prior data as species is new to this programme. | |

3.1.9 Blue passionflower (*Passiflora caerulea*)

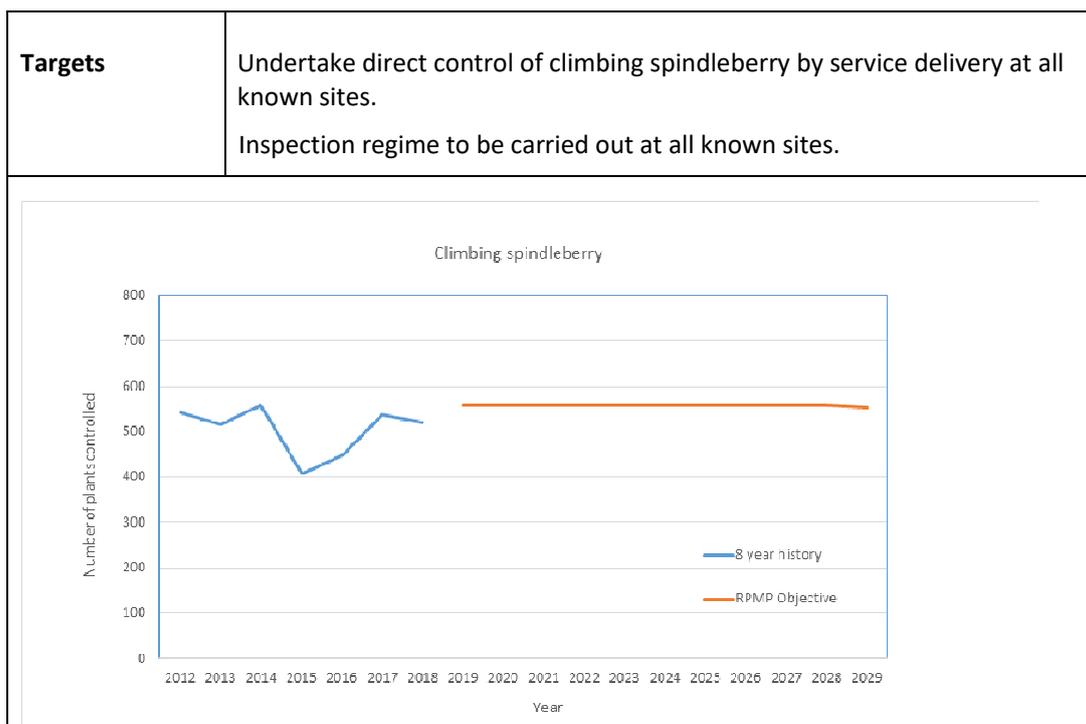
| Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------|-------------------|----------|------|-----------------------------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|
| Objective | Sustainably control blue passionflower within the Wellington region. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Targets | Undertake direct control of blue passionflower by service delivery at all known sites. Inspection regime to be carried out at all known sites. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <caption>Number of Blue passionflower plants controlled over last 10 years</caption> <thead> <tr> <th>Year</th> <th>Number of plants controlled</th> </tr> </thead> <tbody> <tr><td>2008/2009</td><td>2300</td></tr> <tr><td>2009/2010</td><td>1300</td></tr> <tr><td>2010/2011</td><td>1000</td></tr> <tr><td>2011/2012</td><td>2500</td></tr> <tr><td>2012/2013</td><td>1300</td></tr> <tr><td>2013/2014</td><td>1500</td></tr> <tr><td>2014/2015</td><td>1900</td></tr> <tr><td>2015/2016</td><td>2600</td></tr> <tr><td>2016/2017</td><td>3500</td></tr> <tr><td>2017/2018</td><td>3500</td></tr> <tr><td>2018/2019</td><td>2500</td></tr> </tbody> </table> | | | | | Year | Number of plants controlled | 2008/2009 | 2300 | 2009/2010 | 1300 | 2010/2011 | 1000 | 2011/2012 | 2500 | 2012/2013 | 1300 | 2013/2014 | 1500 | 2014/2015 | 1900 | 2015/2016 | 2600 | 2016/2017 | 3500 | 2017/2018 | 3500 | 2018/2019 | 2500 |
| Year | Number of plants controlled | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2008/2009 | 2300 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2009/2010 | 1300 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2010/2011 | 1000 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2011/2012 | 2500 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2012/2013 | 1300 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2013/2014 | 1500 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2014/2015 | 1900 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2015/2016 | 2600 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2016/2017 | 3500 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2017/2018 | 3500 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2018/2019 | 2500 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

3.1.10 Boneseed (*Chrysanthemoides monilifera*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|--|---|-------------------------|-------------------|----------|
| Objective | Sustainably control boneseed in sites of non-productive coastal habitats in special coastal communities. | | | |
| Targets | Undertake direct control of boneseed by service delivery at all known sites of non-productive coastal habitats in special coastal communities. Inspection regime to be carried out at all known sites. | | | |
| Programme trend: Lack of compatible data as prior work carried out to contract specifications and budget; total numbers not recorded. | | | | |

3.1.11 Climbing spindleberry (*Celastrus orbiculatus*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|--|-------------------------|-------------------|----------|
| Objective | Sustainably control climbing spindleberry within the Wellington region to less than or equal to 2014 levels. | | | |



3.1.12 Eelgrass (*Vallisneria spiralis*, *V. gigantea*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|---|--|-------------------------|-------------------|----------|
| Objective | Over the duration of the Plan, sustainably control eelgrass in wetlands or waterbodies identified as specific outstanding waterbodies and wetlands in the Proposed Natural Resources Plan for the Wellington Region (Schedules A 1-3, B, C1, C2), to protect the Wellington Region’s indigenous environmental and cultural values, specifically wetland habitats with native wetland biodiversity. | | | |
| Targets | Undertake direct manual control of eelgrass by service delivery in wetlands and waterbodies identified as natural, significant or outstanding in the Natural Resources Plan for the Wellington region. Erect signage at the above locations as advisory notices for the public. | | | |
| Programme trend: Lack of compatible data as prior work focussed on sites, number of plants cannot be recorded. | | | | |

3.1.13 Banana passionfruit (*Passiflora mixta*, *P. mollissima*, *P. tripartita*), Cathedral bells (*Cobaea scandens*), Old man’s beard (*Clematis vitalba*)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|----------------------------|---|-------------------------|-------------------|----------|
| Objective | Control and reduce the geographic distribution and/or extent of these species within the Hutt City Council TA boundary. | | | |
| Operations overview | Delivered by Hutt City Council. | | | |

| | |
|--|---|
| Targets | <p>Hutt City Council may conduct searches in areas that are vulnerable to infestation by these species.</p> <p>Hutt City Council shall destroy by way of service delivery all of these species within the Hutt City Council TA boundary.</p> <p>Hutt City Council will take responsibility for undertaking the control programme for these species within the Hutt City Council TA boundary.</p> <p>Hutt City Council will provide advice and information to land occupiers and the general public to promote awareness and encourage the public to report any infestations.</p> <p>Hutt City Council will provide education, advice and awareness-raising and publicity activities to other interested parties to prevent the spread of these species.</p> |
| Programme trend: Historically, an insignificant amount of complaints are received for the HCC area. | |

3.1.14 Key Native Ecosystems, Reserves and Forest Health (Pest Plants)

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|------------------|---|-------------------------|-------------------|----------|
| Objective | To protect indigenous biodiversity and achieve a measurable improvement in the ecological health and diversity of KNEs and Reserve areas using a range of suitable indicators. | | | |
| Targets | <p>Undertake direct control by service delivery of pests identified in the management plan for KNEs and Reserves.</p> <p>Use biological control agents where appropriate and support relevant biological control research initiatives.</p> <p>Provide public education and advice on pest plant management to support biodiversity management outside formal KNE and Reserve areas.</p> | | | |

3.1.15 Biocontrol

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|----------------------------|---|-------------------------|-------------------|----------|
| Objective | Assist in the release of biocontrol agents for Eradication, Progressive Containment and Sustained Control species where appropriate. | | | |
| Operations overview | Guided by Landcare Research, with whom GW Biosecurity staff will liaise, as well as with other industry organisations such as AgPest when requested. | | | |
| Targets | <p>Contribute money to the Biocontrol Collective to support relevant biological control research initiatives.</p> <p>As approved biological control agents become available, we may elect to utilise these.</p> <p>Carry out monitoring work, release agents when provided, disperse successful agents throughout the region, harvest agents for other regions where possible, assist in research projects as and when asked.</p> | | | |

Programme trend: Rabbit control agents cyclically regulate the rabbit population in a natural manner. Ragwort, nodding thistle, Californian thistle, buddleia, broom, and gorse agents have had negative effects on those species populations, whereas agents for Tradescantia and old mans beard have yet to be seen to have a negative impact on those species populations.

3.1.16 Surveillance and Engagement

| Exclusion | Eradication | Progressive containment | Sustained control | Site-led |
|--|---|-------------------------|-------------------|----------|
| Objective | Prepare a comprehensive regional surveillance plan. | | | |
| Targets | Review current regime of inspections, monitoring or surveillance in areas that are vulnerable to infestations of RPMP species to improve the effectiveness with which we detect the presence of new infestations and the status of existing or historical sites. Inspect plant outlets and markets within the Wellington region for the sale and/or propagation of RPMP species. Provide training to relevant staff and stakeholders in the identification of pests to assist in early detection. Provide advice, attend events and undertake publicity campaigns to increase public awareness of pests. | | | |
| Programme trend: New programme to be established. | | | | |

4. Anticipated costs

The table below outlines the anticipated costs of implementing the Plan:

| | Species-Led | Site-Led KNE | Total |
|------------------------|--------------------|--------------------|--------------------|
| Pest Animals | \$1,275,000 | \$1,133,000 | \$2,408,000 |
| Pest Plants | \$1,387,900 | \$836,500 | \$2,224,400 |
| Biocontrol | - | - | \$120,000 |
| Landscape RPPCP | - | - | \$1,605,500 |
| Total | \$2,662,900 | \$1,969,500 | \$6,357,900 |

5. Implementation report

A report on the Operational Plan and the success or otherwise of its implementation will be prepared no later than five months after conclusion of the financial year. Copies of the report will be made available to the public.

Appendices:

Appendix 1: Chemical Controls in use by Greater Wellington Regional Council to implement the RPMP

Herbicides:

Clopyralid (Void)

Diquat (Reglone, Dy-Quat)

Glyphosate 360, 450, 510, 540 (Roundup, Agpro Glyphosate, Cut and Treat Gel)

Haloxifop-P-Methyl (Agpro Haloxifop 100, Ignite)

Metsulfuron-Methyl 600 (Escort, Agpro Meturon, Zeal)

Picloram (Tordon Brushkiller XT, Vigilant II Gel)

Triclopyr 600 EC (Grazon, Tordon Brush Killer XT, Agpro Triclopyr 600, X-Tree Wet & Dry)

Triclopyr 360 Triethylamine (Garlon 360)

Vertebrate Toxic Agents and insecticides:

1080 pellets (RS5, No 7)

1080 Paste

Alphachloralose (paste, wheat)

Brodifacoum (Pestoff pellets, Pestoff High Strength, rodent blocks)

Bromadiolone (Confrac blocks)

Cholecalciferol (cereal pellets and Feracol paste)

Coumatetralyl (blocks)

Cyanide (Feratox, paste)

Diphacinone (50D, Ratabate, Ditrac)

Diphacinone and Cholecalciferol (Double Tap)

Difethialone (rodent paste bait)

DRC 1339 paste (rook nest baiting) and bread dripping baits, macaroni baits)

Fipronil (Vanquish ant bait, Vespex wasp bait)

Magtoxin (fumigant pellets)

PAAP (stoat control)

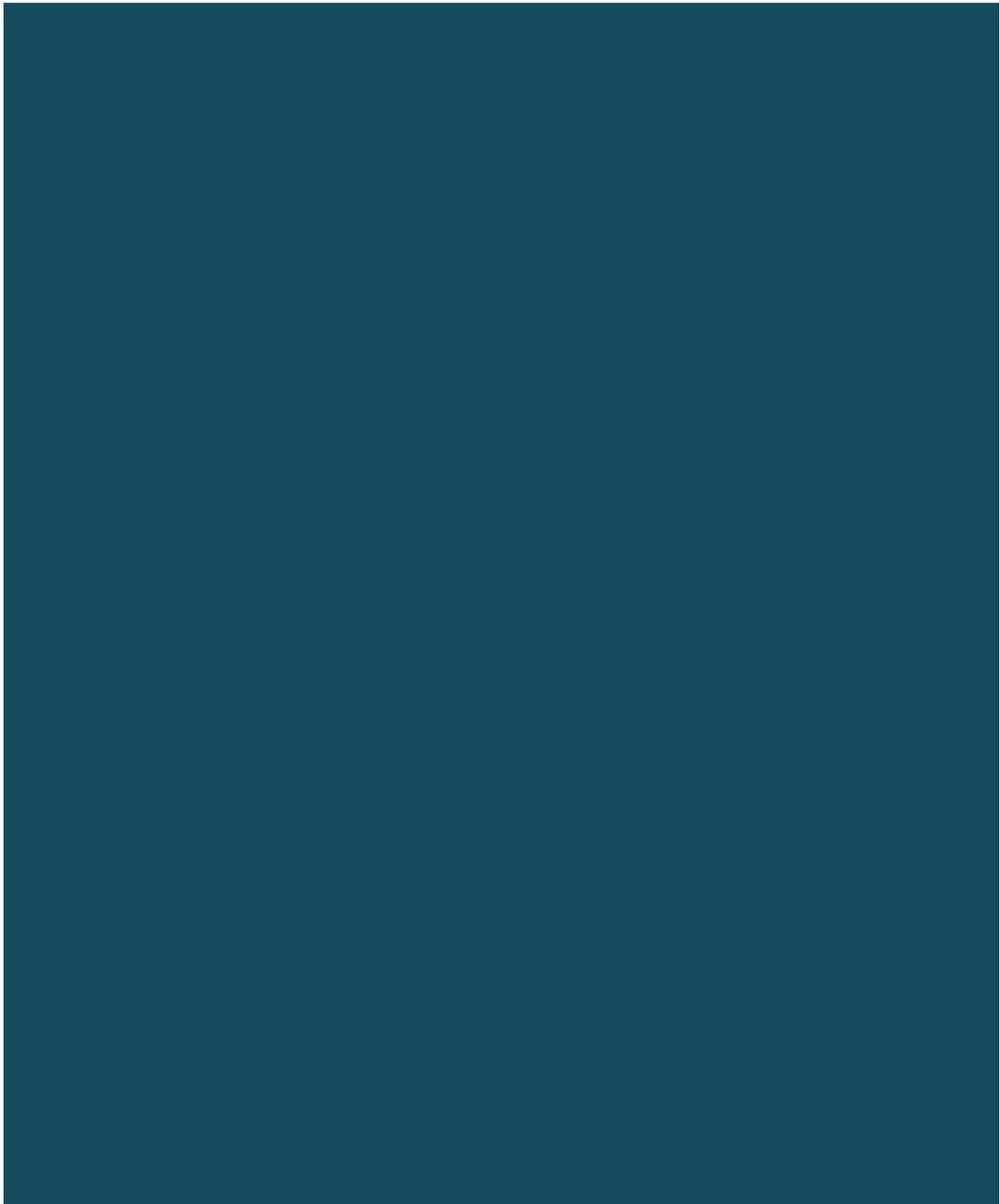
Permethrin (Permex, Dust 2 Dust powder)

Pindone (possum pellets, rabbit pellets, liquid concentrate)

Sodium Nitrate (possum and pig bait)

Appendix 2: Modified McLean Scale

| Scale | Rabbit Infestation |
|-------|--|
| 1 | No sign seen. No rabbits seen. |
| 2 | Very infrequent sign seen. Unlikely to see rabbits. |
| 3 | Sign infrequent with faecal heaps more than 10 metres apart. Odd rabbit may be seen. |
| 4 | Sign frequent with some faecal heaps more than 5 metres apart, but less than 10 metres apart. Groups of rabbits may be seen. |
| 5 | Sign very frequent with faecal heaps less than 5 metres apart in pockets. Rabbits spreading. |
| 6 | Sign very frequent with faecal heaps less than 5 metres apart over the whole area. Rabbits may be seen over whole area. |
| 7 | Sign very frequent with 2-3 faecal heaps often less than 5 metres apart over the whole area. Rabbits may be seen in large numbers over the whole area. |
| 8 | Sign very frequent with 3 or more faecal heaps less than 5 metres apart over the whole area. Rabbits likely to be seen in large numbers over the whole area. |



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September 2019





Report 2019.420
Date 9 September 2019
File CCAB-10-774

Committee Environment Committee
Author Wayne Boness - Principal Ranger, Parks

Coastal Erosion Plan at Queen Elizabeth Park

1. Purpose

To update the Committee following public feedback and seek endorsement for the final Coastal Erosion Plan for Queen Elizabeth Park ([Attachment 1](#))

2. Background

Over recent years the coastline of Queen Elizabeth Park (QEP) has been subjected to numerous extreme weather events, causing significant issues with coastal erosion of not only sand dunes but also tracks, roadways and park infrastructure. This became most evident recently in the wake of ex-tropical cyclone Gita, which washed away half of the pedestrian bridge over the Wainui Stream.

These effects, while dramatic, have only borne out the predictions of a 2010 report which estimated that within 50 years up to 40 metres of fore-dunes would be lost, a single large storm event could result in 40 metres of erosion, and ongoing erosion is likely to occur along the toe of foredunes. Acknowledging that threat, the current Parks Network Plan projects that Greater Wellington Regional Council (GWRC) will “provide for managed shoreline retreat” over the life of the plan. GWRC Parks subsequently provided for a reasonable degree of retreat in our LTP budgets. Preparation of the draft Coastal Erosion Plan centred on the Wellington Road (Paekakariki) entrance area to QEP, and the plan was presented to the Committee in May 2019 (report 19.171).

3. Comment

GWRC Parks is well aware that the significant change proposed in the plan from the current visitor facility network will affect the considerable use and enjoyment of this area of the park, by many thousands of visitors each year. This plan acknowledges the clearly visible impacts of weather events to date, and reflects a proactive approach to managing those to come, working in partnership with our mana whenua partners and the community to reach an

outcome that all parties are comfortable with. Development of the Coastal Erosion Plan has considered the expert advice from GWRC officers and external consultants, and the views of representatives of local iwi and the Paekakariki community.

Feedback through the consultation on the draft plan has been positive, recognising that GWRC is proactively managing this issue. The main concerns were for a lack of linking tracks between internal park tracks and the beach. This has been addressed with the inclusion of two additional tracks to improve loop walk opportunities for park visitors.

Other changes arising from consultation include identifying a site for the Kapiti US Marines Trust to install historic Camp Paekakariki interpretation, and retaining the Phoenix palms which had been proposed for removal.

Once the plan is approved, the next steps will involve more detailed landscape planning of the site, developing a proposed timeline for implementation, obtaining the necessary consents, authorities and preparing environmental restoration plans. GWRC sees the latter in particular presenting excellent opportunities for further community involvement.

4. Communication

Given the high public profile of this project, and expected interest in the outcome, a detailed communications plan will be developed to support and publicise progress in implementation of the plan. Key partners/stakeholders will be:

- Mana Whenua iwi partners
- Department of Conservation
- Kaāpiti Coast District Council
- Paekakariki Community Board
- Coastal Adaption Group
- Park Stakeholder and Interest Groups

5. 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.

5.1 Mitigation assessment

Officers have considered the effect of the matter on the climate. Officers recommend that the matter will have an effect that is not considered significant.

Officers note that the matter does not affect the Council's interests in the Emissions Trading Scheme (ETS) or the Permanent Forest Sink Initiative (PFSI)

5.2 Adaptation assessment

Officers have considered the impacts of climate change in relation to the matter. Officers recommend that the matter warrants the development of a Detailed Scenario Analysis, as attached ([Attachment 1](#)).

6. 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.

6.1 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 because:

- Implementation of this Coastal Erosion Plan will be of primary importance and impact for the local Paekakariki community. From a regional perspective there is likely to be public interest in this example of proactive adaptation to the effects of climate change.
- Feedback from our mana whenua partners and the community to date has been positive. While it has prompted some changes from the draft, the general tenor of responses has been supportive.
- The Coastal Erosion Plan is consistent with current Council policy
- The decision has no impact on the Council's capability and capacity prior to the development of the Long Term Plan 2021-24.

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

6.2 Engagement

Engagement on the matters contained in this report aligns with the level of significance assessed. The following engagement processes have been followed:

- Formal community consultation through park and three community “drop in” days and via the Have Your Say page on the GWRC website. Approximately 200 people attended the drop-in days
- A total of eight submissions were received directly or via the Have Your Say page. Submissions closed on 7 June 2019
- The plan was further discussed with our mana whenua partners, the Paekakariki Community Board, Park Stakeholders and internally.

7. Recommendations

That the Committee:

1. *Receives the report.*
2. *Endorses the final Coastal Erosion Plan for Queen Elizabeth Park.*
3. *Recommends that Council approves the final Coastal Erosion Plan for Queen Elizabeth Park.*

Report prepared by:

Report approved by:

Report approved by

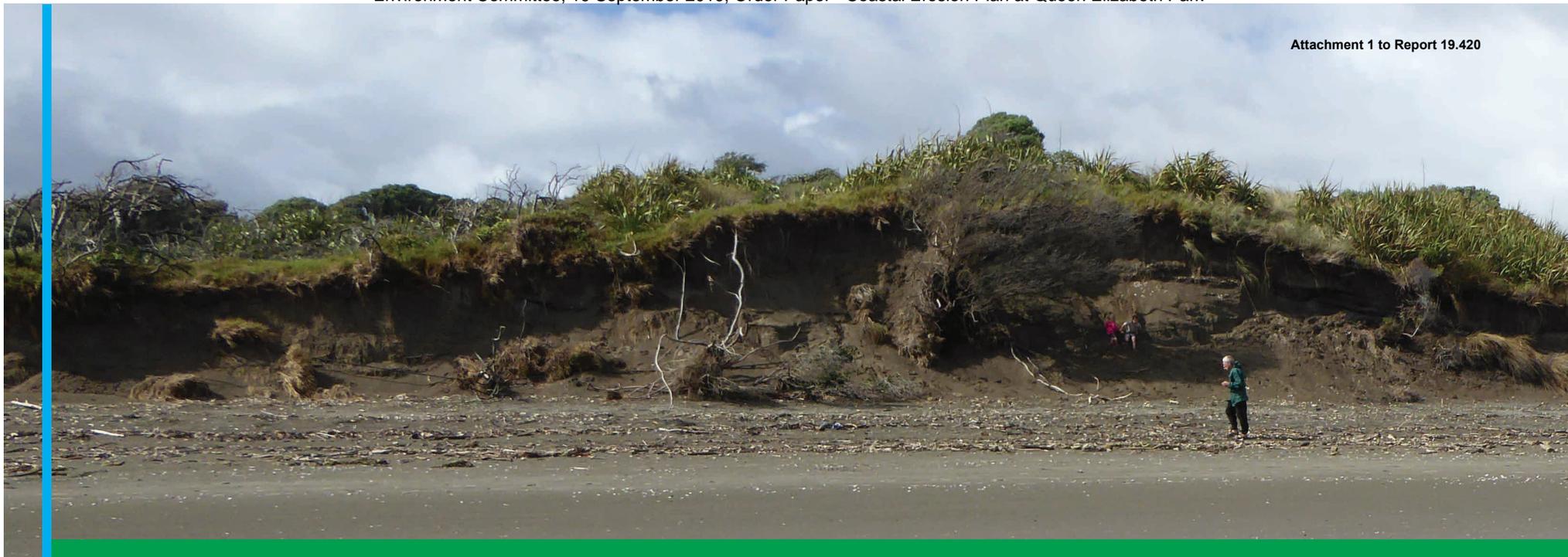
Wayne Boness
Principal Ranger
Western Parks

Amanda Cox
Manager
Parks

Al Cross
General Manager
Environment Management

[Attachment 1](#): Queen Elizabeth Park Coastal Erosion Plan

[Attachment 2](#): Detailed Scenario Analysis



Queen Elizabeth Park

Coastal Erosion Plan

Prepared by PAOS[®]

for Greater Wellington Regional Council

September 2019



PAOS*

Prepared by Cheryl Robilliard
NZILA Registered Landscape Architect



Contents

| | |
|--------------------|----|
| Introduction | 5 |
| Objectives | 6 |
| Analysis | 7 |
| Concept | 13 |
| References | 17 |



Figure 1 - Aerial view of the erosion zone covered by this plan showing designations



Queen Elizabeth Park - Coastal Erosion Plan - September 2019

Queen Elizabeth Park is owned by the crown and managed by Greater Wellington Regional Council (GWRC). The park is classified as a Recreation Reserve under the Reserves Act, and is a Key Native Ecosystem with three ecosystem types - large dune system, wetlands and coastal remnant.

Ngāti Toa Rangitira and Ngāti Haumia have strong associations with the park. The park is included in the reserve established for Ngāti Toa Rangitira in 1847.⁶ The area covered by this plan includes urupa, kainga, koiwi and taonga such as middens and ovens are often found within the shifting dunes.

This plan focuses on the coastal edge from the park's southern entrance at Wellington Road in Paekakariki to approximately 900 metres to the north (see the location aerial map on this page). It includes dunelands, Paekakariki surf club, Budge House, Wainui Pā, Wainui Stream, and a network of green open spaces, picnic areas, roads, carparks, trails and beach access, but not the holiday park or urupa.

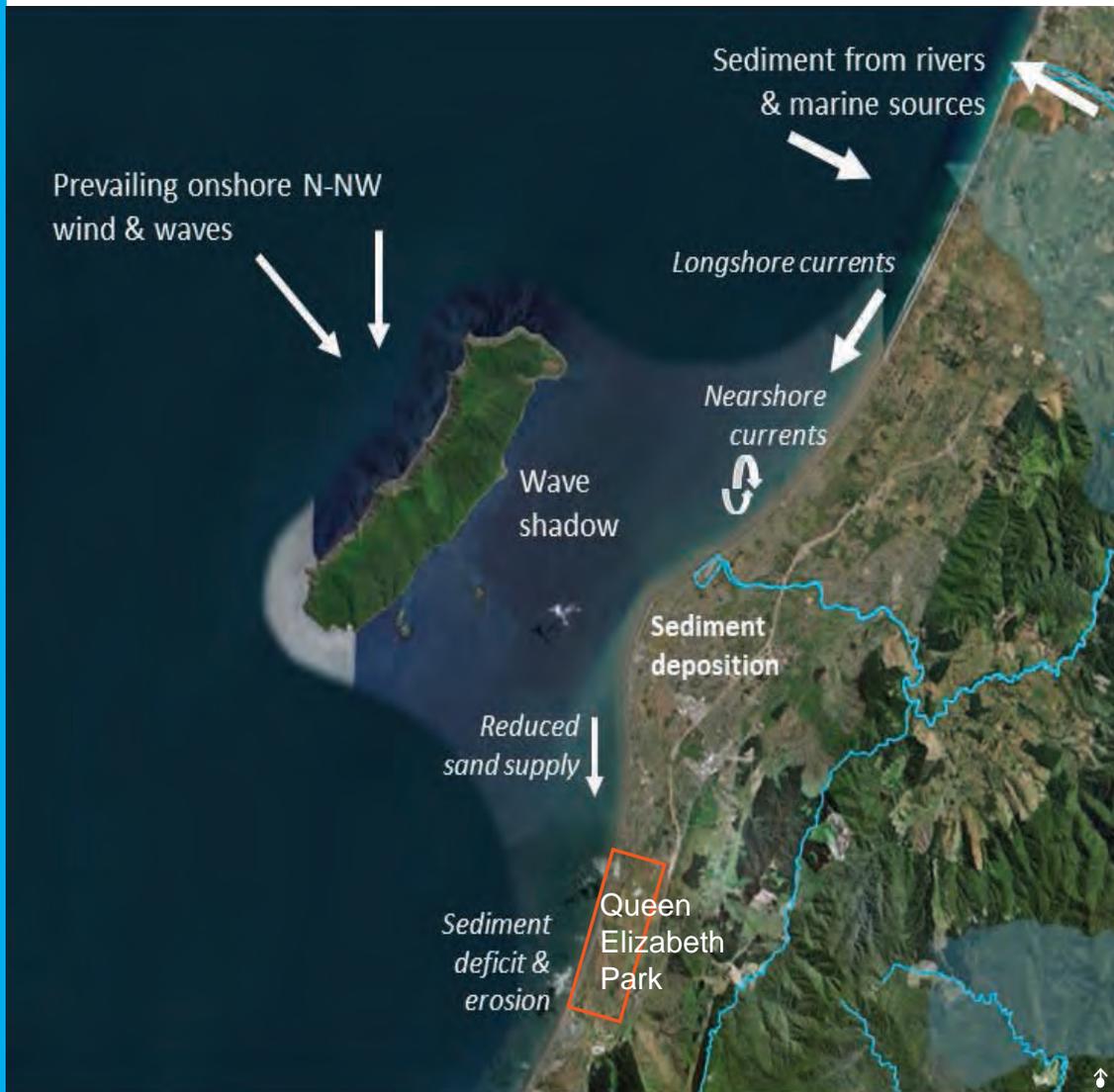
This area is rich in history and reflects natural geological and ecological processes, human occupation and changing land use. The value community places on this area is reflected in Kapiti Coast District Council's (KCDC) District Plan. The District Plan identifies the dunelands as an ecological site with Outstanding Natural Landscapes and Features. Budge House is designated historic heritage and Wainui Pā lies within a wāhi tapu site.

KEY

- WTS 0578 - Wāhi Tapu (Kapiti Coast District Council District Plan)
- Ngāti Toa Rangitira-owned lands

⁶ Ngāti Toa Rangitira Deed of Settlement Documents Schedule, 2.1 Statements of Association, p. 28.

Figure 2 - Diagram showing sediment movement



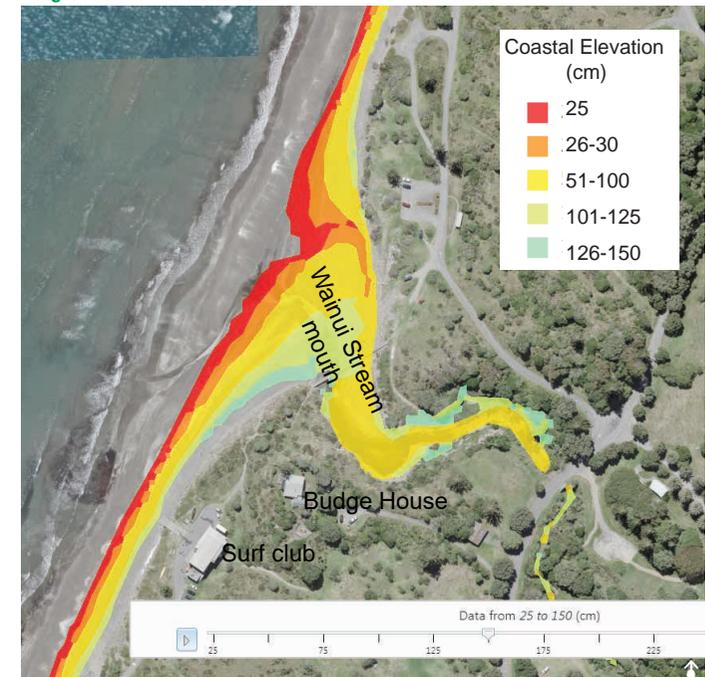
The issue

The coastal edge of the park is a dynamic landscape, vulnerable to erosion and the effects of climate change. These effects include sea level rise, more rainfall, more extreme rainfall events and increasing frequency and intensity of storm events.⁶ The low elevations of the coastal edge at Wainui Stream mouth shown in Figure 3 are particularly vulnerable to these effects.⁷ Probability analysis shows that hazardous events on the Kapiti Coast are likely to involve large waves coinciding with high storm tides.⁸ A 2001 study of the coastal edge of Queen Elizabeth Park estimated that within 50 years up to 40 metres of foredunes would be lost, a single large storm event could result in 40 metres of erosion, and ongoing erosion is likely to occur along the toe of foredunes.⁹

Effects within this 40 metre erosion zone are exacerbated by a lack of sediment to replenish sand eroded after storm events. Figure 2 shows the processes along this part of the Kapiti Coast that lead to a sediment deficit and reduced sand supply.

Two cyclones earlier last year show how vulnerable the park's coastal edge is to storms and erosion. The pedestrian bridge across the mouth of Wainui Stream was washed away and the toe of the foredunes eroded. Tracks along the beach edge and the coastal ring road were eroded and beach access is difficult (see pages 8 - 10 for images of effects).

Figure 3 - Coastal elevations



⁶ NIWA Taihoro Nukurangi, *Climate change and variability - Wellington Region, June 2017.*

⁷ This map is indicative of normal sea levels and does not indicate the extent of damage to landform that may occur from extreme events.

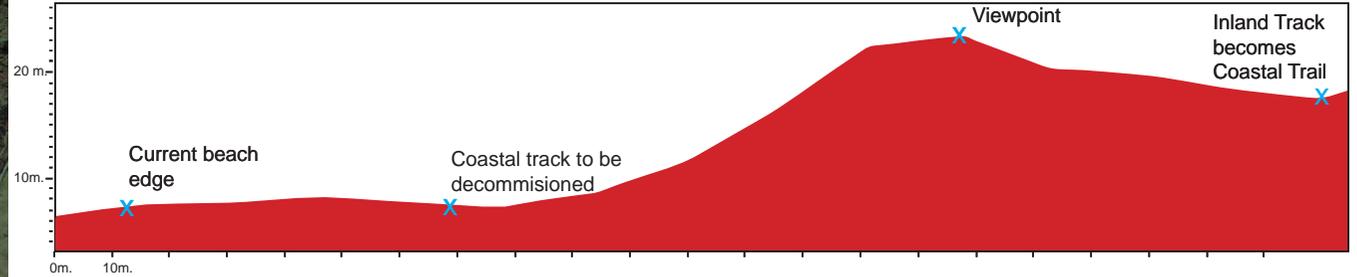
⁸ NIWA Taihoro Nukurangi, *Joint-probability of storm tide and waves on the open coast of Wellington, July 2017.*

⁹ *Queen Elizabeth Park Coastal Dunes Management Discussion Document, Boffa Miskell June 2001.*

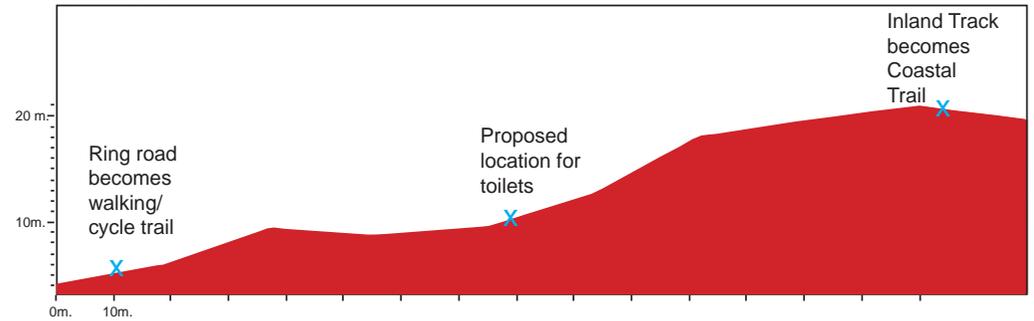
Profiles of the coastal edge



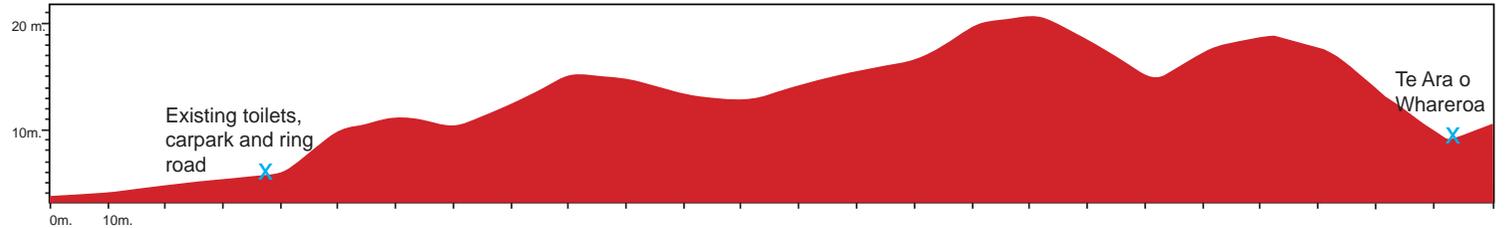
Section D-D



Section C-C



Section B-B



Section A-A

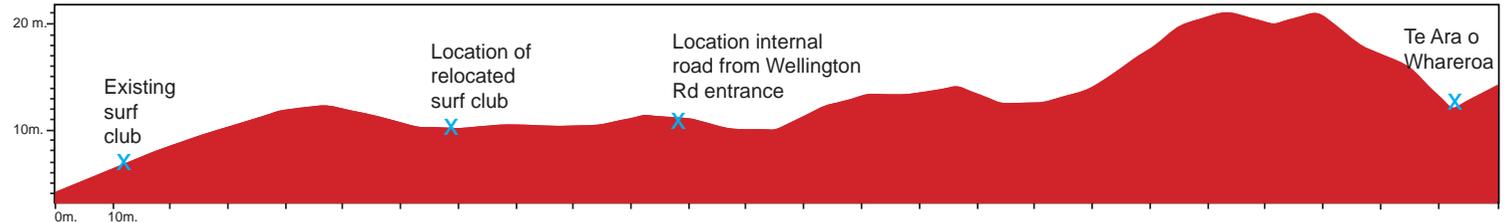


Figure 4 - Aerial view showing existing trails, facilities and infrastructure



KEY

| | | |
|--|---------------------------|--|
| | 40 metre erosion zone | 1 Wellington Road entrance |
| | carparks | 2 surf club |
| | toilets | 3 Wainui Stream mouth |
| | buildings | 4 footbridge washed away early 2018 |
| | park furniture | 5 vehicle/pedestrian bridge across Wainui Stream |
| | locked gates | 6 Wainui Pā site |
| | structures | |
| | vehicle access | |
| | tracks | |
| | east-west track conntions | |

Response

The aerial view on this page shows visitor facilities that lie within the 40 metre erosion zone and are most at risk from storm damage, flooding and extreme winds. In order to protect them, reduce vulnerability to increasing impacts of climate change and develop resilience, a key objective of GWRC's Climate Change Strategy is adaption planning and actions.⁶ This draft coastal erosion plan is an example of adaption planning. It is a practical response to existing and potential risks from the impacts of coastal erosion and climate change.

Plan Objectives

Key objectives of this plan are to:

- Withdraw existing visitor facilities and infrastructure that lie within the 40 metre erosion zone and restore foredunes
- Relocate visitor facilities and infrastructure outside of the erosion zone
- Carry out foredune restoration
- Provide opportunities for people to access, enjoy and recreate in this part of the park
- Highlight and interpret park heritage and the natural environment.

The following pages illustrate how these objectives may be achieved. They identify and comment on the current situation and propose changes aimed at protecting the park and visitor enjoyment of it.

⁶GWRC, *Climate Change Strategy - A strategy to guide the Wellington Regional Council's climate resilience activities*, October 2015.

Figure 3 - Aerial view showing the site



Queen Elizabeth Park - Coastal Erosion Plan - September 2019

Current situation

Comments

| | | | |
|---|--|---|--|
| — | Erosion along the beach edge (see pages 8-10) | ➤ | Beach access is difficult and in some places the beach is inaccessible from the park. |
| — | 40 metre Erosion zone | ➤ | Road, carparks, toilets and park furniture within the erosion zone are vulnerable to storm events and are proposed to be relocated. |
| — | Three trails run North/South parallel to the coast - Te Ara o Whareroa, the Inland Track, and the Coastal Track/Te Araroa | ➤ | The Coastal Track is within the erosion zone and proposed to be closed |
| — | Trails through dunes link coastal and inland trails | ➤ | Once the coastal track is closed the linking tracks are no longer necessary. |
| ① | Surf club access from The Parade | ➤ | The surf club lies within the erosion zone. A 2018 Erosion Hazard Assessment recommended retreat to a site east of the foredune. |
| ② | Budge House (park ranger's house) on foredune with private driveway and storage shed | ➤ | Budge House is partly within the erosion zone and may have to be relocated in future. |
| ③ | Slightly elevated area at Wellington Road entrance with information | ➤ | This area has good surveillance of the park entrance and is a suitable location for a new park ranger's house. |
| ④ | Grassed open spaces of different sizes with picnic tables, toilets, shade, and open space for flexibility and choice for large and small groups. | ➤ | Flexible open spaces are important as they cater for a wide variety of visitor and community needs and can be developed for specific purposes as required. |
| ⑤ | Pedestrian bridge over Wainui Stream mouth destroyed during 2018 cyclones | ➤ | Pedestrian bridge was within the erosion zone and replacement is not recommended. |
| ⑥ | Track above the stream bank (see page 9) | ➤ | This track is within the erosion zone and ongoing maintenance is not recommended. |
| ⑦ | One way ring road through the foredune and along the coastal edge | ➤ | The coastal section of this ring road lies within the erosion zone and is proposed to be replaced by a low impact track. |
| ⑧ | Parking with beach access, picnic tables and toilets | ➤ | Facilities and infrastructure lie within the erosion zone and are proposed to be relocated behind the restored and naturalised foredune. |
| ⑨ | Pa site with views and lookout structure reached by the one-way ring road | ➤ | This plan proposes removing vehicle access and improving accessibility in partnership with iwi. |
| ⑩ | Locked gate controls vehicle access to a parking/turning area | ➤ | The asphalt turning/parking area lies within the foredune and is proposed to be removed and the area planted using indigenous sand binding species. |
| ⑪ | The dune landscape | ➤ | The duneland and sheltered picnic areas lack interpretation or information. |

Beach erosion

Erosion at toe of foredune below Budge House and surf club



Erosion at beach edge in front of surf club



Footbridge across Wainui Stream washed away



Footbridge during storm early 2018



Storm damage along Wainui Stream



Stream bank erosion and debris at mouth of Wainui Stream after a storm



Debris in stream after storm surge - viewed from bridge



Debris from footbridge scattered around Wainui Stream mouth



Clearing debris from the stream after storm 2018



Erosion north of Wainui Stream reducing beach access



Erosion along the Coastal Track and difficult beach access



Coastal ring road eroding after storm surges



Beach access from the coastal ring road eroded



Dune blow out near the Coastal Track



Figure 4 - Aerial view showing proposed relocation and development



Queen Elizabeth Park - Coastal Erosion Plan - Sep'ember 2019

Concept

Strategic retreat from the erosion zone

- ① Removal of structures on the seaward side of the foredune - toilet block, carparks, asphalt ring road, picnic tables, coastal trail and surf club,. The storage shed next to Budge House driveway is also proposed to be removed.
- ② Dune restoration to enable natural coastal processes and dune renewal - removal of hard and fill material, reinstatement of toe of foredunes, planting using native sand binding species such as spinifex, pingao, sand coprosma, sand tussock etc (see page 14 for examples of foredune restoration).
- ② Budge House may need to move in the future if threatened by coastal erosion.
- ③ Coastal Track decommissioned. Existing inland track becomes Coastal Trail/ Te Araroa with views to the sea. With decommissioning of the current coastal track there is no longer need for most connecting tracks across the dune system. Their removal will help protect the dune system.

Replacement facilities

- ③ Replacement toilet block location.
- ④ Replacement surf club building with parking, accessed at the driveway entrance to Budge House.
- ⑤ Future site for park ranger accommodation with good surveillance at the park entrance.

Trails and connections

- ④ Beach access via low impact tracks through restored toe of foredunes(see page 14).
- ⑤ Existing tracks.
- ⑥ Ring road becomes walking/cycle path.

Viewpoints and interpretation

- ⑥ Removal of vehicle access to Wainui Pā site with access for pedestrians only, removal of asphalt at the summit. Redevelopment of the lookout with interpretation of iwi settlement and use in partnership with iwi.
- ⑦ Existing highpoint and seat developed as lookout with interpretation of natural dune processes and ecology (see page 13).
- ⑧ Wainui Stream interpretation panel at existing bridge.
- ⑨ US Marines camp interpretation

Vehicle access

- ④ Existing vehicle access (widened in places to become 2-way).
- ⑤ New vehicle access off Budge House driveway to new surf clubroom and parking.
- ⑥ New carparking for picnicking and access to Wainui Pā and Coastal Trail (current Inland Track).

One-way ring road through foredune to beach proposed to become a pedestrian and cycle path



Coastal carpark and toilets within the erosion zone removed and the coastal edge restored. The ring road becomes a pedestrian and cycle path



An example of foredune restoration near the surf club with low impact path access



Proposed location for replacement parking and toilets in a more protected site behind foredunes below Wainui Pā



Sheltered area below Wainui Pā proposed for parking and picnicking



Access to Wainui Pā to be improved for pedestrians



Wainui Pā site and lookout proposed to be improved



Looking towards the proposed site for parking, toilets, picnicking, and beach access below Wainui Pā



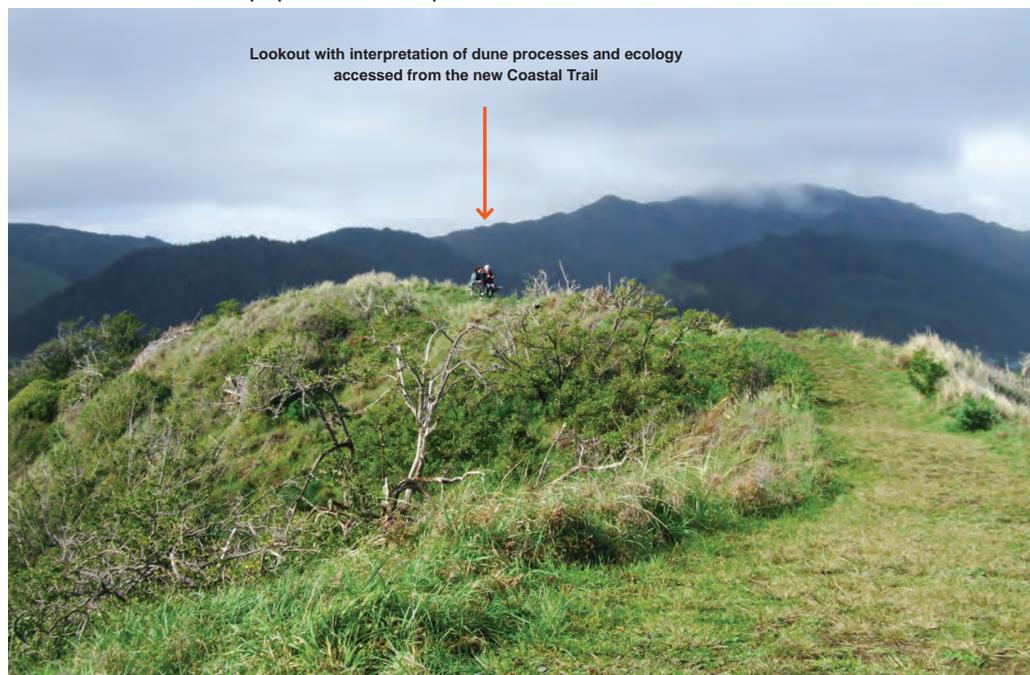
View south from Wainui Pā summit and lookout to site of relocated surf club and foredune restoration to replace current parking area



Location of lookout sites along Coastal Trail



View to northern lookout site proposed to be developed



View from northern lookout



Sites for coastal restoration

From this



↓
To this



Eastbourne Wellington Harbour



Island Bay

Improved beach access

From this



↓
To this



Piha



Island Bay

Proposed relocation of key facilities

New carpark location below Wainui Pā and entry to the Coastal Trail (former Inland Track)



View towards proposed surf club location on park side of foredune



Site of US Marines camp interpretation to the right of the driveway





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Attachment 2 to Report 19.420

| ADAP ASMNT FORM 2: Preliminary assessment of climate change impacts | |
|--|--|
| Characteristic | Comment |
| 1. Location | <i>The Coastal Erosion Plan is focussed on the foredune area of the Paekakariki entrance to Queen Elizabeth Park, from the southern park boundary, to a point approximately 1km northwards.</i> |
| 2. Current driver | <i>There is significant erosion of the foredune currently evident, which is projected to be further exacerbated by increased sea level rise combined with intense wind/ rain events.</i> |
| 3. Duration | <i>The initiative is planned for implementation over approximately three years, starting from 2019/20. Its current legacy is anticipated at 50 years to reflect a long infrastructure replacement cycle.</i> |
| 4. Extent | <i>The area under consideration stretches approximately 800m north of the southern park boundary with Paekakariki township. A 40m retreat inland is proposed. The park infrastructure includes a car park, toilets, a sealed loop road, together with associated services including power, sewerage and water supply. It is expected to involve removal of the current Park Ranger residence¹ and relocation of the Paekakariki Surf Club building².</i> |
| 5. Future driver | <i>Coastal erosion is likely to be accelerated where it is already occurring and erosion may become a problem over time in coastal areas that are presently either stable or are advancing.</i> |
| 6. Complexity | <i>The issue is of medium complexity. The draft Coastal Erosion Plan is based on professionally informed guidelines and reasonably foreseeable events. Should climate change-induced impacts become more severe, or differ markedly from those projections, park infrastructure may be needlessly or critically impacted, which would have a follow-on cost and reputational impact for GWRC</i> |
| 7. Potential solutions | <i>The draft plan identifies solutions that GWRC expects to provide a pragmatic level of mitigation for the scale of impact forecasted. These include relocation of park infrastructure inland beyond the 40m coastal zone, and environmental restoration of the foredunes to increase their resilience to high-intensity storm events.</i> |

¹ A replacement Park Ranger residence is not currently funded.

² The Paekakariki Surf Club is planning to relocate their club building



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Committee Environment
Author Al Cross, General Manager, Environment Management
Wayne O'Donnell, General Manager, Catchment Management
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General Managers' Report to the Environment Committee on 19 September 2019

1. Purpose

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

2. Key/Strategic issues

2.1 One Billion Trees progress

A detailed expression of interest (EOI) for a One Billion Trees (1BT) Partnership Grant to support a number of GWRC programmes including activities across Land Management, Parks, Flood Protection and Biodiversity departments was submitted to Te Uru Rākau (TUR) on the 30 July. The EOI detailed a package of work across three years (2020-23) worth \$8 million including TUR, GWRC and landowner contributions. A TUR advisory panel reviewed this EOI on the 28 August and have supported it proceeding to the next stage of the application process with the aim to have a contract in place by the end of 2019.

A Regional Framework for engaging in 1BT opportunities has been completed. Many of the next steps in implementing this framework sit beyond the influence of GWRC activities. The consultant that led the development of this framework is scheduled to discuss the report with the Farming Reference Group on 7 October.

The exception to the above is land owned and/or managed by GWRC in the regional park network. While maps of planting sites are not yet available, the following attributes will guide establishment of priority sites:

- Steep and/or erosion prone land especially in Battle Hill and Belmont Regional Parks
- Land already retired from grazing but not yet planted, especially riparian margins and/or headwaters
- Wetlands (where intervention is appropriate)
- GWRC owned land which may be eligible for carbon credits

2.3 Resource Management National Direction

The Committee will be aware of the Government's recent announcement of a package of reforms including a range of national policy, regulations and Resource Management Act 1991 (RMA) changes.

The package is substantial and represents possibly the biggest single set of reforms since the RMA's enactment in 1991. The Resource Management National Direction – Year of Delivery (Part 1) (Report 19.410) covers this item in full.

3. Catchment Management

3.1 Land Management

3.1.1 Wellington Region Erosion Control Initiative (WRECI)

The majority of this winter's planting programme for WRECI has been completed.

The WRECI contract for the next four year period (2019-2020 – 2022-2023) has been signed with MPI. This contract has secured co-funding for the WRECI programme at a level which will significantly increase the amount of work delivered through the programme from around \$1.5 million per annum to over \$3 million by 2021/22.

Additional staff resource in the Western Whāitua has assisted in delivery of the winter work programme around Porirua and Kāpiti where over 19,000 native trees and over 1,300 willow/poplar poles have been planted. Projects also include riparian projects within Whakatiki, Mangaroa, Makara and Ohariu catchments with the majority of works occurring in Makara/Ohariu.

3.1.2 Priority catchment contestable fund

Changes to the contestable fund are in development for this year's delivery of the Farm Planning programme to better align it with Whāitua recommendations and to prioritise projects in line with Freshwater Management Unit (FMU) objectives. Proposed changes include:

- considering project impact on the targeted water quality issues specific to a FMU,
- a community grant to assist catchment communities work towards meeting their FMU objectives. This may take the form of employing a

part-time facilitator or support for meetings. This will increase alignment with available Biodiversity grants so that the two are complementary.

3.1.3 Land management advice

Support has been provided to a PhD project researching whether spaced native trees positively influence pasture production and soil erosion in New Zealand hill country, and discussions looking at new ways to support established community groups around Makara have continued.

In August staff met with Manaaki Whenua – Landcare Research scientists leading the programme known as STEC, Smarter Targeting of Erosion Control. Many opportunities exist to align this research with better delivery of Land Management programmes.

3.2 Biosecurity

3.2.1 Pest Plants

New Regional Pest Management Plan (RPMP): Staff continue to receive regular enquiries regarding property boundary control pest plants (Old Mans beard, Blackberry and Banana Passion Fruit) which were under the previous Regional Pest Management Strategy (RPMS). The Boundary control rule has been removed from the new RPMP and can no longer be enforced. The Biosecurity team are working with Wellington City Council (WCC) to look into different ways GWRC can support WCC and the community in dealing with these plant issues. One focus will be increased advocacy at field days and events as well as redirecting people to resources like WeedBusters and the GWRC website.

3.2.2 Pest Animals

Rabbits: Responding to complaints about rabbit populations has been escalating for some months. In some cases, removal of predators (mustelids) could be escalating the problem. A key future task will be undertaking blood sampling across the region to determine the level of Calicivirus immunity and the understanding the type of virus that remains in place. This information will help inform future management strategy options.

Predator Free Miramar: The eradication project is fully underway, with 4006 bait stations and 2922 traps in place, checked weekly by a team of thirty. Bait take has only slowed down around the coastal areas. Traps for mustelids are secured in an open state, being pre-fed with fresh rabbit, and will be activated when we are confident most rats have been killed. The airport trap and bait station network is installed and is also checked weekly. The final barrier has been designed, in conjunction with ZIP (Zero Invasive Pests), and work to eradicate rats from Rongotai isthmus before the barrier is activated began on 9 September 2019. Miramar residents are providing excellent support for this programme.

3.2.3 Regional Possum and Predator Control Programme (RPPCP)

The 2019/20 RPPCP covers 95,700 ha of possum control and 4,300 ha of mustelid control. These activities are broken up into 21 possum control projects and four mustelid projects.

To date control has commenced within four possum control projects and 7,500 hectares have been completed.

3.2.4 Wainuiomata Mainland Island Rat Control.

Biosecurity will undertake aerial 1080 baiting within the Wainuiomata Mainland Island (MLI) – over an area of 2,745 ha, during the 2019 year. This work is essential to protect the biodiversity benefits already gained ahead of what is predicted to be an unprecedented mast year which will lead to significant increases in rodent and stoat populations.

We are still awaiting approvals from Regional Public Health and Wellington Water. Once these are obtained, final operational and Health and Safety planning will be completed with control expected to occur during September.

3.3 Biodiversity

The Regional Biodiversity Framework Collaborative Working Group held their third meeting in Wellington. The group developed its the process of defining the problem/opportunity relevant to their task. The next meeting will include a vote for permanent co-chairs.



Figure 1. Some members of the Collaborative Working Group for the Wellington Regional Biodiversity Framework project at the group's third hui

GWRC and the Department of Conservation (DOC) are leading a lizard translocation project in the Wellington region. The project has been planned to ensure that any lizard translocations into Queen Elizabeth Park, Belmont Regional Park and DOC's Whareroa Farm Park are carried out to a high standard. The project team has staff from Biodiversity, Environmental Science, Parks, DOC and Victoria University of Wellington. The team is also approaching mana whenua to discuss their involvement.

3.1.1 Freshwater Fish Programme

As a member of the New Zealand Fish Passage Advisory Group, Katrina Smith attended the group's annual in meeting in Christchurch on the 26 and 27 of August 2019. The group has a diverse representation including central and local government, industry and consultancies. The Advisory Group started to plan how to implement the new national fish passage guidelines and develop a fish passage assessment app. There was interest in how GWRC is implementing the guidelines via a collaborative project that involves GWRC departments, DOC and Wellington Water.

3.1.2 Wetland Programme

Biodiversity staff supported Porirua City Council (PCC) and Enviroschools to hold a planting day at Romesdale Lagoon, a significant estuarine saltmarsh wetland in Papakowhai on 27 August. Papakowhai and Paremata schools took part with support from Conservation Volunteers Wellington and GWRC. Over 300 wetland plants were planted on the day. GWRC Biodiversity Advisors prepared a restoration management plan for the site and the Wetland Programme is funding ecological weed control this summer in conjunction with PCC.

The Wetland Programme currently has 57 landowners signed up. These landowners have 80 wetlands, and 54 of these wetlands are being managed under an approved restoration management plan.

3.1.3 Biodiversity Advocacy

Biodiversity staff supported the Spade Aid planting event at Queen Elizabeth Park on Sunday 18 August. About 5,000 plants were planted by members of the public on the day. The event also included information about the plants with the aim of improving public understanding about the species that were used.



Figure 2. Members of the public were able to learn about the species they planted at the recent Spade Aid event at Queen Elizabeth Park.

3.1.4 Collaborative Restoration

Biodiversity staff held two planting days with schools during August in Bothamley Park, Porirua on the edge of the Kenepuru Stream. Four classes from three schools learned about water quality and biodiversity issues in the Whaitua area and what they could do to address them.

Applications are now open for the Community Environmental Fund. The contestable fund aims to provide funding to community groups in Te Awarua-o-Porirua Harbour catchment area. It has been promoted widely through the websites, social media and community networks of both GWRC and local partners, as well as in local newspaper adverts.

3.1.5 Biodiversity Advice

Biodiversity staff attended a DOC workshop on the discussion document for the New Zealand Biodiversity Strategy. The workshop was designed in partnership with GWRC staff. Joshua McLennan-Deans presented GWRC's biodiversity role in the region and promoted the work of the Biodiversity Framework Working Group. The workshop discussions were lively and demonstrated strong support for a fresh approach to biodiversity management under the vision of 'living with nature'. GWRC will be submitting on the discussion document and Councillors will have the opportunity to comment on a draft.

The Biodiversity department has released guidance to improve how lizards are protected through the consenting process for development activities. The report, prepared by Wildland Consultants for GWRC, is aimed at all parties involved in the consenting process and can be used to inform conditions on resource consents. It provides advice on good practice for minimising harm to native lizards and their habitat and monitoring the success of methods such as pest control and translocation.

3.4 Flood Protection

3.4.1 Investigations, Strategy and Planning

Waiohine FMP, Upper Wairarapa Valley.

The Waiohine project team is continuing its work on the river management, emergency management and environmental aspects of the Floodplain Management Plan (FMP). A “not yet a draft” River Plan was presented to the community on Monday 5 August 2019. Since this date the River Plan has also been refined. Also during this time the Friends of the Waiohine community group merged with the Waiohine Project Team. Further engagement will be undertaken with Flood Protection operations staff. The Project Team would also like to re-engage with Iwi and other key stakeholders e.g. Fish and Game.

Te Kāuru FMP

As the Te Kāuru FMP has now been adopted by the Council, the team is focusing on the handover and initial implementation actions. A community working group has been formed to consider specific outcomes for the Waipoua River and has had its first two ‘working days’ to develop a project scope.

The next steps include:

- A final workshop with the Te Kāuru Subcommittee advising of the outcomes of the GWRC processes and thanking them for their dedication to the FMP;
- Establishing a Steering Group for the Waipoua River;
- Completing a comprehensive ‘hand-over’ of the FMP to the Flood Protection Implementation team; and
- Working with the Wairarapa (Whaitua) Integration Team to align GWRC projects and processes.

Mangatāreere Flood Hazard Assessment (FHA)

A community led project is currently underway to create an integrated catchment plan for the Mangatāreere Stream, which will include determining the flood risk to Carterton. A steering group has been established for the project, and the first steering group meeting was held on 17 July 2019. The project team have now completed meetings covering the Ruamāhanga Whaitua and the proposed Natural Resources Plan (pNRP), Fensham Reserve and wildlife corridors to the Tararua Ranges, and historic flood events that have impacted Carterton. The project team is currently scoping the modelling and is conducting a site visit in early September to facilitate this.

The next steps for this project include:

- Scoping the hydraulic modelling required.
- Engaging a consultant to undertake the modelling
- Continuing to gather data on historic flood events.

3.4.2 Flood Warning review

A Request for Proposals (RFP) has been drafted and is being finalised ahead of issuing to market in early September. Flood Protection, Hydrology and Wellington Region Emergency Management Office (WREMO) held a joint workshop to discuss current operational procedures. This was a very well attended event and covered the current departmental structures, roles & responsibilities, and the current flood duty system.



Senior Engineer James Flanagan taking WREMO, and Hydrology Duty officers through the flood response process.

3.4.3 GWRC Flood Hazard Modelling Standard (FHMS)

In response to the recent independent audits on the Upper Ruamāhanga modelling, the Investigations team are developing a comprehensive end to end modelling process which will be used across the region to conduct flood hazard modelling. This process will incorporate hydrology best practice, freeboard, climate change, and sensitivity analysis guidance as well as community engagement and consultation. The FHMS will be developed with key stakeholders such as Wellington Water and Territorial Authority's (TA) to promote a common understanding of the flood modelling process undertaken by GWRC. This work is anticipated to be completed by July 2020.

Other Key Investigations Activities.

- **Hydraulic Modelling** – Waikanae model updated results have been received. Updated flood hazard maps will soon be available via GWRC GIS. GWRC are currently working with Wellington Water's Stormwater team to undertake modelling of the Waiwhetu catchment in the Hutt Valley, this is a joint enterprise between the two departments and will provide a comprehensive flood model for this catchment. Further information on this

projects will be provided to the Environment Committee and other relevant committees in the near future (October/November)

- **Gravel analysis** – A Wairarapa wide stocktake of gravel levels across the valley is underway in order to provide a clearer picture to the extraction industry. This work is expected to be delivered by Christmas for workshops in early 2020.
- **Survey** – GWRC's annual river survey programme is currently in its procurement phase with suppliers being sought for surveys in the Waiwhetu, Waikanae and Ruamahanga rivers.
- **Strategy** – Investigations team is working on two major strategy items; firstly 'giving the river more room' which is looking to review current literature and research and develop a principle and guidance for use across the Department. This is seeking to incorporate Mana Whenua values as well as wider environmental and flood protection benefits throughout FMPs strategic planning to a much greater degree. This is expected to be brought to the Environment Committee in 2020.

The second piece of work is to update the FMP guidelines following lessons learnt from the two recent FMPs, the Whaitua, and the River management consent process.

3.4.4 Asset Management & Operations

Good progress has been made with willow and native planting programmes across the region. To date 70% of the programme has been completed with 14,200 willow and 16,400 native trees planted.



Planting underway along the Gladstone reach of the Ruamāhanga River

The weed boat has completed weed clearing in a number of the watercourses and drains in the Kāpiti area. Each year we contract the Hawkes Bay Regional Council to undertake this work in the larger Kāpiti watercourses where access is possible. This reduces the environmental impact on terrestrial ecology and in particular native fish. In smaller watercourses or where access is not possible excavators need to be used.



Weed boat operating in the Mangaone Stream

3.4.5 Floodplain Management Plan Implementation

RiverLink, Te Awa Kairangi/Hutt River

Geotechnical investigations for the NZ Transport Agency (NZTA) component of work have completed. Geotechnical investigations relating to the Hutt City Council (HCC) and GWRC are now forecast to commence in Q2 2019.

Work continues to progress with design, preparation for consents and Notice of Requirements to deliver RiverLink. The current forecast consent lodgement date is after August 2020, however this will be influenced by any decision made by the NZTA board at the end of this calendar year.

Belmont Wetland Pilot construction has commenced, earthworks and the first stage of planting are due to be completed in Q2. The project has generated a huge amount of interest and strong indications of support through shares and likes on social media reaching an audience of 7,000 people. A planting day in conjunction with Belmont School and the stream care group is being planned.

Pinehaven Stream FMP, Upper Hutt

Consents for the planned flood capacity improvement works are on programme to be lodged before the end of the calendar year. A full construction project overview and update is being provided to the Hutt Valley Flood Management Subcommittee at its meeting on 12 September 2019.

Convent Road Flooding Issues, Waitohu Stream, Otaki

We are reviewing the results of additional modelling work that proposed an alternate approach to managing flooding issues affecting Convent Road. The additional solution proposes widening of a watercourse that connects to the Mangapouri Stream, this would capture water that breaks out of the Waitohu Stream upstream of Convent Road before it crosses Convent Road and carry it away from affected properties towards the Mangapouri Stream. Initial

modelling outputs are promising and further refinements are now being done to the design to check that it will work in a range of flood event sizes.

In addition to this the project is including stream and drain restoration opportunities that arise from taking a different approach to the management of the flood waters currently creating an issue for local residents.

Port Road Erosion Protection Repair, Te Awa Kairangi, Hutt City

Erosion protection improvements at Port Road is part of future planned works in the Hutt River Floodplain Management Plan.

Recent storm damage erosion issues have triggered HCC to repair parts of Port Road downstream from the confluence of the river with the Waiwhetu Stream. These works have been completed along a section in this area and will provide protection from up to a ten year return period storm event. The section looked after by GWRC upstream of the confluence with the Waiwhetu Stream is being affected by similar erosion issues, and designs have been developed for both short term and permanent improvements. The cost impacts of these options is being considered alongside the forward work programme for the Hutt River Floodplain Management Plan. A recommendation outlining a course of action for this issue will be brought to the Hutt River Floodplain Management Subcommittee once option consideration is complete.

Waikanae River Erosion

River erosion has been occurring near to cross section 255 on the Waikanae River. This erosion is occurring within an area identified as part of the active channel for the river. The erosion is affecting a maintenance and public access track which has started to fall into the river. There has been considerable public interest in this issue. An alternative track has been upgraded to provide temporary access and to mitigate safety concerns.



Waikanae Track Erosion and Alternative access track

In line with the direction of the Waikanae River FMP and upcoming changes to the river management consents a permanent alternate track location away from the river is being investigated, this will include discussion with Kāpiti Coast District Council (KCDC) and other adjacent landowners. Options for this will

be presented to Council and a briefing session following the 19 September 2019 meeting.

4. Environment Management

4.1 Environmental Science

4.1.1 Sediment rates too high for healthy harbour habitat

Results from a recent bathymetric survey of Te Awarua-o-Porirua Harbour indicate rates of sediment deposition in the last five years are >5 mm/yr. Marine and Freshwater Team Leader Megan Oliver says the deep basins in the harbour are becoming increasingly muddy and unsuitable habitat for a range of species. Ngāti Toa is deeply concerned about sedimentation affecting the health of the harbour and impacting on customary practices (as stated in the Ngāti Toa Rangatira Statement). Te Awarua-o-Porirua Whaitua Implementation Programme (WIP) has set objectives of less than 2 mm/yr and less than 1 mm/yr for the Pauatahanui and Onepoto arms, respectively. Results of the survey will be used to paint a picture of how sediment is transported and deposited throughout the harbour, and there will be ongoing monitoring and evaluation of progress towards Ngāti Toa's recommendations and the WIP objectives.

4.1.2 Citizen Science moving ahead

It's been a busy few weeks in the Citizen Science arena with several initiatives progressing, including:

Citizen Science Association of Aotearoa New Zealand - The fledgling Citizen Science Association of Aotearoa New Zealand (CSAANZ) was incorporated early August. Sheryl Miller attended the inaugural CSAANZ meeting, held 10 August 2019 in New Plymouth. The Association has built on the many citizen science workshops that have taken place over the last c.four years around the country. It has six general objectives aimed at assisting people to engage with the field of citizen science. A committee was elected to determine the next steps, with three working groups formed to tackle a website, sourcing funding and specifications for a coordinator. More information can be found either on the Citizen Science [facebook page](#) or at [Monicalogues](#).

Stream Health Monitoring and Assessment Kits (SCHMAK) training modules - Sheryl Miller (ESci) and Liz Gibson (Mountains to Sea Wellington) have recently finished piloting freshwater monitoring training modules in the Wairarapa. These were well received by both groups, and SHMAK are now available at the Featherston Community Centre, GWRC Masterton office and Pukaha/Mt Bruce. They are looking at delivering the training modules in Porirua prior Christmas.

Postgate Yr7/8 – Sheryl Miller, Bryn Hickson-Rowden and Jon Gabites recently visited Postgate school, Whitby where they showcased some of the local stream inhabitants. They also got the students playing “Who dirtied the water?”, a powerful demonstration of what can happen to a water source over time. And it's great for starting a discussion. The

students all had different ideas of how dirty is too dirty. They also discussed who made the water dirty and who's responsible for cleaning it up.



Citizen Science initiatives

4.1.3 Wellington’s threatened forest ecosystems

A report on the ‘Forest Ecosystems of the Wellington region’ has highlighted forest ecosystems that are regionally threatened and details the composition and original extent of these forests. This information has been loaded onto the external GIS Map Viewer on GWRC’s website. At present, work is underway to combine the threatened forest spatial data with that for erosion-prone areas and potential ecological corridors. The study will provide key information about priority sites for native afforestation through the Billion Trees programme.
<http://www.gw.govt.nz/safeguarding-wellington-s-original-forests/>

Soil health findings

A recently released regional soil quality report has detailed the results of soil quality sampling at nineteen sites across the Wellington region during 2017/2018. The report has highlighted that maximum target phosphorus levels on sedimentary soils were exceeded at sites sampled in market gardens and on horticultural land uses. Macroporosity, an indicator of soil compaction, was below the target range at 43% of the horticultural sites.
<http://www.gw.govt.nz/assets/Our-Environment/Environmental-monitoring/Environmental-Reporting/Soil-Quality-SOE-monitoring-programme-Annual-Data-Report-2017-18.pdf>

RC

4.1.4 Tadpole shrimp - exciting find

An exciting find of a 'tadpole shrimp' was made at Wairio wetland on the side of Lake Wairarapa recently. The area was being surveyed as part of consenting conditions for a diversion of water from Matthew's Lagoon into the Wairio wetland. Tadpole shrimp are listed as Nationally Endangered, as much of their habitat (ephemeral wetlands) has been lost through historic drainage of wetlands.



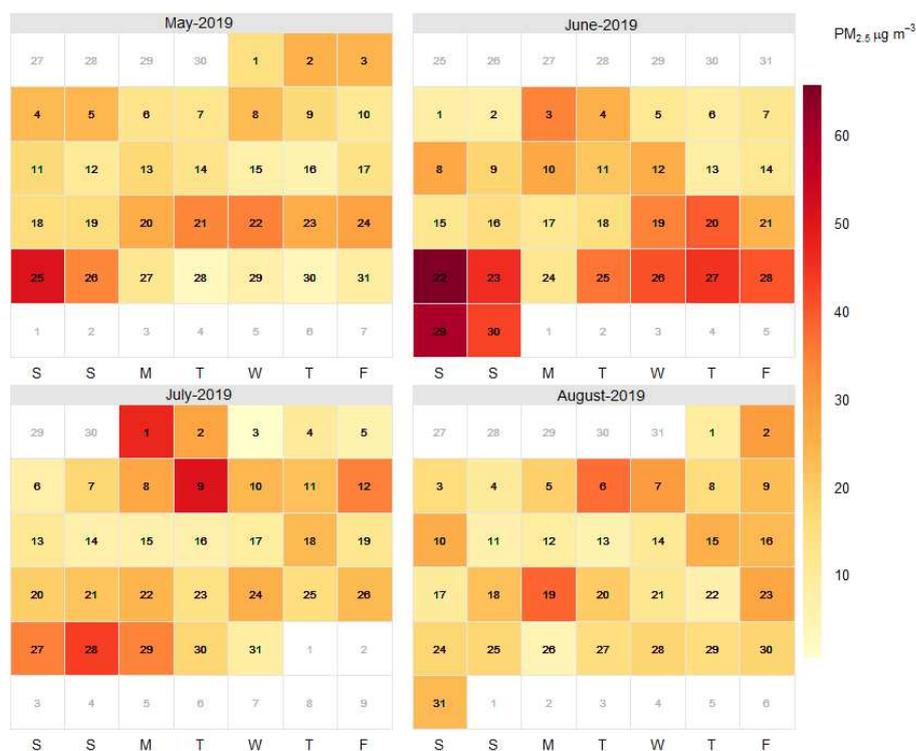
The nationally endangered tadpole shrimp, discovered recently at Wairio wetland

4.1.5 Land, Air, Water Aotearoa (LAWA) data refresh

The annual water refresh for LAWA is drawing to an end. Over the last few months ESci members have been checking GWRC's data that gets displayed on LAWA. This has included river and lake water quality, macroinvertebrates, water quantity and recreational bathing water quality. LAWA is the public 'face' for NZ's environment, so it's important to ensure that the public receives the most update information available.

4.1.6 Air quality winter update

This winter Masterton recorded 35 days that failed to meet the World Health Organization’s daily limit for PM2.5. There were seven exceedances of the National Environmental Standard for PM10 over this period – one more than last winter. This calendar plot below shows 24-hour concentrations of PM2.5 recorded at the Masterton East air quality monitoring station - the darker the colour, the higher the concentration. The World Health Organization daily guideline limit is 25 µg/m³.



4.2 Environment Regulation

4.2.1 Non-notified consents processed

Between 23 July 2019 and 3 September 2019 a total of 38 consents have been granted on a non-notified basis. A summary of the type of consent and the area to which it pertains is set out in the table below.

| Territorial Authority | Coastal Permit | Discharge permit | Land use consent | Water permit | Total |
|-----------------------|----------------|------------------|------------------|--------------|-----------|
| CDC | | 2 | | | 2 |
| HCC | | 3 | 5 | 1 | 9 |
| KCDC | | 1 | 3 | | 4 |
| MDC | | 1 | 1 | 2 | 4 |
| PCC | 2 | 2 | 1 | 1 | 6 |
| SWDC | | 2 | 2 | 3 | 7 |
| UHCC | | | 1 | | 1 |
| WCC | 2 | | 2 | 1 | 5 |
| Region wide | | | | | |
| Total | 4 | 11 | 15 | 8 | 38 |

There were no particular non-notified consents of note with the predominant consent type being for land use consents, mainly for bores.

4.2.2 Consenting

NCI

NCI Packaging Limited currently operate a metal packaging manufacturing factory at 62-66 Montgomery Crescent, Upper Hutt. The consent authorising discharges to air expired on 2 August 2019. The applicant applied to renew their consent to allow for the continued operation of air discharge activities. The consent application has been assessed by technical experts and was notified to surrounding landowners. The period for submissions closed on 12 September 2019.

Southern Landfill Stage 4

The existing Southern Landfill Stage 3 is nearing capacity and WCC need Stage 4 ready to accept refuse by June 2023. WCC has started a series of public meetings and stakeholder engagement to announce the project and get community feedback on the alternatives assessment with an aim to commence the consent process in April 2020. We are currently discussing what technical studies will be required for the consent application and engaging experts to assist GWRC with the effects assessment.

20-24 Hautonga Street – water bottling

As previously reported, a consent application was lodged on 28 June 2019 to take and use groundwater from a bore located at 20-24 Hautonga Street in Petone for water bottling purposes. Further information has been requested from the applicant to assess environmental effects of the activity, this will likely be submitted at the end of September 2019. We, and the applicant, are also having ongoing discussions with the Wellington Tenth Trust about some potential cultural issues they may have with the proposals. A decision on whether the application will be notified has not yet been made and therefore no decision has been made on this consent application as yet.

4.2.3 Pre-application

Porirua wastewater collaborative pilot project

Following the Multi-Criteria Analysis workshop in June 2019, discussions were held between Wellington Water and PCC regarding the collaborative group recommendation. Because the recommended solution was focused on wet weather overflows, it was felt that an opportunity to improve the broader health of the Te Awarua-o-Porirua Whaitua by addressing dry weather leakage may have been missed (a key direction in both the Ngāti Toa Rangatira Statement and the TAO P WIP) and that the very high level of investment required wasn't getting the community the best bang for buck. Therefore the Wellington Water project team have recommended to their client councils that the renewal of the discharge permits related to the wastewater treatment plant are separated from the network issues. The consent application is due to be lodged with GWRC in April 2020 and at this stage it is expected to propose a slight upgrade to the plant's capacity to treat wastewater and no change to the outfall location or length.

GWRC is currently waiting on confirmation from Wellington Water regarding their strategy to address the issues within the wastewater network; they have indicated this will include *“management of the network to reduce wet weather overflows and dry weather leaks with a combination of some storage, an aggressive programme of reducing inflow and infiltration of stormwater into the wastewater network, inspections and enforcement of private laterals that are in poor condition, and increased rate of replacement of leaky pipes in the public network”*. It is anticipated that the collaborative group will be involved in the process to assess the pros and cons of potential network improvements.

Petone to Ngauranga cycleway

NZTA are continuing to engage with GWRC, and jointly with WCC and HCC, on their proposal to construct a shared walking and cycling path from Petone to Ngauranga. The proposal involves extensive reclamation of the harbour edge. Consent has been granted to undertake geotechnical investigations related to the design of the cycleway.

Pinehaven streamworks project

Wellington Water (on behalf of Upper Hutt City Council (UHCC)) are intending to submit a joint application to GWRC and UHCC for resource consent and a Notice of Requirement for works in and adjacent to Pinehaven Stream. Pinehaven Stream has a long history of flooding, and the overall problem which is being addressed by the project is the unacceptable risk of flooding faced by the people and communities in the Pinehaven Catchment, and the subsequent risk to their health, safety and wellbeing. The proposal involves structural mitigation works including the creation of naturalised channel sections, construction of vertically sided lined sections, securing secondary flow paths, replacing private vehicle crossings, blockage reduction for inlet structures, flood walls at two locations, construction of a private access road and relocation of utilities. Consent lodgement is estimated for September 2019 and WWL propose works to be undertaken this financial year.

4.2.4 Compliance, Investigations and Enforcement

Transmission Gully

An additional 4 Infringement Notices and Formal Warnings were issued to CPB HEB Joint Venture in August associated with failures of erosion and sediment controls that occurred in April and May on the Transmission Gully project. Formal Warnings associated with these incidents were also issued to NZTA, Wellington Gateway Partnership, CPB and HEB.

4.3 Environmental Policy

The Department is currently responding to the suite of national direction covering freshwater, urban development and highly productive soils. A draft submission is being presented at this 19 September 2019 meeting.

In addition to this:

- The Appeals period for the pNRP decision closes on 18 September 2019, there will then be a period for interested parties to join each appeal.
- Workshops have been held with a range of stakeholders on the pNRP decision.
- Plan Variation drafting is ongoing aiming for notification next year. This may shift depending on where the government lands with the centralised water hearing panel process in the Resource Management Amendment Bill.
- Preparations are underway for the next Whaitua Whanganui-a-Tara Committee meeting. This will be held on 23 September 2019 and continue exploration of the urban issues theme.

- Discussions have begun as to how we align our work in the area of climate change adaptation. This is especially important for our hazards work and any future whitua processes, especially in Kāpiti.

4.4 Strategy – Parks Planning

4.4.1 Parks Network Plan

It has been a positive year for the Parks Network Plan (PNP) review as opportunities for restoring and enhancing the environment in regional parks grow with a groundswell of community support.

There have been many issues to work through and opportunities to develop which have unfortunately put the planning process behind its original schedule, but work is on track to have an inspirational, practical and collaboratively produced plan ready for public consultation come summertime.

In the early stages it was a sensitive subject to address the future of grazing in our Regional Parks, however the Environment Committees December 2018 endorsement for phasing out farming was a significant milestone. Since then GWRC has taken big leaps forward with the adoption of the Carbon Neutrality Process Plan and the carbon neutral targets to achieve before 2030. Regional parks will play a significant role in carbon targets by not only removing high impact grazing in the parks, but delivering ecosystem service benefits such as higher quality freshwater and improved biodiversity achieved through environmental restoration as well as more enjoyable recreation settings. The enhancement of the environment; more trees, restored wetlands, improved water quality will all contribute to not only financial returns in the form of carbon credits, but will also greatly improve the health and wellbeing of the people in the Wellington Region.

Currently, a background paper “Restoration Opportunities” is being written to support the PNP public consultation. This will focus on the “how” for concentrating our efforts towards environmental restoration including resourcing, restoration techniques/processes and time frames.

In the plan itself, we have worked through the parks network overarching goals, objectives, actions, outcomes and policies, as well as the park specific sections which are due to go out to rangers and the wider organisation for more input. Along with this, is a new rules section which has been enriched and formatted to become more comprehensive and user friendly.

It is our intention to get the draft plan endorsed by the Environment Committee for public consultation pre-Christmas in order for a summer time consultation on the plan.

A workshop with Councillors about the draft Plan is proposed and will include a range of topics including access and recreation activity improvements, restoration and community partnership opportunities.

4.5 Parks Operations

Recruitment for the summer rangers to be based at Queen Elizabeth Park and Kaitoke Regional Park is underway. We are working with Nelson Marlborough Institute of Technology to take on students studying the New Zealand Certificate in Conservation, this provides the students with an opportunity to gain practical park management skills to support the theory work undertaken during the year.

Parks have been involved in the expression of interest (EOI) for a One Billion trees partnership. The parks contribution to the programme is from current restoration budgets. When the programme receives final approval a detailed planning process would be completed across the parks network. The focus will be on degraded sites, riparian margins and wetlands. An external contractor will be engaged to undertake delivery and management of the projects. Further work will be required to explore options on registering the sites for carbon credits. This will require discussions to be held with land owners, e.g. DOC and TA's where control and management agreements are in place.



4.5.1 Pakuratahi Forest

The new toilet at the Gums picnic area at Tunnel Gully is built. It will be ready for public use once documentation from UHCC is supplied. The new building provides two fully accessible cubicles and flush toilets, and is in keeping with the characteristic building design used within the Forest. The location of these toilets means that they will be popular with both visitors to Tunnel Gully and those enjoying the Remutaka Cycle Trail.



The maintenance crew are well through remetalling of the Lower Tanes Track the most popular walk in Tunnel Gully. The new surface will be a huge improvement for buggy walkers and other users.



From left: Remetalled Lower Tanes Track, site planting at Tunnel Gully entrance area

The stream works at the Tunnel Gully entrance are now complete and the hydroseeding and planting all done. This was critical work as the stream was eroding the banks and only 1m away in areas from carparks and the road.

4.5.2 Akatarawa Forest

As part of ongoing liaison with the Akatarawa Recreation Access Committee (ARAC) Parks and ARAC members recently visited the Wainui Stream route that 4WDs had traditionally used prior to harvesting and storm damage that blocked it some five years ago. The stream is also a paper road.

Given the complicated issues of tree blockages, environmental protection and paper road status, the future use of this area requires some further consideration.



Wainui Stream, Puketiro Forest

4.5.4 Kaitoke Regional Park

In August, we hosted around 90 volunteers from the NZ Defence Force (NZDF) Youth Development Unit on site at Kaitoke Regional Park. The crew planted native trees, bark mulched the plantings and spread gravel on entrance ways to the grass camping areas. The work ethic and sheer number of volunteers saw a huge amount of work done and the three year planting plan completed a year early!

Part of the further development of the top terrace camping area and complementing the new facility building planned this year, the plantings will provide privacy and wind protection for campers, whilst also increasing habitat and food for native species.



Youth Development Unit, NZDF, Top Terrace Kaitoke

Te Marua also got some love during August. Work has been steadily progressing to lift its appearance, increase biodiversity and offer a better recreational experience. The Parks team have been helped by students and others from Plateau School to get plants in the ground over winter. There are also new track routes to get more walkers off the main road and picnic tables to be completed for summer.



Planting, Te Marua

4.5.5 Wainuiomata Recreational Area

The Park Ranger has been working with volunteers, Brookfield scouts and school groups to put 2,500 plants into the Wainuiomata Lower Dam wetland this winter. Since the blackberry and other pest plants were removed two years ago the area has really started to flourish. The use of wool weed mats and biodegradable pegs will also hopefully mean that no follow up releasing is required.



Wainuiomata Lower Dam wetland

Following a very successful Dark Skies event at the park during June, investigations are underway into the opportunities that may be available to mitigate light pollution at the park and develop astronomy related story telling, working with local community groups. Policies supporting conservation of dark skies will be included in the draft new Parks Network Plan currently being developed.

.5.6 East Harbour Regional Park

Parks has been working closely with Taranaki Whānui over the last month to get the Rōpu Tiaki governance group up and running again. A key task for the group was organising the annual planting day at Parangarahu Lakes at the end of July. We had about 30 people on the day including members of MIRO. The event also included a visit to the lighthouse and the dendroglyphs (tree carvings).



Planting demonstration for Taranaki Whānui planting day, Lake Kohangapiripiri

The Ngaumatau walking track in Point Howard area of the Northern Forest has been remetalled. The new surface has been well received by the large number of local users.



Ngaumatau track - metalled

4.5.7 Battle Hill

Track closures for lambing are now in place and parts of the park are closed to the public but other areas remaining open for the many visitors coming to see the lambs. Given the easy access to Transmission Gully, many others are visiting to see the progress on the motorway construction.

Planting almost 6000 trees over 2.7 ha has been completed in a newly retired area at Battle Hill. A further 2.5 ha to be planted in 2020 will complete this project adding an increased buffer to the bush reserve and Horokiri stream. The project includes ongoing control of rabbits, hares and goats.



Contractors planting at Battle Hill

Working with the Land management team pole planting has been completed through the RDA licence area to improve erosion control and to provide shelter and shade to the horses.



Preparing to plant poles in the RDA area on a frosty Battle Hill morning

The Transmission Gully project have completed plantings in the eastern Horokiri stream catchment through Battle Hill, in an area previously retired from grazing.

4.5.8 Belmont Regional Park

Restoration projects have been in full swing across the park with plantings by BAMBA at Stratton Street in the logged pine block, at Hill Road by park stakeholders and neighbours in a retired area, and in Cannons Creek where the Friends of Maara Roa continue their restoration efforts.



BAMBA and Sacred Heart College students planting at Stratton Street



Hill Road planting day

Lambing and calving public access closures are currently in place for park visitors to reduce stock losses. While the Old Coach Road/ Hill Road routes remain open to park visitors, GWRC is using social media posts to promote recreation opportunities that exist outside of closed areas of the park.

Transmission Gully planting mitigation works have been completed on the large areas in the eastern side of the designation. GWRC facilitated access through the park to allow this to happen with many thousands of trees being flown to inaccessible sites via the Belmont airstrip.

Most boundary/mitigation fencing works have been completed. These are now being surveyed to form the basis of new maps quantifying project mitigation areas.

We are having ongoing discussions with the TG project team around track reconnections and entry points, to ensure these are considered ahead of final road works being completed.

4.5.9 Queen Elizabeth Park

Restoration planting has been completed for the season. It has been another record year with around 35,000 trees being planted in the park, and good numbers of people attending community planting days. The Spade Aid event hosted more than 200 people who planted the 5000 trees in a little over two hours. In the Maclean Trust-funded area, around 7ha was planted with small pioneer species

The nursery restoration group has been growing on the plants, helping with plant layout and planting a range of sites across the park with emergent and wetland species. Plants are now arriving into the nursery for 2020 with the volunteers turning their attention to growing these on for next winter.



Spade Aid planters get stuck in



Contractors planting in Maclean Trust site

Site preparation has begun for 2020 planting sites; a two year process in some areas as gorse, blackberry and other weeds are controlled ahead of planting.



A mulched area adjacent to Whareroa Stream in readiness for 2020 planting

Park usage has been busy over the winter months as people look to take advantage of fine settled spells. Several cross country, orienteering and the annual Cancer Society Fund raising events have all seen good turn outs. The latter event run by the Tramways Museum and the Vintage Car Club raised \$5,500 for the Cancer Society, in a larger affair than last year with more cars on display and a larger visitor turnout.



Vintage car display; Ramaroa BBQ fully deployed for Cancer Society fundraiser

Work has begun on the development of the Farm Environment Plan for Queen Elizabeth Park, including discussions with stakeholder groups and other specialists. Working with our Land Management team, our aim is to produce a leading edge, pragmatic plan to minimise farming impacts in the context of ecological and recreational enhancement through to the end of the farm licence in 2025.

A new carpark has been constructed at the Marines Memorial site to formalise parking in this area while allowing better access to the site.



US Marines Memorial Carpark

4.6 Harbours

4.6.1 Harbour Safety

Centreport have put in place a procedure for ships to register their arrival at the port without coming close to the entrance before their pilot is ready. This has been backed up by a Harbourmaster's direction to the agents re-enforcing the Maritime Rule that requires ships without pilots to remain outside of Harbour limits.

A recent harbour survey by Centreport has found some shallowing on two parts of the recommend routes for shipping. A plan for managing deep draft outward bound vessels has been agreed upon and communicated to other larger harbour users.

A second users forum for large shipping users of the harbour has been scheduled for late September.

4.6.2 Pollution prevention and response

There has been significant work put into various plans for oil transfer sites. We have been working with site operators to raise the standard of spill prevention and response plans. These range from fuel bowsers at marinas to the tankers transfer sites on the harbour for tankers. This plans are also considered by Maritime NZ before we sign them off under delegated authority from Maritime NZ. We have also been involved in planning for exercising some of these plans.

Environmental Protection have made further progress on identifying the previously unknown source of oil spills from storm-water drains from under Aotea Quay. The area has been identified and work is progressing on isolating and rectifying this problem. This is a very positive step in relation to a long term issue.

4.6.3 Navigation aids

The work at *Hinds Point* has progressed well, the foundations are in place and the tower completed and being painted.



The refurbished *Barrett Reef* buoy has been returned to the port, the lights and solar system are being fitted soon. A final check on the existing buoy mooring has been carried out and next we will be looking for an appropriate weather window to get the buoys changed.



4.6.4 Recreation

Harbour Rangers tested the buoyancy and checked the condition life jackets and floatation belts at two rowing clubs. 128 were tested in total and 26 didn't meet the standard.

A small powerboat was found half sunk and secured to the shore near the Mana bridges in August. Despite wide coverage the owner wasn't forthcoming. From various reports it was established all the people on the boat made off safely. We recovered the boat from the water and are following the process for it to be declared abandoned and disposed of.



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In early August we were made aware of a person at Mana with a small yacht planning to sail to the bay of Islands and several people around the marina were concerned about his ability to make the journey. One of our Rangers met with and spoke to the gentleman to ascertain his likely ability. This was shared with Maritime NZ who also met with him. There was significant amount of communications around him and advice given for improving safety options for the boat. With the assistance of locals at Mana some of this was headed. The yacht and owner finally decided to move to Wellington as a first step on their journey. Unfortunately this didn't go according to his plan and resulted in him being towed back to Mana by the Coastguard. The effort put in prior to this happening meant there was wide awareness of the possible issue. The fact he was safely returned to Mana was positive and the owner has now decided against continuing his voyage.

The Harbourmaster spoke at the pre-season race briefing at Port Nicholson yacht club about safety matters.

We have been working with communications around planning the media side of our summer safety messaging. This will be starting later this month and building as we move towards summer.

6. The decision-making process and significance

No decision is being sought in this report.

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

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

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.*

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