Taranaki Regional Council

AGENDA
Policy & Planning

Tuesday 21 July 2020, 10.30am

Policy and Planning Committee

21 July 2020 10:30 AM - 01:00 PM

AGENDA
Policy & Planning

Purpose of Policy and Planning Committee meeting

This committee attends to all matters of resource management, biosecurity and related environment policy.

Responsibilities

Prepare and review regional policy statements, plans and strategies and convene as a Hearing Committee as and when required for the hearing of submissions.

Monitor plan and policy implementation.

Develop biosecurity policy.

Advocate, as appropriate, for the Taranaki region.

Other policy initiatives.

Endorse submissions prepared in response to the policy initiatives of organisations.

Membership of Policy and Planning Committee

Councillor C L Littlewood (Chairperson)
Councillor M G Davey
Councillor D H McIntyre
Councillor E D Van Der Leden
Councillor M P Joyce (ex officio)
Councillor N W Walker (Deputy Chairperson)
Councillor M J McDonald
Councillor C S Williamson
Councillor D N MacLeod (ex officio)

Representative Members

Councillor C Young (STDC)
Councillor G Boyde (SDC)
Ms B Bigham (Iwi Representative)
Councillor S Hitchcock (NPDC)
Mr P Moeahu (Iwi Representative)
Ms L Tester (Iwi Representative)

Health and Safety Message

Emergency Procedure

In the event of an emergency, please exit through the emergency door in the committee room by the kitchen.

If you require assistance to exit please see a staff member.

Once you reach the bottom of the stairs make your way to the assembly point at the birdcage. Staff will guide you to an alternative route if necessary.

Earthquake

If there is an earthquake - drop, cover and hold where possible.

Please remain where you are until further instruction is given.

MEMORANDUM
Policy & Planning

Date	21 July 2020
Subject:	**Confirmation of Minutes - 9 June 2020**
Approved by:	A D McLay, Director - Resource Management
	M J Nield, Acting Chief Executive
Document:	2535087

Resolve

That the Policy and Planning Committee of the Taranaki Regional Council:

a) takes as read and confirms the minutes of the Policy and Planning Committee meeting of the Taranaki Regional Council held in the Taranaki Regional Council chambers, 47 Cloten Road, Stratford, on Tuesday 9 June 2020 at 10.30am

b) notes the recommendations therein were adopted by the Taranaki Regional Council on Tuesday 30 June 2020.

Matters arising

Appendices/Attachments

Document 2515702: Minutes Policy and Planning Committee Meeting - Tuesday 9 June 2020

Date 9 June 2020, 10.40am

Venue: Taranaki Regional Council chambers, 47 Cloten Road, Stratford

Document: 2515702

Members	Councillors	C L Littlewood	Committee Chairperson
		N W Walker	Committee Deputy Chairperson
		M G Davey	
		M J McDonald	
		D H McIntyre	
		C S Williamson	
		E D Van Der Leden	
		M P Joyce	ex officio
		D N MacLeod	ex officio
Representative Members	Councillors	C Young	South Taranaki District Council
		S Hitchcock	New Plymouth District Council
		G Boyde	Stratford District Council
	Messrs	P Muir	Federated Farmers
		P Moeahu	Iwi Representative
	Ms	L Tester	Iwi Representative *Via zoom*
		B Bigham	Iwi Representative
Attending	Councillor	D L Lean	
	Messrs	B G Chamberlain	Chief Executive
		G K Bedford	Director - Environment Quality
		A D McLay	Director - Resource Management
		S R Hall	Director - Operations
		C Spurdle	Planning Manager
		R Phipps	Science Manager Hydrology/Biology
		T McElroy	Environmental Scientist – Marine Biology
		S Tamarapa	Iwi Communications Officer
		P Ledingham	Communications Adviser
		T Davey	Communications Adviser
	Mrs	V McKay	Science Manager Chemistry
	Miss	L Davidson	Committee Administrator
	Ms	S Mako	Te Kotahitanga o Te Atiawa Trust
		S Gibson	Te Kotahitanga o Te Atiawa Trust
	Messrs	J Clough	

B Jansma
K Holswich
M Ritai

Two members of the media, Taranaki Daily News and Radio New Zealand.

Apologies There were no apologies received.

Notification of Late Items Ms B Bigham requested an update on the Mana department of the Whakahono a Rohe agreement.
The freshwater reforms have been released by government, more information on these will be available once staff have had time to have a proper look at them.

1. Minutes – Tuesday 4 February

1.1 The minutes of the last meeting held on Tuesday 4 February and the minutes from the "whole of committee" meetings held Tuesday 7 April and Tuesday 19 May were attached.

Resolved

That the Policy and Planning Committee of the Taranaki Regional Council:

a) receives the confirmed minutes of the Policy and Planning Committee meeting held in the Taranaki Regional Council chambers, 47 Cloten Road, Stratford on Tuesday 4 February 2020 at 10.30am

b) receives the confirmed minutes of the Ordinary meeting of the Taranaki Regional Council held via audio-visual link (zoom) on Tuesday 7 April 2020 at 10.30am

c) receives the unconfirmed minutes of the Ordinary meeting of the Taranaki Regional Council held via audio-visual link (zoom) on Tuesday 19 May 2020.

Donald/Davey

Matters arising.

There were no matters arising.

2. Lakes380: National Lake Health Research Project

2.1 Mr R Phipps, Science Manager – Hydrology/Biology, spoke to the memorandum introducing the Lakse 380 project, the work being carried out in Taranaki as part of the project and progress on work to date and answered questions arising.

Recommended

That the Taranaki Regional Council:

a) receives the memorandum describing the *Lakes380* research project

b) notes that sampling of eight lakes in Taranaki as part of the project has been completed and that results of this work will be reported once available

c) notes the engagement of the Council and local iwi as participants in the project.

Williamson/McDonald

3. Te Āhua o Ngā Kūrei – Ngāti Mutunga Estuary Project (Curious Minds)

3.1 Mr G K Bedford, Director – Environment Quality, introduced Mr T McElroy, Environmental Scientist – Marine Biology and Ms Anne-Maree McKay and Marlene Benson, Ngāti Mutanga, who gave a presentation providing Members with an update on the progress of the Te Āhua o Ngā Kūrei – Ngāti Mutunga Estuary Project.

3.2 Acknowledgement was given to Emily Roberts, Education Officer, Taranaki Regional Council, who had significant input into the project.

Recommended

That the Taranaki Regional Council:

a) receives the update on Te Āhua o Ngā Kūrei – Ngāti Mutunga Estuary Project

b) notes the work that has been accomplished to date, and the remaining work to be completed.

Van Der Leden/Young

4. Update on Environment Court Mediation on the Proposed Coastal Plan for Taranaki

4.1 Mr A D McLay, Director- Resource Management, spoke to the memorandum updating Members on the progress with the Environment Court mediation on the *Proposed Coastal Plan for Taranaki* (the Proposed Plan).

Recommended

That the Taranaki Regional Council:

a) receives this memorandum entitled *Update on Proposed Coastal Plan for Taranaki: Appeals*

b) notes the progress in resolving appeals to the Proposed Plan lodged with the Environment Court.

Joyce/Walker

5. Tai Whenua, Tai Tangata, Tai Ao

5.1 Mr A D McLay, Director –Resource Management, introduced Ms Sera Gibson and Ms Sarah Mako who gave a presentation for Members information on an Iwi management plan recently produced by Te Kotahitanga o Te Atiawa Trust entitled *Tai Whenua, Tai Tangata, Tai Ao, Te Atiawa Iwi Environment Management Plan 2019* (the plan).

5.2 Such plans are also useful in the consent process in identifying affected parties.

Recommended

That the Taranaki Regional Council:

a) receives the memorandum and the Tai Whenua, Tai Tangata, Tai Ao, Te Atiawa Iwi Environmental Management Plan (2019)

b) notes that the Plan outlines the expectations and the position of Te Atiawa Iwi on matters relating to the environment in their rohe

c) notes that the Plan will be taken into account during the review of the Council's Resource Management Act policy documents concerning air, freshwater, soil and coastal resources; and

d) recognises that the Plan is a positive step forward in clarifying the policy position of Te Atiawa Iwi on environmental matters.

McDonald/Van Der Leden

6. Key Native Ecosystems Update

6.1 Mr S R Hall, Director – Operations, spoke to the memorandum presenting for Members information an update on the identification of seventeen new Key Native Ecosystems (KNE) sites and answered questions arising.

6.2 Councillor N W Walker declared an interest in two KNE sites, Georges Elephant and Orions Belt.

Recommended

That the Taranaki Regional Council:

a) receives the memorandum and the attached inventory sheets for Georges Elephant, Piraunui, Fairy Forest, The Moeawatea, McColl's East Bush Block, Allerby's Bush, Orions Belt, Fern Grove, Vujcich Piakau Stream Forest, Fisher Family Bush, Waha o Tane, Watatao, te Kahu, PKW Farm 7 Inaha Stream, Green School, Cornwall Park Bush Remnants, McKenzie Wetland

b) notes that the aforementioned sites have indigenous biodiversity values of regional significance and should be identified as Key Native Ecosystems.

MacLeod/Muir

7. Regional Monitoring Programme for Inhalable Particulate: 2016-2020

7.1 Mr G K Bedford, Director - Environment Services, spoke to the memorandum providing Members with a report on the first four years monitoring data from a programme tracking the concentration of fine particulate matter in the air in urban New Plymouth. The programme is one of the suite of programmes monitoring air quality in the region.

7.2 The COVID-19 lockdown had a large impact on the air quality around the country however, Taranaki's monitoring system suffered a breakdown at the start of lockdown so no data is available for that period.

Recommended

That the Taranaki Regional Council:

a) receives the memorandum *Regional Monitoring Programme for Inhalable Particulate: 2016-2020*

b) notes the recommendations contained therein.

Williamson/Boyde

Councillor S Hitchcock, New Plymouth District Council, left the meeting at 11.55am

8. Update on Old Man's Beard Control Programme – Waingongoro River

8.1 Mr S R Hall, Director – Operations, spoke to the memorandum updating members on the progress with the implementation of the Old Man's Beard control programme along the Waingongoro River.

8.2 The Old Man's Beard programme is to control and minimise the spread rather than to eradicate it.

8.3 Iwi engagement has been undertaken for this project and some of the work has been tendered out to an iwi owned business.

Recommended

That the Taranaki Regional Council:

a) receives the memorandum *Update on Old Man's Beard control programme – Waingongoro River.*

MacLeod/Davey

9. Principles of the Treaty of Waitangi

9.1 Mr B G Chamberlain, Chief Executive, spoke to the memorandum providing background information of the principles of the Treaty of Waitangi, outlining what reference to the principles is made in the Local Government Act 2002 (LGA) and in the Resource Management Act 1991 (RMA) and advising whether, as a result, Council must provide iwi representatives on Council committees with iPads or equivalent devices.

9.2 Mr P Moeahu, Iwi representative, noted that he was not surprised by the outcome of the report. He believes that Council is not giving Iwi representatives the same opportunities as Councillors and that they are not regarded in the same light.

9.3 Mr P Moeahu, requested that Council reviews its policy on providing Iwi representatives with devices.

9.4 Ms B Bigham, Iwi representative, felt that this was a small request that has now become a legal matter as opposed to just answering the question. Other councils around the country provide devices to Community Board members and representatives. Not being provided a device does not give members the same opportunity to take part in the meetings.

9.5 Councillor E Van Der Leden felt that it was a fair question to be asked and noted that this is an opportunity where Council can change.

9.6 The TRC Chairman, Mr D N MacLeod, noted that everything Council does they go about it in the right way and seek legal advice where needed. Everyone around the table wears different hats at times and participation is important however, everyone is still able to fully participate in discussions at the committee meetings without a

Council device and they are provided with the exact same information as members with a device.

9.7 It was noted that different Councils around the country take different stances on the matter.

9.8 Mr P Muir, Federated Farmers representative, noted that if you start providing for one committee representative you then need to provide for all and doing so would open the floodgates.

Recommended

That the Taranaki regional council:

a) requests a review of the policy on providing iwi representatives with a device in consultation with Iwi.

Moeahu/Bigham

In favour – 5 (Mr P Moeahu, Ms B Bigham, Councillor E Van Der Leden, Councillor C Young, Ms L Tester)

Against – 10 (Councillors C Littlewood, N Walker, M Davey, M McDonald, D McIntyre, C Williamson, D MacLeod, M Joyce, G Boyde, Mr P Muir)

Motion lost

Recommended

That the Taranaki Regional Council:

a) receives the memorandum *Principles of the Treaty of Waitangi*

b) notes that the Council continues to meets its statutory obligations regarding the principles of the Treaty of Waitangi

c) notes that the Council is not obligated nor is it required to supply iPads to iwi representatives under the principles of the Treaty of Waitangi.

MacLeod/Joyce

In favour – 13

Against – 2 (Ms B Bigham, Mr P Moeahu)

Motion carried

Mr P Moeahu left the meeting at 12.16pm

Ms L Tester left the meeting at 12.16pm

10. Iwi Member Inductions

10.1 Mr B G Chamberlain, Chief Executive, spoke to the memorandum informing the committee of the reconvening of the postponed iwi representative inductions following the next Consents and Regulatory and Policy and Planning Committee meetings.

10.2 The invitation is extended to all members of the committee.

Recommended

That the Taranaki Regional Council:

a) approves the induction programme.

Williamson/Van Der Leden

11. General Business

11.1 Mana Whakahono a Rohe agreement

Mr A D McLay, Director Resource Management, gave a brief update on the department of the joint Mana Whakahono a Rohe agreement. Covid-19 had upset the process and currently Councils are meeting before re-engaging with iwi.

There being no further business, the Committee Chairperson, Councillor C L Littlewood, declared the meeting of the Policy and Planning Committee closed at 12.21pm.

Confirmed

Policy and Planning Chairperson: _____

C L Littlewood

Tuesday 21 July 2020

MEMORANDUM
Policy & Planning

Date	21 July 2020
Subject:	**Pest pathway management in Taranaki**
Approved by:	S R Hall, Director - Operations
	M J Nield, Acting Chief Executive
Document:	22510708

Purpose

1. The purpose of this memorandum is to introduce the think-piece *Pest Pathways into Taranaki*. The think-piece was commissioned by the Taranaki Regional Council (the Council) to review high-risk pest pathways into the Taranaki region, to identify high-risk candidate species, and to contribute to the preparation of a *Risk Assessment Inventory for the Taranaki region*.
2. Appended to this item is the think-piece *Pest Pathways into Taranaki*.

Executive summary

3. In 2018, the Council adopted the *Taranaki Regional Council Biosecurity Strategy 2018-2038* (the Biosecurity Strategy), which included actions for the Council to undertake risk assessments and contingency planning for harmful organisms not yet present in the region.
4. In February 2020, the Council commissioned Place Group Environmental Planning to undertake a risk assessment to identify high-risk pests and pathways for the Taranaki region and develop a think-piece on how the Council might manage the pathways identified (where the Council is 'best placed' to take a lead or supporting role).
5. Appended to this item is the think-piece prepared by Place Group Environmental Planning.
6. Preparation of the think-piece was informed by a high-level literature review to identify an initial list of candidate pathway pest species and a workshop to 'vet' a list of candidate species, to discuss the likelihood of candidate species arriving in Taranaki and the potential consequences of establishment, and to identify the probable pathways by which the candidate species might arrive in the region.
7. The think-piece sets out recommendations for the Council in terms of addressing high risk species and pathways for the Taranaki region. These recommendations are grouped around the themes of:
    - planning and advocacy;

- surveillance and response;
- interagency partnerships and collaboration; and
- awareness, education and engagement.

8. The think-piece recommendations are the first step in identifying and planning to manage pathway risks. They also inform the Council's next steps in relation to establishing surveillance and incursion responses targeting high-risk pathways.
9. Appended to the think-piece are 21 individual inventory sheets that will form part of the Council's new *Risk Assessment Inventory of Pathway Pests in the Taranaki Region*. This inventory will be reviewed and updated regularly, including the addition to new species of interest.
10. The inventory and supporting surveillance and incursion response systems represent a step change for the Council as its increases its focus on new threats rather than 'legacy' pests for which it is largely too late to stop them from being an ongoing problem.

Recommendations

That the Taranaki Regional Council:

a) receives the memorandum and attached think-piece *Pest Pathways into Taranaki*

b) notes that the attached think-piece identifies 21 high-risk candidate species to be included in a *Risk Assessment Inventory for the Taranaki region*

c) notes that the *Risk Assessment Inventory for the Taranaki region* will be regularly amended and updated over time to inform Council responses in the management of pest pathways.

Background

11. In 2018, the Council adopted the *Taranaki Regional Council Biosecurity Strategy 2018-2038* (the Biosecurity Strategy), which included actions for the Council to undertake risk assessments and contingency planning for harmful organisms not yet present in the region.
12. As Members are aware, the most efficient and effective form of pest management, is to avoid the establishment of new pest species in the region in the first place. Through effective monitoring and surveillance of 'pathways' that new invasive and harmful species may enter the region, there is an opportunity for agencies to undertake early control before the species has a chance to become established or spread too quickly.
13. The Biosecurity Strategy sets out the Council's strategic directions and priorities over the next 20 years and include objectives, actions and activities to manage pest pathways. In particular, Objective 4.1 of the Biosecurity Strategy states that the Council will:

    "*...avoid the introduction or establishment of harmful organisms present in New Zealand but not yet present in Taranaki, and reduce the spread of other harmful organisms already in the region over the duration of this strategy*."

14. Actions set out in the Biosecurity Strategy to give effect to that objective, are for the Council to:

    - Undertake risk assessments and contingency planning for harmful organisms not yet present in the region;

- Undertake surveillance of high-risk pathways to ensure the early detection of harmful organisms in the region;
- In the event surveillance identifies the presence of new harmful organisms to the region, consider the appropriate incursion response; and
- Support national pathway initiatives to change people's behaviours and reduce the potential spread of harmful organisms and their impacts.

15. In February 2020, the Council commissioned Place Group Environmental Planning to undertake a risk assessment to identify high-risk pests and pathways for the Taranaki region and explore whether the Council is 'best placed' to manage the pathways identified (either in a lead or supporting role).
16. In brief, the think-piece is the culmination of a high-level literature review of candidate pathway pest species and expert opinion. It includes key findings from an 'experts' workshop held in Taranaki on 18 February 2020. The workshop was attended by the consultants and biosecurity practitioners from Taranaki Regional Council, Waikato Regional Council, AsureQuality, Horizons Regional Council and Ministry for Primary Industries to discuss the likelihood of a species arriving in Taranaki and establishing, the potential consequences of establishment, and the key pathways by which the species is likely to arrive.
17. The attached think-piece is the first step in identifying and planning to better manage pathway risks (Action 1). It also informs the Council's next steps in relation to establishing surveillance and incursion responses targeting high-risk pathways for these pests and will guide the further progression of Actions 2 to 4.

Overview of the think-piece

18. As noted above the purpose of the attached think-piece is to inform and implement regional surveillance, incursion response and communication activities to prevent the establishment of harmful organisms not yet present in the region.
19. Sections 3 and 4 of the think-piece examines and summarises key terrestrial, aquatic and marine pathways into the Taranaki region from adjacent regions and further afield. In particular, the think-piece identifies how and where potential invasive species might be introduced to the region via major transport modes (e.g. road, rail, air, and shipping).
20. Section 5 of the think-piece sets out the methodology undertaken by the consultants to develop a risk assessment inventory for the Taranaki region. In brief, the consultants carried out a high-level literature review to identify an initial list of candidate pathway pest species. Candidate species were identified based upon criteria from the Biosecurity Strategy, namely the species had to be:
    - present in New Zealand;
    - not present in Taranaki;
    - present in adjacent or nearby regions or on known pathways;
    - capable of establishing in the region; and
    - likely to have regionally significant adverse and unintended impacts.
21. As previously noted, a workshop was then held in Taranaki on 18 February 2020 to, amongst other things, 'vet' the initial list of candidate species.

22. Section 6 of the think-piece identifies 21 high-risk pathway species based upon the findings of the literature reviews and the workshop (individual inventory sheets for the 21 species have been drafted and incorporated into Appendix 3 of the think-piece - refer discussion below).

23. Section 7 of the think-piece sets out the consultant's recommendations (both short term and long term) for addressing high-risk species and pathways for Taranaki region. These actions are grouped around the themes of:

    - planning and advocacy;
    - surveillance and response;
    - interagency partnerships and collaboration; and
    - awareness, education and engagement.

24. Section 8 of the think-piece highlighted some emerging tools and resources for Council's consideration.

25. Finally, section 9 of the think-piece identifies immediate next steps for the Council to ensure that biosecurity systems and processes are in place to promote early detection and action is required for effective pathway management. Over the short to medium term (1-3 years), it is recommended that the Council focus its efforts on:

    - **Proactive surveillance:** Council to develop a strategic proactive surveillance programme with annual, targeted surveillance for terrestrial and aquatic pests. Options include also engaging with landowners and/or service for additional eyes on the ground and/or to facilitate access to 'vector' sites such as quarries or aggregate stockpiling areas.

      Proactive surveillance can target high-risk species in specific habitats or at specific times of year when target species are most likely to be visible. Proactive surveillance represents a 'step' change from the region's current reliance on passive surveillance (i.e. sightings by landowners or the public) and the risk of a pest being well established before being noticed.

    - **Response planning:** Council to undertake early and detailed response planning for the event of a new incursion.

      Planning should include establishing protocols and roles and responsibilities with other relevant agencies on the management of individual pests or categories of pests, and formalising these arrangements. Drafting small-scale management plans or templates that can then be finalised or filled in to respond to a species incursion is also recommended.

26. Final decisions, including budgetary considerations, have yet to be considered by Council. In due course, officers will be reviewing potential pathway surveillance and educational programmes and be referring the matter back to Council for Members' consideration.

Inventory of pathway pests

27. As noted above, information on 21 high-risk pathway species was gathered into an inventory using internet searches to access a range of documentation. Information for each species includes the references used to populate the inventory. The inventory is included as Appendix 3 of the report. Information for each species includes (as far as possible):

- description, taxonomy and general biology;
- history of introduction and spread in New Zealand;
- current and potential distribution;
- current and potential pathways;
- current and potential costs and benefits; and
- management options, including current control practices, feasibility of eradication, and legislative management responses.

28. The inventory sheets form the start of the Council's new *Risk Assessment Inventory of Pathway Pests in the Taranaki Region*. Its purpose is to be a repository of detailed information for the Council to: increase its understanding of key invasive plants and animals not yet present in Taranaki; facilitate best-practice management of these species; and provide an objective, evidence-based foundation for policy development and the consideration of pathway management options.
29. In the event of an incursion, information is immediately on hand to inform Council decisions and planning on any the initial emergency response planning. Having resources to hand, rather than scrambling for information, equipment and answers, is critical to smoothing the response process.
30. Officers recommend that the Council's new *Risk Assessment Inventory of Pathway Pests in the Taranaki Region* be reviewed and updated regularly, including the addition to new species of interest.

Decision-making considerations

31. Part 6 (Planning, decision-making and accountability) of the *Local Government Act 2002* has been considered and documented in the preparation of this agenda item. The recommendations made in this item comply with the decision-making obligations of the *Act*.

Financial considerations—LTP/Annual Plan

32. This memorandum and the associated recommendations are consistent with the Council's adopted Long-Term Plan and estimates. Any financial information included in this memorandum has been prepared in accordance with generally accepted accounting practice.

Policy considerations

33. This memorandum and the associated recommendations are consistent with the policy documents and positions adopted by this Council under various legislative frameworks including, but not restricted to, the *Local Government Act 2002*, the *Resource Management Act 1991* and the *Local Government Official Information and Meetings Act 1987*.

Iwi considerations

34. This memorandum and the associated recommendations are consistent with the Council's policy for the development of Māori capacity to contribute to decision-making processes (schedule 10 of the *Local Government Act 2002*) as outlined in the adopted long-

term plan and/or annual plan. Similarly, iwi involvement in adopted work programmes has been recognised in the preparation of this memorandum.

Legal considerations

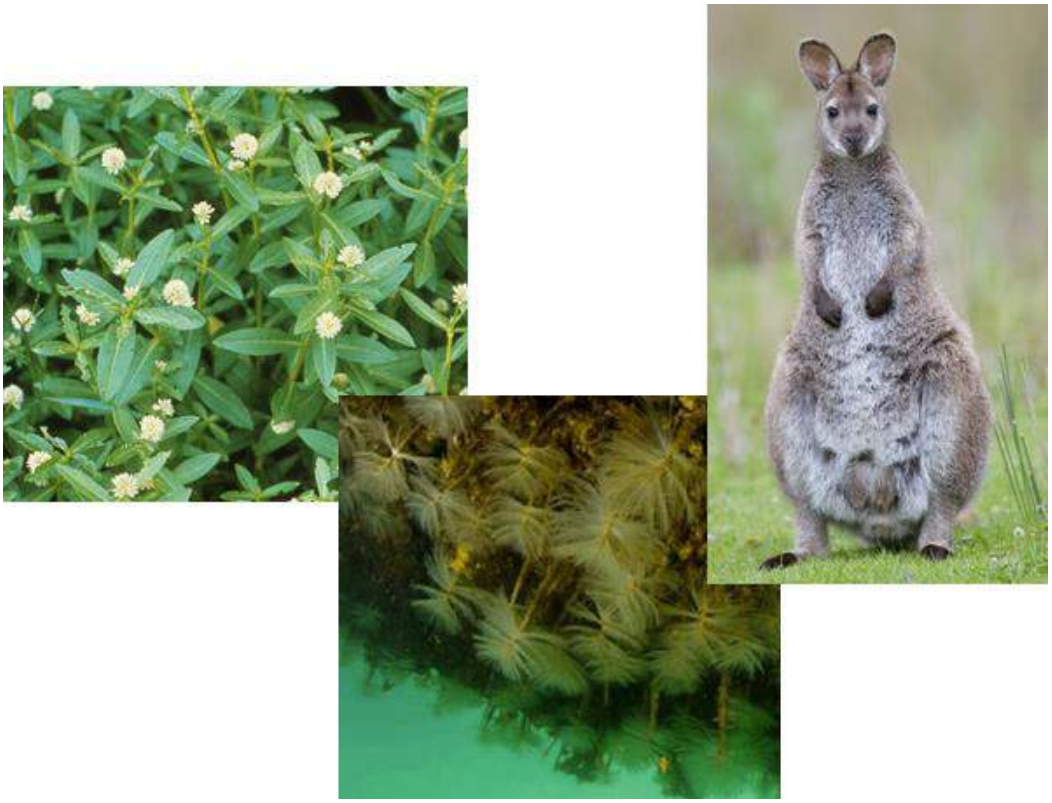
35. This memorandum and the associated recommendations comply with the appropriate statutory requirements imposed upon the Council.

Appendices/Attachments

Document 2541188: Consultant's report on pest pathways in Taranaki.

Pest Pathways into Taranaki

A risk assessment of high-risk pests and pathways



Prepared for:

Taranaki Regional Council

Version: 0.2
Status: Final
Date: 10 June 2020

Status: Final
File reference: TRC-19-286
Contact: nancy@placegroup.co.nz

PLACE GROUP
environmental planning

Nancy Willems
Angus McKenzie

This report was authored by Nancy Willems of Place Group Ltd and peer reviewed by Angus McKenzie of Place Group Ltd. The following people kindly contributed to this report by agreeing to provide information to the author:

Steve Ellis (Taranaki Regional Council)
Chris Spurdle (Taranaki Regional Council)

Contributions from those who attended the workshop:
Steve Ellis (Taranaki Regional Council)
Brett Bailey (Waikato Regional Council)
Nick Heslop (Taranaki Regional Council)
Dave West (Taranaki Regional Council)
Michael Langford (AsureQuality)
Rod Smillie (Horizons Regional Council)
Sophia Clark (MPI)

Contents

1. Purpose

Place Group Limited was engaged by the Taranaki Regional Council (TRC) to undertake an assessment of high risk pest pathways into the Taranaki region, identify high risk candidate species and prepare a risk assessment inventory to inform future TRC management of pests[1] and pathways.

This report documents the key findings of the completed risk assessment and sets out recommended options for the future management of pest pathways into the Taranaki Region.

This report and the supporting pest inventory will assist TRC to:

- Inform and implement regional surveillance, incursion response and communication activities;
- Further explore and implement regulatory and/or non-regulatory methods for managing pests and pathways.
- Determine the most effective allocation of resources in relation to pathway management within the region.

2. Background

There are a range of harmful organisms present in New Zealand that are not yet present in the Taranaki region. The most effective form of pest management, in terms of achieving eradication aims and deriving value for money, is to avoid the establishment of new pest species.

The Taranaki Regional Pest Management Plan 2018-2028 does not include species that are not already present within the region. Instead they are addressed as part of the TRC Biosecurity Strategy 2018-2038. Objective 4.1 of the Biosecurity Strategy sets out the Council's aims in relation to the establishment of new pests and reducing spread as follows:

"...avoid the introduction or establishment of harmful organisms present in New Zealand but not yet present in Taranaki, and reduce the spread of other harmful organisms already in the region over the duration of this strategy."

Pathway management is viewed by TRC as a key preventative measure for reducing the rate of spread of pest plants and animals, and stopping new species from arriving in the region. The TRC Biosecurity Strategy includes the following actions to achieve Objective 4.1:

1. Undertake risk assessments and contingency planning for harmful organisms not yet present in the region.
2. Undertake surveillance of high risk pathways to ensure the early detection of harmful organisms in the region.

[1] For the purposes of this report the term 'pest' is being used in its wider commonly understood meaning rather than its narrower statutory meaning under the Biosecurity Act 1993, which limits its application to species declared as such in a plan.

3. In the event surveillance identifies the presence of new harmful organisms to the region, consider the appropriate incursion response.
4. Support national pathway initiatives to change people's behaviours and reduce the potential spread of harmful organisms and their impacts.

This report has been prepared in relation to complete Action 1. It includes risk assessment to identify high risk pests and pathways for the Taranaki region and explores whether TRC is best placed to manage the pathways identified in a lead or supporting role. The recommendations and next steps set out in this report will guide the further progression of Actions 2 to 4.

The project brief provided by TRC for the risk assessment is included as Appendix 1.

3. Pathway Management

Managing pest pathways is a preventative measure that aims to slow the rate at which new organisms are delivered into the region (MAF, 2010). This can be cost effective in that managing a single pathway can slow the rate of incursions of a range of pests, and reduces the costs incurred from controlling established populations. It is not always critical to know the species entrained in those pathways (MAF, 2010), although identifying high risk species and connecting them with pathways enables methods of managing a particular pathway to be tested for potential effectiveness against those species.

Regional Pest Management Plans (RPMP) and/or Regional Pathways Management Plans (PMP) are regulatory tools that a regional council can use to manage pest pathways. Both plans enable the use of rules and powers under Part 6 of the BSA and the Council's role is to lead the implementation of such plans. The plan can include laying out the roles and responsibilities of other agencies, landowners and the Council itself. The legislative context for pathway management under the Biosecurity and other Acts is summarised in Appendix 2 to this report. The BSA also provides broader functions and powers that are not necessarily linked to the regulatory RPMP and PMP and can include surveillance, monitoring, and education and awareness activities.

The common factor for most pathways is that they are generally controlled by people in some way (WRC, 2017). The exceptions to this are the environmental, natural or wild pathways (hereafter referred to as natural) - wind, floods, ocean currents, and wild/feral animals. Managing these is almost difficult in many cases (eg; movement of waterfowl) and may be limited to attempting to contain the pest to reduce the ability of some natural pathways to operate (eg; physical containment to prevent water from moving an aquatic pest plant).

Vectors and/or pathways, controlled by people, in which pests are caught and moved, can be broadly grouped as follows (noting that the below is not an exhaustive list of vectors/pathways):

- Machines - including vehicles, floating platforms, machinery of all kinds and especially those used to work soil, aggregate or vegetation (eg; earthmoving and agricultural machinery, roadside mowers), vessels/water craft of all sizes and types.

- Equipment - this is generally hand held equipment associated with human activities and includes fishing gear (eg; rods, reels, nets, waders, lures), tools (eg; scrub bars, chainsaws, handheld tools like spades), aquaculture equipment, and could be larger equipment associated with machinery, or needing machinery to move or manipulate.

- Substrates/materials/transport mediums/organic matter - soil/compost and aggregate, spoil and fill, mulch, green waste, potting mix (nursery sourced plants), any other organic materials, bulk construction materials (eg; fenceposts, timber), demolition material, water (bilge, ballast, residual water in vessel compartments or other equipment used in marine or freshwater).

- Harvested crops - stock feed, human food crops including aquaculture.

Managing these vectors/pathways can be difficult where entry to and exit from sites or the region are dispersed and/or numerous and/or with high volumes of movements, and conversely may be more feasible in terms of management when there is a physical bottleneck where vectors can be intercepted at one or a few locations.

4. Pathway Management in Taranaki

The following section summarises the key terrestrial, aquatic and marine pathways into the Taranaki Region and potential opportunities for pathway management by the TRC[2].

To a greater or lesser extent the vectors/pathways listed in section 3 above are relevant to marine, aquatic and terrestrial species and environments, potentially transporting pests via all the major transport mechanisms and networks - road, rail, air, shipping. These pathways connect Taranaki to adjacent regions, and further afield. The arrival of pests from essentially all of New Zealand, and other countries in the case of marine pathways, is limited only by the ability of the pest to have viable material that can survive the trip, although a nearby source population of a pest increases the risk of that pest arriving in the region as viable material.

4.1. Terrestrial pathways

Taranaki Region has three main terrestrial pest entry points via road at State Highway 3 to the north and south, and SH 43 via Whangamomona, with significantly less traffic volume. There is a fourth minor road travelling east-west via Ohura/Waitaanga.

Railways similarly have only two entry points into the region.

While this makes the number of main entry points on land potentially manageable, the volume of traffic travelling by SH 3 into the region makes it very challenging in many regards, and not a feasible option to physically monitor and manage the regional borders on an ongoing basis. The advantage that it may offer, however, is that in the instance of a significantly high risk pest, the road and rail entry points do provide a limited number of sites that could be monitored if the pest was of enough concern to warrant an intensive approach. It could also provide an opportunity for a spot checks approach, observing traffic and noting frequency of things like dirty machinery or recreational

[2] Other organisations can also have a role in pathway management if they choose to do so, and may be declared a management agency responsible for implementation of a pathway management plan (BSA s88).

vessels coming into the region as an indication of how big an issue inter-regional movement by road might be.

Options for the potential ongoing management of terrestrial pathways can be approached by considering the main vectors and targeting those in other ways. For example, the pathways of pest plants associated with crops, like velvetleaf, Chilean needle grass or terrestrial alligator weed, could be targeted by working with primary industry stakeholders to establish protocols around individual on-farm biosecurity or improve machinery hygiene practices. A farm biosecurity plan initiated by the landowner as a separate plan, or incorporated into an overall Farm Environment Plan, could also be an option to address some terrestrial pathways.

High risk terrestrial pathways for the Taranaki Region will exist around the agricultural sector and associated with roading activities. Those with the greatest consequence are those that affect the agricultural sector.

4.2. Aquatic pathways

The associations between aquatic pest plant species, and with exotic fish, indicate they share dispersal pathways and/or that there are shared risk factors for introductions (de Winton *et al*, 2009). Deliberate releases of exotic fish have been the main pathway for pest fish spread in New Zealand to date, and aquatic pest plants may also be released deliberately or accidentally in association. Occasionally a deliberate planting of aquatic plants may bring fish and/or eggs.

Taranaki attracts visitors from outside the region for activities like fishing, and is promoted as providing good fishing opportunities for junior anglers at several locations, and as one of few areas for good sized perch in New Zealand. Several lakes also provide easy access for a range of activities other than fishing. Recreational activities and movements of watercraft and equipment from one freshwater body to another is one of the main pathways for aquatic pests. Deliberate releases of pest fish to establish new fishing areas is an ongoing risk.

Some lakes in Taranaki have infestations of aquatic weeds, while others do not. Preventing the spread of weeds from one lake to another within the region is worth consideration, particularly for sites that are free of all aquatic pest plants.

Management of drainage schemes, and roading activities, are key areas where machinery will move from site to site, often still carrying fragments of plant material in the remnants of drain cleanings and attached to machinery. This is particularly high risk where machinery is moving from one region to another. Dumping of spoil at the work site where material can enter adjacent wetlands or waterways can also spread pests into new sites, either directly or with flowing water. These pathways are evidenced by heavy infestations of more common weed species like reed sweetgrass (*Glyceria maximal*) around and extending out from culvert inlets and outlets, and on piles of spoil from clearing drains or constructing roads and bridges.

Neighbouring and nearby regions, particularly the Waikato and Bay of Plenty, provide a significant source of multiple new aquatic pests to the region, and the potential for multiple pests to arrive on a single vector like machinery and recreational watercraft and equipment. Interregional

movements of specialised equipment for flood management, road construction or earthmoving in general, and transport of materials like aggregates and stock will be key pathways for aquatic pests.

4.3. Marine Pathways

Port Taranaki is a key entry point for marine pests to the region. Vessels entering the port are coming in from a range of domestic and international ports. While the biosecurity aspects of international entries are managed by MPI as part of their border control functions, domestic movements are not. Entry to the port by vessels originating from or travelling via other domestic ports with known marine infestations could be targeted by Port Taranaki with protocols, following existing national or international guidance, to reduce the likelihood of moving a new marine pest into the Port Taranaki. This is likely to require support or encouragement from TRC.

Surveillance for marine pests at Port Taranaki is undertaken under the national surveillance programme led by MPI. High risk sites around New Zealand, including Port Taranaki, are checked twice a year through a combination of trapping, underwater searches and shore searches. While there are five key target species not currently in New Zealand[3], these surveys also identify new species to a site, and gather information about established pests expanding their range. Any finds that can't be identified as local species are sent to labs for testing. Findings are reported annually.

Under the Pest Management National Plan of Action (MAF, 2011) distinctions were made as to the default lead intervention agency responsible for bringing parties with the necessary powers, functions, and resources together for pests in the marine environment. This was adopted as a matter of policy by Cabinet and regional council Chief Executives. This distinction clearly identified MAF (now MPI) as the lead for inter-regional pathway and vector management for marine pests.

There will be opportunities for TRC to collaborate with other regions and directly with ports and vessels that are regular visitors to the Port to improve the management of marine pest pathways to slow their spread into Port Taranaki. However, MPI is technically charged with leading interregional pathways management for marine pests, with regional councils in a collaborative and supporting role, and TRC should join with other regional councils in encouraging MPI to take up this role to the fullest extent.

5. Species risk assessment

The following sets out the methodology undertaken to develop a risk assessment inventory for the Taranaki Region. Table 1 sets out criteria for considering whether candidate organisms are within the scope of the risk assessment. The results of the assessment are provided in Section 6.

[3] Northern Pacific seastar, *Asterias amurensis*; Asian clam, *Potamocorbula amurensis*; European shore crab, *Carcinus maenas*; Chinese mitten crab, *Eriocheir sinensis*; Aquarium weed, *Caulerpa taxifolia*.

Table 1: Organisms in and out of scope

Organisms in Scope	Organisms out of Scope
• Pests (as per BSA definition) from other regions. • Unwanted organisms. • Invasive species not present in the Taranaki region but present in adjacent or nearby regions. • Other invasive species present in New Zealand with a high risk of being spread through known pathways. • Terrestrial, freshwater and marine invasive species. • Biodiversity, economic or social impacts that are regional in significance.	• Invasive species not present in New Zealand. • Invasive species having adverse and unintended impacts that are not regionally significant. • Invasive species for which the benefits of control accrue to individuals rather than the region. • Invasive species not capable of becoming established in the region.

5.1. Methodology

5.1.1. Step 1- Candidate species long list

Candidate species were identified in a stepwise fashion. Through a high level literature review, an initial long list of candidate species was identified in relation to the following criteria from the Taranaki Regional Council Biosecurity Strategy 2018-2038:

- Present in New Zealand;
- Not present in Taranaki;
- Present in adjacent or nearby regions or on known pathways.
- Capable of establishing in the region;
- Likely to have regionally significant adverse and unintended impacts.

Consideration was given to a wide range of species, and their distribution in New Zealand, alongside knowledge and evidence of the consequences of the pest in other locations in terms of invasiveness, effects, and ability and costs to eradicate or control once established. This first list unintentionally included some species that are in fact present in Taranaki, however this was not evident from the initial searches.

Close proximity to source populations of pests increases the likelihood of those pests being moved into Taranaki Region, so pests in adjacent regions are more likely to be transported into Taranaki than those that are 'one region over' or further away. It is acknowledged that inter-regional movements from all over the North Island and/or New Zealand can negate this assumption for pest organisms with viable material (eg; seeds, eggs) that can survive for longer periods of time, however

interactions between Taranaki and its adjacent regions are more likely to bring live propagules into the region with short travel times. The cost of transport for stock feed, for example, will influence farmers to source from as close as possible, if sources are not available within the region.

Table 2: Adjacent and 'nearby' regions

Adjacent Regions	Nearby Regions
Waikato Manawatu-Whanganui (Horizons)	Wellington Hawke's Bay Bay of Plenty Auckland

Nearby regions were defined as those on the North Island bordering the adjacent Waikato and Manawatu-Whanganui (Horizons) regions.

All marine pests present in New Zealand were included as candidate species. Taranaki has direct links with ports with infestations of marine pests. In addition, domestic vessel movements are nation-wide, with ship movements touching nearly every major port and harbour in New Zealand either directly or indirectly. This exposes Port Taranaki to all marine pests currently present in New Zealand. While the port is also exposed to international shipping traffic, species not known to be present in New Zealand are outside the scope of this project and the Ministry for Primary Industries is responsible for border control.

5.1.2. Step 2 - long list to short list

A workshop was held in Taranaki on 18th February 2020 with a range of biosecurity expertise from Taranaki Regional Council, Waikato Regional Council, AsureQuality[4], Horizons Regional Council and Ministry for Primary Industries. The workshop was facilitated by Place Group.

The session focused on discussion about pathways, species and potential approaches to the Taranaki risk assessment work. Discussion arrived at an agreed approach as follows:

1. The candidate species list was vetted to remove any that were already in Taranaki Region. This reduced the initial long list from 66 species down to a list of 43. This list included some uncertainties.

2. The remaining species were further assessed by the panel. A qualitative assessment considered:

    a. The likelihood of a species arriving in Taranaki and establishing;

[4] https://www.asurequality.com/our-services/pest-and-disease-management-solutions/ AsureQuality responds to pest or disease outbreaks and implements operational solutions for biosecurity, in partnership with MPI and other Government, Industry and Communities.

b. the potential consequences of establishment;
c. key pathways by which the species is likely to arrive.

Species were grouped as terrestrial, aquatic (freshwater) and marine to assist with pathways. This stage was able to use Waikato Regional Council's plan for velvet leaf (WRC, 2017) for guidance. The velvet leaf plan provides a comprehensive identification of pathways that are relevant to most of the candidate species that occur in terrestrial and aquatic environments. With the exception of marine pests, all the candidate species were logically linked to one or more pathways, or types of pathways, identified in the WRC plan. The broad species groupings generally followed common pathways of spread.

Alligator weed was treated as both an aquatic and terrestrial pest because it occurs in both habitats, to assess whether this changed the pathways for movement.

Pathways were considered in terms of volume and frequency of movements, and the potential for those pathways to move an organism from one place to another. Because many of the species travel by common pathways, on common vectors, the requirements for managing pathways provides a narrowed focus for effort, and each pathway can cover multiple species.

3. Species that were considered unlikely to be transported into the region, or were unlikely to have significant consequences were eliminated, leaving a short list of species that are likely to arrive in Taranaki via a range of pathways, and would have a high level of consequence for the region if they arrive and establish.

5.1.3. Inventory

Information for each of the candidate species was then gathered into an inventory using internet searches to access a range of documentation. Information for each species includes the references used to populate the inventory. The inventory is included as Appendix 3 to the report. Information was sought as per the project brief, and for each species includes (as far as possible):

- Description, taxonomy and general biology,
- history of introduction and spread in New Zealand,
- current and potential distribution,
- current and potential pathways,
- current and potential costs and benefits,
- management options, including current control practices, feasibility of eradication, and legislative management responses.

In the course of sourcing information for the inventory, two more species, purple nutsedge (aka nut grass) and rough horsetail were removed when online records indicating that they are already present in Taranaki were found and confirmed by TRC staff.

A single plant of sea spurge has been found within the Taranaki Region, however the species is retained on the basis that the plant was removed and no further specimens have been found since. It therefore remains valid as a species of risk to the region.

6. Priority species for Taranaki

Tables 3 to 5 summarise the species that are considered most likely to arrive in Taranaki and will have a high level of consequence if they establish. The regulatory status of each species is provided to indicate whether or not a regulatory response is available. Further information on all the species listed is included in Appendix 3, and includes whether a species is in a neighbouring or nearby RPMP and the intermediate outcome sought.

Table 3: Terrestrial pests

Common name	Scientific name	Status*
Alligator weed	*Alternanthera philoxeroides*	UO; NPPA
Bat-wing passion-flower	*Passiflora apetala*	UO
Broom corn millet[5]	*Panicum miliaceum*	
Chilean needle grass	*Nasella neesiana*	NPPA
Dama wallaby	*Macropus eugenii*	UO (status expires 20 September 2021)
Darwin ants	*Doleromyrma darwiniana*	ant surveillance programme led by MPI
Pyp grass	*Ehrharta villosa*	UO; NIPR
Sea spurge	*Euphorbia paralias*	UO
Velvet leaf	*Abutilon theophrasti*	UO
Exotic pets such as Eastern water dragon; blue tongued skink.		Currently none, however National Pest Pet Biosecurity Accord may address these.

* refers to any status formally recognised under the BSA and or MPI national programme.

The aquatic weed species identified to be of risk to Taranaki feature as high risk species as rated by the Aquatic Weed Risk Assessment Model (Champion and Clayton, 2000). These are considered

[5] Climex modelling for this pest should be further investigated to confirm whether it is a risk to Taranaki

species that score over 50 under the AWRAM model, with only water poppy scoring under that threshold with an AWRAM score of 45.

Table 4: Aquatic pests

Common name	Scientific name	Status*
Alligator weed	*Alternanthera philoxeroides*	UO; NPPA
Bullhead catfish	*Ameiurus nebulosus*	Part 5b (26ZM) Conservation Act 1987
Eel grass	*Vallisneria spiralis*	UO; NPPA
Koi carp	*Cyprinus carpio*	UO
Manchurian wild rice	Zizania latifolia	UO; NPPA; NIPR
Purple loosestrife	*Lythrum salicaria*	UO; NPPA
Salvinia	*Salvinia molesta*	NO; UO; NPPA; NIPR
Tench	*Tinca tinca*	Part 5b (26ZM) Conservation Act 1987
Water poppy	*Hydrocleys nymphoides*	UO; NPPA

* refers to any status formally recognised under the BSA and or MPI national programme.

Table 5: Marine pests

Common name	Scientific name	Status*
Asian paddle crab	*Charybdis japonica*	None - likely to be picked up under the MPI-led high risk site surveillance programme for marine species.
Australian droplet tunicate	*Eudistoma elongatum*	
Clubbed tunicate	*Styela clava*	UO
Medittranean fanworm	*Sabella spallanzanii*	NO; UO

* refers to any status formally recognised under the BSA and or MPI national programme.

7. Management priorities for Taranaki Regional Council

Most of the highest risk species for the region in terms of likelihood of entry and consequence of establishment have a pest status outside the Taranaki Region that enables the Council or other organisations to respond to new incursions within the BSA or other regulatory framework without additional measures necessarily being required.

Unwanted organisms are covered in s52 and s53 of the BSA which enables an enforcement response from TRC (regardless of whether they are listed in the RPMP or not) and the ability to control the pest where it is found – s13 (1) (h) provides for any action (by a regional council) to give effect to any provision of the Act. Surveillance is enabled in s103 (3) of the BSA. Species where MPI is the lead agency (eg; under NIPR) may involve TRC in a supporting role, but otherwise do not require a regional level plan mechanism. In the absence of any other regulatory powers, including where TRC has not declared the species a pest in the existing RPMP, TRC (or another organisation) can declare a small scale pest management plan (s13 (1) (fa) of the BSA) for a new incursion which can then declare the Part 6 powers that will be used to manage the incursion.

Table 6 summarises the key responsibilities of each agency in relation to each pest status. Of note, the Department of Conservation could lead a response for a new aquatic species under provisions in the Conservation Act 1987.

Table 6: Pest status and role of TRC in surveillance and responding to new incursions to the region.

Status	Lead agency	TRC role
Unwanted Organism (UO)	Species dependent	Surveillance; Lead or support response to new incursion to region.
Notifiable Organism (NO)	MPI	Surveillance; Support
National Pest Plant Accord plant (NPPA)	The Accord is a partnership led by MPI and including regional councils, amongst others; lead is species dependent.	Support MPI programme by undertaking surveillance and inspections; Support or lead new incursion.
National Interest Pest Response (NIPR)	MPI	Surveillance; support
National Pest Pet Biosecurity Accord[6] (NPPBA)	The Accord is a partnership led by MPI and including regional councils, amongst others; lead is species dependent.	Support MPI programme by undertaking surveillance and inspections; Support or lead new incursion.

[6] As yet no pet species have been regulated under this Accord. For information about the accord: https://www.mpi.govt.nz/protection-and-response/finding-and-reporting-pests-and-diseases/keeping-watch/stopping-pets-becoming-pests/

Place Group has identified a number of recommended actions for the future management of pest pathways by the TRC as set out below. Actions are grouped into the following themes:

- Priority species
- Surveillance and response
- Interagency partnerships and collaboration
- Awareness, education and engagement

7.1. Recommended actions for the TRC in relation to priority species

7.1.1. Planning and advocacy

That the TRC:

- ➢ Prioritise high risk species that do not have a status that invokes provisions under the BSA for inclusion in the next RPMP (or as an amendment to the current plan) to enable some regulatory provisions.

- ➢ Promote species for inclusion in the Unwanted Organisms register, NPPA or NPPBA if they are considered of sufficient concern. Alternatively investigate why they are not already on the UO register or included in the Accord lists and reassess risk for the region.

- ➢ Consider other pest species that are not UO/NO/NPPA etc that are of risk to the Taranaki region for species focussed surveillance, response planning and/or inclusion in the next RPMP. This assessment would consider species not already included in this inventory that may be of lesser risk but still pose significant potential issues for the region.

- ➢ Gather detailed control information for individual species to facilitate a rapid response in the event of an incursion, particularly chemical control options for pest plants that include herbicides and rates so that the information is easily accessible.

- ➢ For UO and NPPA species regulatory tools are available and actions can focus on advocacy, support, education and continuous improvement of surveillance and response.

7.1.2. Surveillance and response

That the TRC:

- ➢ Continue the required surveillance to prevent the propagation or distribution of NPPA plants and NPPBA animals.
  - Build and maintain relationships with retail outlets
  - Consider surveillance at different times of the year to include species that may be available seasonally

- Ensure personnel are both well trained in the identification of unwanted organisms and distinguishing them from other similar species and are also able to communicate effectively with retailers
- Use existing channels through MPI to advocate for additional species as UOs if they are of concern

➢ Continuous improvement approach and reviews of surveillance and response/readiness systems and practices. Investment into this area of work can prevent the need to spend significantly more on needing to engage in eradication programmes or to manage an established species indefinitely.
- For example: Include surveillance at key sites where various materials are sourced - eg; quarries and other aggregate suppliers, bulk potting mix, mulch and landscaping materials - to enable containment and management of issues on site.
- Investigate and support other initiatives to research and develop new methods of surveillance (eg; use of drones for aquatic pest surveillance; dogs being used to detect Chilean needle grass).
- Collaborate with other regions or at national level on common issues to share costs.
- Actively participate in initiatives like the national Freshwater Biodiversity Partnership Programme that aims to improve tools and knowledge around freshwater pests for example, by helping identify a research need that will be of benefit to others.

➢ Use summer students or assign time to an FTE for proactive biosecurity surveillance work, such as targeted surveys of specific habitat types (eg; wetlands or a section of drainage network) and/or short list of key high risk species. Species would need to be prioritised and appropriate training provided for identification. This would assist with:
- Ensuring a new species has not arrived unnoticed.
- Identifying a new incursion early.
- Containing an incursion particularly where it might otherwise be easily spread (eg; aquatic weeds in drainage networks where contractors move across one property or multiple properties in a single day for drain clearing).
- Avoiding landowners spreading drain cleanings or other spoil that contain pest organisms.
- Improving landowner awareness by being visible and interacting with the community.

➢ Proactive planning for response to new incursions so that a response can be activated as soon as possible. Standard practices around isolating an infestation to delineate and contain is the first priority, however other actions could include:
- Draft small scale management plans for new incursions that TRC will be required to respond to as the lead agency. This reduces the work needed between detection and the ability to declare the plan by public notice.
- Logistics and operations planning in a similar way to emergency management planning in order to activate a response in a few days. This could include having response ready equipment and identified roles for individuals in a response team.
- Establishing protocols with other agencies and neighbouring regions, including the lead and support roles for TRC and other agencies.

- Purchasing or establishing access to specialised equipment to help contain species types (eg; a floating boom to contain a new water hyacinth sighting and prevent it escaping the water body).

➢ Use forward tracing and back tracing (as per WRC, 2017). Trace forward to identify further risk sites and trace back to the extent that it's likely to provide useful information.
- Note: While trace back is highly valuable in the early stages of a response/programme, its value significantly diminishes over time and it can be a source of distraction, with effort best invested elsewhere. Judging the level of effort warranted/to be invested in trace back will need to be weighed up by an experienced investigator at the time.
- This can also add to mutual support between neighbouring regions by locating potential source or new site in another region.

➢ Provide appropriate positive support and response to businesses and individuals who have a new incursion on their property to effectively contain and eliminate it from the site.
- Aim for positive support so that businesses and individuals are not concealing pest issues because they believe they will be prosecuted.

7.1.3. Interagency partnerships and collaboration

➢ Partnerships with industry bodies – that the TRC

- Access existing forums and communications channels to improve farmer/landowner knowledge (eg; DairyNZ discussion groups and websites).
- Work with agricultural contractors to develop pragmatic options for improved machinery hygiene or ways of working to minimise spread within and between properties. There is an Agricultural Contractors Association that could be approached as a starting point.
- Work with roading and rail contractors, agencies (NZTA, District Councils, NZ Rail) and suppliers to improve their biosecurity measures. This should include machinery hygiene practices, sourcing of clean materials, containment of pests at the source (eg; quarries for aggregates), monitoring and follow-up for new infestations that are connected with their work.

➢ Use and encourage the use of commercial incentives to implement good hygiene practices, for example including hygiene requirements and cost recovery (for an incursion response and/or ongoing control needs) in purchasing and supply contracts. This may not be a direct TRC action, however others can be encouraged to use it (eg; NZTA etc).

➢ Take a proactive approach to building on existing relationships with other organisations like the Department of Conservation and the Ministry for Primary Industries to improve communication and information sharing.

- Work with the Department of Conservation and Fish & Game NZ (where appropriate) in pest fish survey work to ensure the extent of exotic fish in the region is well known from up to date information.
  - The introduction of any aquatic life into an area where they do not already occur is an offence under Part 5b (26ZM) of the Conservation Act 1987.
  - Fish & Game NZ, Taranaki, is committed to the removal of any new incursions of coarse fish outside of their existing range, therefore having good information about the existing range will be important in getting support for removal of future incursions.

- Develop agreements and protocols for information and data sharing particularly with neighbouring and nearby regions. There should be a sufficient level of formality to these agreements to ensure that they are not reliant on relationships between individual staff members, and compatible data management tools applied.

- Actively advocate for national and sub-national management plans to control unwanted organisms that require a multi-regional approach to most efficiently and effectively control the species. This is particularly applicable to marine pests, but also applies to aquatic and terrestrial species.

- Participate in national and sub-national initiatives to effectively control unwanted organisms that require a consistent and coordinated multi-regional approach. Check, Clean, Dry and the Freshwater Biosecurity Partnerships Programme is one example.

- For marine species, consider whether the national surveillance is sufficient for Taranaki to identify marine pests new to the port, or whether additional surveillance work might be needed.
  - If more is considered necessary, work with the teams already monitoring in the Port twice a year to expand their surveillance while they are there as a more efficient logistical and cost option than getting a separate team or separate site visit for more targeted searches.

- Work with domestic shipping companies who regularly use Port Taranaki around improved hygiene/biofouling measures to reduce the movement of new pests from other ports. Regional Council could work with Port Taranaki to establish and implement protocols with domestic shipping companies.

- Establish relationships with domestic ports that share shipping routes with Taranaki to keep up to date on new incursions or major infestations with a view to sharing forward and back tracing information for pest spread. Relationships are likely to be most appropriately established between Port Taranaki (as opposed to TRC) and other domestic ports, however the Regional Council may need to provide a level of support, inducement or encouragement to enable this.

- Actively pursue options for inter-regional collaboration around marine pathways management, and to advocate for a national approach to inter-regional movement of marine pests. Options include:

- Developing a marine pest pathways management plan that is consistent with other Councils from both North and South Islands.
- Taking a lead role in approaching MPI with regard to a national marine pathways plan.

7.1.4. Awareness, education and engagement

That the TRC:

- Maximise opportunities for advocacy and education to improve knowledge in the community in general, to support early identification and response.
  - This includes regional communications opportunities
  - Join/support/advocate for national level initiatives
  - Consider targeted campaigns using a range of channels and media for specific pests or groups of pests.

- Promote a "my farm is an island approach" to encourage farmers to:
  - Not allow dirty machinery to enter or leave the property.
  - Communicate to and work with contractors if they have infestations on their property to reduce the spread.
  - Consider machinery cleaning facilities (high pressure hose and bunded area to contain materials) at a main entrance.
  - Not allow contaminated feed to leave the property.
  - Consider supporting landowner to develop a farm biosecurity plan or incorporate biosecurity into a whole farm environment plan to help manage significant pests and contain them within a property or part of a property.
  - Leveraging other drivers for whole farm planning (eg; NPS for Freshwater) may provide an opportunity to incorporate biosecurity into farm plan content.

- Encourage reporting of unusual sightings
  - Easy, friendly, responsive process for the individual.
  - Serious and respectful response to the report in a timely manner so that the community knows that the Regional Council takes this seriously and the individual feels like they have done a good thing and will do it again.
  - Use opportunities to publicise incidents where a report in from a member of the public has enabled a timely response to a new incursion.
  - Build positive relationships and provide good support to landowners.

- There are some wider pieces of work or existing work that could be explored around improving levels of awareness and engagement, increasing individual willingness to do their part, and identifying and addressing barriers to uptake.

8. Emerging tools and resources

8.1. Freshwater Biosecurity Partnership Programme

The Freshwater Biosecurity Partnership Programme (led by MPI) 2016-2026 Strategy is looking at a range of actions to improve collaboration around managing freshwater pests. It includes a range of work that will be of interest to TRC, including relationship management, pathway management, risk assessments, behaviour change, science and research, best practice support for surveillance tools and response planning, regulatory tools, information sharing and capability building. The programme overall should help fill some gaps around freshwater biosecurity and promote programmes of work that will be of national interest and benefit across the regions. Participation will be key to influencing the direction and keeping up to date with developments.

The Strategy can be found here: http://www.mpi.govt.nz/news-and-resources/publications/ .

8.2. Best Management Practice for Aquatic Weed Control (Champion *et al,* 2019)

This is an Envirolink funded project contracted to NIWA that provides a framework of best practice to support decision-making and management of aquatic weeds by regional councils. The Part 1 report is complete. It includes two of three tools:

- A strategic analysis tool that provides guidance and rationale for applying appropriate management options based on the NPD programmes and objectives (including a no management option).

- An incursion detection tool that includes prioritisation of target species based on proximity to a region and dispersal pathways, and regional prioritisation of sites for surveillance. It also includes surveillance techniques and their strategic application and strategies to improve the containment of incursions.

The framework recommends identifying aquatic ecosystems and their relative value and weed status as a first step in protecting regional freshwater resources from the impact of invasive aquatic species, and this could be actioned ahead of the next RPMP.

The Part 2 report will provide an inventory of aquatic weeds with information specific to each weed including actual and potential distribution, potential impacts and methods of control. This would be a fairly definitive information source for aquatic weeds and it is recommended that the inventory information from this current project be replaced when the Part 2 report becomes available. Very few of the species listed are unlikely to naturalise in Taranaki if they are not already present.

In addition, the risk assessments could also be reviewed and the strategic analysis tool applied for the next RPMP review in 2028 and consideration of aquatic weeds as part of that process.

9. Immediate next steps

The list of recommendations for addressing high risk species and pathways for Taranaki Region are included in Sections 8 and 9. Forward planning aimed at identifying potential and likely threats and ensuring that biosecurity systems and processes are in place to promote early detection and action is required for effective pathway management.

In considering where effort is best placed in the short to medium term (1-3 years), up-front investment to address pests at the bottom of the invasion curve through pathway management is considered the highest priority.

9.1. Proactive surveillance:

Develop a strategic proactive surveillance programme with annual, targeted surveillance for terrestrial and aquatic pests. Options could include:

a. Dedicating part of an FTE to targeted surveillance

b. Employing summer students or graduates to undertake surveillance annually (seasonally appropriate for the pests involved), noting that they would need to be competent in identifying the pests concerned and/or would require suitable training.

c. Engaging with landowners and/or service for additional eyes on the ground and/or to facilitate access to land or sites like quarries or aggregate stock-piling facilities.

Species that are not already within the region rely on passive surveillance, ie sightings by landowners and the general public. This increases the risk of a pest being well established before being noticed, particularly where awareness of the need to report unusual sightings is low. For aquatic species, there is a higher risk of them spreading through waterways during flooding events before arriving at a site where they are noticed.

Proactive surveillance can be planned to target high risk species in specific habitats or at specific times of year when target species are most likely to be visible, and/or planned for efficient logistics.

9.2. Response planning:

Undertake early and detailed response planning for the event of a new incursion. Planning should include:

a. Working with other relevant agencies to be clear on protocols, roles and responsibilities for individual pests or categories of pests, and formalising these arrangements

b. Drafting small scale management plans or templates that can then be finalised or filled in to respond to a species incursion

c. Gathering detailed information into one storage location that provides comprehensive information about how to contain and control the species of interest (eg; containment options/tools; chemical control options, rates and repeat cycles; personnel or contract providers appropriately qualified and potentially able to provide on the ground response)

In a similar way to emergency response planning, having protocols, communications channels and roles and responsibilities laid out ahead of a response can help improve the efficiency and effectiveness of the response. While there may not be quite the same level of urgency of response for some pests, others will require a much quicker response (eg; plants vs animals). Having resources to hand, rather than scrambling for information, equipment and answers, is critical to smoothing the response process.

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Appendices

Appendix 1 - project scope provide by TRC

Project Concept Brief:
Review of pest pathways into Taranaki

Project Description

For the Taranaki Regional Council (the Council) to commission a consultant to undertake risk assessments for harmful organisms not present in the Taranaki region by:

- examining high risk pathways for the accidental or deliberate spread of harmful organisms;
- identifying in the order of 20 harmful organism species not present in the Taranaki region but present in adjacent or nearby regions or on known pathway and species that are capable of becoming established in the region and likely to have regionally significant adverse and unintended impacts; and
- preparing a Risk Assessment Inventory of potential invasive plants and animals present in New Zealand but not yet present in Taranaki and which are likely to have regionally significant adverse and unintended impacts.

The project gives effect to Action 1 set out in the *Taranaki Regional Council Biosecurity Strategy 2018-2038* and involves commissioning a consultant with the appropriate experience and expertise to undertake risk assessments and prepare a Risk Assessment Inventory of potential invasive plants and animals present in New Zealand but not yet present or established in Taranaki, for which there is a high risk they may spread to this region, and which would have regionally significant adverse and unintended impacts.

Reason(s) for the Project

The most effective form of 'pest' management is to avoid a problem becoming a problem in the first place. The Council's stated objective, as set out in Section4.1 of the *Taranaki Regional Council Biosecurity Strategy is to "…avoid the introduction or establishment of harmful organisms present in New Zealand but not yet present in Taranaki, and reduce the spread of other harmful organisms already in the region over the duration of this Strategy.*"

There are a large number of potentially harmful species established in New Zealand that are not yet present in Taranaki. However, over time, these may be spread by humans along 'pathways' – either intentionally or unintentionally. Examples of intentional spread might be via the pet trade, examples of unintentional spread might be the accidental spread of weeds or invasive ants via dirty or infected equipment or goods.

The concept underpinning the pathway approach in pest management is to prevent harmful organisms from reaching a destination in the first place rather than responding after the species has arrived, then, becomes established, and becomes a problem.

The first step in this process is to undertake forward planning to clearly identify potential and likely threats so as to ensure biosecurity systems and processes are in place to promote early detection and action.

The project will inform and support the Council's regional surveillance, incursion response and social marketing activities by providing an objective, evidence-based foundation for policy development and determining the best allocation of resources to prevent the introduction of new harmful species to Taranaki. This includes the merits or otherwise of developing regulatory (i.e. inter-regional pathway plans, a regional pathway plan) and/or other policy instruments.

Benefits

The project will have the following benefits:

- objective, evidence-based foundation for policy development
- inform the prioritisation (if appropriate) of Council resources to prevent the introduction of new harmful species to Taranaki
- inform the targeting of key pathways and developing a contingency response in Taranaki
- proactively consider management options for preventing the introduction of new harmful species to Taranaki
- increased public awareness of pathway risks
- improved biosecurity outcomes by avoiding or reducing the spread of new harmful species to Taranaki.

Key Dates

Forecast Start Date: 1/11/2019
Forecast End Date: 14/04/2020

Resources

People: S Hall, S Ellis, D West, C Spurdle, consultant.
Budget:

In Scope

- Pests (as per BSA definition) from other regions.
- Unwanted organisms.
- Other invasive species not present in the Taranaki region but present in adjacent or nearby regions.
- Other invasive species present in New Zealand with a high risk of being spread through known pathways.
- Terrestrial, freshwater and marine invasive species.
- Biodiversity, economic or social impacts that are regional in significance.

Out of Scope

- Invasive species not present in New Zealand.
- Invasive species having adverse and unintended impacts that are not regionally significant.
- Invasive species for which the benefits of control accrue to individuals rather than the region.
- Invasive species not capable of becoming established in the region.

Project Method

This project involves commissioning a consultant to undertake a desktop analyse and undertaking risk assessments for harmful organisms not present in the Taranaki region. Project methodology initially involves establishing a project team to have input and oversee the project. It will comprise S Hall, S Ellis, D West and C Spurdle. S Hall will be project owner.

The Project involves the following component parts and milestones:

1. **Develop project brief:** Project team to confirm project brief to establish project objectives, scope, methodology and timelines, including candidate species of interest. Estimated completion date – *28 November 2019*.
2. **Commission consultant:** Prepare contract and appoint a suitably qualified and experienced consultant to undertake the project.
3. **Undertake workshops to identify candidate species of interest:** Consultant to undertake a workshop(s) of Council Environment Services staff plus representatives from neighbouring councils, MPI and Assure Quality to canvas potential candidate species of interest – these being harmful organism species not present in the Taranaki region but present in adjacent or nearby regions, or on known pathway, and likely to have regionally significant adverse and unintended impact.
4. **Select candidate species of interest** Consultant in discussions with the Council to apply a risk matrix based to prioritise and identify in the order of 20 candidate species that pose the most immediate risk to Taranaki. Criterion for the risk assessment to be confirmed with the consultant but as a minimum would consider: (1) likelihood of the species spreading to Taranaki; (2) the actual and potential impacts of the species should it become established; and (3) technical feasibility of managing the species.
5. **Gather information and prepare Inventory:** Consultant to undertake a desktop analysis of relevant websites and pest management plans and strategies, and interview people with the appropriate experience and expertise (e.g. Council staff) to gather relevant information on the 20 candidate species of interest.

   Available resources include the following:

   - Taranaki Regional Council Biosecurity Strategy
   - Pest Management Plan for Taranaki
   - Pest and pathway plans from other regions
   - Climex modelling
   - Land type/use models.

   In relation to each identified priority candidate species, consultant to prepare Inventory sheet that summarises information from a range of existing sources on candidate species, including:

   - description, taxonomy and general biology
   - history of introduction and spread in New Zealand
   - current and potential distribution
   - current and potential pathways
   - current and potential costs and benefits
   - management options, including current control practices, feasibility of eradication, and legislative management responses.
6. **Prepare a Risk Assessment Inventory:** Consultant to prepare a draft Risk Assessment Inventory of potential invasive plants and animals present in New Zealand but not yet present in Taranaki.

Project team to review prior to finalising draft content. Estimated completion date – *14 April 2020*.

Appendix 2 - Legislative context

Biosecurity Act 1993

Under the Biosecurity Act 1993 (BSA) Regional Councils are responsible for providing regional leadership with regard to pest management within the region.

The BSA is enabling, rather than prescriptive. It provides a level of flexibility with regard to the approaches taken by regional councils to manage pests and pathways and a regional council is not legally obliged to manage a pest by way of a Plan.

Regional Pest Management Plans (RPMP) and/or Regional Pathways Management Plans (PMP) are tools that a regional council can use to provide leadership and manage pests. Both Plans enable the use of rules and powers under Part 6 of the BSA and the Council's role is to lead the implementation of the plan. The plan can include laying out the roles and responsibilities of other agencies, landowners and the Council itself.

Declaring a species to be a pest in an RPMP or PMP allows the application of S52 and S53 of the BSA as a minimum standard. Those sections ban anyone from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Some pests have an additional 'status' at national level which invokes the provisions of S52 and S53 whether the pest is in the RPMP/PMP or not. The status may already include some controls, and/or provide direction as to the lead and support agencies in a response.

Other legislation

Regulations outside the BSA enable enforcement to prevent or respond to the spread of pest organisms and require cooperation and communication between agencies. The Regional Council role alongside other legislation is mainly advocacy and support of the lead agency, however the BSA leadership role enables a higher level of influence and collaboration alongside the agencies responsible under those Acts.

Other legislation that supports or provides for pest management include:

- Conservation Act 1987 - The introduction of any aquatic life into an area where they do not already occur is an offence under Part 5b (26ZM) of the Conservation Act 1987.
    - Lead agency: Department of Conservation.

- Fisheries regulations - recreational and commercial fishers are required to kill catfish on capture.
    - Lead agency: Department of Conservation; Fish & Game New Zealand.

- Wild Animal Control Act 1977 - controls hunting and release of game animals like deer, goats and pigs, and regulates deer farming and safari parks. It gives local authorities the power to control wild animals under an operations plan approved by the Minister of Conservation.
    - Lead agency: Department of Conservation.

- The Resource Management Act 1991- includes powers that may be complementary to the BSA, e.g. by ensuring that biosecurity issues such as biofouling are not exacerbated by use and development activities regulated under the RMA. The BSA cannot override controls imposed under the RMA, like resource consent requirements, however pest management actions can be imposed as conditions of consent.
    - Several agencies have a range of roles under the RMA.

Appendix 3: Species inventory

Alligator weed

(*Alternanthera philoxeroides)*

Other common names: pig weed

Family: Alternanthera

There are 4 species of *Alternanthera* in New Zealand, including *A. philoxeroides*:
A denticulata (lesser joyweed) is considered native, although there is some uncertainty and it may have been naturalised from Australia; *A nahui* (nahui) is native; *A. pungens* is exotic.

Summary of invasiveness:

Alligator weed is considered one of the worst weeds in the world because it can invade terrestrial and aquatic habitats. It is difficult to control, particularly the terrestrial form with extensive underground rhizomatous root systems. These root systems can remain dormant in the ground for several years, and in one such example, the plant re-emerged when soil was disturbed after remaining dormant for six years (Embling, 2019). It reproduces from small fragments and grows in a wide range of climatic conditions and habitats.

It is listed as invasive in at least 14 countries around the world ranging from tropical to temperate, and is a problem in about 30 countries. Once established it is an aggressive invader and can disrupt natural aquatic and sub-aquatic ecosystems, shoreline vegetation and terrestrial habitats. It clogs waterways, making it a problem for recreation, navigation, irrigation and drainage and flood schemes. It is toxic to stock, can outcompete pasture and crops and is likely to interfere with whitebait spawning areas.

Description:

Alligator weed is perennial and stoloniferous. The growth habit is sprawling and leaves are bright green and waxy, between 5-10 cm long, up to 2 cm wide and arranged in opposite pairs on the stem. The white flower looks like a small clover flower and appears at the end of a longish stalk, however it is not known to flower in New Zealand. Stems are thick, soft and hollow and often have a reddish tinge. (Champion and Hofstra, 2014).

The growth form varies between the terrestrial and aquatic forms. Away from open water the plant produces deep taproots and has an extensive root mass reaching below 50 cm in some cases. The leaves of terrestrial plants are smaller and they tend to have fewer flowers. In New Zealand, the terrestrial form of the plant tends to die out over winter in cooler areas, especially those subject to regular frosts , and then re-emerges in spring.

Plants growing over open water grow more vigorously than terrestrial plants and the stems are thicker and taller with larger internal air spaces. Leaves are larger and darker, roots shorter and more filamentous and rising mainly from nodes. Floating mats are made up of interwoven stems and can stretch many metres across the water surface and over 1 metre thick. These mats can break away and continue to grow in free floating form.

Similar species:

In terrestrial locations it can be mistaken for willow weed (*Ludwigia species*), however willow weed has alternate leaves. The native *Alternanthera* species are smaller and the flowers are located at the base of paired leaves, not on a stalk. (Champion and Hofstra, 2014).

Habitat:

It occurs in New Zealand in slow flowing water bodies, swamps, ponds, stream banks, dune hollows and in poorly drained soils in pasture, crops and orchards, and urban lawns (Champion and Hofstra, 2014). Alligator weed often grows at the interface between aquatic and terrestrial environments. It tolerates brackish conditions up to 30% sea water (Van Oosterhout, 2007), and a wide range of temperature and soil drainage conditions (Champion and Hofstra, 2014).

Reproduction

The plant is not known to flower or set seed in New Zealand and it reproduces vegetatively either by extension of stems or stem fragmentation. Stem fragments will re-grow where they are distributed to suitable new locations.

History of introduction and spread in New Zealand

Alligator weed is native to South America and is thought to have been accidentally introduced to New Zealand from ballast that was discharged by ships entering rivers in Northland. It was first recorded in 1906.

Alligator weed was first reported in the Waikato in the 1980's at two sites on the Hauraki Plains. It was discovered on the Waikato River in 1990. It is now established in the lower Waikato River and at approximately 140 known sites (including farms, market gardens and urban areas) elsewhere in the Region. Most of the infestations are a result of human activities (e.g. movement of contaminated soil, green waste and machinery). Control of the weed is occurring at all the known sites (Embling, 2019).

Current and potential distribution in New Zealand

Alligator weed is widespread in the Northland and Auckland Regions with scattered sites in Waikato, Bay of Plenty and Manawatu-Wanganui Regions. Presence in the Manawatu-Wanganui suggests that Taranaki's conditions are suitable for establishment.

Current and potential pathways

Spread is by vegetative material including roots. The plant will regrow from stem fragments that include a node or root.

Fragments are resilient Alligator weed fragments are very resistant to desiccation (drying out). It is unlikely that fragments ever dry out enough to render them unviable under field conditions. Fragments are also able to withstand moderate damage (i.e. from earthmoving equipment or trampling by stock) and still form buds, shoots and roots. Even damaged fragments can remain viable for long periods of time, particularly when in contact with soil or mud (Kruger 2005).

Vectors include:

- Water and flooding - floating rafts or smaller pieces.

- Watercraft, vehicles, machinery
- Animals (attached by mud, carried in hooves)
- Stock feed
- Spoil and drain cleanings.
- Fishing nets or other gear
- on boat trailers, outboard motors and in anchor wells
- It has also been found being grown by some communities as a leafy vegetable, being mistaken for *A. sessilis*. In some countries it has been intentionally introduced as an aquarium and ornamental aquatic plant.

Potential costs and benefits

Toxic to stock - can cause blindness and other health problems
Clogs waterways, drains, culverts, pumps. Blocks access for recreational use.
Can outcompete pasture and crops affecting farm production and profit.
Likely to interfere with whitebait spawning

Floating mats and the mass of stems in flood and drainage schemes accumulate sediment.

Alligator weed "in the north" was estimated, in 2017, to be costing land managers $6.4 million per year (Fowler, 2017).

An alligator weed infestation near Cambridge took almost 10 years to fully eradicate.

Management Options

Prevention (from arrival in region); containment.
Individual farm weed hygiene plan.
Exclude stock during the growing period (in some areas the plant will die out over winter).

Farmers should protect their properties from alligator weed and other serious pest plants by:

- insisting all contractors practice good weed hygiene, cleaning their equipment before entering the farm
- ensuring supplementary feed brought onto the farm is weed free
- ensuring aggregates, soil and sand brought onto the farm is weed free.

Machinery should be cleaned before leaving an infested area, and the cleaning area bunded and monitored to contain and treat any viable material.

Material that is manually removed/controlled needs to be carefully disposed of to ensure it is no longer viable. Options include drying it out completely and then burning (if not completely dry some of the roots will not burn). Boiling for small quantities.

Current control practices and options

Biological control - three agents have been released - a moth and two beetles, however only the moth and one of the beetles appears to have established (Landcare Research 2007). Alligator weed flea beetle has provided partial control in Northland, however it has not been effective in the Waikato due to sub-optimal temperatures for the beetle (Embling, 2019). Other options are still being investigated.

Mechanical and manual control has been used for small isolated infestations however it is time-consuming and costly and every fragment of the plant needs to be captured and removed to prevent re-establishment. Neither are recommended, particularly for larger infestations because any form of mechanical or manual control, either on water or land, will spread fragments further in the immediate area or enable them to move them to new areas.

Containment - using fences and restricting access (van Oosterhout, 2007); prevent disturbance (no mowing, cutting, slashing, earthworks, cultivation, grazing).

Chemical control - Herbicide use for ongoing suppression of alligator weed requires diligence and ongoing repeated monitoring and applications. Alligator weed only translocates very small amounts of systemic herbicides to the root system, so particularly for terrestrial plants, the strategy is to spray two to three times every year so that the plant is forced to re-grow and depletes the reserves in the root system over time by not being allowed to replenish those reserves with extensive regrowth - five to six sets of leaves, 10 cm stem length or 30 cm crown width for prostrate growth forms. Spraying should be done whenever there is sufficient growth.

Metsulfuron-methyl is recommended over glyphosate on land, and glyphosate in aquatic situations because glyphosate causes less viable stem fragments following the herbicide application, which reduces floating fragments that can spread along waterways (Clements et al, 2017). A recommended regime is to use glyphosate to control the floating biomass over water and once infestations have been forced back to the embankment, use metsulfuron (or imazapyr) on the embankments and on land for longer term control (Clements et al, 2017).

Van Oosterhout (2007) provides comprehensive advice and recommendations for the control of alligator weed, although it is important to note that the recommendation for the combined use of metsulfuron and glyphosate between aquatic and land populations should not be used, and the recommendations provided by Clements *et al* (2017) are applied.

Feasibility of eradication

Van Oosterhuis (2007) notes that eradication is not feasible where infestations are well established, and strategically it is important to respond quickly and eradicate small, new or isolated infestations as quickly as possible. Ie rapid response. Larger infestations require extensive suppression (leading to eradication) over several years before eradication could be considered a feasible objective.

Immediate eradication is generally feasible for:

- small numbers of individual scattered plants (through deep manual digging)
- areas of infestation up to 5 m × 5 m (through deep manual digging)
- areas of infestation up to 10 m × 10 m with shallow roots (up to 30 cm deep) (through shallow mechanical excavation).

Legislative management responses

- Unwanted organism
- National Pest Plant Accord

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Waikato Region: Progressive Containment. Rules relating to subdivision and land development are included in the RPMP to reduce the risk of spread, and breaching these rules is an offence under S154N(19) of the Biosecurity Act 1993 (Embling, 2019).

Horizons: Eradication. Known from one site near Taumarunui.

In Bay of Plenty Region it has a range of programmes depending on the location and level of infestation in the region:

- Eastern BOP (Otamarakau/Kawerau/Murupara/Rangitaiki) - progressive containment.
    - Found from Matahina Dam to the coast on the Rangitaiki River and spreading into nearby waterways from floods; below Awaiti flood-gates on the Tarawera River; terrestrial site in an orchard near Opotiki.
- Western BOP (West of Te Puke) - eradication
- Rotorua and mid region - exclusion

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Asian paddle crab

(Charybdis japonica)

Summary of invasiveness

Life history traits make Asian paddle crab invasive, including long larval life that facilitates spread, rapid growth to maturity, high reproductive rates, wide environmental tolerance and a broad diet (Northland Regional Council, 2017).

Description

Colour ranges from off-white and pale green, through olive-green to deep chestnut brown with purplish markings. The back legs have flattened swimming paddles. The shell is up to 12 cm wide, with six prominent spines on each side, and there are five spines on the upper surface of each claw. (MPI, 2019). The marine pest ID guide provides diagnostic information for distinguishing this crab from other similar species.

Asian paddle crabs are generalist predators that feed mainly on shellfish, fish and polychaete worms (Northland Regional Council, 2017).

Similar species

Swimming/paddle crab (*Ovalipes catharus)* - multiple features including five flattened spines on the carapace, one on the claw and two distinct reddish 'spots' on the shell.

Dwarf swimming crab (*Liocarcinus corrugatus*) - five spines, not six; much smaller and has fine corrugations over most of the shell.

Hairy red swimming crab (*Nectocarcinus antarcticus*) - four spines and red to pinkish-red colour.

Habitat

Estuaries, harbours and most coastal habitats; sand and mud substrates, from low tide to 15 meters depth (MPI, 2019).

Reproduction

Females produce an average of 85,000 eggs that may be released several times per year. Larvae float in the water for 3-4 weeks, moving with the tides and currents. It is thought that breeding only occurs at water temperatures above 20°C, which may restrict it's distribution. Fowler (2011) found gravid females first appearing in November in Auckland.

History of introduction and spread in New Zealand

First detected in New Zealand in 2000 in Waitemata Harbour, Auckland, and slowly moving around the coast. Asian paddle crab is native to the coastal regions of China, Japan, Korea, Taiwan and Malaysia (GISD, 2015).

Current and potential distribution in New Zealand

Present in Northland in Whangarei Harbour and widespread in the Hauraki Gulf and Waitemata Harbour in the Auckland Region. They have been present in Tauranga Harbour for several years and were recently found in Ohiwa Harbour in the Eastern Bay of Plenty in early 2020 during a routine dive survey (Tim Senior, pers comm, 20 April 2020).

Current and potential pathways

Larvae move in tides and currents and adults are capable of swimming large distances. Both adults and larvae can be spread in ship sea chests, ballast water, within heavy biofoul, fishing nets and bait tanks. They are sought after for food in their native range, and could be moved intentionally. (Northland Regional Council, 2017).

Potential costs and benefits

Highly detrimental to shellfish aquaculture. Asian paddle crabs are aggressive predators that displace native and fisheries species. They can carry diseases that affect crab, lobster, shrimp and prawn fisheries, eg; white spot syndrome virus, although the New Zealand population has not yet been found to carry it (CABI, 2020).

Management options

Current control practices

Trapping - dome shaped pot with open funnel entrances of type commonly used in Japan (GISD, 2015).

Feasibility of eradication

Trapping is the only tool available and eradication is unlikely to be feasible once the species arrives.

Legislative management responses

No legal status in New Zealand. Under management (MPI marine porthole, 2020).

Inclusion in RPMP or Pathways Management Plan to declare Asian paddle crab as a pest.

Northland Regional Council considered sustained control the preferred option to slow the spread of the species, combined with a pathway plan approach to enable enforcement options for clear exacerbators and opportunities to improve awareness and seek additional funding (Northland Regional Council, 2017).

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Australian droplet tunicate

(*Eudistoma elongatum)*

Summary of invasiveness

Prolific breeder and tolerates a range of habitats including soft bottom substrates and hard structures. Larvae are free-swimming for up to 6 hours. It can reproduce in water temperatures above 14◦C, so it has the potential to spread to the south of its current range (Page *et al*, 2011), although spread in Taranaki may be limited to summer months - it dies back to low densities in winter in Northland.

Description

The Eudistoma sea squirt, also known as the Australian droplet tunicate, forms large colonies that attach to hard surfaces and look like clusters of white or cream-coloured cylindrical tubes . Each colony contains numerous small individuals and they can appear orange flecked due to the colour of the larvae within them. The species is firm and gelatinous to the touch and the cylindrical colonies are generally 5-30 cm long, but can occasionally reach 1.5 m in length. Colonies are generally 5-20 mm in diameter and regress and over-winter as small (c.10 mm) cream buds, re-growing the following spring to larger colonies (Northland Regional Council, 2020)

Similar species

Colonial Sea Squirt - Didemnum spp.

Habitat

Eudistoma is generally found in soft-bottomed tidal habitats and on hard structures such as wharf piles, aquaculture equipment and mangrove roots. It prefers submerged habitats just below the waterline, but can be found out of the water for periods during low tide (Northland Regional Council, 2020).

Reproduction

This species is a prolific breeder, reproducing for at least nine months of the year, from October through to June (Spring to late Autumn). The larvae are free-swimming for approximately six hours before they begin to settle on surfaces. Reproductive output decreases after high rainfall and in the early winter months due to the colony size also decreasing (Northland Regional Council, 2020).

History of introduction and spread in New Zealand

It was first reported in New Zealand in early 2005, but was not originally regarded as a pest, given its low density and the fact it appeared to die off in winter. In the summer of 2007-2008 it became more prolific in a number of locations in Northland and has continued to reappear over the summer months (MPI, 2020).

Current and potential distribution in New Zealand

Eudistoma elongatum has been reported present in Opua, Kerikeri, Russell and the Waikare Inlet in the Bay of Islands, Whangarei Harbour, Tauranga Harbour (historically), and Picton (historically) (MPI, 2016). Eudistoma has the potential to spread further within already occupied harbours, and

to more southern harbours in New Zealand (Page *et al*, 2011). It has spread throughout harbour and oyster farms in Northland (Page *et al*, 2011).

Current and potential pathways

Dispersal may occur by fragmentation; however, we have no data on the ability of fragments to reattach (Michael Page etc)

Potential costs and benefits

The Eudistoma sea squirt competes with native species for both space and food. It has a rapid growth rate, can inhabit a wide range of habitats, and can reach high abundances. It is also possible that it can ingest and kill the eggs and larvae of native species. When present in high densities the Australian droplet tunicate has the potential to have significant impacts on habitats and species. However some of the competitive ability of this species is minimised by the fact it is only present in large numbers during summer months and dies down during rain events and winter months (Northland Regional Council, 2020).

It is a nuisance in aquaculture, smothering oyster racks and therefore may result in higher labour costs for cleaning of equipment (Heath, 2014).

Management options

Current control practices

Only acetic acid was effective at killing colonies above water. Control using heat or other chemicals was not feasible for shallow subtidal populations identified in the study (Page *et al*, 2011).

Feasibility of eradication

Page *et al* (2011) indicate that "eradication is difficult or impossible due to the subtidal distribution of many colonies".

Legislative management responses

No status in New Zealand.

Northland RPMP: sustained control marine
BOP RPMP: Exclusion

Not in Waikato or Horizons RPMP.

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Bat-wing passion flower

(Passiflora apetala)

Summary of invasiveness

Passion flower is shade tolerant and has the ability to smother, shade and strangle other plants, growing up into the canopy. It is an emerging threat in New Zealand. It is sought as an ornamental subtropical plant and birds find the berries attractive and disperse seeds in their droppings. The vines produce large numbers of fruit as small black berries the size of a small grape. Plants grow rapidly from seed and can develop to mature fruit after 32 weeks. The seeds remain viable for more than 10 years. (T.E.R.R.A.I.N, accessed 16 April 2020), and it can grow from stems or plant fragments that touch the ground.

Description

It has leaves with two large lobes (that resemble a bat wing) and some have pale green stripes along the midribs. It has small yellow/green coloured flowers (7-12mm diameter) and produces small black berries about the size of a small grape (7-15mm diameter). The berries are inedible and non-toxic to humans but attractive to birds. (NZPCN; accessed 16 April 2020).

Similar species

No information found, however leaf shape and small green flowers are identifying characteristics.

Habitat

Regenerating native forest and scrub, home gardens and amongst hedges and fence lines where birds perch (NZPCN; accessed 16 April 2020).

Reproduction

By seed, which is spread by birds feeding on berries.

History of introduction and spread in New Zealand

Originates from Costa Rica and Panama in Central America and was imported approximately 30 years ago (NZPCN; accessed 16 April 2020).

Current and potential distribution in New Zealand

Distribution is restricted to the Northland and Auckland regions.

Current and potential pathways

Mostly natural spread by birds, historically by subtropical plant collectors for gardens.

Potential costs and benefits

Mostly a threat to biodiversity values as a smothering climbing plant that is also shade tolerant and spread by birds.

Management options

Current control practices

No information found. Other plants in the genus *Passiflora* can be controlled with herbicides.

Feasibility of eradication

No information found.

Legislative management responses

- Unwanted organism
- National Pest Plant Accord

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Northland RPMP: eradication
Waikato and Bay of Plenty: Exclusion
Horizons: not included.

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Broom corn millet

(Panicum miliaceum)

Summary of invasiveness

Although the cultivated type is grown for human consumption, the wild form is weedier. It is a cropping weed, competing with the harvest for water, nutrients and sunlight when it reaches over the crop canopy. It also clogs harvest machinery.

The plant grows quickly and can set viable seed within six weeks of emergence, and seed production continues for a long period. The seed is persistent in the soil and germination and growth temperature tolerances are similar to corn and maize, although the optimum is warmer.

Description

Broom corn millet (Panicum miliaceum L.) is a highly drought-tolerant cereal that is widely cultivated in the semiarid regions of Asia, Europe, and other continents. (Zou, C., Li, L., Miki, D. et al). A wild biotype emerged in 1970 which quickly became weedy, reaching greater height and producing twice as much seed.

Broom corn millet has broad grass-like leaves up to 2 cm wide and plants resemble maize but with long hairs on the leaf sheath. The leaf blades are hairy on the upper and lower surfaces and along the edges. The leaf sheaths are also very hairy with overlapping margins. Ligules are a line of dense hairs.

Flower spikelets are individually carried on the end of branched panicles and the panicles can be 15-30 cm long. The seeds are egg-shaped, about 3 x 2 mm in size, and encased in a shiny seed coat. (AgPest, 2020).

Similar species

Habitat

Broom corn millet is a weed of crops. It originated in the tropics and temperate regions and can grow in dry climates.

Reproduction

BCM is fast growing and can set viable seed within six weeks of emergence. Its seed is extremely persistent in the soil and will survive for many years (Foundation for Arable Research, 2010).

History of introduction and spread in New Zealand

Since 1961 broom corn millet has undergone multiple entries into New Zealand, finally becoming widespread in sweetcorn crops in Hawke's Bay, Poverty Bay and Marlborough between 1995 and 2005 (James *et al,* 2011). The early incursions would have been of the cultivated type and apparently have not persisted.

However, some of the later incursions were of the wild-type, which have established and been widely dispersed in sweet corn crops by harvesting machinery (James *et al*, 2011).

Current and potential distribution in New Zealand

It has rapidly spread through sweet corn crops in Gisborne, Hawkes Bay and Marlborough and maize growers in these regions are also beginning to find it in their crops (Foundation for Arable Research, 2010). Also found in Bay of Plenty and Auckland Regions (Waikato Regional Council, 2014).

Current and potential pathways

The seed is transferred between properties in harvesting equipment and sweet corn waste (sold as stock food) (Foundation for Arable Research, 2010). Also through livestock and in contaminated grains (Waikato Regional Council, 2014)

Potential costs and benefits

Broom corn millet reduces crop yields by competition and interferes with harvest by clogging machinery. In one study, it was shown to reduce crop yield by 13 –22%, when present at a density of 10 plants/m2. Competes with maize and sweet corn for water and nutrients early in its life cycle. Later, when it has become tall enough, it competes for sunlight as it can reach over 2 m high in crops (AgPest, 2020).

Waikato Regional Council (2014) estimated control costs of approximately $180/ha/annum, and considered the benefits of the Exclusion programme for the RPMP exceeded costs, with the benefit sitting with the agricultural community.

Management options

Current control practices

Broom corn millet can be controlled by a targeted herbicide programme. Including pre-emergence herbicides was more effective, however post-emergence follow-up will be needed as seeds will continue to germinate through the growing season as long as the temperatures are suitable (Foundation for Arable Research, 2010).

Feasibility of eradication

No information found.

Legislative management responses

No status in New Zealand.

Waikato RPMP: Exclusion.
Horizons have not included broom corn millet in their RPMP.

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Brown Bullhead Catfish

(*Ameiurus nebulosus)*

Summary of invasiveness

Invasive overseas, and tolerant of poor water quality, generalist feeders. Male catfish are territorial. There is a lack of effective control tools available.

Description

The brown bullhead catfish is dark brown to olive green colour with paler sides and bellies. In addition to the eight distinctive barbels around their mouth, catfish also have relatively small eyes and a smooth skin. The leading edge on their dorsal and pectoral fins has a sharp spine, and thus catfish should be handled very carefully to avoid injury from the spine. Catfish are an extremely robust fish and can survive for long periods out of water. They commonly grow to 200–300 mm in length.

Catfish normally reach a maximum length of 300–350 mm long, some may reach up to 500 mm in length and more than 3 kg in weight (Scott & Crossman 1973).

Catfish are opportunistic generalists, feeding nocturnally on or near the bottom. The young feed mostly on chironomid larvae, cladocerans and amphipods (Scott & Crossman 1973). The adults are omnivorous with a diet composed of detritus, molluscs, invertebrate larvae, terrestrial insects, leeches, crustaceans, worms, plant material, fish and fish eggs (McDowall 1990).

Similar species

None in New Zealand.

Habitat

In their native range, catfish occupy lakes and sluggish streams with muddy or weedy beds. Catfish are tolerant of a wide range of environmental conditions that may be limiting for other fish species, and can survive temperatures as high as 36oC and oxygen levels as low as 0.2 ppm (Scott & Crossman 1973).

Catfish prefer slow flowing streams and the edges of lakes, often amongst aquatic plants.

Reproduction

Catfish spawn in shallow depressions on the substrate in the shallows. The male guards and fans the eggs during development, and also guards the larvae for about a week after hatching. Catfish are carnivorous and use their sensitive barbels to probe the substrate and locate insects, crustaceans, molluscs and small fish. Freshwater crayfish are a major prey species for catfish in Lake Taupo.

History of introduction and spread in New Zealand

The catfish in New Zealand originated from fresh and brackish waters in North America, where their native range is east of the Rocky Mountains from southern Canada to Central America.

Catfish were released into New Zealand in 1877, and the first consignment of 140 live catfish were released into St Johns Lake, Auckland (McDowall, 1990).

Current and potential distribution in New Zealand

Catfish have been present in New Zealand since the late 1800s. For many years, they were rarely encountered with the only known populations occurring in the lower Waikato River and in Lake Mahinapua south of Hokitika. They were first recorded from Lake Taupo in 1985. Since then, catfish have gradually spread throughout Lake Taupo and down the Waikato River. In 1997, catfish were recorded for the first time from the Kaituna Lagoon near Lake Ellesmere, and in 2003 from a stream entering Hokianga Harbour. Accidental introductions via boat trailers and especially fyke nets used for eeling are continuing to spread this species around New Zealand.

They are widespread in the Waikato River system, but are also found in Northland and there are two isolated populations in the South Island.

Current and potential pathways

Accidental introductions via boat trailers and especially fyke nets used for eeling is continuing to spread this species around New Zealand. Catfish are tolerant of low oxygen levels which enable survival during accidental transfers. Possibility of deliberate spread by coarse anglers.

Catfish are moderately strong swimmers and will likely increase their range through natural dispersal in connected networks of waterways.

Potential costs and benefits

Can contribute to poor water clarity by consumption of zooplankton, re-suspension of sediment and up-rooting submerged macrophytes. Excretion of nutrients in faeces exacerbates nutrient re-suspension.

Impacts on water quality appear to be additive/synergistic when multiple species of exotic fish are present, and catfish presence is significantly correlated with the incidence of New Zealand lakes ‘flipping’.

Opportunistic generalist feeders, therefore a wide range of taxa are potentially impacted by predation. Documented eating common bullies as well as a wide range of invertebrates including kōura (preferred food source where available), Trichoptera, Gastropoda, Chironomidae. May affect charophyte establishment and persistence.

Implicated in local extinctions of freshwater species overseas. Indirect impacts through reductions in water quality.

Numerous impacts on mauri of wai māori (see ‘Water quality’, ‘Species diversity’ and ‘Threatened species’).

(Auckland Council, 2018).

Management options

Current control practices

Lack of effective control tools available. Chemical control (e.g. rotenone) is non-selective, therefore potential non-target impacts on native fish. Chemical control is also less effective when submerged macrophytes are present. Some sites may have strong probability of re-invasion due to connections with other water bodies and/or human-mediated dispersal.

Fyke netting is effective for catching catfish and eels (LakesWater Quality Society Symposium 2017), however the ability to eradicate catfish using nets is unknown. Other options are being investigated for controlling catfish in the Rotorua Lakes.

Feasibility of eradication

Difficult.

Legislative management responses

Catfish are regulated under the Conservation Act and the Freshwater Fisheries Regulations 1983. The release or transfer of aquatic life is prohibited under section 26ZM of the Conservation Act, unless Ministerial approval is obtained. The Department of Conservation and the Fish and Game Council (in relation to sports fish) have the statutory authority to act on illegal liberations of fish.

The Fisheries (Amateur Fishing) Regulations 2013 provides that a person must not possess a live brown bullhead catfish, but does not expressly forbid fishing for the species. The Fisheries (Commercial Fishing) Regulations 2001 also provides that no person may sell live brown bullhead catfish.

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Chilean needle grass

(Nassella neesiana)

Summary of invasiveness

It has broad ecological tolerances including drought and seasonal waterlogging. It is invasive in a number of countries overseas including Australia and the USA. It is difficult to control with seed remaining viable for up to a decade. Seeds are easily spread by a range of vectors.

Description

Erect, tufted, perennial tussock up to 1 m tall, somewhat like fescue in appearance. The leaves are <5 mm wide, flat, strongly ribbed on the upper surface with rough bristly edges. The upper surface is bright green and the underside a dull grey-green. The distinctive flowerheads are large, drooping and purplish and appear from November-December. The seeds have a long hair and a very sharp, pointed base that penetrates animal hides. Seeds are produced at three points on the plant - the main panicle, mid-stem at the leaf joins and at the base of the plant (Marlborough District Council, 2018).

Similar species

Tall fescue (*Schedonorus phoenix* aka *Lolium arundinaceum* subsp*. arundinaceum*) is similar in growth but CNG has narrower leaves and the spear-like attachment on the seed is distinctive.

Habitat

It grows on dry north-facing hill country, forestry blocks, edges of farm tracks, river banks; around hay barns, sheep yards and power poles, fencelines and other places where stock rub themselves. It can thrive in both high and low fertility sites and under moderate to severe moisture stress. (AgPest website, accessed 20 April 2020).

Reproduction

CNG seeds prolifically and builds large seed banks in the soil. It reproduces by either cross or self fertilisation and some seeds are produced in unopened flowers at the base of the flower stem.

Seeds germinate during autumn and winter and establish new plants. Reproductive tillers are produced from mid-September to mid-October and main seed heads are formed by mid-November. Seeds mature between December and January before being shed into soil or amongst the parent plant and can be carried to new sites. Hidden seeds form in flowers that are located at the base of the flower stems and ripen in February so that the plant can still reproduce from the base of the plant even under hard grazing or mowing. (AgPest website, accessed 20 April 2020).

History of introduction and spread in New Zealand

First identified as a pest in Canterbury in the 1940s.

Current and potential distribution in New Zealand

Potential to infest up to 15 million hectares of New Zealand. Currently present in Hawkes Bay (600 ha), Marlborough (2,800 ha) and Canterbury (220ha). (MPI, 2020).

Modelling indicates that coastal areas of Taranaki Region, particularly in the southern parts of the region are suitable to optimal for CNG .

Current and potential pathways

Spreads by seed attached to clothing, shoes, vehicles and animals. Also spread in stock feed, and where it grows along waterways will spread by water.

Potential costs and benefits

Unpalatable to stock, CNG reduces pasture productivity and the seeds damage pelts (no value as sheepskins), can penetrate into muscle tissue, reducing carcass value, and can blind livestock. Enforced containment measures can be restrictive and inconvenient, reducing a property's carrying capacity when those areas can't be grazed, and successful control is difficult and expensive.

During winter and early spring, CNG can provide palatable moderate quality fodder for cattle and sheep (AgPest, 2020).

Management options

There are two dogs in Canterbury trained to detect CNG in pasture as an added surveillance tool.

Current control practices

Early detection and response while the population is still small is key, as is containment of an existing population, ie good on farm biosecurity. Once established, control before seeding, revegetate and maintain pasture with desirable species. Keep stock and machinery out while in seed and follow up 6 monthly until eliminated. Small infestations can be grubbed out before seed set, and chemical controls will work ("taskforce", glyphosate, haloxyfop).

Biological control using a rust fungus has been approved and was released in Marlborough in 2018.

Feasibility of eradication

Possible over medium to long term time-frames - seed banks survive for around a decade.

Legislative management responses

- Unwanted organism
- National Pest Plant Accord

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

It is a legal offence to knowingly allow CNG to spread from a property and precautions must be taken to prevent it spreading.

Regional Councils are responsible for managing CNG in their regions including control, regulations and informing farm owners.

Horizons RPMP: Exclusion

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Clubbed Tunicate

(Styela clava)

Summary of invasiveness

The organism can tolerate a wide range of water temperatures and salinity (MPI, 2013). It is capable of forming monospecific stands and potentially out-competing native species (Northland Regional Council, 2017).

Description

The clubbed tunicate has a long, tough, leathery skinned cylindrical form, tapering to a stalk with a disc shaped holdfast that anchors them to hard surfaces. The sea squirt ranges in colour from yellowish to reddish to brownish and can grow up to 160mm in length. Underwater it often appears fuzzy with secondary growth coating it. Under water, two short siphons or openings are visible at the top of the organism. Similar looking native New Zealand species such as Pyura pachydermatina also have a stalk, however, their stalk is much longer. (Marine Biosecurity Porthole, 2020).

Similar species

Similar looking native New Zealand species such as *Pyura pachydermatina* also have a stalk, however, their stalk is much longer (Marine Biosecurity Porthole, 2020).

Habitat

Styela prefers protected areas such as bays and harbours, away from wave action. It establishes from the low tide mark down to approximately 25 metres. It prefers to settle on hard surfaces, particularly man-made structures. Anything in the water that is not covered in silt or coated with antifouling paint is at risk. It may also be found attached to rocks, seaweed and on shellfish.

Reproduction

Styela is hermaphroditic but male and female gonads mature at different times and they are not self-fertile. It reproduces sexually, releasing eggs and sperm into the water. Spawning is temperature dependent and it is believed to only be able to spawn in waters above 15°C. Fertilisation is external and eggs and larvae are free swimming for between one to three days (24-28 hours at 20°C is given by Clarke and Therriault, 2007), after which they settle and metamorphose into the sessile adult (CABI, 2020).

History of introduction and spread in New Zealand

The species was first recorded in New Zealand in 2005 and was discovered in Port Nelson in 2010 (Forest, 2013).

Current and potential distribution in New Zealand

Present from Northland to Tauranga, Porirua, Picton, Tarakohe, Nelson, Picton, Lyttelton Harbour and Otago Harbours.

Current and potential pathways

The short planktonic phase leads to short larval dispersal distances, and human-aided dispersal as part of fouling on vessel hulls or as larvae in seawater retained in vessels are the key pathways (MPI, 2013).

Potential costs and benefits

The clubbed tunicate can outcompete other species due to it reaching such high densities and being an efficient suspension feeder.

As a fouling organism it can decrease the productivity of cultured species and increase aquaculture processing and harvesting costs. It also results in higher fuel and maintenance costs for vessels. In Japan it has caused asthmatic symptoms in individuals who shuck fouled oysters in poorly ventilated areas.

Management options

Current control practices

Hand removal (picking or scraping the organism from its point of attachment) is the most reliable control method, but this is obviously costly in terms of time and effort. Very small individuals are likely to be missed and manual removal can stimulate reproduction and should only be attempted when water is <15°C. Other ways of killing styela involve lengthy exposure to air and/or extreme temperatures. Sprays and dips of high salt, hydrated lime, and acetic acid solutions have also been tried on tunicates.

The deliberate introduction of the common shore crab (Carcinus maenas) into cages surrounding the sea squirt was not successful as a control agent (NIWA)

Feasibility of eradication

MPI (2013): "It is not feasible to eradicate Styela clava in New Zealand due to its widespread distribution and the fact that it has been present in New Zealand for some years. However, local elimination may be possible, and could slow the spread .... Efforts are now focused on managing this pest long term and, importantly, preventing its spread from infested areas to other locations, particularly those of high environmental, social, or economic value."

Legislative management responses

- Unwanted organism
- National Pest Plant Accord

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Waikato and Horizons RPMPs do not include marine pests.
Bay of Plenty Proposed RPMP: Progressive containment.

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Dama Wallaby

(Macropus eugenii)

Summary of invasiveness

Once established wallabies can be very difficult to eradicate, because of their cryptic nature. When moving into new areas they can remain unnoticed until well established. Control options are challenging and the population in the central North Island continues to expand despite efforts over many years.

Description

Looks like a small grey-brown kangaroo with a pale underbelly. Adults stand up to half a metre tall. A thin white stripe runs from under the eye to the nose. Adults sometimes have a reddish brown patch across their shoulders (BOPRC, ND).

Similar species

There are five species of wallaby in New Zealand, however dama wallaby is of the most immediate risk to the Taranaki Region, excluding the potential for any species to be deliberately introduced. It is one of the smallest species and most of the other species lack the light coloured face markings. The closest in size - parma - is darker in colour overall and has a long tail, and is confined to Kawau Island None of the larger wallabies are found outside the South Island.

Habitat

Wallabies prefer the margins of forest and scrub habitats where they can shelter during the day and feed on grasses and pasture species at night. They inhabit predominantly podocarp/tawa/mixed hardwood forest with adjoining areas of manuka scrub, bracken and pasture (Pest Detective).

Reproduction

Females are sexually mature at 12 months old. Most births occur in January/February with young staying in the pouch for 250 days (DoC).

History of introduction and spread in New Zealand

Wallaby were first introduced to New Zealand around 1870 by Sir George Grey, when they were released onto Kawau Island. Dama wallaby, sourced from Kawau Island, were subsequently liberated near Lake Ōkāreka in 1912 (BOPRC, ND).

Current and potential distribution in New Zealand

The range of dama wallaby now extends over 200,000 ha in an area around Rotorua, Kawerau and south to Rainbow Mountain, plus outlier populations elsewhere in the region.

Current and potential pathways

As wallabies breed and disperse they can become established in new areas. Wallaby spread has been slowed by physical barriers such as the lakes and rivers. Aside from natural spread, dispersal is most likely to be deliberate movement by humans (BOPRC, ND).

Potential costs and benefits

Wallabies browse on native and exotic vegetation. When present in high densities, they can remove all seedlings and saplings, and change the pattern of forest succession and structure and composition of the forest. In this regard, wallabies can have a similar effect to possums (Pest Detective).

In exotic plantations they will damage seedlings and will compete with stock for pasture (BOPRC, ND).

Management options

Current control practices

Night shooting (centrefire .222 or .223, .22 magnum are most effective), exclusion fencing.

Ground baiting and bait stations - the only toxins registered for wallabies are 1080 and Feratox (cyanide capsules). They are vulnerable to broadcast baiting, but are reluctant to feed from some types of bait stations (BOPRC, ND).

Trapping, either leg-hold or live capture box traps, are unlikely to be effective in controlling an established population.

Feasibility of eradication

Unlikely.

Legislative management responses

- Unwanted organism (status expires 20 September 2021)

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Bay of Plenty - Dama wallaby are a containment pest under the RPMP.
Horizons - Exclusion
Waikato - Progressive containment

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Darwin Ants

(Doleromyrma darwiniana)

Family: Formicidae

Summary of invasiveness

They can form large inter-connected colonies with multiple queens. Although they are slow to spread naturally (queens do not fly to a new colony site) (Auckland Council, 2018), human mediated spread is likely because they are so small and can be concealed in a wide range of freight and materials. There are large colonies established in Christchurch with smaller populations elsewhere, including Mount Maunganui.

Description

Darwin ants are light to dark honey-brown, with a dark brown head and lighter body, and 12 segmented antennae. Workers are around 2 mm and queens 5 mm long.

Similar species

They are similar in appearance to Argentine ants but give off a strong odour when crushed; there is little or no odour for Argentine ants, to whom they are closely related.

Habitat

In New Zealand they tend to be associated with human population centers. They occupy dry forest and coastal scrub areas in their native range. (Auckland Council, 2018).

Reproduction

No information found relating to the details of reproduction. Colonies expand by 'budding' into new nests and queens walk to a new colony rather than flying.

History of introduction and spread in New Zealand

This species was first recorded as nesting here in 1959, from Penrose, Auckland (Taylor 1959). The nest was destroyed by Department of Agriculture officials. A probably separate establishment in Christchurch was first reported in 1979 (Keall 1979) and it has since been located at several localities in the Christchurch-Lyttelton area (Keall & Somerfield 1980) (Don and Harris, no date)

Current and potential distribution in New Zealand

Apart from some spreading northward in the Auckland area, this species still tends to remain associated very closely with towns or cities with ports, strongly suggesting separate port invasions in some cases. It has been recorded in Whangarei, Mt Maunganui, Gisborne, Napier, Blenheim, Nelson and Lyttelton (Don and Harris, no date).

Current and potential pathways

Spread in freight, materials being moved, vehicles, mobile homes. Commonly found nesting in situations such as potted plants, probably facilitating their spread around New Zealand (Don and Harris, no date).

Potential costs and benefits

Impacts expected to be similar to Argentine ants. Likely to impact litter decomposition by removing invertebrates and microbes associated with breaking down leaf litter.

Likely to compete strongly with other species that feed on honeydew or nectar.

Predation by Darwin's ants implicated as a factor in the failure of the boneseed leaf roller moth biocontrol agent. Therefore potential to undermine biocontrol investment and indirectly facilitate pest plant invasions (Auckland Council, 2018).

There are numerous potential impacts of Darwin ants on the commercial sector in urban environments; including ants invading food processing plants and becoming important pests of the hospitality industry, and potential to become a threat to the horticulture industry (Nelson City Council, 2020).

Management options

Current control practices

Identification is key to controlling ants to ensure the best strategy is applied. Commercial exterminators can access a range of insecticides and are certified in their use.

Feasibility of eradication

Highly unlikely.

Legislative management responses

No status in New Zealand, however they are subject to the MPI led national ant surveillance programme.

Waikato RPMP: Advisory animal.
Horizons have not included Darwin ants in their RPMP.
Bay of Plenty: non-RPMP pest "considered part of the region's biosecurity framework" but not subject to RPMP provisions.

References

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Eastern Water Dragon

(Physignathus lesueurii/Intellagama lesueurii)

Summary of invasiveness

They have broad environmental tolerances. In their native range they are found from tropical rainforest in the north of Australia to alpine streams in the south and can use urban parks provided the water source meets their needs.

Description

The Eastern water dragon is a medium to large sized lizard, with some specimens growing up to 80cm in length including their long tail. They are dark brown to light brown and mature males have a brighter orange chest, with a row of spines beginning on the head and leading down along their back. They can be recognised by the black band running along the side of the head behind the eyes.

Habitat

Eastern water dragons are semi-aquatic lizards that are found along the east coast of Australia. They are normally found around creeks, rivers or lakes. The lizards can remain submerged for up to 30 minutes and rise to the surface where they are able to breathe, while checking the area for danger before emerging back onto land (Gisborne Online Zoo).

They have broad environmental tolerances. In their native range they are found from tropical rainforest in the north of Australia to alpine streams in the south. They require flowing water with ample tree cover and basking sites and will use urban areas provided the water source meets needs. They are often found in tree branches overhanging water, and will drop into the water when disturbed. In cooler areas they will hibernate during winter by sealing themselves inside a burrow, emerging when the temperatures warm up again. (Auckland Council, 2018).

Reproduction

Males become sexually mature at c.5 years old (snout-vent length 210 mm and weight 400 g), and aggressively defend territories.The breeding season is during spring. Mating occurs near waterways and the females lay eggs away from the river in nests. The nests are usually in moist soil, within rotting vegetation in November to December. Female dragons can lay between 10-20 eggs. (Gisborne Online Zoo). Females may not breed every year.

In the wild, males aggressively defend territories during the breeding season. Sperm storage has not been documented in this species, but is known to occur in a closely related species which has the ability to store sperm for up to 580 days after mating. Incubation length depends on temperature, with eggs incubated at warmer temperatures hatching earlier. Risk of escape from captivity (Auckland Council, 2018).

History of introduction and spread in New Zealand

Eastern water dragons are legally sold as pets in New Zealand.

Current and potential distribution in New Zealand

Modelling indicates a very high risk of establishing in the wild in parts of New Zealand (Northland Regional Council, no date).

Current and potential pathways

Most likely to occur through escapes from captivity or dumping/release into the wild (Auckland Council, 2018). There has been at least one water dragon re-captured in a reserve in the Manawatu in 2017 (DOC, 2017).

Potential costs and benefits

Quick, effective omnivores that eat a variety of insects, aquatic organisms, moths, wasps, crustaceans, small vertebrates, fruit and plant matter. Likely to impact native endangered species by competing for food resources (Auckland Council, 2018).

Management options

Current control practices

No information available. A 2017 incident recorded by DOC caught an individual lizard on a cool evening when the lizard was low on energy from the cold (DOC, 2017).

Feasibility of eradication

No information available.

Legislative management responses

Eastern water dragons may be held in captivity, bred and sold, but it is illegal to release them into the wild.

The National Pest Pet Biosecurity Accord is established to promote responsible pet ownership and potentially establish controls on some pet species, however there are no exotic pet species regulated under this record at this point in time.

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Eel grass

(Vallisneria australis)

Summary of invasiveness

Considered weedy in 23 countries, including New Zealand , it will dominate stream vegetation, although it is noted that *Egeria densa* will displace it in some locations (Williams and Champion, 2008).

Description

Eel grass is a perennial, fully submerged aquatic plant that grows in fresh water up to 9 m deep. The leaves are long and strap like, slimy to the touch and usually light green, but do vary to brown. The plant is bottom rooting with stout rhizomes and forms dense beds. Leaves are produced from nodes at regular intervals along the rhizomes.

Similar species

There are other species of *Valisneria* worldwide, however only *V. spiralis* and *V. australis* are known to be in New Zealand. *V. australis* is found in Lake Pupuke (Auckland) and nearby locations (CABI, 2020).

NZPCN lists *V australis* with *V spiralis* and *V gigantea* as synonyms. Clarification would be useful.

Habitat

Static or flowing freshwater systems <9m deep. Tolerates low salinity. Grows fastest in water temperatures of 25°C.

Streams, drains, wetlands, lake margins, ponds and aquariums.

Reproduction

There are only male plants in New Zealand, so no viable seeds are produced. Spread locally by rhizomes, or intentional planting into new water bodies.

History of introduction and spread in New Zealand

In New Zealand, *V. spiralis* is reported to have been present on the North Island in Lake Wiritoa in the Manawatu-Wanganui region, since 1978, and Meola Creek in the Auckland region since 1982 (de Winton et al., 2009). From 2001 to 2008, the species was documented from 82 sites in the Wellington region, mostly in garden pools. Since 2000 it has also been reported from the Northland region and the Opawa River at Blenheim in the Marlborough region on the South Island (de Winton et al., 2009; P Champion, NIWA, New Zealand, personal communication, 2010).

Current and potential distribution in New Zealand

V. gigantea is known only from Lake Pukepuke (Auckland Region), and *V. spiralis* has been present in Lake Wiritoa in the Manawatu-Whanganui region since 1978 (de Winton *et al*, 2009). *V.*

spiralis is also found around the Auckland region and in Greater Wellington, Northland, and Marlborough (de Winton *et al*, 2009).

Current and potential pathways

It spreads locally by rhizomes and to new sites by intentional planting into new water bodies, and contaminated machinery.

Patterns of distribution when the prohibited status of V. spiralis was removed indicate deliberate planting as the main source, and the prohibited status was reinstated in 2007 with the plant added to the NPPA list (de Winton et al, 2009).

They are popular aquarium plants with debate on aquarium websites as to whether or not they are legal to have or share (Aquarium World forums accessed 9 April 2020). It appeared for sale (listed as *V. gigantea*) on trademe with a seller located in Palmerston North in February 2020 (https://www.trademe.co.nz/a.asp?id=88540303), and other species also appear for sale online (Eg; Aquatic Plants website https://aquaticplants.co.nz/product-category/stem-plants/)

Potential costs and benefits

Dense beds of vegetation block dams and waterways, trap sediment, impede drainage, disrupt recreational activities, and interfere with hydro turbines. Outcompetes native species for light, nutrients and space.

It is considered a drowning hazard due to tangling in the species, with at least one reported fatality at Lake Pupuke.

Management options

Current control practices

Auckland Council suggests small infestations can be controlled by divers hand pulling plants.

Other options for control include mechanical removal, for example a weed harvester or suction dredge), chemical control, manipulation of habitat by drainage or weed mats, and potentially biocontrol using grass carp. (GISD, 2020). Methods that allow root fragments to break off will encourage spread.

It is important to note that grass carp are not species specific and will browse weeds starting from highest preference.

The plant is resistant to management. No consistent herbicide control has been achieved in NZ field sites. Mechanical removal combined with covering with weed mat has been used. Cutting will check weed growth for 3-4 months but does not kill it. (Williams and Champion, 2008).

Feasibility of eradication

Virtually impossible to eliminate. Only treat if necessary as interference often makes the problem worse. Regular follow up required.

Legislative management responses

- Unwanted organism
- National Pest Plant Accord

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Horizons RPMP: Progressive containment.
Waikato RPMP: Exclusion.
Auckland RPMP: Exclusion.

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Koi carp

(Cyprinus carpio)

Summary of invasiveness

Koi have been so widely distributed that they are found on every continent except Antarctica. A single female can produce 1-2 million eggs, and their prolific breeding means that they can completely dominate aquatic ecosystems. They make up 80% of the fish biomass in the lower Waikato River catchment (NIWA, 2020).

Description

Koi carp are a variety of common carp, which is native to Asia. Wild common carp tend to be olive green but as the New Zealand stocks are derived from the ornamental Japanese koi they exhibit distinctive black, red, orange, gold and white patterns. They grow up to 12 kg and 75 cm in length. The key diagnostic in New Zealand are the two pairs of barbels at the corner of their mouths. (NIWA, 2020).

Similar species

Koi will hybridise with goldfish, and hybrids will range in appearance between the two species (DOC, 2020).

Habitat

Koi carp prefer still waters, spreading from rivers into lakes, streams or backwaters in rivers. They are highly tolerant of poor water quality – surviving well in degraded water and contributing to the decline. (DOC, 2020).

Reproduction

They are prolific breeders. The fish congregate for spawning in large numbers in the shallows of rivers and lakes, and spawning occurs in spring and early summer. Females can produce 1-2 million eggs in a season.

History of introduction and spread in New Zealand

It is not known whether the introduction of koi carp here was deliberate or accidental, but feral breeding stocks were first noticed in the Waikato in 1983. They are now common throughout the lower Waikato system, and have been spread mainly into ponds throughout the North Island. The first South Island record of koi carp occurred in Nelson in 2000, but most of the South Island populations have now been successfully eradicated. (NIWA, 2020).

Current and potential distribution in New Zealand

Koi are widely established in the lower Waikato River catchment area, including lakes and wetlands. There are also populations in the Auckland and Northland Regions, occasional incursions in the Bay of Plenty have been found in the past. They have also been found in the South Island, however these populations have been eradicated (NIWA, 2020).

Current and potential pathways

Key pathways are deliberate release and spreading through catchments and subcatchments during floods. Eggs may also be transported on other surfaces, including weed fragments attached to water craft and equipment used for water related recreation. Escape from enclosed ponds is also a likely pathway, as koi are still valued as ornamental fish and occasionally found in ponds.

Potential costs and benefits

Koi eat a wide variety of organisms including plants and animals. One feeding method is to suck up and expel material from the bottom of water bodies to filter out edible material. This means that they increase the turbidity of the water by constantly stirring up the substrate. This also mobilises nutrients, and the turbidity will prevent the growth of macrophytes. Koi presence in a water body will produce a system that is highly turbid and nutrient rich, with few macrophytes. This in turn affects benthic communities, indigenous fish and food sources for water birds. Koi feed on fish eggs and juvenile fish of other species, including NZ indigenous fish.

Once present in a water body they are extremely difficult to manage.

Management options

Current control practices

Electric fishing, one way traps, rotenone pesticide and netting are used to control carp but can only be implemented in small waterbodies and non-flowing habitats (DOC, 2020).

A carp herpes virus is being investigated as an option for biological control of carp in Australia, and while their research programme is largely complete, they have yet to have a decision as to whether it will be released into the environment. The virus is carp specific, however will not eradicate carp without other complementary measures such as genetic and sex biasing approaches.

Feasibility of eradication

Very low once established with current methods, especially into flowing water bodies. Possible within enclosed water bodies with no outflow.

Combined bio-control with genetic and sex biasing approaches is being considered in Australia and may provide higher levels of control.

Legislative management responses

- Unwanted organism
- Noxious animal

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

A containment area has been established between Auckland and Hamilton where recreational fishing is permitted, however all koi must be killed when caught and koi outside the containment area are considered a new incursion and must be reported.

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Mediterranean Fanworm

(Sabella spallanzanii)

Summary of invasiveness

High fecundity, rapid growth and ability to regenerate body structures when damaged. Meditteranean fan worms have wide environmental tolerances, they are a habitat generalist and can settle on a range of substrates and structures. They lack natural predators. Larvae float for around three weeks, and have the ability to extend their life-stage duration if conditions for settlement are unsuitable. (Fletcher, 2014). High potential for natural dispersal as well as human induced spread.

Description

The Mediterranean fanworm is marine polychaete worm. It is a sessile organism that has a long leathery, flexible tube that is pale brown in colour and has a muddy appearance. These tubes normally grow to a length of 10-50 centimetres although in New Zealand individuals 80 centimetres in length have been recorded. It is larger than other native fan worms in New Zealand. The Mediterranean fanworm extends a spiral fan of yellow-orange filaments to collect plankton from the water column (NIWA website accessed 20 April 2020).

Similar species

Some native fan worms are similar, however Mediterranean fanworm is larger.

Habitat

Meditteranan fanworm is generally found in shallow subtidal areas in depths from 1 to 30m (CSIRO, 2001). In shallow waters, worms are solitary and commonly found growing on a wide range of solid surfaces, including artificial materials (rocks, concrete, wood, steel), and benthic organisms (ascidians, mussels, oysters) (Currie *et al,* 2000 cited in CSIRO, 2001). It is also found on wharf piles and facings, channel markers, marina piles and pontoons, and submerged wrecks (CSIRO, 2001). New Zealand incursions have been with biofoul on vessels.

Reproduction

A mature female can produce >50,000 eggs during each spawning event and fertilise the eggs inside the abdominal section of the tube. Spawning may occur from May to late September in central New Zealand based on the sea temperature requirements. Lavae float on ocean currents before settling in suitable locations.

History of introduction and spread in New Zealand

Meditteranean fan worm was first detected in Lyttelton Harbour in March 2008, and extensive populations were then found in Waitemata and Whangarei harbours where it is now well-established. Hull fouling transport is strongly suspected in the New Zealand arrival. (Fletcher, 2014).

Current and potential distribution in New Zealand

It is well-established in the Auckland region, in Waitemata and throughout the harbour area, possibly out into the inner Hauraki gulf, at the marina at Whangaparaoa with other possible

locations. Also in Whangarei in both the marina and the wider harbour, and remains at low densities in Lyttelton Harbour. Isolated incursions have been found in the Coromandel, Tauranga Harbour and Nelson harbour, and a population found on a moored boat in Waikawa Bay near Picton in 2014. (Fletcher, 2014).

Meditteranean fan worm can survive in temperatures from 2-29°C. NZ sea temperatures range from 10°C in the south to 23°C in the north in summer, and in winter from 6-18°C, so the temperature tolerance is within range in all NZ coastal waters.

Current and potential pathways

Boat hulls, ballast water (intra- and inter-regional vessel movements); transfer of equipment, especially equipment that does not move for periods of time.

Once established, natural dispersal is by transportation of larvae by water currents, and larvae from Port Phillip Bay in Australia reached up to 20 km from the parent population before settling and metamorphosing into adult form (Fletcher, 2014).

Potential costs and benefits

The Mediterranean fanworm can form dense colonies of up to 1000 individuals per square metre that will exclude the settlement of other organisms. It also has a high filtering ability that may influence the composition of planktonic communities and abundance of some species. The presence of the Mediterranean fanworm in areas where mussels or oysters are located may affect their growth due to competition for food. The tubes of the Mediterranean fanworm may attach themselves to aquaculture or other marine equipment or vessels and this may increase harvesting or fuel costs, respectively (NIWA, ND).

Management options

Marine pests differ from other pests in that there are few barriers to their movement from one location to another, and every New Zealand port touches every other New Zealand port either directly or indirectly. Port Taranaki has direct connections with domestic vessel movements from other ports known to have marine pests.

MPI is considered the lead agency for the movement of marine pests between regions, and a national marine pests pathway plan would be an option to achieve consistency, and makes sense logistically for domestic shipping. The Top of the North partnership is investigating the feasibility of an inter-regional PMP.

There are gaps in information for this species in New Zealand environments around population dynamics, age and size to sexual maturity and spawning times. This is crucial to determine the likelihood of being able to contain and remove the species before it has spawned. Inferring from other locations raises levels of uncertainty and the potential to miss the key timeframes (Fletcher, 2014).

Current control practices

Cleaning should be done in a dry dock where possible. In-water treatments require significant containment and substances used may affect other non-target marine species.

Anti-fouling of vessels and anti-foul paints.

Physical removal and collection.

Feasibility of eradication

Possible at site level early in the invasion curve using specialised dive teams and/or haul-out cleaning services, ideally before sexual maturity is reached and/or spawning has occurred.

Legislative management responses

- Unwanted organism
- Notifiable organism

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Other regions have included Meditteranean fan worm in their RPMPs.

Pathways Management - Only two pathway management plans for marine pests are operational in New Zealand, Northland and Fiordland. Both include Meditteranean fan worm in their PMP.

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Purple loosestrife

(*Lythrum salicaria*)

Summary of invasiveness

Rapidly invades damp ground and shallow water. Overtops native species with dense bushy growth, is long-lived and produces millions of long-lived, highly viable seeds from an early age. Tolerates hot or cold conditions and low to high nutrient levels in the water, but is intolerant of salt water. (Weedbusters, accessed 7 April 2020).

Its spread and persistence in ecosystems is supported by very high seed production, a vigorous and persistent root system and rapid growth (CABI, 2020).

Description

Tall perennial herb, normally about 6-100 cm tall but can get up to 3 m, with up to 50 stems per rootstock. Roots are a dense, woody mass. It has angled (4-6 sided) reddish-purple or red to purple stems and stalkless leaves that grow either opposite or in whorls from the stem. Leaves are heart-shaped at their base but lance-shaped or narrowly oblong overall. Magenta flowers arise on numerous spikes from December to February. The plant dies off in winter and re-sprouts in spring.

Similar species

Lythrum virgatum is sometimes cultivated and has a similar growth habit. It is smaller in all parts, hairless and has narrower leaves (Champion and Hofstra, 2013).

Habitat

Invades wetlands, lakesides, streams, swamps, bogs that are damp in winter and drier in summer, and creeps onto dry margins and can invade pasture and crops. It can adjust to a range of conditions by adjusting leaf morphology, changing root to shoot ratio and growing shoot and root buds at the site of damage if it is trampled, cut or crushed (Thompson et al, 1987, cited in Champion and Hofstra, 2013).

Reproduction

Spreads by seed - mature plants produced in the order of 600,000 seeds per year. Seeds are spread by wind (limited extent) and water, and germinate in moist soils after overwintering. Seed can also be spread by birds and machinery, and remain viable for up to 3 years (Champion and Hofstra, 2013).

Vegetative spread by underground stems and stem fragments. These could also be moved by machinery and in spoil.

History of introduction and spread in New Zealand

Purple loosestrife is native to Europe, Asia and Australia and was introduced to New Zealand as an ornamental pond and garden plant (Champion and Hofstra, 2013). It also has uses as a medicinal herb in northern Europe (CABI, 2020)

Current and potential distribution in New Zealand

Locally naturalised, especially Horowhenua and Canterbury (Champion and Hofstra, 2013). Distribution is mostly in the south island but there are also populations recorded in the lower north island, including Whanganui in the Manawatu (NZPCN website, accessed 7 April 2020).

Current and potential pathways

Deliberate spread as an ornamental.

Movement by flooding, in stock feed, on animals, on vehicles stuck in mud/soil, and in soil, sand and gravel.

Potential costs and benefits

Forms massive, tall, impenetrable stands, excluding all other species. Destroys wetland and marginal habitats and food sources for many fish and bird species, waterfowl nesting sites are reduced. Affects inanga spawning areas. and causes blockages and flooding, clogging shallow drains and waterways. It is capable of taking over large areas. Purple loosestrife adds nutrients to wetlands and water bodies seasonally in litter as it dies down in winter, which is not part of the natural regime in New Zealand where few wetland species die back.

In the US it is increasingly encroaching on farmland in crops and pasture (Minnesota Sea Grant, accessed 7 April 2020).

Management options

Current control practices

Weedbusters (2020) lists the following options:

- Shading out with other plantings
- Deepening water levels to prevent growth (2-3 weeks to drown weed)
- Lowering water levels and mechanically removing
- Weedmat, starting with top of infestation, and left for 3-4 months
- Chemical control using glyphosate or triclopyr with 3 monthly follow-ups.

Biological control agents are being used in the US and Canada (Minnesota Sea Grant, accessed 7 April 2020).

Where infestations are dug out, all the roots need to be removed and the site needs to be monitored for re-growth. Material needs to be either incinerated, composted or covered with weedmat (2-3 months). Cutting before spraying can reduce non-target bykill.

Areas cleared of purple loosestrife should be replanted as soon as possible to slow reinvasion.

Feasibility of eradication

Likely.

Legislative management responses

Unwanted organism under the biosecurity act

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Pyp Grass

(Ehrharta villosa)

Summary of invasiveness

Pyp grass outcompetes native groundcover species, growing in a dense sward as a monoculture. It will climb up into other plants or structures like fences. Pyp grass develops a mass of interwoven rhizomes, occupying at least half a metre of the topsoil and extending horizontally for many metres.

Description

Perennial grass with long creeping rhizomes. Stems robust and cane-like, 90cm-200cm tall. Leaves bluish-green, 1.5-13 cm long. Like marram grass the leaves are rolled leaving only the outer surface exposed to the sun and wind. Flower head is a panicle up to 25 cm long, narrow and rather lax (Auckland Council website). It grows in a dense sward in New Zealand, which is unlike the more open herb growth in its native South Africa.

Pyp grass grows in summer with rapid growth after spring, summer and autumn rains. Flowers in spring (October-January).

Habitat

Terrestrial. Short tussock land, herbfield, bare land, wetland, mainly on coastline, sand dunes.

Reproduction

Vegetative spread is mainly by rhizomes and fragments of rhizomes, and rooting at the nodes but possible from seed, which can be spread by wind. Seed production is usually low and probably limited by nitrogen. The length of time that seeds remain viable in the soil is unknown. Hodder's (1997) study found no seeds in the soil and suggested that heavy predation by birds and rodents was removing all seeds.

History of introduction and spread in New Zealand

Introduced to New Zealand, at Turakina Beach, in trial plots to stabilise sand dunes by the Ministry of Works in the 1970s (Hodder, 1997). It is unknown how it spread to the other sites known in New Zealand (although now eradicated), but was most likely deliberately planted for the same purpose at other locations.

Current and potential distribution in New Zealand

After being successfully controlled at Blackhead, Hawkes Bay and Waitarere Forest, north of Levin, pyp grass is known to still be present at one coastal site in the North Island, Turakina Beach, south of Wanganui. This site is currently under control (by DOC) with the aim to eradicate pyp grass from this site and therefore New Zealand. (MPI, 2009). The infestation extended into the adjacent exotic forest (along the road) and outside a single private dwelling in the back dunes (McKinnon, 2009).

Current and potential pathways

Seed can be spread short distances by wind and on other vectors like machinery and clothing.

Potential costs and benefits

Pyp grass is a threat to New Zealand's already threatened dune ecosystems where it is expected to invade and degrade sand dune habitats by dominating the indigenous vegetation. In South Australia it is a serious agricultural weed. (MAF, 2009).

Management options

Current control practices

Chemical control at Koitiata used Roundup Transorb, which successfully killed the whole plant including the rhizome (McKinnon, 2009). The following year's report confirmed that this had achieved a good kill (McKinnon, 2010).

Feasibility of eradication

High with repeated follow-up.

Legislative management responses

- Unwanted organism
- National Interest Pest Response species (MPI lead response)

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

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Salvinia

(*Salvinia molesta*)

Summary of invasiveness

Salvinia ranks a close second behind water hyacinth on a list of the world's most noxious aquatic weeds, and recently added to the list of the world's 100 most invasive species (CABI, 2020). Growth rates are rapid - extent can double in 8 days, and it can form dense mats up to 1 m thick. It spreads by fragments. Growth is increased with high nutrients and warm water temperatures.

Description

Salvinia is a free floating aquatic plant with a horizontal rhizome below the water surface. It has two types of frond, buoyant and submerged. The submerged fronds function as roots. The fronds are in whorls of three (two floating), fronds are light to medium green, hairy, and with a distinctive fold in the center. (GISD, 2015).

There are three growth stages. In the first stage leaves are small (~10 mm) and lie flat on the water surface. In stage two the leaves grow to about 25 mm and begin to fold upward, so the structure takes on a keeled shape. Leaves are cupped but do not overlap. In the third and mature phase the leaves grow larger and thicken, leaves are compact, almost vertical and acutely folded (CABI, 2020).

Similar species

The juvenile form resembles *Azolla* species, however the mature form is very distinctive (Champion and Hofstra, 2013).

Habitat

It grows best in water temperatures of 20-30°C and tolerates salinity of 10% seawater. Growth is stimulated by high nutrient levels (GISD, 2015). It prefers stagnant or slow moving water, bays and inlets or tributaries of small streams where it is protected from wave action (CABI, 2020). It can survive on mudbanks.

Reproduction

The plant can not produce viable spores and can only reproduce assexually. It propagates by vegetation growth, and small plant propagules ('daughter plants') will fragment and disperse (GISD, 2015). It also spreads when young growth separates through death or damage of the parent material that links the sections.

History of introduction and spread in New Zealand

It is believed to be a hybrid of horticultural origin from South America (Breitwieser *et al* (eds; 2020)), and the first record is from Western Springs, Auckland in 1961 (Champion and Hofstra, 2013).

Does not produce spores, spreads by fragmentation only through water movement, deliberate 'liberation' of aquarium contents into ponds or lakes.

Current and potential distribution in New Zealand

Salvinia has been found mostly in the warmer areas of the North Island, however it has also been found as far south as Christchurch (MPI, 2014). In 2017 there were 20 sites, mostly in the north, under active management, and included wetlands and small domestic fishponds.

It is a rampant weed of tropical and warm temperate regions, recorded as a naturalised plant in lowland areas of northern New Zealand from near Kaitaia to Hamilton. (Breitwieser *et al* (eds; 2020)). Altitudinal range 0-50 m. It can withstand the occasional frost, although persistent low temperatures and frost will kill the exposed portions of the plant. Unaffected parts of the plants can re-grow (Ensbey, 2018).

Coastal areas of Taranaki Region could support Salvinia (Paul Champion pers comm.; 6 April 2020). It occurs in areas of Australia with similar climatic conditions.

Current and potential pathways

Spreads rapidly by fragmentation and producing plantlets from the old end of the horizontal axis, and can grow from a single node; the death and decay of the older connecting part of the plant can lead to the separation of the viable younger branches. The plant is apparently a sterile hybrid. Fragments spread by water movement, deliberate release (with fish from aquaria) (Champion and Hofstra, 2013). Water currents, animals, contaminated equipment and water craft (eg; boats and trailers) (MPI, 2014).

Early spread was via the aquarium and landscaping trades as an ornamental plant.

Potential costs and benefits

Dense mats block light, reduce water flow and lower oxygen levels in water, which negatively affects biodiversity. It is also a threat to recreational activities and hydro electricity generation.

The mats smother or force out native plants, can attract breeding mosquitoes, block dams and irrigation systems, remove oxygen from the water and create a drowning risk for people and animals. (MPI, 2019)

Management options

Successful management of Salvinia requires early detection, action and implementation of an integrated control program, and different levels and sizes of infestation may require different methods or combinations of methods (Ensbey, 2018).

Current control practices

Biocontrol agents in other parts of the world, like Australia, have had varying success rates and in cooler areas is limited by the ability of the agents to survive outside tropical areas (CABI, 2020).

Draining a waterbody may not be effective where a thick mat protects and insulates the buds. Plants have been known to survive for 20 months under these conditions (Ensbey, 2018).

Barriers to prevent spread can be effective for short periods of time, and can be useful in combination with chemical control. This methodology was used at Kaituna Wetland in the Bay of

Plenty to contain the infestation while other control methods were applied to reduce and remove it.

Dense mature infestations make it difficult to get adequate contact time for chemical control (Ensbey, 2018).

Chemical control is possible, and requires the use of surfactants to penetrate the hairs on the leaf, which form a waterproof barrier (Oliver, 1993, cited by CABI, 2020).

Feasibility of eradication

Possible.

Legislative management responses

Control/eradication is led by Biosecurity NZ under the National Interest Pest Response programme, with a goal of eradication.

- Unwanted organism
- Notifiable organism
- National Pest Plant Accord

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Not included in either the Waikato or Horizons RPMP due to their NIPR status.

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Sea Spurge

(Euphorbia paralias)

Summary of invasiveness

Sea spurge seeds are buoyant and can remain viable floating in the sea for several years and can be dispersed very long distances by sea currents (Mallick and Askey-Doran, no date).

Sea spurge can form dense infestations that dominate the foredune and change the dune structure, and is a problem weed in parts of Australia. Local spread of established infestations occurs when the dry fruits explosively eject seeds up to several metres from the parent plant. Sea spurge has a very large reproductive potential, with a single plant being able to produce 5000 seeds per year (Mallick and Askey-Doran, no date). Seed remains viable for up to 9 years (Parks and Wildlife Service, 2015).

Description

Sea spurge is a hardy European shrub that thrives in sand dunes. It has multiple stems that are often reddish at the base, and its spiky, tightly-packed blue/green leaves are 4-20mm long and 1-16mm wide. Green flowers bloom at the stem tips from September to May and the flower stems die off each year. The milky sap that oozes from broken stems is toxic to people and animals. The plants grow to about 1m tall in dense clusters (MPI, 2012)

Similar species

The native *Euphorbia glauca* has reddish flowers and much larger leaves 30-80 mm long. Also similar to NZ linen flax *Linum monogynum*, but linen flax stems are not reddish at the base. (Waikawa Beach Ratepayers Association, 2020).

Habitat

Sea spurge is a coastal weed that develops into dense infestations on sandy beaches and sand dunes (de Lange 2012).

Sandy, free draining substrates on beaches, throughout dune fields, around estuaries, and in other coastal environments including small pockets of sand on otherwise rocky sections of coastline and on cobbled beaches with sufficient interstitial sand. Sea spurge is capable of moving from dune systems into adjoining native vegetation. On sandy beaches, sea spurge can colonise areas from the loose sand just above the high tide line, up and over the fore and primary dunes and into the secondary dune system (Mallick and Askey-Doran, no date).

Reproduction

Sea spurge seed germinates after heavy rain and the seedling grows rapidly producing a long taproot. The root crown is perennial, with new stems being produced each year in spring from the buried root crown. Flowering occurs from spring through autumn. The stems die after flowering, but may sometimes remain on the plant into the following year (Mallick and Askey-Doran, no date).

History of introduction and spread in New Zealand

It is likely to have arrived on ocean currents from Australia (MPI, 2012)

Current and potential distribution in New Zealand

Sea spurge was found near Aotea Harbour in the Waikato in 2012 and a single plant found at Mokau in 2019. A single plant was found at Himatangi Beach, New Plymouth and has been removed, however it does indicate that sea spurge can land and grow in the Taranaki Region.

Current and potential pathways

Long distance dispersal of sea spurge seeds on ocean currents - this is thought to be the pathway for its arrival in New Zealand.. Sea spurge seed can remain in the sea water for several years and remain viable, allowing for transport over very large distances.

Other human facilitated pathways include transport in recreational vessels and ship ballast water and the transport of root fragments and seeds in contaminated sand or soil during earth moving works. The plant spreads locally by explosively ejecting seeds up to several metres from the parent plant. (Mallick and Askey-Doran, no date).

Potential costs and benefits

Public amenity and access through stands - milky sap released by damaged plants causes skin irritation.

Displacement of indigenous dune species.

Alteration to the natural shape and structure of beach and dunes, and may have adverse effects on the nesting habitat of a range of threatened shorebirds (Mallick and Askey-Doran, no date).

Management options

Control should be timed for completion before seed is mature. Repeat follow-up monitoring and control is needed as the seed back will continue to germinate for several years.

Current control practices

Manual hand removal is effective, although the seed may re-grow from the buried root crown. The toxic sap of damaged plants means that protective clothing, eye protection and gloves are needed. Tasmania has successfully removed reasonably large populations of sea spurge by hand weeding (Parks and Wildlife Service, 2015). Most practical for small and/or scattered populations.

Chemical control options include glyphosate and metsulfuron-methyl and foliar spraying, although non-target species can be affected.

A combination of aerial spraying with herbicide and follow-up hand weeding has been shown to be highly effective in controlling sea spurge infestations in difficult to access areas and over a large extent of coastline.

There are no biological control agents available.

(Mallick and Askey-Doran, no date)

Feasibility of eradication

Tasmania has been successful in reducing sea spurge infestations to the point where they consider it possible to eradicate it from their southwest coastline, with follow-up work to exhaust the seed bank. Their work has reduced areas of tens of thousands of plants to a handful over seven years (Parks and Wildlife Service, 2015).

Legislative management responses

- Unwanted organism
- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

MPI is the lead agency for the Waikato and Himatangi Beach incursions.

Waikato - Eradication species in RPMP.
Horizons - not listed in RPMP.

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Tench

(Tinca tinca)

Summary of invasiveness

Tench can breed rapidly and build reasonably dense populations where conditions are suitable, and they lack natural predators in New Zealand (Rowe, 2004).

Description

Tench are generally an olive green colour although this varies from dark to light. There is a single small barbel at each corner of the mouth. The fins tend to be thick and fleshy and the body is covered in small scales. Males have longer and fatter pelvic fins than females.Their eyes are bright orange, and this is their most distinctive characteristic (NIWA, 2020).

It does not feed on other fish, and may be described as a generalised benthic carnivore (Rowe, 2004). It is solitary and mainly nocturnal (Rowe, 2004).

There may be a golden colour variety in the Auckland area, however this doesn't appear to be a firm record.

Similar species

None in New Zealand - tench are distinctive.

Habitat

Tench generally live in still or slow-flowing waters, and are carnivorous, feeding mainly on crustaceans, molluscs and insect larvae. They are generally bottom dwelling (Rowe, 2004).

They hibernate in the mud at the bottom of deep pools in winter.

Their preferred temperature is 20-21°C and in tank trials avoided water over 25°C (cited in Rowe, 2004). They tolerate brackish water, turbidity, and low oxygen levels.

Reproduction

Spawning occurs in spring and summer and, like all the Cyprinidae, tench are prolific breeders; a large female may produce hundreds of thousands of small eggs. They stick to aquatic vegetation (Rowe, 2004).

History of introduction and spread in New Zealand

First introduced to New Zealand in 1867, initially as a sports fish, and it has been spread for the purpose of creating new recreational fisheries.

Current and potential distribution in New Zealand

Mostly in Auckland, but also present in some lakes and ponds in Northland, Tauranga and Wellington, as well as sites in the South Island.

Current and potential pathways

Deliberate release is the most likely method of spread. Fish eggs can be transported on weed fragments caught up in water craft, trailers and equipment, however this is considered a less likely pathway (Rowe, 2004).

Potential costs and benefits

High densities of tench have been considered the cause of reduction in benthic invertebrates in overseas lakes and there is some evidence from overseas and in New Zealand that a high density population can reduce the water clarity in shallow lakes (Rowe, 2004). They feed by squirting water to move the surface layer of sediment, which re-suspends find sediments into the water column.

Rowe (2004) considers that tench are unlikely to pose a direct threat to other fish species in lakes, including New Zealand natives, however they have been implicated in environmental changes including reduced invertebrate densities, reduced macrophytes and/or reduced water clarity in shallow lakes and ponds. There may be some indirect effect on native fish through reduced food supply, changes to water quality and reduced macrophyte cover.

The major concern with tench is the potential to degrade lacustrine habitats, especially in shallow lakes and in the synergistic role it may play in this with other exotic species like goldfish and koi carp. Tench have also introduced a new parasitic worm, which can be spread by piscivorous birds and will infect indigenous fish species like koaro.

Management options

Current control practices

Nets, rotenone.

Feasibility of eradication

Difficult, particularly where the water body is not isolated and unconnected.

Legislative management responses

Tench are classified as an acclimatised fish under the Fisheries Act 1983, and are listed via the Conservation Act 1987 as a sports fish to be managed by Fish & Game Councils.

Within the Taranaki Region, Fish & Game's management plan commits them to eradicating any new populations of sports fish arriving in the region, therefore a new incursion of tench into Taranaki could be removed, if physically possible.

Waikato RPMP: Site led
Horizons RPMP: not included

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Velvetleaf

(Abutilon theophrasti)

Summary of invasiveness

Velvet leaf is an aggressive competitor for nutrients and water, lowering crop yield, and is one of the most damaging weeds to crops like maize. Seedlings are vigorous and fast growing (Waikato Regional Council 2017), and the plant is resistant to many herbicides (MPI, 2019). Seeds remain viable in the soil for up to 50 years and are easily transported with the main crop after harvest, although it is thought that 90% of seeds germinate in the first year. Plants keep emerging over summer and autumn. It is primarily a weed of crops and is a major invasive crop weed in other countries (MPI, 2019). It is not killed by processing into silage or passing through an animal's digestive tract.

Description

Velvetleaf is an annual broad-leaved weed that grows between 0.5m and 2.5m tall, with buttery-yellow flowers about 3cm across. It flowers from spring through autumn. The leaves are large and heart-shaped, and velvety to the touch. The plant has distinctive seed pods with 12 to 15 segments in a cup-like ring. Each seedpod is about 2.5cm in diameter (MPI, 2019).

Similar species

Similar to some of the mallow family at seedling stage, but otherwise unmistakable once mature (CABI, 2020).

Habitat

In its introduced areas velvetleaf is found in wasteland, vacant lots, gardens and cultivated fields, especially maize and soybean fields and along fence rows (CABI)(

Reproduction

Germination occurs over a long period during summer, mostly from seeds in the top 25 mm of soil; seeds cannot germinate when buried below 150 mm. Even small plants, produced from seed germinating in late summer, can flower and set seed, with seed maturing about 6 weeks after flowering. Seedlings are vigorous and the plant grows rapidly in its first few months. Root growth is rapid and the plant can grow in lightly shaded conditions (AgPest, no date).

History of introduction and spread in New Zealand

There have been several arrivals of velvet leaf in New Zealand and it was initially imported into New Zealand as a potential fibre source. It is used to produce a jute like fibre in China and some other Asian and North African countries. While it didn't naturalise and spread at that time, it was found again in Helensville, near Auckland and over 10 farms in the Waikato Region. It was found in maize silage, crops and in dairy pastures where maize silage had been fed out (AgPest, no date).

The most recent incursion in 2016 was via fodder beet seed which was then planted on over 600 properties.

Current and potential distribution in New Zealand

The weed is on a number of properties across the country and could be in any crop. Canterbury, Otago, and Southland have the most affected properties. There is also velvetleaf in areas around Auckland and the Waikato. This incursion is associated with maize production. It has been spreading in these areas via dirty maize harvesters and contaminated maize silage (MPI, 2019)

Current and potential pathways

Seeds are spread by farm machinery when harvesting grain (e.g., maize), through livestock, and as a contaminant of grain or silage (AgPest, no date). The Waikato Region identifies all possible pathways for velvetleaf to spread in their long term management plan for velvet leaf. Movement of material on vectors like machinery, stock feed, soil, on stock are all able to move velvet leaf seed from one site to another.

Potential costs and benefits

A serious cropping weed that can affect many arable crops and reduces crop yields. Velvetleaf has been reported as causing up to 70% reduction in crop yields overseas (MPI, 2019).

Management options

Current control practices

Containment and pathway management:

Farmers should protect their properties from velvetleaf and other serious plant pests by:

- insisting all contractors practise good weed hygiene, cleaning their equipment before entering the farm
- ensuring supplementary feed brought onto the farm is weed free
- ensuring manures, aggregates, soil and sand brought onto the farm are weed free
- checking feed crops before purchase to ensure they are weed free.

Manual control by pulling plants can be practical for small infestations, especially before seed has set. Where seed is set, containment of seed is critical and MPI provides the guidance for containing seeds within plastic bags and using drop-sheets to capture seeds.

Chemical controls are available with different substances and methodology for different situations (eg; within crop, pre or post-emergence, pasture).

(This section: Waikato Regional Council, 2016).

Feasibility of eradication

The longevity of the seed bank makes eradication unlikely.

Legislative management responses

- Unwanted organism

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Waikato Region: progressive containment.
Horizons: not listed in RPMP.

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Water poppy

(Hydrocleys nymphoides)

Summary of invasiveness

Rapid growth rate, it covers water bodies by developing a dense mat of stems. This chokes water bodies and can cause flooding. It also shades out other plants, and changes the habitat characteristics for other species (Weedbusters accessed 9 April 2020).

Description

Water poppy is a waterlily-like plant with leaves floating on the water surface. The plant has an underwater stem that is elastic and creeping, and floats near the water surface. Leaves and roots arise from each node along the stem. Leaves are a bright glossy green oval in shape and about 7 cm long. The main vein of the leaf is inflated on the underside. The flowers are made up of three yellow petals with a purple centre and are up to 8 cm across (Champion and Hofstra, 2020), and appear between November and April. Each flower only lasts 1-2 days (NZ Government, 2020)..

Similar species

Yellow water lily (*Nuphar lutea*) - has very thick spongy stolons and much larger leaves (up t 40 x 30 cm); marshwort (*Nymphoides geminata*) and fringed water lily (*Nymphoides peltata*). do not have an inflated mid-vein on the underside of the leaves. They also have wings on the outer edges of their petals (Champion and Hofstra, 2020).

Habitats

Still or slow-flowing water less than 2 m deep. Prefers open, warm, nutrient rich conditions, but will tolerate cool climates.

Reproduction

Vegetative spread by stolon fragments, deliberate planting. New plantlets are produced at the end of the growing season and these break away from the main plant to settle and take root in the mud at a new location (Champion and Hofstra, 2020).

History of introduction and spread in New Zealand

Native to tropical South America, most likely imported as an ornamental pond plant (Champion and Hofstra, 2020).

Current and potential distribution in New Zealand

Locally naturalised in northern North Island south to the Rotorua lakes, eradicated from most known sites (Champion and Hofstra, 2020).

Current and potential pathways

Spreads by plantlets or stem fragments carried by water, boats, fishing gear or machinery. No seed is produced in New Zealand (Weedbusters accessed 9 April 2020).

Potential costs and benefits

Water poppy has dense growth that chokes streams, shallow ponds and lake margins, causing flooding. It shades out other plants, reduces nutrient availability and alters the habitat for other organisms. Dense growth restricts access for recreational use.

Management options

Current control practices

There is very little information about control. Department of Primary Industries in New South Wales, Australia notes two rates of glyphosate under existing permits (NSW Department of Primary Industries, 2019).

Feasibility of eradication

Possible: Water poppy was eradicated from a pond on the margin of Lake Rotoehu in the 1970s (Clayton, 2015).

Legislative management responses

- Unwanted organism
- National Pest Plant Accord

- S52 and S53 of the Biosecurity Act 1993 apply: Banned from selling, propagating or distributing any unwanted organism. Not complying with Sections 52 and 53 is an offence under the Act, and may result in the penalties noted in Section 157(1).

Waikato RPMP: Eradication
Horizons: not included

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MEMORANDUM
Policy & Planning

Date 21 July, 2020

Subject: **Review of the Navigation Bylaw for Port Taranaki and its Approaches and Harbourmaster Annual Report**

Approved by: A D McLay, Director - Resource Management

M J Nield, Acting Chief Executive

Document: 2488628

Purpose

1. The purpose of this memorandum is to seek Members' agreement to proceed with a review of the *Navigation Bylaws for Port Taranaki and its Approaches 2009* in accordance with the requirements of the *Local Government Act 2002* (LGA). Also provided is a copy of the Harbourmasters annual report. The Harbourmaster will be at the meeting.

Executive summary

2. The Taranaki Regional Council's (the Council) navigation and safety bylaws were originally prepared in 1993 under the former *Harbours Act 1950*.
3. Subsequent bylaws were later prepared and adopted in 2003 and 2009 (currently operative) under the *Local Government Act 1974*. Ten years on the Council must again review its bylaws.
4. Of note, the current bylaws apply only to Port Taranaki and its approaches. Maritime New Zealand retains responsibility for navigation safety in the areas outside the approaches to the Port. The primary regulatory tool used by Maritime New Zealand to carry out its responsibilities is *Maritime Rule Part 91 Navigation Safety* and *Maritime Rule Part 22 Collision Prevention*, which apply to all waters in New Zealand.
5. At the Policy and Planning Committee meeting of 4 February 2020, it was agreed to commence a review of the existing *Navigation and Safety Bylaws for Port Taranaki and its Approaches 2009*.
6. The current bylaws are generally considered to be effective and have remained relevant and appropriate. Notwithstanding, a number of changes are recommended to update the bylaws to reflect changes in legislation and to improve navigation safety in Port Taranaki and its approaches.
7. In the drafting of the revised bylaws to date, officers have consulted with Port Taranaki Ltd, Port Taranaki harbour pilots, Maritime New Zealand and the regional sector's

Harbour Masters Sector Interest Group) to seek their early input and 'test' draft provisions.

8. Under section 156 of the LGA, the Council is now seeking to publicly notify and invite submissions on the revised amended bylaws.
9. Previously no submissions have been received on the Bylaws, reflecting public support for the regulation of navigation safety in the regions highest risk area.
10. A four-week submission period on the Proposed Bylaws is recommended - from 27 July to 21 August.
11. Thereafter, a hearing of any submissions will be held. Depending upon the outcomes of the public process, the revised bylaws for navigation safety should be adopted by the end of this calendar year.

Recommendations

That the Taranaki Regional Council:

a) receives this memorandum entitled *Review of the Navigation Bylaw for Port Taranaki and its Approaches*;

b) receives and adopts the draft revised bylaws;

c) approves the commencement of the special consultative process for the review of the revised bylaws in accordance with the LGA; and

d) notes that the special consultative process for the review of the *Navigation Safety Bylaw for Port Taranaki and its Approaches 2020* will be run concurrently with another special consultative process for the *River Control and Flood Protection Bylaw for Taranaki 2020*.

Background

12. The purpose of navigation safety is to ensure that different users can safely use shared waterways. Navigation safety is regulated by Maritime New Zealand under the *Maritime Transport Act 1994* (MTA) and by regional councils through the adoption of navigation safety bylaws under the MTA and using the LGA process for bylaw development and community consultation. Some responsibility for navigation safety is also undertaken by district councils through sign posting and community awareness.
13. Under the MTA, the Council has the **discretion** to regulate, prepare bylaws and control navigation safety in relation to any and/or all waters within its region, including inland waters and coastal waters out to 12 nautical miles.
14. The Council's navigation and safety bylaws were originally prepared in 1993 under the former *Harbours Act 1950*. Subsequent bylaws were later prepared and adopted in 2003 and 2009 (currently operative) under the *Local Government Act 1974*. Of note, the current bylaws apply only to Port Taranaki and its approaches. Maritime New Zealand retains responsibility for navigation safety in the areas outside the approaches to the Port. The primary regulatory tool used by Maritime New Zealand to carry out its responsibilities is *Maritime Rule Part 91*, which applies to all waters in New Zealand.
15. Under the LGA, any bylaws need to be reviewed generally every 10 years to ensure their continuing relevance and to adapt to changes in legislation, uses and expectations. Section 160A of the LGA also states that a bylaw is revoked if it has not been reviewed two years after the date on which the bylaw should have been reviewed. This therefore

gives the Council a two year period (i.e. until August 2021) in which to complete the bylaw review process.

16. As Members may recall, at the Policy and Planning Committee meeting of 4 February 2020, Council agreed to commence a review of the existing *Navigation and Safety Bylaws for Port Taranaki and its Approaches 2009*.

Review process to date

17. Council officers, with the assistance of Harbour Master Tony Parr, have reviewed the existing bylaws for Port Taranaki and its approaches to determine their efficiency and effectiveness and whether changes are necessary. Amongst other things, this assessment has involved considerations of:

    - Issues and experiences as identified by current users of Port Taranaki and its approaches (public and commercial) and the range of activities undertaken by each;
    - Changes to the *Maritime Transport Act 1994* (MTA), LGA and the Maritime Rules (in particular Part 91 Navigational Safety Rules).

18. Generally, the current bylaws were considered to be in good shape and remain relevant and appropriate. In particular, officers believe that the Council (through the current bylaws) and MNZ (through the MTA and maritime rules) have been successfully managing navigation in Taranaki waters for the last 10 years under the current framework. Notwithstanding, a number of changes were identified where amendments, deletions or additions to bylaw provisions were considered appropriate to give effect to changes in legislation or to address changing uses and demands within the bylaw area.

19. Council officers have undertaken a pre-notification engagement with key stakeholder to seek their early views, identify issues of concern, and 'test' new provisions or amendments before entering the public consultation phase. This involved officers consulted with Port Taranaki Ltd (including the Harbour Pilots) and Maritime New Zealand. Regional sector expert advice on draft provisions was also provided through the Navigation Safety Special Interest Group for the purposes of promoting inter-regional consistency and alignment.

20. In general, feedback received on the draft revised bylaw provisions was positive with some constructive and helpful suggestions made to improve the drafting and workability of the bylaws.

21. The pre-notification engagement does not prevent these parties from making official submissions through the special consultative process once the draft bylaws are notified.

Draft revised bylaws

22. In relation to suggested amendments to the current bylaws, changes were relatively minor to ensure they remain relevant, are legally robust and generally consistent with other navigation safety bylaws throughout the country.

23. A summary of the changes can be found in the Statement of Proposal document attached to this agenda memorandum but the following key changes are highlighted:

    - changing the water ski access lane to the boat access lane;
    - requirements for vessels to be seaworthy;
    - increased navigational requirements in the main navigation channel;

- more definitive management of temporary events;
- incident reporting requirements; and
- removal of redundant bylaw provisions.

24. In relation to suggested amendments to the current bylaws, officers were particularly interested in ensuring bylaw provisions did not duplicate matters already addressed in higher order regulation (for example the MTA or the Marine Rules).
25. The review also allows the Council to update the bylaws generally to accommodate planning best practice and advances in technology.

Special consultative process of the LGA

26. Under section 156 of the LGA, the Council must use the special consultative process as set out in the Act prior to adopting any new or amended bylaws. The purpose of the special consultative process is to ensure that the public have the opportunity to submit on the Proposed Bylaws.
27. The special consultative process further requires that the Council publicly notify and invite submissions on the draft revised bylaws and identify in that public notice where relevant information can be found. A copy of the public notice is also attached to this agenda.
28. As part of the proposed consultative process, officers have prepared a web page ready for consultation on the Proposed Bylaws. The website contains all of the relevant documentation to support the special consultative process and will continue to be updated over the course of the consultation to keep interested parties informed.
29. Of note, the special consultative process for the review of the *Navigation Safety Bylaw for Port Taranaki and its Approaches 2020* will be run concurrently with another special consultative process for the new *River Control and Flood Protection Bylaw for Taranaki 2020*.

Submissions and hearings

30. Officers recommend a four-week submission period on the draft revised bylaws - from Monday 27th of July until Friday 21st of August.
31. Following that, officers will review and report back to this Committee on any submissions received. Any submitters wishing to be heard in support of their submissions will be given the opportunity to do so. As such, a hearing (comprising of the Policy and Planning Committee members with delegated authority) may be required following receipt of feedback.
32. After any hearing, the Council will make its decisions regarding the draft revised bylaws. Depending upon the outcomes of the public process, the amended bylaws for navigation safety in Port Taranaki and its approaches should be adopted by the end of this calendar year.

Harbourmaster Annual Report

33. The contract the Council has with the harbourmaster requires an annual report to be provided. The harbourmaster, Mr Tony Parr, has provided a thorough report that is attached to this memorandum.

34. There have been no significant breaches of the requirements of the NZ Port and Maritime Safety Code, including the Port Taranaki Harbour Safety Management System in the period ending 30 June 2020. There have been no significant incidents concerning navigational safety in Port Taranaki and its Approaches over the same period. The levels of service in the LTP have been met.

35. Mr Parr will briefly present the report.

Decision-making considerations

36. Part 6 (Planning, decision-making and accountability) of the *Local Government Act 2002* has been considered and documented in the preparation of this agenda item. The recommendations made in this item comply with the decision-making obligations of the *Act*.

Financial considerations—LTP/Annual Plan

37. This memorandum and the associated recommendations are consistent with the Council's adopted Long-Term Plan and estimates. Any financial information included in this memorandum has been prepared in accordance with generally accepted accounting practice.

Policy considerations

38. This memorandum and the associated recommendations are consistent with the policy documents and positions adopted by this Council under various legislative frameworks including, but not restricted to, the *Local Government Act 2002*, the *Resource Management Act 1991* and the *Local Government Official Information and Meetings Act 1987*.

Iwi considerations

39. This memorandum and the associated recommendations are consistent with the Council's policy for the development of Māori capacity to contribute to decision-making processes (schedule 10 of the *Local Government Act 2002*) as outlined in the adopted long-term plan and/or annual plan. Similarly, iwi involvement in adopted work programmes has been recognised in the preparation of this memorandum.

40. Of note, affected iwi and hapū whose rohe includes areas that are covered by the Bylaws will be targeted in consultation to seek their views and input into the Proposed Bylaws.

Legal considerations

41. This memorandum and the associated recommendations comply with the appropriate statutory requirements imposed upon the Council.

Appendices/Attachments

Document 2497665: Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches

Document 2528391: Statement of Proposal for Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches

Document 2541186: Public notice for submissions on the Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches

Document 2541523: Harbourmaster Annual Report 2019/2020.

Seal

The *Taranaki Regional Council Navigation Safety Bylaws for Port Taranaki and its approaches 2020* was prepared by the Taranaki Regional Council under the provisions of section 33M of the Maritime Transport Act 1994 and are to be read in conjunction with the Maritime Rules and Regulations of New Zealand and the operating procedures of Port Taranaki Ltd, including the Port Harbour Safety Management document.

These bylaws were proposed at the Ordinary Meeting of the Taranaki Regional Council held on ___, confirmed at an Ordinary Meeting of the Council held _ 2020 and come into force on __ 2020.

DATED at Stratford on [*date to be confirmed*].

SIGNED by the TARANAKI REGIONAL COUNCIL

By the affixing of its common seal in the presence of

_____

M N MacLeod (Chairman)

_____

M J Nield (Director – Corporate Services)

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Table of contents

Part 1

Preliminary provisions

This section sets out the introduction, purpose and scope of the bylaws, including definition of key terms adopted in these bylaws.

1. Title and commencement

1.1 These bylaws are the *Taranaki Regional Council Navigation Bylaws for Port Taranaki and its Approaches 2020* (the bylaws).

1.2 These bylaws come into force on the date of the Taranaki Regional Council's special resolution on [DATE TO BE DETERMINED].

2. Purpose

2.1 These bylaws are made for the purpose of regulating navigation safety in Port Taranaki and its approaches and are to be read in conjunction with Maritime Rules, Part 91 Navigation Safety Rules[1] and Maritime Rules, Part 22 Collision Prevention[2] prepared by Maritime New Zealand (both of which are listed in Part 7 - Other regulations).

3. Application

3.1 These bylaws apply only within Port Taranaki and its approaches which extends 2.5 nautical miles from Moturoa Trig (NZMS 260 P19: 2599200E, 6237500N), as shown in the Map 1 [Harbour limits][3].

3.2 Nothing in these bylaws shall affect the operations of Port Taranaki Limited, except to the extent provided for by the relevant Acts and Regulations of New Zealand.

4. Definition of terms

4.1 In these bylaws, unless the context otherwise requires:

Access lane means the area designated as an access lane by the Taranaki Regional Council pursuant to navigation bylaws.

Accident has the same meaning as in section 2 of the *Maritime Transport Act 1994* (as set out below):

> means an occurrence that involves a ship and in which—
> (a) a person is seriously harmed as a result of—
> (i) being on the ship; or
> (ii) direct contact with any part of the ship, including any part that has become detached from the ship; or
> (iii) direct exposure to the wash of the ship or interaction (other than direct contact) between 2 ships; or
> (iv) being involved in the salvage of any ship—
> except where the injuries are self-inflicted or inflicted by other persons, or when injuries are to stowaways hiding outside the areas normally available to passengers and crew; or
> (b) the ship sustains damage or structural failure that—
> (i) adversely affects the structural strength, performance, or seaworthiness of the ship; or
> (ii) would normally require major repair or replacement of the affected component; or
> (iii) poses a threat to the safety of people on board the ship; or
> (c) there is a complete or partial failure of machinery or equipment that affects the

[1] *https://www.maritimenz.govt.nz/rules/part-91/*
[2] *https://www.maritimenz.govt.nz/rules/part-22/*
[3] *In all other areas of the Taranaki region, other than Port Taranaki and its approaches, Maritime New Zealand is responsible for regulating navigation safety.*

seaworthiness of the ship; or

(d) there is a loss of, or damage to, or movement of, or change in the state of, the cargo of the ship which poses a risk to the ship or other ships; or

(e) there is a significant loss of, or significant damage to, property (not being the cargo carried by the ship) or the property of any person (whether or not on board the ship), whether or not the loss or damage arises from an interaction between 2 ships; or

(f) there is a loss or escape of any substance or thing that—

(i) may result, or has resulted, in serious harm to any person; or

(ii) may pose a risk, or has resulted in damage, to the ship or other ships; or

(iii) may pose a risk, or has resulted in damage, to any property (whether or not on board the ship); or

(g) a person is lost at sea (whether or not subsequently found) or is missing; or

(h) the ship is foundering, capsizing, being abandoned, stranding, missing, or has foundered, capsized, been abandoned, stranded, been in a collision, or has had a major fire on board.

Act means the Maritime Transport Act 1994.

Bylaw means the *Taranaki Regional Council Navigation Bylaw for Port Taranaki and its Approaches 2020* (and for the avoidance of doubt, includes the most recent version of the Maritime Rules Part 91 Navigation Safety Rules and Part 22 Collision Prevention, prepared by Maritime New Zealand, with all necessary modifications and exceptions).

Council means the Taranaki Regional Council.

Enforcement officer means any person who has been appointed by the Council under section 33G of the *Maritime Transport Act 1994* for the purpose of monitoring, controlling and enforcing the operations of vessels, pursuant to these bylaws.

Harbourmaster has the same meaning as in section 2 of the *Maritime Rules – Part 91 Navigation Safety Rules* (as set out below):

means a person appointed as a harbourmaster under Part 3A of the Act.[4]

Maritime Rules means maritime rules made under the Maritime Transport Act 1994.

Master has the same meaning as in section 2 of the *Maritime Rules – Part 91 Navigation Safety Rules* (as set out below):

means any person (except a pilot) having command or charge of a vessel.

Navigate has the same meaning as in section 2 of the *Marine Rules - Part 91 Navigation Safety Rules* (as set out below):

means the act or process of managing or directing the course of a vessel on, through, over, or under the water.

Navigation bylaw means a bylaw made under section 33M of the *Maritime Transport Act 1994*.

Owner has the same meaning as in section 2 of the *Marine Rules - Part 91 Navigation Safety Rules* (as set out below):

(a) in relation to a ship registered in New Zealand under the Ship Registration Act 1992, means the registered owner of the ship:

(b) in relation to a ship registered in any place outside New Zealand, means the registered owner of the ship: Maritime Rules MNZ Consolidation 1 November 2016 2

(c) in relation to a fishing ship, other than one to which paragraph (a) or paragraph (b) of this definition applies, means the person registered as the owner under section 57 of the Fisheries Act 1983:

[4] For the functions and powers of the harbourmaster refer to sections 33E and 33F of the Maritime Transport Act 1994.

(d) in relation to a ship to which paragraph (a) or paragraph (b) or paragraph (c) of this definition applies, where, by virtue of any charter or demise or for any other reason, the registered owner is not responsible for the management of the ship, includes the charterer or other person who is for the time being so responsible:
(e) in relation to an unregistered ship or a registered ship that does not have a registered owner, means the person who is for the time being responsible for the management of the ship:

Port Taranaki means that area defined in Map 1 [Harbour limits] of these bylaws.

Port company means Port Taranaki Limited or its subsidiaries or successors, acting through its agents or employees.

Reserved area means an area reserved by the Council for a specified navigation safety purpose as set out in these bylaws.

Small vessel means a vessel that is less than 30 metres in overall length, or a seaplane that is less than 30 metres in overall length and is on the water, regardless of the common or intended usage and the mode of power of that vessel or seaplane.

Vessel has the same meaning as in section 2 of the Maritime Rules *Part 91 Navigation Safety Rules* (as set out below):

means every description of boat or craft used in navigation, whether or not it has any means of propulsion; and includes:
(a) a barge, lighter, or other like vessel;
(b) a hovercraft or other thing deriving full or partial support in the atmosphere from the reaction of air against the surface of water over which it operates;
(c) a submarine or other submersible; and
a seaplane while it is on the surface of the water.

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Part 2

Administrative matters

5. Navigation Safety Rules to form part of bylaws

5.1 Subject to sections 6 [Officers not affected] to 12 [Areas set aside for temporary events] the most current version of the Maritime Rules, Part 91 Navigation Safety Rules and Part 22 Collision Prevention shall have effect with all necessary modifications and exceptions, as if those requirements were requirements under these bylaws.

6. Officers not affected

6.1 Sections 7 [Reserve Area A], 8 [Reserve Area B], 9 [Reserve Area C], 10 [Boat access lane], 11 [Anchorage of vessels waiting to enter Port Taranaki], 12.3 [Areas set aside for temporary events], 14 [Moving prohibited zone], shall not apply to the harbourmaster or any enforcement officer while acting in the course of his or her duty.

Part 3

Reserved areas and restrictions

7. Reserved Area A

7.1 Reserved Area A refers to that part of Port Taranaki and its approaches marked as Reserved Area A in Map 2 [Reserved areas and restrictions], being the area inside a line from Blyde Wharf to the end of the Lee Breakwater, excluding the boat access lane.

7.2 Reserved area A is reserved for the purposes of providing an area where a speed restriction of 5 knots applies to vessels within that area.

7.3 No person shall propel or navigate a vessel (including a vessel towing a person or an object) in Reserved Area A at a speed exceeding 5 knots.

7.4 Swimming is permitted within Reserved Area A, however, no person shall swim, dive or otherwise play on/near a boat ramp or jetty, or in a location or manner which may cause danger to the swimmer from boating activities, or which may impede access by any vessel.

8. Reserved Area B

8.1 Reserved Area B refers to that part of Port Taranaki and its approaches marked as Reserved Area B in Map 2 [Reserved areas and restrictions].

8.2 Reserved Area B is reserved for the purposes of providing an area where the speed restrictions set out in Maritime Rules, Part 91.6(1)(b) Navigation Safety Rules do not apply.

8.3 The speed restrictions set out in Maritime Safety Rules, Part 91.6(1)(b) Navigation Safety Rules do not apply to vessels within Reserved Area B.

9. Reserved Area C

9.1 Reserved Area C refers to that part of Port Taranaki and its approaches marked as Reserved Area C in Map 2 [Reserved areas and restrictions].

9.2 Reserved Area C is reserved for the purposes of ensuring safe and efficient Port operations.

9.3 No person shall cause any small vessel to enter Reserved Area C, without the permission of the harbourmaster.

9.4 No person shall jump, dive or swim from or off any wharf or jetty in Reserved Area C, without the permission of the harbourmaster.

10. Boat access lane

10.1 The Boat access lane refers to that part of Port Taranaki and its approaches marked as Boat access lane on Map 2 [Reserved areas and restrictions].

10.2 The Boat access lane is declared for the purposes of providing access into Reserved Area B for small vessels launched and recovered from Ngāmotu Beach.

10.3 No person shall propel or navigate a vessel (including a vessel towing a person or an object) in in the boat access lane at a speed exceeding 5 knots.

11. Anchorage of vessels in the main navigation channel

Except for small vessels, the master of any vessel must not anchor within the main navigation channel, except where:

a) an emergency situation arises;
b) the pilot of the vessel recommends the vessel anchor in response to the emergency; and
c) the harbourmaster is informed of the anchorage as soon as is practicable.

12. Areas set aside for temporary events

12.1 The harbourmaster may designate an area(s) for the purpose of temporary events in accordance with section 16 [Authorization of temporary events].

12.2 Areas set aside for temporary events may be identified by way of flagging and/or otherwise marking the area for the purpose of the temporary event.,

12.3 No person may carry out any activity other than the activities for which the area has been flagged or marked.

Part 4

Operating requirement

13. Vessels to be seaworthy

13.1 The master and the owner of any vessel must keep the vessel in a seaworthy condition at all times.

13.2 The master and the owner of a vessel that is not seaworthy must inform the harbourmaster as soon as practicable and within 24 hours.

13.3 The harbourmaster may give direction to the master or the owner of any vessel that is not seaworthy, to move the vessel to an alternative location or remove it from the waters within a specified time.

13.4 Except for the harbourmaster, no person shall operate any vessel that is not seaworthy except to clear the main navigation channel, to anchor or moor in safety or to comply with the directions of the harbourmaster.

13.5 If the master or the owner of the vessel fails to move a vessel in accordance with the direction given under section 13.3, (above) the harbourmaster may move that vessel to a position where it is no longer a hazard to navigation, or remove it from the water.

13.6 The harbourmaster may provide written approval for vessels that are not seaworthy to be anchored or moored, subject to conditions as appropriate, to ensure navigation safety.

14. Moving prohibited zone

14.1 A moving prohibited zone extending 50 metres to each side, 50 metres astern, and 300 metres ahead of any vessel of 50 metres or more in length or any vessel with tugs in attendance following the main navigational channel into and out of the harbour.

14.2 Except for pilotage vessels and tugs in attendance, the master of any vessel must not navigate a vessel within a moving prohibited zone.

Part 5

Reporting and permitting

15. Collisions and accidents

15.1 The master of any vessel that:

a) has been involved in any accident;
b) has been involved in a collision with any vessel or property, or has been sunk, grounded, or become stranded;
c) by reason of accident, fire, defect or otherwise, is in such a condition as to affect its safe navigation or to give rise to danger to any person, other vessels or property;
d) in any manner gives rise to an obstruction; or
e) causes damage to any navigation aid or structure, or to anything on the structure;

must:

f) report the incident to the harbourmaster as soon as practicable;
g) within 48 hours, fill out an online report[5]; and
h) comply with any accident reporting requirements of the Maritime Transport Act 1994.

15.2 A report under section 15.1 (above) must include:

a) a full description of any injury to persons and their full names and their addresses;
b) a full description of any damage to vessels, navigation aids or structures including discharges into the sea of any pollutants;
c) the name(s) and address(es) of any persons in charge of the vessel;
d) the time and date of the occurrence;
e) an outline of the events relating to the occurrence; and
f) any additional information requested by the harbourmaster in the interest of maintaining navigation safety.

16. Authorisation for temporary events

16.1 Any person intending to conduct a temporary event that requires to:

a) temporarily suspend the application of part or all of the sections 9 to 12; and/or
b) temporarily reserve the area for the purpose of that activity

must apply to the Council using the online form[6].

16.2 If the harbourmaster is satisfied that an application may be granted without endangering the public, it may grant the application for a specified period or periods and subject to such conditions as the Council may specify in the interests of maritime safety and taking into account the commercial requirements of the Port Company.

16.3 No grant of an application under section 16.2 (above) shall have effect unless the applicant:

a) publicly notifies in one or more daily newspapers circulating in the New Plymouth District not less than seven days nor more than 14 days before

[5] *Collisions and accidents: Web address for online form.*
[6] *Authorisation for temporary events: Web address online form.*

the commencement of the activity;

(i) the date(s) and time(s) of the activity; and

(ii) the details of the suspension or reserved area; and

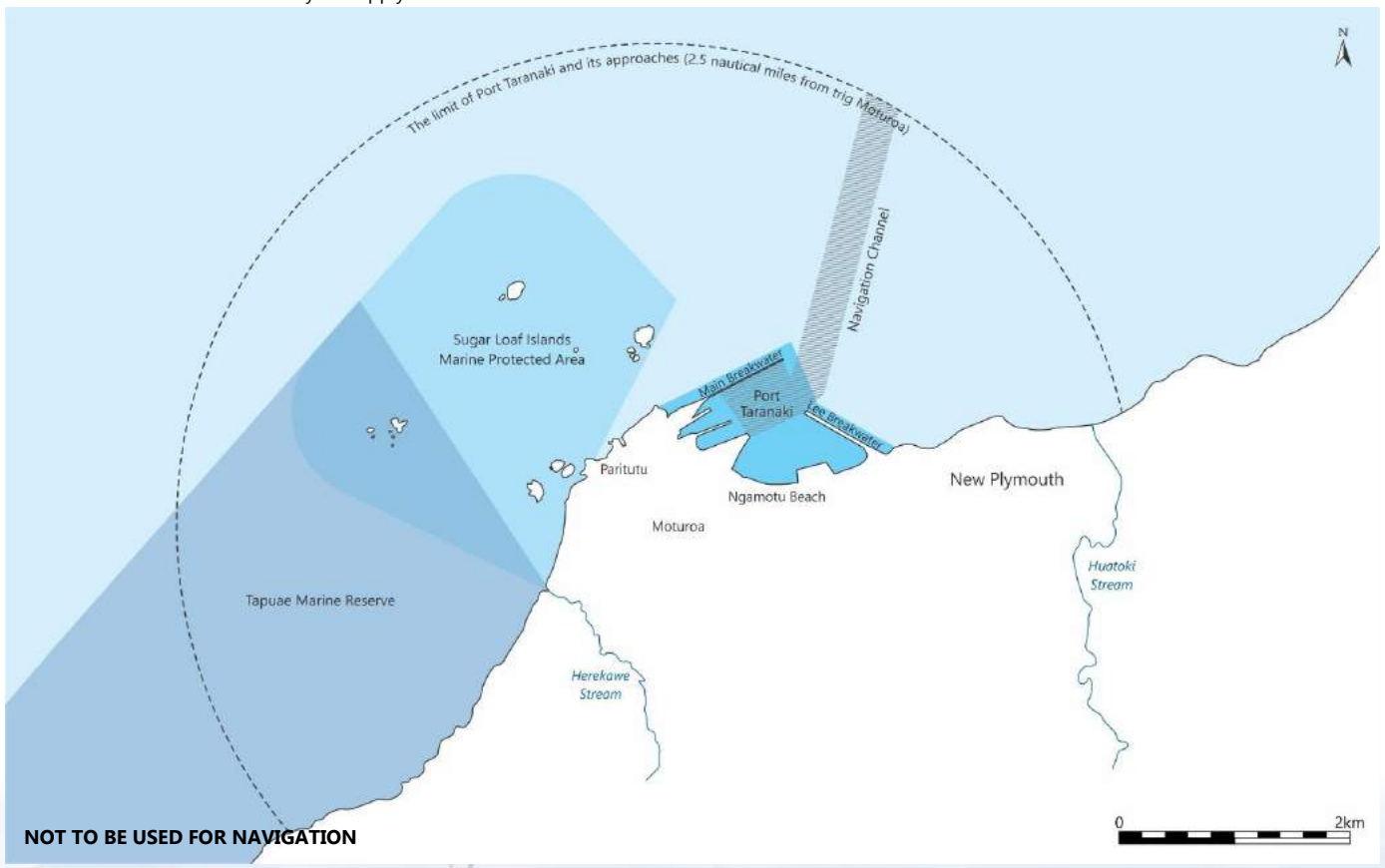
b) notifies any other affected parties as requested by the harbourmaster.

Part 6

Maps

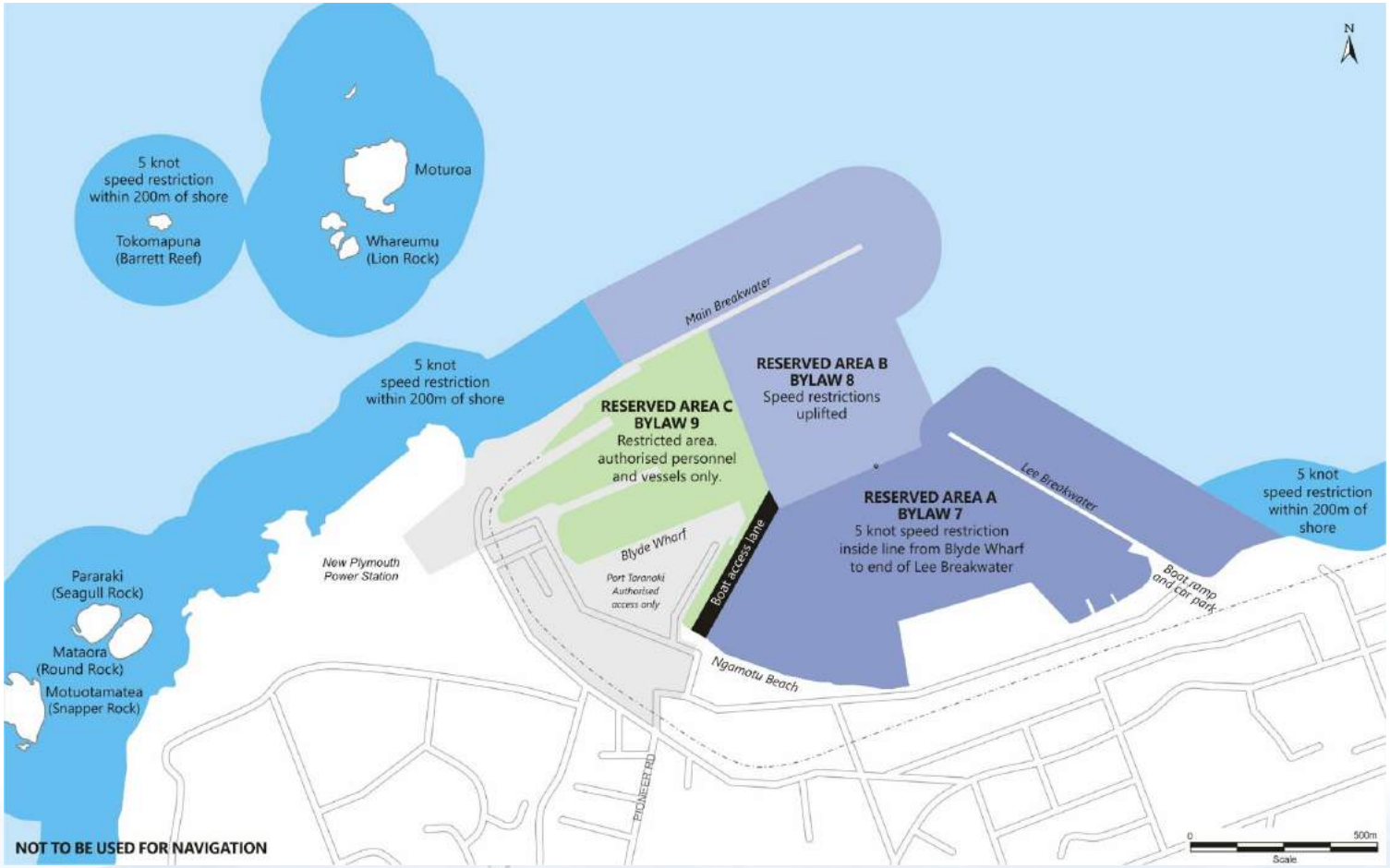
Map 1 – Harbour limits

This map identifies the area to which these bylaws apply.



Map 2 – Reserved areas and restrictions

This map identifies the reserved areas and areas with speed restrictions as set out in sections 7 to 10.



24 July 2020

Statement of Proposal

Proposed Navigation bylaws for Port Taranaki and its approaches

Statement of Proposal

The Taranaki Regional Council (the Council) is seeking public comment on a proposal to amend the *Navigation Safety Bylaws for Port Taranaki and its Approaches 2009*. The document *Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches* includes proposed changes to the current bylaws.

The Bylaws have been developed to ensure navigation safety for users of Port Taranaki and its approaches. The current Bylaws were adopted in October 2009.

Section 159 of the *Local Government Act 2002* (LGA) requires that all Council Bylaws be reviewed every ten years, with two years to adopt a reviewed Bylaw.

Image: Port Taranaki and Ngāmotu beach.

Purpose of the Bylaws

The purpose of the Navigation Safety Bylaws is to ensure that different users of the Port Taranaki area and its approaches can safely use and share the area where the bylaws apply, whether it is for recreational or commercial purposes. The Bylaws are in addition to the requirements of the *Maritime Transport Act 1994* and the *Maritime Rules* and only apply to Port Taranaki and its approaches (2.5 nautical miles around the Port).

Port Taranaki and its approaches have the highest risk to navigation safety in the region due to the high volume of users and the wide variety of activities that occur within that confined space. Outside this area, Maritime New Zealand retains responsibility for navigation safety.

Review of bylaws under the LGA

The purpose of local government is to:

- enable democratic local decision-making and action by, and on behalf of, communities; and
- to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.

In order to effectively manage navigation safety on water the Council has the optional ability, under the LGA together with the *Maritime Transport Act 1994,* to develop specific rules to manage navigation safety through bylaws.

The Council also needs to keep the Navigation Safety Bylaws current and fit for purpose to reflect changing uses and previous experiences gained over the life of the current Bylaws.

The best way to do this is through a review of the current Bylaws, including formal consultation with those affected under a prescribed process outlined in the LGA.

Legislative compliance

Under **section 155** of the LGA in the making of the Navigation Safety Bylaws the Council has to consider whether:

- the proposed Bylaws are the most appropriate way of addressing a perceived problem;
- the proposed Bylaws are the most appropriate form of Bylaws, and
- the proposed Bylaws are not inconsistent with the *New Zealand Bill of Rights Act 1990*.

Appropriateness of Bylaws to address a perceived problem

To that end, the Council has identified in the table below alternative methods to using Bylaws to manage risks to navigation safety in Port Taranaki and its approaches.

Options considered	Reasons for rejection or acceptance
Revoke bylaws and transfer jurisdiction to Maritime New Zealand	• No bylaws means that the Council has no regulatory responsibilities (other than those relating to the Harbour Master granted under the *Maritime Transport Act 1994*) to enforce appropriate behaviour and ensure navigation safety within the Port Taranaki and its approaches. • Without bylaws, monitoring and enforcement responsibilities reverts back to Maritime New Zealand, which may not have local capacity to adequately manage risks to navigation safety within the Port Taranaki and its approaches. **Outcome - Rejected**
Revoking bylaws and include rules in the Coastal Plan for Taranaki	• The *Coastal Plan for Taranaki* is an alternative regulatory tool provided through the *Resource Management Act 1991* (RMA). The RMA does not include provisions that address maritime safety or navigation as these are more appropriately addressed under the *Maritime Transport Act 1994* and other legislation. • Regulating maritime issues under the RMA is therefore inappropriate and not considered an appropriate option. **Outcome - Rejected**
Status quo – the Council maintains bylaws for navigation safety matters in the port and its approaches in accordance with the LGA.	• The Council is aware of and can be directly involved in matters of local significance. • Is consistent with the Memorandum of Understanding that the Council has with Maritime New Zealand (and other Councils) in which all parties agree to adopt and implement the *New Zealand Port & Harbour Marine Safety Code*. It is an expectation of the code that Councils will use their statutory powers to manage and maintain their harbours and navigable waters so that they are fit for the intended uses. This includes putting in place appropriate bylaws to manage maritime safety risks. • Bylaws serve to assist the Port Company as a risk control for the conduct of their own marine operations in the port and their associated obligations under the Health and Safety Act 1995 and the Port Company Act 1988. **Outcome - Accepted**

In addition to the assessment above, the Council also considered whether the spatial extent of bylaw jurisdiction was still appropriate[1]. Three broad options were considered:

- **Status quo:** Spatial extent and geographical coverage of the bylaws to be confined to Port Taranaki and its approaches.
- **Coastal waters:** Spatial extent and geographical coverage of the bylaws is extended to include all Taranaki coastal waters out to 12 nautical miles.
- **All Taranaki coastal and fresh waters:** Spatial extent and geographical coverage of the bylaws is extended to include all Taranaki coastal waters out to 12 nautical miles plus all inland waters.

The assessment determined that the *status quo* option was appropriate given the level of pressure and risk that exists specific to the Port and its approaches in comparison with other areas around Taranaki. This approach involves applying resources where the risks are greatest with Maritime New Zealand retaining responsibility for the other areas.

[1] The options were considered and decided by the Council at the Policy and Planning Committee Meeting of February 4th 2020.

Most appropriate form of Bylaw

Under the LGA, the Council must determine whether the Navigation Safety Bylaws are in the most appropriate form (e.g. standalone, amendment to existing document, consolidation with other bylaws). The Council has determined that a standalone document is appropriate. There are a number of reasons why the Council believes a standalone document is the most appropriate form of Bylaw.

A standalone document:

1. Holds all of the relevant regulations in one place and is easily accessible
2. Is targeted and focusses only on navigation safety
3. Ensures that the Bylaws and the matters being addressed cannot be confused with others
4. Is relatively short and concise and can be easily printed or referenced in its entirety
5. Becomes a repository for all the legal matters associated with maritime navigation safety within the Port and its approaches.

New Zealand Bill of Rights Act 1990

Under section 155(3) of the LGA the Council must determine that the Navigation Safety Bylaws are not inconsistent with the *New Zealand Bill of Rights Act 1990*.

The *Bill of Rights Act 1990* protects the civil and political rights of all New Zealanders. The Act covers:

- Life and security of the person
- Democratic and civil rights
- Non-discrimination and minority rights
- Search, arrest and detention
- Criminal procedure
- The right to justice

The Council considers the Bylaws as proposed here, are not inconsistent with the *Bill of Rights Act 1990*.

Image: Port Taranaki from the chimney.

Summary of changes

An internal review of the efficiency and effectiveness of the existing Navigation Safety Bylaws has now been completed. In most cases it has been decided that the existing rules are effective for ongoing navigation safety within the areas that the bylaws cover. However, in the ten years since the last bylaws were reviewed and updated the Council has noted changes to the use of the area as well as legislative changes that need to be reflected in the bylaws going forward.

Changes are summarised in the Table below.

Description of change or addition	Reason for change
Changing the water ski access lane to the boat access lane	• Water skiing is no longer a common recreational use of the harbour. Jet skis and towed 'biscuit boards' are more common. • The water ski lane does not have egress and ingress lanes within it. There is insufficient room in the lane for this and therefore it is potentially dangerous for towing vessels coming and going form the beach. Re-designating the access lane for 'boat access' will address this issue. • Ngāmotu Beach is increasingly popular for swimmers. Extending the five knot rule to the entire beach waterfront will make the beach a safer place. • Section **2.7 [Water-ski access lane]** in current Bylaws is amended by section **10 [Boat access lane]** in Proposed Bylaws and references in the associated maps updated to refer to the boat access lane.
Vessels must be seaworthy	• Experience over the last ten years that the Bylaws have been operative is that vessels which are not seaworthy increase risk of damage to other users, property and the environment and may become a risk to navigation safety. • Currently there is no provision for the harbourmaster to be informed of vessels that are not seaworthy. In addition, the harbourmaster requires a regulatory mechanism to ensure that vessels that are not seaworthy are managed and located such that they do not produce risks to other users, property or the environment. • New section **13 [Vessels to be seaworthy]** included in Proposed Bylaws.
Increasing regulations in main navigation channel and Port area	• The risk of collision and/or accident is highest within the Port and within the main navigation channel due to the high volume of traffic, confined space and variety of vessel types. There is a need to ensure that the high traffic areas are managed so as to reduce risks and ensure personnel safety. • Large vessels cannot manoeuvre easily or change course without increased risk, the most appropriate way to reduce risk is to ensure that large vessels have right of way within these areas. This is achieved through sections **11 [Anchorage of vessels in the main navigation channel]** and **14 [Moving prohibited zone]** (section 2.11 [Moving safety zones] in current Bylaws).
Increased requirements for temporary events that involve uplifting of bylaws or restricting access to general public	• Organised events are becoming more common and more definitive management is required. If an activity will require the uplifting of bylaw provisions or the temporary restrictions to public access over the duration an updated process needs to be in place to ensure that the harbourmaster is provided with the necessary information and can ensure that health and safety matters are fully considered. • Amendments include more specific directions to event applicants to provide the harbourmaster with appropriate information. • The general public also need to be kept informed by event holders if an event will impact or restrict access to the Port/harbour area. Increased requirements for public notices is recommended and additional consultation with other parties encouraged through the online form. • New sections **12 [Areas set aside for temporary events]** and **16 [Authorisation for temporary events]** are proposed to replace section 2.9 [Temporary events] in current Bylaws.
Incident reporting	• Current bylaws do not have any reporting requirements for collisions or accidents. • The harbourmaster is generally kept informed, however, a consistent method of reporting incidents is necessary to ensure that any issues are captured and can form part of any future assessment of navigation safety within the Port and its approaches. • New section **15 [Collisions and accidents]** as well as associated online reporting form is recommended.
Removal of redundant bylaw provisions	• A number of bylaw provisions in the current bylaws are recommended to be revoked: o Small vessels to stop on demand – Under section 33F (1) (g) of the *Maritime Transport Act 1994* harbourmasters can require any person in charge of a ship or seaplane to stop and give his or her name and address and is not limited to small vessels only. This makes section **2.8 [Small vessels to stop on demand]** of the current bylaws redundant. o Collision Prevention – redundant as Maritime Rule Part 22 applies to all vessels regardless of whether required by bylaws or not. This makes section **2.12 [Collision Prevention]** of the current bylaws redundant.

Public consultation and submissions

Copies of the Proposed *Navigation Safety Bylaws for Port Taranaki and its Approaches* are available:

- Online at www.trc.govt.nz/river-control-bylaws/
- At the Taranaki Regional Council offices at 47 Cloten Road, Stratford, 4352
- On request from the Taranaki Regional Council by:
    - emailing bylaws@trc.govt.nz
    - or phoning 0800 736 222.

The Taranaki Regional Council welcomes your views and feedback.

Any organisation or member of the public may make a submission on the Proposed *Navigation Safety Bylaws for Port Taranaki and its Approaches*.

A submission is a statement in support of, or in opposition to, any part of this statement of proposal or the Proposed *Navigation Safety Bylaws for Port Taranaki and its Approaches*.

Submissions may focus on:

- The effectiveness of the proposed bylaws in managing risks to navigation and safety in Port Taranaki and its approaches;
- Identifying any cross boundary or management issues; and
- Identifying any gaps or additional activities required to manage risks to navigation and safety in Port Taranaki and its approaches.

To have your say, you can:

- Make an on-line submission at **www.trc.govt.nz/river-control-bylaws/**
- Emailing your submission to bylaws@trc.govt.nz and including 'Submission on the Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches' as the subject heading; or
- by posting your submission to Taranaki Regional Council, Private Bag 713, Stratford 4352 and including as the subject 'Submission on the Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches'.

Public submissions start at 8am on Monday 2 July 2020 and close at 5pm on Friday 21st August 2020.

When making a submission:

- Clearly state your name, address, email, telephone number and preferences on being heard at a hearing;
- State the most important points you want the Taranaki Regional Council to consider;
- Make your comments as specific as possible; and
- Include the relevant section to which your comments refer.

Hearings relating to the Proposed Bylaws will be scheduled following receipt of submissions.

Review of the Navigation Safety Bylaws for Port Taranaki and its Approaches

Taranaki Regional Council

Pursuant to section 156 of the Local Government Act 2002, the Taranaki Regional Council gives notice that it is reviewing the *Navigation Safety Bylaws for Port Taranaki and its Approaches*.

The *Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches* as well as the Statement of Proposal and supporting documentation, is available:

- On the Taranaki Regional Council website at www.trc.govt.nz/navigation-bylaw-review/
- As hard copies available on request during office hours from the Taranaki Regional Council premises at 47 Cloten Road, Stratford.

The Taranaki Regional Council now invites feedback on the *Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches*.

Feedback can be made through:

- Completion of the online submission form at www.trc.govt.nz/navigation-bylaw-review/
- Emailing Taranaki Regional Council at bylaws@trc.govt.nz and including as the subject 'Submission on the Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches'.
- Posting your submission to Taranaki Regional Council, Private Bag 713, Stratford 4352 and including as the subject 'Submission on the Proposed Navigation Safety Bylaws for Port Taranaki and its Approaches'.

The closing date for feedback is the 21st of August 2020.

For further information contact: Taranaki Regional Council, Private Bag 713, Stratford, phone 0800 736 222 or email bylaws@trc.govt.nz

Mike Nield
Acting Chief Executive
Taranaki Regional Council

Working with people | caring for Taranaki

TARANAKI like no other

MEMORANDUM

HARBOURMASTER 2019/20 REPORT

- There have been no significant breaches of the requirements of the NZ Port and Maritime Safety Code, including the Port Taranaki Harbour Safety Management System during the year. There have been no significant incidents concerning navigational safety in Port Taranaki and its Approaches over the same period. The levels of service in the LTP have been met.
- The number of recreational and small commercial vessels using the ramp and pontoon facilities at the Lee Breakwater continues to grow. The facilities are very stretched at busy periods in the summer months especially. Data gathered by Maritime New Zealand over 2019/20 indicates a 20% growth in recreational boat ownership in NZ.
- The principal work stream over the period has been the review of the *Navigation Bylaws for Port Taranaki and its Approaches (2009).* Briefed separately.
- A separate work stream has been to establish a limited managed anchorage area for merchant vessels in the North Taranaki Bight. At present there are no restrictions on where and when a vessel may anchor in the Bight. Risk is presented where a combination of weather conditions, poor holding ground and proximity to shore can potentially make anchorage in the Bight unsafe. This is a combined TRC/Port Taranaki Limited/Maritime New Zealand project. The aim of the project is to mitigate the risk of a vessel dragging its anchor and grounding in poor weather conditions (e.g. Lake Triview in 2014).
- The Harbourmaster has participated in Maritime New Zealand's *'No Excuses'* national campaign for recreational boating safety over the summer period. The Taranaki approach has been one of delivering education and awareness to the recreational boating public before they proceed out to the port area. Approximately 600 copies of a TRC published guide to recreational boating in the Port Taranaki area have been distributed around the region.
- The Port Company has undergone a significant restructuring over the period which has included the establishment of a Head of Operations position. The Port Company continues to employ four harbour pilots,

including one under training, enabling 24/7 port availability. 19 Pilotage Exemption Certificates are active for the port.

- The Port Company continues with a review to improve ship berthing arrangements at the port, making full use of the wharves' shore tensioning mooring system, bollard and fendering arrangements. The review aims to make fuller use of port assets by reducing, where and when possible, the incidence and duration of vessel exclusion periods due to weather conditions.
- Maintenance dredging of the main harbour channel and berths was undertaken in the summer. A check survey of the channel was undertaken in June revealing some silting at the end of the main breakwater but not sufficient to compromise the channel. Harbour depths are adequate for vessels using the port.
- Key stakeholder engagement has occurred during the year particularly during the summer months.
- Conducted an annual review of the Port and Harbour Safety Code with PTL.
- Over the next twelve months the Harbourmaster will:
    - Continue with the duties as set out in the harbourmaster contract (e.g. marine panel, monitoring bylaw compliance, engagement with the harbour masters SIG group, and annual review of the Port and Harbour Safety code).
    - Continue with the anchorage project.
    - Be involved with consultation for the reviewed Bylaws.
    - Participate in Maritime New Zealand's summer recreational boating safety campaign.
    - Work with the Port Company to establish a north cardinal navigation mark marking shoal water off Ngamotu Beach.

MEMORANDUM
Policy & Planning

Date 21 July 2020

Subject: **Making of River Control and Flood Protection Bylaws for Taranaki**

Approved by: S R Hall, Director - Operations

M J Nield, Acting Chief Executive

Document: 2489039

Purpose

1. The purpose of this memorandum is to present for Members' consideration the proposed *River Control and Flood Protection Bylaws for Taranaki 2020* (Proposed Bylaws) and seek approval to undertake the special consultative process on the Proposed Bylaws in accordance with the *Local Government Act 2002* (LGA).

Executive summary

2. Floods are New Zealand's most common and costly natural hazards and can have dramatic social and economic consequences.
3. To manage significant flood risks to urban areas, the Taranaki Regional Council (the Council) maintains six river control and flood schemes in the region, as well as an extensive network of hydrological equipment to monitor rainfall and river levels.
4. Council river control and flood schemes represent $13.7M worth of assets and comprise of floodways, defences against water (such as stopbanks, floodgates, channels, bunds, dams, groynes etc), areas of vegetation protection and other equipment and infrastructure that support the ongoing use of the infrastructure.
5. To protect these assets from damage or destruction, the Council has prepared the attached bylaws under the LGA for public consultation.
6. The purpose of the Proposed Bylaws is to provide the Council with a regulatory mechanism to better safeguard its flood protection and river control infrastructure.
7. The Proposed Bylaws only apply to those assets owned and operated by the Council. They do not apply to privately owned infrastructure or infrastructure that is owned or operated by district councils.
8. Under section 156 of the LGA, the Council must use the special consultative process as prescribed prior to the adoption of new or amended bylaws.

9. The special consultative process further requires that the Council publicly notify and invite submissions on the Proposed Bylaws. A four-week submission period on the Proposed Bylaws is recommended - from 27 July to 21 August.

10. Thereafter, a hearing of any submissions may be held. Depending upon the outcomes of the public process, new bylaws for river control and flood protection should be adopted by the end of this calendar year.

Recommendations

That the Taranaki Regional Council:

a) receives this agenda memorandum *Making of River Control and Flood Protection Bylaw for Taranaki*

b) receives and adopts the attached proposed *River Control and Flood Protection Bylaw for Taranaki 2020* and supporting documentation

c) approves the commencement of the special consultative process for the making of new bylaws in accordance with the LGA

d) notes that a hearing may be required to hear submissions made on the proposed bylaws

e) notes that the special consultative process for the making of the *River Control and Flood Protection Bylaw for Taranaki 2020* will be run concurrently with another special consultative process for the review of the *Navigation Safety Bylaw for Port Taranaki and its Approaches*.

Background

11. Floods are New Zealand's most common and costly natural hazard and can have dramatic social and economic consequences. As part of managing flood risks, the Council has built and maintains six flood protection schemes where there are significant flood threats to urban and/or built-up areas, roads, and productive farmland. These are:

    11.1 the Lower Waiwhakaiho River Flood Control Scheme;

    11.2 the Lower Waitara River Flood Control Scheme;

    11.3 the Okato Scheme;

    11.4 the Makuri Stream Management Scheme;

    11.5 the Opunake Flood Control Scheme; and

    11.6 the Waitotara Scheme.

12. The Council also monitors rainfall and river levels using an extensive network of equipment that is an essential component of the Council's flood warning system.

13. Collectively, the Council's river control and flood schemes represent $13.7M worth of assets. The schemes comprise of floodways, defences against water (such as stopbanks, floodgates, channels, bunds, dams, groynes etc), and areas of vegetation protection, plus other equipment and infrastructure that support the ongoing use of the infrastructure.

14. Despite the significance of these schemes, both as a costly asset plus their vital role in protecting people, livelihoods and communities, currently they have limited regulatory protection from damage or destruction by people (either inadvertently or deliberately) working on or near our river control and flood schemes. Such activities might include:

- Construction or placement of new infrastructure over, under or through a stopbank or floodwall, which may weaken the structure or provide an alternative pathway for floodwaters;
- Stock damage to stopbanks which may weaken stopbank structure;
- Structures being built in floodways which may alter the direction of floodwaters;
- Removing and damaging flood protection vegetation, which may destabilizes banks during flood; or
- Structures being built that may prevent access for necessary maintenance of assets.

15. The *Public Works Act 1981* provides some protection for survey benchmarks, but these protections do not extend further to the infrastructure that manages flood protection.
16. Section 149 (c) of the LGA empowers the Council to establish bylaws for "*flood protection and flood control works undertaken by, or on behalf of, the Council*". Given the above, officers have developed draft bylaws for Members' consideration. They are similar in kind to those adopted elsewhere around the country such as Environment Canterbury, Otago Regional Council and the Bay of Plenty Regional Council.

Content of the Proposed Bylaws

17. The purpose of the Proposed Bylaws is to provide the Council with a regulatory mechanism to better protect its flood protection and river control infrastructure, and hydrological equipment.
18. The Proposed Bylaws only apply to those assets owned and operated by the Council. They do not apply to privately-owned infrastructure or infrastructure that is owned or operated by district councils.
19. The Proposed Bylaws are set out in six parts:

    19.1 Part 1 - Preliminary provisions

    This part includes the legal title, commencement date, purpose, application and definition of key terms used in the Proposed Bylaws.

    19.2 Part 2 - Activities under the Proposed Bylaws

    This part identifies what activities require authority from the Council before undertaking. These are activities associated with floodways, defences against water, flood protection vegetation, hydrological devices, equipment and survey benchmarks that may alter or affect the functionality of the assets or alter or impede the natural flow of water within a channel.

    19.3 Part 3 - Land entry

    This part authorises Council officers undertaking inspection or maintenance activities to enter onto privately owned land for access purposes. Because the Council owns much of the land where the assets are located, the use of the land entry bylaws is only necessary for those few instances where the inspection and maintenance of Council managed assets require access through private land.

    Entry onto privately owned land can only be undertaken after officers have complied with the prescribed notification requirements set out in this part.

This part also has provision for private adjacent landowners to request to manage Council managed watercourses to avoid the use of herbicides in the management of the watercourse.

19.4 Part 4 - Applying for an authority

Part 4 prescribes the process in which anyone can request authority from the Council to undertake activities identified in Part 2 Authority will only be granted once the Council is satisfied that the activity or works are to be located and undertaken in a manner that will not create any risk to the functionality or performance of the asset or result in any perverse outcomes from impacts on flow of water within a floodway or channel.

Of note, this part also empowers the Council to remove or rescind any previously granted authority if, in the opinion of the Council, the activity being undertaken is not compliant with the terms or conditions that the authority was granted under.

19.5 Part 5 - Compliance and enforcement

This part sets out the compliance and enforcement provisions of the bylaws. In instances of non-compliance, the Council may issue notice to non-compliant parties to remedy any works undertaken (or remedy damage caused from negligence). The Council also has the authority to remove any works or structure that contravene the bylaws with the cost of removal to be recoverable from those who undertook the works.

19.6 Part 6 - Maps

The maps identify where, at the time of writing, floodways, defences against water and hydrological devices, equipment and survey benchmarks are located in the Taranaki region.

Special consultative process of the LGA

20. Under section 156 of the LGA, the Council must use the special consultative process as set out in the Act prior to adopting any new or amended bylaws. The purpose of the special consultative process is to ensure that the public have the opportunity to submit on the Proposed Bylaws.

21. In addition to the Proposed Bylaws, the special consultative process requires that the Council prepare and make publicly available:

    21.1 a statement of proposal which must include:

        a. a draft of the bylaw as proposed to be made or amended;

        b. the reasons for the proposal; and

        c. a report on determinations (as prescribed by section 155 of the LGA);

    21.2 a description of how the local authority will provide persons interested in the proposal with an opportunity to present their views to the local authority; and

    21.3 a statement of the period within which views on the proposal may be provided to the local authority (the period being not less than 1 month from the date the statement is issued).

22. A draft Statement of proposal document is attached to this agenda.

23. The special consultative process further requires that the Council publicly notify and invite submissions on the Proposed Bylaws and identify in that public notice where

relevant information can be found. A copy of the public notice is also attached to this agenda.

24. As part of the proposed consultative process, officers have prepared a web page ready for consultation on the Proposed Bylaws. The website contains all of the relevant documentation to support the special consultative process and will continue to be updated over the course of the consultation to keep interested parties informed.

25. Of note the special consultative process for the making of the proposed *River Control and Flood Protection Bylaw for Taranaki 2020* will be run concurrently with another special consultative process for the review of the *Navigation Safety Bylaw for Port Taranaki and its Approaches*.

Submissions and hearings

26. Officers recommend a four-week submission period on the Proposed Bylaws - from Monday 27th of July until Friday 21st of August.

27. Following that, officers will review and report back to this Committee on any submissions received. Any submitters wishing to be heard in support of their submissions will be given the opportunity to do so. As such, a hearing (comprising of the Policy and Planning Committee members with delegated authority) may be required following receipt of feedback.

28. After any hearing, the Council will make its decisions regarding the Proposed Bylaws. Depending upon the outcomes of the public process, new bylaws for river control and flood protection should be adopted by the end of this calendar year.

Decision-making considerations

29. Part 6 (Planning, decision-making and accountability) of the *Local Government Act 2002* has been considered and documented in the preparation of this agenda item. The recommendations made in this item comply with the decision-making obligations of the *Act*.

Financial considerations—LTP/Annual Plan

30. This memorandum and the associated recommendations are consistent with the Council's adopted Long-Term Plan and estimates. Any financial information included in this memorandum has been prepared in accordance with generally accepted accounting practice.

Policy considerations

31. This memorandum and the associated recommendations are consistent with the policy documents and positions adopted by this Council under various legislative frameworks including, but not restricted to, the *Local Government Act 2002*, the *Resource Management Act 1991* the *Local Government Official Information and Meetings Act 1987* and the *Soil Conservation and Rivers Control Act 1941*.

Iwi considerations

32. This memorandum and the associated recommendations are consistent with the Council's policy for the development of Māori capacity to contribute to decision-making

processes (schedule 10 of the *Local Government Act 2002*) as outlined in the adopted long-term plan and/or annual plan. Similarly, iwi involvement in adopted work programmes has been recognised in the preparation of this memorandum.

33. Of note, affected iwi and hapū whose rohe includes Council managed river control and flood protection schemes affected by the Proposed Bylaws will be targeted in consultation to seek their views and input into the Proposed Bylaws.

Legal considerations

34. This memorandum and the associated recommendations comply with the appropriate statutory requirements imposed upon the Council.

Attachments

Document 2478465: Proposed River Control and Flood Protection Bylaw for Taranaki 2020

Document 2528408: Statement of Proposal for Proposed River Control and Flood Protection Bylaws

Document 2541446: Public notice for submissions on the River Control and Flood Protection Bylaw.

This note does not form part of the Bylaw.

Explanatory Note

The *Taranaki Regional Council Flood Protection Bylaw 2020* has been prepared under the *Local Government Act 2002* to provide for the ongoing management and efficient operation of flood protection and flood control works that are owned or controlled by the Taranaki Regional Council ('the Council'). These include flood protection schemes, floodways and areas of flood protection vegetation constructed and managed to prevent damage, danger, or distress to the community from river flooding. It is crucial that these works function properly when needed.

People undertaking activities within the vicinity of these flood protection and flood control works require authority from the Council under this bylaw where the activity could impact on the integrity or efficient operation of the works.

This bylaw does not apply to any privately owned/managed drainage or flood protection schemes, or those that are managed by other local authorities.

Compliance with this bylaw does not remove the need for activities to comply with the *Resource Management Act 1991*, and other relevant regional and district plans. Activities within the beds of lakes and rivers may also be subject to rules in regional plans in accordance with section 13 of the *Resource Management Act 1991*. Any activity occurring within the coastal marine area may require resource consent under section 12 of the *Resource Management Act 1991*.

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Seal

The *Taranaki Regional Council Flood Protection Bylaw 2020* was prepared by the Taranaki Regional Council under the provisions of section 149 of the *Local Government Act 2002*.

This bylaw was proposed at the Ordinary Meeting of the Taranaki Regional Council held on [*date to be confirmed*], confirmed at an Ordinary Meeting of the Council held [*date to be confirmed*] 2020 and come into force on [*date to be confirmed*] 2020.

DATED at Stratford on [*date to be confirmed*].

SIGNED by the TARANAKI REGIONAL COUNCIL

By the affixing of its common seal in the presence of

_____

M N MacLeod (Chairman)

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M J Nield (Director – Corporate Services)

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Table of contents

Part 1

Preliminary provisions

1. Title

1.1 The bylaw shall be known as the '*Taranaki Regional Council Flood Protection Bylaw 2020*'.

2. Commencement

2.1 This bylaw came into force on the date of the Taranaki Regional Council's special resolution on [DATE TO BE DETERMINED].

3. Purpose

3.1 The purpose of this bylaw is to protect flood protection and flood control works belonging to or under the control of the Taranaki Regional Council (the Council) from damage or misuse by people undertaking activities within the vicinity of these works.

3.2 This bylaw only controls activities that may affect the integrity or effective operation and maintenance of the flood protection and flood control works.

4. Application

4.1 This bylaw has legal effect under the *Local Government Act 2002* and applies within the administrative boundaries of the Taranaki region as defined by the *Local Government (Taranaki Region) Reorganisation Order 1989*.

4.2 This bylaw applies to flood protection and flood control works that are owned or controlled by the Council. These include flood protection schemes, floodways and areas of flood protection vegetation constructed and managed to prevent damage, danger, or distress to the community from river flooding.

4.3 For the purposes of certainty, the bylaw does not apply to any privately owned/managed drainage or flood protection schemes, or those that are managed by other local authorities.

5. Definition of terms

5.1 In this bylaw, unless the context otherwise requires:

Authority means any permission issued by the Council under section 15 [Authority] of these bylaws.

Bylaw means the *Taranaki Regional Flood Protection Bylaw 2020*.

Construct includes effect, alter, reconstruct, replace, extend, remove and demolish.

Council means the Taranaki Regional Council.

Crossing means any bridge, culvert, set of pipes or ford across a watercourse which provides passage for people, stock, vehicles or equipment.

Defence against water means any managed structure or appliance of whatsoever kind that has the effect of stopping, diverting, controlling, restricting, or otherwise regulating the flow or spread or subsidence of water in or out of a watercourse, including flood waters, and includes associated dam, bund, weir, floodgate, channel, bank, stopbank, flood wall, retaining wall, protection structure, carriageway, groyne, or reservoir, and includes those identified in Part 6 [Maps].

Drain has the same meaning as in section 2 of the *Land Drainage Act 1908* (as set out below):

> includes every passage, natural watercourse, or channel on or under ground through which water flows continuously or otherwise, except a navigable river, but does not include a water race as defined in section 58 hereof.

Earthworks has the same meaning as set out in the *National Planning Standards* (as set out below):

> means the alteration or disturbance of land, including by moving, removing, placing, blading, cutting, contouring, filling or excavation of earth (or any matter constituting the land including soil, clay, sand and rock); but excluding gardening, cultivation, and disturbance of land for the installation of fence posts.

Equipment means any equipment, devices or machinery associated with managing watercourses or defences against water. For example floodgates, pump stations and water level recorders.

Excavation means the removal of material, which results in a hole or cavity, other than boring or digging of holes up to 1.5 metres depth for immediate placement of posts or piles, or driving posts or piles.

Flood protection vegetation means all trees and shrubs, including those deliberately planted, or self-seeded, owned, controlled or managed by the Council for flood or erosion protection purposes.

Flood protection and flood control includes defences against water, drains, watercourses, floodways and flood protection vegetation.

Floodway means any area managed by the Council which is designed to provide passage for floodwaters and includes those identified in Part 6 [Maps].

Maintenance includes mechanical cleaning, weed cutting, or spraying, and the maintenance or repair of related installations.

Occupier in relation to any property, means the lawfully authorised inhabitant of that property and persons who have legal right to undertake activities on that property.

Person means anybody, except those authorized by the Council in the exercise of any powers or duties provided for under this bylaw.

Structure has the same meaning as in section 2 of the *Resource Management Act 1991* (as set out below):

> means any building, equipment, device, or other facility, made by people and which is fixed to land, and includes any raft.

Watercourse has the same meaning as in section 2(1) of *the Soil Conservation and River Control Act 1941* (as set out below):

> includes every river, stream, passage, and channel on or under the ground, whether natural or not, through which water flows, whether continuously or intermittently.

Part 2

Activities under the bylaw

6. Floodways

6.1 No person shall:

a) widen, deepen, infill, divert or otherwise alter any floodway;
b) place any material or object that could impede or deflect flood or drainage flows within or into any floodway;
c) plant or allow to grow any vegetation in any floodway that may;
   (i) impede or deflect the flow of water; or
   (ii) interfere with access for maintenance or inspection purposes; or
d) construct or locate any structure in, over, through or under any floodway;

without the prior written authority of the Council in accordance with Part 4 [Applying for authority].

7. Defences against water

7.1 No person shall:

a) alter or otherwise interfere with any defence against water;
b) damage or allow damage to occur to any defence against water;
c) allow stock to damage or overgraze vegetation on any defence against water;
d) construct any crossing in, over, through, along or under any defence against water;
e) construct, or form through repeated use, a road, track or ford for the passage of vehicles, people or stock, on any defence against water; or
f) remove, adjust, or interfere with any equipment relied on for the operation of any defence against water;

without the prior written authority of the Council in accordance with Part 4 [Applying for authority].

7.2 No person shall:

a) plant or allow to grow any shrub, hedge, tree, or part thereof;
b) dump or deposit any thing;
c) construct or locate any structure; or
d) carry out any earthworks or excavation, including for construction of a drain or for building foundations;

on any defence against water, within 7.5 metres from any defence against water or between a defence against water and the opposite bank of the watercourse, without the prior written authority of the Council in accordance with Part 4 [Applying for authority].

7.3 No person shall remove, damage, or allow stock to damage any fence, gate, sign, track, or ford that is owned or controlled by the Council in relation to any defence against water without the prior written authority of the Council in accordance with Part 4 [Applying for authority].

8. Flood protection vegetation

8.1 No person shall remove or damage any flood protection vegetation or allow stock to graze within an area where Council managed flood protection vegetation is located without the prior written authority of the Council in accordance with Part 4 [Applying for authority].

9. Hydrological devices, equipment and survey benchmarks

9.1 No person shall remove, damage or interfere with hydrological devices, hydrological equipment or survey benchmarks, or undertake works that would affect their operation, without the prior written authority of the Council in accordance with Part 4 [Applying for authority].

Note: *The location of hydrological devices and equipment can be found in Part 6 [Maps].*

Part 3

Land entry

10. Inspection and surveys

10.1 The Council may enter onto land to inspect and/or survey any floodway, defence against water, or any device, equipment or machinery used or associated with any defence against water, where the Council has given written notice[1] of at least two working days to the occupier of the land, of the activity and it is not an emergency.

10.2 In the event of an emergency, the Council is not required to give two working days notice but will provide notice as soon as practicable in the circumstances.

11. Defences against water maintenance works

11.1 The Council may enter onto land to carry out maintenance or repairs to floodways or defences against water owned or controlled by the Council where the Council has given written notice[1] of at least five working days to the occupier of the land, of the activity and it is not an emergency.

11.2 In the event of an emergency, the Council is not required to give five working days notice but will provide notice as soon as practicable in the circumstances.

12. Prohibiting or restricting access

12.1 The Council may prohibit or restrict access to any floodway or defence against water if, in the opinion of the Council, the restriction or prohibition is necessary to protect the floodway or defence against water from damage.

12.2 A prohibition or restriction under bylaw 12.1 will only be made where the Council has:

a) clearly displayed, adjacent to any floodway or defence against water, a notice stating the prohibition or restriction; and
b) given written notice[1] of at least two working days, including an explanation of the prohibition or restriction, to the occupier of land and it is not an emergency.

12.3 In the event of an emergency, the Council is not required to give two working days notice but will provide notice as soon as practicable in the circumstances.

13. Obstruction to officers and contractors

13.1 No person, whether on private land or not, shall unreasonably obstruct or hinder any employee of the Council or any contractor engaged by the Council in the performance of anything which that employee or contractor is or may be required to do.

13.2 No person shall unreasonably obstruct or hinder any employee or contractor from bringing, onto any land, or from operating, any drain clearing plant or machinery.

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[1] *In addition to written notice given under bylaws 10 to 15, the Council will endeavour to speak directly to the occupier of land before entering land to discuss the reasons for entry and any matters for concern. In determining reasonable terms of entry in the circumstances, the Council will have regard to the interests and convenience of the persons who may be affected and the requirements of any business utilising the land.*

14. Maintenance of floodways by private individuals

14.1 Occupiers of land who wish to avoid herbicide use for the maintenance of floodways adjacent to or through their properties may undertake the floodway clearance themselves, or employ contractors to do so, subject to:

a) obtaining prior written authority from the Council in compliance with Part 4 Applying for an authority];
b) signs being erected by the occupiers of land to clearly mark the areas where chemicals are not to be used (this may be achieved using simple signs clearly marked 'Chemical Free Area');
c) the works are to be carried out to a standard specified by the Council. That standard may include a time period within which the works are required to be carried out; and
d) if the works are not carried out to the prescribed standard, the Council may give notice of its intention to maintain the floodway and, following the period of one week, may carry out the required maintenance using any method it deems efficient including the use of herbicides.

Part 4

Applying for an authority

15. Authority

15.1 An application to the Council for authority under this bylaw shall be made using the online form at: [hyperlink to be confirmed] and be accompanied by any fee as prescribed in the Long-Term Plan.

15.2 When considering any application for an authority, the Council shall have regard to, but not be limited to, the following assessment criteria, in order to ensure the effective operation and integrity of the flood protection and flood control works:

a) drainage and flood flow capacity;
b) stability/scour/erosion risk;
c) on-going functionality;
d) access for inspection and maintenance purposes; and
e) term of authority.

15.3 Any condition imposed under any authority will be appropriate for the scale and nature of the activity proposed and for giving effect to the purpose of this bylaw.

15.4 In the event of a Council decision to refuse an application for authority, the Council shall include, in writing, the reasons for that decision.

15.5 Every person to whom an authority is granted shall produce that authority for inspection on request by the Council.

15.6 Every authority granted under this bylaw to an occupier of any land, shall be binding on every subsequent occupier of that land, unless it specifically states otherwise.

15.7 The Council shall keep a register of all authorities granted and refused.

16. Fees

16.1 Any person who applies for an authority under this bylaw is required to pay an administration fee upon lodging the application for authority. Fees are set out in the Long Term Plan.

16.2 The Council may, in its absolute discretion, refund, remit or waive the whole or part of such fee.

17. Deeming authority

17.1 Any existing resource consent or agreement granted by or made with the Council and issued prior to this bylaw coming into force and which authorises the carrying out of any activity listed in this bylaw, shall be deemed to be an authority under this bylaw to carry out such work for the term and on the conditions set out in the resource consent or agreement. This will include any right under that consent or agreement to replace or repair any structure or to undertake any routine maintenance.

18. Revocation of authority

18.1 The Council may revoke any authority granted under this bylaw where:

a) the holder of that authority contravenes or fails to comply with any condition of the authority; or
b) if the information made available to the Council, by the applicant for the authority for the purposes of the application, contained inaccuracies which materially influenced the decision made by Council in respect of the application.

18.2 Where the authority is to be revoked in accordance with section 18.1(a) (above), the Council shall not revoke any such authority without giving to the holder a notice in writing which:

a) sets out the matters in which the holder has contravened or has failed to comply with any condition of the authority; and
b) if the breach or failure is capable of remedy, gives the holder a reasonable time within which to remedy it.

Part 5

Compliance and enforcement

19. Offence

19.1 Every person who commits an offence against this bylaw is liable to the penalties prescribed by section 242 of the *Local Government Act 2002*.

20. Notice to remedy

20.1 The Council may, by written notice, require any mitigation or remediation considered necessary by Council, in relation to the contravention of any provision of this bylaw, or the conditions of the relevant authority, in the time, and in the manner stated in the notice, at the cost of the person who committed the offence, as described by section 19 [Offence] (above).

21. Removal of works

21.1 The Council, may remove or alter any work or anything constructed after the date at which these bylaws becomes operative, that contravenes of any provision of these bylaws or any conditions of any authority, and may recover the costs incurred by the Council in connection with the removal or alteration from those responsible for the works.

21.2 Any action undertaken under section 21.1 [Removal of works] (above) shall not relieve any person from liability to any penalty incurred by reason of the breach.

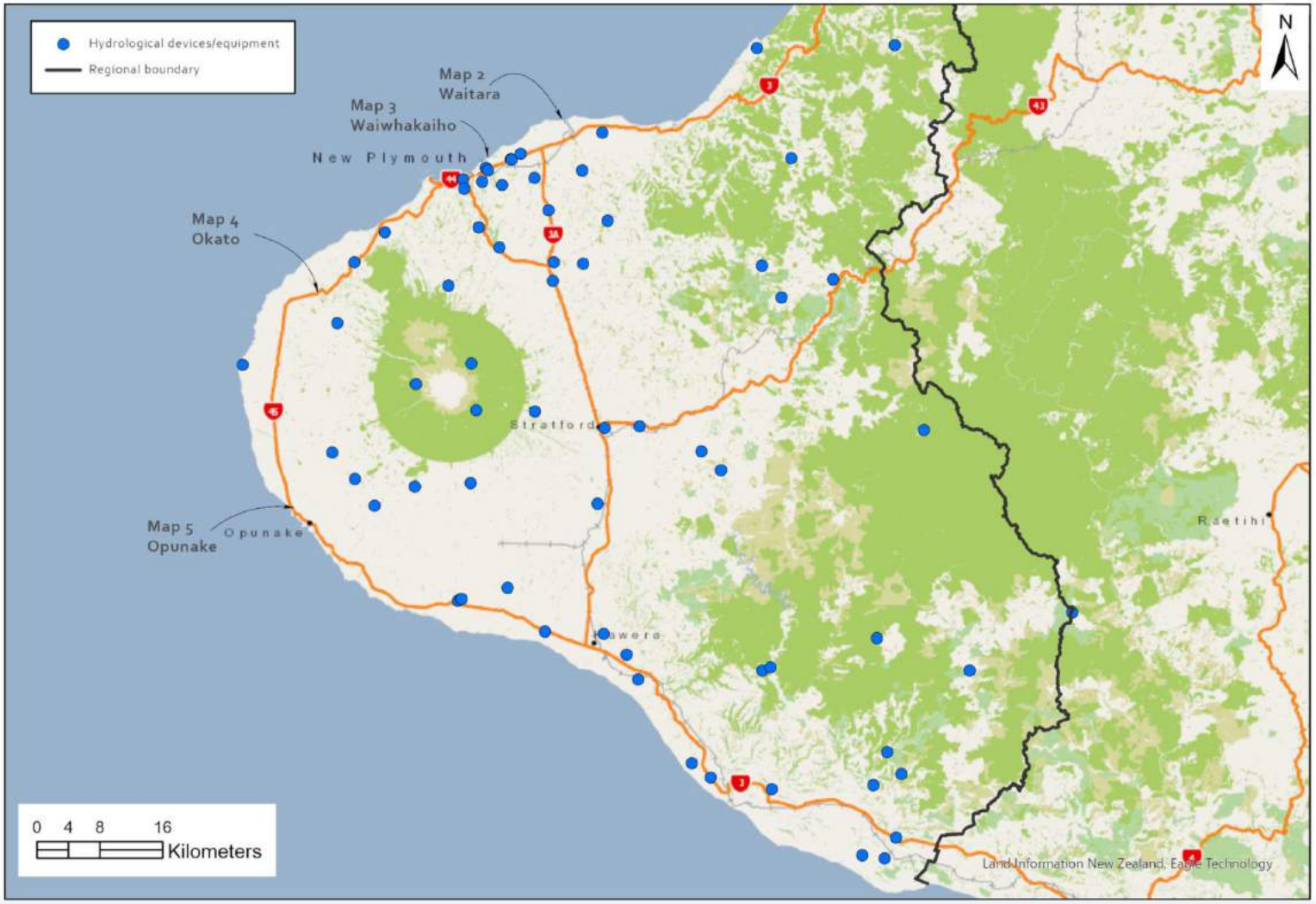
Part 6

Maps

Note 1: *These maps are a representation of Council managed hydrological devices/equipment, floodways and defences against water, at the time of writing and may be added to over the life of the bylaws.*

Note 2: *The resolution of lines on maps in the printed Map Volume may not be sufficient to determine the accurate placement of those lines in relation to any property. If you are uncertain, please contact the Council's River Manager directly for assistance.*

Map 1 – Regional map

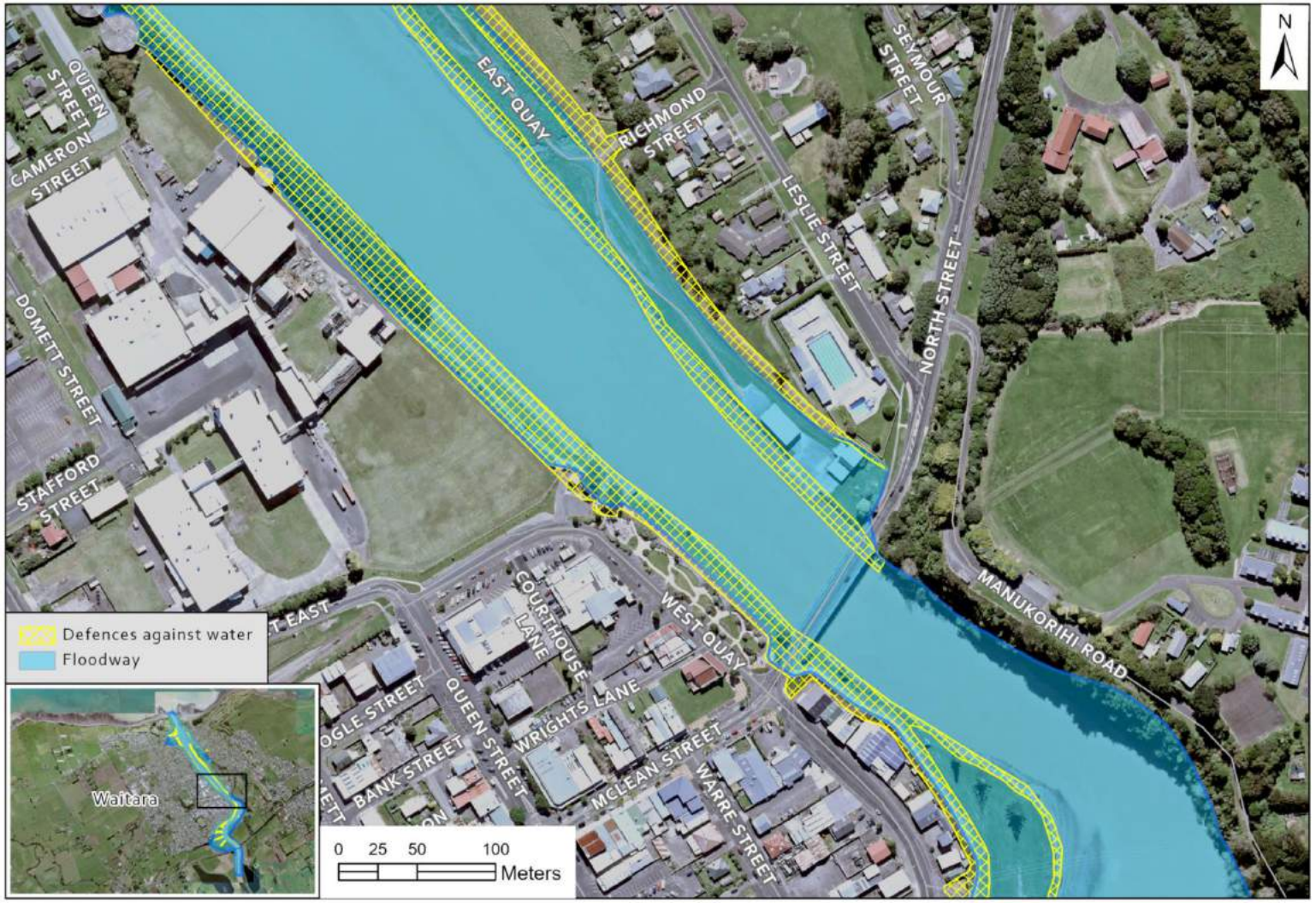


Map 1 *Regional map showing the location of hydrological devices/equipment sites and also showing the location of map sets 2 – 4*

Map 2 - Waitara

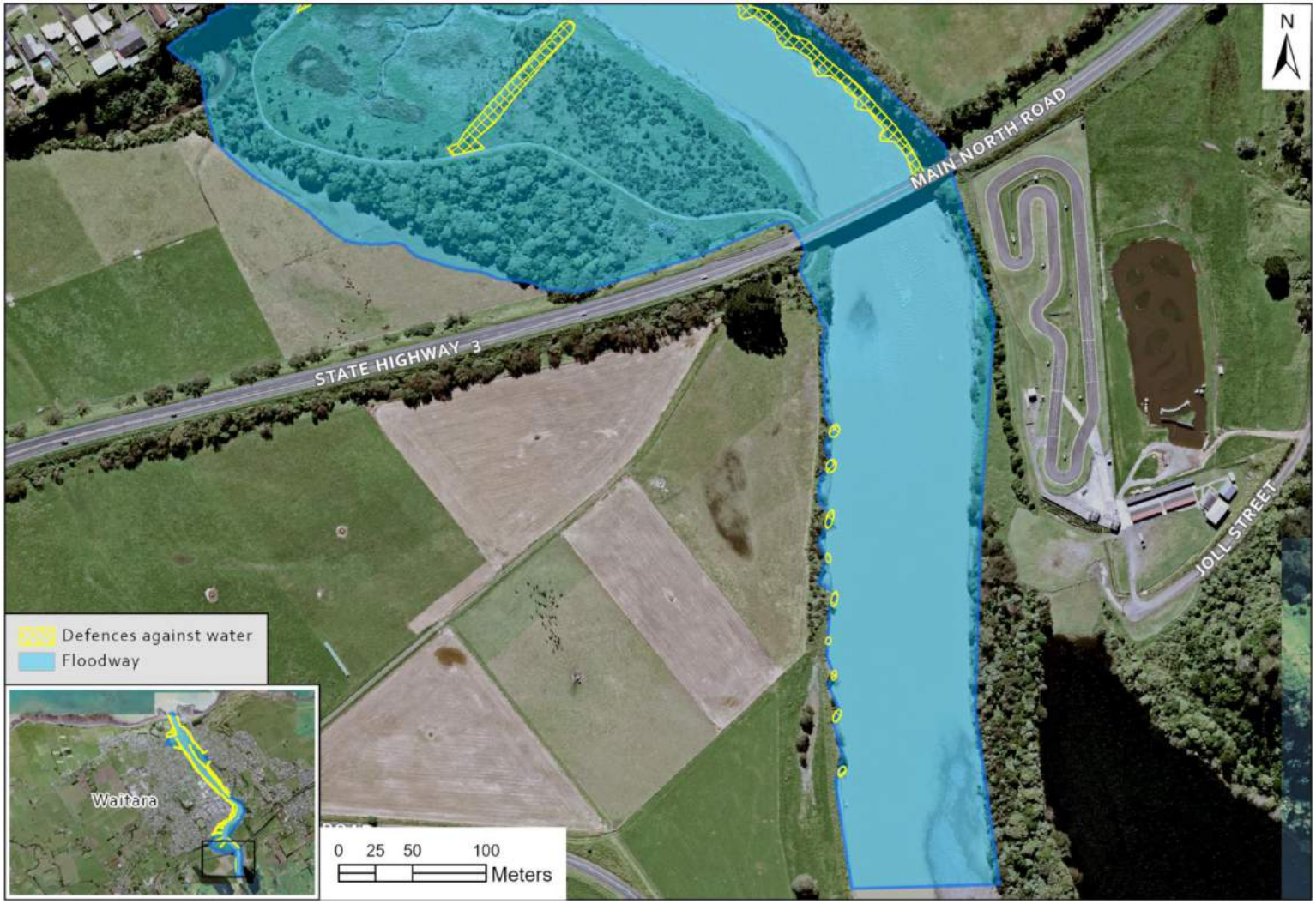
Map 2a *Defences against water and floodways along the Waitara River, New Plymouth.*

Map 2b *Defences against water and floodways along the Waitara River, New Plymouth.*



Map 2c *Defences against water and floodways along the Waitara River, New Plymouth.*

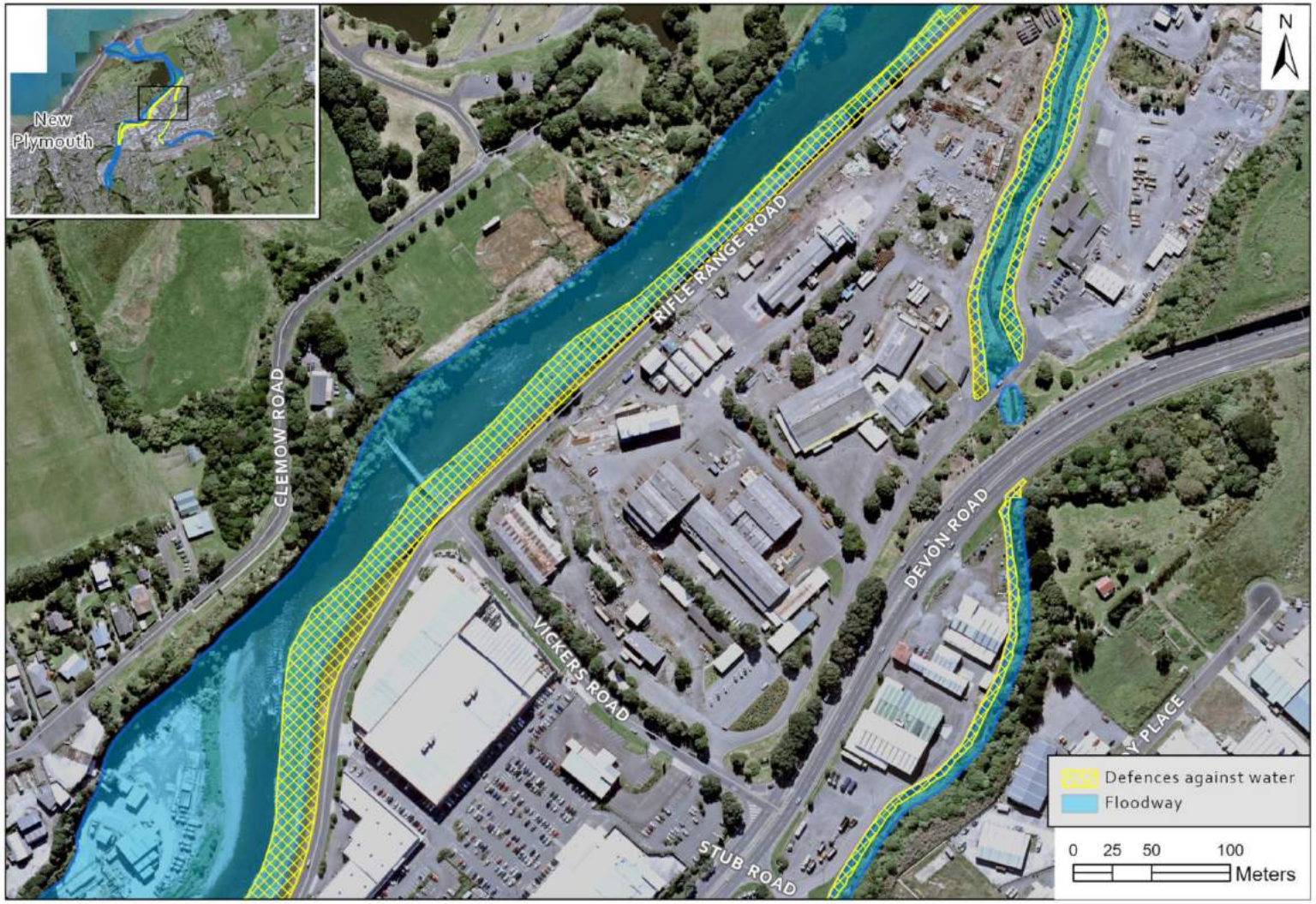
Map 2d *Defences against water and floodways along the Waitara River, New Plymouth.*



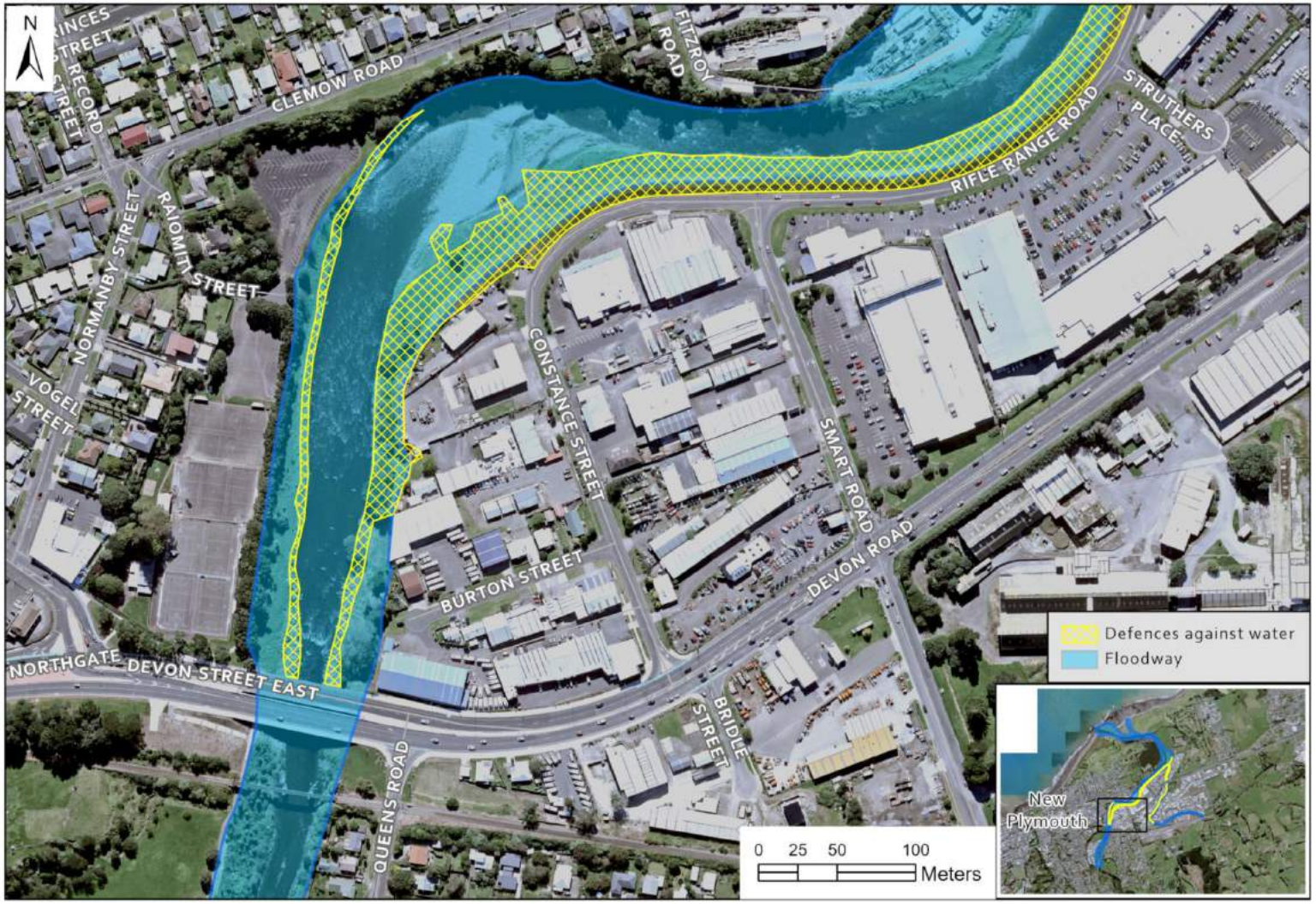
Map 2e *Defences against water and floodways along the Waitara River, New Plymouth.*

Map 3 - Waiwhakaiho

Map 3a *Defences against water and floodways along the Waiwhakaiho River and Upper Mangone Stream, New Plymouth.*

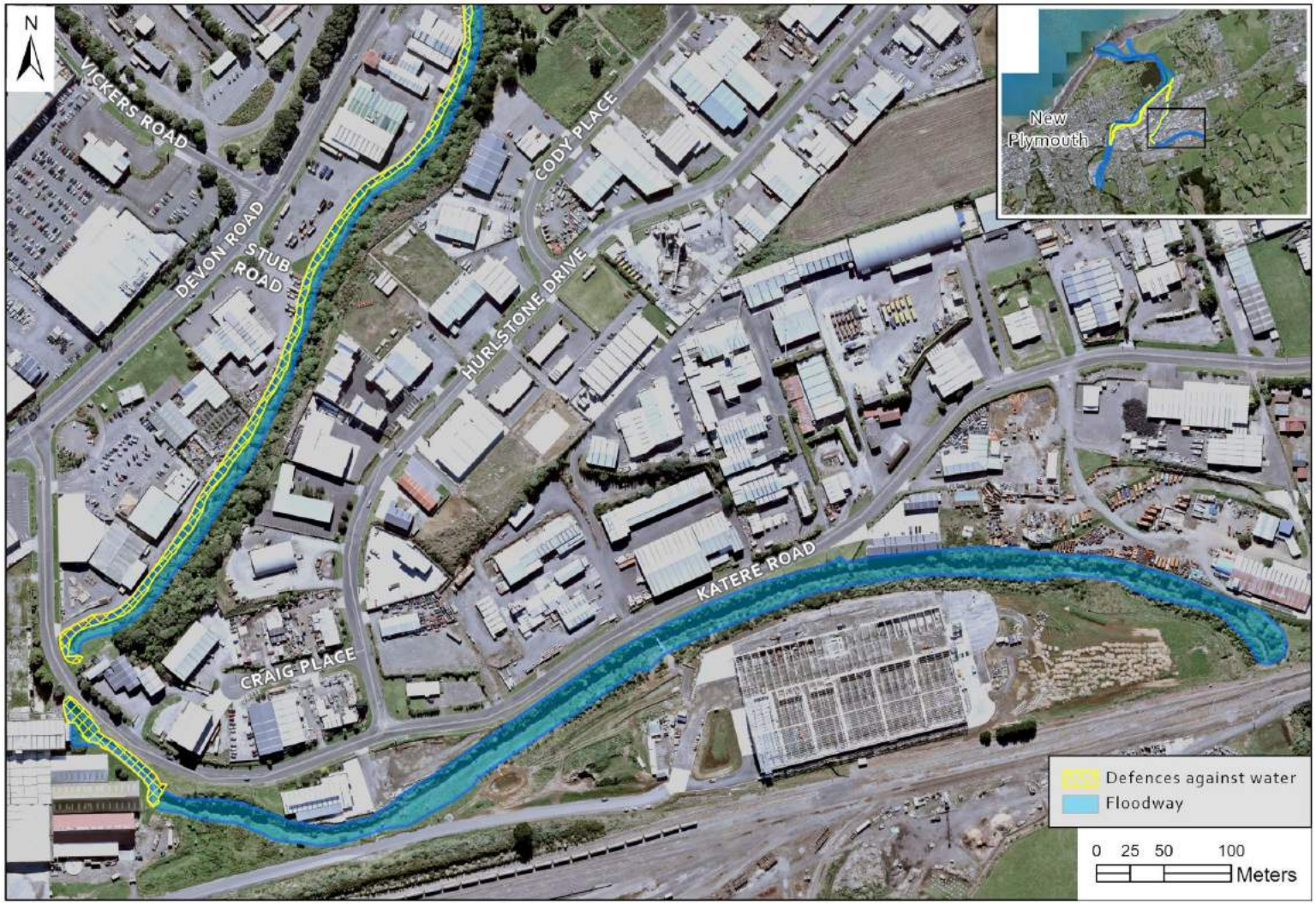


Map 3b *Defences against water and floodways along the Waiwhakaiho River and Mangone Stream, New Plymouth.*



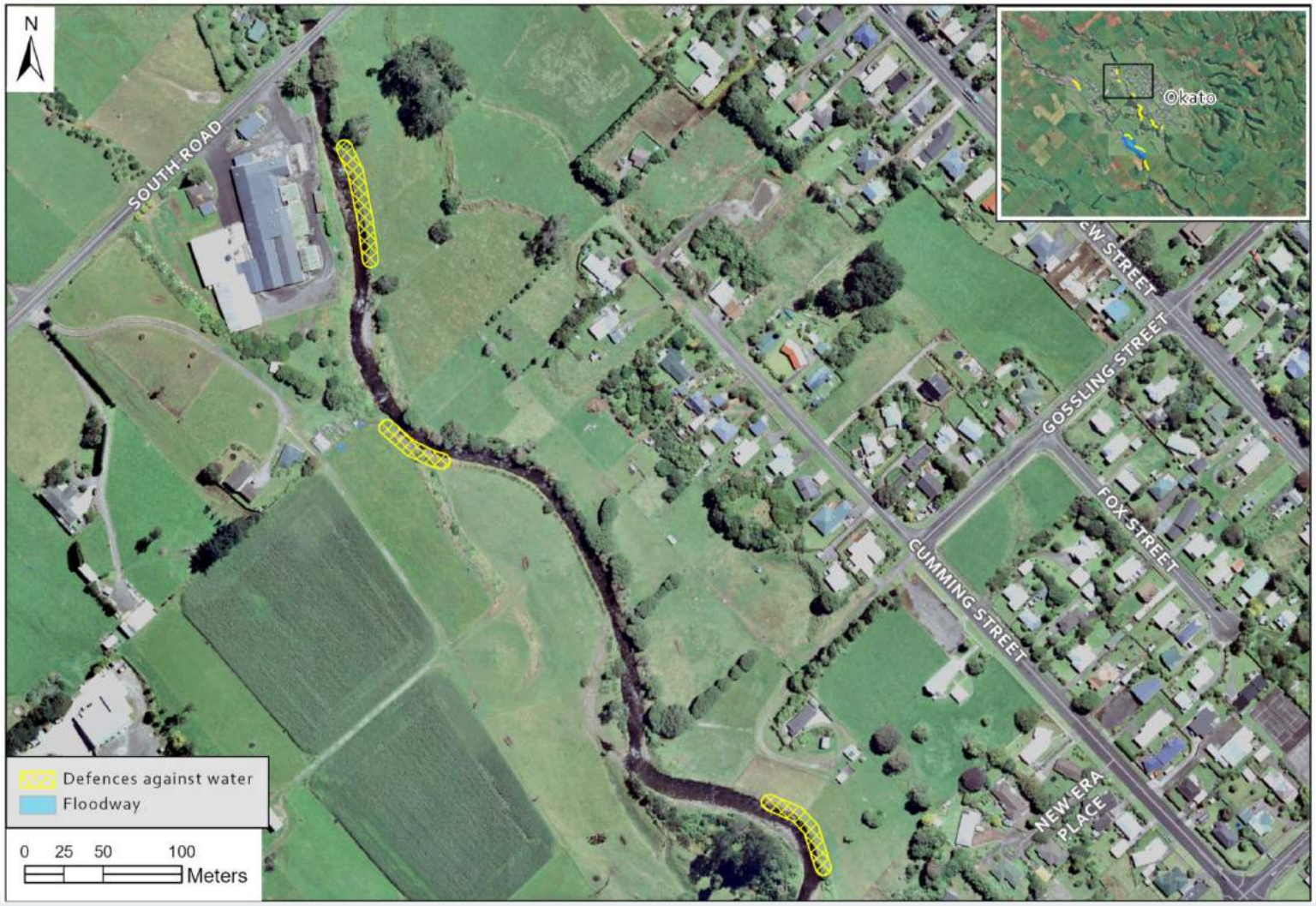
Map 3c *Defences against water and floodways along the Waiwhakaiho River, New Plymouth.*

Map 3d *Floodways along the Waiwhakaiho River, New Plymouth.*



Map 3e *Defences against water and floodways along the Mangaone Stream, New Plymouth.*

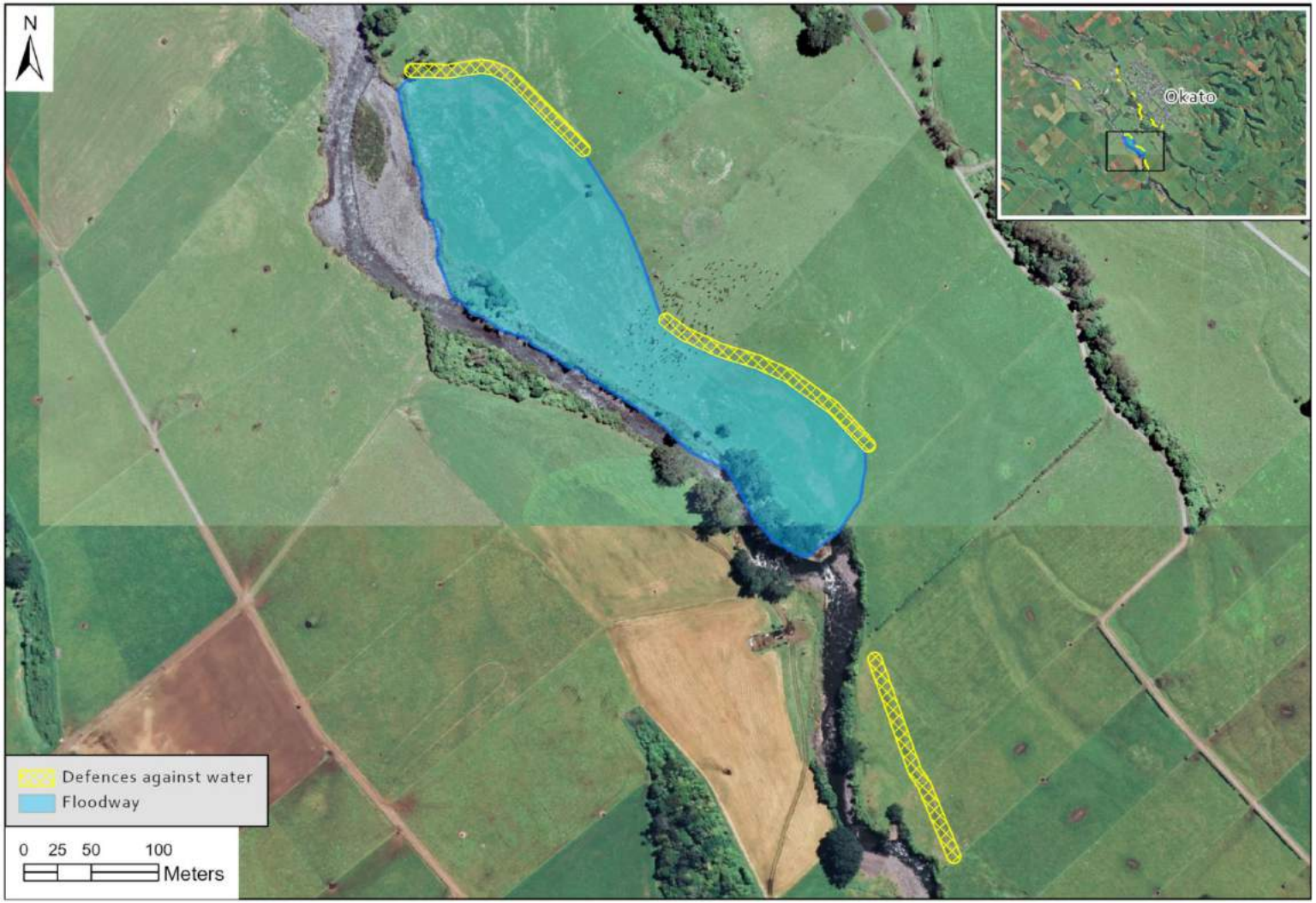
Map 4 - Okato



Map 4a *Defences against water along the Kaihihi Stream, Okato.*

Map 4b *Defences against water along the Kaihihi Stream, Okato.*

Map 4c *Defences against water and floodways along the Stony/Hangatāhua River, Okato*



Map 4d *Defences against water along the Stony/Hangatāhua River, Okato.*

Map 5 – Opunake

Map 5a Defence against water between Otahi stream 2 and Hihiwera Stream.

Map 5b Defences against water near Ihaia Road, Opunake.

Map 5c Defences against water between Ihaia Road and Waiaua River 2, Opunake.

Map 5d *Defences against water between Gisborne Terrace and Allison Street, Opunake.*

24 July 2020

Statement of Proposal

Proposed River Control and Flood Protection Bylaws for Taranaki

Statement of Proposal

The Taranaki Regional Council (the Council) is seeking public comment on a proposal to adopt the *River Control and Flood Protection Bylaws for Taranaki 2020*.

The proposed bylaws have been developed to protect river control and flood protection assets, including floodways, defences against water, flood protection vegetation, hydrological devices and equipment and survey benchmarks managed by, or under the control of the Council.

There are currently no bylaws or other regulatory or non-regulatory measures in place to ensure the protection of the aforementioned assets.

Image: Waitara River stopbank and erosion control.

Purpose of the Bylaws

Flood protection and river control assets are constructed to prevent damage, danger and distress to the community from river flooding. It is crucial that these assets are functioning properly when needed.

The purpose of the Bylaws is to protect flood protection and flood control works belonging to or under the control of the Council from damage or misuse by people undertaking activities within the vicinity of these works.

The Bylaws only control activities that may affect the integrity or effective operation and maintenance of the flood protection and flood control works.

The Bylaws **do not apply** to any privately owned/managed drainage or flood protection systems or those that are managed by other local authorities.

Under the Bylaws, Council may issue "Bylaw Authorities" to allow landowners to carry out works in accordance with the requirements of the Bylaws.

The purpose of local government is to:

- enable democratic local decision-making and action by, and on behalf of, communities; and
- to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.

In order to effectively manage local flood protection and river control infrastructure, the Council has the optional ability, under the *Local Government Act 2002*, to develop specific rules to manage and control this infrastructure through Bylaws.

The best way to do this is through formal consultation with those affected under a prescribed process outlined in the *Local Government Act 2002*.

Legislative compliance

Under **section 155** of the *Local Government Act 2002* in the making of Bylaws the Council has to consider whether:

- the proposed Bylaws are the most appropriate way of addressing a perceived problem;
- the proposed Bylaws are the most appropriate form of Bylaws, and
- the Bylaws are not inconsistent with the *New Zealand Bill of Rights Act 1990*.

Appropriateness of Bylaws to address a perceived problem

To that end, the Council has identified in the table below alternative methods to using Bylaws to ensure protection and efficient operation of the flood protection and drainage systems.

Options considered	Reasons for rejection or acceptance
Status quo	• River control and flood protection assets are vulnerable to misuse and/or damage which may leave communities vulnerable in a flood or extreme weather event. • Council have no powers to enforce appropriate behaviour in relation to the infrastructure or to prosecute if necessary. • Effects of damage or misuse of assets may be of significant cost to repair. **Outcome - Rejected**
Amending the Freshwater Plan for Taranaki to include rules	• RMA plans manage complex natural resource issues or implement national policy statements. Protection of assets is not a natural resource issue. • Unreasonably costly and lengthy process to prepare and amend regional plans. • RMA plans require high level of public consultation that is warranted for this issue and after considering other options. • A RMA plan would require anyone undertaking an activity addressed in the plan to apply for a resource consent which is costly and takes time to process and may involve additional hearings and costs depending on the significance of the consent. **Outcome - Rejected**
Transference of powers to district councils	• The Council manages, operates, and in many cases, owns the land and the assets. The Council has the necessary experts to make determinations for the most appropriate use and management of activities associated with the assets as opposed to district councils whose experts are not familiar with the specific nature of the infrastructure. • Management of different assets may be divided into different districts and therefore risk inconsistent management across the region. • District councils may have differing capacity and resourcing to adequately protect the assets. **Outcome - Rejected**
Strategy/collective agreement with land owners	• Non-regulatory tool relies on the good will of land owners. • Non-binding agreements between certain parties/persons do not include the wider public. • Not enforceable. • Will require additional engagement and effort by Council for changes of land owners to draw up new agreements. **Outcome - Rejected**
New bylaw under the Local Government Act 2002	• The *Local Government Act 2002* provides powers for regional councils to enforce bylaws • The Council is the most appropriate enforcement authority. • Bylaw authority process has proven to work well for other regions around the country and is not cost or time prohibitive for proponents. • The engagement process for the adoption of the bylaws is considered appropriately proportionate to the nature of the issue being managed • The cost and time of adopting the Bylaws is proportionate to the size of the issue being addressed. This is considered the most appropriate option for ratepayers. **Outcome - Accepted**

Most appropriate form of Bylaw

Under the *Local Government Act 2002*, the Council must determine whether the Bylaws are in the most appropriate form (e.g. standalone, amendment to existing document, consolidation with other bylaws). The Council has determined that a standalone document is appropriate. There are a number of reasons why the Council believes a standalone document is the most appropriate form of Bylaw.

A standalone document:

1. Holds all of the relevant regulations in one place and is easily accessible
2. Focusses only on flood protection and drainage
3. Ensures that the Bylaws and the matters being addressed cannot be confused with others
4. Is relatively short and concise and can be easily printed or referenced in its entirety
5. Becomes a repository for all the legal matters associated with protection of flood protection and drainage

New Zealand Bill of Rights Act 1990

Under section 155(3) of the *Local Government Act 2002* the Council must determine that the Bylaws are not inconsistent with the *New Zealand Bill of Rights Act 1990*.

The *Bill of Rights Act 1990* protects the civil and political rights of all New Zealanders. The Act covers:

- Life and security of the person
- Democratic and civil rights
- Non-discrimination and minority rights
- Search, arrest and detention
- Criminal procedure
- The right to justice

The Council considers the Bylaws as proposed here, are not inconsistent with the *Bill of Rights Act 1990*.

Image: Waitara River stopbank West Quay from Manukorihi

Public consultation and submissions

Copies of the *Proposed River Control and Flood Protection Bylaws for Taranaki* are available:

- Online at www.trc.govt.nz/river-control-bylaws/
- At the Taranaki Regional Council offices at 47 Cloten Road, Stratford, 4352
- On request from the Taranaki Regional Council by:
    - emailing bylaws@trc.govt.nz
    - or phoning 0800 736 222.

The Taranaki Regional Council welcomes your views and feedback.

Any organisation or member of the public may make a submission on the proposed *River control and flood protection bylaws for Taranaki 2020*.

A submission is a statement in support of, or in opposition to, any part of this statement of proposal or the proposed *River control and flood protection bylaw for Taranaki 2020*.

Submissions should focus on:

- The effectiveness of the proposed bylaws in protecting river control and flood protection assets;
- Identifying any cross boundary or management issues; and
- Identifying any gaps or additional activities required to address the protection of river control or flood protection assets.

To have your say, you can:

- Make an on-line submission at www.trc.govt.nz/river-control-bylaws/
- Emailing your submission to bylaws@trc.govt.nz and including 'Submission on the Proposed River Control and Flood Protection Bylaws for Taranaki' as the subject heading; or
- by posting your submission to Taranaki Regional Council, Private Bag 713, Stratford 4352 and including as the subject 'Submission on the Proposed River Control and Flood Protection Bylaws for Taranaki'.

Public submissions start at 8am on Monday 2 July 2020 and close at 5pm on Friday 21st August 2020.

When making a submission:

- Clearly state your name, address, email, telephone number and preferences on being heard at a hearing;
- State the most important points you want the Taranaki Regional Council to consider;
- Make your comments as specific as possible; and
- Include the relevant section to which your comments refer.

Hearings relating to the proposed Bylaws will be scheduled following receipt of submissions.

Proposed River Control and Flood Protection Bylaw for Taranaki

Taranaki Regional Council

Pursuant to section 156 of the Local Government Act 2002, the Taranaki Regional Council gives notice that it has prepared the *Proposed River Control and Flood Protection Bylaws for Taranaki*.

The *Proposed River Control and Flood Protection Bylaws for Taranaki*, as well as the Statement of Proposal and supporting documentation, is available:

- On the Taranaki Regional Council website at www.trc.govt.nz/river-control-bylaws/
- As hard copies available on request during office hours from the Taranaki Regional Council premises at 47 Cloten Road, Stratford.

The Taranaki Regional Council now invites feedback on the *Proposed River Control and Flood Protection Bylaws for Taranaki*.

Feedback can be made through:

- Completion of the online submission form at www.trc.govt.nz/river-control-bylaws/
- Emailing Taranaki Regional Council at bylaws@trc.govt.nz and including as the subject 'Submission on the Proposed River Control and Flood Protection Bylaws for Taranaki'.
- Posting your submission to Taranaki Regional Council, Private Bag 713, Stratford 4352 and including as the subject 'Submission on the Proposed River Control and Flood Protection Bylaws for Taranaki'.

The closing date for feedback is the 21st of August 2020.

For further information contact: Taranaki Regional Council, Private Bag 713, Stratford, phone 0800 736 222 or email bylaws@trc.govt.nz

Mike Nield
Acting Chief Executive
Taranaki Regional Council

Working with people | caring for Taranaki

TARANAKI
like no other

MEMORANDUM
Policy & Planning

Date	21 July 2020
Subject:	**Update on the freshwater reforms**
Approved by:	A D McLay, Director - Resource Management
	M J Nield, Acting Chief Executive
Document:	2519128

Purpose

1. The purpose of this memorandum is to provide an update and summary of the Government's freshwater reforms.

Executive summary

2. On 5 September 2019, the Government released their discussion document *Action for Healthy Waterways*. The discussion document contains wide-ranging proposals to improve freshwater quality across New Zealand.
3. Following public consultation on its freshwater proposals, the Government had received approximately 17,500 submissions, including a comprehensive submission from Council.
4. The Council's submission noted that, if adopted, the Government proposals would impose major costs on the Taranaki region for unpredictable and probably only marginal freshwater-quality gains.
5. In response to the public submissions and recommendations from the Independent Advisory Panel, on 28 May 2020 the Government announced significant changes to its original proposals. The Government also signalled amendments in response to the COVID-19 pandemic and in light of new implementation challenges.
6. Officers have reviewed Government changes to the original proposals and generally welcome many of the changes. The changes reflect many of the reliefs sought by the Council in its submission and supporting evidence. Of particular note:
    - No inclusion of DIN and DRP limits
    - No use of OverseerFM in a regulatory context
    - Swimmability targets and lower *E. coli* levels targeting bathing season at the places where people swim and when conditions allow it
    - Amendments to stock exclusion and riparian management provisions
    - Exclusion of the Waingorogoro catchment (and other N-high catchments)

- Sediment limits
- New measures of stream health and water quality.

7. At this point in time, the Government has only released its policy decisions. The actual text of the statutory documents that will be gazetted/enacted has not been provided.
8. Council practitioners have five working days to work through the detail and make final comment prior to them being promulgated.

Recommendations

That the Taranaki Regional Council:

a) receives the memorandum *Update on the freshwater reforms*

b) notes the Council and many others have achieved significant changes through the submission process

c) recognise that until we can review the detail of the regulatory documents, the full implications of the proposals are difficult to assess.

Background

9. On 5 September 2019, the Government released their discussion document *Action for Healthy Waterways*.
10. The discussion document set out Government proposals for new and additional requirements, including a revised *National Policy Statement for Freshwater Management* (NPS-FM), a new *National Environmental Standards for Freshwater Management* (NES-FM) and new *Stock Exclusion Regulations* (SER). The Package is intended to "*…stop further degradation of New Zealand's freshwater resources and improve water quality within five years*" and "*reverse past damage and bring New Zealand's freshwater resources, waterways and ecosystems to a healthy state within a generation*."
11. The original deadline for submissions was 17 October 2019, which was later extended to 31 October 2019.
12. Members will recall endorsing a comprehensive and extensive submission with supporting material on the proposals. In brief, substantive elements presented in the Government proposals raised concerns that Council (and others) believed warranted further consideration to avoid perverse outcomes. Points of particular concern in the proposals highlighted in the Council's submission were:
    - The focus on setting limits rather than environmental outcomes even where there is no proven cause and effect link. For example, Taranaki already has very good to excellent freshwater ecosystem health and therefore the imposition of limits on nitrogen, phosphorus or suspended sediment is unlikely to have substantial environmental gains.
    - The imposition of nutrient and sediment limits that lack a credible basis and are out of line with comparable overseas criteria.
    - The use of and reliance on OverseerFM in a regulatory framework.
    - The imposition of nationally imposed stock-exclusion rules that would derogate and undermine Taranaki's successful Riparian Management Programme.

- The lack of meaningful cost-benefit analysis, particularly in relation to the costs implications for regional communities.
- The impacts on the viability of many farms (and the wider region) arising from proposed national bottom line limits.
- The application of universally applied 'solutions', irrespective of local context, and likelihood of perverse and adverse outcomes for Taranaki with only marginal environmental benefits.

13. Following public consultation on its freshwater proposals, the Government received approximately 17,500 submissions.
14. On 28 May 2020, the Government released their *Action for Healthy Waterways* policy decisions, as decided by Cabinet.

Summary of key changes

15. As requested by Members at the Policy and Planning Committee meeting of 9 June 2020, officers have reviewed the Government's position statements on their freshwater proposals.
16. While the Government's announcements see the new NPS-FM, NES-FM and Stock Regulations proceed largely unchanged, there are notable tweaks to the time-frames, nutrient limits, and regulatory mechanisms. Most notably, dissolved organic nitrogen and dissolved reactive phosphorous will no longer have 'national bottom lines' (to be reviewed in 12 months), restrictions on farm intensification and stock exclusion requirements will both be relaxed slightly, and the *Resource Management Act 1991* (RMA) will be amended to include a new regime for farm management plans.
17. Set out in the Table below, is a high-level overview on matters of particular interest to this Council (noting that until we can review the detail of the regulatory documents, the full implications of the proposals are difficult to assess).

Proposals (as set out in cabinet paper)	**Explanation of changes from the September proposals**
NPS-FM	
Timetable for full implementation	Change from September proposals. Timeframe for notifing regional plans to give effect to the new NPS-FM has been extended by one year to December 2024.
Te Mana o te Wai	Some amendments from September proposals have been indicated but Te Mana o te Wai, including its hierarchy of obligations, will remain the basis of the revised NPS-FM. Full implications cannot be determined by officers until NPS-FM wording is provided and assessed.
Maori values for freshwater and involving Maori	Mahinga kai, which was tentatively proposed as a new 'compulsory value', has been confirmed for the new NPS-FM. This means that regional plans will need to set

Proposals (as set out in cabinet paper)	Explanation of changes from the September proposals
	National Objectives Framework (NOF) objectives for freshwater management units that provide for mahinga kai (in addition to the existing compulsory NOF values of ecosystem health and human contact).
Maintain or improve water quality	No significant change from September proposals. Current state of freshwater (as assessed as at 7 September 2017) to be maintained or improved.
Swimmability standards	No significant change from September proposals. Amended NPS-FM will introduce higher standards targeting swimming sites during summer. This addresses some of the deficiencies with national swimmability targets set out in the current NPS-FM and is supported by the Council (refer to discussion below).
National Objectives Framework (NOF)	No significant change to September proposals. NOF to now distinguish between attributes that require limit-setting versus attributes that require action plans. Full implications cannot be determined until NPS-FM wording is provided and assessed.
New compulsory NOF values requiring limits	No significant change to September proposals beyond those highlighted elsewhere in this report. New and amended compulsory NOF values requiring limits for threatened species habitat, mahinga kai and ecosystem health. DIN limits removed and a strengthening of ammonia and nitrate toxicity limits. Dissolved reactive phosphorus (DRP) will also require an action plan for management rather than a national bottom line. DIN and DRP provisions will be reviewed in 12 months time.
New compulsory NOF values requiring action plans	No significant change to September proposals. New and amended compulsory NOF values requiring action plans (rather than limit setting) for macroinvertebrates, submerged plants in lakes, dissolved oxygen, fish species, ecosystem metabolism, and DRP. Full implications cannot be determined until NPS-FM wording is provided and assessed. However, requirement to monitor fish presence and abundance represents a significant new statutory responsibility.
Ammonia and nitrate (toxicity)	No significant change to September proposals. The existing national bottom lines for the nitrate and ammonia toxicity attributes will be reduced (i.e. made

Proposals (as set out in cabinet paper)	Explanation of changes from the September proposals
	more stringent) to provide for the protection of 95% of species from toxic effects (up from 80%).
Nutrient limits	Change from September proposals. DIN and DRP bottom lines will not be included in the NPS-FM. Government intends to reconsider the possibility of a DIN and DRP bottom line in 12-months time.
Sediment limits	Change from September proposals. New deposited sediment attribute to be included in the NPS-FM but will not apply in naturally soft-bottomed streams.
NES-FM	
Protection of wetlands	No substantive change to the policy position adopted in the September proposals but technical amendments have been signalled. Full implications cannot be determined until NPS-FM wording is provided and assessed.
Protection of streams	No substantive change to the policy position adopted in the September proposals but technical amendments have been signalled. Full implications cannot be determined until NPS-FM wording is provided and assessed.
Farm plans	Significant amendments to the proposals. Provisions relating to mandatory farm plans to be removed from NES-FW and instead advanced through amendments to the RMA and subsequent regulations.
High-risk land uses	No significant change to September proposals. Stronger controls for feedlots and stockholding areas and new controls on intensive winter grazing of forage crops
Nitrogen-fertiliser cap	Change from September proposals. New requirement, apparently replacing the cap and reduction requirements in nitrogen-impacted catchments. The NES-FM will set a national synthetic nitrogen-fertiliser cap of 190kg N/ha/year set for all pastoral farms in New Zealand (and require dairy farmers to report annually to councils on the weight of nitrogen applied per hectare as synthetic nitrogen fertiliser).

Proposals (as set out in cabinet paper)	Explanation of changes from the September proposals
Intensification	No substantive change to the policy position adopted in the September proposals. Interim restrictions on major agricultural intensification (involves land use change and pasture irrigation).
Schedule 1 catchments	Change from September proposals. It appears that provisions relating to specific interventions targeting the 13 identified high-nitrogen catchments (including the Waingongoro catchment) have been removed. Instead accelerated preparation and implementation of farm-specific freshwater farm plans with be required for 'at risk' catchments.
Other	
Stock exclusion regulations	Change from September proposals. The regulations will no longer require permanent fences to be moved and the setback requirement will now be a minimum of 3m (rather than an average of 5m as first proposed). The restrictions will now apply to grazing dairy cattle and pigs on all terrain, intensive stock activities on all terrain, and beef cattle and deer on low slope land only.
RMA amendments	RMA to provide for a new freshwater planning process.

18. Generally, Government changes to the original proposals are welcomed. The changes reflect many of the reliefs sought by the Council in its submission and supporting evidence. A discussion of points of particular interest to the Council is set out below.

Nutrient limits

19. The Council had argued in its submission that the blanket nationwide nutrient limits proposed last year lacked credible scientific basis, were out of line with comparable overseas criteria, and would substantially and unnecessarily restrict farm output for no clear benefit to stream health. The Council further argued that single nationwide bottom lines for nutrients that 'fail' to take into account natural variation between different river types remain inappropriate and are neither credible nor justifiable as a cost-effective intervention.
20. A Council-commissioned study appended to the submission indicated that achieving the originally proposed Dissolved Inorganic Nitrogen (DIN) limits alone would cost $100,000 a year for 33% of the region's dairy farms and $50,000 a year for 70%.
21. In its submission, the Council questioned the imposition of such costs on the dairying industry, when Taranaki's mountain-fed rivers are rated in the 'A' and 'B' bands for

ecological health by the Government's own measure. With only rare exception, the ecological health of Taranaki rivers has been stable or improving for a decade or more.

22. Following submissions on its September proposals, the Government has decided not to include national bottom lines for DIN due to a lack of consensus among the Science and Technical Advisory Group. The new dissolved reactive phosphorus attribute (DRP) will also be shifted from a 'limit setting' attribute to an 'action plan' attribute, meaning that the new NPS-FM will no longer prescribe a 'national bottom line' limit to be met.
23. The Government has not however given up on nutrient limits. Instead, it has announce it will re-consider the inclusion of DIN and DRP in 12 months' time.
24. In the interim, through the NES-FM, the Government will require councils to monitor and enforce a universal limit of 190kg nitrogen fertiliser, per hectare, per year. The actual annual usage of N synthetic fertiliser must be reported to the Council. Most dairy farms should be able to meet this limit.
25. The Government is also significantly tightening existing water quality limits on nitrate and ammonia, to give a very high degree of protection to stream ecology. Again, Taranaki's streams and rivers comfortably meet the new criteria.

Swimmability

26. Under the Government's September proposals, swimming standards would have to be maintained even where or when rivers are too cold, shallow, dangerous, discoloured, and/or too fast-flowing to be suitable for recreation. The logic of this was challenged in the Council's submission.
27. It is understood that the proposals as amended by the Government now require lower *E. coli* levels (from the current NPS-FM) to apply during the bathing season at the places where people swim and when conditions allow it. The Council's existing recreational bathing monitoring programme already fulfils the amended requirements. In addition to this, the Council will also work towards improving E. coli levels more widely through non-statutory action plans.

Role of OverseerFM

28. The Government originally proposed to require the use of the OverseerFM farm management tool in farm environment plans.
29. The Council agrees that OverseerFM is a useful on-farm management aid to nutrient balancing. However, Council also shares the view of many experts and authorities, including the Parliamentary Commissioner for the Environment; that OverseerFM is unfit for use as a regulatory tool to control water quality. Overseer is highly inaccurate, remains unproven in many environmental landscapes and cannot reflect actual environmental impacts.
30. In its proposals as amended, the Government confirmed OverseerFM, for now, will not be used as a compulsory and regulatory tool (although Government will invest in improvements to the model to support its role as an aid to nutrient management).

Stock exclusion and riparian management

31. The Government originally proposed 'one size fits all' stock exclusion rules including a compulsory average five metre riparian fencing setback for streams wider than one metre.

32. The Council strongly argued in its submission that this was an arbitrary limit that did not consider individual circumstances - unlike Taranaki's riparian farm plans that are tailor-made for each property and encompass planting as well as fencing. The new rule would have threatened and overridden Taranaki's proven, successful and much more comprehensive Riparian Management Programme, adding substantial cost for no obvious benefit.

33. In its proposals as amended, the Government has reduced its setback requirements from a 5m average to 3m. Furthermore, and more importantly, it will allow existing permanent fencing to remain in place, if that width was recommended through a Council-prepared riparian management plan.

34. Of note, Taranaki's long-running Riparian Management Programme, which also includes riparian planting, already goes further than the Government's proposals.

The Waingongoro catchment

35. The original proposals targeting high-nitrogen catchments around New Zealand and included the Waingongoro catchment. The Government's regulatory focus on the Waingongoro catchment - which would have meant harsh constraints on dairy farming - was based on a desktop view that nitrogen concentrations were causing unacceptable effects to the river.

36. The Council's scientific evidence, from more than 20 years' worth of environmental monitoring, was that such potential effects were in fact not present, and the river is actually showing improvement across a number of measures of health and quality.

37. Besides the universal review of the appropriateness of nitrate nutrient criteria that it will now undertake, the Government now appears to have abandoned any of the specific interventions it had put forward targeting high-nitrogen catchments.

38. Instead it will require the accelerated preparation and implementation of farm-specific freshwater farm plans. These will require each farmer to determine and apply actions that are effective in better managing on-farm risks and controlling adverse effects of their farming on receiving freshwaters to achieve outcomes 'yet to be prescribed' by the Government. Councils will be required to ensure compliance with the plans.

39. The Council awaits information about the outcomes the Government will require in these catchments.

Sediment regulation

40. Sediment entering and flowing down rivers is widely recognised as having a substantial impact upon stream and estuarine health.

41. The Council expressed reservations about the workability of the Government's original criteria for suspended solids (water clarity) and streambed sedimentation. The proposals have now been modified, and the Government considers the implementation of widespread improvements in land management will achieve the re-worked targets.

42. However, the Council remains concerned about what the potential sediment levels of the regulations could be.

43. The soils of Taranaki's eastern hill country are naturally highly erodible when left exposed without tree cover. Slumping and landslips are routine without soil conservation measures in place, causing waterways to carry high sediment loads, given the frequently wet weather patterns with intensive downpours.

44. This all results in high levels of sediment movement in waterways in the region's eastern hill country. However, it is uncertain how much this can be reduced with the implementation of sustainable land management practices despite around 70% of the Taranaki hill country already being indigenous vegetation, a further 10% in exotic forestry, and widespread uptake by farmers of farm management plans delivering sustainable land use.

New measures of stream health and water quality

45. The Council has a comprehensive suite of measures for determining and reporting to the public on the health of the region's streams. The Government had proposed a considerable number of compulsory additional measures.
46. The value and practicality of some of these were challenged by the Council. An amended range is now to be required, providing extra ways of assessing freshwater fauna and flora and ecosystem function.
47. Methods, schedules, and criteria for data interpretation are still to be developed, and staff will evaluate these requirements as details emerge. However, it is already clear that the Council's ratepayers will face additional costs.

COVID-19 and regional planning processes

48. The Government originally proposed that councils would take all new requirements into account and notify new regional plans for freshwater, recognising and giving effect to all proposals, by December 31, 2023.
49. The practicality and workability of this deadline was vigorously challenged by the local government sector. The Government has now acknowledged the original deadline would have been onerous for councils, communities and iwi alike, and risked compromising the quality of the process and outcomes. It has further recognised the possibility that council processes, including stakeholder engagement, have been disrupted by the Covid-19 lockdown.
50. The Government has now agreed an extra year should be allowed for the preparation of new regional plans.

Further input and uncertainty

51. At this point-in-time, the Government has only released its policy decisions. The actual text of statutory documents that will be gazetted/enacted has not been provided. Council officers have been advised that draft provisions will be circulated in early July with regional council practitioners having five working days to work through the detail and provide final comment to the Ministry for the Environment prior to them being promulgated.
52. Until we can review the detail of the regulatory documents, the full implications of the proposals are difficult to assess and are uncertain.
53. Further, some contentious elements of the proposal have been put on a 12 month review and could re-emerge.
54. For further information on the Government's freshwater reform, please refer to the Ministry for the Environment website.

Decision-making considerations

55. Part 6 (Planning, decision-making and accountability) of the *Local Government Act 2002* has been considered and documented in the preparation of this agenda item. The recommendations made in this item comply with the decision-making obligations of the *Act*.

Financial considerations—LTP/Annual Plan

56. This memorandum and the associated recommendations are consistent with the Council's adopted Long-Term Plan and estimates. Any financial information included in this memorandum has been prepared in accordance with generally accepted accounting practice.

Policy considerations

57. This memorandum and the associated recommendations are consistent with the policy documents and positions adopted by this Council under various legislative frameworks including, but not restricted to, the *Local Government Act 2002*, the *Resource Management Act 1991* and the *Local Government Official Information and Meetings Act 1987*.

Iwi considerations

58. This memorandum and the associated recommendations are consistent with the Council's policy for the development of Māori capacity to contribute to decision-making processes (schedule 10 of the *Local Government Act 2002*) as outlined in the adopted long-term plan and/or annual plan. Similarly, iwi involvement in adopted work programmes has been recognised in the preparation of this memorandum.

59. The Council will be liaising with iwi and hapū directly and through the Wai Māori working group as part of the development of the proposed Natural Resources Plan for Taranaki. This includes ensuring the new Plan giving effect to the NPS-FM and NES-FM. Of particular interest will be ensuring NPS-FM concepts such as Te Mana o te Wai, matauranga Maori and the incorporation of mahinga kai as a NOF attribute are properly consulted on and incorporated into relevant Plan provisions and associated work and monitoring programmes.

Legal considerations

60. This memorandum and the associated recommendations comply with the appropriate statutory requirements imposed upon the Council.

MEMORANDUM
Policy & Planning

Date 21 July 2020

Subject: **Considerations of Stream Size in Determining Minimum Flows and Water Allocation Limits in Taranaki Rivers**

Approved by: A D McLay, Director - Resource Management

M J Nield, Acting Chief Executive

Document: 2536519

Purpose

1. The purpose of this memorandum is to introduce the report produced by Dr Ian Jowett (Jowett Consulting), *Considerations of Stream Size in Determining Minimum Flows and Water Allocation Limits in Taranaki Rivers*.

2. The report has been prepared to inform the review of freshwater plan and, in particular, the consideration of minimum flow and allocation limits for a new proposed *Natural Resources Plan*. Attached to this item is a factsheet that has been prepared to summarise, key concepts and findings from the technical report.

Executive summary

3. The Taranaki Regional Council (the Council) is currently preparing a proposed *Natural Resources Plan for Taranaki*. This is a new regional plan that will in due course replace the current air, soil and freshwater plans.

4. As part of its review, the Council has commissioned two technical reports from Dr Ian Jowett (Jowett Consulting Ltd.) to:

   - review allocation options for the setting of environmental flows and water take limits in a proposed Natural Resources Plan, including the benefits and costs;
   - meet Resource Management Act section 32 requirements (which require the Council to prepare and publish an evaluation report for the proposed Plan);
   - meet limit setting requirements for the *National Policy Statement for Freshwater Management* (NPS-FM); and
   - provide technical data to inform discussion with tangata whenua, water users and the wider community regarding future water allocation regulations.

5. The first report *Review of Minimum Flows and Water Allocation in Taranaki* was completed in June 2018.

6. The 2018 report investigated existing research on environmental flow requirements, principles for setting minimum flow and allocation limits, reviewed long term hydrological, water quality and streambed invertebrate data for Taranaki, and presented options for future flow limits for Taranaki.
7. The 2018 report was based on surveys of 'representative' Taranaki rivers (typically with small to moderate mean flows in the order of 1-30m^3/s). The report recommended setting 'default' environmental flow limits based on protection levels sought for benthic habitat and fish (as indicators of instream ecological health).
8. Following the 2018 report, and after discussions with the Wai Māori Working Group, the Council commissioned additional work and investigations to assess whether differing environmental flows and protection levels should be set for 'very small streams' or 'large' rivers (those much smaller or bigger than the Taranaki 'norm').
9. A second report by Dr Jowett *Considerations of Stream Size in Determining Minimum Flows and Water Allocation Limits in Taranaki Rivers* was completed in May 2020 and a summary of the report findings are set out in the discussion below and in the attached factsheet.
10. Key findings from the 2020 report are as follows:
    - lower minimum flow percentages and higher allocation percentages may be set for large rivers (i.e. Waitara) that will still provide the equivalent levels of instream protection sought for the representative (smaller) rivers analysed in the 2018 report;
    - instream habitat for 'very small' streams are not significantly different from those classed as 'small';
    - there is no technical basis for the Council to set different default environmental flow limits for 'small' and 'very small' streams; and
    - 'small' and 'very small' streams are the most vulnerable to use and development and the report confirms that less water should be taken from them to achieve high instream protection levels.
11. The 2020 report is part of a suite of technical investigations to inform discussion with tangata whenua, water users and the wider community regarding the setting of environmental flow limits for a new proposed Natural Resources Plan.

Recommendations

That the Taranaki Regional Council:

a) receives the report *Considerations of Stream Size in Determining Minimum Flows and Water Allocation Limits in Taranaki Rivers* and its associated Factsheet

b) notes that the report will underpin technical discussions and the wider consultation of water allocation policy options to be incorporated in the proposed *Natural Resources Plan*.

Background

12. The *National Policy Statement for Freshwater Management 2014* (NPS-FM) states that all regional councils will be required to set environmental flows that include an allocation limit and a minimum flow.

13. In late 2019, the Government consulted on a draft NPS-FM. In setting environmental flows and identifying take limits, the draft NPS-FM has indicated that the Council must ensure relevant regional plans comply with the following sections:

3.11 Setting environmental flows and levels

(1) Every regional council must set environmental flows and levels for each FMU [freshwater management unit], and may set them for individual waterbodies or parts of waterbodies in an FMU.

(2) The environmental flows and levels must be developed on the basis of the environmental outcomes identified under clause 3.7.

(3) The environmental flows and levels must be expressed in terms of the water level, flow rate, and variability of flow (as appropriate to the waterbody) at which:

a) for flows and levels in rivers, the taking, damming, or diverting of water meets the environmental outcomes for the river and any connected waterbody; and

b) for levels of lakes, the taking, damming, or diverting of water meets the environmental outcomes for the lake and any connected waterbody; and

c) for levels of groundwater, the taking, damming, or diverting of meets the environmental outcomes for the groundwater and any connected surface water.

(4) Clause 3.9(6) applies when regional councils are setting environmental flows and levels.

3.12 Identifying take limits

(1) In order to meet environmental flows and levels, every regional council:

a) must identify take limits for each FMU; and

b) must include the take limits as rules in its regional plan; and

c) must state in its regional plan whether existing water permits will be reviewed to comply with environmental flows and levels; and

d) may prepare and publish action plans; and

e) may impose conditions on resource consents.

(2) Take limits must be expressed as a total volume or total rate at which water may be taken from each FMU, or from parts of an FMU, and must state the circumstances in which the take may occur.

(3) Take limits must be identified at levels that:

a) provide for flow or level variability that meets the needs of the relevant waterbody and connected waterbodies, and their associated ecosystems; and

b) safeguard ecosystem health from the effects of the take limit on the frequency and duration of lowered flows or levels; and

c) provide for the lifecycle needs of aquatic life; and

d) provide for the essential health needs of people; and

e) take into account the environmental outcomes applying to the relevant waterbodies and any connected waterbodies (such as aquifers and downstream surface waterbodies), whether in the same or another region.

14. The current *Regional Freshwater Plan for Taranaki* includes a policy that sets minimum flow limit but does not set allocable volume limits. Minimum flow limits in this Plan generally

require two-thirds (66%) of habitat to be retained at mean annual low flow (MALF). MALF is the lowest flow that could be naturally expected on a year-to-year basis (or in other words, a typical summer low flow). In real terms, this limit requires 66% of MALF to be retained as a minimum flow.

15. As part of the review of its Freshwater Plan, the Council is developing a proposed Natural Resources Plan that combines regional plan provisions for air, land and fresh water. As part of that Plan review, the Council commissioned additional studies and investigations to inform the setting of environmental flow limits for inclusion in the proposed Natural Resources Plan. This work is part of the Council's Section 32 [cost benefit] analysis, which requires the Council to prepare and publish an evaluation report for the proposed Plan.
16. The Council commissioned Dr Ian Jowett (Jowett Consulting Ltd to assist with these investigations. Dr Jowett has significant New Zealand experience and previous experience working within the Taranaki region, which includes providing technical guidance to the Council when the current version of the Freshwater Plan was developed.
17. In June 2018, the first report by Dr Jowett was completed which investigated the following in relation to 'representative' Taranaki rivers (typically with small to moderate mean flows in the order of 1-30m^3/s):
    - the existing research on environmental flow requirements;
    - the principles for setting minimum flow and allocation limits;
    - hydrological, water-quality and streambed invertebrate data relating to nine waterbodies representative of Taranaki rivers; and
    - recommendations or options for future environmental flow limits for Taranaki.
18. This scientific report *Review of Minimum Flows and Water Allocation in Taranaki* is available on the Council website. Given its complex and technical nature, a factsheet summarising key concepts and findings as also been prepared. The report and associated modelling analysed environmental impacts of different limits on freshwater flows and allowable water takes. It drew on long-term monitoring data to model the impacts of various flow and allocation limits on fish and invertebrate populations, and on the reliability of supply for water users. Key finding and recommendations from the report included:
    - water allocation decisions should largely be based on a river's 'mean annual low flow', or MALF, which is the average of the lowest flow that naturally occurs in the river each year;
    - reduced water levels reduce the amount of habitat available for fish species and stream invertebrates, especially in shallow, wide streams (of note, this was probably the first New Zealand study to examine the combined ecological effects of minimum flows and allocation on these benthic communities);
    - instream protection levels are directly linked to the environmental flows (the more restrictive the minimum flow and allocation volumes are, the higher the instream protection levels);
    - conversely the more restrictive the minimum flow and allocation volumes, the less water is available for use and development (e.g. the number of days of partial restriction would more than double from the current regime if 90% MALF minimum flow and 30% MALF allocable volumes were adopted);

- recommendation that 'default' environmental flow limits be based on protection levels sought for benthic habitat and habitat for fish species that rely on shallow swift flow habitats such as trout or torrentfish;
- a 20% reduction in fish population is probably not detectable and the reduction would only occur if the fish population were habitat limited; and
- similarly, a reduction of 10% in the state of the benthic invertebrate community is minor and probably not detectable. To put this in perspective, a fish protection level of 83% and a benthic protection level of 91% would reduce the number of large (> 40 cm) trout by approximately one fish per kilometre.

19. The report was presented to iwi and stakeholders of the region at a hui and meeting in late 2018 by Dr Jowett and was discussed.
20. Following the first 2018 report, and after discussions with the Wai Māori Working Group, the Council determined to commission Ian Jowett to undertake further work and investigations to examine whether different environmental flows and protection levels should be set for 'very small streams' or 'large' rivers (those much smaller or bigger than the Taranaki 'norm').

Second (2020) study on environmental flows

21. As noted above, the Council commissioned Dr Jowett to undertake further work and investigations and to report his findings to the Council. The purpose of this study was to study a wider range of river sizes with a focus on very large rivers and very small streams and 'test' whether the protection levels calculated in the initial work would apply consistently across all stream sizes.
22. To be selected for inclusion in the survey, a river or stream needed to have a long-term record of river flow information. The two large rivers chosen for surveying were the Waitara and Whenuakura rivers, and the two very small streams were the Mangatawa (Punehu) and the Waiokura streams. Adding these sites meant there would now be 13 sites included in the analysis across both 'Jowett' reports.
23. In February and March 2020, Dr Jowett alongside Council officers undertook habitat surveys in the four additional waterways. Representatives from Otaraua hapu and Waiokura Marae assisted with surveying of the Waitara River and Waiokura Stream, respectively.
24. The surveys involved an initial inspection of river/stream to map the various types of habitat found in the waterway.
25. From this mapping, a number of cross sections were selected for surveying that best represented the range and proportion of differing habitat types mapped. Up to 15 cross sections were selected in each surveyed waterway.
26. Once selected, instream habitat surveying was carried out. This involved measuring the depth and speed of water, and the type of bed material (sand/cobble/rock/weed etc.) at a number of locations across each cross section. The combination of these measurements was used to assess the habitat quality at each cross section and its suitability for various species of benthic invertebrates and fish. Calibration visits to each waterway were then required to determine how habitat changed at higher and/or lower flows.
27. The results of the habitat surveys were then used to model and assess the effects of flow changes on the amount of suitable habitat for key indicator species in each surveyed river/stream. These 'models' enabled the effects of various environmental flow limits to

be tested and the amount of protection provided for benthic invertebrates and fish under each scenario to be estimated.

28. Benthic invertebrates are used internationally, and in New Zealand, as a measure of ecosystem health. Benthic invertebrates are an important food source for native fish and trout. The macro-invertebrate community index (MCI) is commonly regarded as a measure of ecosystem health and has been identified as the one measure that was most closely related to Māori cultural values[1]. Maintaining a high MCI will also lead to high biodiversity and help meet MCI requirements of the NPS-FM. State of the Environment monitoring data for Taranaki shows widespread improvement in MCI values across the region over the last 20 years.

29. Native fish and trout can be affected by low flows through a reduction in the amount of suitable habitat if the flows are low for a sufficiently long period. At low flows, the amount of habitat suitable for fish with high flow requirements, such as torrentfish, kōaro and adult trout, declines linearly as flows reduce towards zero. To maintain populations of these fish species with high flow requirement, extended periods of low flows (> 30 day period) should be avoided. Because trout, kōaro and torrentfish have the highest flow requirements of any fish species, flows that maintain adequate habitat for them will be more than adequate for other fish species, such as tuna (eels) and inanga.

30. Subsequently, Dr Jowett has reported back to the Council his findings. A summary of the report findings are set out in the discussion below and in the attached factsheet. The full report *Considerations of Stream Size in Determining Minimum Flows and Water Allocation Limits in Taranaki Rivers* is available on the Council website.

31. Key findings from the report are as follows:

- the relationship between environmental flows and protections levels is generally linear - the more permissive environmental flow limits are, the less protection they provide for instream ecosystem health and fishery habitat;
- the relationship between environmental flows/protection levels and stream size is also generally linear - the larger the river/stream size, the more permissive environmental flow limits can be before there is an effect on instream protection levels;
- however, there is no technical basis to have different environmental flow limits for 'small' and 'very small' rivers. Both types are the most vulnerable to use and development and require the same, more restrictive, environmental flow limits than larger rivers; and
- making environmental flow limits more restrictive also increases the number of days that water take restrictions are expected. However, relatively large increases in minimum flow restrictions result in only small increases in protection levels but significant increases in days with water restrictions.

Discussion

32. Rivers and streams surveyed for the *Considerations of Stream Size in Determining Minimum Flows and in Taranaki Rivers* report are classified nationally as 'large', 'moderate' or 'small' (or 'very small') depending on their flow rate. Large rivers have a mean flow of at least

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1 Tipa & Teirney 2003.

30 cubic metres a second, while moderate sit in the range of 5 to 30 cubic metres a second. Small are below five cubic metres a second and very small are below one cubic metre a second.

33. Over the course of the two studies, Dr Ian Jowett undertook comprehensive and in-depth surveys of a broad spectrum of river and stream sizes and types in Taranaki. This means Council can be confident that the study finding can be applied to waterways across the region. The waterways surveyed were:

    - Very small (mean flow < $1m^3/s$): Tawhiti, Mangatawa, Waiokura;
    - Small (mean flow 1-$5m^3/s$): Kapoaiaia, Kaupokonui, Manganui, Mangaoraka, Patea, Waiongana, Kapuni;
    - Moderate (mean flow 5-$30m^3/s$): Tangahoe, Waingongoro, Waiwhakaiho, Whenuakura, Hangatahua (Stony); and
    - Large (mean flow > $30m^3/s$): Waitara.

34. Approximately 95% of Taranaki rivers would be classified as 'small' but the values of a waterway do not necessarily diminish because it is classified as 'small'. They may still be quite significant for a variety of reasons including for cultural, ecological, and fishery values.

35. The Waitara River is the only Taranaki waterway that would be nationally classified as 'large'. The second Jowett report confirms that for large rivers, instream values can still be protected when minimum flow percentages are lower and allocation percentages are higher.

36. Taranaki has only a small number (around 4%) of waterways nationally classified as 'moderate', two examples being the Waiwhakaiho River and the Waingongoro rivers. The new report confirms that these waterways can also sustain slightly larger water takes and lower minimum flow percentages than what would be tolerable for small streams.

37. Because most Taranaki waterways are small, the Council's state of the environment monitoring has largely focused on these waterway type (and because of the availability of data, 'small' waterways were the focus of the first Jowett report). The second report focuses on three waterways classified as 'very small' (or tiny): Tawhiti Stream, Mangatawa Stream and Waiokura Stream.

38. The study shows that, in terms of habitat, ‘very small’ streams are not significantly different from those classed as ‘small’. It concludes that there is no technical basis to have different environmental flow limits for ‘small’ and ‘very small’ streams. Both types are the most vulnerable to use and development, and the report confirms that any water takes should be smaller to achieve high instream protection levels.

39. Table 1 shows the implications of adopting various 'default' environmental flow combinations in terms of achieving an 80-90% protection level in Taranaki rivers at the worst time of the year (i.e. during the summer with low flows and peak demand). However, any impacts are likely to be short lived with habitat and fish numbers recuperating during wetter seasons with less water demand.

40. The actual effects on the benthic invertebrate community are likely to be less than indicated by the modelling carried out as the effects were calculated assuming that the maximum allowable allocation was abstracted all through the year. This would rarely be the case. Riparian management can also positively affect benthic invertebrates and fish communities by increasing shade to reduce water temperatures and creating cover and

habitat diversity for fish. Riparian planting has been used to offset the effects of abstraction in many instances.

41. The options considered include the Council's current 'default' limits. However, going forward the Council will be seeking higher levels of protection.

Table 1: Minimum flow options varying with stream size

	Small stream (< 5 m³/s)	**Moderate river (> 5 m³/s)**	**Large river (> 30 m³/s)**	**Allocation volume as % MALF**	**Benthic invertebrate protection level %**	**Fish habitat protection level %***
	Minimum flow as % MALF					
Option 1	79%	67%	45%	30	89	80
Option 2	81%	71%	52%	30	91	80
Option 2a	90%	85%	76%	30	92	83
Option 3	87%	82%	71%	40	90	80
Option 4	89%	85%	77%	40	91	80
Option 5: Current Freshwater Plan	66%			33**	87	77

* for the most sensitive fish species with the highest flow requirements i.e. trout and torrentfish. Of note, a 20% reduction in fish population is probably not detectable and would likely only affect trout and torrentfish, (which rely on swift-flow habitats). Similarly, a reduction of 10% in benthic protection is considered small and probably not detectable

** Inferred allocation limit as no limits are specified in the existing Freshwater Plan

42. The reliability of water supply represents how many days per year water takes may be restricted depending on different combinations of minimum flow and allocation. Water takes provide for a broad range of uses, including some of high economic or social value such as community water supply and hydroelectricity generation.

43. Increasing protection levels restricts the amount of water available for resource users. Restrictions can either be total (no taking allowed) or partial (some reduction in take rates) to ensure compliance with minimum flows. The number of days with total restriction depends on the minimum flow. Allocation affects the number of days there is likely to be partial restrictions with a 10% increase in allocation causing about a 10-day increase in the number of days with partial restriction.

44. In addition to the protection levels originally assessed in the 2018 report, Council sought to understand what the effect on protection levels and reliability would be if the minimum flow (as a percentage of MALF) was increased while retaining an allocation volume of 30% of MALF. As shown in Tables 1 and 2, there is only a minimal increase in protection levels but the reliability of supply is significantly decreased.

Table 2: Restrictions to abstraction for each of the minimum flow/allocation limit options in Table1

	Small stream (< 5 m^3/s)	**Moderate river (> 5 m^3/s)**	**Large river (> 30 m^3/s)**	**Allocation volume as % MALF**	**Days per year of full / partial restriction**		
	Minimum flow as % MALF				**Small stream**	**Moderate river**	**Large river**
Option 1	79%	67%	45%	30	2.6 / 28	0.4 / 15	0.0 / 2
Option 2	81%	71%	52%	30	3.4 / 31	0.8 / 19	0.0 / 4
Option 2a	90%	85%	76%	30	8.5/42	5.8/36	2.2/24
Option 3	87%	82%	71%	40	6.8 / 49	4.0 / 44	0.8 / 31
Option 4	89%	85%	77%	40	7.9 / 51	5.8 / 47	2.2 / 38
Option 5: Current Freshwater Plan	66%			33*	0.4 / 18		
* Inferred allocation limit as no limits are specified in the existing plan							

Where to from here

45. The 2020 report is part of a suite of scientific and technical investigations to inform discussion with tangata whenua, water users and the wider community regarding the setting of environmental flow limits for a new proposed Natural Resources Plan.

46. The Council will in due course consult the public on a proposed water allocation framework with environmental flow limits for inclusion in a Natural Resources Plan. Based upon the work done to date, it is likely a new allocation framework will be developed that includes the following concepts:

    - Default limits: Normal limits based upon the Jowett studies that will apply to most Taranaki waterways, unless one of the exemptions below applies.

- Catchment/site-specific limits: Specific limits, higher or lower than normal, for a small number of waterways or reaches that are set that recognise and provide for specific values identified for that waterway/reach – e.g. to protect outstanding waterbodies or to provide for important consumptive uses such as municipal water supplies or hydroelectricity generation.

47. Based upon the Jowett studies and the subsequent adoption of new environmental flow limits it is likely that the new Natural Resources Plan will identify over-allocated catchments. These are waterways where total allocations already exceed default limits and it will be appropriate to 'claw back' water use through the resource consent process over time.

48. The attached Factsheet has been prepared to summarise, for the layperson, key concepts and findings from the report, to inform discussions relating to the review of the Freshwater Plan.

Decision-making considerations

49. Part 6 (Planning, decision-making and accountability) of the *Local Government Act 2002* has been considered and documented in the preparation of this agenda item. The recommendations made in this item comply with the decision-making obligations of the *Act*.

Financial considerations—LTP/Annual Plan

50. This memorandum and the associated recommendations are consistent with the Council's adopted Long-Term Plan and estimates. Any financial information included in this memorandum has been prepared in accordance with generally accepted accounting practice.

Policy considerations

51. This memorandum and the associated recommendations are consistent with the policy documents and positions adopted by this Council under various legislative frameworks including, but not restricted to, the *Local Government Act 2002*, the *Resource Management Act 1991* and the *Local Government Official Information and Meetings Act 1987*.

Iwi considerations

52. This memorandum and the associated recommendations are consistent with the Council's policy for the development of Māori capacity to contribute to decision-making processes (schedule 10 of the *Local Government Act 2002*) as outlined in the adopted long-term plan and/or annual plan. Similarly, iwi involvement in adopted work programmes has been recognised in the preparation of this memorandum.

53. In undertaking the latest surveys the Council consulted with Pukerangiora hapu and Otaraua hapu for the Waitara River and with representatives of the Waiokura and Whenuakura Marae in relation to the Waiokura Stream and Whenuakura River. In addition, representatives from the Otaraua hapu and Waiokura Marae joined Council officers and Dr Jowett to physically undertake the surveys. Unfortunately due to timing constraints related to Covid-19, the planned involvement of Whenuakura Marae trustees in a field visit did not proceed as was intended. Council officers also discussed the surveys with the Wai Māori Working Group prior to them being undertaken.

Legal considerations

54. This memorandum and the associated recommendations comply with the appropriate statutory requirements imposed upon the Council.

Appendices/Attachments

Document 2536399: *Factsheet: Considerations of Stream Size in Determining Minimum Flows and Water Allocation Limits in Taranaki Rivers*

Freshwater Review:

Does stream size matter when determining minimum flows?

This factsheet is the second in a series discussing minimum flows and water allocation in Taranaki. The first summarised a study into how flows and allocations affected benthic (streambed) invertebrate communities and fish populations, particularly species that need high flows. This one summarises a follow-up study into whether different approaches are needed for small streams versus larger rivers.

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Taranaki Regional Council

Does stream size matter when determining minimum flows?

Understanding the findings of *Considerations of Stream Size in Determining Minimum Flows in Taranaki Rivers*, Jowett Consulting Ltd, June 2020.

Overview

Freshwater is precious and limited, a taonga of huge significance, and is of particular importance to Māori. This information sheet is one of a series outlining proposed new water allocation approaches to managing the health of fresh water in Taranaki.

The Taranaki Regional Council is reviewing its *Regional Fresh Water Plan for Taranaki*. This Plan will be combined with the *Regional Soil Plan* and *Regional Air Quality Plan* to form a new *Natural Resources Plan* to manage our air, land and freshwater resources.

A new Natural Resources Plan currently being developed aims to 'up the game' in freshwater allocation to better protect the health and mauri of our waterways.

Through the *Natural Resources Plan*, the Council will set limits on how much water can be taken from rivers and streams. It's vital to ensure that, as a minimum, enough water is left in our rivers and streams to protect the health, well-being and mauri (life force) of water. Notwithstanding that, additional water might still need to be retained in a waterway to protect other values such as fishery and/or customary uses and values.

Torrentfish photo: Angus McIntosh

By protecting trout, kōaro and torrentfish (which rely on swift-flow habitat, we also protect other species such as tuna (eels) and inanga (whitebait).

Images from top to bottom: juvenile native brown trout, torrentfish, tuna (long-fin eels).

Proposed environmental flow limit setting framework for Taranaki

As part of the development of a new Natural Resources Plan, the Council will be consulting with the public on a new water allocation framework with environmental flow limits set for different circumstances. The framework will include the following concepts

Default limits
Normal limits applying to most waterways, unless one of the exemptions below applies.

Catchment-specific limits
Specific limits, higher or lower than normal, for a small number of waterways to reflect specific values – e.g. to protect outstanding waterbodies – or to provide for municipal water supplies or hydroelectricity generation.

Site-specific limits
Variations for specific water takes, perhaps exceeding default limits to cater for existing public water supplies or regionally significant infrastructure.

Over-allocated catchments
For waterways where total allocations already exceed default limits, it may be appropriate to 'claw back' water use through the resource consent process.

Natural Resources Plan
Environmental flows and allocation limits are only one factor in protecting freshwater values. The new *Natural Resources Plan*, will also include provisions addressing discharges, nutrient levels, and ecological health, and identify whether the waterway has special values such as sites of significance to Māori or inanga spawning sites.

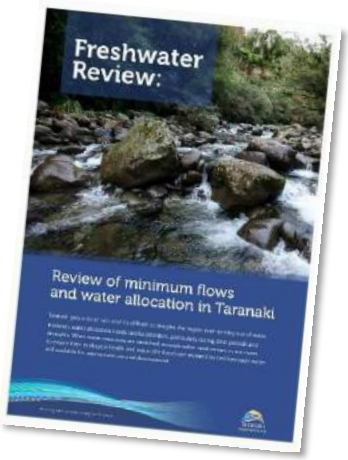
The Council proposes major changes to its current *Freshwater Plan* by setting new limits based on environmental flows. The next step is developing these limits and associated provisions before notifying a proposed *Natural Resources Plan* by the end of 2024.

What are environmental flow limits?

Environmental flows are a combination of allocation limits (the total volume of water allowed to be taken from a particular waterway) and minimum flow limits (the cut–off point where water takes cease in order to protect ecosystem health).

To help understand what appropriate environmental flow limits might be for Taranaki, the Council commissioned a comprehensive expert review of how, and by what measure, we can protect the health of our rivers and streams. Jowett Consulting Ltd has much experience with the region and was commissioned to examine the science and freshwater monitoring data, including what protection levels and water restrictions are likely to apply when setting various environmental flow levels. That work recommends setting protection levels for our rivers and streams based on benthic habitat (streambed invertebrate communities) and fish populations that need high flows, such as trout and torrentfish. Two studies have been undertaken – they are probably the first in New Zealand to examine the combined ecological effects of environmental flows on ecosystem health and biodiversity.

The first study, *Review of Minimum Flows and Water Allocation in Taranaki*, was completed in July 2018 and examined the long-term water data from 13 monitored 'representative' Taranaki rivers (typically with small to moderate mean flows in the order of 1 to 30 cubic metres a second).



A second study was completed in May 2020. It aimed to help the Council understand if different environmental flows and protection levels should be set for 'very small (tiny) streams' or 'large' rivers (those much smaller or bigger than the Taranaki 'norm'). The findings from that study are set out in the report *Considerations of Stream Size in Determining Minimum Flows and in Taranaki Rivers*. This factsheet summarises the key findings from the second report.

The value and impacts of environmental flow limits

Taking water from rivers and streams reduces the habitat available for aquatic life, and may also increase water temperatures. This, in turn, affects the fish and insects living in the waterway.

The Council, through its new *Natural Resources Plan* and resource consents, will set clearer limits on how much water can be taken. In setting these limits, the Council first seeks to protect the baseline health of the waterway. Any effects must be temporary and not undermine the health of the waterway itself. More water may also need to be left in the waterway to protect other values (e.g. fisheries, mahinga kai, amenity values, and so on). Further work is being undertaken to identify these values.

Allocating higher amounts of water and/or having a lower minimum flow limit generally results in less protection for fish and insects (and vice versa). However, this must be balanced against the needs of essential services such as public water supplies and hydro-power generation or significant industries that are important to the local economy and employment.

Recreational fishing near the Waitara Rivermouth

The limits also dictate how often any allocated water will actually be available for use (before reaching the cut-off point). This is referred to as 'reliability of supply'. Allocation limits also influence how much additional water might be available for any future use in a catchment.

Does the size of rivers or streams matter?

Rivers and streams surveyed for the *Considerations of Stream Size in Determining Minimum Flows and in Taranaki Rivers* report are classified nationally as 'large', 'moderate' or 'small' (or 'very small') depending on their flow rate.

Large rivers have a mean flow of at least 30 cubic metres a second, while moderate sit in the range of 5 to 30 cubic metres a second. Small are below 5 and very small are below 1.

Approximately 95% of Taranaki rivers would be classified as small. But the values of a waterway do not necessarily diminish because it is classified as small. They may still be quite significant.

The Waitara River is the only Taranaki waterway classified as large. The second Jowett report confirms that for large rivers, instream values can still be protected when minimum flow percentages are lower and allocation percentages are higher.

Taranaki has only a small number of waterways (around 4%) classified as moderate, two examples being the Waiwhakaiho and Waingongoro rivers. The new report confirms that these waterways can also sustain slightly larger water takes and lower minimum flow percentages than what would be tolerable for small streams.

Waterways surveyed
Jowett undertook comprehensive and in-depth surveys of 16 waterways. These represent the broad spectrum of river and stream sizes and types in Taranaki, so we can be confident applying the findings to waterways across the region.

Very small (mean flow < 1m3/s)
Tawhiti Stream
Mangatawa Stream
Waiokura Stream

Small (mean flow 1-5m3/s)
Kapuni Stream
Kapoaiaia Stream
Kaūpokonui Stream
Manganui River
Mangaoraka Stream
Pātea River
Waiongana Stream

Moderate (mean flow 5-30m3/s)
Tangāhoe River
Waingongoro River
Waiwhakaiho River
Whenuakura River
Hangatahua (Stony)

Large (mean flow > 30m3/s)
Waitara River

Fonterra Whareroa fish pass in the Tawhiti Stream

Because most Taranaki waterways are nationally classified as small, this type was the major focus of the first Jowett report. The second report focuses on three waterways classified as very small: Tawhiti Stream, Mangatawa Stream and Waiokura Stream, comparing habitats to streams that are much larger but still classified as small.

The study shows that, in terms of habitat, 'very small' streams are not significantly different from those classed as 'small'. It concludes that there is no technical basis to have different environmental flow limits for 'small' and 'very small' streams. Both types are the most vulnerable to use and development, and the report confirms that less water should be taken from them to achieve high instream protection levels.

How are protection levels determined?

Water allocation decisions are largely based on a river's mean annual low flow, or MALF, which is the lowest average annual flow (or in other words, a typical summer low flow). The MALF is generally the minimum needed to maintain 100% of the natural river's instream values, including life-supporting capacity for fish and invertebrates, natural character and ecosystem health.

Instream protection levels are directly linked to the environmental flows. Minimum flows and allocations are calculated as a percentage of MALF, and this allows the protection level for benthic habitat and fish to be assessed.

Table 1 shows the implications of adopting various default environmental flow combinations in terms of achieving a protection level of 80% to 90% in Taranaki rivers at the worst time of the year (during the summer with low flows and peak demand). However, any impacts are likely to be short-lived, with habitat and fish numbers recuperating during wetter seasons with less water demand.

The options considered include the Council's current default limits. However, the Council will be seeking higher levels of protection.

Hydrology gauge and water intake pipe, Waiokura Stream

It should be noted that these protection levels set out in Table 1 are conservative. They assume that the full allocation volume is taken by all water users all year. But this rarely happens in practice, so the real protection levels are much higher. In addition, the protection level for fish is calculated for species that need the highest flow (trout and torrentfish). The same limits would provide higher levels of protection for species with lower flow requirements, including tuna and whitebait.

Table 1: Minimum flow options varying with stream size

	Small stream (< 5 m^3/s)	Moderate river (> 5 m^3/s)	Large river (> 30 m^3/s)	Allocation volume as % MALF	Benthic invertebrate protection level %	Fish habitat protection level %*
	Minimum flow as % MALF					
Option 1	79%	67%	45%	30	89	80
Option 2	81%	71%	52%	30	91	80
Option 2a	90%	85%	76%	30	92	83
Option 3	87%	82%	71%	40	90	80
Option 4	89%	85%	77%	40	91	80
Option 5: Current Freshwater Plan	*66%*			*33***	*87*	*77*

** For the most sensitive fish species with the highest flow requirements i.e. trout and torrentfish. Of note, a 20% reduction in fish population is probably not detectable and would likely only affect trout and torrentfish, (which rely on swift-flow habitats). Similarly, a reduction of 10% in benthic protection is considered small and probably not detectable*

*** Inferred allocation limit as no limits are specified in the existing Freshwater Plan*

Reliability of supply

The term 'reliability of supply' refers to how often water takes may be restricted under different combinations of minimum flow and allocation. Water takes provide for a broad range of uses, including some of high economic or social value such as community water supply and hydroelectricity generation.

If instream protection levels are increased, this restricts the amount of water available for resource users. Restrictions can either be total (no taking allowed) or partial (some reduction in take rates) to ensure compliance with minimum flows. The number of days with total restriction depends on the minimum flow. Allocation also affects the reliability of supply, with a 10% increase in allocation leading to an increase of about 10 days with partial restrictions.

Table 2: Restrictions to abstraction for each of the minimum flow/allocation limit options in Table1

	Small stream (< 5 m^3/s)	Moderate stream/river (> 5 m^3/s)	Large river (> 30 m^3/s)	Allocation volume as % MALF	Days per year of full / partial restriction		
	Minimum flow as % MALF				Small stream	Moderate river	Large river
Option 1	79%	67%	45%	30	2.6 / 28	0.4 / 15	0.0 / 2
Option 2	81%	71%	52%	30	3.4 / 31	0.8 / 19	0.0 / 4
Option 2a	90%	85%	76%	30	8.5/42	5.8/36	2.2/24
Option 3	87%	82%	71%	40	6.8 / 49	4.0 / 44	0.8 / 31
Option 4	89%	85%	77%	40	7.9 / 51	5.8 / 47	2.2 / 38
Option 5: Current Freshwater Plan	*66%*			*33**	*0.4 / 18*		

** Inferred allocation limit as no limits are specified in the existing Freshwater Plan*

Given the possibility of restrictions, water users are strongly encouraged to consider water efficiency opportunities, water storage and alternative water sources.

The Government's 'Action for Healthy Waterways' package requires that Te Mana o Te Wai (the health and wellbeing of the waterway) be provided for before essential human needs and other uses. The setting of 'default' environmental flows is consistent with this concept.

Through the regional plan review, the Council will ensure that environmental flow limits are set that will safeguard the health and well-being of the waterway first before considering whether (and how much) water can be taken for other purposes.

Further Reading:

The full Report: *Considerations of Stream Size in Determining Minimum Flows and in Taranaki Rivers,* Jowett 2020 and other related reading maybe read from the Council website - https://www.trc.govt.nz/council/plans-and-reports/strategy-policy-and-plans/regional-fresh-water-plan/water-and-soil-plan-review/ or by clicking on the following hyperlinks:

- Full Report: *Soil Water Plan Review / Stream size and allocation,* Jowett 2020
- Full Report: *Review of Minimum Flows and Water Allocation in Taranaki,* Jowett 2018
- Factsheet: *Review of Minimum Flows and Water Allocation in Taranaki,* Taranaki Regional Council 2018

Date 21 July 2020

Subject: **Report on advocacy and response activities for the 2019/2020 year**

Approved by: A D McLay, Director - Resource Management

M J Nield, Acting Chief Executive

Document: 2511010

Purpose

1. The purpose of this memorandum is to report to the Committee on advocacy and response activities for the 2019/2020 year.

Executive summary

2. The 2019/2020 Annual Plan has a level of service in relation to advocacy and response activities of approximately 20 submissions made on policy initiatives proposed by other agencies.
3. In the 2019/2020 year, the Council made 22 submissions (26 in the preceding year).
4. The Council made submissions on a number of legislative changes including the *Resource Management Amendment Bill*, *Climate Change Response (Zero Carbon) Amendment Bill*, *Land Transport (NZTA) Legislation Amendment Bill*, and the *Exclusive Economic Zone and Continental Shelf (Environmental Effects – Decommissioning Plans) Regulations*.
5. The Council further submitted on significant and often complex central government policy proposals of import to this region. Of particular note was the large submission on the Government's *Essential Freshwater* package. However, other policy proposals submitted on included the draft *National Policy Statement for Indigenous Biodiversity*, draft *National Policy Statement for Urban Development*, draft *National Policy Statement for Highly Productive Land*, draft *National Environmental Standard for Outdoor Tyre Storage*, and draft *National Policy Statement for Air Quality: Articulate Matter and Mercury Emissions*.
6. Other central and local government policy initiatives commented on included the *2020-2030 Road Safety Strategy: Road to Zero*, the *Proposed New Plymouth District Plan*, the consultation document for the Hector's and Maui dolphin threat management plan, support for the Provincial Growth Funding application for sealing of SH 43, the *Proposed Priority Products and Product Stewardship Scheme Guidelines*, the Seaport Land application adjoining Port Taranaki, the Waitara to Bell Block speed review, *Accelerating renewable energy and energy efficiency*, and the *Government Policy Statement on Land Transport 2012*.

7. The Council further provided comment or feedback on a range of other matters during the year including input into Venture Taranaki Trust submission on the review of the *Crown Minerals Act 1991* and a joint submission on landfill levies, on behalf of Taranaki Solid Waste Management Committee.
8. Officers also responded to the Office of the Auditor-General's draft report, which summarised the key findings from its audit of freshwater management in four regional councils. This process began in 2017 with the final report released in September 2019.
9. Senior Council staff were also involved in various working parties or other fora locally or in Wellington and elsewhere to advise on policy development.
10. The net effect of the Council's wide-ranging advocacy and response activities has been in the majority of cases to make policy proposals more relevant, pragmatic and cost-effective for the region.

Recommendations

That the Taranaki Regional Council:

a) receives the memorandum *Report on Advocacy and Response activates for the 2019/2020 year*

b) notes that 22 submissions were made during the year on the policy initiatives of other agencies

c) notes that senior staff were also involved in various working parties or other fora on central and local government policy development and review projects.

Background

11. The 2019/2020 Long-Term Plan has the following level of service for advocacy and response activities for that financial year:

    "*Level of service*

    Effective advocacy on behalf of the Taranaki community on matters that affect the statutory responsibilities of the Council or that relate to matters of regional significance, which are of interest or concern to the people of Taranaki.

    Target

    Approximately 20 submissions made per year, with evidence of successful advocacy in most cases."

12. Under '*What we plan to do*' in 2019/2020 the Annual Plan states:

    "*Advocacy and response*

    Assess the implications of policy initiatives proposed by other agencies including discussion documents, proposed policies, strategies, plans and draft legislation, and respond within required timeframes on approximately 20 occasions per year."

13. Effective advocacy on behalf of the Taranaki community on matters that affect the statutory responsibilities of the Council or that relate to matters of regional significance, which are of interest or concern to the people of Taranaki, is an important area of work for the Council.
14. The amount of effort that is put into advocacy and response work is determined, largely, by those proposing policy changes or draft legislation, or otherwise seeking responses to

various initiatives. As a result, the number of Council submissions or responses made in any one year may be above or below the level of service indicated in the Annual Plan.

15. Priority responses are accorded to those policy proposals or responses sought that are related directly to the Council's core statutory obligations, or where we have particular knowledge or experience that will be of benefit to those proposing the change or seeking a response.

Submissions made in 2019/2020

16. The Council made 22 submissions to policy proposals or initiatives by various agencies in 2019/2020. This compares with 26 submissions made in the preceding year (2018/2019) and 24 in 2017/2018.

17. As noted above, the number of submissions prepared in any given year is largely dictated by what policy development is being carried out by others. It was noticeable that there was less new Government policy initiatives emerging in the last quarter of 2019/2020, which may be attributable to the impact of COVID-19.

18. The number of submissions made over the last 5 years is shown in Figure 1 below.

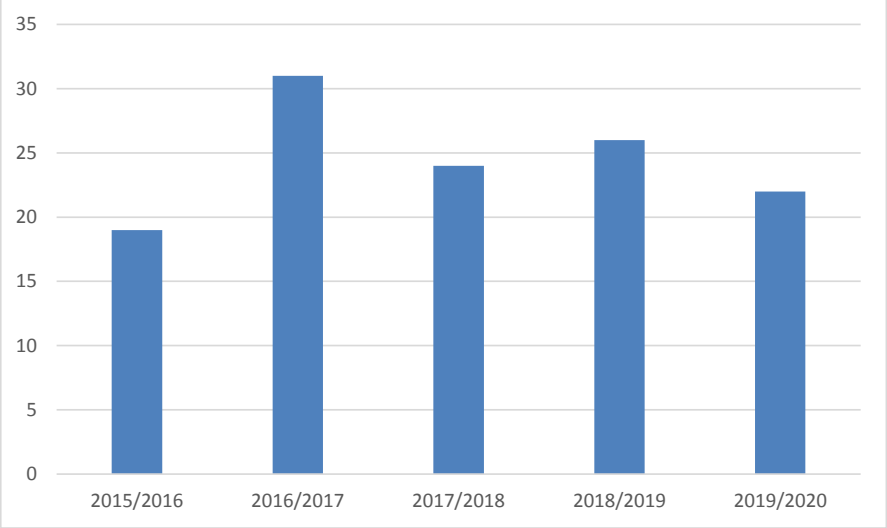


Figure 1: Number of submissions made by year

19. It is noted that Council submissions were made with input from staff across the Council. All submissions were made within the required timeframes.

20. The full list of submissions made in 2019/2020 and the outcome of those submissions (where known) are shown in Table 1. It shows a relatively high rate of success with the net effect that policy proposals are more cost-effective for the region.

Table 1: Submissions made in 2019/2020 and results of input

Submission made to	Policy initiative or proposal	Result
Office of the Auditor-General	Draft report on managing freshwater quality	Amendments made to final report
Ministry of Transport	*2020-2030 Road Safety Strategy: Road to Zero*	Submission was considered and changes made
New Plymouth District Council	Ecosystems and Indigenous Biodiversity chapter of *draft New Plymouth District Plan*	Response was considered and changes made
Department of Conservation	Consultation document for the *Hector's and Maui dolphin threat management plan*	Submission was considered
Stratford District Council and the New Zealand Transport Agency	Support for Provincial Growth Fund application for sealing of SH 43	Submission was considered and SH43 funding provided
Ministry for the Environment	*Proposed Priority Products and Product Stewardship Scheme Guidelines*	Submission was considered and changes made
Ministry for Primary Industries	*Proposed National Policy Statement on Highly Productive Land*	Submission forwarded. Matter is under consideration
Ministry for the Environment	*Proposed National Policy Statement on Urban Development*	Submission forwarded. Matter is under consideration
Ministry for the Environment	*Acton for Healthy Waterways* discussion document	Submission was considered and changes made
Environment Committee	*Resource Management Amendment Bill*	Submission was considered
New Plymouth District Council	*Proposed New Plymouth District Plan*	Submission was considered. Matter is under consideration
New Plymouth District Council	Seaport Land application adjoining Port Taranaki	Submission was presented to a hearing and is being considered.

Environment Committee	*Climate Change Response (Emissions Trading Reform) Amendment Bill*	Submission was considered
New Zealand Transport Agency	*Waitara to Bell Block speed review*	Submission was considered
Ministry of Business, Innovation and Employment	Input into Venture Taranaki Trust submission on the discussion document reviewing the Crown Minerals Act 1991	Further information and evidence provided. Matter is under consideration
Transport and Infrastructure Select Committee	*Land Transport (NZTA) Legislation Amendment Bill*	Submission forwarded. Matter is under consideration
Ministry for the Environment	Input into Taranaki Solid Waste Management Committee submission on Reducing waste: A more effective landfill levy discussion document	Submission was considered and changes made
Ministry of Business, Innovation and Employment	*Accelerating renewable energy and energy efficiency* discussion document	Submission forwarded. Matter is under consideration
Ministry for the Environment	*Proposed National Environmental Standard for the outdoor storage of tyres*	Submission forwarded. Matter is under consideration
Ministry for the Environment	*Proposed amendments to the National Environmental Standard for Air Quality: Particulate matter and mercury emissions*	Submission forwarded. Matter is under consideration
Minister of Transport	*Government Policy Statement on Land Transport 2021*	Submission forwarded. Matter is under consideration
Ministry for the Environment	*Draft Exclusive Economic Zone and Continental Shelf (Environmental Effects – Decommissioning Plans) Regulations*	Submission forwarded. Matter is under consideration

21. During the 2019/2020 year, work was undertaken on a number of central government policy initiatives.

22. Early in the financial year, the Council responded to the Office of the Auditor-General's request for further feedback on its draft report setting out its findings from its audit of freshwater management. This audit - involving four regional councils - began in 2017 and was a follow-up from a 2011 audit. This has been a very long and resource intensive process for Council staff. Council officers responded to requests for further information and evidence from the Auditor-General on numerous occasions, followed up by meetings and teleconferences with audit staff. Council officers' feedback and comments

were largely incorporated into or addressed in the final report, which was released in September 2019.

23. Between 5 September and 31 October 2019, the Government consulted on a suite of proposals for *Action for Healthy Waterways* package. This involved reviewing, analysing and comment on a draft *National Policy Statement for Freshwater Management*, a draft *National Environmental Standard for Freshwater Management*, and proposed stock exclusion regulations. The Council prepared a large and comprehensive submission supported by scientific studies and investigations and an economic analysis of the likely impact of the proposals as part of its evidence supporting reliefs sought in the submission. Councillors and officers were also involved in a number of forums during the consultation process.

24. Members will be aware that in response to submissions (approximately 17,500 submissions were received), the Government made major changes to its initial proposals.

25. In addition to the above, in 2019/2020 the Council made submissions on a number of legislative changes including the *Resource Management Amendment Bill*, *Climate Change Response (Zero Carbon) Amendment Bill*, *Land Transport (NZTA) Legislation Amendment Bill*, and the *Draft Exclusive Economic Zone and Continental Shelf (Environmental Effects – Decommissioning Plans) Regulations*. The first two Bills have since been promulgated.

26. The Council also submitted on a number of draft national policy statements and environmental standards. These being (in addition to the draft *National Policy Statement for Freshwater Management* and the draft *National Environmental Standard for Freshwater Management*, refer discussion above) the draft *National Policy Statement for Indigenous Biodiversity*, draft *National Policy Statement for Urban Development*, draft *National Policy Statement for Highly Productive Land*, draft *National Environmental Standard for Outdoor Tyre Storage*, and draft *National Policy Statement for Air Quality: Articulate Matter and Mercury Emissions*. At the time of preparing this item, the Government has not announced any detailed decisions in relation to these policy initiatives.

27. Other central and local government policy initiatives commented on included the *2020-2030 Road Safety Strategy: Road to Zero*, the *Proposed New Plymouth District Plan*, support for the Provincial Growth Funding application for sealing of SH 43, the *Proposed Priority Products and Product Stewardship Scheme Guidelines*, the Seaport Land application adjoining Port Taranaki, the Waitara to Bell Block speed review, *Accelerating Renewable Energy and Energy Efficiency*, and the *Government Policy Statement on Land Transport 2012*.

28. The Council also submitted on the consultation document for the *Hector's and Maui Dolphin Threat Management Plan* released in August 2019. On the 24 June 2020, the Government announced its decisions in relation to that plan, which included, amongst other things, a prohibition on new currently unpermitted (future) seismic surveying and seabed mining in the newly extended sanctuary and which includes the entire Taranaki coastal marine area. To recap, the Council submitted in favour of extending the sanctuary however supported a permitting regime for seismic surveying. The Council submitted against an outright prohibition of seismic surveying and seabed mining activities, advocating that those be managed through the RMA consenting process.

29. The Council further provided comment or feedback on a range of other matters during the year including input into Venture Taranaki Trust submission on review of the *Crown Minerals Act 1991* discussion document and a joint submission on *Reducing Waste: A More Effective landfill Levy* discussion document, on behalf of Taranaki Solid Waste Management Committee.

30. On occasion, the Council has also had direct input into submissions made by regional council convened Special Interest Groups on specific topics or Local Government New Zealand submissions made on behalf of the local government sector as a whole.

31. Experienced senior Council staff were also involved in various working parties or other fora locally or in Wellington and elsewhere to advise on policy development. These included policy development work or advice in areas as diverse as flood hazards, the oil and gas industry, and biodiversity.

32. In addition, Council staff respond to many other requests for advice or comment on policy matters.

33. It is sometimes difficult to determine, given the processes adopted, whether the submissions or responses have made a difference to the policy or other matters under consideration. In some cases there is no formal feedback that the submissions were successful (or not), while in others no or limited feedback is provided. Senior council staff receive anecdotal feedback on submissions that is very positive, and that changes in policy have been made as a result or other actions taken in recognition of the matters raised. The substantive changes made by the Government on their Action for Healthy Waterways package that align with reliefs sought in the Council's submission is particularly noted.

34. The Council's reputation and experience as being a successful regulator and policy developer is well recognised and its views valued. The net effect of the Council's wide-ranging advocacy and response activities has been in the majority of cases to make policy proposals more relevant, pragmatic and cost-effective for the region. The work has contributed to the Council's community outcomes of a sustainable and prosperous Taranaki.

Decision-making considerations

35. Part 6 (Planning, decision-making and accountability) of the *Local Government Act 2002* has been considered and documented in the preparation of this agenda item. The recommendations made in this item comply with the decision-making obligations of the *Act*.

Financial considerations—LTP/Annual Plan

36. This memorandum and the associated recommendations are consistent with the Council's adopted Long-Term Plan and estimates. Any financial information included in this memorandum has been prepared in accordance with generally accepted accounting practice.

Policy considerations

37. This memorandum and the associated recommendations are consistent with the policy documents and positions adopted by this Council under various legislative frameworks including, but not restricted to, the *Local Government Act 2002*, the *Resource Management Act 1991* and the *Local Government Official Information and Meetings Act 1987*.

Iwi considerations

38. This memorandum and the associated recommendations are consistent with the Council's policy for the development of Māori capacity to contribute to decision-making

processes (schedule 10 of the *Local Government Act 2002*) as outlined in the adopted long-term plan and/or annual plan. Similarly, iwi involvement in adopted work programmes has been recognised in the preparation of this memorandum.

Legal considerations

39. This memorandum and the associated recommendations comply with the appropriate statutory requirements imposed upon the Council.

Whakataka te hau

Karakia to open and close meetings

Whakataka te hau ki te uru	Cease the winds from the west
Whakataka te hau ki tonga	Cease the winds from the south
Kia mākinakina ki uta	Let the breeze blow over the land
Kia mātaratara ki tai	Let the breeze blow over the ocean
Kia hī ake ana te atakura	Let the red-tipped dawn come with a sharpened air
He tio, he huka, he hauhu	A touch of frost, a promise of glorious day
Tūturu o whiti whakamaua kia tina.	Let there be certainty
Tina!	Secure it!
Hui ē! Tāiki ē!	Draw together! Affirm!

Nau mai e ngā hua

Karakia for kai

Nau mai e ngā hua	Welcome the gifts of food
o te wao	from the sacred forests
o te ngakina	from the cultivated gardens
o te wai tai	from the sea
o te wai Māori	from the fresh waters
Nā Tāne	The food of Tāne
Nā Rongo	of Rongo
Nā Tangaroa	of Tangaroa
Nā Maru	of Maru
Ko Ranginui e tū iho nei	I acknowledge Ranginui above and
Ko Papatūānuku e takoto ake nei	Papatūānuku below
Tūturu o whiti whakamaua kia tina	Let there be certainty Secure it!
Tina! Hui e! Taiki e!	Draw together! Affirm!

AGENDA AUTHORISATION

Agenda for the Policy and Planning Committee meeting held on Tuesday 21 July 2020.

Confirmed:

A D McLay
Director Resource Management

Approved:

M J Nield
Acting Chief Executive