Taranaki Regional Council

AGENDA
Policy & Planning

Tuesday 18 July 2023, 10.30am

Policy and Planning Committee

18 July 2023 10:30 AM

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 te 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!

Date 18 July 2023

Subject: **Policy and Planning Committee Minutes – 6 June 2023**

Approved by: A D McLay, Director - Resource Management

S J Ruru, Chief Executive

Document: 3187122

Recommendations

That 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 6 June 2023 at 10.30am

b) notes the recommendations therein were adopted by the Taranaki Regional Council on Tuesday 27 June 2023.

Matters arising

Appendices/Attachments

Document: 3177983 Minutes Policy and Planning – 6 June 2023.

Date 6 June 2023

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

Document: 3177983

Present	C L Littlewood	Chairperson
	D M Cram	
	D H McIntyre	
	S W Hughes	
	A L Jamieson	
	N W Walker	(*ex officio)*
	E Bailey	Iwi Representative *(zoom)*
	P Moeahu	Iwi Representative
	G Boyde	Stratford District Council
	B Haque	New Plymouth District Council

Attending	Mr	S J Ruru	Chief Executive
	Mr	A D McLay	Director - Resource Management
	Ms	A J Matthews	Director – Environment Quality
	Mr	D R Harrison	Director - Operations
	Mr	M J Nield	Director – Corporate Services
	Ms	L Hawkins	Planning Manager
	Mr	F Kiddle	Policy lead
	Mr	D Sherman	Land Services Manager
	Mr	T McElroy	Science and Technology Manager
	Mr	H Smith	Landcare research *(zoom)*
	Ms	K Holland	Communications Adviser *(zoom)*
	Mrs	M Jones	Governance Administrator
	Miss	N A Chadwick	Executive Assistant to Chief Executive

1 member of the media
1 member of the public

Apologies Were received and sustained from, C S Williamson - Committee Chairperson, Councillor B J Bigham and M Ritai.

With the absence of the Committee Chair and Deputy Chair. Mr S J Ruru - Chief Executive Taranaki Regional Council, put the motion that the committee nominate and appoint a chairperson for the Policy and Planning committee**.** Councillor McIntyre nominated Councillor Littlewood.

McIntyre/Littlewood

1. Confirmation of Minutes Policy and Planning Committee 14 March 2023

Resolved

That the Taranaki Regional Council:

a) took as read and confirmed the minutes of the Policy and Planning Committee of the Taranaki Regional Council held at 10.30 on 14 March 2023 at Taranaki Regional Council 47 Cloten Road Stratford

b) noted the recommendations therein were adopted by the Taranaki Regional Council on Tuesday 4 April 2023.

Walker/Boyde

2. Freshwater Implementation Project Report

2.1 Ms L Hawkins, Policy Manager, spoke to the memorandum to provide the Committee with an update of the *Freshwater Implantation project*.

Resolved

That the Taranaki Regional Council:

a) received the memorandum *Freshwater Implementation Report*

Walker/Hughes

3. Sediment Contributions from natural land cover areas and impacts of climate change for freshwater planning in Taranaki

3.1 Mrs A J Matthews, Director – Environmental Quality, spoke to the memorandum to provide the Committee with an overview of the findings of a recent report commissioned by Taranaki Regional Council *SedNetNZ modelling to assess sediment contributions from natural land cover areas and impacts of climate change in Taranaki* by Manaaki Whenua Landcare Research*).*

3.2 Mr H Smith – Landcare Research provided a PowerPoint presentation.

Resolved

That the Taranaki Regional Council:

a) received the memorandum *Sediment contributions from natural land cover areas and impacts of climate change for freshwater planning in Taranaki* and accompanying report

b) received the presentation by Manaaki Whenua Landcare Research; and

c) noted the recommendations of the authors and officers regarding future work.

Boyde/Cram

4. Strengthening National Direction on renewable Electrify Generation and electricity Transmission

4.1 Mr A D McLay, Director – Resource Management, spoke to the Memorandum and introduced Mr F Kiddle – Strategy Lead, requesting the members endorse the submission on the *Strengthening national direction on renewable electricity generation and electricity transmission consultation document* (the Consultation Document).

Resolved

That the Taranaki Regional Council:

a) received the memorandum entitled *Strengthening National Direction on Renewable Electricity Generation and Electricity Transmission;*

b) noted the attached *Submission on strengthening national direction on renewable electricity generation and electricity transmission;*.

c) endorsed the submission made on the Consultation Document;

d) determined that this decision be recognised as not significant in terms of section 76 of the *Local Government Act 2002*

e) determined that it has complied with the decision-making provisions of the *Local Government Act 2002* to the extent necessary in relation to this decision; and in accordance with section 79 of the Act, determines that it does not require further information, further assessment of options or further analysis of costs and benefits, or advantages and disadvantages prior to making a decision on this matter.

Hughes/Cram

5. The Minister for the Environment's request for information on providing for vegetable production through regional plans

5.1 Ms L Hawkins, Policy Manager, spoke to the Memorandum informing members of the new requirement, under section 27 of the *Resource Management Act 1991* (RMA), to carry out annual reporting to the Minister for the Environment on the Council's intention to provide for vegetable production within its review of the Freshwater Regional Plan.

Resolved

That the Taranaki Regional Council:

a) received this memorandum

b) noted that the Minister for the Environment has requested annual reporting on the Taranaki Regional Councils intentions to provide for vegetable production when implementing the National Policy Statement for Freshwater Management 2020

c) noted that the first report to the Minister has been prepared and submitted by the Chief Executive.

Littlewood/Jamieson

6. Regional Policy Statement - resource management issues

6.1 Ms L Hawkins, Policy Manager, spoke to the memorandum to update the members on the Resource Management issues for the region.

Resolved

That the Taranaki Regional Council:

a) received this memorandum titled *Regional Policy Statement – Resource management issues*;

d) noted that these issues are draft until the Natural Resources Plan is notified by the Council (end 2024) and are subject to refinement through the Councils plan development process and feedback from stakeholders;

b) noted that issues are mandatory provisions for the RPS under the RMA and have been prepared in accordance with RMA, National Planning Standards and current plan drafting practice;

c) noted that the issues of significance to iwi authorities has been prepared by Ngā Iwi o Taranaki through the Pou Taiao under the Heads of Agreement;

e) noted that the Council will be presented these issues, and any updates to them, for their endorsement in 2023 prior to consultation on the draft Natural Resources Plan and again prior to formal notification of the Proposed Natural Resources Plan.

Walker/Hughes

There being no further business the Committee Chairperson, C Littlewood, declared the meeting of the Policy and Planning Committee closed at 11.56am the meeting closed with a karakia.

Policy and Planning Chairperson: _____

C L Littlewood

Date 18 July 2023

Subject: **Freshwater Implementation Report March 2023**

Approved by: A D McLay, Director - Resource Management

S J Ruru, Chief Executive

Document: 3186314

Purpose

1. The purpose of this memorandum is to provide the Committee with a Freshwater implementation project update.

Executive summary

2. Set out in this memorandum is an update on the progress of implementing the Essential Freshwater Package from central government. The memorandum focuses on the key tasks undertaken since the previous Committee meeting, and identifies risks associated with the project and achievement of the project timeframe.
3. The attachment focusses on the key streams of work associated with the essential freshwater package. This being policy development as part of the Natural Resources Plan, implementation of the Freshwater Farm Plan Regulations and the communications and engagement timeline.

Recommendation

That the Taranaki Regional Council:

a) receives the July 2023 update on the freshwater implementation programme.

Background

4. The purpose of this memorandum is to update Members on progress in implementing the Essential Freshwater Package. An implementation programme was previously presented to, and approved by, the Committee. This report provides an overview on the progress of the work programme.
5. This report provides a regular update to Committee on the progress of implementing the Essential Freshwater Programme and provides an opportunity for discussion relating to progress and risks identified.

Discussion

6. At the meeting on 6 June, with the commencement of a new Strategy Lead, the Committee was informed that the presentation of this report would be reviewed to ensure the critical elements for the Committee are the key focus of the report. As such the format of the attached report has been simplified to more clearly draw attention to the main streams of work, key milestones reached, next steps and any risks associated with the programme.

7. As such key discussion points are now included in this covering memorandum, with the attachment providing the high level overview. Key points of discussion are provided below.

Engagement approach

8. At the 6 June Committee meeting, staff committed to bringing additional information back to the Committee with regard to the communication and engagement plan. This was specifically in relation to the coming 12 months in relation to the policy development. This has been included in the attached report. As the consultation stages progress updates providing more detail will be provided to the Committee ahead of each step. This will include outlining any involvement of Members which might be required.

NOF framework progress & working with iwi

9. Good progress has been made over the past 6 weeks, particularly in drafting the building blocks of the National Objectives Framework (visions, values and environmental outcomes), and in setting baselines for a number of the required attributes in the NPSFM.

10. Staff have also been working closely with Pou Taiao to ensure input from iwi is supported and facilitated in a timely manner. Despite best efforts of all involved, there have been some delays in the position statements on Te Mana o Te Wai and Values and outcomes from Ngā iwi o Taranaki being received by TRC. This has led to a pivot in approach to ensure this can be facilitated. As such the wider consultation (community and special interest groups) on the NOF process originally planned for August has had to be delayed. Instead, a focus on the building blocks of NOF with iwi will take place in August. This will include working at the Pou Taiao level, but also coordinating a meeting with TRC Councillors and Iwi Chairs and Chief Executives to present the draft framework and to seek feedback ahead of consulting on this stage more widely.

11. Whilst the programme has been able to pivot and be agile in this instance, as it tightens going forward there is reduced ability for this to occur. This has necessitated a full review of the programme and key milestones. This review is currently being undertaken by staff, and if needed an updated implementation programme will be brought back to Committee at the next meeting.

Financial considerations—LTP/Annual Plan

12. 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

13. 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

14. 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.
15. As set out in the discussion document, further discussions with iwi are planned in August in relation to the key milestone of the NOF. Work is on going with Pou Taiao and hapū level engagement has commenced with those hapū who have expressed a desire.

Community considerations

16. This memorandum and the associated recommendations have considered the views of the community, interested and affected parties and those views have been recognised in the preparation of this memorandum.

Legal considerations

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

Appendices/Attachments

Document: 3184745 – Freshwater Implementation Progress Report 18 July

Freshwater Implementation Project Report to Policy & Planning Committee

July 2023

	Progress in the last six weeks	Key tasks in the coming six weeks	Risks
National Policy Statement for Freshwater Management	• Freshwater **visions** for each FMU drafted. **Values** confirmed for each FMU, including non-compulsory values. **Environmental outcomes** drafted for each value and attributes identified where NPSFM does not specify. • The above applies to all values except Threatened Species and Mahinga Kai. These two values are still being worked through and are dependent on input from consultants and iwi respectively. • **Baseline states** identified for all attributes where data is readily available; where possible, modelling has been undertaken to address gaps and assess state across the breadth of FMUs. • Development of modelling frameworks for setting of **target attribute states** for sediment, nutrients and *E. coli* continued. Modelling of lake water quality and threatened species underway. • Climate change impacts and natural sources of sediment outputs to inform **limit setting** and **action plan development** reported to Council. • Work continues with NIWA to explore options for the development of fish passage action plans. • Attendance at Pou Taiao May workshop, TRC presentation focussed on sediment, fish passage and mahinga kai. • Wananga 3 held on Te Mana o Te Wai. • Efficiency and Effectiveness assessment of existing water plan completed. • State of environment monitoring programme reviews completed, to inform SoE network alignment with NPS-FM requirements.	• Finalise Te Mana o Te Wai as an objective for the plan, and to be included in consultation. • Finalise NOF **visions** through to **environmental outcomes**. • Finalise technical reports of **baseline states**. • Modelling of mitigations and outcomes continues to inform setting of **target attribute states** for rivers and lakes. • Hui with Pou Taiao to present draft NOF visions through to environmental outcomes framework. • Hui with Council and iwi Chairs and CEs early August to present draft NOF visions through to environmental outcomes framework. • Finalise discussion documents for consultation in September (subject to updated project plan being reviewed). • Two position statements send to TRC from Pou Taiao: (1) Te Mana o Te Wai; (2) Values and Outcomes. • State of environment monitoring network recommendations drafting underway.	• High risk – Partnership with iwi. Risk that the timeframes, complexity of issues and the need to be working in an agile manner to develop the policy framework will impact on the partnership approach being fostered. • Medium risk – Threatened species and mahinga Kai gaps in the NOF framework are unable to be completed by early August when further engagement with iwi is planned. Policy team have begun working more closely with science teams and pou taiao to support and progress this work. • Medium risk – Awaiting position statement for Ngā iwi o Taranaki regarding Te Mana o Te Wai. This is a critical input to being able to prepare an objective to be included in the plan, and to prepare for upcoming engagement.
Freshwater Farm Plans	• Regulations gazetted on 8 June. • If-needed communications material prepared in conjunction with Te Uru Kahika. • Rollout plan for Taranaki drafted.	• Approval of rollout plan by Council. • Standing up of internal working group to manage rollout. • Project and risk planning.	• TBD based on project and risk planning.

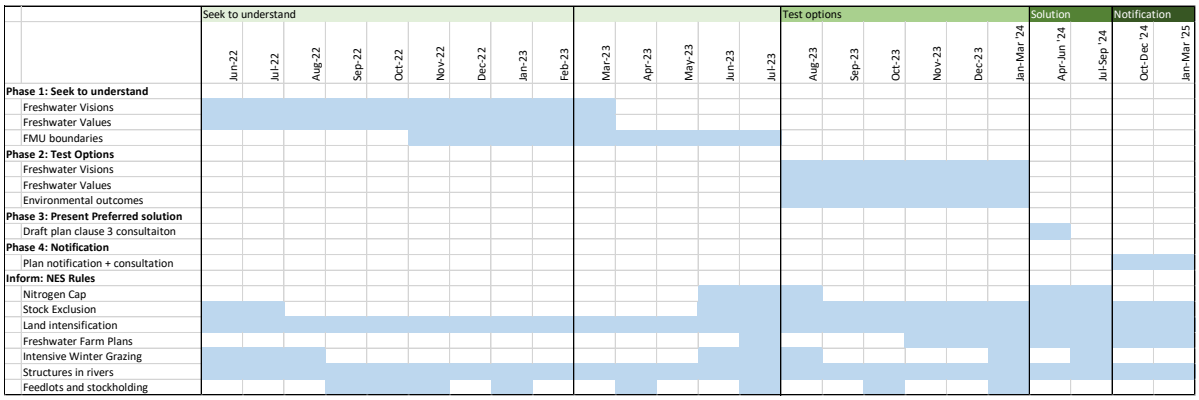
Engagement and Communication Strategy (Policy Development)

Set out below is a high level summary of the engagement approach and timing for key components supporting the policy development. Also noted is a high level timeline for key communications and engagement activity. Note this engagement plan does not including Council working with their tangata whenua partners, this process is subject to an alternative approach led with the Pou Taiao and Council's Iwi communications advisor.

Phase	Stage	What	Who	Timing*
Phase 1	**Seek to understand** Focus: gathering info from audiences about what's important to them	This phase has covered seeking input on a variety of high level freshwater matters including visions for Freshwater in Taranaki, identification of values for freshwater management and feedback on the proposed FMU boundaries. Input has been sought through a variety of mediums including online surveys, social pinpoint, face to face meetings and drop-in sessions (ie Stratford A&P show).	Community and special interest groups.	Apr 2021 to Mar 2023
Phase 2	**Test options** Focus: building and discussion on options that meet the region's wants and needs	There are two key steps in this process: 1. Testing the building blocks of the National Objectives Framework. A discussion document for each FMU is being prepared and will cover visions, values, baselines and environmental outcomes. 2. Testing limits and targets. Continuing to build the National Objectives Framework, this step will present options for the limits and targets for the new plan. This phase will also likely include region wide policy framework discussions.	1. Community – via online consultation opportunity. Special interest groups including industry bodies, catchment groups, government agencies, district councils, environmental NGOs – via workshop discussions. 2. Community and special interest groups. A series of face to face meetings around the region and opportunity for online feedback.	Aug 2023 to Mar 2024
Phase 3	**Present preferred solution** Focus: presentation of best options (draft plan)	A draft plan will be complied and through requirements of the RMA an opportunity for written feedback provided.	Clause 3 – listed in the RMA, and special interest groups.	Mid 2024
Phase 4	**Notification: Public submissions** Focus: formal communication relating to Plan notification	The Freshwater components of the NRP must be notified by December 2024. Once notified all interested parties will have the opportunity formally submit written submissions on the notified plan.	All interested parties.	End 2024 for notification. Submission period early 2025.

* Note the timing is indicative only, as a full programme review is currently being undertaken.

Essential Freshwater Engagement Strategy timeline



Date 18 July 2023

Subject: **Freshwater Farm Plans - Phasing**

Approved by: A D McLay, Director - Resource Management

S J Ruru, Chief Executive

Document: 3185745

Purpose

1. The purpose of this memorandum is to provide an overview of the process undertaken to set the phasing of rollout in relation to Freshwater farm plans across Taranaki, and to seek endorsement of the proposed Order in Council.

Executive summary

2. On 6 June 2023, the Freshwater farm plan Regulations came into effect. These regulations require those affected farms to undertake the preparation of a Freshwater farm plan, and to be certified and audited in accordance with the regulation. Freshwater farm plans are a farm planning process that puts the health of water at the centre of decision making by identifying the associated risks of the land and the farm management practices undertaken.

3. The certification and auditing process will be reported to the regional council, and hence the phasing of how the regulations are rolled out across the region is an important first step to provide clarity to the community and to manage Council's work programme. The regulations will gazette the phasing for each region through an Order in Council to the regulations. The regulations currently include the phasing for the first two regions - Southland and Waikato. This memo requests the consideration and endorsement of the proposed phasing for the Taranaki Region, in anticipation of a future request from the Ministry for the Environment for such information.

Recommendations

That the Taranaki Regional Council:

a) receives the memorandum titled - *Freshwater Farm Plans – Phasing.*

b) notes that a memorandum providing an overview of the regulations and their implementation processes will be brought to the committee in the future.

c) endorse the guiding principles and roll out plan for farm plan phasing as set out in Appendix 1 to this memorandum , and endorse this to be submitted to the Ministry for the Environment when requested.

d) determines that this decision be recognised as not significant in terms of section 76 of the *Local Government Act 2002.*

e) determines that it has complied with the decision-making provisions of the *Local Government Act 2002* to the extent necessary in relation to this decision; and in accordance with section 79 of the Act, determines that it does not require further information, further assessment of options or further analysis of costs and benefits, or advantages and disadvantages prior to making a decision on this matter.

Background

4. The Freshwater Farm Plan Regulations came into effect on 6 June 2023. The system intends to pull together many of the Essential Freshwater threads at a catchment and farm level by consolidating rules, regulations and plans into a single Freshwater Farm Plan (FWFP) that is specific to the farm to which it applies. Every farm with more than 20 hectares in arable or pastoral use, more than 5 hectares in horticultural use, or more than 20 hectares of combined use will require a FWFP. The FWFP will need to be independently certified and audited and the results of these will need to be delivered to the regional council.

5. Whilst nationally directed, the implementation of the FWFP will happen at a regional level. A key component of the implementation will be the phasing as to how the rollout will occur across Taranaki. It is not expected or reasonable that the whole region is 'switched on 'all at once.

6. The system is being implemented a few regions at a time at the discretion of the Minister. The first two regional councils to implement the system are Environment Southland and Waikato Regional Council. They are expected to be 'switched on' for their first catchments next month (August 2023). All regions and all catchments must be switched on by 1 January 2026. Taranaki will be 'switched on' in the 3rd phase of Council, which is from 1 July 2024.

7. To further support the roll out, each regional council is being asked to consider the phasing of the farm plans within their region. Phasing can be considered at Freshwater Management Unit level or by catchment. Once a phase is 'switched on' there will be 18 months to complete a FWFP and have it certified.

8. The phasing within a region will be incorporated into the regulations by an Order in Council[1]. The Ministry for the Environment has indicated they will request this information for the 2nd phase and 3rd phase regions, but have not specified when.

Issues

9. The phasing of FWFP rollout in Taranaki has an impact on the work programme of TRC, and also on the expectations of iwi and the community to fulfil the requirements of the regulations.

[1] In accordance with Part 9A s.217C of the Resource Management Act

Discussion

10. There are over 3900 farms within Taranaki, which the regulations will apply, as such this is a considerable work load for the community and council alike to plan for. There are a number of elements which need to be considered in a phasing approach. These include:

    10.1. Scale of which to apply the phasing;

    10.2. Workforce capacity to implement the regulations;

    10.3. TRC capacity to implement the regulations;

    10.4. What determines a catchment in the greatest need;

    10.5. Input from iwi.

Scale of application

11. The regulations do not set out the scale at which to apply the roll out of FWFP. It may be at a catchment by catchment approach, or it may be helpful to group catchments together through the FMU approach. Given the intent of the regulations are to assist in implementing the essential freshwater package, application of the FMU framework being developed through the Natural Resource Plan provides an appropriate lens. Although it is noted, until the plan is notified, the FMU framework is proposed. But likely to remain intact, given the sequencing assumptions required to get the necessary plan work completed by the 2024 deadline.

Guiding principles

12. To assist in working through the remaining issues a set of guiding principles (criteria) have been drafted as set out below. These guiding principles have been used to assign the phasing across the region:

    12.1. Environmental Degradation:

    Whilst all catchments / FMU's across Taranaki are experiencing some level of degradation, the Waingongoro catchment has been identified by the Ministry for the Environment as an 'At Risk Catchment'. This principle warrants consideration being given to those areas where the need for the improvement is the greatest.

    12.2. Community mobilisation:

    TRC already has an extensive land management programme underway through Riparian Management Plans and Hill Country Farm Plans. The roll out of this voluntary programme across Taranaki has resulted in sections of the region already mobilised in utilising farm management plans to guide practice and achieve improved outcomes. There are efficiencies to be gained by considering these catchments in the phasing.

    12.3. Resourcing capability:

    To ensure the rollout across the region can be achieved within the required timeframe phasing must consider the resourcing capability. Phasing should provide for a scale of implementation that can be met by resources and which is easy to understand and communicate.

    12.4. Joint Management Agreements:

TRC are working with iwi on developing Joint Management Agreements (JMA), namely the Waitara River Committee JMA. There is the opportunity to support the partnership with iwi through aligning the phasing with such agreements.

13. In addition to the above criteria the Ministry for the Environment has advised that there needs to be at least 6 months between commencing each phase. This is presumably to manage workforce pressure. As Taranaki is in phase 3 of the country wide rollout, starting in 3rd quarter 2024, but needing to have all areas 'switched on' by 1 Jan 2026, this required spacing does limit the options of phasing.

Proposed phasing:

14. The proposed FMU structure across the region has been assessed against the above criteria and the following proposed phasing created ensuring the deadline of all FWFP are 'switched on' by the start of 2026:

Phase one: - commencing 3rd quarter 2024	
The Waingongoro Catchment	The Waingongoro has been identified by MFE as an "At Risk Catchment" due to poor water quality. Tackling it first means the catchment in the most need is prioritised. The catchment also has high riparian plan coverage, and there is likely to be many industry based plans in place (ie Fonterra Plans) both of which can be used as a baseline. The community are already engaged in farm management plan processes. There is time also to audit the riparian plans to ensure they have the full suite of riparian recommendations. There is also benefit to tackling a smaller catchment first rather than a whole FMU from a resource capability perspective. Note the Waingongoro catchment is part of the Volcanic Ring Plan FMU.
Phase two – commencing 1st quarter 2025	
The Waitara FMU	The Waitara FMU has a riparian component to it, being the Manganui Catchment. The time lag between phase one and phase two will allow for the hill country farm plans to have recommendations updated that will direct FWFP. This also aligns with the TRC hill country erosion programme, which will focus on one of the key areas of environmental degradation in the FMU. The Waitara FMU is also important to progress action under the Waitara River JMA.
Volcanic Ring Plain FMU	The largest FMU, it will be important to get this underway early in the phasing programme, but with enough lead time that the FWFP workforce will be established and can more easily tackle a large complex area. The intensively farmed volcanic ring

	plain means land use has significant impact on water quality, and hence it is an area where sustainable management gains can be achieved. This also aligns well with the longstanding extensive riparian planning programme in place, and auditing underway of the existing riparian management plans.
Phase three – commencing 3rd quarter 2025	
Coastal Terraces FMU	Given the largest FMU has commenced in the previous phase, closely following this with a smaller FMU will align with resource capabilities. The Coastal terraces are also intensively farmed and therefore experiencing environmental degradation with gains to be made through sustainable management to their sensitive environment. This also aligns with our current riparian planting programme and auditing underway.
Patea FMU	Setting the Patea catchment later in the phasing enables more time for the hill country farm plans to be updated to include soil conversation recommendations. There is also some intensive ring plain farming throughout this catchment. It is also a large catchment, and being undertaken at same time as a smaller Coastal Terraces will enable efficient use of available resources.
Phase four – commencing end of 4th quarter 2025 (must be switched on by 31 December)	
Northern Hill Country FMU	The Northern Hill Country FMU has an established workforce in place with TRC delivering the hill country farm plans. Benefits will be gained by allowing this work programme to become more established and as community mobilisation increases.
Southern Hill Country FMU	Work within the FMU can be planned by a catchment priority, to tackle those areas with greatest environmental degradation first, for example the Waitotara Catchment within this FMU. Which is also a focus for iwi partners Ngaa Rauru. There has been less exposure of hill country farmers to existing TRC land management programmes and hence the community may be less mobile to the regulation requirements. Farms within this FMU are also much bigger than other FMUs and therefore will likely take longer to prepare plans or update recommendations.

Engagement with iwi

15. Staff circulated the above set of principles and proposed phasing of rollout to iwi to seek feedback on the approach. Input was received from and /or conversations held with Ngāruahine, Ngaa Rauru and Te Atiawa. There was no objection to the proposed phasing, with specific comments including the following:
    15.1. Support for Waingongoro Catchment being prioritised.
    15.2. Support for the Volcanic Ring Plan and Waitara FMU in phase 2.
    15.3. Identification that the FMU framework is still proposed, and there may be the desire within the FMU framework to tackle some catchments ahead of others to reflect iwi rohe and capacity.
    15.4. Consideration of how TRC might be working with and mobilising farmers within those areas in later phases ahead of the relevant area being 'turned on'. There was some concern expressed that this lag could put some catchments at a disadvantage to make gains.
    15.5. Acknowledgement of capacity of iwi to participate in this process. Ngaa Rauru in particular sought to confirm the alignment with the Horizons proposed phasing, as they will be working across both processes. The alignment of the Southern Hill Country FMU and the Kai Iwi catchment (Horizons) are scheduled to start within 4 months on one another, which is positive.
16. During hui held with some iwi, it is evident that there is interest and desire for TRC and iwi to work closely together in developing the Catchment, Context, Challenge and Values (CCCV) statements ahead of each phase roll out. The CCCV are required before the 'switch on' of a phase, and these statements provide the framework for integrating Te Mana o Te Wai into all aspects of freshwater planning and will be used by farmers, certifiers and auditors to determine the approach necessary within the FWFP. Another important role for iwi will be working with the Council in the training of the certifiers and auditors. The details of how both of these tasks will be undertaken is currently being considered by staff and further discussions with iwi will occur ahead of a future paper being brought to Committee.

Options

17. Set out below are the options available to the Committee.

Option one – not having an endorsed phasing approach for Taranaki.

18. The committee could choose not to endorse the proposed phasing. However, a phasing for the region will still need to be gazette in the regulation. In this situation, it is likely that the Ministry for the Environment will impose their own phasing to be applied to the region. Putting forward a proposed phasing for Taranaki enables the consideration of how the rollout will affect iwi, the community and Councils own programmes.

Option two – endorsing the proposed phasing approach

19. Applying the guiding principles and the proposed phasing, results in a roll out of the FWFP that responds to the needs of the Taranaki region. The phasing responds to the

environmental challenges, community readiness, resourcing constraints and existing and future partnership opportunities with iwi.

20. Option 2 is considered the most appropriate option for Taranaki and enables regional consideration in a process being broadly directed at a national level.

Significance

21. Under the TRC's Significant and Engagement Policy, the decision to apply the proposed phasing approach to the roll out of FWFP is not significant. Whilst the regulations will have an impact on a large number of the community, the regulations are already in place, the phasing of the rollout enables the impact to iwi, community and the Council to be mitigated and planned accordingly. Accordingly, it does not require further consideration under the Significance and Engagement policy.

Financial considerations—LTP/Annual Plan

22. 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

23. 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

24. 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. As indicated in this memo input from iwi has been sought in the development of the proposed phasing and has been considered in the proposed approach.

Community considerations

25. This memorandum and the associated recommendations have considered the views of the community, interested and affected parties and those views have been recognised in the preparation of this memorandum.

Legal considerations

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

Appendices/Attachments

3186495 - Appendix 1 Freshwater Farm Plan Rollout for Taranaki

Freshwater Farm Plan Rollout for Taranaki

Guiding Principles for phasing

Environmental Degradation:

Whilst all catchments / FMU's across Taranaki are experiencing some level of degradation, the Waingongoro catchment has been identified by the Ministry for the Environment as an 'At Risk Catchment'. This principle warrants consideration being given to those areas where the need for the improvement is the greatest.

Community mobilisation:

TRC already has an extensive land management programme underway through Riparian Planting and Hill Country Management Plans. The roll out of this voluntary programme across Taranaki has resulted in sections of the region already mobilised in utilising farm management plans to guide practice and achieve improved outcomes. There are efficiencies to be gained by considering these catchments in the phasing.

Resourcing capability:

To ensure the rollout across the region can be achieved within the required timeframe phasing must consider the resourcing capability. Phasing should provide for a scale of implementation that can be met by resources and which is easy to understand and communicate.

Joint Management Agreements:

TRC are working with iwi on developing Joint Management Agreements (JMA), namely the Waitara River Committee JMA. There is the opportunity to support the partnership with iwi through aligning the phasing with such agreements.

Phased approach

Phase one: - commencing 3rd quarter 2024	
The Waingongoro Catchment	The Waingongoro has been identified by MFE as an "At Risk Catchment" due to poor water quality. Tackling it first means the catchment in the most need is prioritised. The catchment also has high riparian plan coverage, and there is likely to be many industry based plans in place (ie Fonterra Plans) both of which can be used as a baseline. The community are already engaged in farm management plan processes. There is time also to audit the riparian plans to ensure they have the full suite of riparian recommendations. There is also benefit to tackling a smaller catchment first rather than a whole FMU from a resource capability perspective. Note the Waingongoro catchment is part of the Volcanic Ring Plan FMU.
Phase two – commencing 1st quarter 2025	
The Waitara FMU	The Waitara FMU has a riparian component to it, being the Manganui Catchment. The time lag between phase one and phase two will allow for the hill country farm plans to have recommendations updated that will direct FWFP. This also aligns with the TRC hill country erosion programme, which will focus on one of the key areas of environmental degradation in the FMU. The Waitara FMU is also important to progress action under the Waitara River JMA.
Volcanic Ring Plain FMU	The largest FMU, it will be important to get this underway early in the phasing programme, but with enough lead time that the FWFP workforce will be established and can more easily tackle a large complex area. The intensively farmed volcanic ring plain means land use has significant impact on water quality, and hence it is an area where sustainable management gains can be achieved. This also aligns well with the longstanding extensive riparian planning programme in place, and auditing underway of the existing riparian management plans.
Phase three – commencing 3rd quarter 2025	
Coastal Terraces FMU	Given the largest FMU has commenced in the previous phase, closely following this with a smaller FMU will align with resource capabilities. The Coastal terraces are also intensively farmed and therefore experiencing environmental degradation with gains to be made through sustainable management to their sensitive environment. This also aligns with our current riparian planting programme and auditing underway.
Patea FMU	Setting the Patea catchment later in the phasing enables more time for the hill country farm plans to be updated to include soil conversation recommendations. There is

	also some intensive ring plain farming throughout this catchment. It is also a large catchment, and being undertaken at same time as a smaller Coastal Terraces will enable efficient use of available resources.
Phase four – commencing end of 4th quarter 2025 (must be switched on by 31 December)	
Northern Hill Country FMU	The Northern Hill Country FMU has an established workforce in place with TRC delivering the hill country farm plans. Benefits will be gained by allowing this work programme to become more established and as community mobilisation increases.
Southern Hill Country FMU	Work within the FMU can be planned by a catchment priority, to tackle those areas with greatest environmental degradation first, for example the Waitotara Catchment within this FMU. Which is also a focus for iwi partners Ngaa Rauru. There has been less exposure of hill country farmers to existing TRC land management programmes and hence the community may be less mobile to the regulation requirements. Farms within this FMU are also much bigger than other FMUs and therefore will likely take longer to prepare plans or update recommendations.

Freshwater Farm Plan – roll out for Taranaki

Catchment/ FMU	1/7/2024	1/10/2024	1/1/2025	1/4/2025	1/7/2025	1/10/2025	31/12/2025	1/4/2026	1/7/2026	1/1/2027	1/4/2027	1/7/2027	1/1/2028
Waingongoro Catchment													
Waitara FMU													
Volcanic Ringplain FMU													
Coastal terraces FMU													
Patea FMU													
Northern Hill Country FMU*													
Southern Hill Country FMU*													

* Note these two catchments will be switched on in late December 2025.

Date 18 July 2023

Subject: **New Dam Safety Requirements**

Approved by: A D McLay, Director - Resource Management

S J Ruru, Chief Executive

Document: 3179543

Purpose

1. The purpose of this memorandum is to inform Members of changes in the regulation of dam safety and implications for the Taranaki Regional Council (the Council).

Executive summary

2. The regulations to give effect to most of the dam safety requirements, set out in the *Building Act 2004,* come into force on 13 May 2024. Dam owners and engineers have responsibility for most of the requirements. The Council will have modest administrative, monitoring and compliance responsibilities for the new system.
3. The Council will need to go through the special consultative procedure to review its *Dangerous Dams Policy*. Staff will begin this process in the coming months, alongside the development of internal procedures and an updated register of dams for the region.

Recommendations

That the Taranaki Regional Council:

a) receives the memorandum *New dam safety requirements*;

b) notes that on 13 May 2024 the *Building (Dam Safety) Regulations 2022* will commence, bringing with them modest new requirements for the Council to implement;

c) notes that before the regulations commence, the Council will need to update its *Dangerous Dams Policy*, which must be adopted in accordance with the special consultative procedure.

Background

4. The *Building Act 2004* (the Act) manages building consent requirements for dam construction and the requirements to ensure their ongoing safety. Along with the other regional councils in the North Island, the Council has delegated its building consent processing and inspection functions for dams to the Waikato Regional Council. Regarding dam safety responsibilities in the Act, the Council:

- must maintain a register of all dams in its district;
- must administer and monitor the dam safety process;
- must have a dangerous dams policy that is reviewed every five years; and
- is given a range of powers to act if a dam poses an imminent risk to public safety.

5. However, all Council functions except the powers to act, were awaiting regulations to provide key definitions before they became operative. The *Building (Dam Safety) Regulations 2022* (the Regulations) now look set to come into force on 13 May 2024. Dam owners will have one to two years to implement the new requirements.
6. The Council's *Dangerous Dams Policy* was last updated in 2011. Further reviews of the policy were placed on hold waiting the required regulations – a previous set of regulations was gazetted in 2008 only to be revoked in 2015, 7 days before they were due to come into effect. There has been much delay in resolving disputes over how dam safety would be regulated, which have now been resolved.

The Regulations

7. The Regulations define the dams to which the majority of the safety provisions in the Act apply. These are termed classifiable dams. A classifiable dam is one that is four metres or higher and stores 20,000 or more cubic metres of fluid, or is one metre or higher and stores 40,000 or more cubic metres of fluid.
8. Every classifiable dam must be given a potential impact classification (PIC) rating of low, medium or high. To do this, a dam owner works through a comprehensive process to identify the likely effect of an uncontrolled release. A recognised engineer, as defined in the Regulations, must certify this classification. The owner then provides it to the relevant regional council. A council can only not accept a PIC if it considers a recognised engineer did not complete the certification.
9. Owners of dams with a PIC rating of medium or high then must develop a dam safety assurance programme (DSAP). DSAPs are structured frameworks of plans and procedures to ensure the safe operation and management of a dam. The regulations set what must go in a DSAP. They then also must be certified by a recognised engineer, and submitted to a regional council who can only not accept them if the engineer is not recognised.
10. Finally, every year a dam owner must provide the regional council a Dam Compliance Certificate that a recognised engineer has certified. They must also review their DSAP at certain intervals depending if they are medium or high PIC dams.

Discussion

11. By 13 May 2024, Council will need to update the *Dangerous Dams Policy*. The policy must set out:
    - the approach Council will take in performing its dam related functions;
    - the Council's priorities in performing those functions; and
    - how the policy will apply to heritage dams.

    The Act requires using the special consultative procedure set out in the *Local Government Act 2002* to update a dangerous dams policy. Staff will begin this process in the coming months. It will likely be straightforward. An up-to-date template used by other regional councils provides a very good basis towards providing a low cost consistent approach.

Previous consultations on the dangerous dams policy have also not garnered much public interest in the region.

12. In parallel, the Council will also update its internal procedures for dam safety and assess resourcing requirements to implement the system. These requirements are likely to be modest with dam owners and engineers responsible for most of the system.
13. The existing classifiable dam register, summarised below, was compiled in 2008 and will need to be reviewed in light of the new definitions in the regulations.

Dam name	Date of construction/year operational	Purpose	Height (m)	Reservoir maximum capacity (m3)	District
Patea	1984	Hydro electric power	63	144,000,000	South Taranaki
Motukawa	1927	Hydro electric power	17	745,000+	New Plymouth
Mangorei	1931	Hydro electric power	25	1,000,000	New Plymouth
Mangaotuku	1988	Flood protection	13	336,000	New Plymouth
Waimea	1988	Flood protection	11	150,000	New Plymouth
Huatoki	1987	Flood protection	24	1,000,000	New Plymouth
McCallum	1981	Irrigation	10	45,500	South Taranaki
Waireka	2000	Amenity	Two 6-7	56,000	New Plymouth
Jordan	2009	Irrigation	5.8	53,345	South Taranaki
Ward	2001	Irrigation	9.3	171,500	South Taranaki
Oberwil	2014	Water storage	9	24,750	South Taranaki
Pukekura Park	1878	Amenity	4	35,000	New Plymouth
Highlands Park	2005	Stormwater retention	4	29,900	New Plymouth

Financial considerations—LTP/Annual Plan

14. 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

15. 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

16. 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.

Community considerations

17. This memorandum and the associated recommendations have considered the views of the community, interested and affected parties and those views have been recognised in the preparation of this memorandum.

Legal considerations

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

Date 18 July 2023

Subject: **Emissions Trading Scheme Consultation**

Approved by: A D McLay, Director - Resource Management

S J Ruru, Chief Executive

Document: 3185762

Purpose

1. To discuss and seek approval to draft submissions on two consultation documents on the New Zealand Emissions Trading Scheme (the NZ ETS) and the permanent forest category within the NZ ETS.

Executive summary

2. The first consultation document sets out options for ensuring the NZ ETS drives reductions in gross (i.e. before removals are taken into account) emissions. The large-scale planting of forests (mainly exotics) to sequester carbon is currently too cheap to keep the carbon price high enough to drive meaningful change. The longer the country leaves reducing gross emissions, the more painful it will be.
3. To address this issue, the Government is proposing splitting the NZ ETS into two systems. One for reducing gross emissions and one for removals. A standalone market for gross reductions can ensure the carbon price is sufficient to drive gross reductions. The separate removals market ensures forestry remains part of the national climate toolbox. Initial analysis from Council officers supports the Government's proposed approach.
4. The second consultation seeks to address issues caused by permanent exotic afforestation. Until biodiversity benefits of indigenous forest can be more accurately costed (e.g. through a separate biodiversity credit system), Council officers are supportive of exotic forestry being excluded from the permanent forest category. There would likely need to be some exceptions (e.g. small scale plantings).
5. The second consultation document also discusses potential new management and enforcement tools to support effective permanent forestry. These are likely needed. But they need to be proportional to the size of the forest block and not disincentivise smaller-scale afforestation.

Recommendations

That the Taranaki Regional Council:

a) receives the memorandum titled *Emissions Trading Scheme Consultation*;

b) notes submissions close on 11 August 2023;

c) approve Council officers drafting submissions on the two NZ ETS consultation documents for review by the Policy and Planning Committee out of session via email prior to submission;

d) note that the final submissions will be presented at the next meeting of the Policy & Planning committee for retrospective endorsement after the submissions have been made;

e) determines that this decision be recognised as not significant in terms of section 76 of the Local Government Act 2002; and

f) determines that it has complied with the decision-making provisions of the Local Government Act 2002 to the extent necessary in relation to this decision; and in accordance with section 79 of the Act, determines that it does not require further information, further assessment of options or further analysis of costs and benefits, or advantages and disadvantages prior to making a decision on this matter.

Background

What is the NZ ETS

6. The NZ ETS is one of the Government's main tools for reducing greenhouse gas emissions. Its purpose is to help meet international obligations under the Paris Agreement and domestic emissions targets. The Government sets and reduces the number of units supplied into the scheme over time. This limits the quantity that businesses participating in the NZ ETS can emit. One unit allows a participant to emit one tonne of carbon dioxide (or its equivalent).

7. The Emissions Trading Scheme sends price signals to producers, consumers and investors. It puts a price on emissions by charging certain sectors of the economy for the greenhouse gases they emit. Those sectors are liquid fossil fuels, stationary energy (e.g. fuels for electricity generation), industrial processes, waste (i.e. landfills), synthetic gases (e.g. refrigerants), and forestry.

8. In addition to the units released by the Government, participants can generate units through forestry to sell into the NZ ETS. As a forest grows, it sequesters carbon from the atmosphere. Participants can receive units from the government for this sequestration. However, if a participant ever removes a forest and does not replant they have to buy back the units to offset the loss in sequestration.

9. Forestry in the ETS can be standard or permanent. Standard forestry is post-1989 forest land that is intended to be regularly harvested and replanted. For standard forestry, you earn units up-front based on the long-term average of carbon sequestered across harvest cycles. You only receive credits for the first cycle, but do not have to pay units when harvesting as long as you replant within a given time. Permanent forestry is post-1989 forest land that will not be clear-felled for at least 50 years. Owners continue to receive units as the forest grows and continues to sequester more carbon.

10. The consultation documents relate to both gross and net emissions. Gross emissions are the total amount of greenhouse gasses emitted. Net emissions are gross emissions minus the amount of carbon removed from the atmosphere (e.g. through forestry).

Issues with the NZ ETS

11. The biggest issue with the NZ ETS is that in its current form it will not drive sufficient reductions in gross emissions to serve New Zealand's interests. Sequestration through the planting of exotic forestry is too cheap to deliver a sufficiently high and stable carbon price to drive the type of change the country requires. While a cheaper carbon price may sound appealing today, it creates significant medium and long-term risk. The country will have to reduce gross emissions eventually. The longer we leave it, the more painful it will be.
12. The NZ ETS has also driven large-scale afforestation across New Zealand, most of it in exotics. From 2018 to 2021, an estimated 105,000 hectares of afforestation occurred in New Zealand. The NZ ETS will not have driven all of this, but it was likely the main factor for the estimated 26,250 hectares put into permanent exotic forestry. The Ministry of Primary Industries estimates the country will need 0.97 to 1.44 million more hectares of forest by 2050 to meet climate change targets.
13. This scale of afforestation brings with it a range of issues. The Tairawhiti/Gisborne District and Wairoa District floods vividly highlighted the risks of plantation forestry on erosion prone land. Permanent forestry can also be problematic:
    - It can drive land-use change towards a use that does-not deliver long-term productivity (i.e. once a forest stops growing, it stops sequestering carbon and earning units, but it would be prohibitively expensive to ever cut it down).
    - Even while still growing, permanent forestry can (but not always) provide fewer jobs and exports than other land-uses.
    - Permanent forestry requires ongoing management to ensure the carbon it has sequestered remains locked away forever (e.g. pest control or replanting after an extreme weather event).
14. The above issues apply to both exotic and indigenous forestry. However, native permanent forestry at least can deliver a range of co-benefits. Most importantly for biodiversity, but also potential opportunities around tourism and customary use. Native forests are also often more resilient to weather related risks – although pests are an issue.

The consultation

15. The Government is undertaking two consultations simultaneously on the NZ ETS. The first relates to the overall form of the NZ ETS. The other is specifically on the permanent forestry category within the NZ ETS. Both consultations close on 11 August 2023. A key concept in the consultation on permanent forestry is the transition forest. This is a permanent exotic forest that is managed overtime to transition into an indigenous forest.
16. The core of the broader consultation is proposed changes to the NZ ETS to ensure that it does drive a reduction in gross emissions. Attachment One includes the summary of the different options presented in the full consultation document. The Government's preferred option is to split the NZ ETS into two: one for emission reductions and one for removals. Emitters would not be able to purchase units from forestry to cover their emissions. They would have to depend on the units supplied directly from the

government into the reductions market. The separate market for removals would see units from forestry sequestration sold directly to the Government.

17. The permanent forestry consultation sets out a range of design choices for consideration, with no Government preference stated. The options are summarised below. Attachment Two contains the full consultation document.

Design Choice	Options
What should permanent forests include?	Option 1.1: Only transition forests and indigenous forests can enter the permanent forest category. Option 1.2: Exotic forests allowed to enter under limited circumstances – for example, only certain types/ locations/ ownership characteristics of the exotic forest allowed. The following sub-options are not mutually exclusive: Option 1.2a: Long-lived exotic species (such as redwoods). Option 1.2b: Maori-owned land. Option 1.2c: Small scale exotic forests planted on farms.
How should transition forests be managed?	Option 2.1: Status quo (no new specific carbon accounting method for transition forests). Option 2.2: Enable new mandatory specific carbon accounting methods for transition forests in the permanent forest category.
How should permanent forests be managed?	Option 3.1: Status quo (no additional forest management requirements introduced for forests in the permanent forest category). Option 3.2: New minimum forest management requirements – specific to the permanent forest category – are introduced for all registered permanent forests (exotic, indigenous and transition forests). Option 3.3: New forests management requirements are needed for transition forests.

18. In discussing new forest management requirements, the Consultation Document floats the idea of forest management plans. Such a plan would likely identify risks posed to a forest, include mitigations to manage the risk, specify implementation timelines, and set out monitoring requirements. Specification would also be needed on who:

    - certifies or verifies a plan as being up to standard;
    - undertakes continued monitoring to make; and
    - carries out compliance and enforcement.

19. Finally, the Government is seeking views on the types of compliance tools needed for managing permanent forestry in the NZ ETS. There are existing tools under the NZ ETS providing for low-level fines, reporting and payment related fines, pecuniary penalties, expelling forests from the NZ ETS, and criminal offences. Tools that could be added include abatement notices, withholding units, moving non-compliant permanent forests to the standard forest category, and bonds to ensure forest outcomes are achieved long-term.

20. Neither consultation refers to the potential inclusion of agricultural emissions in the NZ ETS. How to tackle agricultural emissions is being managed through the separate He Waka Eka Noa process. Indications to date are that agricultural emissions may not end up included under the NZ ETS but will be under a separate bespoke system.

Issues

21. Successful climate mitigation and a reduction in gross emissions is essential for limiting the impacts of climate change on Taranaki communities. A well-managed just transition to a low-carbon future is also needed to avoid adverse effects on livelihoods.
22. The incentives created by the NZ-ETS will have a significant impact on land-use across the region, particularly in the hill country. This will have flow in impacts for biodiversity, erosion, natural hazard risk, sediment loads in rivers, and economic wellbeing.

Discussion

23. Council Officers are still actively considering the consultation documents. Initial comments on the review of the NZ ETS itself are:
    - The NZ ETS in its current form is not achieving what it needs to for New Zealand to transition to a low carbon future.
    - The focus of the NZ ETS needs to be on reducing gross emissions, but maintaining removals is also very important. Along with being necessary for reaching climate goals, removal activities provide landowners an avenue to undertake climate action with a low barrier to entry.
    - The Government's proposed option to split the NZ ETS into two strikes the best balance between prioritising gross emissions while still providing for removals. A standalone market for gross reductions can ensure the carbon price is sufficient to drive gross reductions. It can also facilitate better pacing of reductions to support a just a transition. While the separate removals market ensures forestry remains part of the national climate toolbox. A separate removals market would likely provide more flexibility to include other removal sources in the future.
    - A strategy for the future technological development of the NZ ETS is needed. This would provide for new removals (e.g. blue carbon), or technology to allow finer scale registrations (e.g. machine learning to identify small-scale forest areas).
    - The NZ ETS should remain focused on carbon. It does not need to provide for co-benefits within the system itself (these can be provided in parallel systems), but it needs to avoid environmental costs. Along with risks around fire, erosion and wilding pines, this includes the opportunity cost of exotic forestry compared to indigenous forestry.
    - To support an accurate assessment of the costs of exotic vs. indigenous afforestation, priority should be placed on innovative ways to price biodiversity, such as a biodiversity credit system.
24. Initial comments on the consultation on the permanent forest category are:
    - In the absence of a robust way to assess the opportunity cost of permanent exotic forestry compared to indigenous forests, likely with some exceptions, exotic forestry should be excluded from the permanent forest category.

- These exceptions would likely be around Māori land that has limited other uses and small-scale plantings.
- Where there are exceptions, consideration should be given to still prohibiting some exotic species (e.g. due to being short-lived or wilding risk).
- Transition forests look to be a good, if new and experimental, idea to support indigenous afforestation. They will almost certainly require their own accounting and management frameworks.
- Bespoke forest management plans should, at least initially, only be required for large-scale permanent forestry. The rollout of freshwater farm plans will likely provide many useful insights to inform how any system for forest management plans might operate.
- An ongoing discussion, not a one off consultation, with the sector is needed to determine roles and responsibilities in any new management system.
- More enforcement tools would be beneficial. The idea of bonds, especially for large-scale exotic permanent forestry, in particular warrants further exploration. Bonds could also be useful for ensuring transition forests do transition, but care is needed they do not undermine the financial viability of a transition forest.

Options

25. At this stage, the options are to decide to submit on the consultation documents or not. A submission is recommended due to the impacts the NZ ETS will have on climate action and land-use in Taranaki.

Significance

26. The decision to make a submission or not is assessed as not significant under the Significance and Engagement Policy.

Financial considerations—LTP/Annual Plan

27. 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

28. 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

29. 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.

Community considerations

30. This memorandum and the associated recommendations have considered the views of the community, interested and affected parties and those views have been recognised in the preparation of this memorandum.

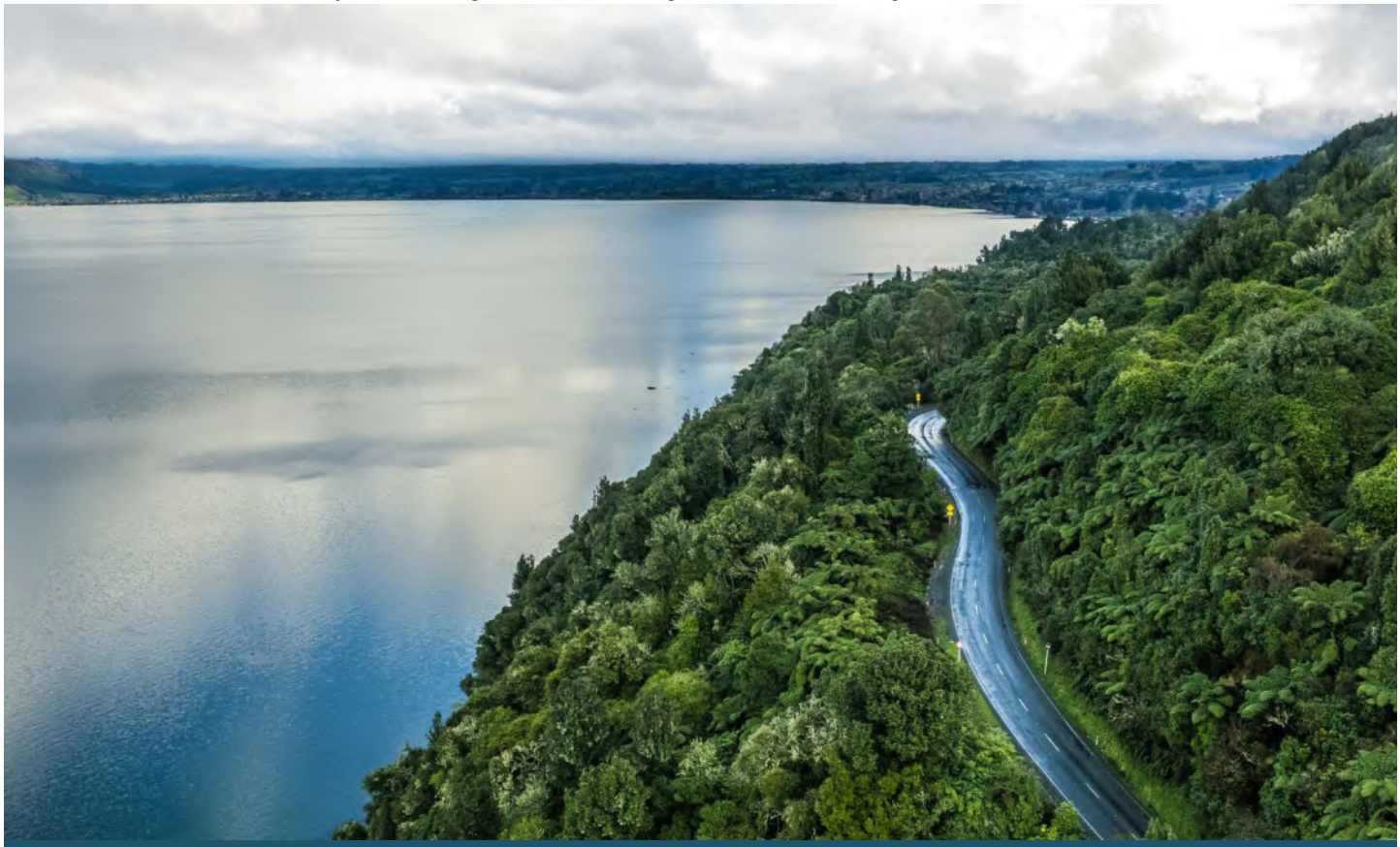
Legal considerations

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

Appendices/Attachments

Document 3186507: Review of the New Zealand Emissions Trading Scheme. Summary of the consultation.

Document 3186506: A redesigned NZ ETS Permanent Forest Category. A discussion document.



Te Arotake Mahere Hokohoko Tukunga

Review of the New Zealand Emissions Trading Scheme

Summary of the consultation

Ministry for the Environment
Manatū Mō Te Taiao

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Ministry for Primary Industries
Manatū Ahu Matua

Reviewing the New Zealand Emissions Trading Scheme

The Government is inviting public feedback as part of a review of the New Zealand Emissions Trading Scheme (NZ ETS). The review will assess if changes are needed to provide stronger incentives for businesses to transition away from fossil fuels, while also supporting carbon removals.

The effects of climate change are being felt across Aotearoa New Zealand. We need to reduce greenhouse gas emissions from all sectors of the economy. This means:

- reducing emissions of greenhouse gases from sectors such as transport, waste, energy and agriculture (often called gross emissions)
- increasing the amount of carbon we remove from the atmosphere, for example, from forest growth.

Cutting our emissions requires a comprehensive and well-balanced mix of policies. Emissions pricing is a critical part of this mix.

The NZ ETS is Aotearoa New Zealand's main emissions pricing tool to reduce emissions. The NZ ETS requires most emitters to report and pay for their greenhouse gas emissions. This enables businesses, households and the public sector to incorporate the costs of emissions – or the benefits of reducing or removing emissions – into day-to-day decisions.

Emissions from all parts of our economy are covered by the NZ ETS except for agriculture. A separate pricing system for agricultural emissions is being developed through the He Waka Eke Noa partnership.

The NZ ETS also rewards activities that remove carbon from the atmosphere, such as forestry. Aotearoa is one of the only countries in the world which does not limit the number of units from carbon removals that can be used by emitters to pay for their emissions.

The difference between net and gross emissions

Our climate change targets are 'net' emissions reduction targets. This means they include the greenhouse gas emissions that are released (gross emissions) and deduct removals of carbon from the atmosphere from activities such as forestry. The Government has committed to prioritising gross emissions reductions, while also supporting carbon removals.

New Zealand Units and the NZ ETS

Businesses in the NZ ETS must report on and pay for their emissions. They do this by surrendering New Zealand Units (NZUs), equivalent to their emissions, to the Government. One NZU is equivalent to one tonne of carbon dioxide equivalent.

NZUs can be purchased from the Government or earned through removing carbon from the atmosphere, for example, through forestry. Industrial allocation also encourages businesses to stay in Aotearoa, rather than relocating to countries where emissions are cheaper or not priced at all. This kind of relocation could also increase global greenhouse gas emissions – this is called emissions leakage.

Individuals and businesses are allowed to trade and purchase NZUs. Expectations of supply and demand for NZUs is a key driver of the NZU price.

Figure 1: How the NZ ETS market operates

The challenge

Aotearoa needs to reduce its emissions to play our part in the global efforts to rein in climate change and reduce our reliance on fossil fuels. A low-emissions economy would offer benefits for New Zealanders, such as warmer, healthier homes, better public transport, new clean-tech industries, and well-paying jobs, especially outside our major cities.

We also need to incentivise forestry and other activities to remove carbon from the atmosphere.

The question is: **Do we want to use the NZ ETS to reduce gross greenhouse gas emissions?**

If the answer is yes, then how can the NZ ETS best support both goals of:

- reducing emissions of greenhouse gases, and
- increasing the amount of carbon we remove from the atmosphere?

Why are we considering changing the NZ ETS?

In its current state, the NZ ETS is not driving gross emissions reductions at the scale and pace we want to meet our climate change targets. Currently the price of NZUs means it is cheaper for emitters to pay for their emissions, rather than investing in improving energy efficiency or changing to low-carbon alternatives. There is particular concern that more money is being invested into exotic forestry than improvements in efficiency as NZUs generated from forests are cheaper than the cost of transitioning to low-emissions alternatives.

While we want to incentivise new forest plantings, modelling shows that the NZU supply generated by these forests may exceed the number needed by emitters. If there are too many lower-cost NZUs available for purchase, the price of NZUs will drop. This would weaken incentives for emitters to reduce their emissions. A lower carbon price would also disincentivise new forest planting and could encourage deforestation.

How NZ ETS participants behave depends on what they expect to happen to NZU prices

The NZ ETS is a dynamic market. One of the challenges in accurately predicting the behaviour of NZ ETS participants is that their actions depend not just on today's NZU price but what they expect the NZU price to do in the future. This depends on what they expect other participants to do, because:

- emitters will invest in low-emissions technology if they expect the price of NZUs to rise and stay high, so that the investment in low-emissions technology is cheaper than paying for NZUs
- foresters will increase afforestation if they expect the price of NZUs to rise so they can make a profit from selling them in the future, or avoid having to buy more expensive NZUs when cutting their trees down
- people holding NZUs will continue to hold them if they expect the price to be higher in the future.

Forestry provides a range of benefits

Forestry is one of the most effective tools we have for removing carbon from the atmosphere. Significant new forestry is still needed to meet Aotearoa New Zealand's domestic and international climate change targets and help Aotearoa maintain net zero emissions after 2050.

Exotic and indigenous forests, either permanent or for harvest, provide other benefits, including:

- employment in rural communities
- economic returns for land that may otherwise be unproductive
- erosion control
- indigenous biodiversity.

We know there can be environmental, social and economic risks associated with forestry and the Government is committed to achieving the right type, location and scale of forests, for the right purpose.

These issues are being considered through changes to the National Environmental Standards for Plantation Forestry and the consultation on proposals for redesigning the permanent forest category in the NZ ETS. The NZ ETS review is considering the type and scale of forestry carbon removals driven by the NZ ETS and the impacts of that scale.

The Ministerial Inquiry into Land Use in Tairāwhiti and Wairoa following cyclone Gabrielle has also recently published its recommendations about the further work needed to address the impacts of land use and storms. The Inquiry's findings and recommendations were released on 12 May 2023. The Government is considering its response to the Inquiry's recommendations.

Significance for Māori

Māori have significant interests in forestry, native biodiversity and Aotearoa New Zealand's transition to a low-emissions, resilient economy.

The Government has also heard that more urgent climate action is required, with Māori communities particularly vulnerable and already facing the impacts of climate change.

The Government is committed to embedding te Tiriti o Waitangi in Aotearoa New Zealand's climate response.

The impact of changes to the NZ ETS

Changes to the NZ ETS will have an impact on all New Zealanders, in the short and long term.

Focusing on reducing emissions now through the NZ ETS rather than removing them through forestry could be more expensive, at least in the short term. These costs are likely to get passed on to households through higher fuel and electricity prices.

In the long term, New Zealanders will benefit from a low-carbon economy built on efficient, low-carbon technologies.

There is some uncertainty whether reducing emissions now or waiting will be more expensive in the long run. He Pou a Rangi Climate Change Commission considers that prioritising emissions reductions would put Aotearoa in a stronger position to meet and sustain net zero, at lower overall costs to New Zealanders.

We have considered four options

If the Government decides the NZ ETS needs to be changed to provide a stronger incentive for gross emissions reductions, there are four high-level options to do this.

Each high-level option could be implemented in different ways. This will affect the incentive to reduce emissions and increase carbon removal activities.

Option 1

Use existing NZ ETS levers to strengthen incentives for net emissions reductions

The Government could adjust existing regulation in the NZ ETS. For example, it could look at reducing the number of NZUs it sells to decrease the number of NZUs available in the market, so the carbon price rises. This would incentivise polluters to reduce emissions faster, and also incentivise more removal activities.

While this option may provide a short-term increase to NZU prices it will not be effective over the long term. If land owners respond to the increased price by planting more trees, over time, this will supply more NZUs into the market, causing the price to drop. A reduced NZU price would discourage investments in emissions reductions.

Option 2

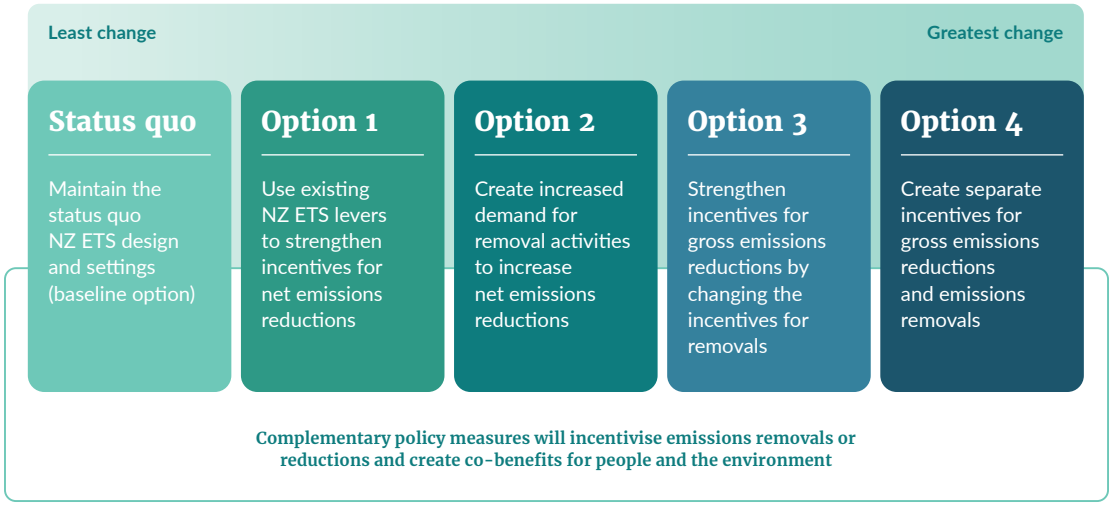
Create increased demand for removal activities to increase net emissions reductions

This option allows the Government and overseas buyers to purchase NZUs from removal activities. This could raise the NZU price if enough additional NZUs are purchased to increase demand, encouraging both emissions reductions and more removals.

However, we anticipate that the effectiveness of this option may be limited as:

- demand from overseas buyers for NZUs from exotic forestry is unknown, though we anticipate it would be minimal
- demand created by the Government purchasing NZUs will depend on the amount it is willing to purchase and how much it is willing to pay
- the Government would need to consider whether money is spent to purchase NZUs or provide funding to help transition infrastructure to lower emitting technologies.

Figure 2: Proposed options to strengthen the incentives for gross emissions reductions in the NZ ETS



Option 3

Strengthen incentives for gross emissions reductions by changing the incentives for removals

The Government could apply restrictions or conditions to NZUs from carbon removals. This would make removal NZUs less attractive and increase the demand for other NZUs sold by the Government at a price that encourages businesses to reduce their emissions.

There are different ways this option could be implemented. For example, the Government could restrict how many forestry generated NZUs emitters can use to 'pay' for their emissions. Or they could reduce the number of NZUs given out for forestry, relative to the amount of carbon removed from the atmosphere.

Applying such restrictions or conditions would likely reduce the value of removal activities, making them less financially attractive. This option would disincentivise carbon removal activities unless the Government provides other incentives for forestry that are outside the NZ ETS.

Option 4

Create separate incentives for gross emissions reductions and emissions removals

This would create two NZ ETS markets with separate prices: one for emissions reductions and another for removals. Emitters would not be able to use forestry NZUs to 'pay' for their emissions. Instead, carbon removals would be sold directly to the Government or on a separate market.

This option allows the Government to incentivise reductions and removals independently towards budgets and targets, and provides the most comprehensive change to the NZ ETS, relative to the other options. Because the Government can now control the cost for businesses to pay for their emissions it can encourage faster decarbonisation.

Make your voice count

Join the kōrero and find out more:

- @environmentgovtnz
- @environmentgvnz
- facebook.com/environmentgovtnz
- linkedin.com/company/environmentgovtnz

We want your views on the New Zealand Emissions Trading Scheme review

Please share your thoughts on the New Zealand Emissions Trading Scheme review. We want to hear from people across Aotearoa – your voice matters.

- Read the discussion document.
- Attend one of our webinars or hui. These are listed on our website.
- Provide a submission through Citizen Space, our consultation hub, by completing the feedback form or by uploading your own written submission.

We request that you don't email or post submissions as this makes analysis more difficult. However, if you need to, please send written submissions to NZ ETS review, Ministry for the Environment, PO Box 10362, Wellington 6143.

If you are emailing your feedback, have pātai (questions), or require additional information, email etsconsultation@mfe.govt.nz.

Submissions are open from 19 June 2023 and close at 11.59pm, 11 August 2023.

What happens next

The review poses a number of questions about the impacts, trade-offs, and risks of changing the NZ ETS to incentivise emissions reductions. Feedback will support officials to provide the incoming government with recommendations on next steps for the NZ ETS review.

The Government will not pursue legislative or regulatory changes before the election.

Te Kāwanatanga o Aotearoa
New Zealand Government

Published by the Ministry for the Environment, Ministry for Primary Industries and Ministry of Business, Innovation & Employment in June 2023.

INFO 1146

Ministry for Primary Industries
Manatū Ahu Matua

Ministry for the Environment
Manatū Mō Te Taiao

A redesigned NZ ETS Permanent Forest Category

A discussion document on proposals to redesign the permanent forest category in the New Zealand Emissions Trading Scheme (NZ ETS)

MPI Discussion Paper No: 2023/07

Te Kāwanatanga o Aotearoa
New Zealand Government

Publisher

Ministry for Primary Industries
PO Box 2526, Wellington, 6140
New Zealand
0800 00 83 33
www.mpi.govt.nz

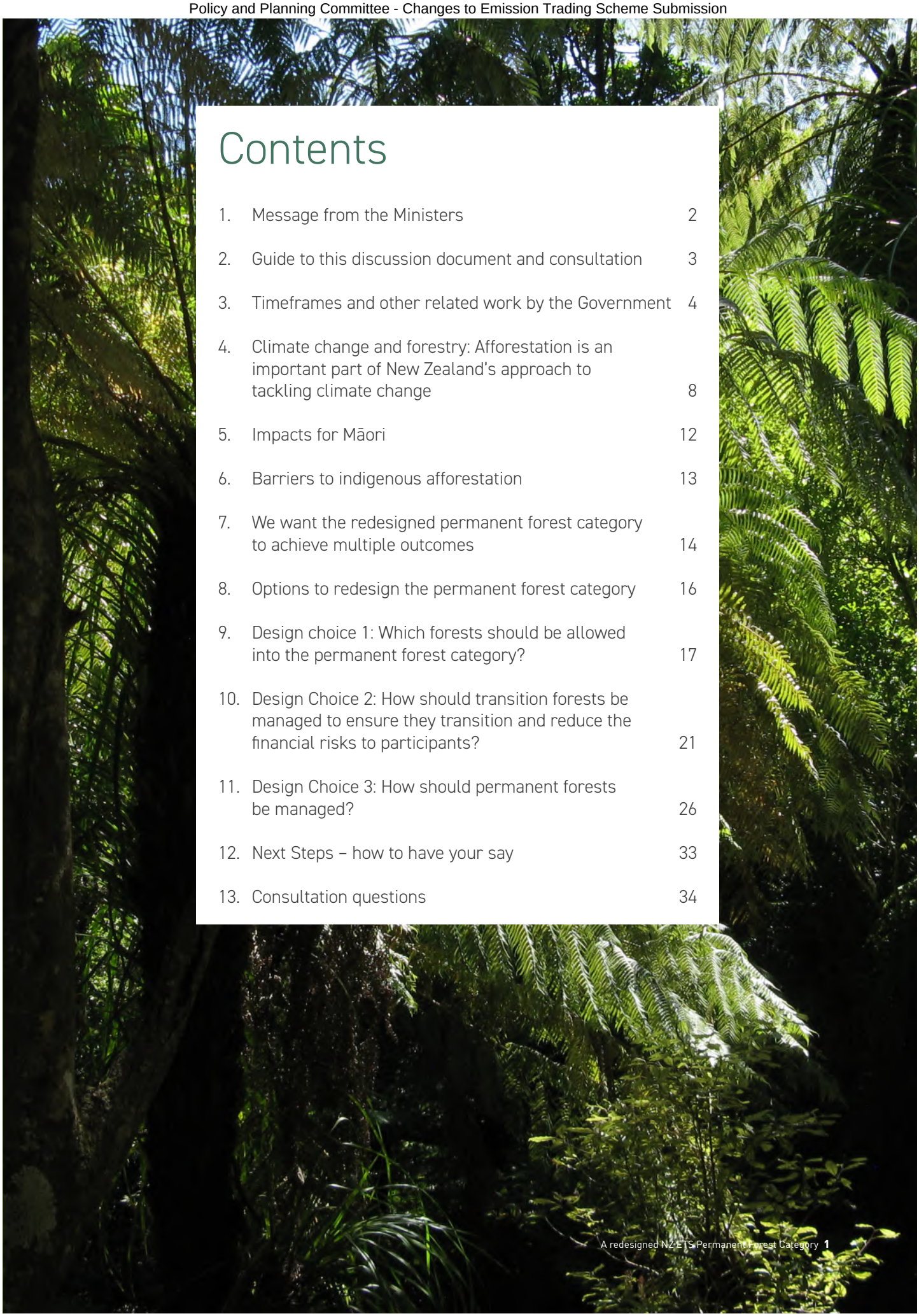
MPI Discussion paper 2023/07

ISSN No: 2253-3907 (online)

ISBN No: 978-1-991087-05-8 (online)

This document may be cited as:

Ministry for Primary Industries (2023). A redesigned NZ ETS Permanent Forest Category: *A discussion document on proposals to redesign the permanent forest category in the New Zealand Emissions Trading Scheme (NZ ETS)*. Wellington: Ministry for Primary Industries.



Contents

1. Message from the Ministers

Our forests play a vital role in New Zealand's response to the climate emergency. Forests reduce New Zealand's net emissions by sequestering carbon, helping New Zealand meet its key international and domestic emissions reduction targets.[1]

New Zealand's international targets are more ambitious than our domestic emissions budgets (there is an estimated 99 million tonnes CO_2-e gap between them). We consider there could be a role for additional afforestation, both inside and outside the New Zealand Emissions Trading Scheme (NZ ETS), to address this.

Forests are also hugely significant to our economy, rural communities, and to Māori both culturally and economically. Forests are recognised for their carbon sequestration in the NZ ETS, by earning New Zealand Units (NZUs).

The NZ ETS encourages investment in lower emissions technologies and practices, including the use of forestry as a carbon sink, by pricing emissions from most sectors of the economy. It is important the NZ ETS incentivises enough emissions reductions to meet our climate targets, but we need to also ensure that the type and scale of afforestation is balanced.

Over the last few years, we have seen greater investment in forestry, particularly exotic forestry, due to the significant increases in the carbon price, forestry's role in reaching our emission reduction goals, and increased demand for wood products. If left unchecked and without management oversight, large scale land use changes to permanent exotic carbon forests may have unintended impacts on our environment and rural economies.

Last year we consulted on proposals to restrict permanent exotic forests in the New Zealand Emissions Trading Scheme in response to concerns about the impacts on the environment and rural communities from these forests. The proposals generated significant interest, shown by the volume and strength of the submissions we received. Following this, we committed to taking more time to fully consider options for the future direction of the ETS permanent forest category.

We want all forests – as much as possible – to be planted and managed in an environmentally appropriate way. We intend to take a cautious approach to managing the long-term environmental and ecological risks of permanent exotic forests when redesigning the permanent forest category.

This discussion document outlines the further ideas and options we are exploring for how we can support forests to deliver positive long-term outcomes as part of our climate transition, while also providing for wider environmental benefits, and supporting both Māori and rural communities.

We think there is an opportunity through redesigning the permanent forest category to maximise the benefits of permanent forests for the climate, environment, and landowners, while also minimising the risks of these forests in these same areas. As part of this there is an opportunity to better support the establishment of long-term indigenous carbon sinks through enabling permanent exotic forests to transition to indigenous forests over time.

We are seeking your feedback on three key design choices: what forests should be allowed in the permanent forest category, how transition forests should be managed to best ensure a successful transition, and what rules will best maximise the benefits of permanent forests in the category.

We want to hear your views on these ideas and options, and how they may affect you, your organisation, business, or community, to inform the final decisions we make. We are also interested in how you think these options could be operationalised.

A cautious approach to redesigning the permanent forest category

There is some uncertainty around the long-term environmental and ecological risks that permanent exotic forests pose – due to the lack of long-term data on permanent exotic forests in New Zealand. To mitigate this, the Government intends to take a cautious approach to redesigning the permanent forest category.

We encourage you to have your say during this consultation. Decisions we make now on permanent forestry will be critical for our future environmental sustainability, economic growth, and the well-being of our people and communities.

Peeni Henare
Minister of Forestry

James Shaw
Minister for Climate Change

1 New Zealand has an international commitment to reduce net greenhouse gas emissions by 50 percent below gross 2005 levels for the period 2021-30. There are also domestic targets to reduce long-lived greenhouse gas emissions to net zero, and biogenic methane emissions by 24-47%, by 2050.

2. Guide to this discussion document and consultation

On 1 January 2023, a new category became available in the New Zealand Emissions Trading Scheme (NZ ETS) for post-1989 forest land that is not intended to be clear-fell harvested[2] for at least 50 years (referred to as the permanent forest category in this document).

This discussion document takes you through options to redesign the permanent forest category, presents options for how we could implement these proposals, and provides relevant information that can help you write your submission.

We are consulting on the design of the permanent forest category

There are three key decisions to consider when redesigning the permanent forest category:

1) What should be allowed to register as permanent forest?
2) If the permanent forest category includes transition forests , how should transition forests[3] be managed to:
   a. ensure they transition from exotic to indigenous, and
   b. reduce the financial risks to participants
3) What rules and compliance regime will best maximise the positive outcomes from permanent forests, while minimising their risks?

We are seeking your views on these proposed changes to the permanent forest category under the Climate Change Response Act 2002 (CCRA). Your feedback will help us gather information, ideas and evidence that we can use to develop the proposals further, consider alternative options, and understand what matters most to you.

Further information

If you are interested in the evidence and analysis that we've drawn upon to develop the proposals, you can refer to MPI's interim Regulatory Impact Statement.

Dates for public webinars to hear more about the proposals and ask questions can be found on the MPI website: https://www.mpi.govt.nz/consultations/proposals-to-redesign-the-permanent-forest-category-in-the-emissions-trading-scheme. (URL DOESN'T WORK)

Sending us your views

Submissions on these proposals will be received by the Ministry for Primary Industries (MPI) through to 5pm on 11 August 2023, by email to NaturalResourcesPol@mpi.govt.nz or online via the MfE website https://consult.environment.govt.nz/climate/nz-ets-permanent-forestry-category-redesign/.

You can find out more information about how to send us feedback later in this document in the section on *How to have your say* at page 33.

Further information

The full discussion document, regulatory impact statement, summary of submissions and Cabinet's final decisions for the consultation undertaken in April 2022 can be found online at https://www.mpi.govt.nz/consultations/managing-exotic-afforestation-incentives.

2 In the NZ ETS, clear felled means an area of at least one hectare on which any trees are cleared or killed by any form of human activity that results in a forest species crown cover of 30% or less in each hectare.
3 In this document, the term 'transition forests' refers to exotic forests that are actively managed to transition to indigenous forest over time.

3. Timeframes and other related work by the Government

This consultation will occur between 19 June 2023 and 11 August 2023. Following consultation, the Government will carefully consider feedback provided through submissions. Decisions following this consultation will be a matter for the next government. Feedback from submissions will put officials in a good position to advise the incoming government on next steps for the redesign of the permanent forest category.

We tentatively propose that changes could be implemented by early 2025.

We are consulting on the NZ ETS review alongside the redesign of the permanent forest category

The Government is consulting on the NZ ETS review alongside this consultation on redesigning the permanent forest category. The NZ ETS consultation also runs from 19 June – 11 August 2023.

Further information on the NZ ETS review consultation can be found here: https://consult.environment.govt.nz/climate/nzets-review

The NZ ETS review aims to assess if the NZ ETS's design and settings need to be changed to provide a stronger incentive for businesses to transition away from fossil fuels, while also supporting greenhouse gas removals.

The NZ ETS review responds to the Government's decision to prioritise gross emissions reductions in the first emissions reduction plan, while continuing to incentivise net removals. This review is also informed by He Pou a Rangi – Climate Change Commission's advice on emissions budgets.

We are consulting on both programmes at the same time because they are interlinked. Both programmes have significant implications for the forestry sector, but also New Zealand's climate change response, rural land-use change and Māori interests. Some of the options being considered could significantly alter the current price incentives for permanent forestry. You can find more information on the NZ ETS review proposals here: https://environment.govt.nz/publications/review-of-the-new-zealand-emissions-trading-scheme-discussion-document

We want to hear your thoughts on both issues – and will try to incorporate all your feedback on both topics, regardless of how you provide us feedback. However, when you are providing us feedback, please try to target your feedback to the relevant consultation feedback questionnaire.

Ministerial Inquiry into Land use change in Tāirawhiti and Wairoa (the Inquiry)

Cyclones Hale and Gabrielle caused significant damage to people, land, property and infrastructure in the Tairāwhiti/Gisborne and Wairoa Districts earlier this year.

A Ministerial Inquiry was announced on 23 February, sponsored by the Minister for the Environment and the Minster of Forestry. The purpose of the Inquiry was to describe the history of land uses associated with the mobilisation of woody debris (including forestry slash) and sediment in the Tairāwhiti/Gisborne and Wairoa Districts, and to make recommendations about the further work needed to address impacts of land use and storms. The Inquiry's findings and recommendations were released on May 12, 2023.

The Inquiry made several recommendations related to the NZ ETS. The redesign of the permanent forest category could play a role in addressing the Inquiry's recommendations.

The Government is still considering its response to the Inquiry's recommendations. We want your feedback on how the redesign of the permanent forest category could support the Inquiry's recommendations.

Further information on the Inquiry's recommendations and full report can be found at: https://environment.govt.nz/what-government-is-doing/areas-of-work/land/ministerial-inquiry-into-land-use/

QUESTION BOX 1

Question 1: How do you think the Inquiry's recommendations should be reflected in proposals to redesign the permanent forest category?

There are also other proposals related to forestry and climate change policy in progress this year

Table 1: Key forestry and climate change policy work in 2023-24

Note: Work and timing will be subject to decisions made by the government of the day.

Proposed change	Policy instrument	2023		2024
		Q3 (Jun - Aug)	Q4 (Sep - Dec)	Q1 (Jan – Mar)
Redesign post-1989 permanent forest category	CCRA	Consultation		
ETS review – balancing net and gross emission reductions	CCRA	Consultation		
Amendments to the National Environmental Standards for Plantation Forestry (NES-PF)	NES-PF	Drafting regulations following Cabinet agreement; for final decisions by Minister for the Environment and Cabinet; Gazettal	Subject to Cabinet approval, commencement in late September	
Maximising Forest Carbon Programme	Climate Change (Forestry) Regulations 2022 Possibly CCRA	Research and policy development	Research and policy development	Research and policy development
Ministerial Inquiry into Land use change in Tāirawhiti and Wairoa	NES-PF General	Government to consider response to the Inquiry's recommendations		
NZ ETS cost recovery for forestry	CCRA	Development of regulations	Regulations in place	

Changes to cost recovery for forestry services

In addition, recent and proposed changes for cost recovery of ETS forestry services will also influence incentives for participants in the NZ ETS. Further information on the recent and proposed changes to cost recovery for forestry services in the NZ ETS can be found https://www.mpi.govt.nz/consultations/forestry-in-the-ets-proposed-updates-to-cost-recovery-settings/ and https://www.mpi.govt.nz/consultations/forestry-in-the-ets-second-set-of-proposed-cost-recovery-fees-and-charges/.

National direction for forests

As well as the NZ ETS review, amendments to the National Environmental Standards for Plantation Forestry (NES-PF) is another key work programme that is likely to influence the incentives driving afforestation and management of permanent forestry. Although we are not seeking feedback on the NES-PF policies through this consultation, proposals within these work programmes will impact final policy options.

Between 23 October and 18 November 2022, the Government consulted on proposals to amend the NES-PF to address environmental, economic, and cultural effects of plantation and exotic carbon forests.[4]

The proposed options during consultation on the NES-PF sought to:

- Manage the environmental (biophysical) effects of exotic carbon forests,
- Control the location of plantation and exotic carbon afforestation to manage social, cultural and economic effects,
- Improve wildfire risk management in all plantation and exotic carbon forests, and
- Address matters identified through the Year One Review of the NES-PF to better enable foresters and councils to manage the environmental effects of forestry.

4 Carbon forest/forestry has a similar meaning to plantation forest as defined in the NES-PF, except that it is forest that will not be harvested below a certain level of canopy cover. National direction for plantation and exotic carbon afforestation - discussion document https://www.mpi.govt.nz/dmsdocument/53623-National-direction-for-plantation-and-exotic-carbon-afforestation

A related proposal from consultation on the NES-PF was to amend the NES-PF to require forest management plans for exotic carbon forestry.[5] The NES-PF currently requires management plans for specific activities such as harvesting. The discussion document outlined two broad options for the purpose of Forest Management Plans:

1) they could be designed to manage only environmental effects and other risks, or

2) they could additionally manage forest outcomes, such as transition to indigenous species if that was the goal of the forest.

Depending on what changes are implemented through the NES-PF, additional rules may be needed in the NZ ETS permanent forest category to ensure the long-term viability of these permanent forests. For example, bespoke rules are likely to be needed for transition forests.

Amendments to the NES-PF are scheduled to be finalised later this year (2023). Officials will consider options to redesign the permanent forest category with the NES-PF changes in mind, to ensure a cohesive regulatory system for managing permanent forests in the future.

Maximising Forest Carbon Programme

The Maximising Forest Carbon Programme will run from 2022 – 2026 and will undertake extensive research into carbon storage in different forest types and how carbon storage can be better measured, including the use of remote sensing technology. The Programme will:

- Improve the way we measure forest carbon in the NZ ETS, including:
  - Updates to the existing carbon tables used by some NZ ETS participants to calculate their carbon stock and unit entitlements – these will likely be publicly consulted on in stages;
  - Consider new methodologies to determine participant specific yield tables, and who can use these
- Consider how good forest management practices resulting in additional carbon storage can be measured, recognised and incentivised, particularly in pre-1990 forest; and
- Consider how climate change will impact carbon storage in our forests in the future and what interventions may be needed in the short-term to mitigate or manage these impacts.

The research that the Maximising Forest Carbon Programme is undertaking into transition forests will be especially relevant for the options in this discussion document. This will consider issues such as:

(i) how active forest management (such as pest control) can support a forest to transition from exotic to indigenous, and

(ii) more accurately recognising carbon sequestration in indigenous forests.

While the Maximising Forest Carbon Programme will help understand how transition forests could work in the NZ ETS, a significant body of work will be required to provide practical guidance for landowners to successfully manage a transitional forest.

Further information on Maximising Forest Carbon - Draft Summary Research Plan: https://mpi.govt.nz/dmsdocument/54544/direct

Forestry and Wood Processing Industry Transformation Plan

The Forestry and Wood Processing Industry Transformation Plan (ITP) was released in December 2022. The ITP aims to make better use of forestry resources by processing more wood onshore, producing more high-value wood products, and using residues to develop a forest-based bioeconomy.

Aspects of the redesign of the permanent forest category overlap with the ITP. One of the objectives of the ITP is to diversify the forestry estate - both in species and ways of managing the forest. This can be done through planting of alternative species (exotic or indigenous) while also accelerating the uptake of new harvesting techniques such as continuous cover forestry instead of clear-felling.

Removals outside of the NZ ETS

The Government is also progressing work to recognise removals outside of the NZ ETS. This includes:

- **Developing a voluntary carbon market framework**
  The Government is progressing the development of a voluntary carbon market (VCM) framework to support more private–public collaboration, scale up climate activity in Aotearoa New Zealand, and provide greater assurance of integrity and certainty amid significant changes in global VCMs. Developing a VCM framework was a key action identified in the emissions reduction plan. There are opportunities to drive climate mitigation actions outside the NZ ETS, which can be leveraged through VCMs.

  Sustainability certifying organisations support New Zealand's businesses efforts to measure their baseline emissions, invest in climate mitigation projects, certify their voluntary emissions reduction and removals, and facilitate the purchase of carbon credits through international carbon markets.

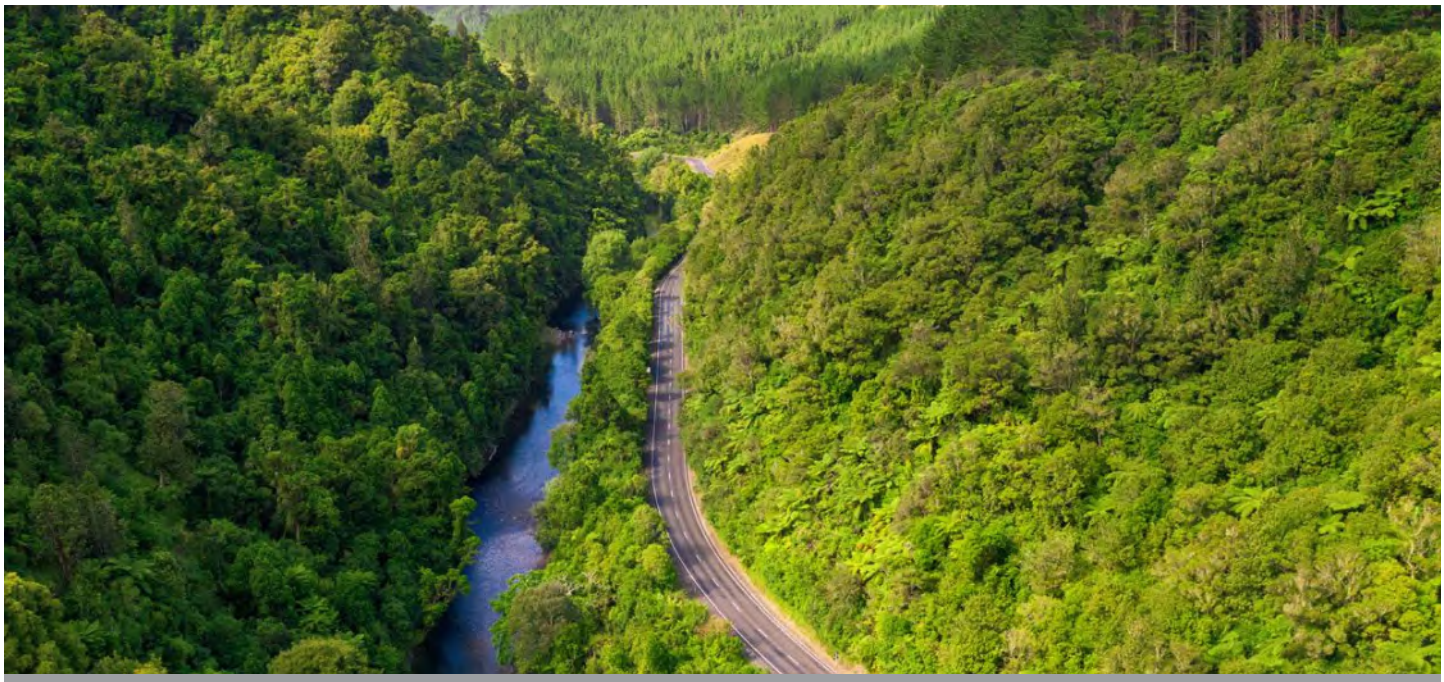
5 Has a similar meaning to plantation forest as defined in the NES-PF, except that it is forest that will not be harvested below a certain level of canopy cover.

However, voluntary climate mitigation in Aotearoa New Zealand is still underdeveloped to meet increasing demand and largely unregulated, lacking the level of clarity and consistency necessary to stimulate greater domestic project development and high-integrity credit generation

- **Biodiversity credits**
  The Government is also exploring other policy measures to enhance biodiversity and support wider environmental benefits. For example, work is currently underway to understand the potential role that a biodiversity credit system might play in supporting the protection of biodiversity. This could complement the NZ ETS. Such a system would seek to drive private investment to directly reward actions that will protect, expand, and enhance indigenous diversity.
- **Nationally Determined Contribution (NDC) Strategy**
  The Government increased Aotearoa New Zealand's NDC (NDC1) in 2021 to a 50 percent reduction of net emissions below gross 2005 levels by 2030. Domestic action will be prioritised; however, offshore mitigation will be needed to achieve the NDC. Afforestation could play a critical role in meeting the target.

  A strategy describing how New Zealand can meet NDC1 through a continuation of domestic action and international cooperation is in development.
- **Carbon Neutral Government Programme**
  In December 2020, Cabinet established the Carbon Neutral Government Programme to help make a number of public sector organisations carbon neutral from 2025. Work to reduce emissions and identify sources of offset supply which can be used by the Carbon Neutral Government Programme, is underway.

  You can learn more online at https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/carbon-neutral-government-programme/



4. Climate change and forestry: Afforestation is an important part of New Zealand's approach to tackling climate change

New Zealand has committed to reducing our greenhouse gas emissions to limit the global average temperature rise to 1.5°C. To help achieve this, the Government has set the following domestic and international targets:

- **Domestic:**
  - net emissions of greenhouse gases, other than biogenic methane, to be reduced to zero by 2050;
  - emissions of biogenic methane to be 10 percent lower than 2017 levels by 2030, and 24 to 47 percent lower than 2017 levels by 2050.
- **International:**
  - New Zealand's Nationally Determined Contribution (NDC) has set a target to reduce net emissions by 50 percent below gross 2005 emissions levels by 2030;

To help achieve these domestic targets, the CCRA also requires the Government to set emissions budgets that outline the amount of emissions allowed for each budget period. The first three emissions budgets were set in May 2022, for the periods 2022-2025, 2026-2030 and 2031-2035.

Emissions budgets set a limit on the amount of greenhouse gas emissions allowed across the budget period. These budgets can be met using a combination of gross emissions reductions and net emissions removals.

Box 1: Gross emissions versus net emissions

Gross emissions are the total emissions New Zealand releases from sectors such as agriculture, transport, energy, industry and waste.

Net emissions are the total of gross emissions, minus any emissions removals (for example, from forests storing carbon as they grow).

Afforestation supports New Zealand to meet our climate targets

Forestry supports New Zealand to help meet its climate change targets and emissions budgets by offsetting emissions. Forests can be both a carbon sink (while growing) or a source of emissions (for example, from harvesting or deforestation).

The first Emissions Reduction Plan (ERP1) sets out the long-term vision for forestry's role and contribution to New Zealand's climate change response:

> *By 2050, Aotearoa New Zealand has a sustainable and diverse forest estate that provides a renewable resource to support our transition to a low-emissions economy. Forestry will contribute to global efforts to address climate change and emissions reductions beyond 2050, while building sustainable communities, resilient landscapes, and a legacy for future generations to thrive.*

He Pou a Rangi – the Climate Change Commission pathways for meeting New Zealand's climate change targets include significant afforestation of both indigenous forests and exotic forests. However, recommendations in their first report[6] also specifically asked the Government to consider the role of permanent exotic forests in its climate change response.

Under current policy settings, MPI projects between 0.97 and 1.44 million hectares of additional afforestation out to 2050 are needed to meet New Zealand's climate change targets.[7]

6 https://ccc-production-media.s3.ap-southeast-2.amazonaws.com/public/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa.pdf

7 Ministry for Primary Industries (2022) LULUCF projected contribution towards New Zealand's net zero emission budgets and 2030 NDC target – Technical background paper 2022 LULUCF Accounting Projections (mpi.govt.nz)

Box 2: He Pou a Rangi – the Climate Change Commission's recent draft recommendations are relevant to our proposals

On 26 April 2023, He Pou a Rangi – the Climate Change Commission (the Commission) released their draft advice to inform the second Emissions Reduction Plan (ERP2), covering Aotearoa New Zealand's 2026-2030 emissions budget. This included draft recommendations on amending the NZ ETS and clarifying the role of forests in Aotearoa New Zealand's climate change response.

Public consultation on the Commission's draft advice will run from 26 April until 20 June 2023.[8] Following this, the Commission will provide the Government with the final advice by the end of 2024.

Afforestation will help New Zealand meet our international targets (Nationally Determined Contributions or NDCs)

Carbon sequestered (stored) by trees will help New Zealand meet our international climate targets. New afforestation will have limited impact on New Zealand's first NDC (2021-2030) due to the time it takes for new forests to be established and grow large enough to sequester significant volumes of carbon. Creating a permanent forest sink will help meet future NDCs – and help maintain net zero beyond 2050. We need to plan now, due to the long-time spans.

Note: how we balance the prioritisation of gross and net emissions reductions is also currently being consulted on under the NZ ETS review.

Forestry also provides many other benefits for New Zealand

Forestry is a key means of removing carbon dioxide from the atmosphere. However, it can also achieve other strategic objectives. These include long-term indigenous carbon sinks, enhancing biodiversity, improving freshwater outcomes, building resilience to the impacts of climate change, and providing economic opportunities for landowners, including tangata whenua.

The New Zealand Emissions Trading Scheme (NZ ETS)

Established in 2008, the New Zealand Emissions Trading Scheme (NZ ETS) is a key climate change policy tool to reduce greenhouse gas emissions. The purpose of the scheme is to help New Zealand meet its emission reduction budgets, domestic targets and international climate obligations by pricing greenhouse gas emissions. This encourages investment in lower emissions technologies and practices, as well as emissions removal activities such as forestry.

The permanent forest category was introduced by the 2020 NZ ETS Amendments

In 2020, the Government introduced major reforms for forestry under the CCRA to incentivise higher levels of afforestation across New Zealand. This included introducing the permanent forest category (serving the purpose of the Permanent Forest Sink Initiative (PFSI) following its closure).[9]

From 1 January 2023, eligible forests – exotic or indigenous – can be registered in the permanent forest category so long as the forest is on post-1989 forest land, meets the conditions within the CCRA and is not intended to be clear felled for at least 50 years after registering in the NZ ETS.[10]

The permanent forest category allows participants to earn and trade units (New Zealand Units or NZUs) based on the amount of carbon their forest removes from the atmosphere (sometimes referred to as "sequestration" or "removals" or "abatement"). Forests in the permanent forest category will earn NZUs for as long as the forest is in the ground and the carbon stock is increasing, i.e., while forests within the permanent forest category continue growing.

The 2022 consultation on proposals to manage exotic afforestation incentives

Following the decision to introduce the permanent forest category, some stakeholders began to voice concerns that current NZ ETS settings and carbon prices, and the expectation of rising carbon prices in the future, will potentially lead to increasing levels of afforestation. These stakeholders are particularly concerned about fast-growing exotic forests – which may not produce the best long-term outcomes for New Zealand. In particular, poorly managed or unmanaged permanent exotic afforestation has the potential to create a number of risks, including the displacement of productive land uses and environmental risks.

8 https://haveyoursay.climatecommission.govt.nz/comms-and-engagement/erp2/supporting_documents/CCC4940_Draft%20ERP%20Advice%202023%20P02%20V02%20web.pdf

9 There are around 14,000 hectares of forest in the PFSI. These forests have the option of transferring into averaging accounting or the permanent forest category from 1 January 2023. Forests in the PFSI on 1 January 2024 will be automatically moved into the permanent forest category.

10 Otherwise, clear fell penalties apply.

In April 2022, the Government consulted on its proposals to manage exotic afforestation incentives (more information on this consultation package, including the discussion document and regulatory impact statement, can be found at the following link: https://www.mpi.govt.nz/consultations/managing-exotic-afforestation-incentives).

The high-level questions asked during consultation in early 2022 included:

- Should exotic forests be prevented from registering in the permanent forest category?
- If exotic forests are not allowed, should there be exceptions to this where these forests support the Government's wider objectives for forestry?

Box 3: Feedback from 2022 consultation: should exotic forests be prevented from registering in the permanent forest category?

The April 2022 consultation generated significant interest. Feedback from submitters was divided between those who preferred to retain the status quo (22%), those who thought the permanent forest category should only be open to indigenous forests (36%), and those who thought the permanent forest category should be open predominately to indigenous forests, with some exceptions (30%).

Overall, a majority of submitters supported at least some restrictions on exotic forests. However, many Māori submitters (71%), made strong submissions against changes to the permanent forest category (or at least to any changes on Māori land), citing the disproportionate impact of the proposals on their aspirations, rangatiratanga, and kaitiakitanga. A further 20% of Māori submitters only supported restrictions if there were exceptions. These views and the wider impacts on Māori are explored further in the next section.

Māori views were not uniform, although there was near universal agreement on the need for the permanent forest category to support certain kinds of exotic forests, and a viable indigenous afforestation programme (including a path for transition forests).

A majority of submitters saw the need for the permanent forest category to support some kinds of exotic forests, and a viable indigenous afforestation programme (including a pathway for transition forests).

The most frequently suggested exceptions by submitters were for:

- Low productivity land
- Erosion-prone land
- Exotic to indigenous transition forests
- Long-lived exotic species.

Many submitters suggested that there should be forest management conditions for all forests, covering silviculture practices such as thinning, fire and pest management. Submitters also suggested that additional conditions are needed if there were to be exceptions.

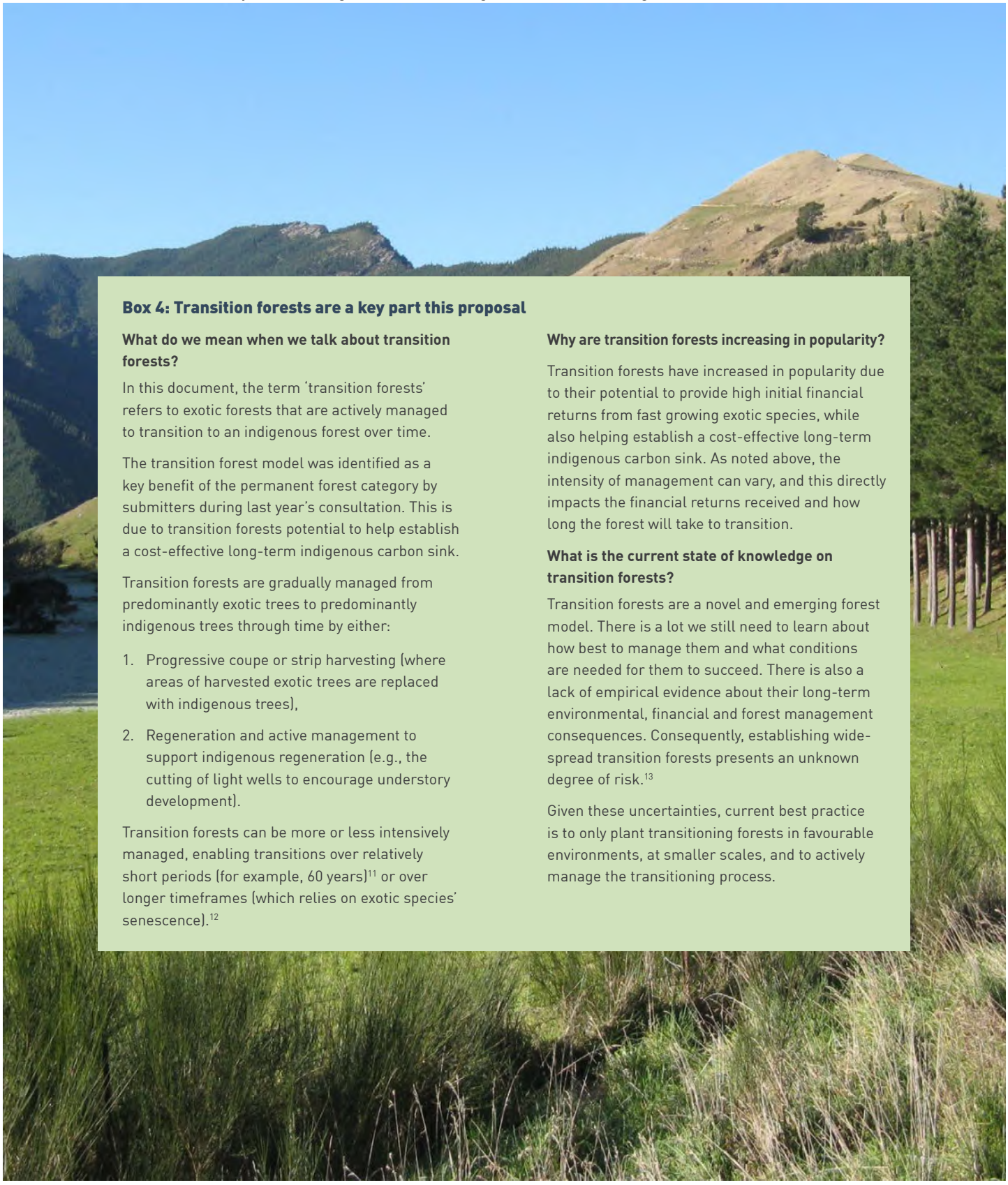
In September 2022, the Government decided to redesign the permanent forest category

In September last year, following significant consultation feedback, the Government stated that while the design of the permanent forest category presents risks, it also presents opportunities.

The Government confirmed that the permanent forest category would open to all forests on 1 January 2023, as currently legislated, but agreed to carry out further work to redesign the permanent forest category.

This will help align future afforestation outcomes with the Government's forestry and climate change objectives, as well as Māori aspirations for their land.

The Government also noted that a redesigned permanent forest category could support forests which are managed to transition from predominantly exotics to indigenous species over time (transition forests). Transition forests, when managed appropriately, can play a role in establishing cost-effective indigenous carbon sinks.



Box 4: Transition forests are a key part this proposal

What do we mean when we talk about transition forests?

In this document, the term 'transition forests' refers to exotic forests that are actively managed to transition to an indigenous forest over time.

The transition forest model was identified as a key benefit of the permanent forest category by submitters during last year's consultation. This is due to transition forests potential to help establish a cost-effective long-term indigenous carbon sink.

Transition forests are gradually managed from predominantly exotic trees to predominantly indigenous trees through time by either:

1. Progressive coupe or strip harvesting (where areas of harvested exotic trees are replaced with indigenous trees),
2. Regeneration and active management to support indigenous regeneration (e.g., the cutting of light wells to encourage understory development).

Transition forests can be more or less intensively managed, enabling transitions over relatively short periods (for example, 60 years)[11] or over longer timeframes (which relies on exotic species' senescence).[12]

Why are transition forests increasing in popularity?

Transition forests have increased in popularity due to their potential to provide high initial financial returns from fast growing exotic species, while also helping establish a cost-effective long-term indigenous carbon sink. As noted above, the intensity of management can vary, and this directly impacts the financial returns received and how long the forest will take to transition.

What is the current state of knowledge on transition forests?

Transition forests are a novel and emerging forest model. There is a lot we still need to learn about how best to manage them and what conditions are needed for them to succeed. There is also a lack of empirical evidence about their long-term environmental, financial and forest management consequences. Consequently, establishing wide-spread transition forests presents an unknown degree of risk.[13]

Given these uncertainties, current best practice is to only plant transitioning forests in favourable environments, at smaller scales, and to actively manage the transitioning process.

11 Weaver (2023). Carbon economics of regeneration at scale. New Zealand Journal of Forestry. 64 (4).
12 Hall (2001). Mitigating an organisation's future net carbon emissions by native forest restoration. Ecological Applications. 11 (6).
13 Forbes Ecology. (2021). Transitioning exotic plantations to native forest: A report on the state ofknowledge. Report prepared for Te Uru Rākau - New Zealand Forest Service.

5. Impacts for Māori

Māori have significant cultural, spiritual and economic interests in forests

Māori have significant interests in the forestry sector as rangatira, kaitiaki, land and forest owners, workers and business owners. In 2018, Māori were estimated to own $4.3 billion of forestry assets (six percent of the total Māori asset base) and up to 2,200 Māori were employed in the sector. Around 30 percent of New Zealand's 1.7 million hectares of plantation forestry is estimated to be on Māori land and this is expected to grow to 40 percent as Treaty settlements are completed. Most of this forest is on pre-1990 forest land.

Māori owned land is often remote, and less versatile, making it well suited to permanent forestry

Māori freehold and Māori customary land is disproportionately on remote, less versatile land (compared to general land), and is held in smaller, fragmented titles rather than general title.

We have heard from Māori that the remote location of a large proportion of Māori owned land limits site accessibility (e.g., to harvest plantation forests and distance to ports), which is required to undertake plantation forestry.

We have also heard the considerable challenges of raising capital on Māori freehold land, and the unique opportunity that prospective carbon revenue from exotic forests in the permanent forest category could provide for land development and for investment back into rural communities.

This includes options such as transition forests, continuous canopy production, and high-value exotics. Due to the financial barriers to indigenous afforestation, these same opportunities are not available to Māori through indigenous forests. We acknowledge that changes to the permanent forest category could limit the ability for Māori to realise the potential productive value of their land.

Not all Māori we have heard from have supported exotic forestry, a group of landowners from Tairāwhiti favoured indigenous forests, even when commenting on afforestation for erosion-prone land. This group also favoured prioritising environmental benefits such as indigenous biodiversity and protecting the whenua over financial returns.

The proposals in this document will have impacts on Māori landowners

We consider the options proposed in this discussion document can support Māori to realise aspirations for their land, while meeting the other outcomes possible under permanent forestry. However, we acknowledge that options which restrict the forest species that can register in the permanent forest category, limits options for Māori participants to develop the productivity of their land.

We want to hear about the impacts of the options proposed in this discussion document on Māori, and on different types of land.

6. Barriers to indigenous afforestation

Indigenous forests remove carbon at a slower rate than exotic forests but can continue to sequester carbon for hundreds of years. The Climate Change Commission states that indigenous afforestation needs to start now to provide enough removals to maintain net zero long-lived greenhouse gas emissions beyond 2050.[14]

However, under current settings, there is a greater incentive to plant permanent exotic forests than indigenous forests due to the financial returns possible through the NZ ETS.[15] Without intervention, it is likely that permanent exotic forests would continue to be the preferred option for forest owners and investors, due to lower up-front establishment and management costs and ability to earn NZUs more quickly, compared to indigenous forests.

As part of the 2022 Managing Exotic Afforestation Incentives consultation, the Government also sought feedback on how the Government could reduce barriers and incentivise permanent indigenous afforestation to ensure long-term resilient biodiverse forests are established. Submitters identified that the following key barriers exist for indigenous species compared to exotic species, preventing large-scale indigenous afforestation:

- High establishment costs
- Lower success rates (linked to high pest management requirements)
- Slower sequestration rates (and thus slower earning of NZUs).

It is unlikely that any restrictions on exotic forests in the permanent forest category alone will address the financial barriers to indigenous afforestation.[16] However, some of the options proposed in this discussion document have the potential to help reduce barriers to indigenous afforestation: either by restricting exotic afforestation, or through better enabling well-managed transition forests.

In suitable environments and with appropriate forest management interventions (such as managing light conditions in the canopy and enrichment planting) exotic forests have the potential to transition to indigenous forests over time. This forest model has been asserted as a key benefit of the current permanent forest category by submitters and could play a role in establishing a cost-effective long-term carbon sink.

14 Climate Change Commission. (2021).Ināia tonu nei: a low emissions future for Aotearoa.
15 Managing Permanent Exotic Afforestation Incentives: Regulatory Impact Statement
16 It is likely that exotic forests established under averaging accounting in the NZ ETS will still be a significantly more appealing value proposition than indigenous forests in either the averaging or permanent categories of the ETS.

7. We want the redesigned permanent forest category to achieve multiple outcomes

Current NZ ETS settings incentivise increasing levels of permanent exotic afforestation

The current NZ ETS settings mean that permanent exotic forests (particularly *Pinus radiata*) have a much higher return on investment relative to other competing land uses (including indigenous forests and some pastural systems). This is because exotic forests grow and sequester carbon quicker than indigenous species, are cheaper to establish than indigenous species, and permanent exotic forests earn NZUs for longer than production forests.

Carbon prices within the NZ ETS have incentivised afforestation, particularly exotic afforestation, beyond what was previously expected.[17] The afforestation intentions survey shows an increase in the establishment of permanent exotic forest whereby in the year 2022 up to 10,200 hectares of new permanent exotic forests was established, compared to 5,300 hectares in 2019.[18] MPI estimates that under the current settings, up to 350,000 hectares of permanent exotic forests could be planted over the next decade in response to the NZU price.[19]

While large-scale permanent exotic afforestation could help New Zealand meet its emissions reduction targets, and would provide significant economic benefits to NZ ETS participants, poorly managed or unmanaged permanent exotic afforestation may create risks, including displacing other productive land uses or environmental risks.[20]

Redesigning the permanent forest category is an opportunity to maximise the benefits of permanent forests

The Government wants to ensure the permanent forest category delivers the best outcomes for all New Zealand. We want to support the right tree in the right location. While the permanent forest category presents risks, it also presents opportunities to support the government's forestry and climate change objectives (both for mitigation and adaptation), and Māori aspirations for their land.

For example, there is an opportunity to use the permanent forest category to help reduce the barriers to indigenous afforestation, and incentivise long-term indigenous carbon sinks through the transition of exotic forests to indigenous forests over time.

A cautious approach to redesigning the permanent forest category

We lack empirical evidence about the long-term environmental and forest management consequences of permanent exotic forests over the long-term. To mitigate this, the Government intends to take a cautious approach to redesigning the permanent forest category.

Outcomes and assessment criteria

The Government wants to redesign the permanent forest category to deliver the best outcomes for all of New Zealand, including:

1. **Provide long-term carbon sequestration (particularly from indigenous forests)**
   - Permanent forests will help meet New Zealand's long-term emissions budgets and targets through secure long-term carbon sequestration.
2. **Helps improve climate change adaptation and resilience**
   - Permanent forests help to improve New Zealand's adaption and resilience to climate change and other significant weather events.
3. **Provide positive environmental outcomes**
   - Permanent forests will support broader environmental benefits to support improving freshwater quality, soil conservation and other ecosystem benefits, and be managed to mitigate end-of-life risks.
   - Permanent forests will be managed to mitigate risks from animal pests, weeds and disease.

17 In early-2020, the carbon price within the NZ ETS was around $25 per New Zealand unit, rising to $75 in early 2023. The carbon price currently sits around $55.
18 Manley, B. (2022). Afforestation and deforestation intentions survey 2021. University of Canterbury: Canterbury, New Zealand. Available at: mpi.govt.nz/dmsdocument/52405-Afforestation-andDeforestation-Intentions-Survey-2021
19 Managing Permanent Exotic Afforestation incentives – Regulatory Impact Statement
20 These issues were discussed at length in last year's discussion document and the final regulatory Impact Analysis (which can be found online here).

4. **Support Māori aspirations for their land**
   - Actively protect Māori interests and ability to make decisions regarding their land in line with their cultural, social, environmental, and economic aspirations, while considering that a high proportion of Māori land is marginal and difficult to access.
5. **Support rural economies and communities**
   - Permanent forests provide on-going, high quality employment opportunities within rural communities and economies, which contribute to regional economic development.
   - Permanent forests contribute to New Zealand's economy through diversified revenue streams.

The outcomes above have also been used as the criteria to assess the options presented in this consultation document.

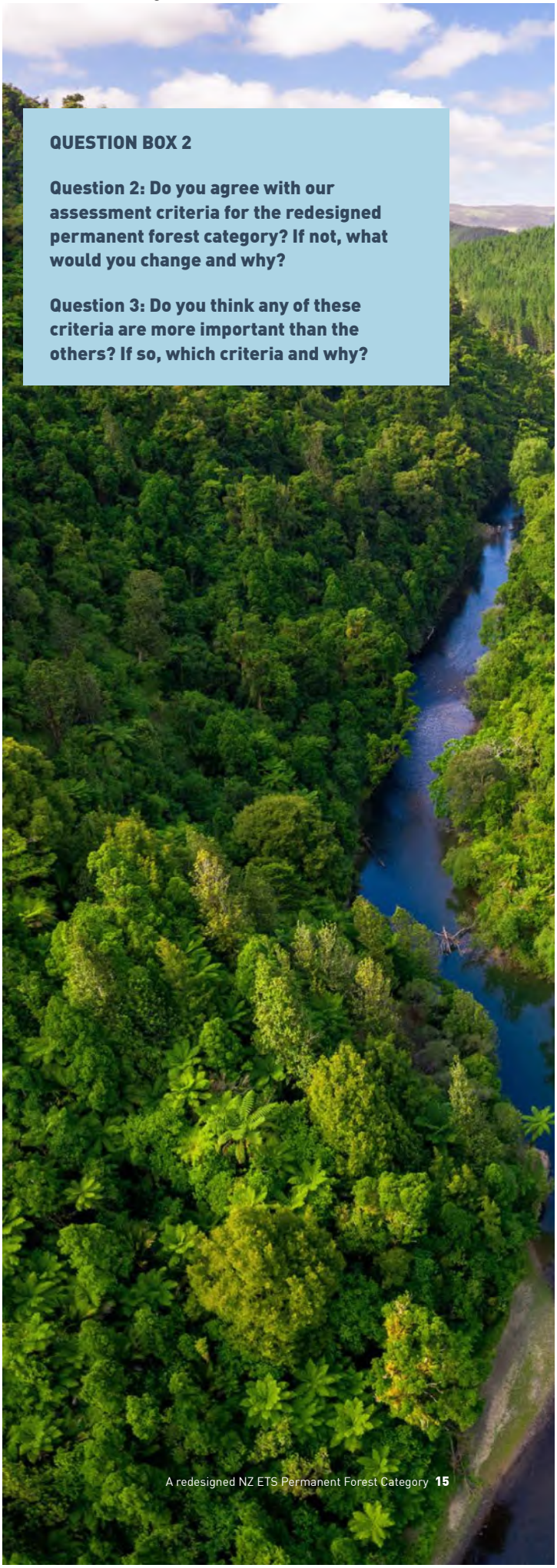
It is also important to ensure the redesigned permanent forest category is operationally achievable, can be implemented quickly, is resilient to future changes and avoids unintended consequences. Any options should minimise administration and compliance costs, support the purpose of the NZ ETS and maintain regulatory certainty.

There are important trade-offs that need to be considered when balancing the application of the assessment criteria.

For example, restricting the permanent forest category to only allow indigenous forests to register would help achieve positive environmental outcomes. However, this would come with a risk that New Zealand may not meet its climate change objectives, which could also impact our international credibility to meet Nationally Determined Contributions (NDCs). Conversely, if 'providing long-term carbon sequestration' to meet climate change objectives is prioritised most strongly, then the status quo (unrestricted permanent exotic afforestation) becomes more viable, despite the risks it presents to the future viability of rural economies and communities.

The criteria have not been weighted in our initial analysis – currently all the above criteria are considered equally important. However, you might think some of these criteria are more important than others. We want to hear from you on how we should balance these assessment criteria.

Note: as previously stated, the Government intends to take a cautious approach to managing the long-term environmental and ecological risks of permanent exotic forests when redesigning the permanent forest category.



QUESTION BOX 2

Question 2: Do you agree with our assessment criteria for the redesigned permanent forest category? If not, what would you change and why?

Question 3: Do you think any of these criteria are more important than the others? If so, which criteria and why?

8. Options to redesign the permanent forest category

Given the opportunities and risks identified with permanent forests and consultation feedback received early 2022, we propose several options to redesign permanent forestry under the CCRA.

There are three key decisions to consider when redesigning the permanent forest category:

1. Which forests should be allowed into the permanent forest category?
2. How should transition forests be managed to ensure they transition and reduce the financial risks to participants?
3. How should permanent forests be managed?

Each key decision is considered in a separate sub-section, as per the table below.

Table 2: Summary of options proposed in this discussion document.

Section & options summary	
Section 9. Design choice 1: Which forests should be allowed into the permanent forest category? **Option 1.1:** only transition forests and indigenous forests can enter the permanent forest category **Option 1.2:** exotic forests allowed to enter under limited circumstances – for example, only certain types/ locations/ ownership characteristics of the exotic forest allowed. The following sub-options are not mutually exclusive: **Option 1.2a:** long-lived exotic species (such as redwoods) **Option 1.2b:** Māori-owned land **Option 1.2c:** small scale exotic forests planted on farms.	Pages 17-20
Section 10. Design Choice 2: How should transition forests be managed to ensure they transition from exotic to indigenous forests and reduce the financial risks to participants? **Option 2.1:** Status quo (no new specific carbon accounting method for transition forests). **Option 2.2:** enable new mandatory specific carbon accounting methods for transition forests in the permanent forest category	Pages 21-25
Section 11. Design Choice 3: How should permanent forests be managed? This section discusses the management and compliance, monitoring and enforcement regime required to deliver the desired outcomes from permanent forestry under the CCRA. **Option 3.1:** Status quo (no additional forest management requirements introduced for forests in the permanent forest category) **Option 3.2:** New minimum forest management requirements – specific to the permanent forest category – are introduced for all registered permanent forests (exotic, indigenous and transition forests) **Option 3.3:** New forests management requirements are needed for transition forests.	Pages 26 – 32

Some of the options have been narrowed by last year's consultation

This document focuses on the options for redesigning the permanent forest category. As you read through the options presented in this document, you might think of other options we haven't included. Sometimes this will be intentional – several options were consulted on the Government during the 2022 consultation.

For example, under design choice 1 (which forests should be allowed into the permanent forest category), this consultation does not ask for your feedback on:

- the status quo (no changes to the permanent forest category), or
- restricting the permanent forest category to indigenous forests only.

The Government received significant feedback on these options last year which will help inform the Government's decisions on the permanent forest category's redesign.

Transitional arrangements: what about forests entering the category now?

Eligible forests have been able to register in the permanent forest category since 1 January 2023. However, following this consultation, the Government may decide to make changes to redesign the permanent forest category.

If the Government does decide to make changes to the permanent forest category, we will need to consider how any changes (for example, if conditions are imposed through management plans) may impact those forests that are registered in the permanent forest category before any changes to the category become effective. This work would need to consider what transitional arrangements would be needed for those existing registered forests in the permanent forest category.

9. **Design choice 1:** Which forests should be allowed into the permanent forest category?

Deciding what forests can enter the category, and where they can be[21], directly impacts how big the opportunities and risks from permanent forests will be. This decision is the most significant choice fundamentally affecting the redesign's overall outcomes.

Aspects of these questions were consulted on during last year's consultation and were the most contentious aspect of the consultation.

Two options are being considered:

a. **Options 1.1:** only transition forests and indigenous forests can enter the permanent forest category

b. **Option 1.2:** exotic forests allowed to enter under limited circumstances – for example, only certain types/ locations/ ownership characteristics of the exotic forest allowed. The following sub-options are not mutually exclusive:
   a. Long-lived exotic species (such as redwoods)
   b. Māori-owned land
   c. exotic forests planted on small-scale forests on farms.

Note, the Government has previously consulted on the status quo (no additional restrictions on the types or locations of forests entering the permanent forest category) during last year's consultation. Therefore, this document focuses on the options to redesign the permanent forest category.

Similarly, the Government has previously indicated its preference for the redesigned permanent forest category to allow transition forests to register – therefore we do not propose to consult on the option of only allowing indigenous forests to register in the permanent forest category.

Also, depending on which of the above options is progressed, there may be other opportunities to support exotic and indigenous afforestation outside of the redesigned permanent forest category.

Option 1.1: Only indigenous and transition forests can enter the permanent forest category (see forest management requirements)

Under this option, only indigenous forests and transition forests would be able to register in the permanent forest category.

Although a novel forestry model, the Government recognised that transition forests, when managed appropriately, could play a role in establishing cost-effective indigenous carbon sinks.

However, additional management may be required for transition forests to ensure they transition from exotic to indigenous species (discussed in more detail in sections 10 and 11).

Option 1.2: exotic forests allowed to enter under limited circumstances – for example, only certain types/ locations/ ownership characteristics of the exotic forest allowed

Under this option, permanent forest registration would be open to indigenous, transition forests and exotic species in limited circumstances. Transition and indigenous forest species would be able to register as a permanent forest on any land, but exotic species can enter in limited circumstances.

We propose the following two options which exotic permanent forests could be limited to. Note, these options are not mutually exclusive:

Option 1.2a. Long-lived exotic species (such as redwoods)

Under this option, exotic afforestation in the permanent forest category would be limited to long lived exotic species.

We propose to exclude Radiata pine under this option. Radiata pine rotations of 60 years and beyond (on favourable sites) is biologically feasible. However, forest vigour and health beyond these timeframes and any environmental issues that may arise due to senescence is unknown.[22]

Long-lived exotic species was one of the most frequently cited exceptions preferred by submitters during consultation last year. It was particularly favoured by key impacted groups including Māori, the forestry sector, the agricultural sector and councils. The benefits of long-lived exotic species cited during last year's consultation included:

- Enhancing soil stability, protection of waterways and biodiversity

21 Note that proposed amendments to the NES-PF enable regional councils to have the ability to control the location of afforestation.
22 Woollons, R. & Manley, B. (2011). Examining growth dynamics of Radiata pine plantations at old ages in New Zealand. Forestry: An International Journal of Forest Research 85(1)

- Animal welfare benefits (such as shade/shelter), and
- Diversification of income streams on farms.

However, risks of long-lived exotic species cited during last year's consultation included:

- Exotic forests could still be preferable to indigenous forests due to greater returns
- Some regions would still be a target for afforestation due to limited port/processing infrastructure, and
- Environmental considerations (fire and wilding risks).

Different species grow at different rates, over different timeframes, and some species can be sensitive to site conditions. Deciding which species are included in the definition will impact where permanent forests are planted, and foresters' returns from the permanent forest category. While some long-lived exotic species will be obvious (e.g., redwoods and some exotic hardwoods), some are likely to be difficult to define and we may have limited information to support their inclusion.

We would like your feedback on long-lived exotic species that could be included in the permanent forest category, including any evidence you have to support their inclusion.

Option 1.2b. Māori-owned land (Whenua Māori and/or settlement land)

Under this option exotic afforestation in the permanent forest category would be limited to Māori-owned land.

Māori-owned land could be defined in different ways. For example, it could be defined as Whenua Māori (defined under Te Ture Whenua Māori Act 1993 means Māori freehold and customary land) or land defined as Whenua Māori plus that held by Post-Settlement Governance Entities, and Treaty settlement land.[23]

Whenua Māori is disproportionately on remote, less versatile land (compared with general land) which make it well suited to permanent forestry.

Around 123,650 hectares of whenua Māori has been identified as well suited to forests – some of which could qualify for registering in the NZ ETS. Of this, around 71,000 hectares has been identified as remote and marginal-to-harvest land so is likely suited to permanent afforestation. However, land held by settlement entities is general title land which makes it difficult to calculate land characteristics and forestry suitability.

Option 1.2c. Small-scale forests on farm (e.g., less than 50ha)

Under this option exotic afforestation in the permanent forest category would be limited to small-scale forests on farms.

In last year's consultation, this option was favoured by some submitters from the forestry sector, agricultural sector, environmental and research groups. However, it was not among the most frequently suggested exceptions.

Key considerations and trade-offs

We received feedback on a number of these options during last years' consultation. This consultation highlighted how challenging it will be to appropriately define any allowances for exotic forests to enter under limited circumstances.[24]

Benefits

Option 1.1 best supports the establishment of long-term, indigenous carbon sinks (depending on whether transition forests prove ecologically viable, and the redesigned permanent forest category adeptly incentivises and manages forests to successfully transition).

Options 1.2 a-c are not mutually exclusive. To differing degrees, they could provide the following opportunities (when compared against Option 1.1):

- Enables higher levels of afforestation than Option 1.1 – facilitating quicker carbon sequestration to meet our upcoming NDCs.
- Better supports Māori aspirations for their land. Enables exotic continuous cover forest models within the NZ ETS – which can provide jobs and non-carbon revenue through selective harvest of high value timber. Exotic continuous cover forest models could also play an important role in the diversification of New Zealand's production forestry estate.[25]

Option 1.2 provides more flexibility for participants to utilise a broader range of forest species and models that are best suited to their land. In addition, allowing non-transitioning forests in limited circumstances would mean we get more afforestation overall, increasing carbon sequestration, helping meet our 2050 climate targets.

Costs

Transition forests are a novel and emerging forest model. There is a lot to learn about how best to manage them and what conditions are needed for them to succeed. There is also a lack of empirical evidence about their long-term environmental, financial and forest management consequences. Consequently, establishing wide-spread transition forests presents an unknown degree of risk.

23 Which could include protected land, land held by a post-settlement entity and a post-settlement entity.
24 MPI Summary of Submissions https://www.mpi.govt.nz/dmsdocument/53635-Summary-of-submissions
25 Te Uru Rakāu New Zealand Forest Service. (2022). Te Ara Whakahou – Ahumahi Ngahere Forestry and Wood Processing Industry Transformation Plan.

Evidence from two case studies (at Milnthorpe Park Reserve and Waingake Ngahere Restoration Project) have shown initial positive results. However, on-going management will be required to ensure these forests successfully transition through time.[26]

Option 1.2 may drive predominantly permanent exotic afforestation due to the financial incentives in the NZ ETS. There is a risk that permanent exotic afforestation under Option 1.2 could displace other productive land uses in those areas, potentially adversely impacting rural communities and economies.

There is a risk that permament exotic afforestation under Options 1.2 a-c could undermine incentives to register transition forests in the permanent forest category. Depending what forest species and models are allowed into the permanent forest category will influence the attractiveness of the transition forest model. The more specific circumstances where permanent exotic afforestation can occur, could undermine incentives for participants to register transitions forest in the permanent forest category.

All options also introduce greater complexity to the rest of the permanent forest category. For Option 1.2 a-c, the Government will need to clearly define the exact conditions which exotic forests can enter (for example, defining long-lived exotic species). The Government would also need to carefully monitor applications to enter the redesigned permanent forest category to ensure these conditions are being applied.

QUESTION BOX 3

Question 4: Of these options, what is your preferred approach? Why? Are there other options you prefer, that we haven't considered? (Note, options 1.2a and 1.2c are not mutually exclusive)

Question 5: If you support allowing exotic species under limited circumstances, how do you think your preferred 'limited circumstance' should be defined? (For example, if you support allowing long-lived exotics to register, how do you think we should define 'long-lived'?)

Permanent forests could support environmental benefits and climate change adaptation and resilience (afforesting erosion-prone land)

The permanent forest category presents opportunities to support environmental benefits and climate change adaptation and resilience through permanent afforestation.

Permanent forests can be a cost-effective solution for severely erosion prone land and could contribute to meeting the Government's sediment bottom lines under the National Policy Statement for Freshwater Management by improving soil conservation and water quality.[27] There is an estimated 1.4 million hectares of land deemed at risk of severe erosion and suitable for permanent forest cover, 840,000 hectares of which is in the North Island.[28]

26 Further information on these case studies can be found here: https://www.mpi.govt.nz/dmsdocument/48637-Transitioning-exotic-plantations-to-native-forest-practical-guidance-for-landowners

27 Manaaki Whenua. (2019). Impact testing of a proposed suspended sediment attribute: identifying erosion and sediment control mitigations to meet proposed sediment attribute bottom lines and the costs and benefits of those mitigations. Report prepared for the Ministry for the Environment.

28 https://www.stats.govt.nz/indicators/highly-erodible-land

Forests can also play an important role in climate change adaptation and resilience. Research on the impacts of Cyclone Bola on the East Coast of New Zealand found that forests with closed canopy (indigenous forest and exotic pines greater than 8 years old) were 16 times less susceptible to land-sliding than pasture, although newly planted forests remain vulnerable until canopy closure around 6 years old.[29] This is supported by other research that found closed-canopy tall forests have been found to reduce landslides in large storms by 70 to 90 percent and forests can also play a role in flood regulation.[30]

However, the current permanent forest category may not realise these potential benefits. Erosion-prone land isn't specifically targeted by the NZ ETS and may be avoided by investors due to perceived lower productivity and higher risk.

During last year's consultation, one of the most popular exceptions was for erosion-prone land.[31] This consultation also highlighted how challenging it will be to appropriately define any exceptions for erosion-prone land.

The Government recently received the report from the Ministerial Inquiry into Land use change in Tāirawhiti and Wairoa (the Inquiry) which has provided recommendations on how to address the land use impacts of storms, following the cyclones which hit the North Island earlier this year.

The recommendations could include suggestions on managing erosion. There may be opportunities to incorporate these recommendations into the redesigned permanent forest category.

QUESTION BOX 4

Question 6: Do you think there is an opportunity to use permanent forests to stabilise erosion-prone land?

Permanent forests could help address the risk of wilding pines

Exotic forests present risks of wilding pines (wilding pines is the New Zealand term for introduced conifers that are spreading across the landscape through natural regeneration). If exotic forests are allowed to register in the permanent forest category, the permanent forest category's redesign could also present opportunities to manage the risk of wilding pines.

For example, there may be options to reduce the wilding pine risk by restricting the permanent forest category to exotic species with a low wilding risk.[32] There is research underway to determine the commercialisation of sterile Douglas fir now and into the future.

The proposed NES-PF amendments also consider changes to better manage the wilding risk of permanent exotic forests. Depending on what changes are implemented through the NES-PF, additional rules could be needed in the NZ ETS permanent forest category.

QUESTION BOX 5

Question 7: Do you think the Government should consider restricting the permanent forest category to exotic species with a low wilding risk?

29 Marden & Rowan. 1993. Protective value of vegetation on tertiary terrain before and during Cyclone Bola, East Coast, North Island, New Zealand. New Zealand Journal of Forestry Science 23(3): 255-263.
30 Basher, L. (2013). Erosion processes and their control in New Zealand. In Dymond J ed. Ecosystem services in New Zealand - conditions and trends. Manaaki Whenua Press: Lincoln, New Zealand.
31 MPI Summary of Submissions https://www.mpi.govt.nz/dmsdocument/53635-Summary-of-submissions
32 See Appendix 1 in https://www.mpi.govt.nz/dmsdocument/19124-Guidelines-for-the-use-of-the-Decision-Support-System-Calculating-Wilding-Spread-Risk-From-New-Plantings

10. **Design Choice 2:** How should transition forests be managed to ensure they transition from exotic to indigenous forests and reduce the financial risks to participants?

Transition forests are a new forestry model and come with unique challenges.[33]

The Government is interested in their potential to help establish a long-term indigenous forest carbon sink, and is undertaking and funding several research programmes to learn more about the opportunities and limits of transition forests, including:

a) **Maximising Forest Carbon Programme.** Due for completion in 2026, this programme will undertake extensive research into carbon storage in different forest types and the impacts of active forest management activities (such as, animal pest control) on carbon storage, including exotic to indigenous transition forests.

b) **Sustainable Food and Fibre Futures funded research.** Due for completion in 2027, this research will identify management and site requirements needed to support successful transitioning from exotic to indigenous forests.

While the Maximising Forest Carbon Programme will help understand how transition forests could work in the ETS, a significant body of work will be required to provide practical guidance for how these forests could be managed.

Ultimately, these programmes may impact the final design and/or implementation of the permanent forest category.

Transition forests may require specific carbon accounting methods

We think transition forests may need a new, specific carbon accounting method for them to be considered a feasible option within the permanent forest category. Under the current settings, transition forests will incur significant surrender liabilities under the NZ ETS as large exotic trees are replaced by smaller, slower growing indigenous species, therefore reducing carbon stocks (this is explained in Box 5).

How we account for the carbon stored in transition forests will affect when participants receive returns for transition forests, and how much financial risk they carry. This will therefore affect how much transition forests are planted, and how many of them are incentivised to successfully transition.

Transition forests will require ongoing management to transition from exotic to indigenous forests (*discussed in detail at section 11. Design Choice 3: how should permanent forests be managed?*)

Two options for how transition forests earn carbon units are being considered:

- **Option 2.1:** Retain the status quo (transition forest accounting using stock change accounting).
- **Option 2.2:** New mandatory specific carbon accounting methods for transition forests in the permanent forest category.

33 In this document, the term 'transition forests' refers to exotic forests that are actively managed to transition to indigenous forest over time.

Box 5: Why change the carbon accounting method for transition forests?

Key points:

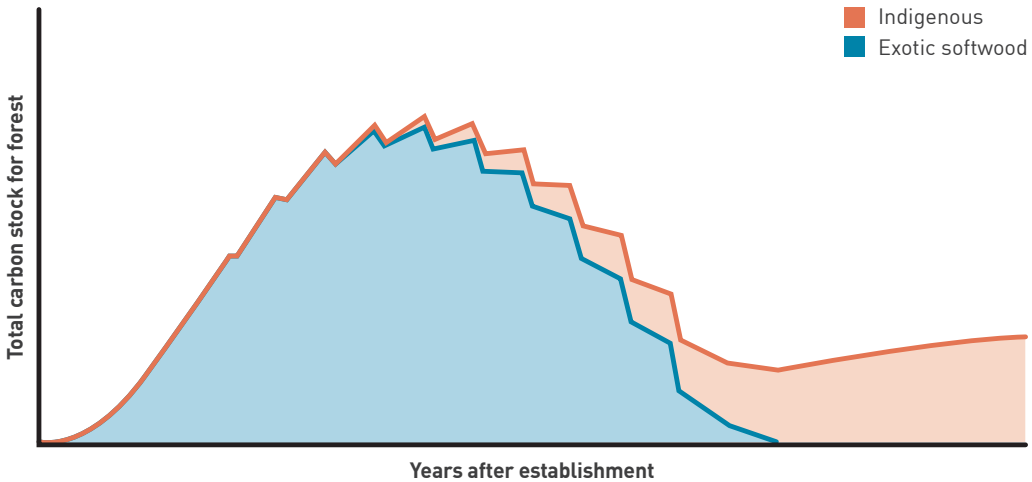
- Forests in the permanent forest category, including transition forests, will currently use the stock-change accounting approach.[34]
- Under the current stock-change accounting approach, transition forests risk incurring significant surrender liabilities within the NZ ETS as large exotic trees are replaced by smaller, slower growing indigenous species and the predominant forest type changes.
- This presents a financial risk to participants and may also act as a disincentive to plant transition forests.
- A new carbon accounting method could help reduce the financial risk facing participants, while also encouraging participants to plant transition forests and successfully transition them.
- The proposal won't change the overall number of units that participants end up with in the long-run (after the forest has transitioned to indigenous forest).

Indigenous forests and exotic forests store carbon at different rates. These trends in carbon stocks are reflected in modelling of a transition forest using stock change accounting, shown in Figure 1 below. The figure shows how the amount of carbon stored in a transition forest changes over time, as mature exotic trees are gradually replaced with new indigenous trees. The modelled forest sees a peak in total carbon stock around age 40, with exotic softwoods making up over 95% the total carbon stored in the forest at this point. Total carbon stocks are progressively reduced as the forest is made up of greater proportions of indigenous species.

Over time (from roughly 35 – 40 years onwards in this model) the exotic trees are removed and replaced with new indigenous trees. This causes the amount of carbon stored in the forest to decrease. Moreover, although indigenous forests are expected to sequester high levels of carbon in the long-run, the total amount of carbon stored in the forest is still far below its initial peak after 100 years.

Under the current accounting rules, this reduction in carbon stock means participants will earn a lot of units they will have to surrender as their forest transitions – and creating a large financial liability for participants (see Figure 2).

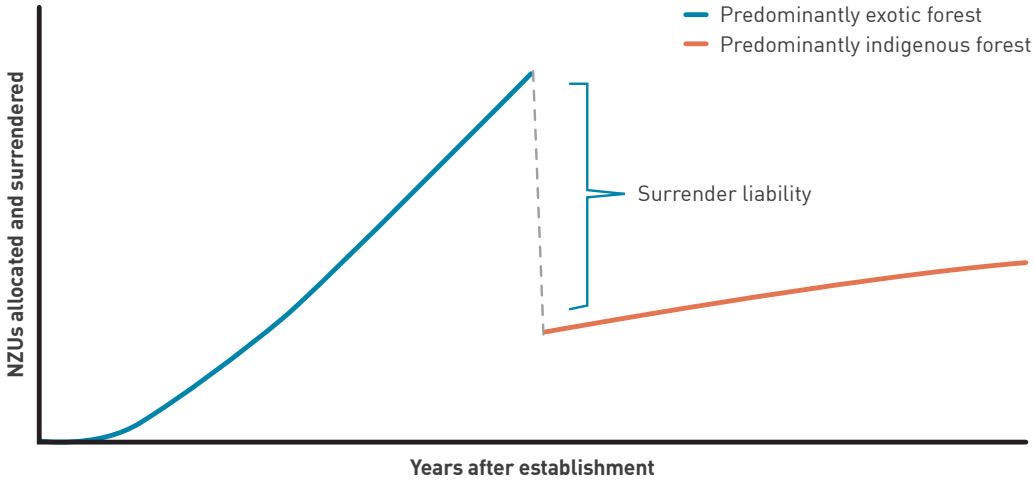
Figure 1: Modelled total carbon stock for a 100-hectare transition forest (via progressive strip harvesting) under stock change accounting.



Note: This model uses a forest established with exotic softwood species, which is then progressively harvested and replanted with indigenous species, until forest fully transitioned.

34 Stock change accounting is a method of quantifying the changes in the carbon stored in registered forests to determine the NZUs allocated/owed by participants. In stock change accounting, the participant accounts for the net carbon stock change in the forest. This means stock change accounting provides continuous NZUs for forests as they grow and requires NZUs to be surrendered if the forest is harvested. If the forest is replanted after harvest the forest can again earn NZUs for its growth.

Figure 2: Carbon units earnt/owed by an illustrative transition forest under current accounting settings



This is because under the status quo, transition forests will earn units based on the predominant forest type. When the predominant forest type has switched from exotic to indigenous[35] – the forest will switch from earning units on the higher exotic forest yield table to a much lower indigenous forest yield table.

This will create a large surrender obligation, and could impact the long-term financial sustainability of the forest model due to units needing to be surrendered as carbon stocks reduce.

We want to reduce this liability, while also encouraging participants to plant transition forests and successfully transition them.

35 Predominant forest type is defined by the particular forest species with the greatest total basal area, in relation to an area of forest land.

Two options for how transition forests earn carbon units are being considered

Option 2.1: Retain the status quo (transition forest accounting using stock change accounting).

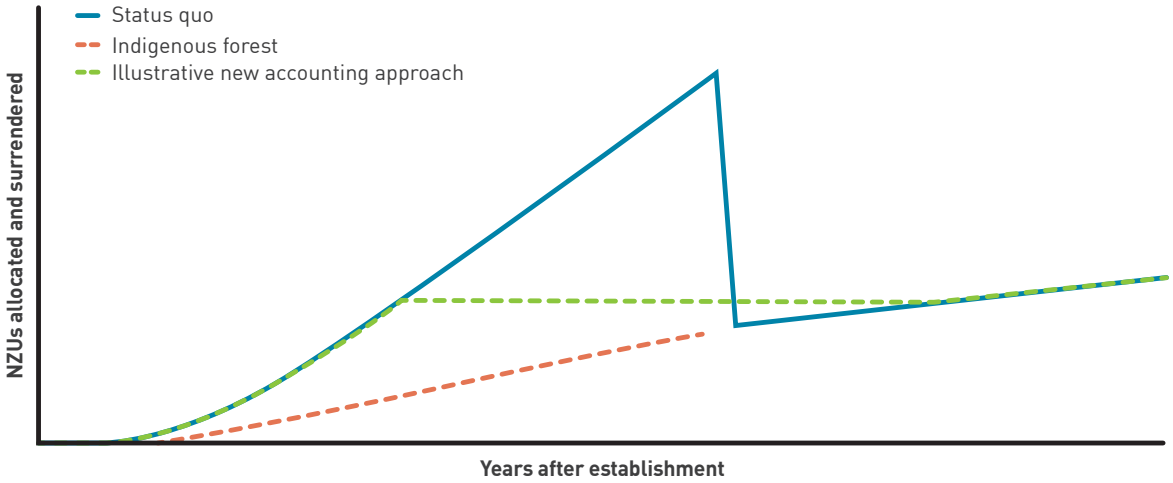
Under the status quo, participants would face a significant surrender liability when the forest species transitions from a predominantly exotic to indigenous species.

Option 2.2: New mandatory specific carbon accounting methods for transition forests in the permanent forest category.

Enable new mandatory specific carbon accounting methods for transition forests in the permanent forest category (see illustrative example below).

Note: we are not seeking feedback on the details of the specific accounting values now – if Option 2 is chosen, we will consult on the design of the regulations at a later date.

Figure 3: Illustrative example of how a new carbon accounting approach could work under Option 2.2



Note: the new accounting approach shown above is illustrative only. The permanent forest category redesign could enable a new accounting approach to be used, but NZ ETS accounting is implemented via regulations. If a new accounting approach is introduced, the permanent forest category redesign will define its objective in the Climate Change Response Act 2002, but the precise detail will be introduced by regulations.

As stated above, we are currently only seeking feedback on whether we should enable a new accounting approach. We are not yet seeking feedback on the precise detail of a new accounting approach.

The illustrative model shown above (green line) averages out the number of units earned during the transition of the forest, and enables the indigenous forest to earn units once its carbon stocks increases.

This means that the forest earns units as an exotic forest up until a certain age. Unit allocation is then paused (shown by the green line levelling off) until the forest transitions to predominantly indigenous forest. Unit allocation resumes once the carbon stock starts to increase past the carbon stock at the point unit earnings were paused (and the forest is predominantly indigenous species). We could also consider other ways of achieving this (for example, withholding units, or using a bond, which are held until the forest is predominantly indigenous).

Overall, participants would end up with the same number of units in the long-term as would have been achieved using stock change accounting – but without receiving and surrendering lots of units as the forest transitions from predominantly exotic to indigenous species.

Depending on how the new accounting approach is designed, Option 2 could help incentivise foresters to manage the forest to transition and provide simple compliance options (for example, the option could be designed to enable transition forests to move to the standard forest category under averaging accounting if transition is found to be unsuccessful).

Points to note:

- implementing this change in carbon accounting approach may also require other changes to how the permanent forest category works. For example, we will also need amend the CCRA to allow only one accounting method per carbon accounting area in the permanent forest category.
- we are not seeking feedback on the details of the specific accounting values now – if Option 2 is chosen, we will consult on the design of the regulations at a later date.

Key considerations and trade-offs

Benefits

Option 2 could utilise some of the initial fast growth of exotic species (and financial rewards) which is more likely to assist in the delivery of a long-term indigenous carbon sink, by providing a financially sustainable model that funds indigenous transition over the long-term. Compared to the status quo, Option 2 could overcome some of the upfront cost barriers of indigenous afforestation and could provide a stronger incentive to manage towards an indigenous forest to start receiving units again.

An advantage of making the redesigned permanent forest category less financially attractive, in the short- to medium-term, is that it may help ensure those participants registering transition forests have a strong desire to produce indigenous forests. This may help reduce the risk of large-scale farm conversions caused by the permanent forest category.

Costs

Compared to the status quo, a new accounting approach for transition forests will reduce participants' initial returns and spread participants returns out over a longer period. This could delay when participants receive the carbon units and may reduce how attractive the permanent forest category is to some participants – as the forest model will becomes less profitable (once future discounting is taken into consideration). This could result in less permanent afforestation, reducing abatement towards New Zealand's emissions budgets and targets in the short term.

Depending what forest species and models are allowed into the permanent forest category, will influence the attractiveness of the transition forest model.

The more specific circumstances where permanent exotic afforestation can occur, could undermine incentives for participants to register transitions forest in the permanent forest category. It is likely that transition forests would only be pursued by those committed to seeing the model succeed.

QUESTION BOX 6

Question 8: Do you agree with the proposal for a specific carbon accounting method for transition forests? If you disagree could you please provide the reasons why? If there are other options you think we should consider please list them.

Question 9: If you agree with the proposal for a specific carbon accounting method for transition forests, what do you think it needs to achieve?

Question 10: What do you think should occur if a forest does not transition from a predominately exotic to indigenous forest within 50 years?

Note: we are not seeking feedback on the details of the specific accounting values now – if Option 2 is chosen, we will consult on the design of the regulations at a later date.

11. **Design Choice 3:** How should permanent forests be managed?

We want to ensure that permanent forests are managed appropriately to achieve the redesigned permanent forest category's desired outcomes. We are considering what rules and compliance regime will best help achieve these outcomes.

There are three main choices to make regarding the permanent forest category management:

a) what the new rules should be, and which forest types they apply to?

b) how flexible or prescriptive the new rules should be?

c) what should the compliance (monitoring and enforcement) regime look like?

How do the proposals in this section interact with the proposed changes to the NES-PF?

Participants entering forests in the NZ ETS must comply with any requirements from the Resource Management Act 1991 (RMA), the Forest Act 1949 and the Biosecurity Act 1993. However, requirements for ongoing forest management are currently limited to production forests. Proposals to include permanent forests in the NES-PF are currently under active consideration.[36]

This issue is being addressed in part by proposed changes to the NES-PF but could be supported by additional changes to the permanent forest category in the NZ ETS.

Possible amendments to the NES-PF and the permanent forest category's redesign must be carefully considered to ensure a cohesive regulatory system managing permanent forests, in the future. However, an RMA instrument can only manage matters within the scope of the RMA, so alignment with other regulatory tools would be required for all risks and effects to be managed. Further, some councils are limited in their forestry knowledge and experience, meaning the NES-PF may not be the most effective regulatory tool to achieve this.

Depending on what changes are implemented through the NES-PF, we consider that additional rules may be needed in the NZ ETS permanent forest category to ensure the long-term viability of these permanent forests, while maximising carbon sequestration.

11.1 **Design choice 3a:** what new rules do we need, and which forest types should they apply to?

New rules could mitigate environmental risks associated with permanent forests, encourage positive environmental co-benefits, and help promote a successful transition from an exotic to indigenous forest over time. Managing factors such as forest health, wildfire, and pests, may help ensure better protection of forest carbon sinks over the long-term, and also help provide ongoing employment opportunities from forest management.

Different forest species or models (exotic, transition or indigenous forests) may require rules tailored to the risks and needs of each forest type. For example, transition forests will need specific rules to ensure they transition in a timely manner – reducing the risk they become unmanaged plant-and-leave exotic forests. And non-transitioning exotic forests may need stricter rules than indigenous forests to reduce their risk of becoming unmanaged plant-and-leave permanent exotic forests.

The climate change impacts and risks in forests in New Zealand are predicted to increase. A recent study showed that fire risk in plantation forests is projected to increase in the future, along with greater vulnerability of plantations to wind damage. These risks are likely to continue to increase over the lifetime of the forests.[37] [38]

Officials will consider amendments to the NES-PF in conjunction with the redesign of the permanent forest category, to ensure a cohesive regulatory system managing permanent forests in the future.

Three options are being considered:

a. **Option 3.1:** status quo (no additional forest management requirements introduced for forests in the permanent forest category)

b. **Option 3.2:** New minimum forest management requirements – specific to the permanent forest category – are introduced for all registered permanent forests (exotic, indigenous and transition forests).

c. **Option 3.3:** New forest management requirements are needed for transition forests

** Note: Options 3.2 and 3.3 are not mutually exclusive – but could be applied simultaneously.*

36 Examples include restrictions on the clearing of existing vegetation under the RMA or the application of pest management plans under the Biosecurity Act.
37 Michael S Watt, Miko U F Kirschbaum, John R Moore, H Grant Pearce, Lindsay S Bulman, Eckehard G Brockerhoff, Nathanael Melia. (2019) Assessment of multiple climate change effects on plantation forests in New Zealand. Forestry: An International Journal of Forest Research, Volume 92, Issue 1
38 Melia, N., Dean, S., Pearce, H. G., Harrington, L., Frame, D. J., & Strand,T. (2022). Aotearoa New Zealand's 21st-century wildfire climate. Earth's Future 10(6)

Option 3.1: Status quo (no additional forest management requirements introduced for forests in the permanent forest category)

There are currently minimal requirements for ongoing management of forests in the permanent forest category.

Under the status quo, the person who applies to register forests in the NZ ETS must comply with any requirements from the Resource Management Act 1991, the Forest Act 1949 and the Biosecurity Act 1993.

However, the status quo will include any new requirements introduced by changes to the NES-PF.

Option 3.2: New minimum forest management requirements – specific to the permanent forest category – are introduced for all registered permanent forests (exotic, indigenous and transition forests)

This option proposes that additional forest management requirements are needed. These rules would only apply to forests registered in the permanent forest category and would apply to all forests in the category (exotic, transition or indigenous forests).

Option 3.3: New forests management requirements are needed for transition forests

This option proposes introducing new forest management requirements specifically for transition forests in the permanent forest category. They would be tailored to the needs of transition forests, and help ensure they transition from exotic to indigenous forests.

Transition forests are a relatively novel forest model. Recent research has shown forests can be transitioned in favourable environments (that are species specific) if the process is actively managed to ensure exotic to indigenous transition.[39] While transition forests can play a role in establishing cost-effective long-term carbon sinks, there are also risks that – if not managed appropriately – they become unmanaged plant-and-leave exotic forests.

We propose that additional requirements are needed to ensure the transition model's success, including:

a) managing and/or manipulating light conditions in the canopy,

b) ensuring access to indigenous seed sources and/or enrichment planting, and

c) specific monitoring and milestones to ensure the transition occurs.

Note, our understanding of what best management practice looks like for transition forests is still developing. We will need to ensure transition forest management is flexible enough to accommodate emerging science, while ensuring that minimum standards are met, and outcomes for the model are achieved.

We may also need to make some further changes to the permanent forest category to better facilitate forests to transition. For example, we propose to amend the CCRA to better allow for small coupe harvesting or clearing strips to establish indigenous species in transition forests – which is used for more intensive transition forest models.[40]

Box 6: Example: Managing climate change related risks

The climate change impacts and risks in forests in New Zealand are predicted to increase.

Wildfire risk is estimated to increase for most of New Zealand, with extreme levels of fire risk occurring at the district and local scale. Recent research has found that the increased wildfire risk in New Zealand's forests, afforested land, and carbon farming activities, has the potential to disrupt the achievement of climate change budgets and targets.[41]

The impact of pests, diseases and weeds cause significant economic damage in planted forests. These risks are expected to increase with climate change as temperatures rise. Maintaining good forest monitoring and management will be key in managing risks associated with a warming climate.[42]

Extreme winds, including subtropical cyclones, are predicted to become more frequent in New Zealand. Severe wind events can result in broken and uprooted trees and significant value losses for foresters. Forests management, including site selection, species and silviculture, can play an important role in reducing wind-related risk.[43]

We consider that permanent forests must be managed to minimise future risks such as, wildfire, pests and disease and wind-related risk, to protect enduring carbon sinks. Requirements for forest management in the permanent forest category could ensure these risks are managed.

39 Forbes Ecology. (2021). Transitioning exotic plantations to native forest: A report on the state ofknowledge. Report prepared for Te Uru Rākau - New Zealand Forest Service

40 Crown cover in the permanent forest category must not be reduced below 30% in each hectare.

41 Michael S Watt, Miko U F Kirschbaum, John R Moore, H Grant Pearce, Lindsay S Bulman, Eckehard G Brockerhoff, Nathanael Melia. (2019) Assessment of multiple climate change effects on plantation forests in New Zealand. Forestry: An International Journal of Forest Research, Volume 92, Issue 1

42 https://www.scionresearch.com/__data/assets/pdf_file/0008/57932/Climate-change-Info-Sheet_pests-diseases-weeds.pdf

43 https://www.scionresearch.com/__data/assets/pdf_file/0006/57930/Climate-change-Info-Sheet_wind.pdf

Key considerations and trade-offs

Benefits

It is difficult to compare Option 3.2 (additional forest management requirements for all forests in the permanent forest category) with the status quo – as final changes to the NES-PF have not yet been made.

However, new rules to ensure on-going management may help to protect forest carbon sinks over the long-term and help provide ongoing employment opportunities from forest management (through on-site activities such as, planting, pest control and thinning where applicable).

Additional forest management requirements under Option 3.3 could provide important certainty to help facilitate best management of transition forests, and to help ensure they transition to indigenous forests over time.

Costs

Under both Option 3.2 and 3.3, additional rules will create additional costs for both participants and regulators. Additional costs will likely further reduce the incentive for participants to enter the permanent forest category. This could limit the amount of permanent afforestation across New Zealand, impacting the various outcomes we want to achieve with permanent forests (in particular, meeting our climate change objectives).

Option 3.3 would require additional management requirements to ensure the transition model's success. This would increase costs on top of those proposed under Option 3.2. This could reduce the attractiveness of registering transition forests in the permanent forest category.

Given that transition forest models are an emerging science, there is no guarantee that even when actively managed, exotic forests will transition to predominately indigenous forests within 50 years.

QUESTION BOX 7

Question 11: Of these options, what is your preferred approach? Why? Are there other options you prefer, that we haven't considered? (Note, options 3.2 and 3.3 are not mutually exclusive)

Question 12: If there were to be additional management requirements for transition forests, what do you think they should be for? Why?

Question 13: Do you think transition forests should be required to meet specific timebound milestones to demonstrate they are on a pathway to successful transition?

Question 14: Do you agree with this proposal to allow transition forests to be permitted to clear-fell small coupes or strips to establish indigenous species? Why? And if you agree, what other restrictions should there be?

11.2 Design Choice 3b: how flexible or prescriptive should forest management requirements be?

If we implement forest management requirements, we need to choose how prescriptive or flexible these requirements are.

Rules could be introduced via:

- a prescriptive regulatory approach
  - for example, via a single set of prescriptive rules that apply to each forest

or

- using a more flexible outcomes-focussed approach
  - for example, by requiring bespoke verified forest management plans for each forest.

Minimum forest management requirements provide participants with regulatory certainty and ensures that permanent forests are being managed consistently across New Zealand. Under this approach, minimum requirements would be set in regulation that all forests must meet.

However, we want to balance providing participants with regulatory certainty, with avoiding creating an inflexible regime which cannot adapt to changing pressures or developing forest management practices. This is particularly important for transition forests, where the science driving the success of the forest is still emerging. A more flexible approach might better account for the variation in species, geographical locations, climate and soil types different forests encounter.

QUESTION BOX 8

Question 15: If forest management requirements are implemented, do you think these should be prescriptive or outcomes-focused? Why/Why not?

One way to implement forest management requirements could be via forest management plans

One way to implement new forest management requirements would be via forest management plans. These would need to be verified and monitored.

Forest management plans would be an entirely new system to introduce to the NZ ETS.

We consider forest management plans could provide flexibility for participants to manage permanent forests that accounts for species specific, climatic and geographically bound constraints. Forest management plans could be informed by expert judgement, including in forestry science and mātauranga Māori. We would like your thoughts on whether forest management plans should be introduced, and on a few design aspects of these plans, including their verification and monitoring, and the costs of the system.

To help you provide us feedback, we've described some of the key design features forest management plans might need. Please refer to Box 7 for a refresher on the similarities and differences between proposed forest management under the NES-PF and in this consultation.

Box 7: How proposals to require forest management under this consultation are similar/different to NES-PF

Proposals were consulted on to amend the NES-PF, to require exotic carbon forests to be managed under a forest management plan.

The NES-PF has existing requirements for forestry earthworks management plans, harvest plan specifications and quarry erosion and sediment plan specifications. Any changes to the NES-PF relating to forest management plans can only consider RMA matters, however, they will need to be considered alongside options to change the NZ ETS permanent forest category.

Depending on what changes are implemented through the NES-PF, we consider that additional rules may be needed in the NZ ETS permanent forest category to ensure the long-term viability of these permanent forests, while maximising carbon sequestration.

What would a forest management plan need to cover?

Forest management plans would need to be appropriate to the forest model and address the forest's risks. They could:

- Identify risks posed to the forest and include an appropriate monitoring regime to ensure risk management remains effective through time
- Include mitigations for risks posed to the forest
- Stipulate best practice forest management that is appropriate for the forest model
- Outline timeframes for specific management interventions
- Consider the proximity to natural seed sources to support forest regeneration (this could support indigenous forests to establish successfully).

What verification and monitoring might be needed?

We consider that a forest management plan should be checked (verified) before a forest is registered in the permanent forest category. We also consider forest management plans will need ongoing monitoring to check that the ongoing management:

- Reflects what is in the plan
- Is consistent with the forest model
- Meets any milestones outlined in the plan
- Identifies and recommends any changes in planned management that are needed going forward.

The regulator's existing monitoring system for NZ ETS forestry participants is proposed to also play a role in the assessment of the quality of forest management plans and the management of forests against the plan.

Who could verify the forest management plans?

If we progress forest management plans, we will need a skilled workforce to verify forest management plans and provide a consistent service across New Zealand. People checking the plans (called verifiers in this discussion document) would need to be able to identify environmental risks and impacts of forests, in relation to the forest types and outcomes the forest management plan is trying to achieve.

Verifiers would need to understand forest systems, the forest manager's aspirations, have a good knowledge of both national and regional requirements, and operate within a professional code of ethics. The number of individuals/organisations providing these services would also need to be sufficient to meet the needs of those registered in the permanent forest category.

There are different options for who could provide this service. For example, it could be provided by independent verifiers (for example, specified people or a professional body) or by the government (potentially through Te Uru Rākau - New Zealand Forest Service).

We need to consider:

- Should forest management plans be verified (including re-verification as discussed below) by an independent verifier (for example, by an independent professional person or body), or by the government (for example, by Te Uru Rākau - New Zealand Forest Service)?
- Should forest management plans be monitored by an independent verifier (for example, by an independent professional person or body), or by the government (for example, by Te Uru Rākau - New Zealand Forest Service)?

Services undertaken by Te Uru Rākau - New Zealand Forest Service under these proposals would need to be cost recoverable to ensure that the people receiving the benefit of a verified forest management plan are paying a fair cost for that service. We would need to consider how any verification functions fit with existing NZ ETS compliance, monitoring, and enforcement functions carried out by Te Uru Rākau – New Zealand Forest Service.

If the government does not assume responsibility for verifying forest management plans, there are several approaches the government could take to approving individuals and/or organisations to act as independent verifiers for forest management requirements.

This includes:

- Recognising people covered by an existing regulatory system or professional membership to act as verifiers (e.g., registered forestry advisers), or
- creating a new accreditation scheme.

If independent verifiers are used for these functions, we will need to consider the skills and systems needed to carry out the role, how verifiers should be monitored and by whom, the compliance regime they face (including penalties and offences), and cost recovery for recognition or accreditation. If this option is chosen, further consultation will be needed to determine these details.

When should on-going verification happen?

We need to consider when forest management plans will need to be verified, and how often they will need to be re-verified after a forest is registered in the permanent forest category. This includes considering:

- How often the plan should be re-verified? E.g., every Mandatory Emissions Return Period
- Who should re-verify plans? The regulator or an independent verifier?
- How new science and evolving forest practice may influence the forest management plan?

QUESTION BOX 9

Question 16: What are your views on forest management plans?

Question 17: What should forest management plans include?

Question 18: Who do you think should be allowed to verify and/or monitor forest management plans?

Question 19: How often do you think forest management plans should be re-verified?

Question 20: What do you think should happen if there are not enough people to verify forest management plans?

11.3 Design choice 3c: what should the compliance (monitoring and enforcement) regime look like?

We need to ensure the rules of the redesigned permanent forest category can be effectively implemented, monitored, and enforced.

There are several choices to make on the compliance regime to support effective implementation.

Key compliance design features include factors such as: how frequently monitoring occurs, who will undertake these functions, how punitive the compliance system is, and who enforces the system.

An escalating compliance regime for forest management requirements

A range of possible compliance actions and tools are needed to ensure participants comply with any forest management requirements that apply to them and their forests. It is important that the tools used are proportionate to the objective and provide a fair and reasonable opportunity for participants to comply, as well as providing an incentive for the participant to return to compliance (see box 8 on compliance actions).

We consider that an escalating pathway of compliance action and tools will be required in relation to forest management requirements (see box 9). We also know that sometimes things will happen that are outside of participants' control. The compliance regime must accommodate this.

There are compliance tools already available in the NZ ETS – these could be used as currently legislated or expanded to any new forest management requirements. These include:

- Infringement notices (fees and fines) for low-level non-compliance
- Reporting and late payment penalties
- Pecuniary penalties
- Expelling forests from the ETS for persistent non-compliance
- Criminal offences decided by the courts for serious misconduct.

There are also new options that we could consider which may be better suited to the nature of permanent forestry, particularly transition forests:

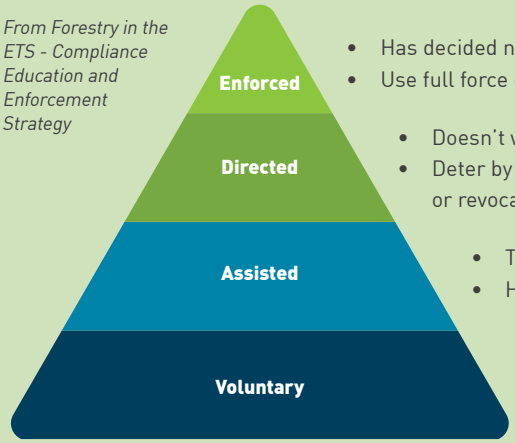
- Abatement notices and/or direction notices (requires the person to take or stop certain actions within a set timeframe.)
- Withholding units until a requirement is met
- Moving persistently non-compliant forests to the standard forest category under averaging accounting (instead of deregistering them from the NZ ETS entirely)
- Bonds to ensure forest outcomes are achieved over the life of the forest.

Note: the options above consider legislative tools, but there are other tools that would also be available to the regulator that don't need to be specified in legislation. These include things like guidance material, reminders of upcoming obligations, and targeted assistance for participants to help them return to compliance. These voluntary and assisted compliance actions can be achieved through operational policy and implementation processes – and many of these actions are currently used to support NZ ETS compliance.

Box 8: What are compliance actions?

Compliance actions are any steps the regulator takes to ensure that people are complying with the rules that apply to them. It includes helping people to understand their obligations, monitoring their performance, and taking enforcement action when they don't comply. This can be demonstrated through the VADE model.[44] Where compliance actions are specific and proportionate to the situation and the potential consequences of inaction. Most people are willing to comply if they have access to the right information.

From Forestry in the ETS - Compliance Education and Enforcement Strategy



- Has decided not to comply – criminal intent and illegal activity
- Use full force of the law. Prosecution

- Doesn't want to comply – propensity to offend
- Deter by detection. Infringements, notices, registration suspension or revocation

- Tries to comply, but doesn't succeed - uninformed
- Help to comply. Use verification and audit

- Voluntarily complies – willing to do the right thing
- Make compliance as easy as possible. Provide education and guidance

44 Forestry in the ETS – Compliance Education and Enforcement Strategy (Te Uru Rākau – New Zealand Forest Service

Complying with forest management plans

If forest management plans are introduced, a compliance regime will be needed to ensure compliance with forest management plans.

We initially think the following actions could be subject to compliance action:

- failing to obtain and submit a re-verified forest management plan,
- failing to meet the specified thresholds or milestones set out in a plan.

We do not think that minor deviations from management plans should be considered non-compliance, provided the management actions carried out are in line with the overall purposes of the plan and are appropriate for the particular forest models' needs at that time. We acknowledge the inherent uncertainty in forest systems, and that individual circumstances may change between submitting the plan and the management action taking place.

We also think the compliance regime should recognise there may be situations where a participant is unable to submit an updated forest management plan on time or implement management actions due to circumstances outside of their control. For example, we think it would be reasonable to be able to extend the due dates for late forest management plans submissions.

Box 9: Example: Enforcement of non-compliance with forest management.

A forest owner has registered a transition forest in the post 1989 permanent forest category. There is a milestone that 10% of the forest basal area must be made up of indigenous forest species at year 10.

- At year 5, the forest only has 2% indigenous forest species, and the verifier recommends enrichment planting to ensure the milestone is met.
- The forest owner does not carry out any enrichment planting and does not meet the year 10 milestone.
- The regulator requires the forest owner to carry out enrichment planting as per the forest management plan and gives the forest owner 6 months to do this.
- After 6 months the forest owner has not carried out any planting.
- The regulator issues an infringement fine and warns the forest owner that if they do not carry out planting, and show significant progress towards the milestone by year 15 the regulator will deregister the forest from the NZ ETS, and the forest owner will have to surrender the units earned while registered in the permanent forest category.

QUESTION BOX 10

Question 21: Do you think the use of existing compliance tools are appropriate?

Question 22: Do you think there should be new or expanded compliance tools for permanent forests? Which ones and why?

Question 23: Are there other compliance options that you think we should consider?

Question 24: For the compliance tools you think we should have, when do you think they should be used?

12. Next Steps – how to have your say

The Government welcomes your feedback on this discussion document. The questions posed throughout this document are summarised on pages 34 and 35. They are a guide only and all comments are welcome. You do not have to answer all the questions.

To ensure your point of view is clearly understood, you should explain your rationale and provide supporting evidence where appropriate.

This consultation starts on 19 June 2023 and ends on 11 August 2023. Following the end of consultation, we will publish a summary and may make all or parts of submissions publicly available on our website. We cannot reply to individual submitters.

How to make a submission

You can send us your comments in two ways:

- Complete a submission online via the MfE website https://consult.environment.govt.nz/climate/nz-ets-permanent-forestry-category-redesign/
- Write your own submission

We request that you don't post submissions as this can risk the submission not getting to us in a timely manner. However, if you need to, written submissions can also be sent to **Redesigning the NZ ETS permanent forest category consultation, Ministry for Primary Industries, PO Box 2526, Wellington 6140** and include your:

- name or organisation
- postal address
- telephone number
- email address.

If you are emailing your submission, send it to NaturalResourcesPol@mpi.govt.nz as a:

- PDF
- Microsoft Word document (2003 or later version).

Submissions close at 5pm, 11 August 2023.

For more information

Please send any queries to:

Email: NaturalResourcesPol@mpi.govt.nz

Postal: Redesigning the NZ ETS permanent forest category consultation, Ministry for Primary Industries, PO Box 2526, Wellington 6140.

Publishing and releasing information

All or part of any written comments (including names of submitters), may be published on the Ministry for Primary Industries website, http://mpi.govt.nz.

Unless you clearly specify otherwise in your submission, the Ministry will consider that you have consented to website posting of both your submission and your name.

Contents of submissions may be released to the public under the Official Information Act 1982 following requests to the Ministry for Primary Industries (including via email).

Please advise if you have any objection to the release of any information contained in a submission and, in particular, which part(s) you consider should be withheld, together with the reason(s) for withholding the information. We will take into account all such objections when responding to requests for copies of, and information on, submissions to this document under the Official Information Act.

The Privacy Act 2020 applies certain principles regarding the collection, use and disclosure of information about individuals by various agencies, including the Ministry for Primary Industries. It governs access by individuals to information about themselves held by agencies.

Any personal information you supply to the Ministry in the course of making a submission will be used by the Ministry only in relation to the matters covered by this document. Please clearly indicate in your submission if you do not wish your name to be included in any summary of submissions that the Ministry may publish.

13. Consultation questions

Timeframes and other related work by the Government

Question 1: How do you think the Inquiry's recommendations could be reflected in proposals to redesign the permanent forest category?

We want the redesigned permament forest category to achieve multiple outcomes

Question 2: Do you agree with our assessment criteria for the redesigned permanent forest category? If not, what would you change and why?

Question 3: Do you think any of these criteria are more important than the others? If so, which criteria and why?

Design Choice 1: Which forests should be allowed into the permanent forest category?

Question 4: Of these options, what is your preferred approach? Why? Are there other options you prefer, that we haven't considered? (Note, options 1.2a and 1.2b are not mutually exclusive)

Question 5: If you support allowing exotic species under limited circumstances, how do you think your preferred 'limited circumstance' should be defined? (for example, if you support allowing long-lived exotics to register, how do you think we should define 'long-lived'?)

Permanent forests could support environmental benefits and climate change adaptation and resilience (afforesting erosion-prone land)

Question 6: Do you think there is an opportunity to use permanent forests to stabilise erosion-prone land?

Permanent forests could help address the risk of wilding pines

Question 7: Do you think the Government should consider restricting the permanent forest category to exotic species with a low wilding risk?

Design Choice 2: How should transition forests be managed to ensure they transition and reduce the financial risks to participants?

Question 8: Do you agree with the proposal for a specific carbon accounting method for transition forests? If you disagree could you please provide the reasons why?
If there are other options you think we should consider please list them.

Question 9: If you agree with the proposal for a specific carbon accounting method for transition forests, what do you think it needs to achieve?

Question 10: What do you think should occur if a forest does not transition from a predominately exotic to indigenous forest within 50 years?

Note: we are not seeking feedback on the details of the specific accounting values now – if Option 2 is chosen, we will consult on the design of the regulations at a later date.

Design Choice 3: How should permanent forests be managed?

Question 11: Of these options, what is your preferred approach? Why? Are there other options you prefer, that we haven't considered? (Note, options 3.2 and 3.3 are not mutually exclusive)

Question 12: If there were to be additional management requirements for transition forests, what do you think they should be for? Why?

Question 13: Do you think transition forests should be required to meet specific timebound milestones to demonstrate they are on a pathway to successful transition?

Question 14: Do you agree with this proposal to allow transition forests to be permitted to clear-fell small coupes or strips to establish indigenous species? Why? And if you agree, what other restrictions should there be?

Design Choice 3b: How flexible or prescriptive should forest management requirements be?

Question 15: If forest management requirements are implemented, do you think these should be prescriptive or outcomes focussed? Why/Why not?

One way to implement forest management requirements could be via forest management plans

Question 16: What are your views on forest management plans?

Question 17: What should forest management plans include?

Question 18: Who do you think should be allowed to verify forest management plans?

Question 19: How often do you think forest management plans should be audited or re-verified?

Question 20: What do you think should happen if there are not enough people to verify forest management plans?

Design choice 3c: What should the compliance (monitoring and enforcement) regime look like?

Question 21: Do you think the use of existing compliance tools are appropriate?

Question 22: Do you think there should be new or expanded compliance tools for permanent forests? Which ones and why?

Question 23: Are there other compliance options that you think we should consider?

Question 24: For the compliance tools you think we should have, when do you think they should be used?

Ministry for Primary Industries
PO Box 2526
Wellington 6140
New Zealand
0800 00 83 33
www.mpi.govt.nz

Date 18 July 2023

Subject: **National Survey of Pesticides in Groundwater 2022**

Approved by: AJ Matthews, Director - Environment Quality

S J Ruru, Chief Executive

Document: 3185548

Purpose

1. The purpose of this memorandum is to provide the Committee with an overview of the findings of the *National Survey of Pesticides in Groundwater 2022*, undertaken by ESR with support from the regional sector.
2. A copy of the report accompanies this memorandum, and is available on the Council's website.

Executive summary

3. A groundwater pesticides investigation was conducted in Taranaki in 2022 as part of an ongoing national study, co-ordinated by the Institute of Environmental Science and Research Limited (ESR). The survey has been completed every four years since 1990, with 2022 being the ninth consecutive survey, and investigates the presence and levels of a range of pesticides, including herbicides, fungicides and insecticides in groundwater bores and wells.
4. The additional analyses of a range of emerging organic contaminants (EOCs) and per- and polyfluoroalkyl substances (PFAS) were also offered as part of the 2022 survey. The Council undertook sampling of EOCs during the 2018 survey and elected to include PFAS in the 2022 survey. Reporting of PFAS results was pending at the time of drafting this memorandum and an update to Council will be provided as this information becomes available.
5. All 15 regional councils and unitary authorities participated in the survey. Taranaki Regional Council (the Council) sampled eight bores and wells for pesticides and PFAS during late 2022. Groundwater bores and wells were selected based on several factors including the importance of an aquifer to the region, the known application and storage of pesticides in the area, and the perceived vulnerability of the aquifer to pesticide contamination. A number of wells sampled in previous surveys were included in the 2022 survey to give a temporal comparison. Most of the sampled wells draw groundwater from unconfined aquifers and were selected because shallower unconfined aquifers are at greater risk of contamination than confined, deeper aquifers.

6. In total, 184 bore and wells were sampled across Aotearoa New Zealand, with pesticides detected in 17 wells (9%), with 6 (3%) of these wells having two or more pesticides detected. The maximum number of pesticides detected in one well was six. Compared to the pesticide survey of 2018, the number of pesticide detections has decreased. In 2018, 24% of wells had pesticides detected but in the 2022 survey this had dropped to 9%.
7. Pesticides were detected in at least one or more well in 10 of the 15 participating regions. In total, sixteen different pesticides were detected. Herbicides were the most frequently detected pesticide group with 19 detections (i.e., 66% of all herbicide detections) of 12 different herbicides, with two insecticides and two fungicides detected in the sampled wells. No pesticides were detected in any of the eight bores sampled in Taranaki.
8. Further analysis of the data is continuing, with reporting of PFAS results pending. More extensive discussion of the findings will be provided in a journal paper that will be prepared for publication and provided to councils in due course.

Recommendations

That the Taranaki Regional Council:

a) receives the report *National Survey of Pesticides in Groundwater 2022*

b) notes the findings and recommendations.

Background

9. Pesticides, including insecticides, fungicides and herbicides are widely used in New Zealand to control insects, diseases and weeds in primary industries such as agricultural farming, forestry, and horticulture. Groundwater is an important source of drinking water and utilised as a water source for irrigation and stock. Pesticides have the potential to contaminate groundwater and receiving surface water bodies through leaching and spillage.
10. Regional councils and unitary authorities are responsible for managing water takes and other activities that affect groundwater, this includes the monitoring and reporting of the state of groundwater quality. The Council's state of environment groundwater monitoring programme includes regular measurement of a range of indicators of groundwater quality. In addition, every four years the Council participates in the national pesticide survey.
11. Previous national and regional groundwater surveys in New Zealand have shown low levels of pesticides in some groundwater systems, with a particular focus on shallow unconfined systems that are typically most vulnerable to contamination. While the concentrations of detected pesticides have generally been less than 1% of their respective maximum acceptable value (MAV) under the Drinking Water Standards for New Zealand, there have been some exceedances of the MAVs in some regions, including in Taranaki.
12. Prior to 2018, national surveys focussed on the detection of pesticides (including herbicides) however, more recently there has been interest in understanding the presence of other contaminants, such as emerging organic contaminants (EOCs) and per- and polyfluoralkyl substances (PFAS). Emerging organic contaminants can include personal care products such as shampoos, insect repellents, and sun screens; antibiotics and other pharmaceuticals; estrogens; recreational compounds such as caffeine and nicotine; and industrial compounds. Per- and polyfluoroalkyl substances can be found

in cleaning products, water-resistant fabrics, such as rain jackets, umbrellas and tents, in grease-resistant paper and non-stick cookware, and (perhaps most notably) in fire-fighting foams. Currently very little is known about the extent of EOC and PFAS contamination in the environment.

13. During the 2018 survey, EOCs were included in the suite of contaminants analysed for Taranaki. For the 2022 survey, PFAS were included however, results were pending at the time of drafting this memorandum. An update will be provided to Council as this information becomes available.

Discussion

14. All fifteen of the Regional and Unitary Authorities with groundwater management responsibilities participated in the 2022 survey. A total of 184 wells were sampled and analysed for a range of pesticides. The Council sampled eight bores and wells for the 2022 survey, the same number as the 2018 survey. Three bores were resampled, having been included in the 2018 survey, while five bores were sampled for the first time.
15. Pesticides were detected in at least one or more well in 10 of the 15 participating regions. In total, sixteen different pesticides were detected. Herbicides were the most frequently detected pesticide group with 19 detections (i.e., 66% of all herbicide detections) of 12 different herbicides, with two insecticides and two fungicides detected in the sampled wells. No pesticides were detected in any of the eight bores sampled in Taranaki.
16. Overall, data from the 2022 national groundwater survey indicate a decrease in the frequency and concentration of pesticide residues detected in groundwater relative to previous surveys. As these surveys have focused on shallow unconfined groundwater systems, which are most at risk of pesticide contamination, this indicates that most groundwater in New Zealand should be considered safe to drink with respect to pesticides.
17. Table 1 provides a summary of the number of bores surveyed and number and proportion of positive detections of pesticides and emerging organic contaminants since 1994. Figure 1 displays the locations of the 8 groundwater sites sampled for pesticides within Taranaki in 2022.

Table 1: Pesticide surveys and no. detections for Taranaki bores and wells (1994 - 2022).

Survey	Total number of Taranaki bores sampled	Number of bores with positive pesticide detections	Number of bores with positive EOC detections	Number of bores with positive PFAS detections
1994 / 1995	32	1 (3%)	-	-
1998	2	1 (50%)	-	-
2002	6	2 (33%)	-	-
2006	6	1 (16.5%)	-	-
2010	8	0 (0%)	-	-
2014	5	0 (0%)	-	-
2018	8	1 (12.5%)	4 (50%)	-
2022	8	0 (0%)	-	TBA

Figure 1: Locations of groundwater sites sampled for pesticides within Taranaki in 2022

18. Assuming surveys continue to run every four years, it is anticipated that sampling for the next survey will be undertaken in 2026, with reporting by ESR expected in 2027. It is recommended that the Council contributes to future national groundwater pesticide surveys as part of its state of environment monitoring and reporting responsibilities.
19. Results of PFAS sampling are expected to be released shortly; an update to Council will be provided as that information becomes available.

Financial considerations—LTP/Annual Plan

20. 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

21. 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*.

22. Data and information collected through groundwater sampling programmes, including the National Pesticides Survey will help inform the development of the Council's freshwater policy and plan.

Iwi considerations

23. 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.

Community considerations

24. This memorandum and the associated recommendations have considered the views of the community, interested and affected parties and those views have been recognised in the preparation of this memorandum.

Legal considerations

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

Appendices/Attachments

Document 3187474: National Survey of Pesticides in Groundwater 2022.

National Survey of Pesticides in Groundwater 2022

June 2023

Prepared by:

Murray Close and Laura Banasiak

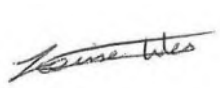
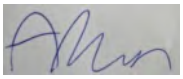
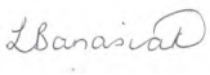
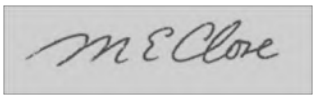
PREPARED FOR: **Regional and Unitary Authorities**

CLIENT REPORT No: **CSC23010**

REVIEWED BY: **Andy Pearson**

ACKNOWLEDGEMENTS

ESR wishes to thank the Regional and Unitary Authorities who funded this survey and whose support ensures the continuation of long-term monitoring of pesticides in groundwater throughout New Zealand.

Manager	Peer reviewer	Authors
		
Louise Weaver	**Andy Pearson**	**Laura Banasiak**
Group Leader, Water & Environment Group Manager	Senior Scientist	Senior Scientist
		
		Murray Close
		Senior Science Leader

DISCLAIMER

CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. EXECUTIVE SUMMARY

In 2022, ESR coordinated a survey of pesticides in groundwater throughout Aotearoa New Zealand. The pesticide survey has been completed every four years since 1990, with 2022 being the ninth consecutive survey. Regional and Unitary Authorties carried out the well sampling and the 2022 survey was the first time that per- and polyfluoralkylsubstances (PFAS) were included in the suite of compounds analysed. The pesticide analysis was carried out by Hills Laboratories. Emerging Organic Contaminants (EOCs) were also analysed but the results are not available for this report. ESR's role was to coordinate the survey, advise on well selection, collate and interpret the results and produce a summary report.

Wells were selected based on several factors including the importance of an aquifer to a region, the known application and storage of pesticides in the area, and the perceived vulnerability of the aquifer to pesticide contamination. Where possible, wells sampled in previous surveys were included in the 2022 survey to give a temporal comparison. Most of the sampled wells are screened in unconfined aquifers and were selected because shallower unconfined aquifers are at greater risk of contamination than confined, deeper aquifers.

In total, 184 wells were sampled, including an additional 21 wells from Waikato Regional Council that had been sampled as part of their regional surveys between January 2020 and June 2022. Pesticides were detected in 17 wells (9.2%), with 6 (3.3%) of these wells having two or more pesticides detected. The maximum number of pesticides detected in one well was six. Pesticides were not detected in wells from Auckland Council (8 wells), Bay of Plenty Regional Council (10 wells), Hawkes Bay Regional Council (12 wells), and Greater Wellington Regional Council (8 wells). Sixteen different pesticides were detected in the sampled wells, with herbicides being the most frequently detected pesticide group with 19 detections (66%) of 12 different herbicides and their metabolites. The most commonly detected pesticide was terbuthylazine (detected in 6 wells), followed by desethyl terbuthylazine (DET) (detected in 4 wells). Only one pesticide detection concentration exceeded 1 µg/L (clopyralid, 1.1 µg/L). There is no Maximum Acceptable Value (MAV) for drinking water available for clopyralid. Dieldrin was detected above the MAV for drinking water in one well, at a maximum concentration of 0.053 µg/L (i.e., 133% of the MAV of 0.04 µg/L (Taumata Arowai (2022)). Concentrations of other detected pesticides were less than 4% of their respective MAV.

Compared to the pesticide survey of 2018, the number of pesticide detections has decreased. In 2018 24% of wells had pesticides detected but in the 2022 survey this had dropped to 9%. Analysis of wells sampled in 2022 that had been sampled in multiple previous surveys indicate that there were 2 wells with significant ($p<0.05$) decreases over time and a further well with a decrease at the $p<0.1$ level. 26 of the 56 wells that had been sampled in 2022, and had also been sampled in 4 or more previous surveys, had no pesticides detected on any occasion. As these surveys have been focused on shallow unconfined groundwater systems, which are most at risk of pesticide contamination, this indicates that most groundwater in New Zealand should be considered safe to drink with respect to pesticides. Overall, our data from the 2022 national groundwater survey indicate a decrease in the frequency and concentration of pesticide residues detected in groundwater relative to previous surveys.

There is limited discussion in this report about the correlation of pesticide detections with parameters such as well depth and groundwater chemistry. It was felt that it was more important to provide the actual results of the survey of pesticides in groundwater to the regional councils as soon as possible. Further analysis of the data is continuing, and more extensive discussion will be provided in a journal paper that will be prepared for publication and sent to all the councils as soon as it is ready.

2. INTRODUCTION

Aotearoa New Zealand's first nationwide pesticide survey was undertaken in 1990 and has been repeated every four years since. Groundwater is a critical resource for New Zealand, providing drinking-water to 40% of New Zealanders (LAWA, 2022). In most regions throughout Aotearoa New Zealand, the volume of abstracted groundwater is continuing to increase due to growing demand from agricultural (irrigation) and other industry sectors, as well as from drinking water use. However, in many areas nationwide, groundwater quality has been degrading for decades and is owing to land use intensification (MfE & StatsNZ, 2019). Thus, identification of contaminants in aquifers (e.g., via routine monitoring and surveys such as the one presented here) are an essential component for informing careful management and protection of sensitive aquifers and their recharge zones.

Regional councils and unitary authorities are responsible for managing groundwater quantity and quality and maintain groundwater monitoring programmes. However, these monitoring programmes rarely include pesticide analysis. Nevertheless, councils, authorities and local communities are becoming increasingly concerned about whether pesticides are present in groundwater. Pesticides, including insecticides, fungicides, herbicides, and plant growth regulators, are commonly used in New Zealand to control insects, diseases and weeds in primary industries such as agricultural farming, forestry, and horticulture (Manktelow et al., 2005). The horticultural sector is the most intensive user of pesticides on a land area basis (13.2 kg active ingredient/ha), with more than 300 pesticides approved for use on fruit and vegetables grown in New Zealand. Pesticides are also widely used by arable, forestry and pastoral sectors (Manktelow et al., 2005).

National surveys of pesticides in groundwater have been carried out every four years since 1990, with the 2022 survey being the ninth consecutive survey. Previous national and regional groundwater surveys in New Zealand have shown low levels of pesticides in some groundwater systems, with a particular focus on shallow unconfined systems that are typically most vulnerable to contamination. While the concentrations of detected pesticides have generally been less than 1% of their respective MAV, there have been some exceedances of the MAVs. Triazine pesticides, which are commonly used to kill weeds, are the group of pesticides most detected. Further details of previous surveys are summarised in Close et al. (2021), Close and Humphries (2016), Close and Skinner (2012), Gaw et al., (2008), Close and

Flintoff (2004), Close and Rosen (2001), Close (1996) and Close (1993). In addition to the national surveys, some regional councils have also undertaken their own more intensive pesticide monitoring programmes (Hadfield and Smith, 1999; Taranaki Regional Council, 1995; Hadfield, 2013).

The most previous survey in 2018 sampled 279 wells including an additional 41 wells sampled by Waikato Regional Council and 71 additional wells sampled by Environment Canterbury (Close et al., 2021). Pesticides were detected in 68 wells (24.4%), including 28 with two or more pesticides detected. The maximum number of pesticides detected in one well was six. Pesticides were not detected in sampled wells from Bay of Plenty (25 wells) and Hawkes Bay (14 wells). In total, twenty-five different pesticides, including metabolites, were detected. Herbicides were the most frequently detected pesticide group with 98 detections (88% of total pesticide detections) of 17 different herbicides and their metabolites. There were three pesticide detections where concentrations exceeded 1 μg/L, however, pesticide concentrations did not exceed the Maximum Acceptable Value (MAV) for drinking water in samples. The highest detection relative to its respective MAV was dieldrin, which was detected at a concentration of 0.025 μg/L (i.e., 62.5% of the MAV of 0.04 μg/L (Taumata Arowai (2022)). Most pesticide detections were less than 0.5% of their respective MAV.

Groundwater sampling for the 2002 survey was mostly undertaken between September and December 2022. However, this report also includes data from 21 wells sampled as part of Waikato Regional Council's regional surveys between January 2020 and June 2022. There is limited discussion in this report about temporal variation of pesticides in groundwater, the correlation of pesticide detections with parameters (e.g., depth of the screen, land use, and groundwater chemistry). The aim of this report is to provide a summary of the survey results to the regional councils as soon as possible. More detailed analysis of the data is ongoing, and an extensive discussion will be included in a journal paper.

3. METHODOLOGY

3.1 WELL SELECTION

In collaboration with ESR, wells were selected by each participating council using the following criteria:

- shallow, unconfined, and vulnerable aquifers
- significant and important aquifers
- past or present land use
- known or suspected pesticide storage and use

If possible, wells sampled in previous surveys were included in the 2022 survey to allow a temporal comparison. Wells were also selected in areas that were under-represented or not sampled in previous surveys. For each well, the following information was requested from the council: well location, water level, depth of the well screen, the type of aquifer, and the predominant land use in the catchment. A balance was sought between selecting wells that were most vulnerable to contamination (shallow and screened near the water table) and wells that reflected the general usage of the aquifer (e.g., drinking water). Most of the selected wells are screened in unconfined aquifers.

All fifteen of the Regional and Unitary Authorities with groundwater management responsibilities participated in the 2022 survey. A total of 184 wells were sampled and analysed for the pesticide suites, including the 21 wells from the Waikato Regional Council. The Waikato Regional Council carried out their own regional survey between January 2020 and June 2022, whereby 21 wells were sampled. The data from the Waikato Region were included in this survey (Figure 1).

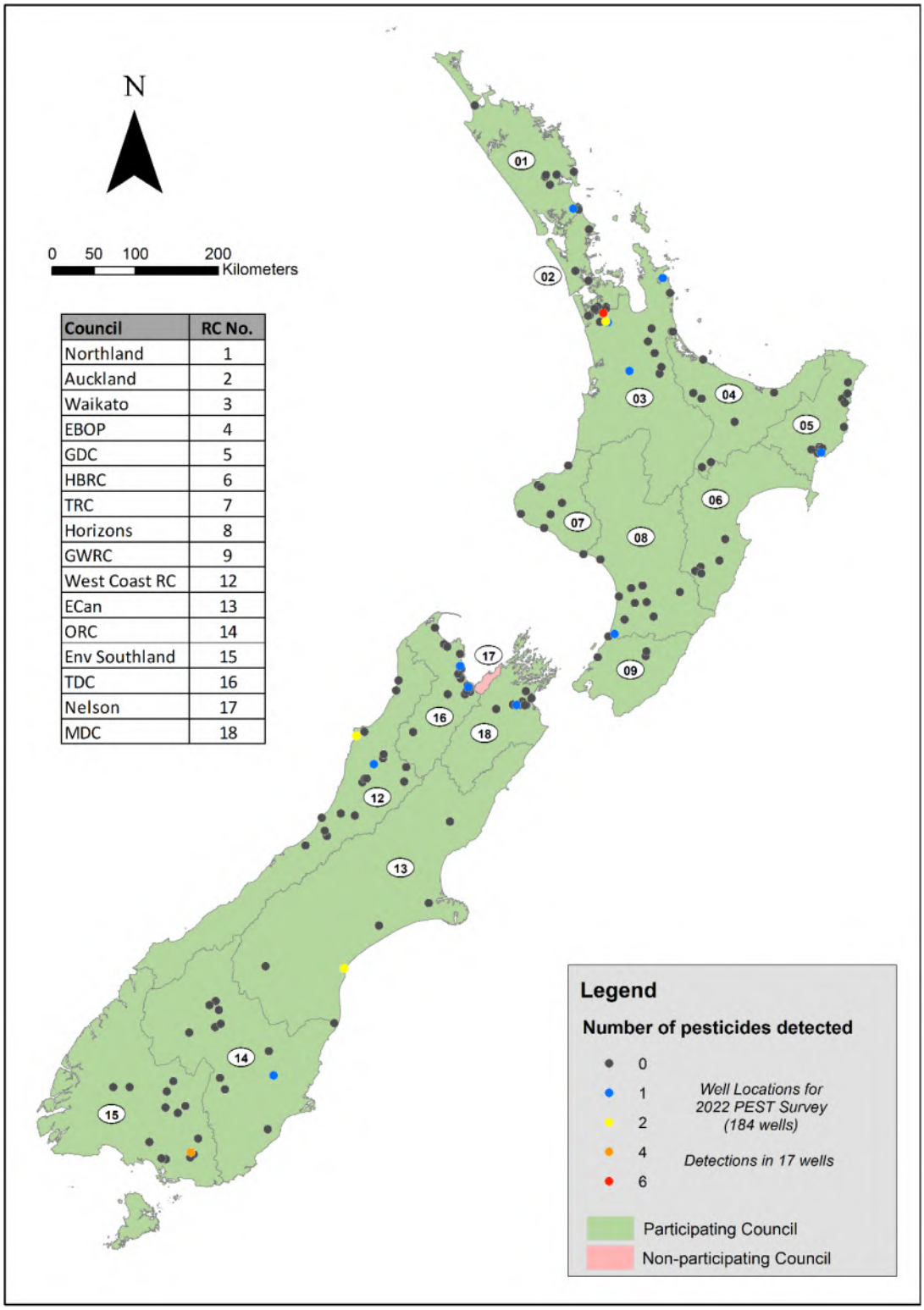


FIGURE 1: Regions and sampling locations for the 2022 survey of pesticides in groundwater.

3.2 SAMPLING

Samples were collected following ESR's procedure for sampling pesticides (Appendix A), with purging procedures based on *"A National protocol for State of the Environment Groundwater Sampling in New Zealand"* (Daughney et al., 2006). According to these procedures, each council was asked to purge three well volumes before sampling. Samples were collected by either portable pumps or in-situ pumps as close to the well head as possible. In most cases field measurements of pH, dissolved oxygen, conductivity, and temperature were recorded and a water sample taken following stabilisation of parameter values. For each sampling event, a field sheet was completed and returned to ESR (Appendix B). Glass bottles for pesticide analysis were supplied by Hill Laboratories (an IANZ accredited laboratory). Samples from 7.6% of wells were collected in duplicate so that blind-duplicate analysis could be undertaken for Quality Assurance (QA) purposes.

3.3 LABORATORY ANALYSIS

Samples for the pesticide analysis suites were sent to Hill Laboratories and analysed for acidic herbicides and a suite of organo-chlorine, organo-phosphorus, and organo-nitrogen pesticides (OC/OP/ON). Upon receipt by Hill Laboratories, sample bottles were checked for damage, correlated against the supplied inventory and sampling details, and stored in the dark at 4°C. The acid herbicide analysis involved liquid chromatography with tandem mass spectrometry (LC-MS-MS). The OC/ON/OP pesticides were analysed using liquid-liquid extraction-gas chromatography–mass spectrometry (LLE-GC-MS). The pesticides assayed and their limits of detection (LOD) are provided in Appendix C. The detection limits are slightly lower than in previous surveys.

4. RESULTS

4.1 ASSESSMENT OF SURVEY METHODOLOGY

Blind duplicate samples from 14 wells (7.6%) were submitted to the analytical laboratory as an additional QA measure. None of the blind duplicate samples had detectable pesticides present and there was very clear consistency for all duplicate analyses (Table 1).

Table 1: Comparison of Blind Duplicate samples for pesticides suite.
(ND, not detected)

Council	Well ID (Blind duplicate)	Pesticide Concentration (µg/L)
Northland Regional Council	331726 (Blind Duplicate)	ND (ND)
Auckland Council	6475015 (Blind Duplicate)	ND (ND)
Bay of Plenty Regional Council	1000147 (Blind Duplicate)	ND (ND)
	170047 (Blind Duplicate)	ND (ND)
Gisborne District Council	GTA044 (Blind Duplicate)	ND (ND)
Hawkes Bay Regional Council	16503 (Blind Duplicate)	ND (ND)
Taranaki Regional Council	GND0827 (Blind Duplicate)	ND (ND)
Horizons Regional Council	347056 (Blind Duplicate)	ND (ND)
Tasman District Council	GW 8036 (Blind Duplicate)	ND (ND)
	GW 23759 (Blind Duplicate)	ND (ND)
Marlborough District Council	20226247 2993 (Blind Duplicate)	ND (ND)
Otago Regional Council	H42/0214 (Blind Duplicate)	ND (ND)
Environment Southland	E46/0867 (Blind Duplicate)	ND (ND)
West Coast Regional Council	Kirby @ Waitaha bore (Blind Duplicate)	ND (ND)

4.2 SURVEY RESULTS

Including 21 wells sampled by Waikato Regional Council, total of 184 wells were sampled. Pesticides were detected in 17 wells (15.8%); a significant decrease compared to the 2018 survey where 68 wells (24.4%) out of a total of 279 wells sampled had pesticides detected. The additional wells sampled by Waikato Regional Council had a higher detection frequency (28.6%) compared to the national detection frequency. It should be noted that five of the Waikato Regional Council wells were sampled on a more frequent basis to provide a more detailed understanding of temporal variability of pesticides in groundwater and three of these wells had a previous history of pesticide contamination. Pesticides were detected in at least one or more well in 10 of the 15 participating regions (Table 2), with regional detection rates varying from 0 to 28.6% (note that most of the higher rates of detection were for a smaller number of sampled wells). Pesticides were not detected in wells from Auckland Council (8 wells), Bay of Plenty Regional Council (10 wells), Hawkes Bay Regional Council (12 wells), and Greater Wellington Regional Council (8 wells). Across all survey data, two or more pesticides were detected in 6 wells (3.3%) (Table 2). The maximum number of pesticides detected in an individual well was six (Waikato, 61_113), with four being detected in a well from Southland (F45/0239). Sixteen different pesticides were detected in the sampled wells (Table 3).

In total, sixteen difference pesticides were detected (Table 3). Herbicides were the most frequently detected pesticide group with 19 detections (i.e., 66% of all herbicide detections) of 12 different herbicides, with two insecticides and two fungicides detected in the sampled wells. There were 13 detections (45%) of triazine herbicides with terbuthylazine being the most frequently detected pesticide (6 detections, 21%), though these concentrations were below the MAV for drinking water. The highest detection as a percentage of the MAV was dieldrin, which was detected at a maximum average concentration of 0.04 μg/L (i.e., 100% of the MAV of 0.04 μg/L (Taumata Arowai, 2022)). Two samples had been collected from this well 11 months apart, with both samples having dieldrin detected at concentrations of 0.027 and 0.053 μg/L, giving an average concentration of 0.04 μg/L. The next highest detections relative to the MAV were for terbuthylazine, simazine and diuron at 3.9%, 2.5% and 2.3% of their MAV's, respectively. The remainder of the pesticides were detected at concentrations below 0.6% of their respective MAVs.

Concentration ranges, MAVs, groundwater ubiquity scores (GUS), and the mobility and degradation characteristics of each pesticide are given in Table 3. The mobility and degradation values come from the National Pesticide Information Centre, which hosts several pesticide properties databases (http://npic.orst.edu/) as of May 2023, unless otherwise noted. The selected value listed in this database, plus the range of values in the literature, are given in Table 3. The degree to which pesticides sorb to organic carbon particles in sediment or soil during transport i.e., its mobility, in water is estimated by the pesticide-specific organic-carbon partition coefficient (*K*oc) and the pesticide-specific octanol-water partition coefficient (*K*ow) or the pesticide- and soil-specific distribution coefficient (*K*d). The *K*ow is a useful descriptor of the tendency of a compound to associate with hydrophobic or hydrophilic substances. There will be some sorption of the detected pesticides to soils, sediment, and aquifer media (Sarkar et al., 2020), therefore some pesticides persist in an aquifer or groundwater system and will not be removed from a groundwater system as rapidly as they might if they were totally miscible with water.

Leaching potential can be easily predicted using a nomogram based on the mobility and persistence (Gustafson, 1989):

GUS = log10 (soil half-life) x [4 - log10(*K*oc)]

Pesticides with a GUS less than 0.1 are considered to have an extremely low potential to be leached from soil and are, therefore unlikely to infiltrate into groundwater. A GUS value greater than 2.8 indicates that the compound would leach relatively readily and a GUS score of less than 1.8 indicates a 'non-leacher'. There is a transitional zone between 1.8 and 2.8 where pesticides could leach under favourable conditions. Values of 1.0-2.0 are low, 2.0-3.0 are moderate, 3.0-4.0 are high, and values greater than 4.0 have a very high potential to move toward groundwater. The GUS values suggested by Primi et al., (1994) of 1.5 and 3.0 were used to differentiate leachers and non-leachers. Use of laboratory data for persistence (laboratory half-lives in soil of 20–372 days) and sorption (Koc 418–1666) gives GUS of 1.0 to 3.5 and places diuron mainly in the transitional class (short half-life), extending into the probable leacher range (longest half-life and lowest Koc) (APVMA, 2011).

Water solubility describes the amount of pesticide that will dissolve in a known volume of water at a specific temperature. Most of the values reported were determined at room temperature (20°C or 25°C). Highly soluble pesticides are more likely to be removed from the soil by runoff or via infiltration to the vadose zone with excess water.

TABLE 2: Summary of results from the 2022 pesticides in groundwater survey detailing 29 detections in 17 wells out of a total of 201 wells sampled.

Note that µg/L = mg m^{-3} = ppb. 4,4'-DDE = Dichlorodiphenyldichloroethylene. DET = desethyl terbuthylazine=terbuthylazine desethyl.

COUNCIL REGION (# wells with detections / # wells sampled, % detected)	WELL ID	PESTICIDE DETECTED	CONCENTRATION (µg/L)
Northland Regional Council (1/10, 10%)	209851	Terbuthylazine	0.03
Auckland Council (0/8, 0%)			
Waikato Regional Council (6/21, 28.6%)	60_12	Diuron	0.46
	61_113	4,4'-DDE	0.013*
		Metalaxyl	0.10*
		Metribuzin	0.18*
		Procymidone	0.14*
		Propazine	0.06*
		Terbuthylazine	0.03*
	61_230	Dieldrin	0.04*
	61_54	Dieldrin	0.03
		Propazine	0.03
	61_93	Atrazine	0.06*
		Metolachlor	0.10*
	62_5	DET	0.06
Bay of Plenty Regional Council (0/10, 0%)			
Gisborne District Council (1/14, 7.1%)	GPA004	Diuron	0.17
Hawkes Bay Regional Council (0/12, 0%)			
Taranaki Regional Council (0/8, 0%)			
Horizons Regional Council (1/10, 10%)	372034	Alachlor	0.1
Greater Wellington Regional Council (0/8, 0%)			
Tasman District Council (2/22, 9.1%)	GW285	DET	0.05

	GW6342	Terbuthylazine	0.02
Marlborough District Council (1/10, 10%)	P28w/0548	Terbuthylazine	0.02
Environment Canterbury (1/5, 20%)	K39/0033	DET Terbuthylazine	0.31 0.07
Otago Regional Council (1/13, 7.7%)	I44/0821	Hexazinone	0.1
Environment Southland (1/15, 6.7%)	F45/0239	Propazine	0.03
		Simazine	0.05
		Terbuthylazine	0.08
		DET	0.05
West Coast Regional Council (2/18, 11%)	Westport @ Okari	Clopyralid	1.1
		Picloram	0.3
	Porter @ Maimai	Picloram	0.7
	17 wells		**29 detections**

* Average concentration from well sampled multiple times.

TABLE 3: Characteristics of detected pesticides (all herbicides).

Field half-lives, water solubility and *K*oc values are from the National Pesticide Information Centre database (http://npic.orst.edu/): selected value with range in parentheses. GUS classes: L = leacher; N = non-leacher; T = transitional. NA = not available. MAV = maximum acceptable value, are from Taumata Arowai (2022) unless otherwise stated.

PESTICIDE	FAO CLASSIFICATION	FIELD HALF-LIFE (DAYS)	WATER SOLUBILITY (mg/L)	ORGANIC CARBON-WATER PARTITION COEFFICIENT *K*oc (mg/L)	GUS SCORE	# WELLS	RANGE (µg/L)	MAV (µg/L)
Herbicide								
Alachlor	Amide	15	240	170	2.08 T	1	0.1	20
Atrazine	Triazine	60	33	100	3.56 L	1	0.05-0.07	100
Clopyralid	NA	40	300,000	6	5.06 L	1	1.1	-
Diuron	NA	90	42	480	1-3.5 L[1]	2	0.17-0.46	20
Hexazinone	Triazine	90	33,000	54	4.43 L	1	0.1	400
Metolachlor	Amide	90	530	200	3.32 L	1	0.09-0.12	20
Metribuzin	Triazine	40	1220	60	3.82 L	1	0.05-0.59	70
Picloram	Other hormone type	90	200,000	16	5.46 L	2	0.3-0.7	200
Propazine	Triazine	135	8.6	154	3.86 L	2	0.03	70
Simazine	Triazine	60	6.2	130	3.35 L	1	0.05	2
Terbuthylazine	Triazine	86 (34–193)*	6.6[2]	110 (42–575)*	3.79 L	6	0.02-0.31	8
DET	Triazine	#	327.1[2]	#		4	0.05-0.07	
Insecticide								
4,4'-DDE	Organochlorine	1000	0.1	50,000	-2.10 N	1	0.013	1

Dieldrin	Organochlorine	1000	0.2	12,000	-0.24 N	2	0.02-0.04	0.04§
Fungicide								
Metalaxyl	Other fungicide	70	8400	50	3.33 L	1	0.04-0.21	300
Procymidone	Other fungicide	7	4.5	1500	4.26 L	1	0.05-0.22	70

* values for Terbuthylazine taken from Close et al., (2008); DET = desethyl terbuthylazine=terbuthylazine desethyl; # values assumed similar to Terbuthylazine;
§ The sum of aldrin + dieldrin, not each; References: [1] Australian Pesticides and Veterinary Medicines Authority (APVMA, 2011); [2] Pesticide Properties Database, University of Hertfordshire, Agriculture & Environment Research Unit, http://sitem.herts.ac.uk/aeru/ppdb/en/index.htm.

5. DISCUSSION

There was one pesticide detection exceeding 1 µg/L (clopyralid at 1.1 µg/L, no MAV currently available) and only one pesticide detected at the MAV for drinking water. The highest detection as a percentage of the MAV was dieldrin, which was detected at a maximum average concentration of 0.04 µg/L, which was 100% of the MAV of 0.04 µg/L (Taumata Arowai, 2022). The next highest detections relative to the MAV were for terbuthylazine, simazine and diuron at 3.9%, 2.5% and 2.3% of their MAV's, respectively. The median concentration of the other detected pesticide detections were lower than 0.6% of their respective MAVs. These results indicate that there is unlikely to be significant risks to human from the pesticides analysed at the wells included in this survey.

In previous surveys, dieldrin concentrations have exceeded the MAV in a small number of samples (Close and Skinner, 2012; Close and Humphries 2016; Close et al., 2021). In the 2018 survey, the maximum concentration of dieldrin was 0.025 µg/L, which was 62.5% of the MAV and 37.5% less than the maximum concentration found in the current study. The comparatively low MAV for dieldrin (0.04 µg/L) means that even concentrations close to the detection limit are more likely (compared to other pesticides) to exceed the MAV for drinking water. Further, dieldrin was widely used in New Zealand in the 1960s, prescribed by Government regulations for the control of ectoparasites on sheep and cattle (MfE, 2006). In the 1960s, most livestock farms operated sheep or cattle dips. Even though dieldrin has not been used since the mid 1960's it persists to this day in many farm soils where dipping operations were completed and dipping wastewater disposed of, and occasionally it is detected in the underlying groundwater. Hadfield and Smith (1999) investigated dieldrin in groundwater in the Waikato region and found widespread dieldrin contamination in soils near sheep dip sites. Further, in shallow groundwater (about 5 m below ground level) proximal to sheep dips, dieldrin concentrations could increase though usage had ceased 30-40 years previously. Many of the other detected insecticides are also persistent legacy chemicals with low mobility (Table 3).

Terbuthylazine was the most detected pesticide, found in 6 wells (21%) at levels ranging from 0.02 to 0.31 µg/L (Table 3). The second most common pesticide was desethyl terbuthylazine (a metabolite of terbuthylazine) with 4 detections ranging in concentration from 0.05 to 0.31 µg/L. None of the detections for terbuthylazine or desethyl terbuthylazine exceeded the MAV

for drinking water. Both dieldrin and picloram were detected in 2 wells, with the remainder of pesticides detected in one well each.

Herbicides were the most frequently detected pesticide group (19 detections out of a total of 29 detections across all pesticide types i.e., 66%) with two insecticides and two fungicides also detected. The high detection rate for herbicides is consistent with estimates that herbicides comprise at least 60% of the total amount of pesticides sold in New Zealand annually (Manktelow et al., 2005). The detection of triazine herbicides (13 detections, 45%), was less common than was observed in previous surveys (Table 4).

Of the 16 pesticides detected that had data available for soil half-life and Koc, GUS values indicated that 12 were leachers, 1 was transitional (diuron was borderline transitional-leacher), and 2 were non-leachers (Table 3). Dieldrin, which was widely used and very persistent as discussed previously, and DDE are non-leacher pesticides that were detected in samples from the Waikato Regional Council. Leaching of extremely persistent pesticides can occur over long time periods to shallow groundwater.

5.1 TEMPORAL TRENDS FOR PESTICIDES WITH PREVIOUS SURVEYS

For all surveys, most sampling has occurred from October to December (late spring to early summer). Although seasonal patterns in pesticide concentrations are often observed for individual wells (e.g., Hadfield and Smith, (1999); Close et al. (2001)), pesticide variability across different wells is inconsistent. The inconsistency between seasonal trends across different wells is likely due to variable travel times through the soil and vadose (unsaturated) zone and groundwater systems, together with the differences in pesticide mobility and persistence characteristics. This implies that any sampling time can be regarded as representative providing that it is consistent (i.e., sampled in the same season) between surveys, and temporal variability is best assessed using wells that have been sampled in multiple surveys.

The groundwater from some wells has contained detectable concentrations of the same pesticide over multiple surveys. Figure 2 shows selected wells where the same pesticide has been detected in an individual well over five or more surveys. The data for these wells were selected to demonstrate this occurrence for seven different pesticides, with between one and

four pesticides detected within each well. The longevity for these pesticide detections is probably related to both the extended period of time over which application of the pesticide has been occurring (with consistent land use and management taking place in the capture zone of each well), and the recognised increase in the persistence of pesticides once they leach from the soil zone into the vadose zone and groundwater system (Pang and Close,1999; Levy and Chesters,1995).

No wells have been sampled in all nine national groundwater surveys, with 7 wells having been sampled in eight surveys, 10 wells having been sampled in seven surveys, 25 wells having been sampled in six surveys, 36 wells having been sampled in five surveys and 33 wells having been sampled in four surveys. Of the 56 wells that were sampled in 2022 and have been sampled on four or more surveys, using the sum of all pesticide concentrations detected as the comparison measure, 26 wells (46%) had no detectable pesticide concentrations in any of the surveys. There were two wells (F46/0239 and 4096, Environment Southland) that showed a significant ($p < 0.05$) decreasing trend in total pesticide concentrations, and one further well (372034, Horizons Regional Council) showed a decreasing trend in total pesticide concentrations at a significance level of $p < 0.10$).

Well F46/0239 is associated with long-term sources of contamination around Edendale, Southland, with previously high concentrations (> 6 μg/L) of total pesticides being measured in groundwater in the 1994 and 1998 surveys and levels decreasing since that time. Hughes (2000) found several nearby sources were likely involved in the contamination of this well, including a plant nursery, horticultural activities and spraying for weed control around railway yards. Well 4096 is a relatively shallow well (5 m) used for firefighting purposes. It has shown low and consistently decreasing levels of simazine since 1994 (Figure 2), with pesticide concentrations below the detection limit in the 2022 survey. Well 372034 had high levels (34 μg/L) of alachlor detected in 2006, together with trace levels of metalaxyl and metribuzin. Levels of alachlor dropped to 12 μg/L in 2010, to below detection in 2014 and just above detection in 2018 and 2022.

The 1998 survey had the greatest frequency of pesticide detections compared to subsequent surveys. If the higher detection limits (used for the 1990 and 1994 surveys) were applied to subsequent surveys, then the 1994 survey had the highest frequency of pesticide detections (Table 4). Owing to improvements in analytical methods and technology, there has been a

significant decrease in lower detection limits for many pesticides. For example, if the detection limits for the 1990 and 1994 surveys were applied to the 2022 survey, then pesticides would only have been detected in 6 wells (3%) instead of 17 wells (Table 4). Table 4 shows that, while there had been a similar number of pesticides detected in the four surveys prior to the current 2022 survey, there has been a decrease in the number of pesticides detected since the 2018 survey. In 2018, pesticides were detected in 24% of wells compared with 9% in 2022. Analysis of wells sampled in 2022 that had been sampled in multiple previous surveys showed that there were 2 wells with significant ($p<0.05$) decreases over time and a further well with a decrease at the $p<0.1$ level. Twenty-six of the 56 wells that had been sampled in 2022, and had also been sampled in 4 or more previous surveys, had no pesticides detected on any occasion.

In all surveys prior to 2022, a small number of wells (between 2 and 4) have had pesticide concentrations greater than 1 μg/L (Table 4). However, in the 2022 survey, only one well had pesticide concentrations greater than 1 μg/L. In six of the nine surveys, one pesticide was detected at a concentration equal to or greater than the MAV, with the other three surveys having no pesticides detected at a concentration greater than the MAV (Table 5). As these surveys were focused on shallow unconfined groundwater systems, which are most at risk of pesticide contamination, most groundwater in New Zealand should be considered safe to drink with respect to pesticides. Overall, our data from the 2022 national groundwater survey indicate a decrease in pesticide concentrations and total number of detections relative to previous surveys.

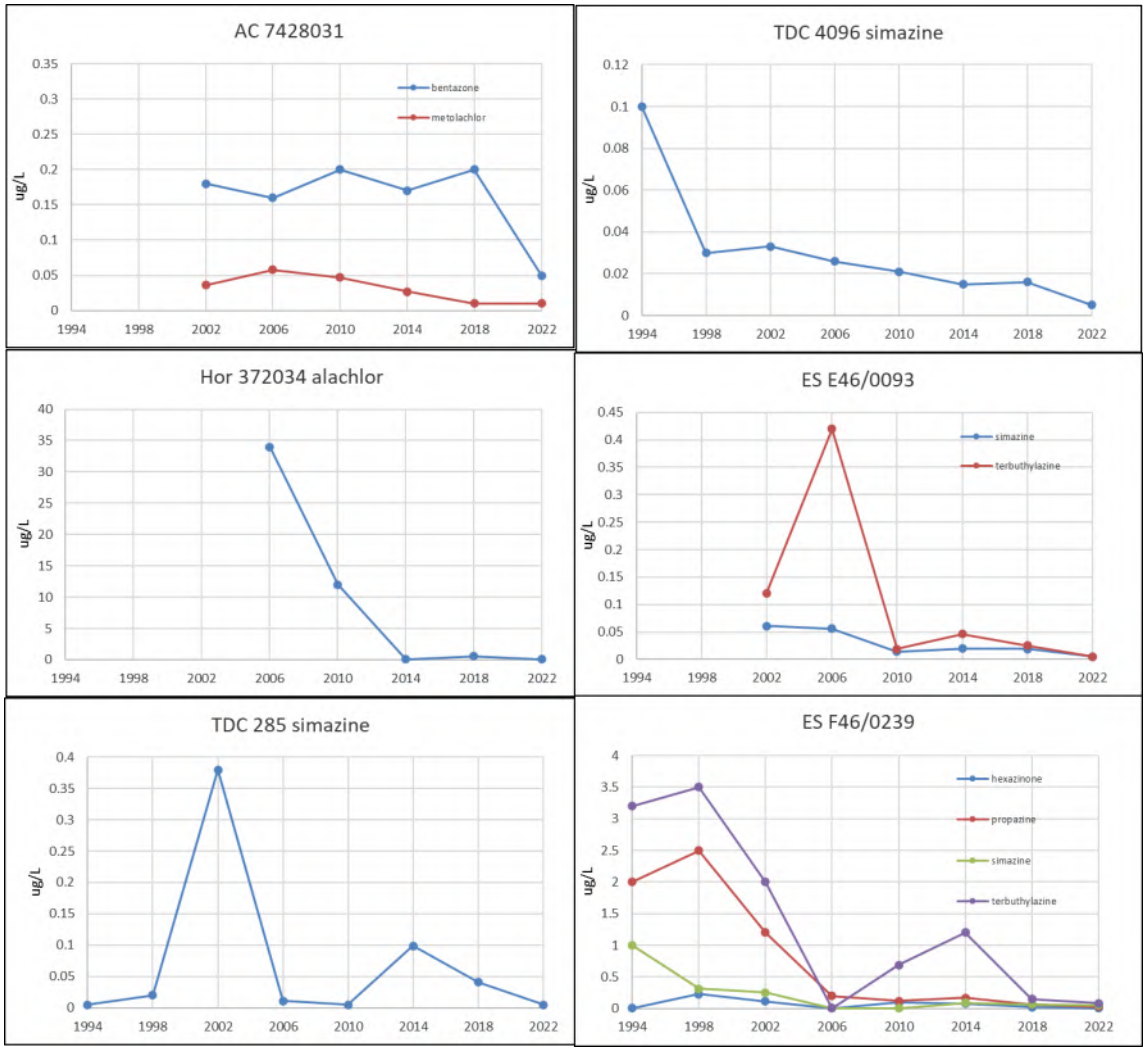


FIGURE 2: Temporal variation of pesticides in selected wells across multiple surveys.

Note: Values < DL have been plotted as 0.5DL

Table 4: Summary statistics for the nine national surveys of pesticides in groundwater in New Zealand.

* Detection limits have changed over time so detection counts may not be directly comparable over time.

	Year of survey								
	1990	1994	1998	2002	2006	2010	2014	2018	2022
	Close 1993	Close 1996	Close & Rosen 2001	Close & Flintoft, 2004	Gaw et al. 2008	Close & Skinner 2012	Close & Humphries 2015	Close & Humphries 2018	This study
No. of wells in survey	82	118	95	133	163	162	165	279	184
No. of regions	6	13	15	15	14	14	13	14	15
No. of regions with pesticides detected	4	8	11	9	11	9	6	12	10
No. of pesticides detected*	7	10	22	21	19	22	21	28	16
% of wells with pesticides detected > DL = 0.1 μg/L	7%	14%	11%	9%	8%	7%	10%	8%	3%
% of wells with pesticides detected > DL = 0.01 μg/L	-	-	35%	21%	19%	24%	17%	24%	9%
No. of wells with pesticides >1 μg/L	2	3	3	3	2	3	4	3	1
No of pesticides detected > MAV	1	0	1	0	1	1	1	0	1
% of detections that were herbicides	50%	95%	92%	92%	74%	91%	86%	88%	66%
% of detections that were triazines	13%	65%	76%	67%	50%	61%	61%	71%	45%

REFERENCES

APVMA. 2011. Diuron Environment Assessment. Australian Pesticides and Veterinary Medicines Authority. Accessed April 2023, https://apvma.gov.au/sites/default/files/publication/15386-diuron-environment.pdf.

Close, M.E. 1993. Assessment of pesticide contamination of groundwater in New Zealand. II Results of groundwater sampling. *New Zealand Journal of Marine and Freshwater Research* 27: 267-273.

Close, M.E. 1996. Survey of pesticides in New Zealand groundwaters 1994. *New Zealand Journal of Marine and Freshwater Research* 30: 455-461.

Close, M. and Flintoft, M. 2004. National Survey of Pesticides in Groundwater 2002. *New Zealand Journal of Marine and Freshwater Research* 38: 289-299.

Close, M. and Humphries, B. 2016. The 2014 national survey of pesticides in groundwater in New Zealand. *Journal of Hydrology (NZ)*, 55(2): 73-88.

Close, M.E. and Rosen, M.R. 2001. 1998/99 National Survey of Pesticides in Groundwater using GCMS and ELISA. *New Zealand Journal of Marine and Freshwater Research* 35: 205-219.

Close, M.E. and Skinner, A. 2012. Sixth national survey of pesticides in groundwater in New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 46(4): 443-457.

Close, M., Humphries, B. and Northcott, G. 2021. Outcomes of the first combined national survey of pesticides and emerging organic contaminants (EOCs) in groundwater in New Zealand 2018. *Science of the Total Environment*, 754: 142005.

Daughney, C., Jones, A., Baker, T., Hanson, C., Davidson, P., Zemansky, G., Reeves, R. and Thompson, M. 2006. A National Protocol for State of the Environment Groundwater Sampling in New Zealand. Ministry for the Environment Report no. 781.

Gaw, S., Close, M.E. and Flintoft, M.J. 2008. Fifth national survey of pesticides in groundwater in New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 42: 397–407.

Gustafson, D.I. 1989. Groundwater Ubiquity Score: A Simple Method for Assessing Pesticide Leachability. *Enviromental Toxicology and Chemistry*, 8, 339-357.

Hadfield, J. 2013. *Groundwater quality monitoring 2012-13. Waikato Regional Council Technical Report 2013/01*. Hamilton, New Zealand: Waikato Regional Council, p. 94.

Hadfield, J. and Smith, D. 1999. *Pesticide contamination of groundwater in the Waikato region. Environment Waikato, 1999/9*. Hamilton, New Zealand: Environment Waikato.

LAWA, 2022. Q&A: LAWA Groundwater Quality, Land, Air, Water Aotearoa. Accessed May 2023: https://www.lawa.org.nz/get-involved/news-and-stories/national-news/2022/march/qa-lawa-groundwater-quality/.

Manktelow, D., Stevens, P., Walker, J., Gurnsey, S., Park, N., Zabkiewicz, J., Teulon, D. and Rahman, A. 2005. Trends in Pesticide Use in New Zealand: 2004. Report to the Ministry for the Environment, Project SMF4193. HortResearch Client Report no. 17962.

MfE, 2006. Identifying, Investigating and Managing, Risks Associated with Former Sheep-Dip Sites: A Guide for Local Authorities. MfE Report ME 775, Ministry for the Environment, Wellington.

Ministry for the Environment & Stats NZ. 2019. New Zealand's Environmental Reporting Series: Environment Aotearoa 2019. Publication number: ME 1416.

Primi, P., Surgan, M.H. and Urban, T. 1994. Leaching potential of turf care pesticides: A case study of Long Island golf courses. *Ground Water Monitoring and Remediation* Summer 1994: 129-138.

Sarkar, B., Mukhopadhyay, R., Mandal, A., Mandal, S., Vithanage, M., Biswas, J.K. 2020. Chapter 8 - Sorption and desorption of agro-pesticides in soils. Agrochemicals Detection, Treatment and Remediation, Butterworth-Heinemann, pp. 189-205.

Regional Council. 1995. Report on an investigation of pesticides in shallow groundwater in Taranaki., Report number 95-14. Taranaki Regional Council, p. 31.

Taumata Arowai. (2022). Drinking Water Standards for New Zealand. Accessed April 2023,

https://www.legislation.govt.nz/regulation/public/2022/0168/latest/whole.html#LMS698042.

APPENDIX A: ESR 2022 PROCEDURES FOR SAMPLING OF PESTICIDES

National Survey of Pesticides, EOCs & PFAS in Groundwater 2022 - Sampling Procedures

To: The Regional or Unitary Authority

Thank you for participating in the National Survey of Pesticides in Groundwater 2022. The survey has occurred every four years since 1990 with this year being the 9th survey.

This document contains details of the required sampling procedures for this year's survey. This set of instructions are for councils that are also collecting samples for PFAS analysis in addition to samples for pesticides and EOC analysis. Four organisations are involved in the survey, ESR, Hill Laboratories, Northcott Research Consultants, and AsureQuality laboratories, with details of their role and what support and services you will receive from them below:

ESR:

- Management of the nationwide survey and full technical support
- Field sampling form
- Analysis of the results and a final report

Hill Laboratories *(Pesticide analysis laboratory)*

- x1 500ml amber glass sample bottle unpreserved (Org500)
- **NOTE: For all Hill Laboratories samples, there are holding time requirements that must be met. Samples must be refrigerated after collection and received at Hill's Hamilton Laboratory within 3 calendar days of collection. Samples should not arrive at the laboratory on a Friday due to sample extraction requirements.**
- Sample submission form
- Polystyrene boxes, ice packs and packing material for the return trip (i.e. bubble wrap)

Northcott Research Consultants *(Emerging Organic Contaminants (EOCs) analysis laboratory)*

- x1 4L amber glass sample bottle
- Sample submission form

- Polystyrene boxes, ice packs and packing material for the return trip (i.e. bubble wrap)

AsureQuality Laboratories *(PFAS analysis laboratory)*

- x1 250ml HDPE sample bottle unpreserved (supplied double-bagged in ziplock bags)
- Sample submission form
- Polystyrene boxes, ice packs and packing material for the return trip

GEAR LIST

- Council Health and Safety Form, first aid kit and cell phone
- Personal Protection Equipment (PPE)
- Sampling gloves (nitrile)
- Sample bottles (x5 bottles for each well)
- Chilly bins, ice packs and packing material (i.e. bubble wrap)
- Portable pump (i.e. Grundfos MP1 or SuperTwister) and power source if needed
- Courier tickets and address information for Hill Laboratories, Northcott Research Consultants Ltd, and AsureQuality.

SOME IMPORTANT THINGS TO REMEMBER WHEN SAMPLING

1. Please do not sample on a Thursday or Friday. If it is unavoidable then please send samples with a weekend delivery ticket or refrigerate until Monday. If at all possible, please sample on Monday to Wednesday and then send the samples back to Hill Laboratories, Northcott Research Consultants, and AsureQuality immediately via courier.
2. For PFAS sampling there needs to be 2 people in the sampling team to be able to implement a “Clean Hands/Dirty Hands” protocol. Disposable nitrile gloves have been supplied by ESR for use in collection of the PFAS samples. Note that the PFAS samples are collected in replicate. If a Blind Duplicate sample is being collected from the well, there will be a total of 4 HPDE bottles collected from the well.
3. Overalls (100% cotton and washed using water only) should be stored in plastic bags while travelling in the vehicle and put on at each site. A separate set of overalls is **not** required for each site.
4. NOTE: For all Hill Laboratory samples, there are holding time requirements that must be met. Samples must be refrigerated after collection and received at the laboratory within 3 calendar days of collection.
5. Field staff **please strictly avoid the following** on the day of sampling if sampling for EOCs or PFAS:

- Spray deodorants
- Perfume
- Insect repellent
- Smoking
- Coffee and other caffeine containing drinks such as tea, V, coke, pepsi, etc. (no drinking of these caffeine containing drinks on the day of sampling as caffeine is exuded in breath and will influence the results for nicotine and cotinine)

- Sunscreen
- Makeup/cosmetics (these products contain UV filters that are being analysed and will affect the results)

6. Please try to avoid sampling in the pouring rain so that the risk of contamination is minimised.

WELL SAMPLING PROCEDURE

1. Before putting on gloves, the sampling team removes the bags containing the gloves, 10 L bucket and the plastic groundsheet from the storage containers in which they are packed.

2. Select a flat suitable area for sampling and place groundsheet on the ground. Remove sampling equipment from the bags and place on the groundsheet. Place the decontamination equipment, and chilly bin onto the groundsheet.

3. Take the 100% cotton overalls from the plastic bag and put them on.

4. **CLEAN HANDS** and **DIRTY HANDS** put on a new pair of disposable nitrile gloves. (A hint is to put on 2-3 pairs of gloves so that putting on a fresh pair of gloves (as in step 12 or if they get contaminated) only involves taking off the uppermost pair of gloves).

5. **CLEAN HANDS** labels the preserved sample bottles and places them back into the zip lock plastic bags.

6. DIRTY HANDS measures the **static water level** within the well. This information can be very important for interpreting the results. The static water level is to be taken from a known or historical council recorded measuring point (i.e. typically the top of the well casing).

> Make sure that **x3 times the casing volume of water** has been purged from the well before a sample is taken. This is to ensure that a representative sample is taken from the surrounding aquifer and not from the stagnant water within the well casing. If the well is a domestic/agricultural water supply fitted with a submersible pump, make sure the pump is running and allow it to run so that x3 well volumes are removed from the well. Take your sample as close to the well head as possible before it enters into a pressure tank or storage tank (**NEVER sample down gradient of a pressure tank or storage tank**).

7. **DIRTY HANDS** opens the tap and allows the water to run for approximately two minutes into a bucket.

8. **DIRTY HANDS** undertakes the physicochemical measurements using a multi-parameter water meter (i.e. pH, temperature, conductivity, dissolved oxygen etc) from the water collected into the bucket and records the readings and site observations. Make sure that these **readings have stabilised** before taking the sample.

9. **CLEAN HANDS** opens the sample and replicate bottles lids and collects the samples by alternately filling 25-33% of each bottle from the running tap.

10. **DIRTY HANDS** operates the tap to ensure the correct flow is maintained.

11. **CLEAN HANDS** replaces the lid on the sample bottles, returns the bottles to their inside bag, and zip-locks the bag.

12. **DIRTY HANDS** turns off the tap and places on a fresh set of gloves.

13. **CLEAN HANDS** then places the zipped bag into the outer bag held by **DIRTY HANDS**.

14. **DIRTY HANDS** zips the outer bag, places the double-bagged sample bottle into a clean chilly bin.

15. Once the PFAS samples are stored away, clearly label the glass bottles for Pesticide and EOC analyses before you get your hands or the bottles wet with the date, time and well ID number.

16. Make sure your hands are clean and once the lid is off do not touch the top of the sample bottle or the inside of the lid.

17. **Hill Laboratories bottles:** The amber glass sample bottles have been washed and rinsed according to a strict protocol. It is important that the samples are collected directly into the bottles and not into a bucket or other container before filling the sample bottles.

18. **Northcott Research Consultants bottles:** The glass 4L bottles need to be pre-rinsed twice with approximately 0.5 L of sample before filling with the collected sample. It is important that the samples are collected directly into the bottles and not into a bucket or other container before filling the sample bottles.

19. Make sure that you fill the correct number of bottles for each well that is sampled. If your council has opted to sample Pesticides, EOCs and PFAS for the well, there will be a total of 2 glass bottles and 2 HDPE bottles to fill.

11) Once your samples have been collected immediately store them in a chilly bin with ice packs (keep them stored at approx. 4°C) in preparation for transportation to the labs. **DO NOT FREEZE THE BOTTLES, OTHERWISE THEY WILL BREAK.**

BLIND DUPLICATES

For councils that are sampling more than 7 wells, there is an additional set of sample bottles. This is for the collection of blind duplicate samples, which is a quality control measure for the laboratory analysis. There is no additional cost for the collection of the blind duplicate sample. Please collect the blind duplicate samples as an extra sample from one of the wells at the same time as collecting the normal sample. Instructions are below:

- Pick at random which well will be chosen to provide the blind duplicate sample.
- The blind duplicate sample should be labelled the same as the well sample but the well ID number on the bottle should be **fictitious** and the time should be omitted. On the ESR sampling sheet identify the well ID number that is associated with the fictitious blind duplicate well number. **On the Hill Laboratories and the AsureQuality chain of custody forms do not indicate which sample is the blind duplicate sample.**
- For example, if you are sampling between 8 and 21 wells for pesticides then 1 blind duplicate sample is required. If you are sampling more than 21 wells then 2 blind duplicate samples are required. We will advise you regarding the number of blind duplicate samples that you should collect.
- When you are sampling the well collect the water for the sample and the blind duplicate as outlined below. This will ensure that the sample and the blind duplicate are representative of the whole sampling period when both samples are being taken.
- For the PFAS samples we are aiming to collect blind duplicate samples for 10% of the wells being sampled to provide additional quality control and assurance.

  - 250 mL HDPE bottle for the well sample
  - 250 mL HDPE bottle for the well sample (2nd bottle in ziplock bag)
  - 250 mL HDPE bottle for the Blind Duplicate

- 250 mL HDPE bottle for the Blind Duplicate (2nd bottle in ziplock bag)
- 500 mL amber glass bottle for the well sample
- 500 mL amber glass bottle for the Blind Duplicate
- 4L amber glass bottle for the well sample
- 4L amber glass bottle for the Blind Duplicate

FORMS

Please fill in the forms for each well sampled:

- **ESR Field Sampling form** (i.e. the well details and parameters). Record if there has been a blind duplicate sample taken and record the fictitious well ID number along with which well the blind duplicate belongs to.

- **Hill Laboratories Environmental sample submission form** (please place the form in a waterproof plastic bag inside the chilly bin)

- **Northcott Research Consultants Ltd sample submission form** (please place the form in a waterproof plastic bag inside the chilly bin)

- AsureQuality sample submission form (please place the form in a waterproof plastic bag inside the chilly bin)

Scan and email copies of the ESR Field Sampling forms to Laura Banasiak: laura.banasiak@esr.cri.nz, copy to Murray Close, murray.close@esr.cri.nz

COURIERING SAMPLES

The glass bottles should be packed in the chilly bins and packaging received in and couriered to Hill Laboratories and Northcott Research Consultants Ltd (addresses are provided at the end of this document). The HDPE bottles should be packed in the chilly bins and packaging received in and couriered to AsureQuality Laboratories (address provided at the end of this document).

Please advise Hill Laboratories of any breakages at mail@hill-labs.co.nz so that replacement bottles can be sent.

Please advise Northcott Research Consultants Ltd of any breakages nrcltd@hotmail.co.nz or 021 2268474 so that replacement bottles can be sent.

If you have any questions about sampling or if the procedures conflict with your current sampling protocols, please do not hesitate to contact us and we can try to resolve the issues as quickly as possible.

Thanks for participating in the programme; it could not exist without your support. Any questions or comments are welcome.

APPENDIX B: ESR PESTICIDES SAMPLING FIELD SHEET

Field Sampling Form: 2022 National Survey of Pesticides, EOCs & PFAS in Groundwater ***(please use one form per well)***		
Regional/District Council:		
Person collecting sample:		
Grid reference (NZTM):		
Council well number/ID:		
Blind Duplicate number if appropriate:		
Well owners name:		
Address:		
Weather:		
Surrounding land use:		
Well use:		
Well diameter (mm):		
Well depth (m):		
Screened interval (m):		
Pumped (circle one):	*YES / NO*	
Sampling point description:		
Water level (m):		
Date and time of sampling:	*Date:*	*Time:*
Time of pumping before sampling:		
Well volumes removed:		
Field measurements:	*DO (mg/L)*	
	Conductivity	
	Temperature	
	pH	
Type of aquifer:		
Name of aquifer (if any):		
Comments:		

APPENDIX C: LIST OF PESTICIDES AND LIMITS OF DETECTION (LOD)

Units are μg/L (ppb).

(1) Pesticide Screen			
(i) Organochlorine pesticides:		Cyfluthrin	0.00004
Aldrin	0.000005	Cyhalothrin	0.00004
alpha-BHC	0.000010	Cypermethrin	0.00008
beta-BHC	0.000010	Deltamethrin (including Tralomethrin)	0.00006
delta-BHC	0.000010	Diazinon	0.00002
gamma-BHC (Lindane)	0.000010	Dichlofluanid	0.00004
cis-Chlordane	0.000005	Dichloran	0.0002
trans-Chlordane	0.000005	Dichlorvos	0.00008
2,4'-DDD	0.000010	Difenoconazole	0.00008
4,4'-DDD	0.000010	Dimethoate	0.00008
2,4'-DDE	0.000010	Diphenylamine	0.00008
4,4'-DDE	0.000010	Diuron	0.00004
2,4'-DDT	0.000010	Fenpropimorph	0.00004
4,4'-DDT	0.000010	Fluazifop-butyl	0.00004
Total DDT Isomers	0.00006	Fluometuron	0.00004
Dieldrin	0.000005	Flusilazole	0.00004
Endosulfan I	0.000010	Fluvalinate	0.00004
Endosulfan II	0.000010	Furalaxyl	0.00002
Endosulfan sulphate	0.000010	Haloxyfop-methyl	0.00004
Endrin	0.000005	Hexaconazole	0.00004
Endrin aldehyde	0.000005	Hexazinone	0.00002
Endrin ketone	0.000010	IPBC (3-Iodo-2-propynyl-nbutylcarbamate)	0.0002
Heptachlor	0.000005	Kresoxim-methyl	0.00002
Heptachlor epoxide	0.000005	Linuron	0.00005
Hexachlorobenzene	0.00004	Malathion	0.00004
Methoxychlor	0.000005	Metalaxyl	0.00004
		Metolachlor	0.00004
(ii) OrganoNitrogen & Phosphorus pesticides:		Metribuzin	0.00004
Acetochlor	0.00004	Molinate	0.00008
Alachlor	0.00004	Myclobutanil	0.00004
Atrazine	0.00004	Naled	0.0002
Atrazine-desethyl	0.00004	Norflurazon	0.00008
Atrazine-desisopropyl	0.00008	Oxadiazon	0.00004
Azaconazole	0.00002	Oxyfluorfen	0.00002
Azinphos-methyl	0.00008	Paclobutrazol	0.00004
Benalaxyl	0.00002	Parathion-ethyl	0.00004
Bitertanol	0.00008	Parathion-methyl	0.00004
Bromacil	0.00004	Pendimethalin	0.00004
Bromopropylate	0.00004	Permethrin	0.00002
Butachlor	0.00004	Pirimicarb	0.00004
Captan	0.00008	Pirimiphos-methyl	0.00004
Carbaryl	0.00004	Prochloraz	0.0002
Carbofenothion	0.00004	Procymidone	0.00004
Carbofuran	0.00004	Prometryn	0.00002
Chlorfluazuron	0.00004	Propachlor	0.00004
Chlorothalonil	0.00004	Propanil	0.0002
Chlorpyrifos	0.00004	Propazine	0.00002
Chlorpyrifos-methyl	0.00004	Propiconazole	0.00004
Chlortoluron	0.00008		
Cyanazine	0.00004		

Pyriproxyfen	0.00004	Chlorpropham	0.00008
Quizalofop-ethyl	0.00004	Chlozolinate	0.00004
Simazine	0.00004	Coumaphos	0.00008
Simetryn	0.00004	Cyproconazole	0.00004
Sulfentrazone	0.0002	Cyprodinil	0.00004
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	0.00008	Dichlobenil	0.00004
Tebuconazole	0.00004	Dichlofenthion	0.00004
Terbacil	0.00004	Dicofol	0.0002
Terbumeton	0.00004	Dicrotophos	0.00004
Terbuthylazine	0.00002	Dinocap	0.0003
Terbuthylazine-desethyl	0.00004	EPN	0.00004
Terbutryn	0.00004	Ethion	0.00004
Thiabendazole	0.0002	Etrimfos	0.00004
Thiobencarb	0.00004	Famphur	0.00004
Tolylfluanid	0.00002	Fenarimol	0.00004
Triazophos	0.00004	Fenitrothion	0.00004
Trifluralin	0.00004	Fenpropathrin	0.00004
Vinclozolin	0.00004	Fensulfothion	0.00004
		Fenvalerate (including Esfenvalerate)	0.00004
(iii) Acid Herbicides:		Folpet	0.00008
Acifluorfen	0.0004	Hexythiazox	0.0002
Bentazone	0.0004	Imazalil	0.0002
Bromoxynil	0.0004	Indoxacarb	0.00004
Clopyralid	0.0004	Iodofenphos	0.00004
2,4-Dichlorophenoxyacetic acid (24D)	0.0004	Isazophos	0.00004
2,4-Dichlorophenoxybutyric acid (24DB)	0.0004	Isofenphos	0.00002
Dicamba	0.0004	Leptophos	0.00004
Dichlorprop	0.0004	Methacrifos	0.00004
Haloxyfop	0.0004	Methidathion	0.00004
2-methyl-4-chlorophenoxyacetic acid (MCPA)	0.0004	Methiocarb	0.00004
2-methyl-4-chlorophenoxybutanoic acid (MCPB)	0.0004	Mevinphos	0.00008
Mecoprop	0.0004	Nitrofen	0.00008
Oryzalin	0.0006	Nitrothal-isopropyl	0.00004
2,3,4,6-Tetrachlorophenol (TCP)	0.0004	Oxychlordane	0.00002
2,4,5-Trichlorophenoxypropionic acid (245TP, Fenoprop, Silvex)	0.0004	Penconazole	0.00004
Fluroxypyr	0.0004	Phosmet	0.00004
2,4,5-Trichlorophenoxyacetic acid (245T)	0.0004	Phosphamidon	0.00004
Pentachlorophenol (PCP)	0.0004	Propetamphos	0.00006
Picloram	0.0004	Propham	0.00004
Quizalofop	0.0004	Prothiofos	0.00004
Triclopyr	0.0004	Pyrazophos	0.00004
		Pyrifenox	0.00004
(iv) Multiresidue Extra Pesticides:		Pyrimethanil	0.00004
Bendiocarb	0.00004	Quintozene	0.00008
Benodanil	0.00008	Sulfotep	0.00004
Bifenthrin	0.00002	Tebufenpyrad	0.00002
Bromophos-ethyl	0.00004	Tetrachlorvinphos	0.00004
Bupirimate	0.00004	Triadimefon	0.00004
Buprofezin	0.00004		
Captafol	0.0002		
Carbofenothion	0.00004		
Chlorfenvinphos	0.00004		

INSTITUTE OF ENVIRONMENTAL
SCIENCE AND RESEARCH LIMITED

Kenepuru Science Centre
34 Kenepuru Drive, Kenepuru, Porirua 5022
PO Box 50348, Porirua 5240
New Zealand
T: +64 4 914 0700 **F:** +64 4 914 0770

Mt Albert Science Centre
120 Mt Albert Road, Sandringham, Auckland 1025
Private Bag 92021, Auckland 1142
New Zealand
T: +64 9 815 3670 **F:** +64 9 849 6046

NCBID – Wallaceville
66 Ward Street, Wallaceville, Upper Hutt 5018
PO Box 40158, Upper Hutt 5140
New Zealand
T: +64 4 529 0600 **F:** +64 4 529 0601

Christchurch Science Centre
27 Creyke Road, Ilam, Christchurch 8041
PO Box 29181, Christchurch 8540
New Zealand
T: +64 3 351 6019 **F:** +64 3 351 0010

www.esr.cri.nz

Date 18 July 2023

Subject: **Taranaki Regional Coastal Plan Operative**

Approved by: A D McLay, Director - Resource Management

S J Ruru, Chief Executive

Document: 3187092

Purpose

1. The purpose of this memorandum is to provide an update to the Committee that approval of the Proposed Coastal Plan for Taranaki has been received from the Minister for Conservation, and the proposed plan will shortly be made operative.

Executive summary

2. At the December 2022 Council meeting, the Regional Coastal Plan for Taranaki was adopted and referred to the Minister for Conservation for final approval. On 14 June 2023 staff received correspondence from the Minister of Conservation, confirming the approval of the Regional Coastal Plan, with no changes to be made.
3. At the December meeting the Council also authorised the Chief Executive to specify a date from which the Interim Decisions Version of the Regional Coastal Plan for Taranaki will become operative, following the receipt of the approved Plan from the Minister. This process is now underway and the Proposed Coastal Plan for Taranaki will be made operative as soon as practicable.

Recommendations

That the Taranaki Regional Council:

a) receives this report, outlining that the Regional Coastal Plan will be made operative on a date determined by the Chief Executive;

b) notes the success of the mediation process in resolving appeals on the Plan and the avoidance of an expensive Environment Court process for all parties.

Background

4. The Proposed Coastal Plan was publicly notified on 24 February 2018, the culmination of a comprehensive consultative and engagement process, with much greater iwi input than previously.

5. Sixty-one initial submissions were received on the Proposed Coastal Plan, with a further 25 submissions received in support or opposition of the initial submissions. Following a significant pre-hearing engagement process and hearing of submissions, Council made its decision in relation to the relief sought by submitters on the Proposed Coastal Plan. The Council's decisions were publicly notified on 4 October 2019.
6. In accordance with the RMA, submitters then had the opportunity to lodge an appeal against the Council's decisions. Ten appeals were subsequently lodged with the Environment Court, with 19 parties joining the proceedings as s274 parties. Mediation occurred across six themes based on topics and relief sought by interested parties. This process was ongoing from 2019 to late 2022. Despite the time and resource commitment, this process was very successful and resulted in all appeal points either being resolved by way of Environment Court consent order or through withdrawal of appeal points by appellants. There was no need for an expensive Environment Court hearing to be held.

Discussion

7. The adoption and approval of a Coastal Plan is different to that of the Councils other regional plans. Following adoption by Council (occurred in December 2022), the Minister of Conservation must approve the plan. The Minister also has power to require changes to the Interim Decisions Version of the Coastal Plan, as long it is not inconsistent with, or in conflict with any direction of the Environment Court.
8. Staff have received notification of the Ministers approval and signature of the seal to be inserted in the plan. The letter is appended to this memorandum. In the letter, the Minister acknowledged the work and effort of the Council in undertaking the development of the Regional Coastal Plan, particularly the constructive approach to resolution of all appeals by mediation.
9. The approval of the plan is now in effect and the public notification of the date for which the plan is to become operative is being finalised. There are some minor administrative processes being worked through ahead of finalising a date, of which the Chief Executive will authorise as per resolution (e) from the Council meeting in December 2022. By the notice of making the Interim Decisions Version of the Regional Coast Plan Operative, the existing Regional Coastal Plan for Taranaki (1997) is replaced and made inoperative.
10. Along with the public notice, a number of communication channels will be used to ensure the community and interested persons are aware of the change. This will include direct contact made with iwi, government departments, district councils and both submitters on the plan and appellants. There will also be additional communications through Council website and social media page.
11. Staff will inform the committee via email when the operative date has been set, and communications released.

Financial considerations—LTP/Annual Plan

12. 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

13. 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

14. 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.

Community considerations

15. This memorandum and the associated recommendations have considered the views of the community, interested and affected parties and those views have been recognised in the preparation of this memorandum.

Legal considerations

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

Appendices/Attachments

Document 3181662: Approval letter from the Minister for consultation.

Hon Willow-Jean Prime

MP for Northland
Minister of Conservation
Minister for Youth
Associate Minister for Arts, Culture and Heritage
Associate Minister of Health
Associate Minister of Statistics

08 JUN 2023

Steve Ruru
Chief Executive
Taranaki Regional Council
Private Bag 713
STRATFORD 4352

Taranaki Regional Council
Document No:

14 JUN 2023

Document No of Reply:

Ref: 23-B-0103

Tēnā koe Mr Ruru

Thank you for your letter dated 6 March 2023 seeking my approval of the Regional Coastal Plan for Taranaki, and your helpful description of the development of the Plan.

I am satisfied that the Plan meets the requirements of the Resource Management Act 1991 and gives effect to the New Zealand Coastal Policy Statement 2010.

I am pleased to be able to approve the Regional Coastal Plan for Taranaki in accordance with subclause 19(4) of schedule one of the Act. The signed seal page is attached.

Please thank your staff for the hard work they have put into the Plan. I am advised that their constructive approach was instrumental to the resolution of all appeals by mediation. The results reflect well on them.

Nāku noa nā

Hon William Jean-Prime
Minister of Conservation

cc Grace Marcroft, grace.marcroft@trc.govt.nz

Attach: Seal page for the Regional Coastal Plan for Taranaki

Private Bag 18041, Parliament Buildings, Wellington 6160, New Zealand
+64 4 817 8788 | wj.prime@ministers.govt.nz | beehive.govt.nz

Taranaki Regional Council
Regional Coastal Plan for Taranaki

By resolution of the Council on the 13th day of December 2022 in accordance with clause 18 of the First Schedule of the Resource Management Act 1991, the Taranaki Regional Council adopted the Regional Coastal Plan for Taranaki.

DATED at Stratford this day 13 of December 2022.

SIGNED by the **TARANAKI REGIONAL COUNCIL** by the affixing of its common seal in the presence of

Charlotte Littlewood
Chairperson

Stephen Ruru
Chief Executive

Taranaki Regional Council
THE COMMON SEAL OF
2022/02

The Minister of Conservation approved the Regional Coastal Plan for Taranaki by signing it in accordance with clause 19 of the First Schedule of the Resource Management Act 1991.

Hon. Willow-Jean Prime
Minister of Conservation

7 June 2023
Date

The Regional Coastal Plan for Taranaki shall become operative on _____

Date 18 July 2023

Subject: **Key Native Ecosystems Programme Update**

Approved by: D Harrison, Director - Operations

S J Ruru, Chief Executive

Document: 3188290

Purpose

1. The purpose of this memorandum is to present for Members' information an update on the identification of eight new Key Native Ecosystem (KNE) sites.

Executive summary

2. The *Biodiversity Strategy for the Taranaki Regional Council* ('the Biodiversity Strategy') sets out four strategic priorities for the Taranaki Regional Council (the Council), one of which relates to the protection of KNEs on privately owned land.
3. KNEs refer to terrestrial (land) areas identified by the Council as having regionally significant ecological values and are targeted for ongoing protection.
4. Officers work with interested landowners, including iwi, and community groups to promote the voluntary protection and enhancement of ecological values associated with the sites.
5. Any landowners can seek an ecological assessment of their particular site for potential involvement in the KNE programme. When opportunities arise, new sites are assessed by Council officers to determine their regional significance, and/or identify agreed management actions to maintain and enhance those values.
6. Protection of KNEs is part of the Council's non-regulatory work and involves working with interested landowners and others through the preparation and implementation of biodiversity plans, the provision of environmental enhancement grant funding, and/or assisting with pest and weed control.
7. Eight new sites have been identified in the 2022/2023 financial year covering a total area of 412.3 ha.
8. With the addition of the new sites, the Council has so far identified 366 KNEs covering approximately 129,441 hectares in the region.
9. 312 of the KNE sites are partially or completely privately owned. Together, they cover approximately 19,695 hectares or 30% of the privately owned indigenous vegetation in Taranaki.

10. 228 KNE sites are currently under active management through a Council biodiversity plan, which provides site-specific information on agreed actions for protecting that site. A biodiversity plan typically addresses such matters as formal protection, fencing, weed control, pest control and restoration.

Recommendations

That the Taranaki Regional Council:

a) receives this memorandum and the attached inventory sheets for Oki Oki Titoki, Doug and Suzanne Raper Bush, Moerangi, Harold's Bush, Kawaiti, A & P Bush Remnants, Stony River Block, and Redbranch Bush.

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

Background

11. The Biodiversity Strategy sets out the Council's vision, aims, priorities and work programmes for maintaining and enhancing indigenous biodiversity in the region. In so doing, it assists in giving effect to its statutory functions for indigenous biodiversity under the *Resource Management Act 1991*. The Biodiversity Strategy sets out four strategic priorities, one of which relates to the Council focusing on protecting KNEs on privately owned land.

12. The Council's management approach is to work with interested landowners, community groups and other interested parties to promote the voluntary protection and enhancement of ecological values associated with KNE sites on privately owned land. It involves the provision of a property planning service and other assistance, including the preparation and implementation of biodiversity plans, the provision of environmental enhancement grant funding, and/or assisting with pest and weed control.

13. The identification of KNEs is a comprehensive but ongoing exercise by the Council. The Council maintains an inventory and database identifying KNEs. However, any landowners can seek an assessment of their particular site for potential involvement in the KNE programme. When opportunities arise, new sites are assessed in relation to their regional significance, and/or existing information and databases updated.

KNE site inventory process

14. Council officers have recently investigated and consulted with landowners to identify a further eight sites totalling 412.3 hectares and recommend they be adopted as KNEs. The candidate sites are:

    - Oki Oki Titoki
    - Doug and Suzanne Raper Bush
    - Moerangi
    - Harold's Bush
    - Kawaiti
    - A & P Bush Remnants
    - Stony River Block

- Redbranch Bush

15. All the sites have been assessed by officers as significant in accordance with criteria set out in Bio Policy 4 of the *Regional Policy Statement for Taranaki* (2010), i.e. rarity and distinctiveness, representativeness or ecological context. Copies of the inventory sheets for the new sites are attached to this item.
16. With the addition of the new sites, the Council has so far identified 366 KNEs (covering approximately 129,441 hectares), which includes some public conservation land. Of the 289,000 hectares of indigenous vegetation in the region, approximately 64,000 hectares is in private ownership.
17. A total of 312 of the KNE sites, covering approximately 19,695 hectares, are partially or completely privately owned. This represents around 30% of the privately owned indigenous vegetation in the region. However, of note KNE sites do not cover all indigenous vegetation in the region but rather the most vulnerable and at risk types of indigenous vegetation.
18. Identification of a site as a KNE does not have any extra bearing on the rules or controls that already apply to such sites in regional or district council plans.
19. Identification of sites is undertaken by the Council to focus its non-regulatory efforts to work with and support landowners to protect biodiversity values on their land. As previously noted, protection is implemented through the preparation and implementation of biodiversity plans, the provision of environmental enhancement grant funding, and/or assisting land occupiers and/or care groups with pest and weed control.
20. The 2021/2031 Long Term Plan includes, amongst other things, a target to maintain and regularly update the Council's Inventory of KNEs. The identification of the additional KNEs gives effect to that commitment.

Financial considerations—LTP/Annual Plan

21. 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

22. 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

23. 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.

Community considerations

24. This memorandum and the associated recommendations have considered the views of the community, interested and affected parties and those views have been recognised in the preparation of this memorandum.

Legal considerations

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

Appendices/Attachments

Document 3077587: Oki Oki Titoki

Document 3161373: Doug and Suzanne Raper Bush

Document 3155618: Moerangi

Document 3155230: Harold's Bush

Document 3155704: Kawaiti

Document 3182413: A & P Bush Remnants

Document 3174967: Stony River Block

Document 3184286: Redbranch Bush

Oki Oki Titoki

At a glance

TRC Reference: BD/9755

Ecological District: North Taranaki

Land Tenure: Private

Area(ha): 3.8

GPS: 1719238X & 5680154Y

Habitat: Forest Remnant

Bioclimatic Zone: Semi-Coastal

Ecosystem Type: WF13: Tawa, kohekohe, rewarewa, hinau, podocarp forest

LENZ:	F5.2a Acutely threatened
Local:	Significant Natural Area
National:	Priority 1 – Threatened Land Environment
	Priority 4 – Threatened Species
Regional:	Key Native Ecosystem
Regional Ecosystem Loss:	Chronically threatened 10-20% left
Protection Status:	QEII Pending
Catchment:	Onaero (398)

General Description

The Oki Oki Titoki site is located on private land approximately 3 km south-west of Urenui in North Taranaki. It is a tawa-dominated forest remnant in a gully system of the Whangairari Stream, near the centre of the Onaero catchment. Unnamed tributaries of the Whangairari Stream dissect the bush, originating from springs and ponds within the site. Amongst the tawa-dominated canopy are occasional kahikatea, pukatea, and rewarewa. It is situated in close proximity to other Key Native Ecosystems such as Kotare Bush and Kaipikari Road Forest Remnants, and has been identified as a SNA by the New Plymouth District Council.

Ecological Features

Flora

The forest canopy is dominated by tawa, pukatea, and rewarewa, with occasional kahikatea, titoki, miro, and rimu. The understory and groundcover is primarily kawakawa, five-finger, small-leaved coprosma, parataniwha, and ferns e.g., hen and chicken fern. Three rata species are present, which are classified as 'Threatened' due to the presence of myrtle rust.

Fauna

Native birds include fantail, kereru, and tui. Morepork, although not observed on the day of assessment, are also likely to be present. A species of gecko (likely the forest gecko) was anecdotally observed nearby. There is good habitat for a range of other native species such as freshwater fish, other reptiles, and invertebrates. Long-tailed bats have been confirmed nearby and may use the site.

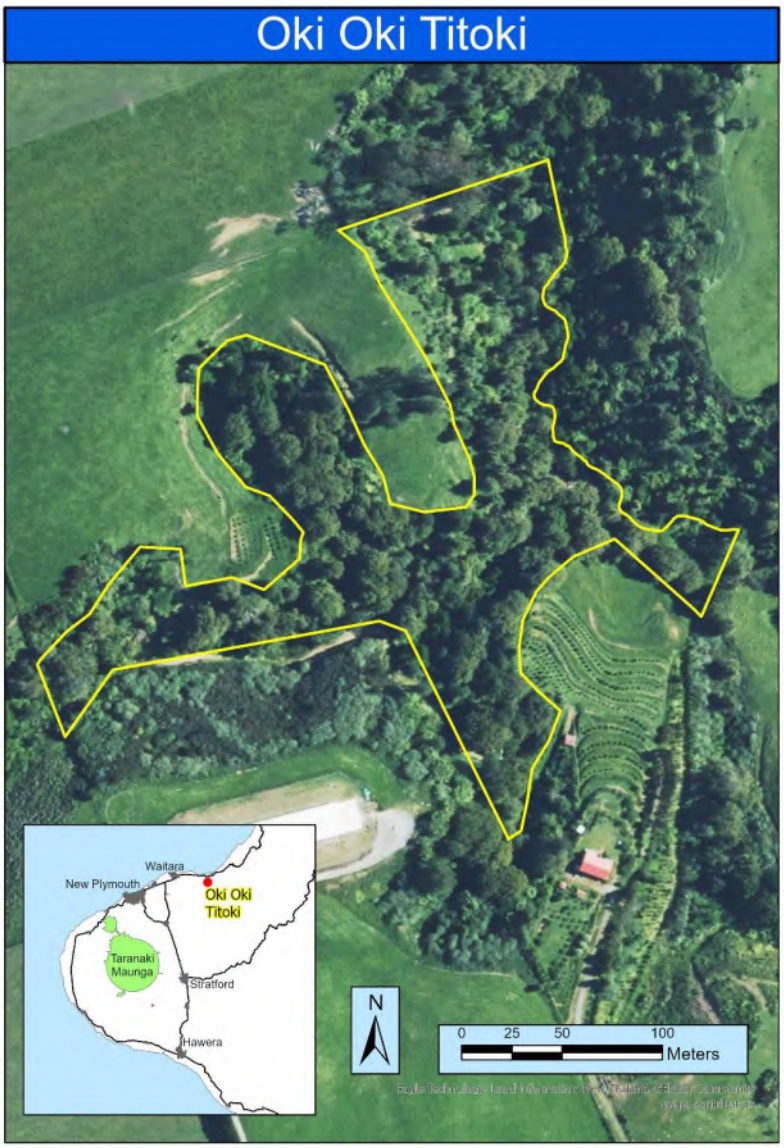
Ecological Values

Rarity and Distinctiveness - Medium	Provides habitat for and also likely to contain other notable fauna species including reptiles and invertebrates. Also contains three rata species listed as 'Threatened' flora due to vulnerability to myrtle rust. Long-tailed bats may be present.
Representativeness - High	Contains indigenous vegetation on F5.2a, an 'Acutely Threatened' LENZ environment. It is also a good example of a forest type that is considered Chronically threatened in Taranaki (WF13 Tawa, kohekohe, rewarewa, hinau, podocarp forest).
Ecological Context - Medium	Close to and interconnected with other small forest remnants and riparian vegetation in vicinity.

Sustainability - Positive	In good vegetative condition. Key ecological processes still influence the site. Under appropriate management, it can remain resilient to existing or potential threats.

Other Management Issues

Habitat Modification - Low	The site is fully fenced and will be protected with a QEII conservation covenant. There is no immediate risk of habitat modification.
Weeds - High	Invasive weeds, particularly woolly nightshade, are a current threat to the site. Other weed species including tradescantia and climbing asparagus are also present and have the potential to impact on the health of this site.
Predators - Medium	Predators including rodents, mustelids, possums, feral cats and hedgehogs will be having an impact on native species at the site.
Herbivores - Medium	Fenced from stock, however the site is vulnerable to possums and potentially feral goats.



Douglas & Suzanne Raper Bush

At a glance

TRC Reference: BD/9759
Ecological District: Egmont
Land Tenure: Private
Area(ha): 1.7
GPS: 1711537X & 5678855Y

Habitat: Forest Remnant
Bioclimatic Zone: Semi-Coastal
Ecosystem Type: WF13: Tawa, kohekohe, rewarewa, hinau, podocarp forest

LENZ: F5.2b Acutely threatened
National: Priority 4 – Threatened Species
Priority 1 – Threatened Land Environment
Regional: Key Native Ecosystem
Representative site for management
Regional Ecosystem Loss: Chronically threatened 10-20% left
Protection Status: QEII Covenant
Catchment: Parahaki (396)

General Description

Douglas and Suzanne Raper Bush is a 1.7ha privately owned QEII Covenant approximately 1km east of Tikorangi in North Taranaki. The site is located in the Parahaki Stream catchment and the Egmont Ecological District and is within 2kms of several other remnant bush sites and Key Native Ecosystems. The main mature forest patch is of particular ecological value as a priority representative site for management in Taranaki. Notable species present include king fern and three species of endangered rata. Habitat is extended to include a regenerating riparian corridor with a central stream, likely home to notable native fish such as banded kokopu and long-finned eel.

Ecological Features

Flora

The mature forest canopy is dominated by kohekohe, tawa, and karaka; with the occasional titoki, puriri, mahoe and pukatea. The understory also contains kawakawa, coprosma, and a range of other species in lesser numbers. Native climbers and epiphytes are found throughout and include several native orchids, spleenworts and ferns. Notable species include king fern and three species of threatened rata. The adjacent riparian corridor has been planted with a mix of natives and is beginning to show signs of natural regeneration.

Fauna

Native birds present include kereru, tui, piwakawaka/fantail, tauhou/silvereye, kahu/harrier, and ruru/morepork. The small stream to the south and west may contain kokopu and longfin eels. There is good habitat for a range of other notable species including reptiles and invertebrates.

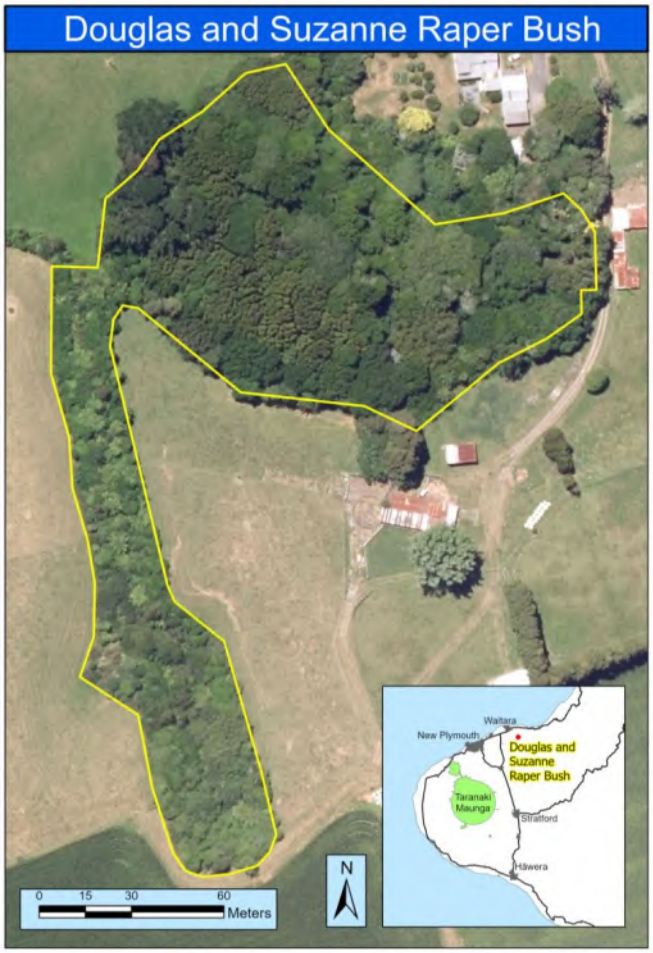
Ecological Values

Ecological Context - Medium	Enhances connectivity between fragmented indigenous habitat in this area including Chris Jury Forest and Wetlands, Otaraua-Nikorima, and Bushy Park.
Rarity and Distinctiveness - Medium	Contains the 'At Risk' king fern and three species of 'Threatened' rata. Provides habitat for and likely to contain other notable species including reptiles and notable native fish.
Representativeness - High	Contains vegetation on 'Acutely Threatened' land environment (F5.2b) and is a remnant of an ecosystem type (WF13: Tawa, kohekohe, rewarewa, hinau, podocarp forest) considered 'Chronically Threatened' as less than 20% remains in the region. Raper Bush is a

	priority representative site for management in Taranaki (30% Terrestrial Targets).
Sustainability - Positive	In good vegetative condition for the size, and likely to remain resilient to existing or potential threats with some management.

Other Management Issues

Habitat Modification - Medium	Mostly fenced apart from the garden and home boundary. Low risk from stock breach. Potential medium risk from further garden species escapes, although currently under active management by landowners.
Herbivores - Medium	Potential threat from rabbit browsing should numbers increase. Minor evidence currently present.
Predators - Medium	Predators including rodents, mustelids, possums, feral cats and hedgehogs will be having an impact on native species at the site.
Weeds - High	Several weedy species are present including climbers such as jasmine, kiwifruit and passionfruit; and Tradescantia/wandering willy. The landowners are already active in controlling some species, although the threat and management will be ongoing. Benefit would be found in additional support for a knockdown programme and technical advice.
Possum Self-help	The site is outside the current possum self-help programme boundary although the landowners carry out occasional control. High possum numbers have the potential to impact on forest health.



Moerangi

At a glance

TRC Reference: BD/9765

Ecological District: North Taranaki

Land Tenure: Private

Area(ha): 5

GPS: 1718342X & 5681113Y

Habitat: Forest Remnant

Bioclimatic Zone: Semi-Coastal

Ecosystem Type: WF13: Tawa, kohekohe, rewarewa, hīnau, podocarp forest

LENZ:	C1.2a Acutely threatened
Local:	Significant Natural Area
National:	Priority 1 – Threatened Land Environment
	Priority 4 – Threatened Species
Regional:	Key Native Ecosystem
	Representative site for management
Regional Ecosystem Loss:	Acutely Threatened <10% left
Protection Status:	QEII Covenant
Catchment:	Onaero (398)

General Description

The Moerangi forest remnant is located on privately owned land approx. 2 km southwest of Urenui. The site is positioned within the North Taranaki Ecological District and is approx. 5 ha in total, and comprises the forest portion of QEII Covenant 5/06/505 (wetland area excluded as doesn't meet criteria) and comprises a strip of forest along an escarpment, with a canopy dominated by pukatea and kohekohe, as well as some pūriri and kahikatea. Occasional emergent rewarewa throughout, and few tawa near the southern end. There are a number of large macrocarpa present. The site is steep, with sheer faces in places. *Tradescantia* is a common groundcover weed.

Ecological Features

Flora

The canopy is pukatea-kohekohe dominant (WF13), interspersed with pūriri, kahikatea, rewarewa & occasional tawa at the southern end. Some historical clearing shown by treefern-māhoe dominant regen areas, but secondary growth & some original trees are present, & some planted areas e.g. on edges. Macrocarpa & hīnau also occur. Understory dominated by kawakawa, hangehange, treeferns & māhoe with occasional rangiora & *Coprosma* spp. Groundcover consists of ferns, *Tradescantia* & parataniwha where wet.

Fauna

Native birds present on-site consist of tūī, kererū, grey warblers, fantail, ruru, kāhu, silvereye etc. The site and wider area does on occasion get visited by NZ falcon. There is good habitat for a range of other native species such as reptiles and invertebrates, but freshwater habitat is sparse (seemingly restricted to ephemeral streams).

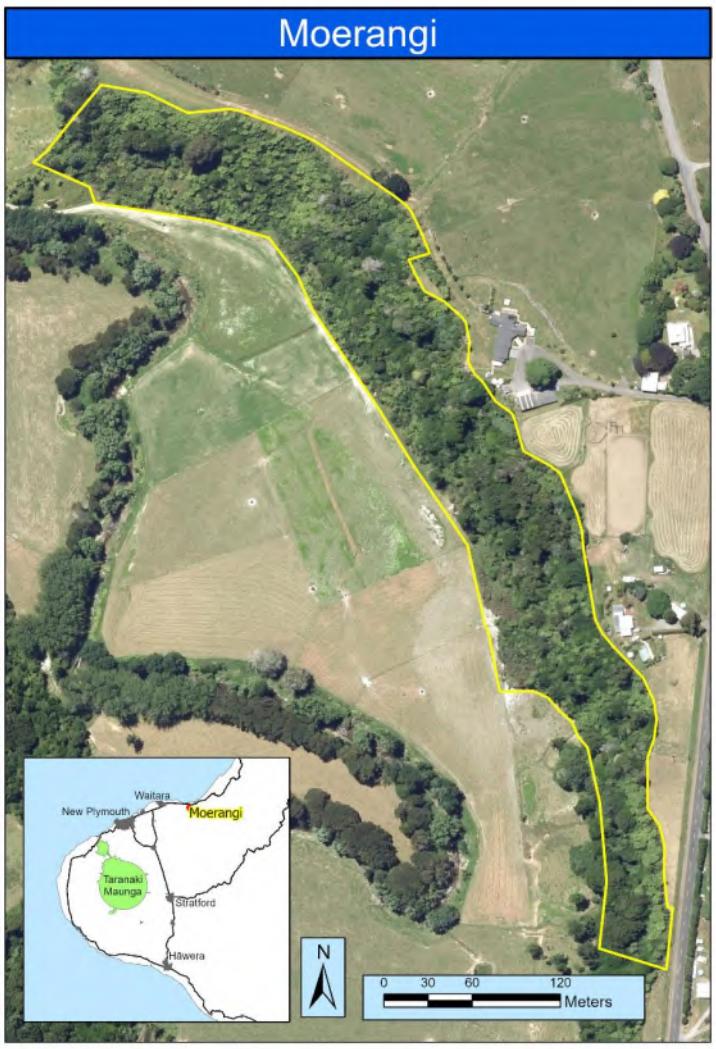
Ecological Values

Ecological Context - Medium	Close to and interconnected with other small forest remnants and riparian vegetation in vicinity.
Rarity and Distinctiveness - Medium	Provides habitat for and also likely to contain other notable fauna species including reptiles and invertebrates. Also contains rātā species which are listed as 'Threatened' flora due to the threat of myrtle rust.
Representativeness - High	Contains indigenous vegetation on C1.2a 'Acutely Threatened' LENZ environment. It is also an example of a forest type that is

	considered Chronically threatened in Taranaki (WF13: Tawa, kohekohe, rewarewa, hinau, podocarp forest). The site has been selected as a priority for management due to its connectivity between ecosystems in the area, from inland to the coast.
Sustainability - Positive	In reasonably good vegetative condition. Key ecological processes still influence the site. Under appropriate management, it can remain resilient to existing or potential threats.

Other Management Issues

Habitat Modification - Low	The site is fully fenced and protected with a QEII conservation covenant. There is no immediate risk of habitat modification. Previous habitat modification has occurred via planting and harvesting of exotic pine species.
Herbivores - Low	The site is entirely fenced from stock or restricted by topographical features i.e., a sheer cliff face on the southwestern end of the covenant. Possums, rabbits and hares are present and current control may not be effective to keep numbers low; the site is located outside of the possum self-help block.
Predators - Medium	Predators including rodents, mustelids, possums, feral cats and hedgehogs will be having an impact on native species at the site.
Weeds - Medium	*Tradescantia* is common throughout the site, but other invasive plants are more scattered. Gorse and other pasture weeds occur in forest gaps and near the edge of the covenant.



Harold's Bush

At a glance

TRC Reference: BD/9764

Ecological District: North Taranaki

Land Tenure: Private

Area(ha): 34.5

GPS: 1721208X & 5678568Y

Habitat: Forest Remnant

Bioclimatic Zone: Semi-Coastal

Ecosystem Type: WF13: Tawa, kohekohe, rewarewa, hinau, podocarp forest

LENZ: F1.1b Less reduced, better protected
F7.2a At risk
F5.2a Acutely threatened

National: Priority 4 – Threatened Species

Regional: Key Native Ecosystem

Regional Ecosystem Loss: Chronically threatened 10-20% left

Protection Status: QEII Covenant

Catchment: Onaero (398)

General Description

Harold's Bush QEII covenant is located on private land, approximately 4.8km south of Urenui in North Taranaki. The remnant is comprised of mature semi-coastal forest and regenerating bush and includes one unnamed tributary of the Mangapoua stream, near the centre of the Onaero catchment. The covenant is situated in close proximity to Ben's Bush KNE and Hickman Road (Luxton) KNE.

Ecological Features

Flora

This covenanted area contains a good quality example of semi coastal/lowland mixed tawa forest (WF13). Less than 20% of this type of forest remains in the Taranaki region. Some of the forest is mature with a canopy consisting of tawa, miro, pukatea, rewarewa, puriri and rimu. The site contains two species of threatened climbing rata and is likely to include other notable species such as king fern. The understory and ground cover in the forest is in fair condition, likely due to feral goats and occasional stock incursions.

Fauna

Native birdlife recorded in and around the remnant include the kereru, grey warbler, fantail, bell bird, tui, morepork, kingfisher and shining cuckoo. There is good habitat for a range of reptiles and invertebrates. Native fish and bats may also be present.

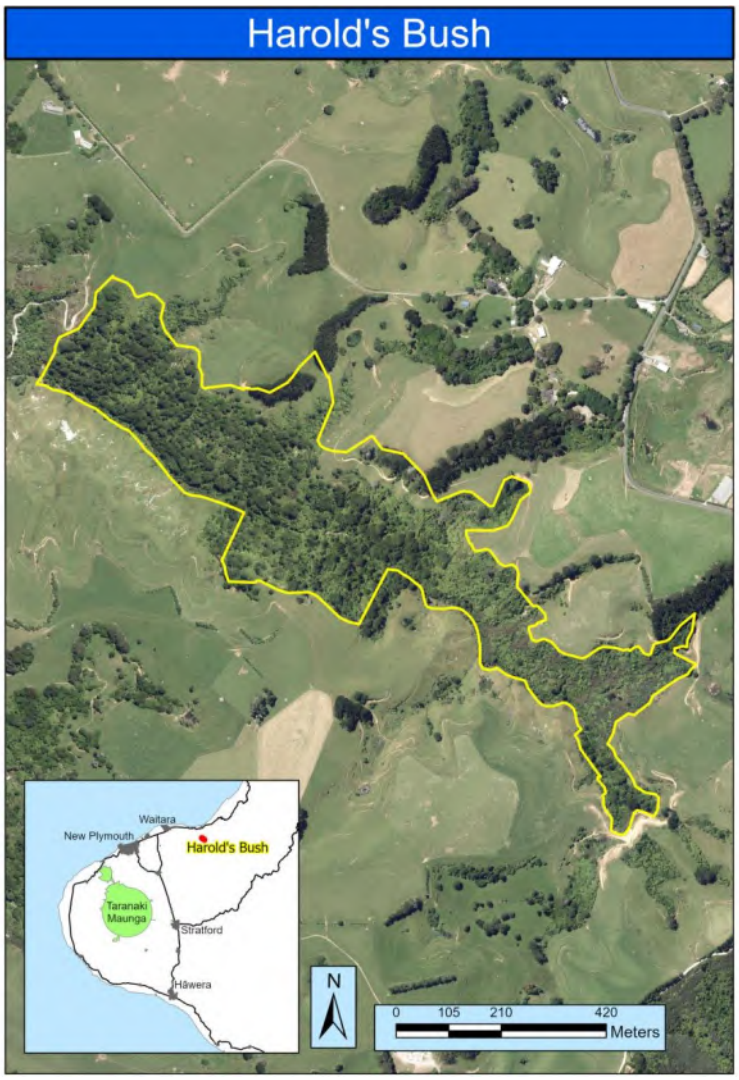
Ecological Values

Representativeness - High	The remnant is a good example of a forest type that is considered Chronically Threatened in Taranaki (WF13 Tawa, kohekohe, rewarewa, hinau, podocarp forest). Less than 20% of this type of forest remains in the region. The site also contains vegetation on acutely threatened land environments (F7.2a and F5.2a). These land types have largely been cleared for agriculture. Remnant and regenerating native vegetation in these areas provide important habitat and ecological stepping stones for indigenous species in the landscape.
Sustainability - Positive	In good vegetative condition. Key ecological processes still influence the site although continued pressure from goats and possums may compromise forest regeneration.
Ecological context - High	Provides well forested cover for tributaries of the Mangapoua stream as well as additional habitat and greater connectivity with

	other Key Native Ecosystems in this area such as the Hickman Road (Luxton) KNE and Ben's Bush KNE.
Rarity and Distinctiveness - Medium	Provides habitat for, and also likely to contain, other notable fauna species including native bats, reptiles and invertebrates. Also contains two climbing rata species listed as 'Threatened' and Manuka which is listed as 'At Risk'.

Other Management Issues

Habitat Modification - Medium	Feral goat browsing has modified accessible parts of this remnant. Fencing repairs and maintenance, and feral goat control will reduce this risk.
Weeds - Low	Weeds are currently a low threat at this site with scattered invasive species present including woolly nightshade, montbretia, pampas grass and blackberry which are mainly isolated to edge understory.
Predators - High	Rodents, mustelids, possums and feral cats are present and will be having an impact on native species.
Herbivores - High	Browsing by possums, stock, and goats pose a high risk to the regeneration of this remnant.



Kawaiti

At a glance

TRC Reference: BD/9756

Ecological District: Matemateāonga

Land Tenure: Private

Area(ha): 343

GPS: 1728706X & 5615295Y

Habitat: Forest Remnant

Bioclimatic Zone: Lowland

Ecosystem Type: MF21: Tawa, kāmahi, rimu, northern rātā, black beech forest

MF7.2: Rātā, tawa, kāmahi, podocarp forest

MF7.3: Tawa, pukatea, podocarp forest

LENZ: F7.2a At risk

F1.3b Less reduced, better protected

National: Priority 4 – Threatened Species

Regional: Key Native Ecosystem

Regional Ecosystem Loss: Less reduced >50% left

At risk 20-30% left

Protection Status: Local Government

Catchment: Manawapou (347)

General Description

The Kawaiti forest site is located on private land, approximately 17 km east of Hāwera, in South Taranaki. The site is large (343 ha), and is a mixture of mature cutover native forest, regenerating native forest, and gorse reverting to native. Topography is mainly steep to very steep slopes leading down to the Ingahape Stream and stream tributaries in the upper Manawapou River catchment. The site lies within the Matemateāonga Ecological District. It is directly connected to the Tarere Conservation Area, providing very good connectivity between indigenous habitats in this area. Notable species have been recorded on site.

Ecological Features

Flora

The areas of old forest canopy are dominated by tawa with a mixed and varied range of other species, including pukatea, rewarewa, black beech, miro, matai, rimu, hīnau and kahikatea. The understory is dominated by unpalatable species, such tree ferns, mingimingi and tree daisy (*Olearia rani*). Younger regenerating areas are dominated by treeferns and māhoe amongst mānuka and gorse. Notable flora species are present including four species of threatened rātā.

Fauna

Native birds recorded at the site (on the day of assessment or by landowner/other parties in recent history) include tūī, bellbird, grey warbler, kererū, tomtit, long-tailed cuckoo, North Island brown kiwi, robin and whitehead. Long-tailed bats have been confirmed present. The site contains habitat for, and may contain other notable fauna including reptiles, native fish and invertebrates.

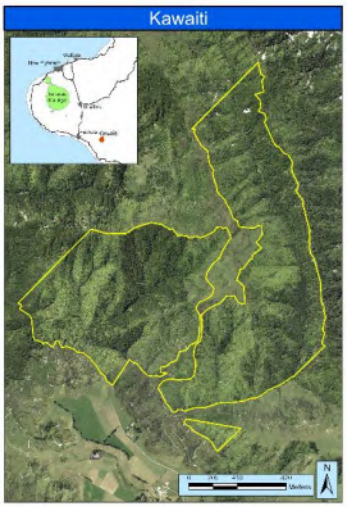
Ecological Values

Ecological context - High	Provides connectivity to other habitats in the area. Provides habitat for the North Island brown kiwi, long-tailed bats and other notable fauna and flora.
Rarity and Distinctiveness - High	Contains notable species including North Island brown kiwi, long-tailed bat, long-tailed cuckoo, and species of rātā. Other notable flora and fauna are likely to be present.
Representativeness - Medium	Contains indigenous vegetation mostly in an area classified as F1.3b "Less reduced, better protected", but some indigenous

	vegetation in an area classified as F7.2a "At risk" (LENZ) - where less than 30% indigenous vegetation remains. It also contains an example of MF7-3 "Tawa, pukatea, podocarp" forest type, which is considered "At Risk" in Taranaki, with less than 30% of its original extent remaining. Native biodiversity in these areas is greatly depleted and under threat from continued habitat fragmentation.
Sustainability - Positive	In reasonable vegetative condition considering the location of the site (hill country, adjacent to conservation estate). The site size and condition ensure key ecological processes still function. Under appropriate management, this site can remain resilient to existing or potential threats.

Other Management Issues

Habitat Modification - Medium	Historic vegetation clearance has modified large tracts of this site but it is now regenerating. Limited stock grazing and herbivore browsing has also modified some parts of this remnant. The soil and underlying geology of the site make the area potentially at higher risk from erosion.
Herbivores - High	Browsing by stock, goats and deer pose a high risk to the regeneration of this remnant. Pigs are also present, and possums in lower densities. Occasional deer, goat and pig control is undertaken, however, the site is large and well-connected to extensive habitat for these pest species, so re-incursion will be ongoing. Stock are excluded from some areas of bush, but fencing is marginal or non-existent in others.
Predators - High	Rodents, mustelids, hedgehogs, possums and feral cats are present. Possums, however, appeared to be in unusually low numbers. Threatened species at this site are highly sensitive to introduced predators. A number of trap lines (targeting rodents, cats and mustelids) have been installed and the landowner services these regularly. More predator control work may be completed in the future.
Weeds - Low	Weeds are currently a low threat to this site, with only occasional woolly nightshade and Himalayan honeysuckle being the main threats. Large areas of gorse are present, but this is acting as a good nursery for regenerating native seedlings, and reversion to native vegetation is well underway in these areas. The gorse will be outcompeted by native vegetation in time.



A&P Bush Remnants

At a glance

TRC Reference: BD/9769
Ecological District: Egmont
Land Tenure: Private
Area(ha): 1
GPS: 1710553X & 5646209Y

Habitat: Forest Remnant
Bioclimatic Zone: Lowland
Ecosystem Type: WF8: Kahikatea, pukatea forest

LENZ: F5.2a Acutely threatened
National: Priority 1 – Threatened Land Environment
Priority 4 – Threatened Species
Regional: Key Native Ecosystem
Regional Ecosystem Loss: Acutely Threatened <10% left
Protection Status: QEII Pending
Catchment: Patea (343)

General Description

The A&P bush remnants are located on the north east margin of the Stratford township in central Taranaki and lie in the Egmont Ecological District and Patea River catchment. They cover approximately 1ha in total and are made up of three remnants in close proximity to each other that are currently in fair to poor condition. The remnants are in urgent need of management and restoration including a buffer where possible to avoid complete loss over time. Threatened flora species are present and the site provides additional habitat and connectivity to the Te Kapua Park KNE very nearby (<170m).

Ecological Features

Flora

The forest canopies are a mix of dryland and wetland species including kamahi, tawa, hinau, kahikatea, pukatea and occasional exotic tree species such as sycamore. The understory and ground cover is sparse to absent although recent recovery is evident in the larger remnants due to stock management. Notable threatened species include swamp maire and two species of white rata.

Fauna

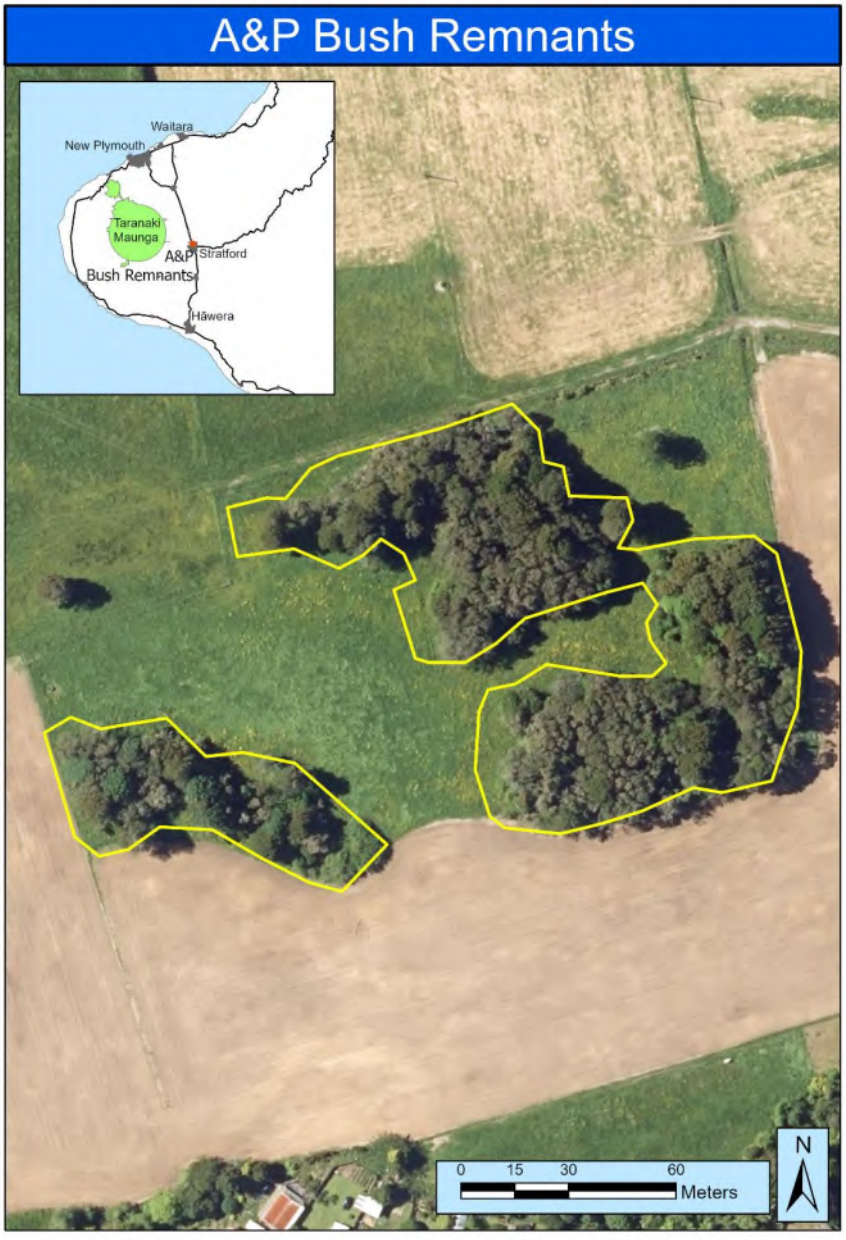
Native birds confirmed present include tui and grey warbler. Other native birds are likely to be present or use this area such as kereru, fantail, kotare, silvereye, shining cuckoo and morepork. There is occasional habitat for native reptiles including the forest canopy, loose bark, epiphytes, logs on the forest floor and leaf litter. Notable reptile species are known in the area and may be present at this site.

Ecological Values

Sustainability - Negative	Without intervention, this site is not sustainable. With appropriate management and restoration to bring the remnants together, key ecological processes can be restored to make the site more resilient.
Representativeness - Medium	Is a remnant of native forest classified as an 'Acutely Threatened' land environment and an 'Acutely Threatened' ecosystem type (WF8: Kahikatea, pukatea forest).
Rarity and Distinctiveness - Medium	Contains three 'Threatened' flora species: (two species of climbing rata and swamp maire). Provides habitat for, and also likely to contain, other notable fauna species including reptiles and invertebrates.
Ecological Context - Medium	Provides connectivity to other habitats, KNE's and priority ecosystems in this vicinity.

Other Management Issues

Possum Self-help	The property is within the possum self-help area and receives occasional possum control.
Predators - Medium	Predators including rodents, mustelids, possums, cats and hedgehogs will be having an impact on native species at the site.
Weeds - High	Environmental weeds are present including sycamore, cherry, holly, barberry, Darwin's barberry, willow and blackberry.
Herbivores - High	Potential high risk from browsing on the northern end bordering the farmland. Other margins border the road or urban housing.
Habitat Modification - Medium	Historic and ongoing modification due to lack of fencing and stock damage, but with a QEII covenant pending, this will soon be minimized through new fencing.



Stony River Block

At a glance

TRC Reference: BD/7065

Ecological District: Egmont

Land Tenure: Private

Area(ha): 7.3

GPS: 1679391X & 5656281Y

Habitat: Forest Remnant

Bioclimatic Zone: Lowland

Ecosystem Type: VS5.2, Northern rata, kamahi forest

LENZ: H1.3a Acutely threatened

National: Priority 1 – Threatened Land Environment

Priority 4 – Threatened Species

Regional: Key Native Ecosystem

Regional Ecosystem Loss: Acutely Threatened <10% left

Protection Status: QEII Covenant

Catchment: Hangatahua (Stony) (380)

General Description

Stony River Block is located approximately 6km south-east of Okato in the Egmont Ecological District and is adjacent to the Hangatahua/Stony river. The covenant sits on an elevated river terrace and runs alongside a bush remnant on a lower river terrace which lies on public land. The covenant covers 7.3ha of 'At-Risk' VS5-2, Northern rata, kamahi forest on an Acutely Threatened land environment, and has been identified as a priority representative site for management. The remnant has a direct connection with Te Papakura o Taranaki through the adjoining Blue Rata Scenic Reserve and has good connections to nearby KNE's including Bruce's Bush, Danny's Pond and Honeyfield's Bush.

Ecological Features

Flora

On the upper river terrace, the forest canopy is low and dominated by kamahi, mahoe and pigeonwood with large tawa trees scattered throughout. Large podocarps are absent but there are emergent northern rata toward the southern boundary adjoining with Blue Rata scenic reserve. The understory is vigorous in most places and palatable species such as kanono and a range of ferns are present. There are occasional stands of kohekohe with dense canopies and a less developed understory. The lower river terrace is frequently disturbed by flood and contains many early successional species such as mahoe and wheki, but also a number of established pukatea outside of the river channel.

Fauna

A number of common bird species are present in the covenant including kereru, tui, piwakawaka, rironiro and kotare. Birds present in Te Papakura o Taranaki that may also visit the site include whio, miromiro, korimako and toutouwai. Although no reptiles have been observed on site, good habitat exists for these.

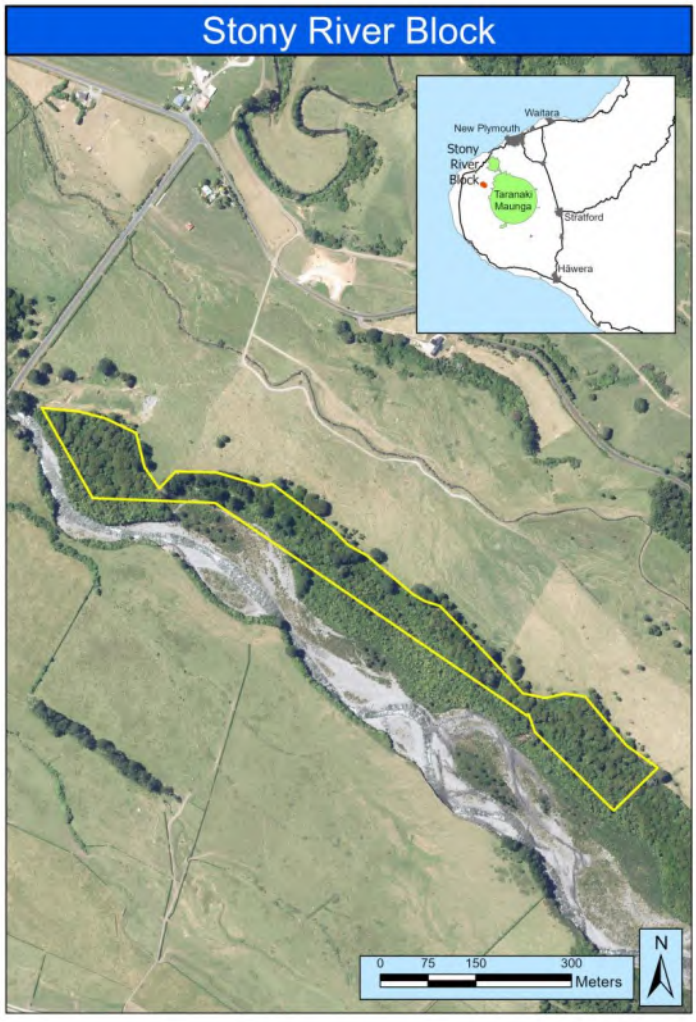
Ecological Values

Ecological context - High	Direct connectivity to Te Papakura o Taranaki via the Blue Rata reserve. Also in close proximity to other KNE's such as Bruce's Bush, Danny's Pond and Honeyfield's Bush.
Rarity and Distinctiveness - High	Includes four species of 'Threatened' rata, notably including terrestrially established northern rata which are very uncommon elsewhere in the region.
Representativeness - High	Contains indigenous vegetation on an 'Acutely Threatened' (LENZ H1.3a) land environment. A good example of VS5-2, Northern rata, kamahi forest and a rare example of terrestrially established northern rata within Taranaki.

Sustainability - Positive	The site is well fenced and regenerating well with prolific seedlings and saplings present. Key ecological processes influence the site. Under appropriate management, the site will remain resilient to existing or potential threats.

Other Management Issues

Habitat Modification - Low	The site is fully fenced and protected with a QEII conservation covenant. There is no immediate risk of habitat modification.
Herbivores - Medium	Fenced from sheep and cattle, however the site is prone to invasion from possums.
Possum Self-help	The property falls within the Possum Self Help Area and is subject to possum control rules as detailed in the Pest Management Plan for Taranaki.
Predators - Medium	Predators including rodents, mustelids, possums, feral cats and hedgehogs will be having an impact on native species at the site.
Weeds - Medium	A stand of large pines within the covenant are beginning to spread. There is also a stand of bamboo and large patches of agapanthus and montbretia in this area. Japanese honeysuckle and blackberry are present along the lower river terrace. Gorse, barberry and flowering cherries are also present around the site.



Redbranch Bush

At a glance

TRC Reference: BD/9760

Ecological District: Egmont

Land Tenure: Private

Area(ha): 16

GPS: 1691948X & 5639826Y

Habitat: Forest Remnant

Bioclimatic Zone: Lowland

Ecosystem Type: MF7.2: Rata, tawa, kamahi, podocarp forest
MF8.2: Rimu, rata, kamahi forest
MF8.3: Kahikatea, rimu, kamahi forest

LENZ: F5.2a Acutely threatened
F5.3a Less reduced, better protected

National: Priority 4 – Threatened Species
Priority 1 – Threatened Land Environment

Regional: Key Native Ecosystem
Representative site for management

Regional Ecosystem Loss: Less reduced >50% left
Reduced 30-50% left

Catchment: Otakeho (356)

General Description

Redbranch Bush is a medium sized (16ha), privately owned remnant of cut over/regenerating lowland forest, located on the southern edge of Te Papakura o Taranaki/Egmont National Park. The remnant is undulating with the Otakeho Stream flowing along the eastern boundary. The vegetative layers are in good condition, with several notable species present, and sparse evidence of pest animals. Direct connectivity to the National Park and existing biodiversity efforts there add advantage to what is already a highly valuable and representative piece of forest.

Ecological Features

Flora

The forest canopy is dominated by tawa and kamahi, with occasional kahikatea and rata. The understory and ground cover is mainly intact and is a mix of kanono, mahoe, hinau, pigeonwood, tree ferns and ground ferns. Native climbers and epiphytes are common and include native jasmine, muehlenbeckia, perching lily, tank lily and native orchids. Three species of threatened rata and the threatened waiwaka/swamp maire are also present and are notable for the site.

Fauna

Native birds confirmed to be present include titipounamu, kereru, tui, welcome swallow, kahu, shag, ruru, miromiro, rironiro, kotare, koekoea and piwakawaka. Likely to present is the threatened whio, which has been recorded during surveys further upstream. The site is likely to contain a variety of other native fauna including reptiles, native fish (noting that koaro have been detected in other parts of the catchment) and invertebrates.

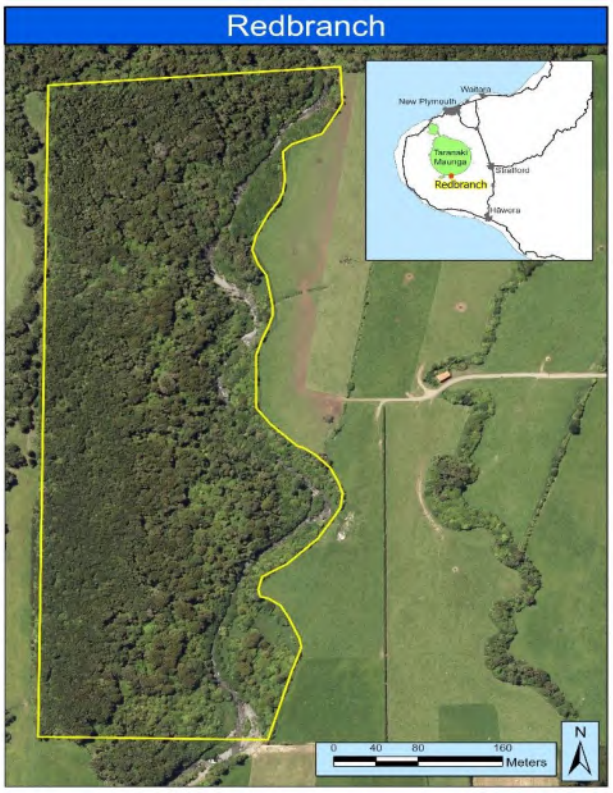
Ecological Values

Representativeness - High	Contains vegetation associated with an 'Acutely Threatened' (F5.2a) LENZ environment. The remnant is a good example of cutover MF7-2, Rata, tawa, kamahi, podocarp forest as it blends into MF8.2: Rimu, rata, kamahi at higher altitudes towards the national park. MF8-3: Kahikatea, rimu, kamahi is characteristic of the poorer drained areas. These forest types have been reduced by 30-65% from their original extent but are also well represented within Te Papakura o Taranaki.

Rarity and Distinctiveness - Medium	This site provides habitat for a variety of notable threatened flora species including rata and waiwaka/swamp maire. Fauna of note include the threatened koekoea/long-tailed cuckoo during spring and summer months and resident At Risk titipounamu/rifleman. Also likely to be present are koaro, whio/blue duck, tuna/long-finned eel, native reptiles and invertebrates.
Ecological context - High	Provides connectivity to other habitats via riparian corridors, and most notably it adjoins Te Papakura o Taranaki/ Egmont National Park.
Sustainability - Positive	In good vegetative condition. Key ecological processes still influence the site, and by maintaining existing management levels, it can remain resilient to existing or potential threats.

Other Management Issues

Weeds - Low	Minor infestations of weeds such as blackberry and barberry, primarily along the fringes
Predators - Medium	At the time of assessment possum densities were low (little sign/ low RTC) but will require ongoing management. Other predators including rodents, mustelids, feral cats and hedgehogs will be having an impact on native species at the site.
Possum Self-help	The property is within the possum self-help area and receives sustained possum control.
Herbivores - Low	Feral goats, pigs and deer are largely absent from the ring plain and believed to be functionally extinct from the neighbouring National Park. Potential high risk from stock browsing should existing fences become compromised.
Habitat Modification - Medium	Currently fenced and in good condition. Potential risk from stock breach and human modification.



AGENDA AUTHORISATION

Agenda for the Policy and Planning Committee meeting held on Tuesday 18 July 2023

Confirmed:

11 Jul, 2023 8:26:34 AM GMT+12

A D McLay

Director Resource Management

Approved:

11 Jul, 2023 9:22:00 AM GMT+12

S J Ruru

Chief Executive