

Nelson Biodiversity Forum Meeting
Held in the Council Chambers on Monday 8 June 2026
9.30am to 12.30pm

Meeting Minutes

ATTENDANCE:

Sky Davies (Tasman Environmental Trust) Chairperson	Janeen Collings (NCC)
Aaron Stallard (NCC)	Leigh Marshall (NCC)
Alec Woods (Boathouse Community Trust)	Lucy Garrett (The Nature Conservancy)
Charmayne King (Minute taker)	Marian McCay (NCC)
Chris McCormack (Brook Sanctuary)	Michelle Dublon (Kaitiaki o te Ngahere)
Clare Moore (QEII)	Phil Cochrane (NCC)
Dan Montgomery (Tasman Forests)	Richard Frizzell (NCC)
Dave Taylor (Kumanu)	Rob Brown (F&B)
Debs Martin (KMTT/TNC)	Scott Burnett (F&B/TET)
Ed Challies (WIF)	Scott Butcher (NCC)
Fraenzi Furigo (Forum partner)	Sean Handley (Earth Sciences NZ)
Fiona Eade (NT Climate Forum)	Shannon Holroyd (Port Nelson)
Gwen Struick (Friends of Nelson Haven, F&B)	Susan Moore-Lavo (Te Uru Rakau)
Helen Otley (DOC)	Tom Kennedy (Friends of the Maitai)
Hudson Dodd (The Nature Conservancy)	Vicky Smith (Art Ecology)

APOLOGIES:

Bradley Myer	Miang Lim
Leona de Ridder	Wayne O'Keefe
Missy Simpson	

Karakia Timatanga

Whakataka te hau ki te uru
Whakataka te hau ki te tonga
Kia mākinakina ki uta
Kia mātaratara ki tai
E hī ake ana te atakura
He tio, he huka, he hau hū
Tīhei mauri ora!

1. Welcome, apologies and introductions; emergency evacuation procedures

2. Approval of meeting minutes from previous meeting held on 2 March 2026

Meeting minutes of 2 March 2026 to be regarded as a true and correct record moved by Sky, seconded by Debs, carried.

3. Items under action

Who?	What?	When?	Item/Status
Coordinating group	To follow up with potential speakers for the next meetings:	Next meeting.	Ongoing. Can contact Sky or Leigh with ideas.
Missy Simpson	Add to minutes of last meeting: "Sky put her name forward as Chair for the next year and no further nominations were received. It was agreed Sky will continue as Chair."	Next meeting.	Completed.
Harry Allard	Provide CREST Portal report by email to Forum members.		Leigh to check if this happened.
All Forum members	The theme for our next meeting is lowland ecosystem - connectivity and those sorts of things. If you have any thoughts on topics to be covered, please get in touch with Sky. Any other ideas for future meetings, let us know.	Next meeting.	

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4. Meeting focus - Lowland ecosystems outcomes (Sky Davies)

Sky said we are trying to bring a theme forward for each meeting that connects to outcomes and objectives of the Strategy. The theme of our last meeting was freshwater and estuaries, for today's meeting it is lowland ecosystems which connects to several of the outcomes in our Strategy. Today we will hear from council staff and welcome The Nature Conservancy and KMTT team to talk about the work they have underway looking at restoring lowlands.

5. Presentations

5.1 Project Mahitahi lessons and next steps (Marian McCay)

Project Mahitahi is a collaborative environmental restoration initiative focused on the Maitai/Mahitahi Valley in Nelson. Our vision is establishing thriving and connected plans and wildlife within a functioning and connected ecosystem, and people and communities inspired to nurture and value the Mahitahi.

Mahitahi is the largest catchment in Nelson. Two of the biggest tributaries are Brook Stream and Sharlands Creek, as well as Packer Creek. It has historical significance as a navigational route. It is classified as lowlands but includes uplands. It has been highly modified over time into pasture and forestry. Work has been happening for a long time with Project Maitai, Maitai Ecological Restoration in 2020, Jobs for Nature funding, plus ongoing council programmes, with weed control, restoration planting, and protection.

Recent achievements: 152,000 native plants have been planted across 19.5 hectares; pest control over 128 hectares with over 3,300 predators trapped, crack willow control over 12.5 km, weed control over 26 hectares, and ungulate and possum control over 4,000 hectares.

The project has allowed community engagement and has raised the profile of the Maitai.

Lessons learned over five years:

- Jobs for Nature measured outputs not outcomes.
- Funding that included training was a major success.
- A minimum five-year timeframe is important as long enough to establish planting and do after care.
- The 2022 weather event showed us the problem of crack willow, and we ramped up removal and found that native plants that were hit hard bounced back quickly.
- The ERP was drafted in 2020 and having that ready when the opportunity for funding came along was very useful.

Leverage through funding - having resources to do the work. Collaboration is key including the governance group, iwi representatives, DOC, and volunteers. A whole catchment approach was needed. The ungulates issue was wider than just river margins.

What is happening? Funding has come to an end, but we can carry on working at a slower pace without that funding. Parks and reserves maintenance and recreational asset management, willow control programme, Nelson Halo Project, forestry transition, KMTT oversight and governance group remain in place.

Gaps and opportunities - monitoring outcomes, undertake activities on private land/iwi land and more inaccessible sites, willow control in tributaries, develop Integrated Catchment Management Plan - is an ideal outcome and don't have that at the moment, secure funding to scale up work beyond business-as-usual programmes.

Questions:

Q: Do you feel you could go backwards and lose some of the gains?

A: Yes, that is a risk. We have focussed on doing minimum required to maintain. We are not yet concerned about going backwards but it is very difficult to make significant jumps forward.

5.2 Ecological restoration plans for lowland reserves (Scott Butcher)

One of my projects is ecological restoration plans. We are developing plans for Paremata Flats and Wakapuaka Sand Flats. Our plans have often been inconsistent, so we are formalising a template to get more consistent structure for ecological restoration plans so there is consistency in how they look. Climate change considerations haven't been factored in, so we are doing that as well as iwi considerations. We have tried to integrate iwi considerations into a template to

inform other ecological plans as well. We have engaged consultants to develop the plans. Once the template is signed off and approved by all iwi, then we will move on to develop into plans themselves, so that is what is happening now.

One of things with EAPs is they are often strong in specific areas but weak in others, so we are trying to be more consistent across the range of groups that occur at sites. We have already got good data from the consultant who has been out in the field. Will be produced by July. Going forward, there are a few locations we are thinking about and know we need plans for, such as Tahunanui Beach, and revised plans for Oyster Island and Haulashore Island in the next financial year. We have had debate around whether we put in capital works and recreational interests, but we are trying to be clear these are technical documents that inform other plans.

Questions:

Q: Once you have a plan, how do you fund implementation?

A: Funding is from an operational budget, so already exists. We are trying to highlight clearly what is maintaining status quo and what is the budget for more work.

Comment: You need to make it clear this is needed. There may be several levels of funding.

A: What is maintenance and what will require substantively more funding will hopefully come out clearly in the plan.

Q: Will that come through in the Long-Term Plan?

A: Once completed it will be readily available to Councillors and the public.

Q: Do you see this mainly as a plan that informs council internal work, or is it identifying how you work with community for collaborations?

A: There are specific groups working in those zones. We would like to expose the plan to those groups - iwi, community groups. We will keep it quite targeted.

5.3 Nelson connectivity model, and state of lowland ecosystems (Phil Cochrane)

In 2006 Peter Lawless produced a technical report - Nelson Biodiversity Strategy. We looked at what we have currently and actions.

The current challenges are habitat loss including climate related habitat loss, historical loss, invasive species plants and animals.

Bigger patches support more species. Isolation affects species persistence. Connectivity allows populations to function as a system, not isolated fragments. Small, fragmented, and irregular patches are more affected by edge effects and are less resilient than larger connected patches. Small populations can go extinct.

In Nelson, lowland ecosystems are highly fragmented, and there are small, isolated patches. The hill country is larger and more intact, but pressures remain. Lowland ecosystems are the most vulnerable due to poor connectivity. Connectivity is critical.

The connectivity model shows how ecological connectivity was assessed in Nelson. WSP are reviewing this model for use under RM reform. It will be used to inform restoration. Connectivity is critical.

From 1996 to now, every few years the whole country is analysed for Land Cover ("Landcover database"). This is done 100 by 100 square metres, and there are many categories. Land cover has changed over time in Nelson. We took all information in GIS. There has been over 2000 hectares of change since 1996 - areas have gone from grassland to city, or forestry grassland into regenerated natives.

Since 1996 nearly half of regional land cover change has occurred in the lowlands. Recent urban development is not included. Spatial planning seems to lack mechanisms to protect lowland ecosystems.

Questions:

Q: In terms of connectivity, having indigenous species in those corridors would be ideal, but for buffered land would it not be a win where pasture is transitioned into forestry in terms of connectivity?

A: That is a difficult one, forestry is a hard solution. If you have plantation forest, it might be good for birds but may not be good for other species, so we were being precautionary in our approach. It is difficult with plantation forestry because it is on rotation. It is important to protect what is left in those areas.

Comment: We do need productive land.

Q: What was your threshold for lowland land?

A: We used potential ecosystems.

Q: Was there an overall elevation threshold?

A: No because potential ecosystems looks at all sorts of thresholds. Looking at what was there before is more useful.

Comment: Ecosystem lowlands was a 600-metre cut-off point in mapping.

Comment: At the last meeting there was a wetlands presentation, and it showed that the Kokoroa area is important for wetlands. When I look over the Nelson area, it is a place I don't hear a lot about. We often see the map of Nelson but don't go up to that area. I would like to highlight Kokoroa as a place that has a lot of potential. It is a place we could put a bit more focus into.

Sky commented that these ideas are some we could bring into a workshop session later where there may be gaps or opportunities.

Q: Apart from streams and rivers, are there other corridors that might not register, in terms of area, for fostering connectivity in urban rural fringe and lowlands?

A: Yes, but we are in 2026 and trying to do the best we can with the land we have got. Regarding corridors - if we really target, we will have to think hard, and this may be a role for KMTT because it looks across all land and not just public land.

Comment: One of the things we struggled with was that the terrestrial mapping connectivity via vegetation is straight forward, but what about coastal ecosystem species, boulder bank species, estuarine species? In some ways it feels like the vegetation component in mapping out connectivity fragments is easy, but it's hazier when looking at coastal fringe and species, then you have offshore and what happens to those species, so there are limitations.

5.5 Restoring lowland projects (Debs Martin, Hudson Dodd, Lucy Garrett)

Goals: Increase healthy native vegetation cover to 15%. Connect remnants via biodiversity corridors. Restore riparian and coastal margins. Improve climate resilience. Control problem pests and weeds.

Debs: In 2019 a Strategy was released, then covid came in 2020 and significant investment for Jobs for Nature came through. In 2022 Jobs for Nature was going to end and we needed to think about where to next. We did 23 full day workshops on a number of themes, and one theme was restoration of lowlands. As a result, we came out with an Implementation Pathway Plan that is structured similar to the NZ Biodiversity Strategy. It focussed on three components - getting systems right, empowering action, and key critical outcomes. The driver was that if we improve vegetation to 15%, we improve climate resilience and improve carbon dioxide sequestration. Some ecosystems across the region are less than 1%. Nature Conservancy brought global expertise.

Hudson: KMTT set a target of 15% restoration. This is a rough threshold that can be sustained over time. We set a 500 metres above sea level threshold for lowlands. We settled on a large pilot area for exploring these approaches to restoration, settling on Motueka Estuary and Tasman District which is a larger project we are working on.

The purpose of the project is to look at what is possible to restore our native ecosystems at scale. We developed a spatial model to achieve this that looks at a whole range of factors to identify priority areas for restoration. Resources are limited. We commissioned a spatial model, developed by WSP with input from KMTT partners. It is complex and sets out 42 different data sets into six different sub models.

The model shows revegetation potential and prioritisation where you might invest in lowland restoration. Wairau and Motueka catchments are large areas that stand out.

The model clearly shows prioritization of riparian and river zones. Opportunities for connectivity are visible on the landscape. We have got a lot of fragmentation. There is a lot of gaps in-between, and the goal is to use this tool for planning

projects and directing limited resources. Is available for KMTT partners to use in their planning work.

Debs: We will be hosting this tool eventually. It is available to NCC, and they can use it to work with any groups they wish to, to help prioritize restoration work.

Question:

Q: Looking at lowland of the catchment, talking about connectivity of restored areas, not lowland but steep land that is not suitable for production forestry, if you included steep areas there's a high potential for native restoration in corridors. Would that improve the map?

A: The purpose of this tool is to look at the most depleted ecosystems which is the lowlands. The idea is for councils and KMTT partners to use it with other overlays to provide a bigger picture.

Hudson: Assisted Natural Regeneration (ANR) is highly site specific and only works where some native regeneration still exists. We partnered with local landowners Cable Bay Adventure Park. The site included 15 hectares of cleared pine plantation with five years regeneration. We explored the use of drones to deliver precision application of herbicide to assist natural regeneration. Early observations were widespread germination of wilding pines and old mans beard.

We trialled ground control versus drone-based control which is limited in terms of range and only useful for country sites like this. Conditions for this site created clear restoration opportunity to trial different methodologies. We set up the trial with Elliot Easton and focussed on suppressing wilding pines and old mans beard. The management objective was suppression to a level where native species could dominate the canopy. Approximately. 2 hectares of ground-based control targeting wilding pine and old mans beard control which required 104 crew hours. Ground based was constrained by dense gorse, steep terrain, and severely limited suitability. Key learning was that ground-based control is costly and limiting.

The application of drone technology is very much in its infancy; there are so many things not known and the technology is not made for this. A key factor is low pump pressure; you need strong pump pressure to deliver targeted herbicide, and drones are not up to it. Monitoring is key to measure success, but it is in the early stages. We have established photo points and will be doing both ground and drone monitoring going forward. There is some off target kill when using a drone.

Questions:

Comment: With the issue of targeting just wilding pines with a drone, there is an issue with the drone creating air current. One other potential option is instead of targeting an individual tree, creating an island space in the middle of weeds to clear off vegetation and become your regeneration space and use as stepping stones through the landscape - another way to use this technology.

Q: What chemical were you using?

A: We trialled different options and settled on a main chemical used for wilding pine control, but I can't remember what it is called.

Q: Did you consider using them to carve a path through the gorse so ground crew can get in? MPI wilding pine control programme are also doing drone work did you work with them?

A: We did an initial literature review, but time frames required us to move forward as fast as we could. There is no shortage of research opportunity to pull together what is being done nationally.

Hudson: Choice modelling study for restoration - achieving restoration scale requires that we work on private land. Many landowners are substantial barriers to control on their land. There is a need for more targeted evidence to inform the design of incentive programmes that support native vegetation on private land in ways that are both ecologically effective and attractive to landholders. We have undertaken research quantifying minimal compensation for landowners to enrol their land.

We held interviews with landowners in person and sent out a wider email survey. Of the survey respondents, 601 respondents started the survey and 403 completed it. This corresponds to an overall response rate of 40% and a completion rate of 67% amongst those who started the survey. The results are still being analysed.

Lucy: Unlocking sustainable financing for lowland restoration. How we can scale restoration, specifically how we can finance. There is a huge opportunity for highly modified lowland systems with a high restoration potential. There are significant economic industries engaged in the landscape. The region is ideal for investment with measurable benefits, but the challenge is that restoration is expensive and there will be a long-term need for maintenance which is also expensive. Public funding through grants is achievable but limited. There is a mis match where everyone is benefiting but landowners are bearing greater cost.

The shift from funding to financing restoration. Different streams can support different types of restoration. Market revenue, council, impact capital, water funds, philanthropy, insurance iwi investment, industry beneficiaries - all are important but not finite. We are looking to see how we shift to on-going revenue streams. The catchment approach integrates multiple sectors to finance restoration. We are looking at how we finance this integrated programme.

Sustainable financing pathway - the aim is to explore optimal targeting and financial feasibility of restoration in Motueka, Moutere and Riuwaka catchments. Pilot catchment scale restoration. Co-design iwi-council-industry partnerships for catchment scale governance and investment mechanism.

Question:

Q: For Choice modelling, when will the final report be out?

A: By end of the month.

6. Forum discussion: Gaps and opportunities for protecting and restoring Nelson lowlands (facilitated by Sky Davies)

Sky asked everyone to think about where collective effort can make the biggest difference for Nelson's lowland efforts over the next 2-3 years. Everyone was asked to write down their individual ideas, then break into groups to discuss a top gap and top opportunity.

Results:

Opportunity	Gap
Relationships - breaking down barriers between industry and community groups.	Funding.
Importance of community - getting the community involved.	Retaining the original plan (long-term, integrated, continuous).
Need for long-term funding models, e.g. local offset opportunities like NCC forestry reversion.	Maintaining the benefits, e.g. Project Mahitahi.
Landscape scale - whole of catchment needs whole of community. Ideas sell well to community.	Leveraging all existing investments.
Whangamoia and Wakapuaka - opportunities for restoration.	Using the tools, financing, storytelling.
Opportunities in developments, e.g. kaka.	NCC weed budget reinstated - new weeds.
Aggregating and connecting between projects and between people, including private landowners.	
Understanding better the benefits of ecosystem services and share (for public/community).	

Key themes coming through:

Understanding and connecting community.

Lost cost from stopping and starting projects. Maintaining the gains.

Working in a larger integrated way across the catchment.

7. General business

7.1 NCC Long Term Plan process and discussion (Leigh Marshall)

There is a lot going on - Long Term Plan 2027-2037 (LTP), RM reform, local government reform, NCC shaping our future, election on 7 November 2026.

Long term plan and activity management plans - it is a 10-year plan that is updated every three years. It outlines council's activities, functions and responsibilities, asset and service planning, defines levels of service, provides work programmes and budgets used in the LTP. A lot of discussions and workshops are happening. The LTP is consulted on and is being developed as a public facing document.

In early May there was a council meeting where strategic priorities were discussed. The community wanted environment to be added as a strategy priority in the LTP and it has now been included. The draft LTP will be finalised at the end of the year. Early next year there will be public consultation, submissions, hearings and deliberations. The LTP is to be adopted in June and will be live on 1 July. The next review will be the following year.

7.2 NBF Marine Subgroup update (Fraenzi Furigo)

Summary of last meeting - eDNA in coastal areas was presented and is a big ongoing project. Details are in the minutes which are online. There was an update from the Waimea Inlet Forum on Action Plan work - a draft to be completed by end of June. Al Alder from Cawthron Institute talked about artificial reefs, and we had a marine biosecurity update from Richard Frizzell. We had an update from Debs on two new project managers.

Our group was always a subgroup, and we discussed changing the name of the group to "Te tai o Aorere Marine Biodiversity Forum". I would like to ask if the Forum is agreeable to this name change.

Motion put forward to change the name of the marine subgroup to Te tai o Aorere Marine Biodiversity Forum.

There were no concerns. The new name will be established.

We were to have a meeting on 16 June but had a late cancellation and now only have two speakers. We may need to postpone the meeting to October. This will be confirmed.

8. Any other business

Sky acknowledged council staff and how much they are juggling and we appreciate their support.

9. ACTION ITEMS (ongoing and new) FROM THIS MEETING

Who?	What?	When?	Item/Status
Coordinating Group	To follow up with potential speakers for the next meetings.	Next meeting.	Ongoing
Fraenzi	Confirm if the next meeting of the marine subgroup will be postponed to October.	Before 16 June.	

Leigh	Check with Harry Allard whether he provided the CREST Portal report by email to Forum members.	Next meeting	
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Closing comments and karakia

Karakia Whakamutunga

Kia whakairia te tapu

Kia wātea ai te ara

Kia turuki whakataha ai

Kia turuki whakataha ai Haumi e, Hui e, Tāiki e!

Meeting closed 12.30pm

Next meeting

Venue: NCC Council Chambers **Time:** 0930 - 1230

Date: 7th September 2026

Attachments:

Project Mahitahi Presentation - Marian McCay

Ecological Connectivity in the Nelson Region and State of Lowland Ecosystems - Presentation - Phill Cochrane

TNC Aotearoa NZ - Presentation - Debs Martin, Hudson Dodd, Lucy Garrett.

Restoring Lowlands: Project Mahitahi

Project Mahitahi Vision

The Mauri (or life force) of the Mahitahi is restored- ki uta ki tai – so that native plants and wildlife can thrive within a functioning and connected eco-system and people and communities are inspired to nurture and value the Mahitahi as a taonga for past, present, and future generations.



Outcome 2 Rare and representative examples of native communities are protected and restored.

Intermediate Outcome 2.1 - At least 10% of the original area of all terrestrial ecosystems is functioning, connected, and resilient in a changing climate

Actions

2.1.1	Protect and restore existing alluvial, riparian and coastal ecosystems of the Maitai Valley and the urban area of the city, Wakapuaka Valley and Delaware Bay including Paremata Flats, and Whangamoa Valley including the Kokorua dune complex. (Lead: Nelson City Council)
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Outcome 3 Indigenous biodiversity is ecologically connected to sustain its functioning.

Intermediate Outcome 3.1 - Biodiversity corridors connect hill to coastal ecosystems

Actions

3.1.1	Identify ecological connections and linkages from hills to the coast and support their protection and restoration. (Lead: Nelson City Council)
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We're on the way...

Project Maitai

Maitai Ecological Restoration Plan (ERP) 2020

- 61 'enhancement opportunities' identified
- 10-year timeframe
- Focused on riparian corridor

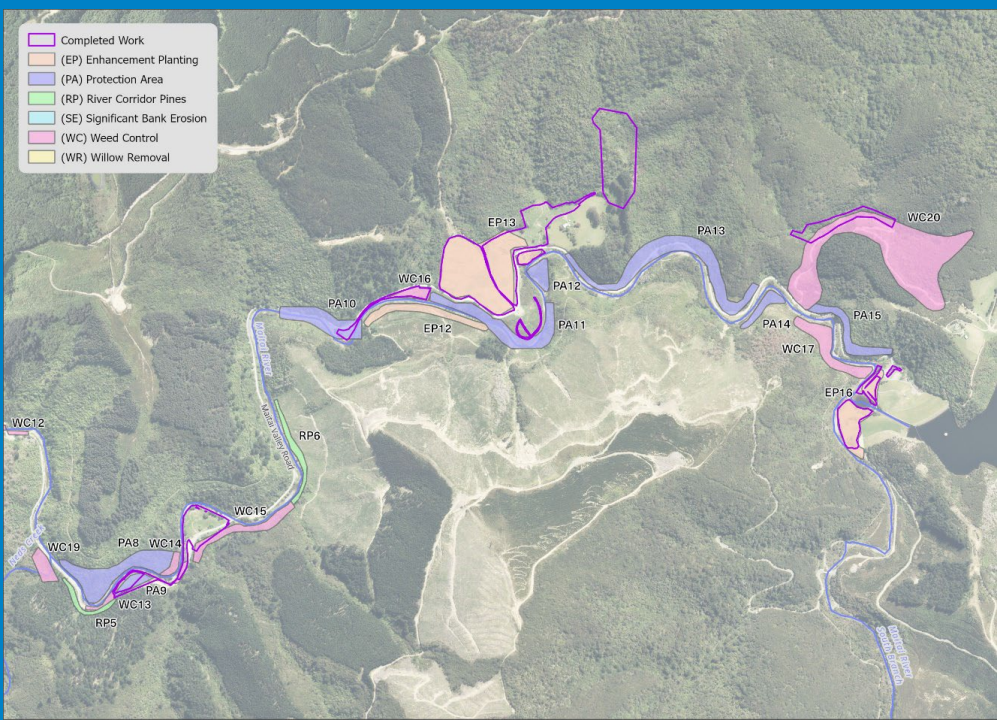
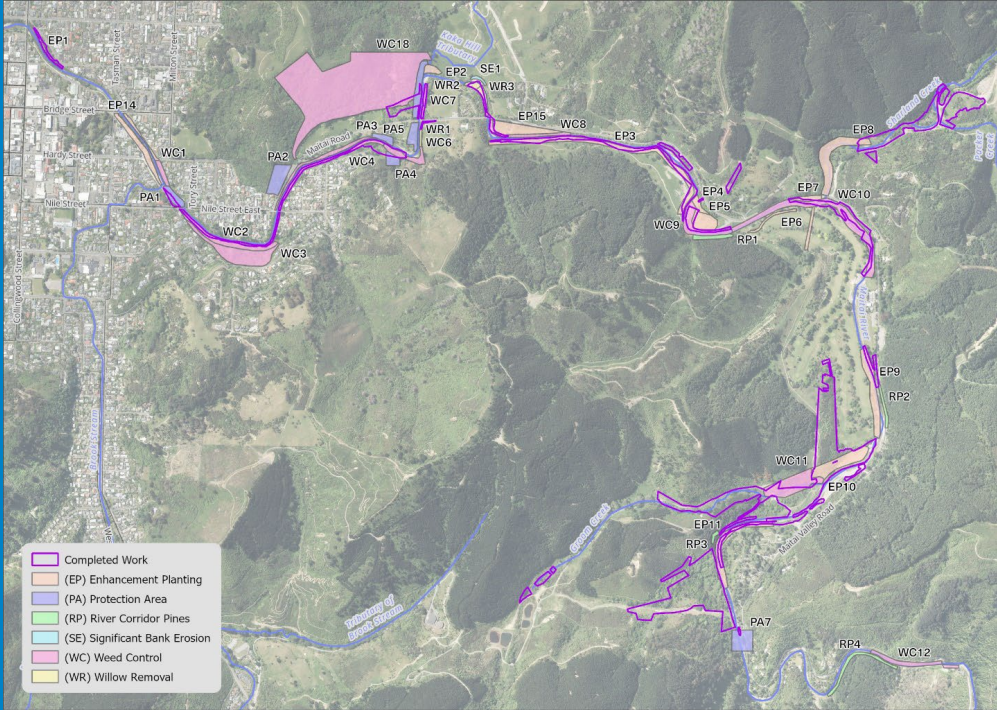
Jobs for Nature Funding + Ongoing Council programmes



Recent achievements...

- ✓ 45/61 ERP enhancement opportunities underway
- ✓ Community engagement in the Maitai

Native plants installed	152,000
Area of new planting	19.5 hectares
Pest trapping	128 ha / 2,000 pests
Crack willow control	12.5km
Weed control	26 hectares
Ungulate & Possum control	4,000 hectares





Lessons Learned...

- Jobs for Nature measured *outputs* not *outcomes*
- Funding that included training was major success
- Minimum 5-year time-frame important
- Impact of weather events
- Have a plan ready to go
- Leverage through funding
- Collaboration is key
- Whole-catchment approach needed

What *is* happening:

Council's ongoing and strategic work programmes include:

- Parks and Reserves maintenance & Recreation asset management
- Willow control programme
- Nelson Halo project
- Forestry transition
- KMTT oversight and Governance Group remain in place



Gaps and Opportunities:

- **Monitoring outcomes** – how to measure progress
- Undertake activities on **private/iwi land** and more **inaccessible sites**
- **Willow control** in tributaries
- Develop **integrated catchment management plan**
- Secure **funding** to scale-up work beyond business-as-usual programmes





Ecological Connectivity in the Nelson Region & State of Lowland Ecosystems



Phillip Cochrane
Nelson Biodiversity Forum
June 2026
Phillip.Cochrane@ncc.govt.nz



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City Council | Te Kaunihera o
Whakatū



Introduction

- Preamble
- Connectivity model (~10 mins)
- Lowland ecosystems (~10 mins)
- Patai (~5 mins)
 - Or morning tea ☺



Nelson
City Council

Te Kaunihera o
Whakatū



Nelson Biodiversity Strategy Technical Report



Peter Lawless and Sarah Holman
17 November 2006

THE lawless
edge

Nelson Biodiversity Strategy

Reviewed 2017/2018



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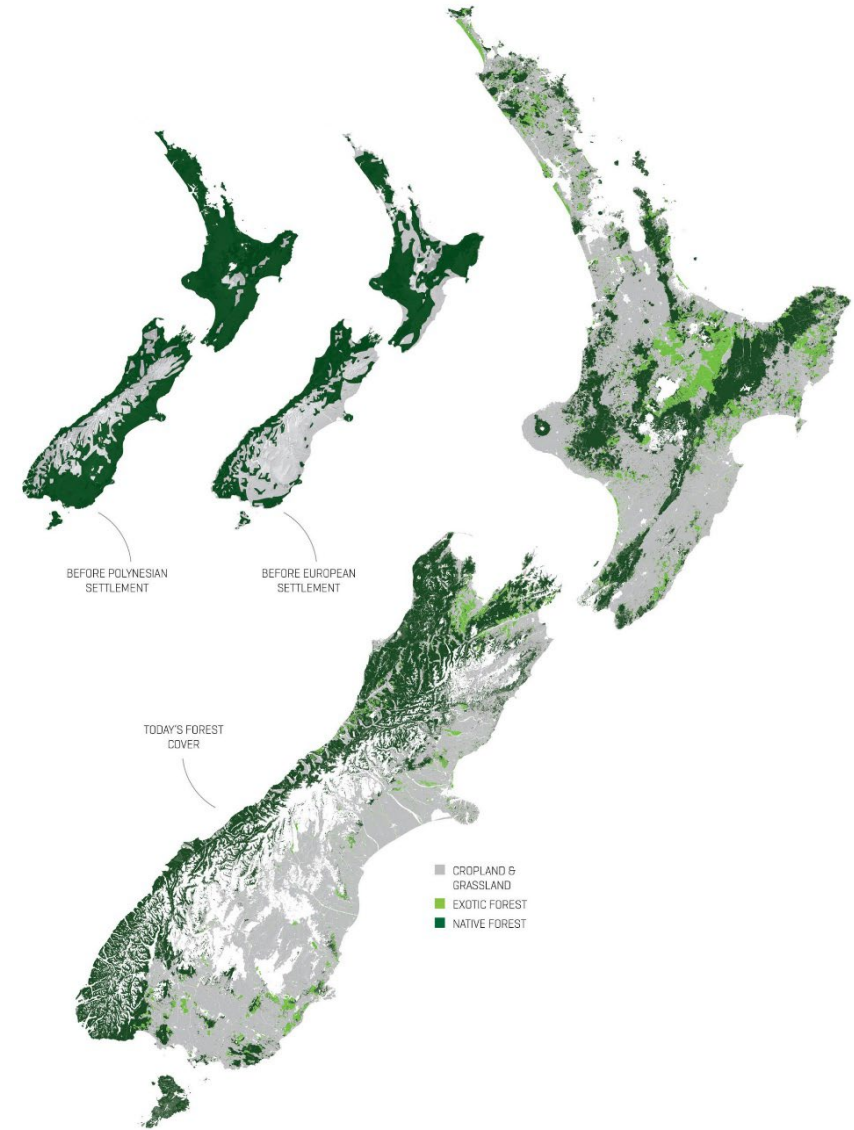


Goals	1 Active protection of native biodiversity. Ngā taonga tuku iho (the treasured resources), native species, and natural ecosystems of Nelson/Whakatū are protected and restored			
Objective	1 Ecological health, mauri, and wairua of natural ecosystems are sustained and native biological diversity is restored, enhanced and, where appropriate, connected			
Outcomes	1 Nationally and regionally threatened indigenous species are sustained or restored	2 Rare and representative examples of native communities are protected and restored	3 Indigenous biodiversity is ecologically connected to sustain its functioning	4 Degraded indigenous ecosystems are restored and then sustained
Intermediate Outcomes	1.1 Nationally and regionally threatened species are under active management	2.1 At least 10% of the original area of all terrestrial ecosystems is functioning, resilient in a changing climate, and connected	3.1 Biodiversity corridors connect hill to coastal ecosystems	4.1 The condition of indigenous hill country ecosystems is improved and their area increased
	1.2 - Predator free and predator suppressed areas are sustained as refuges for vulnerable species	2.2 - Diverse actions for marine ecosystem protection and recovery are underway...	3.2 - Impediments to freshwater flow and fish migration are removed	4.2 Ecological functioning, water quality, habitat, flows and values are further restored in all streams, rivers, wetlands, and estuaries
				4.3 Biological diversity, sensitive habitats, and biological communities are restored in greater Tasman Bay



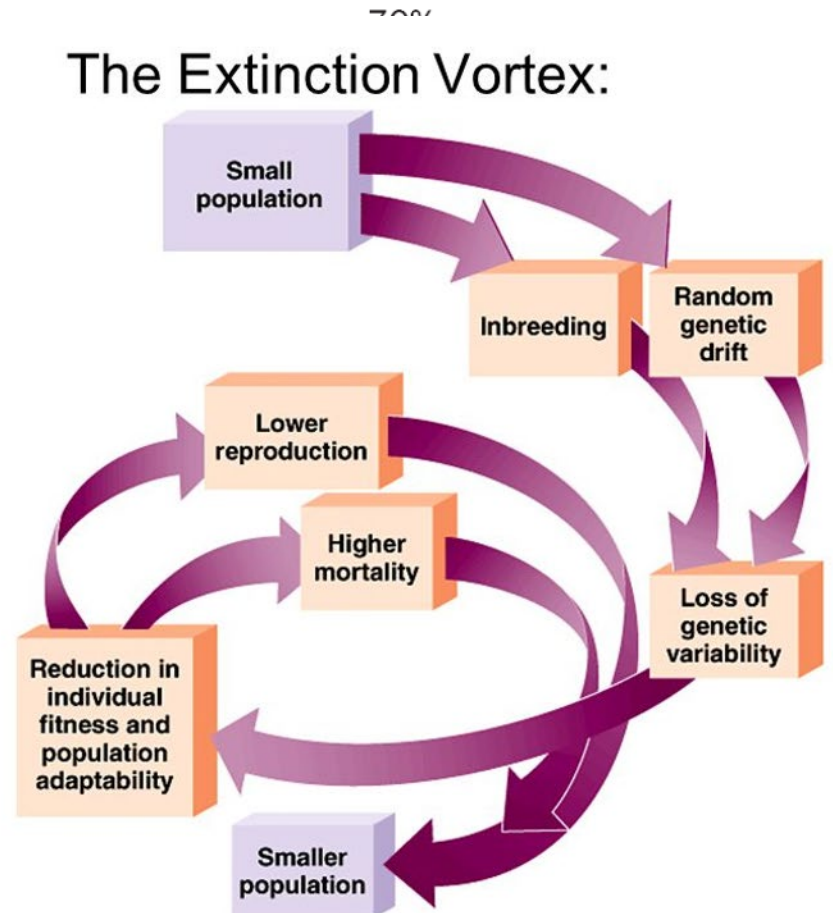
Setting the scene

- Habitat loss
 - including climate related habitat loss
- Historical loss disproportionately affected flatter, lowland and coastal ecosystems
- Invasive species
 - Plants
 - Animals
 - Browsers, predators, competitors



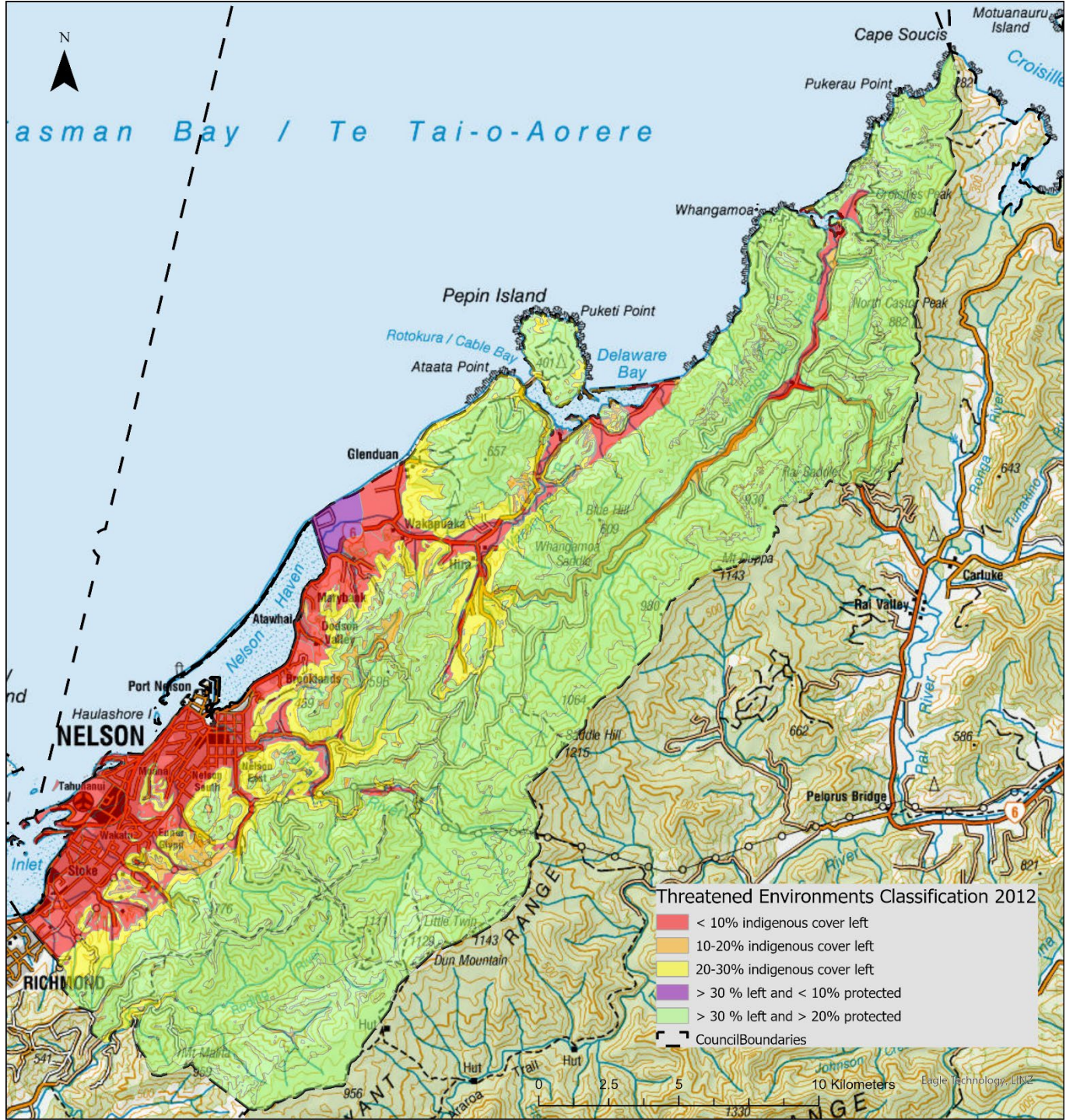
Species–area relationships

- Bigger patches support more species
- Isolation affects species persistence
- Connectivity allows populations to function as a system, not isolated fragments
- Small, fragmented and irregular patches are more affected by edge effects and are less resilient than larger connected patches
- Small populations can go extinct



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The edge to interior (i.e. core) ratio of a habitat patch is affected by patch shape. A more convoluted, irregular, or linear patch will have a higher proportion of edge. From Kennedy et al. (2003).





Nelson context

Lowland ecosystems:

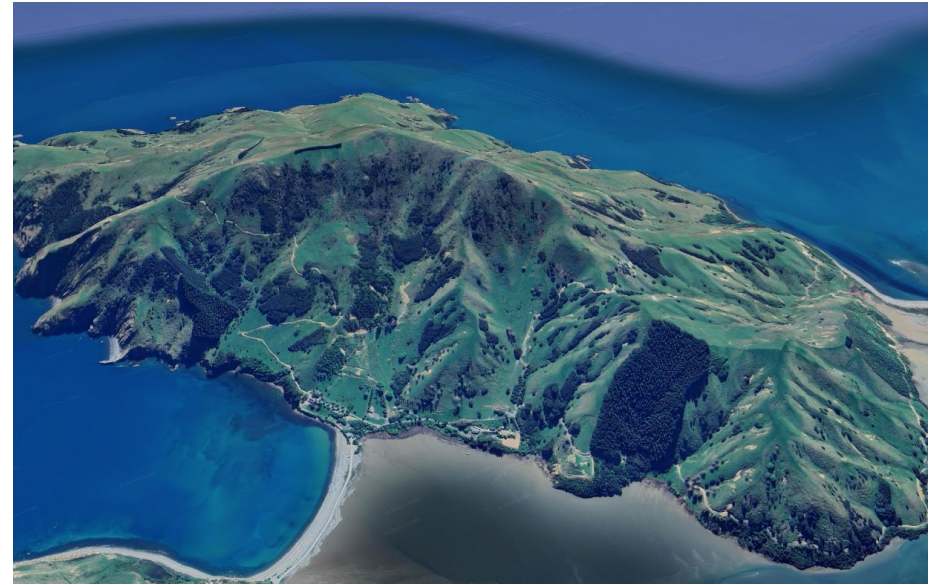
- highly fragmented
- small isolated patches

Hill country:

- larger and more intact
- pressures remain

Implication:

- **Lowland ecosystems are most vulnerable due to poor connectivity**



Roundup

- **Bigger and more connected patches support more biodiversity**
- **Small, fragmented and irregular patches are more affected by edge effects and small populations, and are less resilient**
- **Connectivity allows populations to function as a system, not as isolated fragments**
- **Local interventions that improve ecological connectivity will increase ecosystem resilience and long-term viability**





NCC's Ecological Connectivity Model

- Wildlands assessed ecological connectivity in Nelson
- WSP are reviewing this model
 - Use under RM reform
 - Spatial Planning
 - Use to inform restoration
 - ERP's
 - Environmental Grants

ASSESSMENT OF ECOLOGICAL CONNECTIVITY IN THE NELSON REGION



providing
outstanding
ecological
services to
sustain
and improve our
environments



Nelson
City Council

Te Kaunihera o
Whakatū

Habitat patches

Habitat patches (blue):

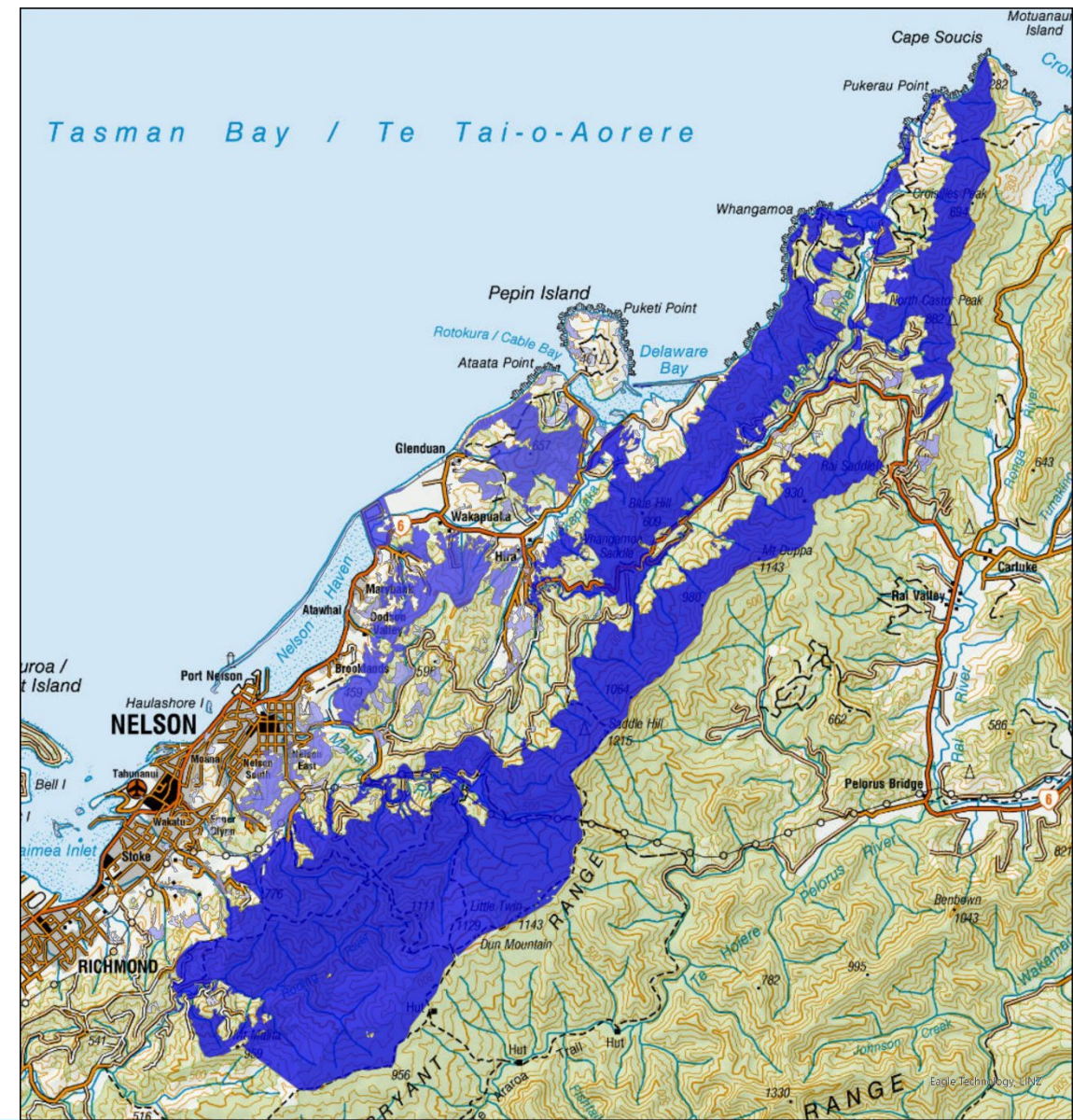
- darker = higher quality and resilience

Existing connectivity:

- mainly along elevated areas
- limited in lowland areas

Lowlands and urban areas:

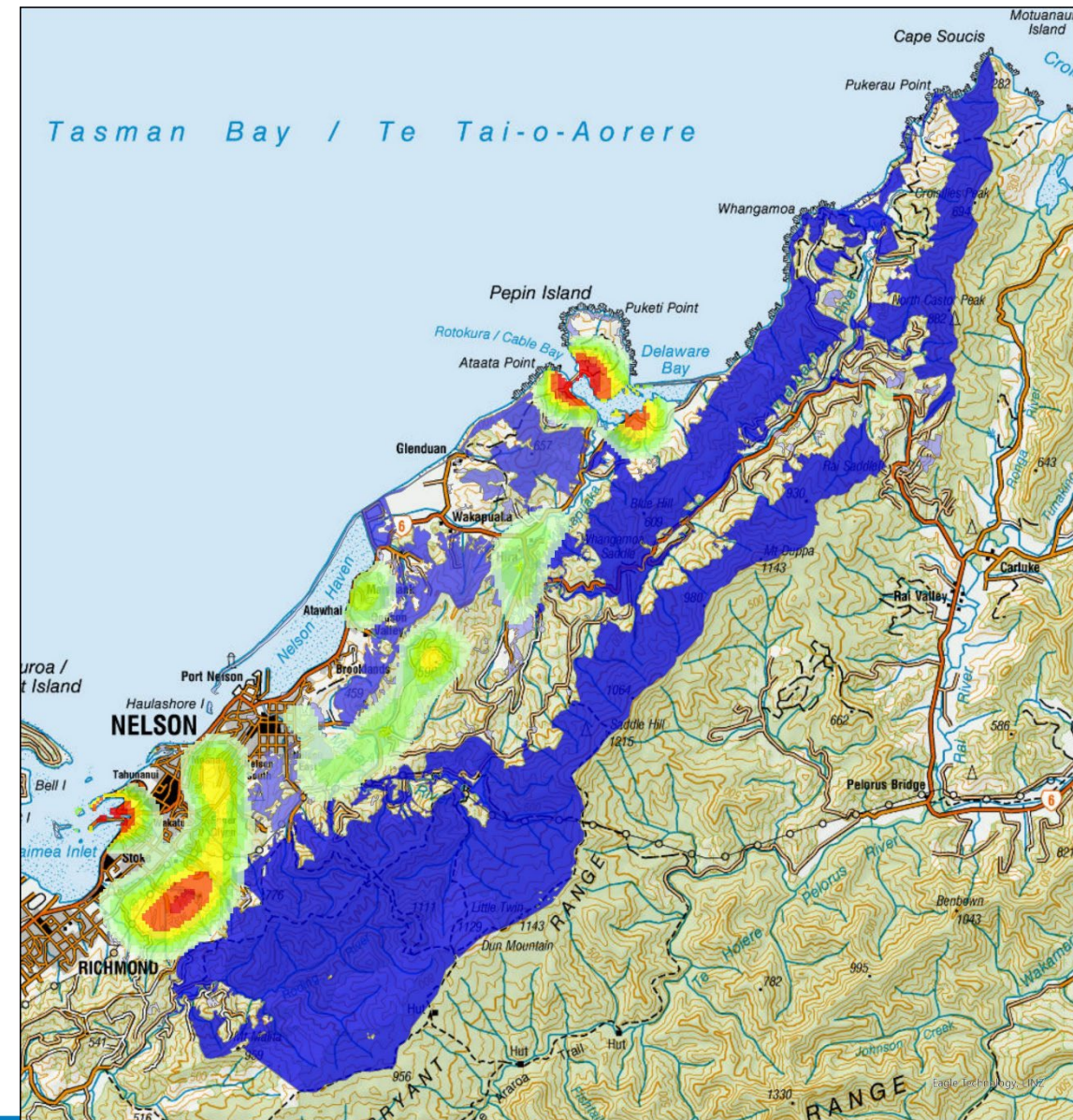
- poorly connected
- limited mountain-to-sea connectivity

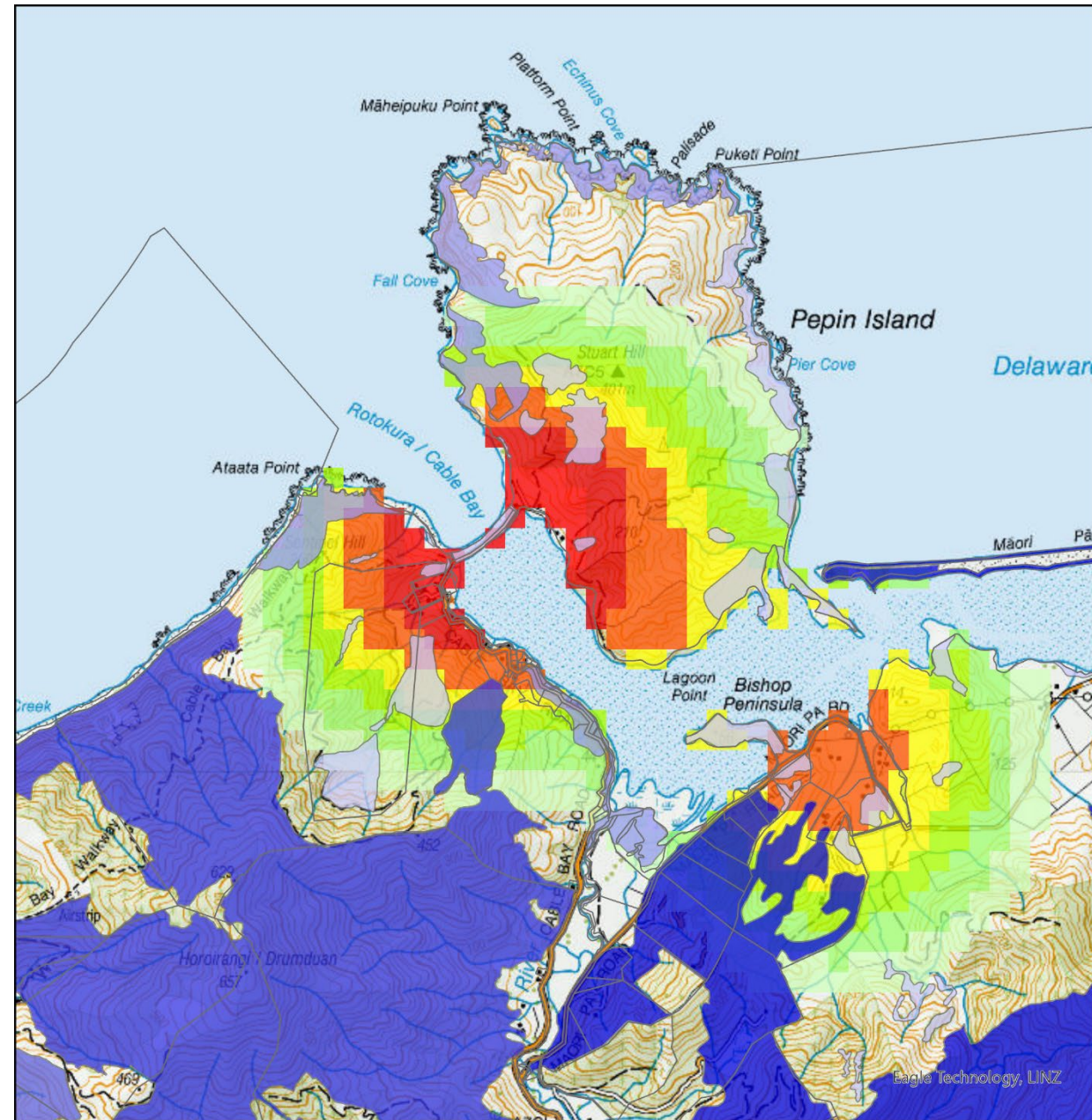
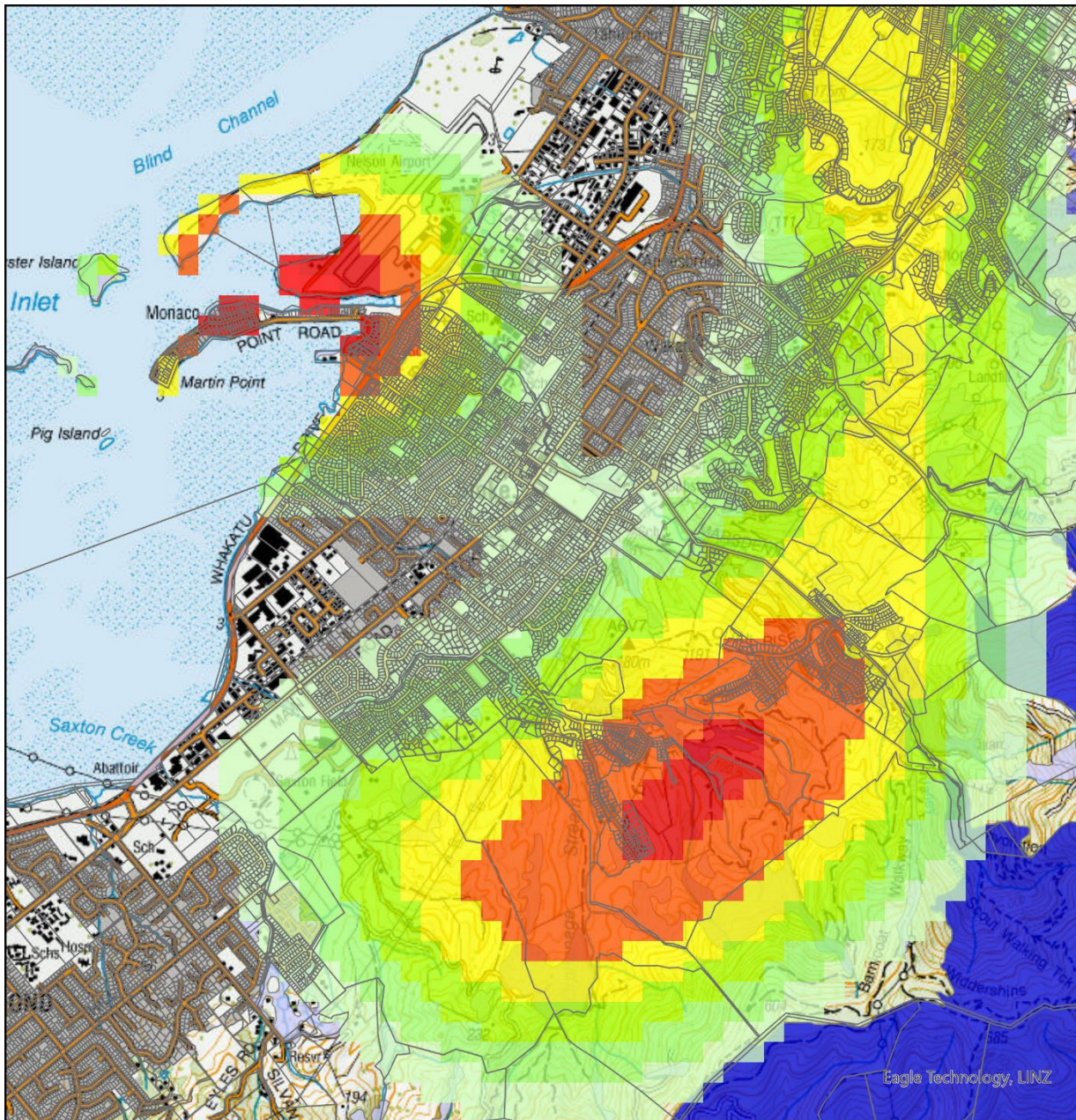




Role of matrix

- Matrix:
 - not current habitat
- Green areas:
 - higher restoration potential
- Key point:
 - value depends on surrounding habitat
- Priority:
 - Restore matrix in highlighted areas to reconnect fragmented landscapes





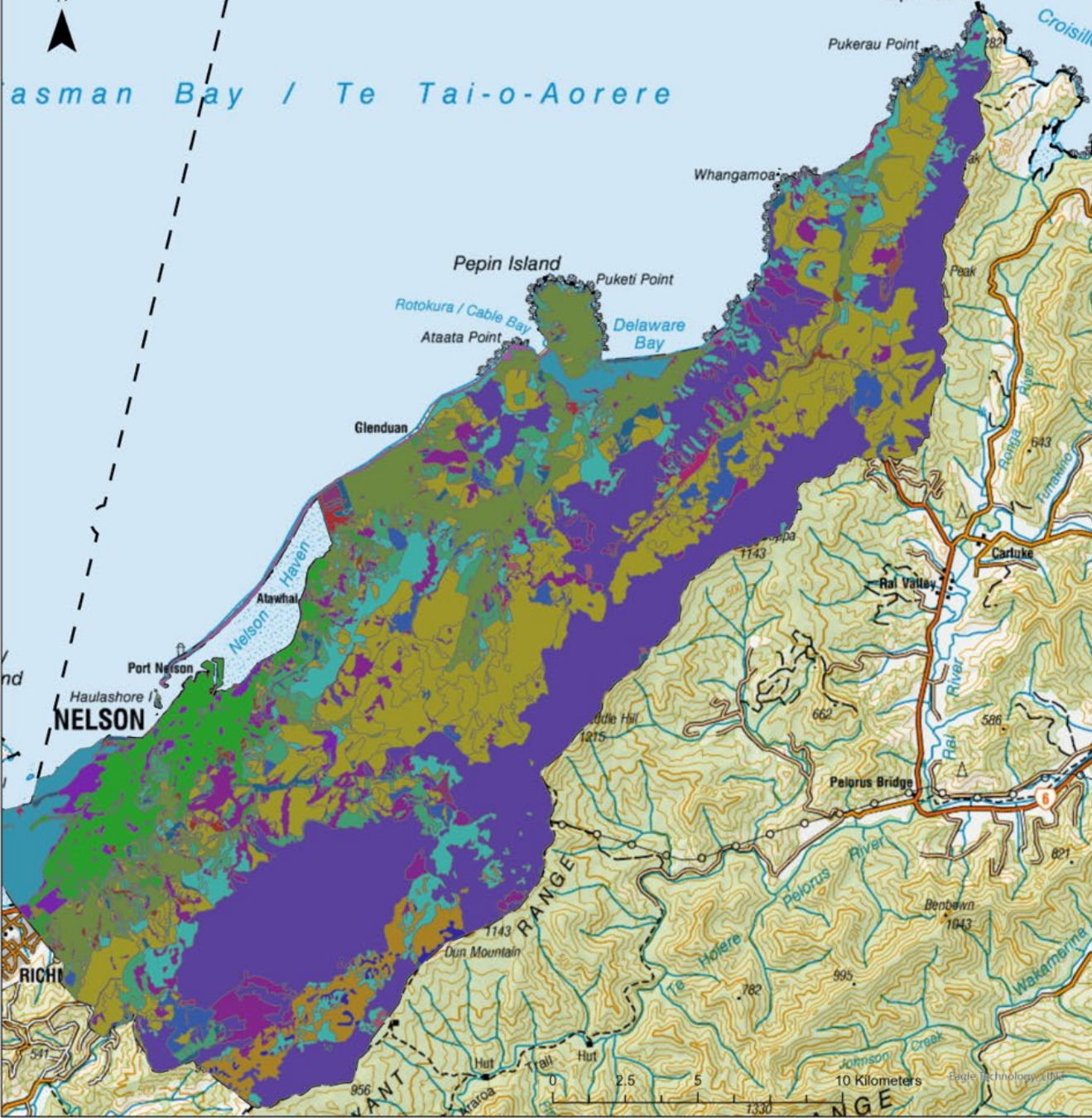
Take home messages

- Connectivity is critical for biodiversity resilience
 - Fragmentation in Nelson's lowlands is a key risk
- Priority areas are clear
 - lowland connections
 - mountain-to-sea pathways
 - “stepping stones” between patches
- Restoration can have disproportionate impact
 - Targeting priority areas strengthens connectivity at a regional scale
- The model is a decision-support tool
 - Identifies priority areas
 - Does not define exact corridors or sites
- Implementation requires local knowledge
 - Site selection, species needs, and management still matter





State of Lowland Ecosystems



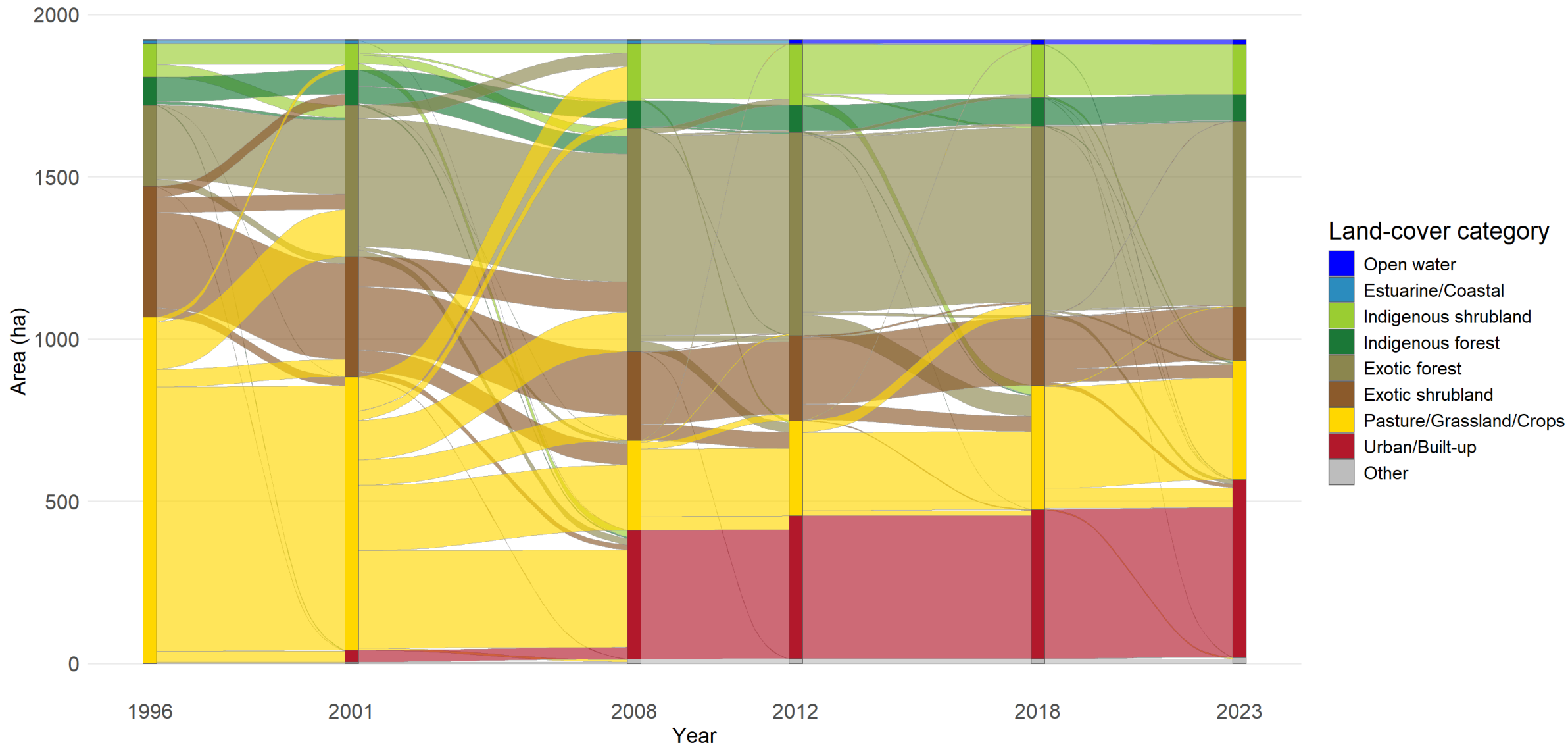
- Broadleaved Indigenous Hardwoods
- Built-up Area (settlement)
- Deciduous Hardwoods
- Estuarine Open Water
- Exotic Forest
- Fernland
- Forest - Harvested
- Gorse and/or Broom
- Gravel and Rock
- Herbaceous Freshwater Vegetation
- Herbaceous Saline Vegetation
- High Producing Exotic Grassland
- Indigenous Forest
- Lake or Pond
- Landslide
- Low Producing Grassland
- Manuka and/or Kanuka
- Matagouri or Grey Scrub
- Mixed Exotic Shrubland
- Orchard, Vineyard or Other Perennial Crop
- River
- Sand and Gravel
- Sub Alpine Shrubland
- Surface Mine or Dump
- Tall Tussock Grassland
- Transport Infrastructure
- Urban Parkland/Open Space
- Council Boundaries

- Open water
- Estuarine/Coastal
- Indigenous shrubland
- Indigenous forest
- Exotic forest
- Exotic shrubland
- Urban/Built-up
- Pasture/Grassland/Crops
- Wetland
- Other

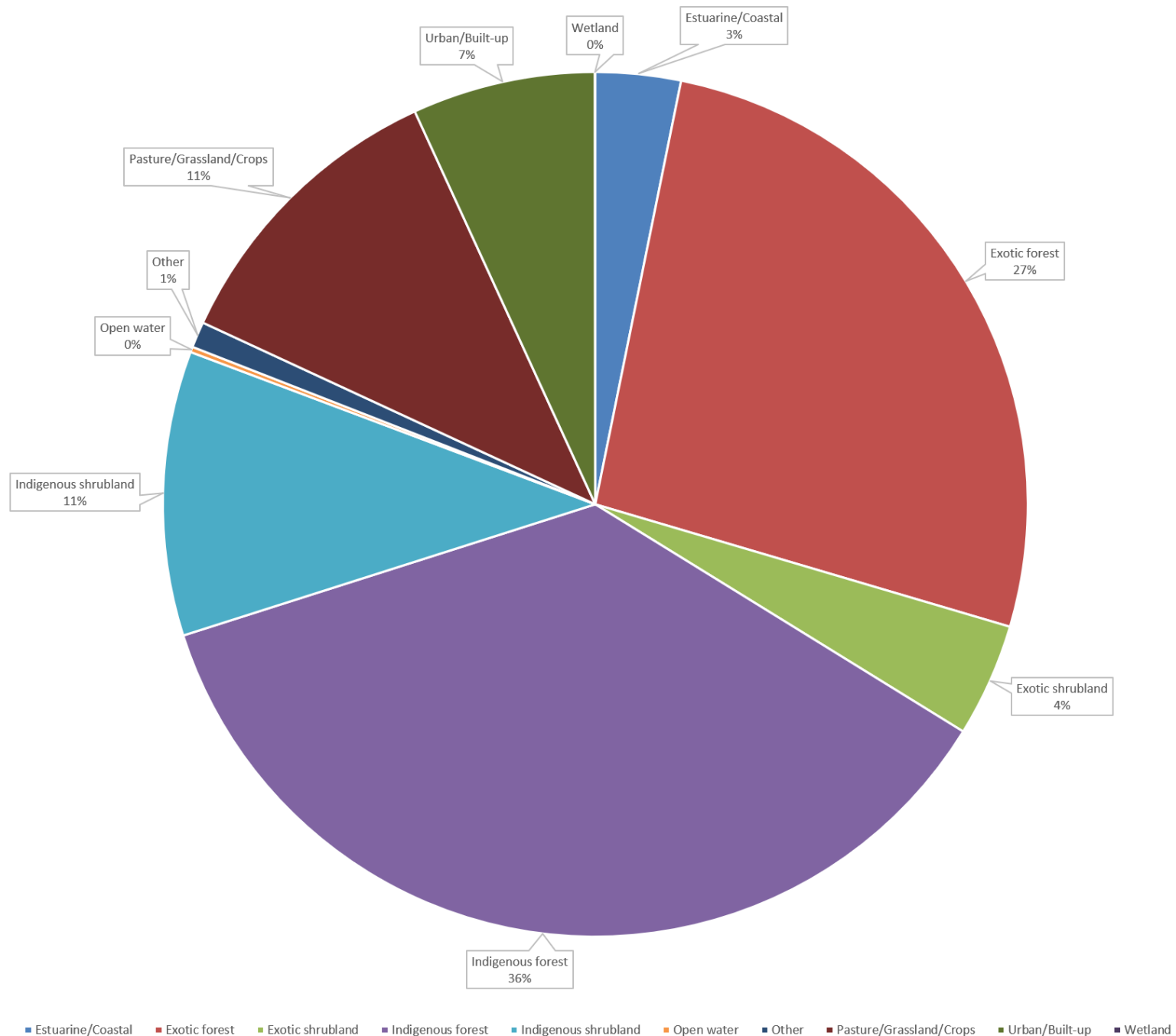
Estuarine Open water

Estuarine/Coastal

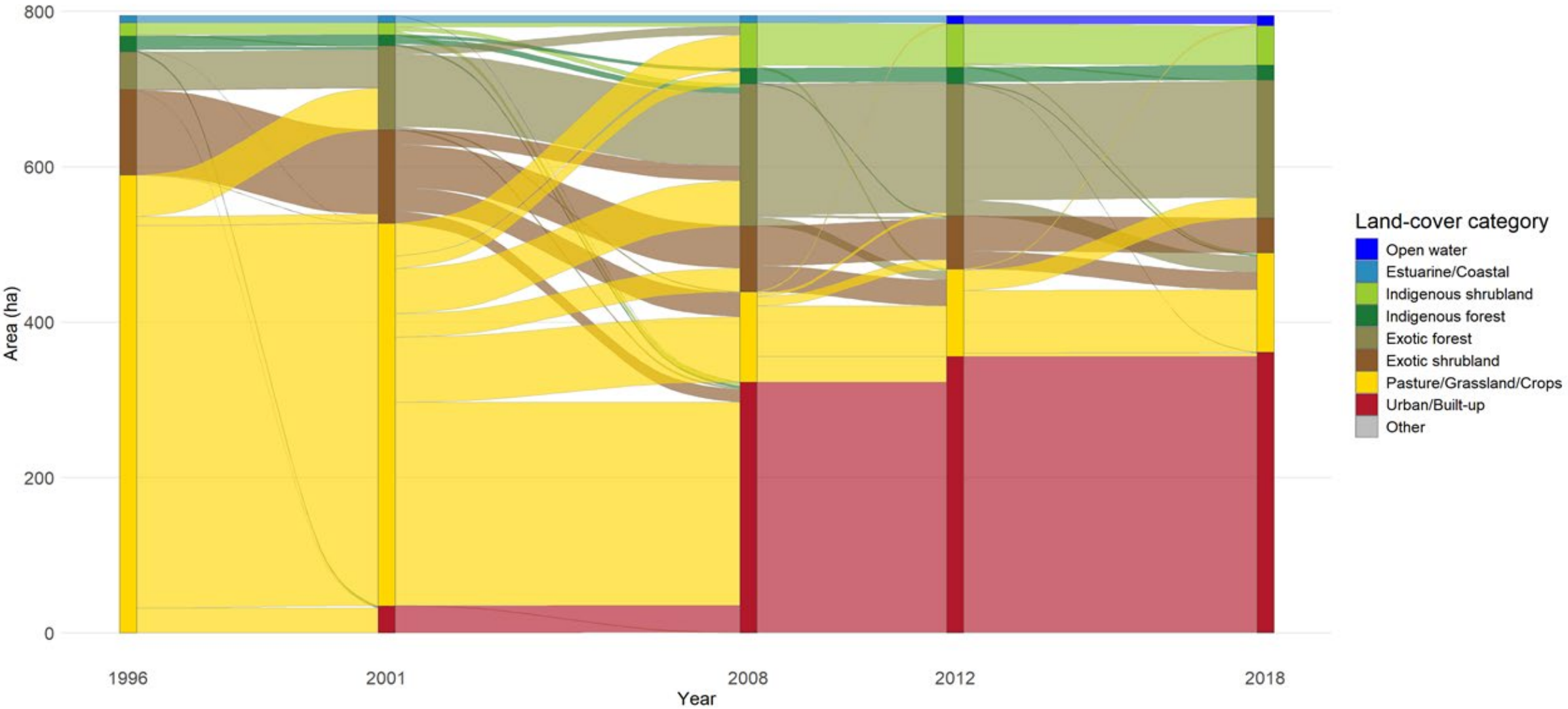
Land-cover change over time in Nelson



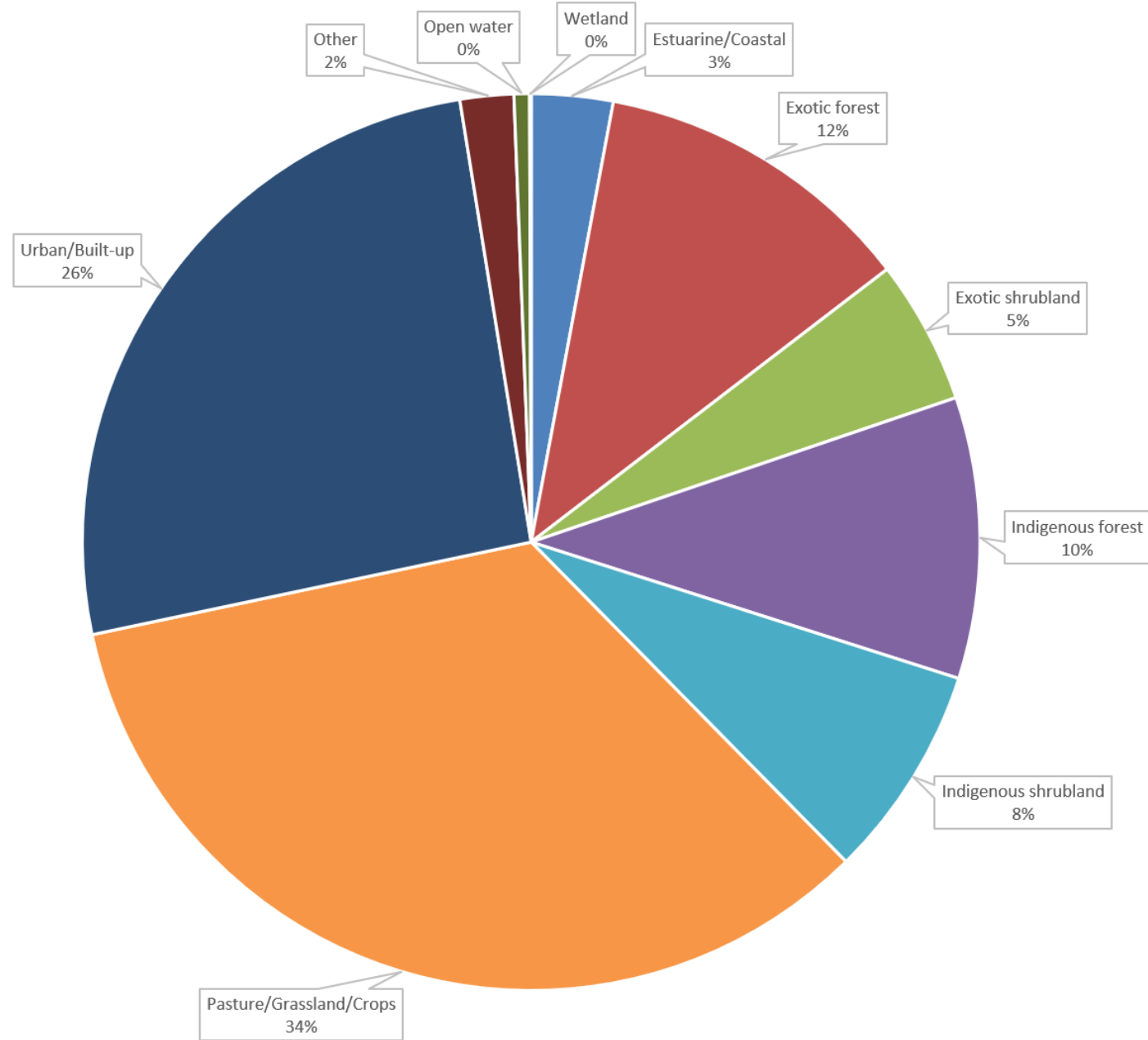
Proportion of Region (LCDBv6 2023)



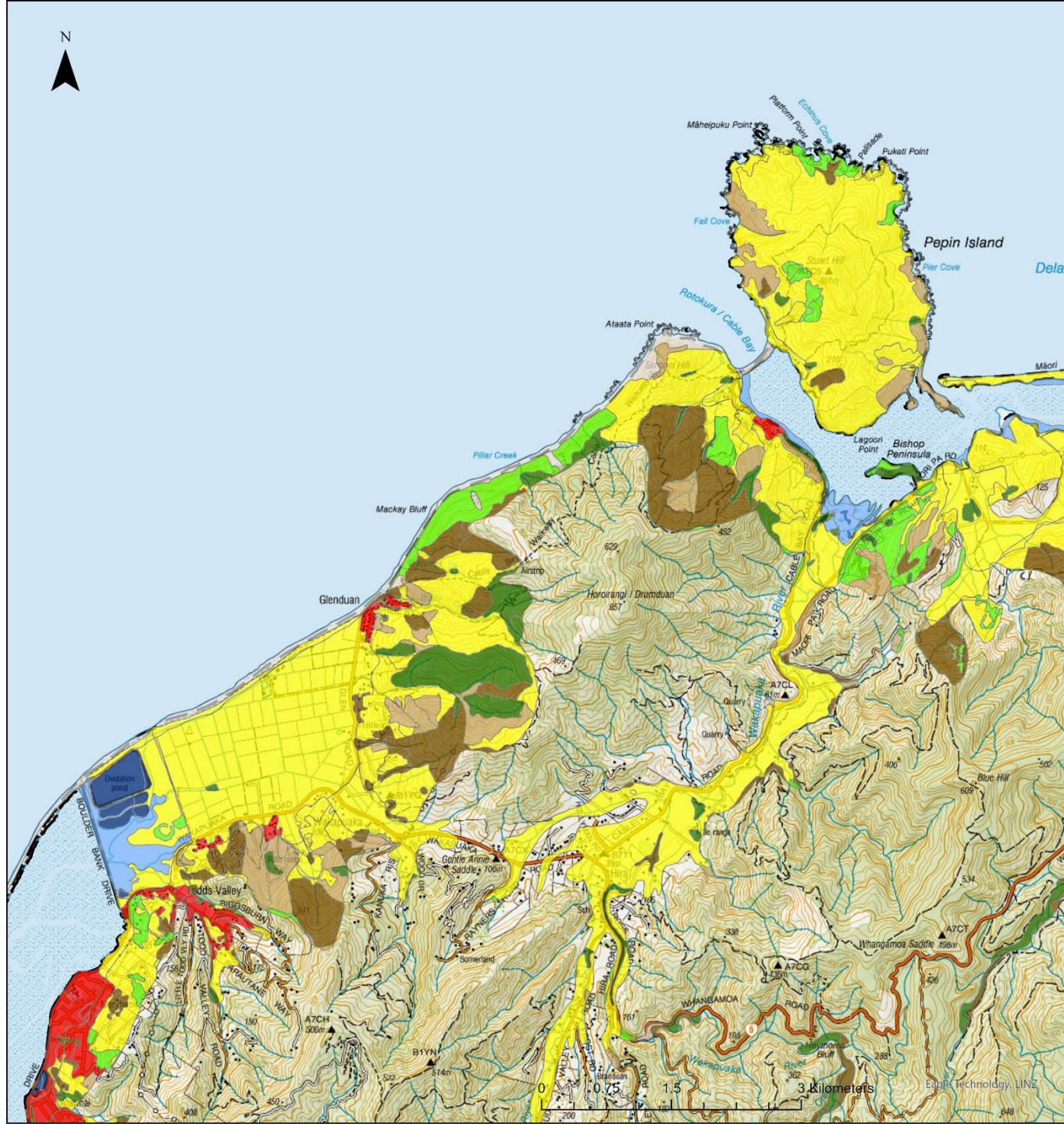
Land-cover change over time in Lowland Nelson

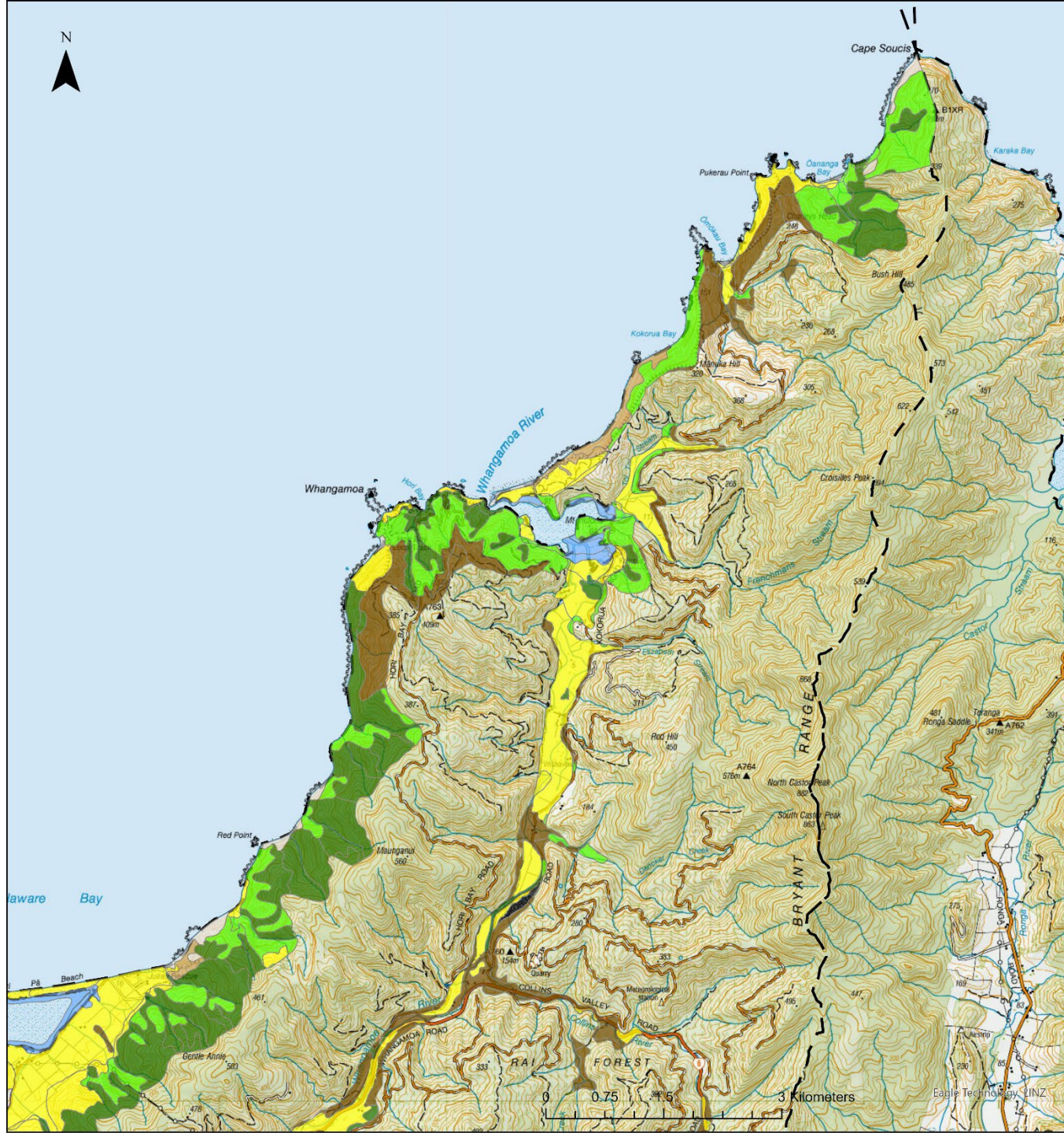


Proportion Lowland (LCDBv6 2023)



■ Estuarine/Coastal ■ Exotic forest ■ Exotic shrubland ■ Indigenous forest ■ Indigenous shrubland ■ Pasture/Grassland/Crops ■ Urban/Built-up ■ Other ■ Open water ■ Wetland





- Category 2023
- Open water
 - Estuarine/Coastal
 - Indigenous shrubland
 - Indigenous forest
 - Exotic forest
 - Exotic shrubland
 - Urban/Built-up
 - Pasture/Grassland/Crops
 - Wetland
 - Other
 - Council Boundaries

Take home message

- Since 1996, nearly half of regional land cover change has occurred in the lowlands
 - Recent urban development not included
 - Spatial planning seems to lack mechanisms to protect lowland ecosystems
- The RMA and NPS-IB?



Patai?



Nelson Nature



Bringing the
wild into our **life**

TNC Aotearoa New Zealand

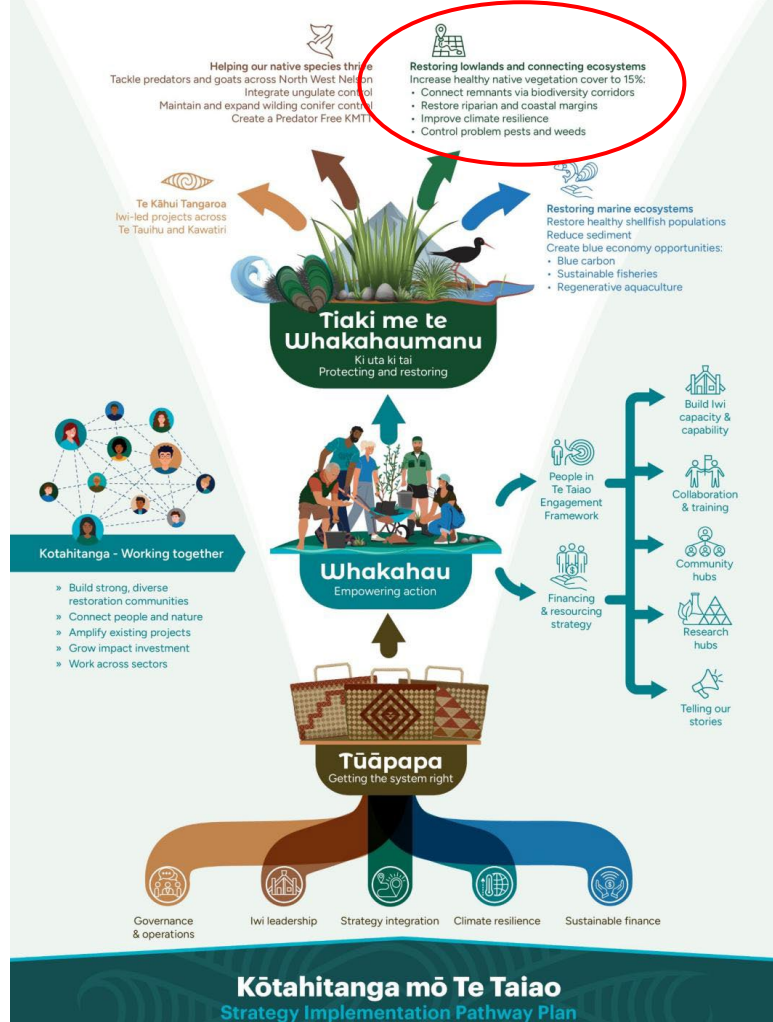
Nelson Biodiversity Forum

8 June 2026

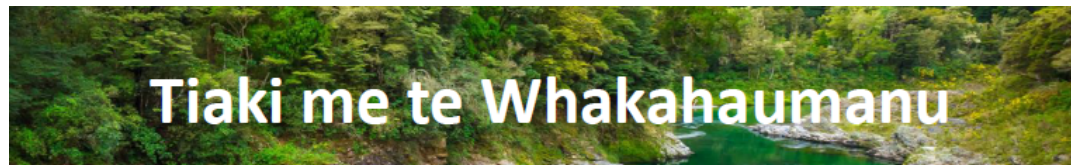


- 1** Mapping Restoration in Te Taihu
- 2** Assisted Natural Regeneration
- 3** Choice Modelling to Understand Landowner Restoration Motivation
- 4** Unlocking Sustainable Financing for Lowland Restoration





KMTT Restoring Lowlands



Restoring Lowlands & Connecting Ecosystems pou

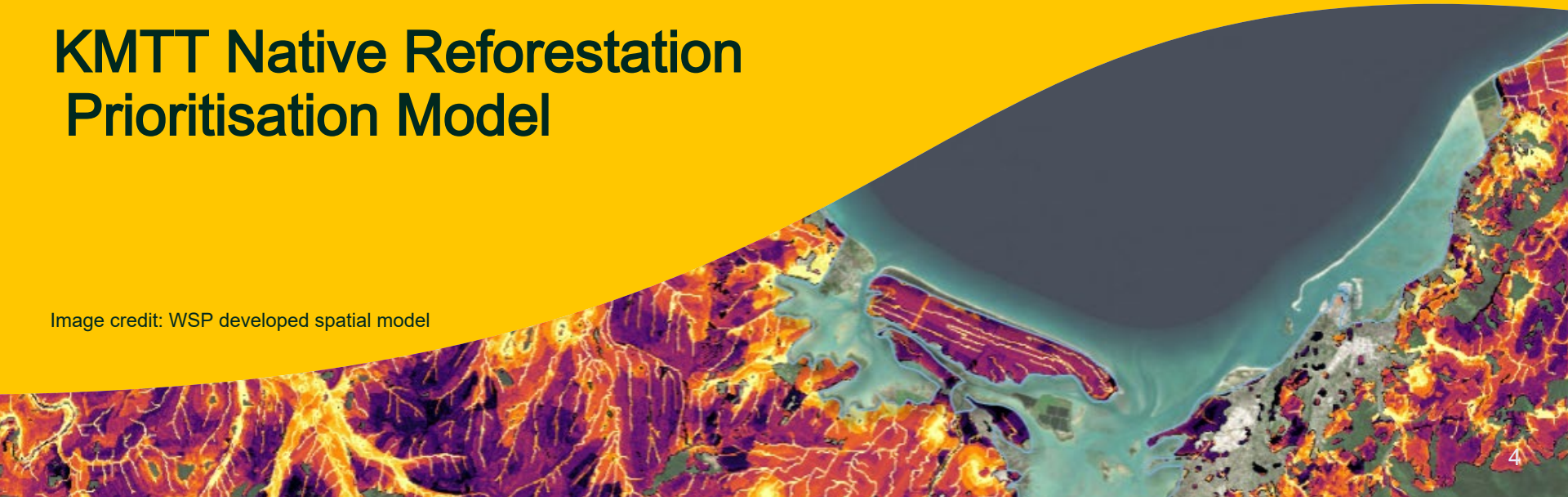
Increase healthy native vegetation cover to 15%

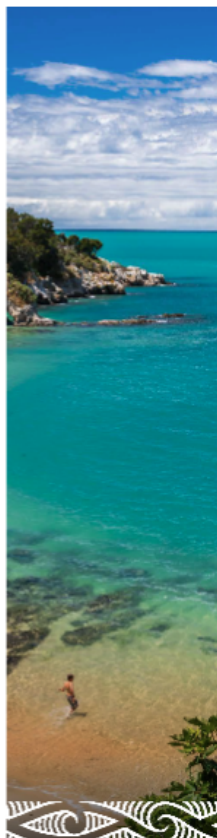
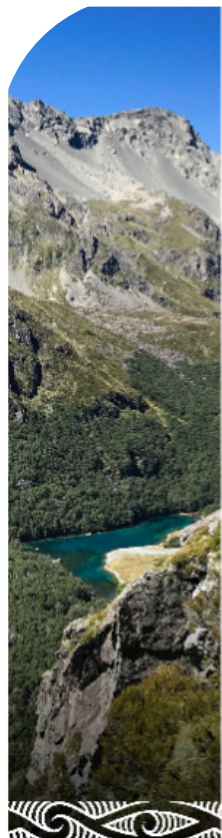
- Connect remnants via biodiversity corridors
- Restore riparian and coastal margins
- Improve climate resilience
- Control problem pests and weeds

Mapping Restoration in Te Taihū

KMTT Native Reforestation
Prioritisation Model

Image credit: WSP developed spatial model



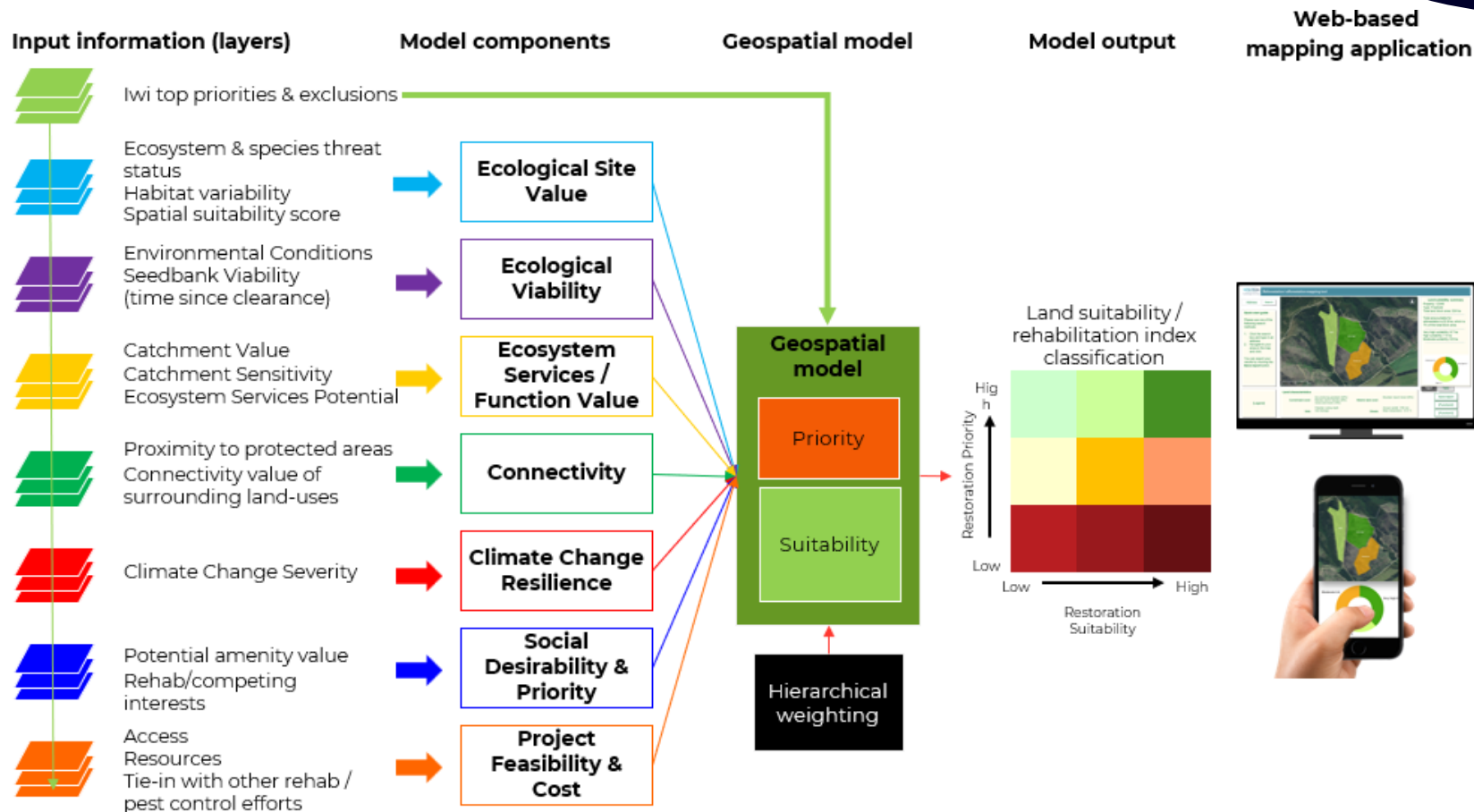


Project Purpose and Vision

The intent of the KMTT Spatial Model and Mapping Project is to identify strategic areas for native revegetation for KMTT partners to assist with native planting plans with landowners, communities and other stakeholders in the Top of the South Island.

This initiative aims to improve forest cover to reduce sedimentation, enhance native biodiversity, and create resilient ecological networks through connectivity of priority fragmented habitats. There have been several efforts in Aotearoa New Zealand to map suitable land for various land cover and land use types, including native reforestation, particularly in response to environmental, economic and climate initiatives.

Restoring native ecosystems to at least 15% of their original cover is a priority across Aotearoa New Zealand to achieve ecological stability and prevent further loss. With support from The Nature Conservancy, the Alliance sought a spatially explicit method to prioritise areas for native revegetation. GIS enabled the integration and analysis of a vast array of environmental datasets and the translation of the findings into actionable information, offering a strategic, place-based solution to a regional-scale ecological challenge.



Rehabilitation potential is defined by the sum of rehabilitation priority and rehabilitation suitability. This requires categorisation and prioritisation (weighting) of input layers that feed the model by subject-matter experts. Specifics on model generation can be found in the project documentation.

The categories used to group layers are as follows, and are also shown diagrammatically:

1. Ecological Site Value (wt = 0.26)

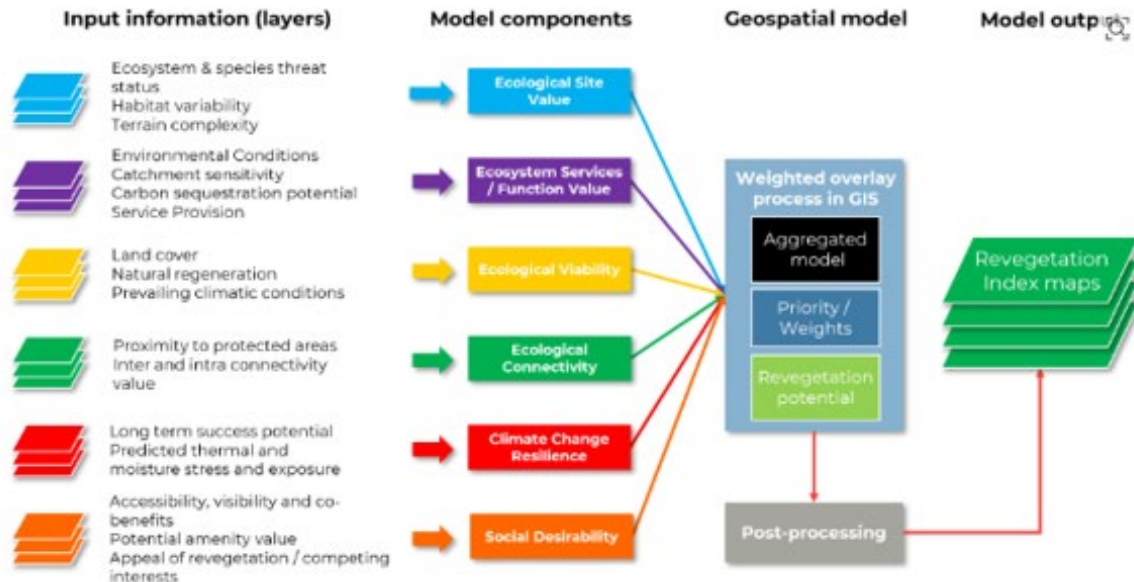
2. Ecosystem Services/Function Value (wt = 0.2)

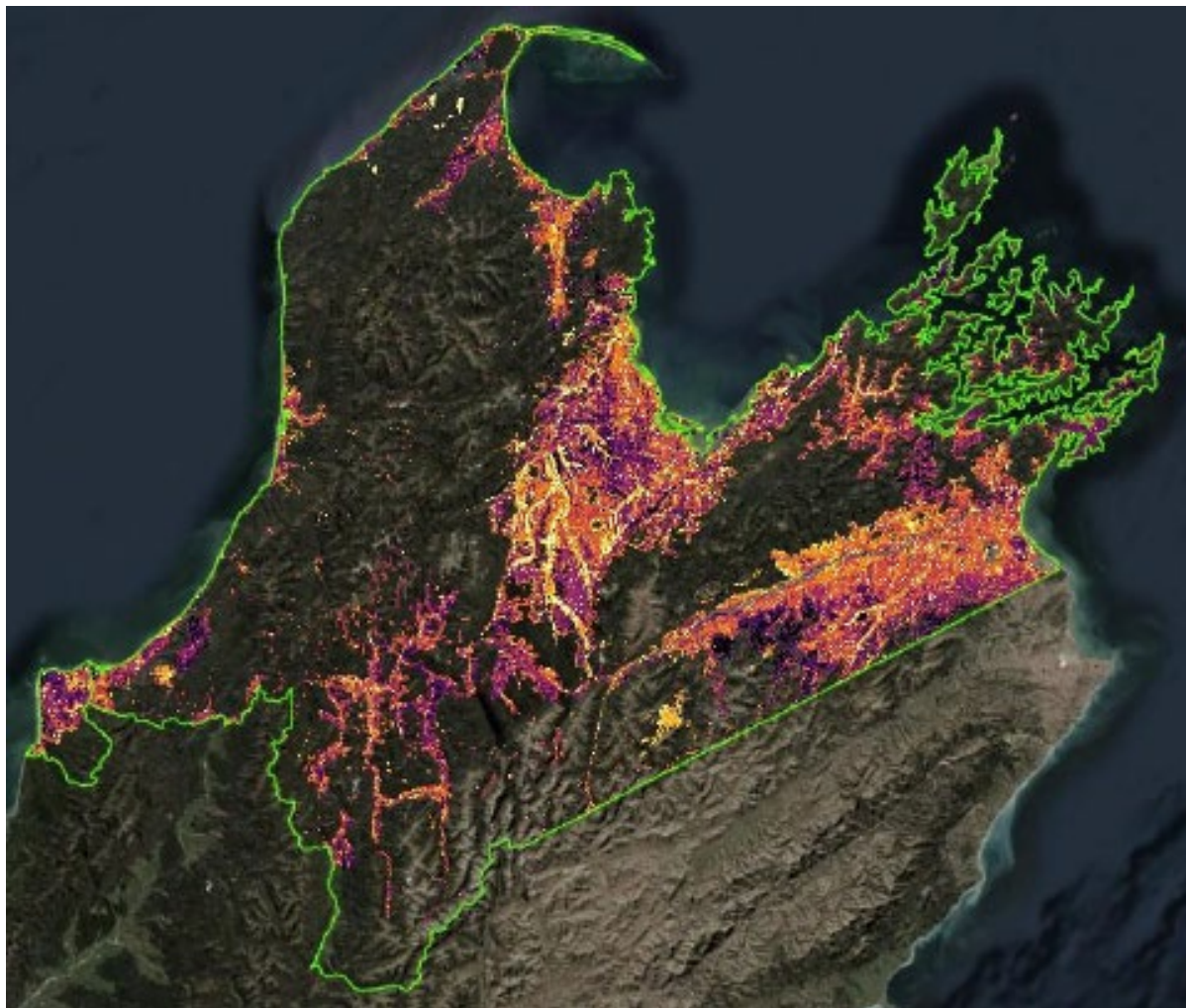
3. Ecological Viability (wt = 0.15)

4. Connectivity (wt = 0.17)

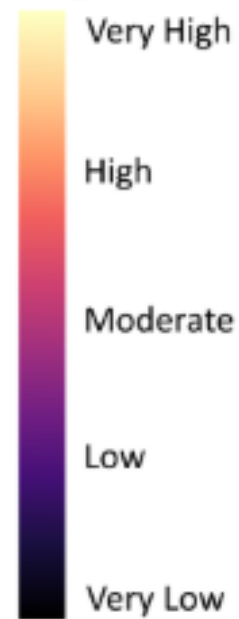
5. Climate Change Resilience (wt = 0.08)

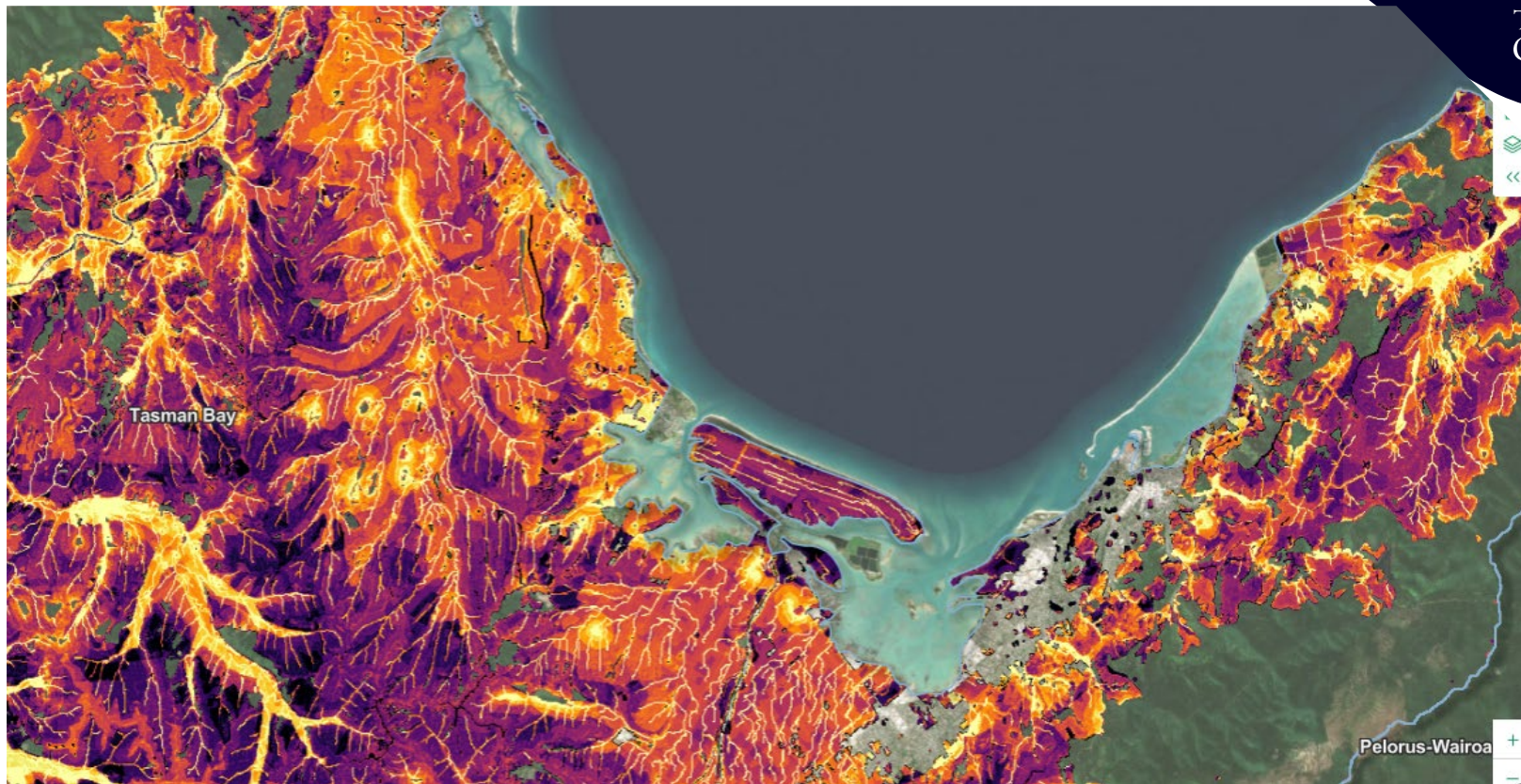
6. Social Desirability (wt = 0.14)



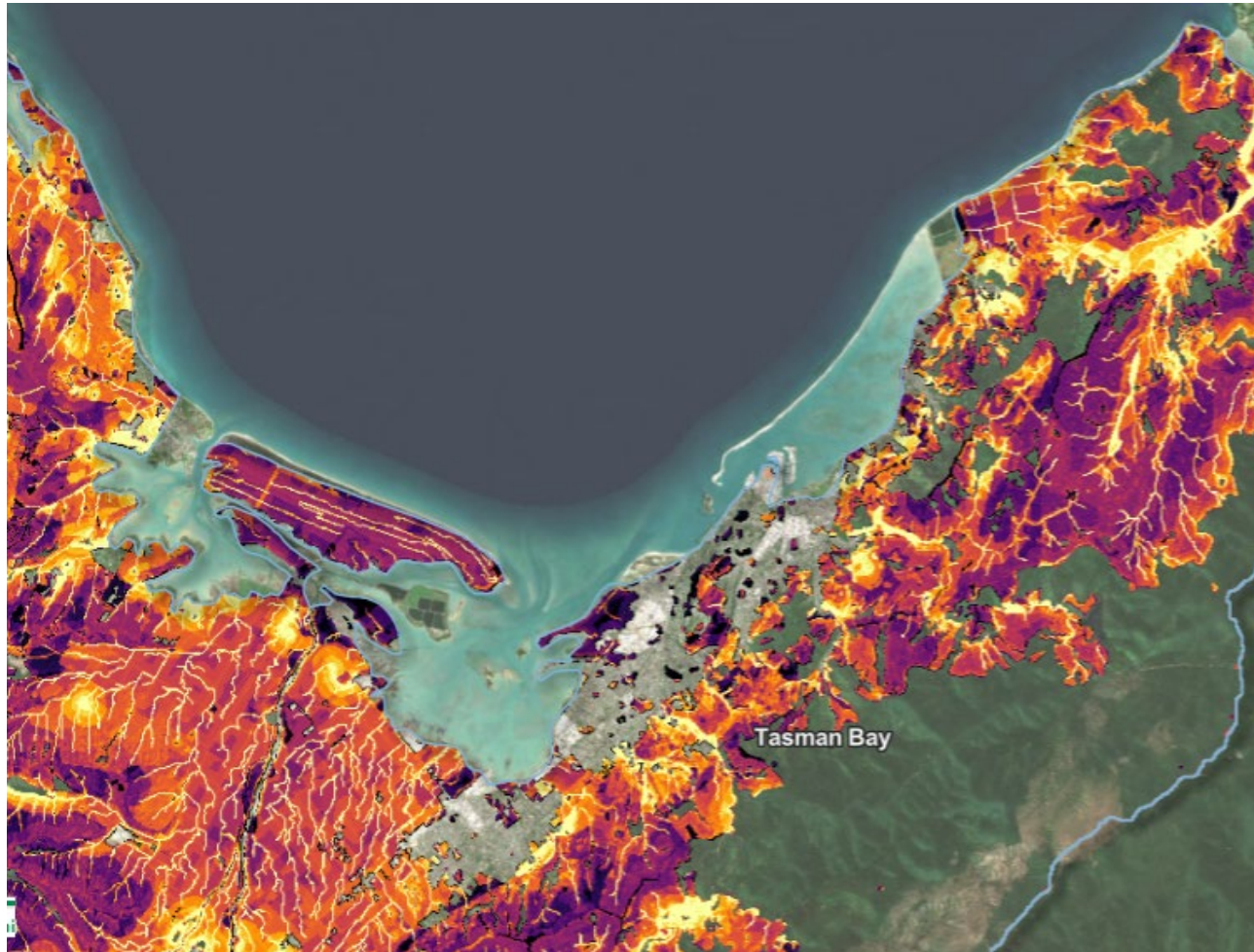


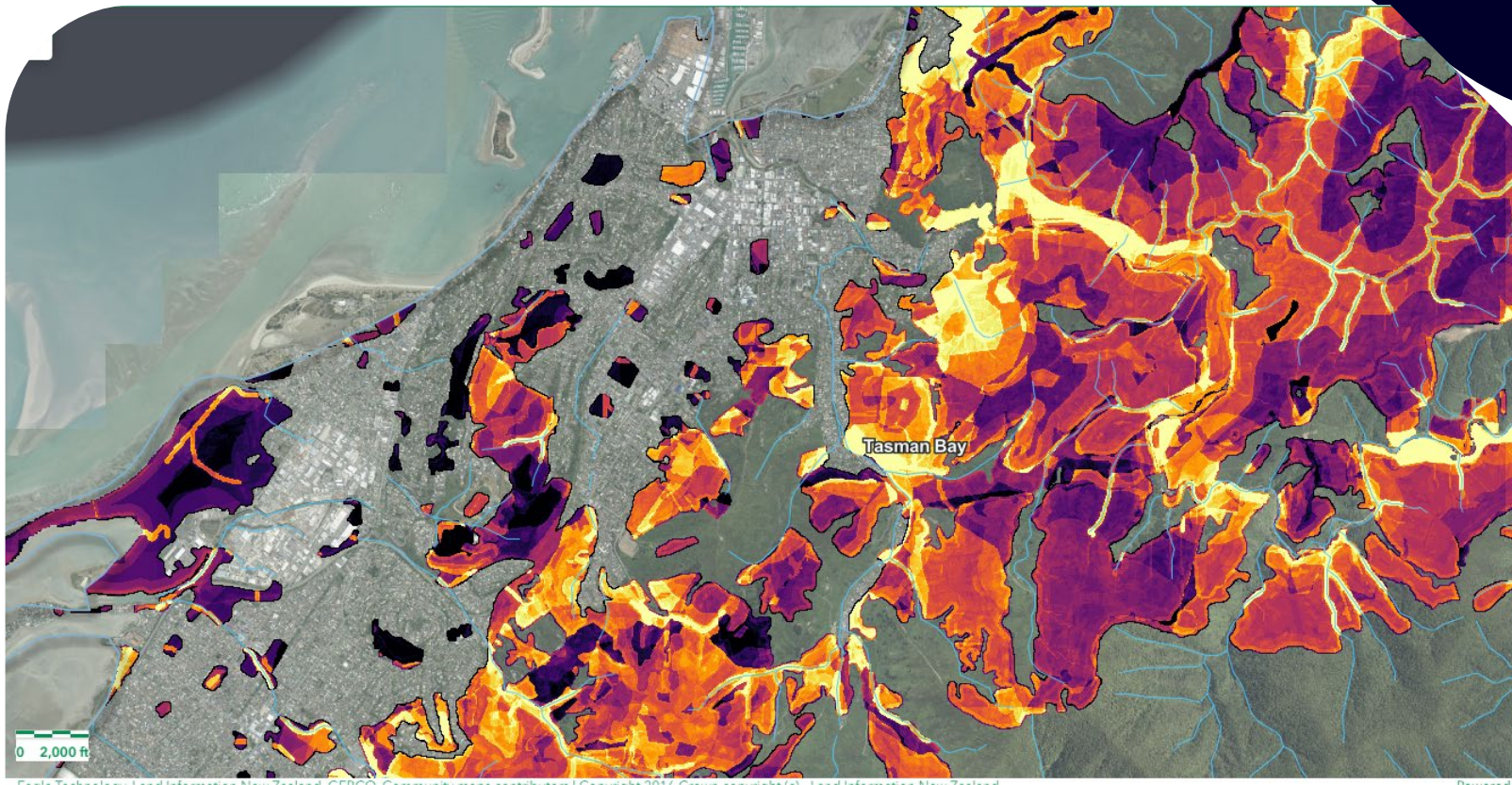
Revegetation Potential





Zooming in on the Nelson and Tasman Bay area





Maximum zoom in on Nelson City

Assisted Natural Regeneration (ANR)

Drone vs Manual Ground Control
Cable Bay Adventure Park, Nelson

Image credit: Agri Drone Specialists







Cable Bay Adventure Park, Wakapuaka Catchment



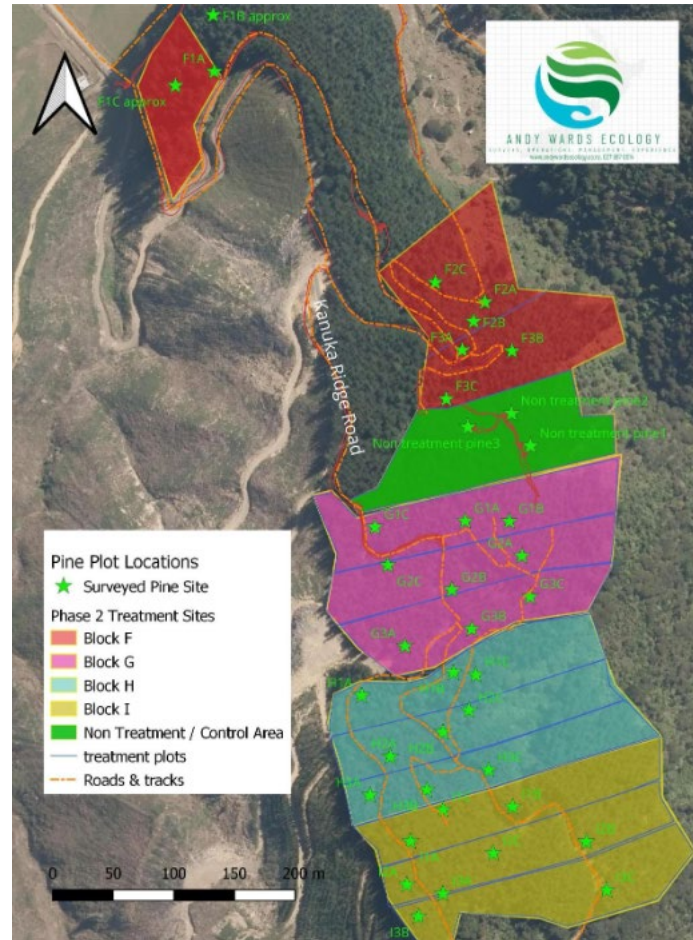
Treatment Areas – Drone vs Ground Control



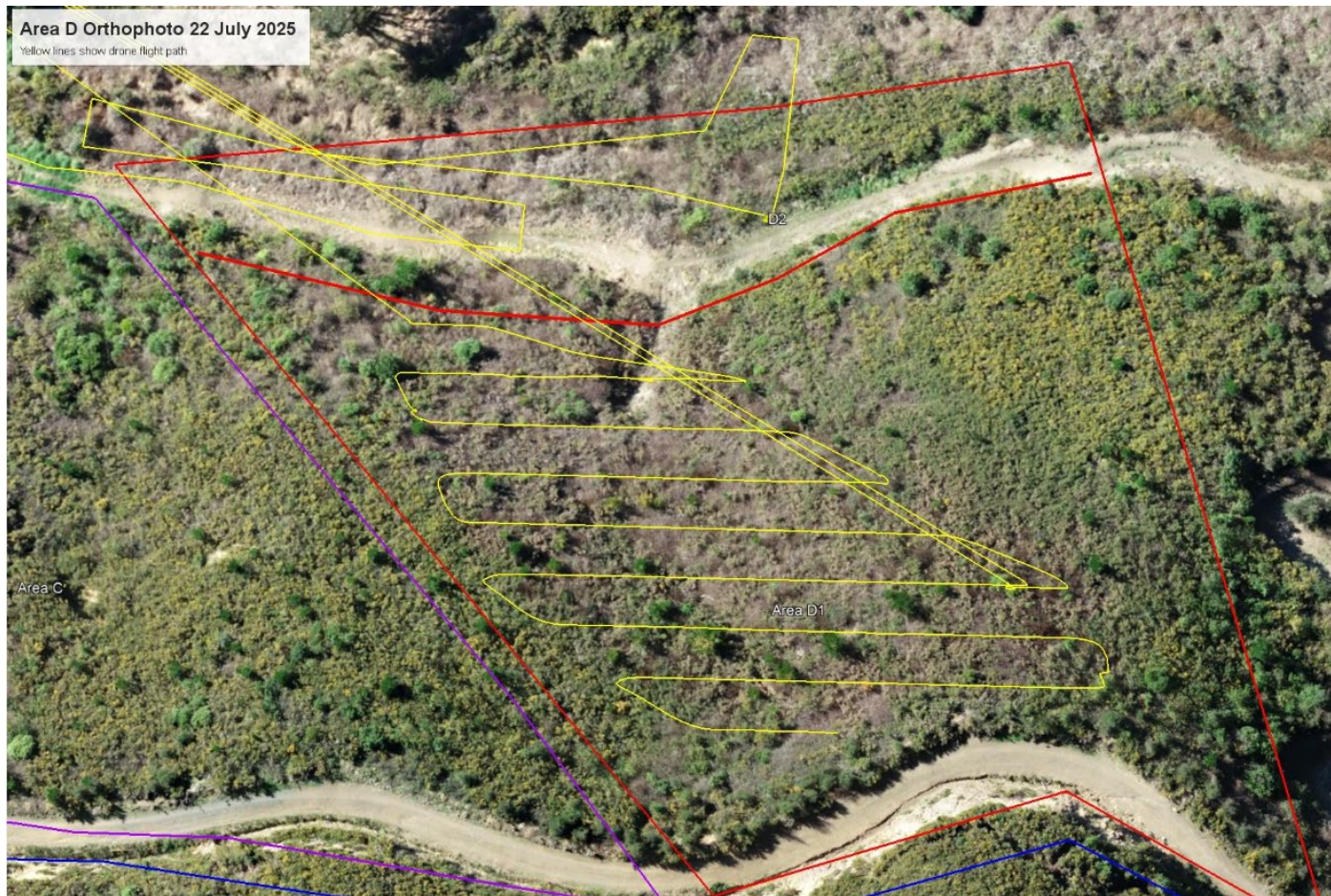
Ground Control Team



Ground Control – Track cut through gorse



Treatment Area – Ground Control Plots



Treatment Area – Drone Flight Path



Built bespoke manifold to hold nozzles

South East

☉ 132°SE (T) ● -41.201495, 173.418736 ±3m ▲ 79m



A follow up 1

Cable bay

23 May 2025, 13:37:51

Treatment Area – Photo Points



Drone in action



Drone in action

Phase 1 produced a clear cost contrast between control methods.

Drone-based control:

- Total cost (excl. GST): approximately **\$4,650**
- Wilding pines treated: approximately **416 trees**
- Indicative cost: **~\$11 per tree**

Costs include mapping, setup, herbicide, calibration, and approximately **11.5 hours** of drone application under conservative first-use conditions.

Ground-based control:

- Total cost (excl. GST): approximately **\$10,000**
- Wilding pines treated: approximately **135 trees**
- Indicative cost: **~\$74 per tree**

Labour and access cutting were the dominant cost drivers.

Key learning: in steep terrain, drone-based control was approximately **6–7 times cheaper per treated tree** than ground-based methods under Phase 1 conditions.

A practical operational model

The Wakapuaka trials support a staged, hybrid control approach:

1. Initial drone-based suppression of wilding pines in steep or inaccessible areas
2. Aerial-led monitoring to assess effectiveness and identify priorities
3. Targeted follow-up using drone spot spraying or selective ground control
4. Transition to under-canopy management as native regeneration overtops residual weeds

This sequencing minimises disturbance, improves safety, and reduces long-term costs.

Key risks to plan for

Key risks identified through the Wakapuaka trials include:

- Limited weather windows requiring flexible scheduling
- Software constraints affecting spatial precision of treatment records
- Reliance on operator judgement for size classification and dosing
- Over-treatment causing unnecessary disturbance to regeneration processes

Planning should explicitly account for these constraints.

Bottom line

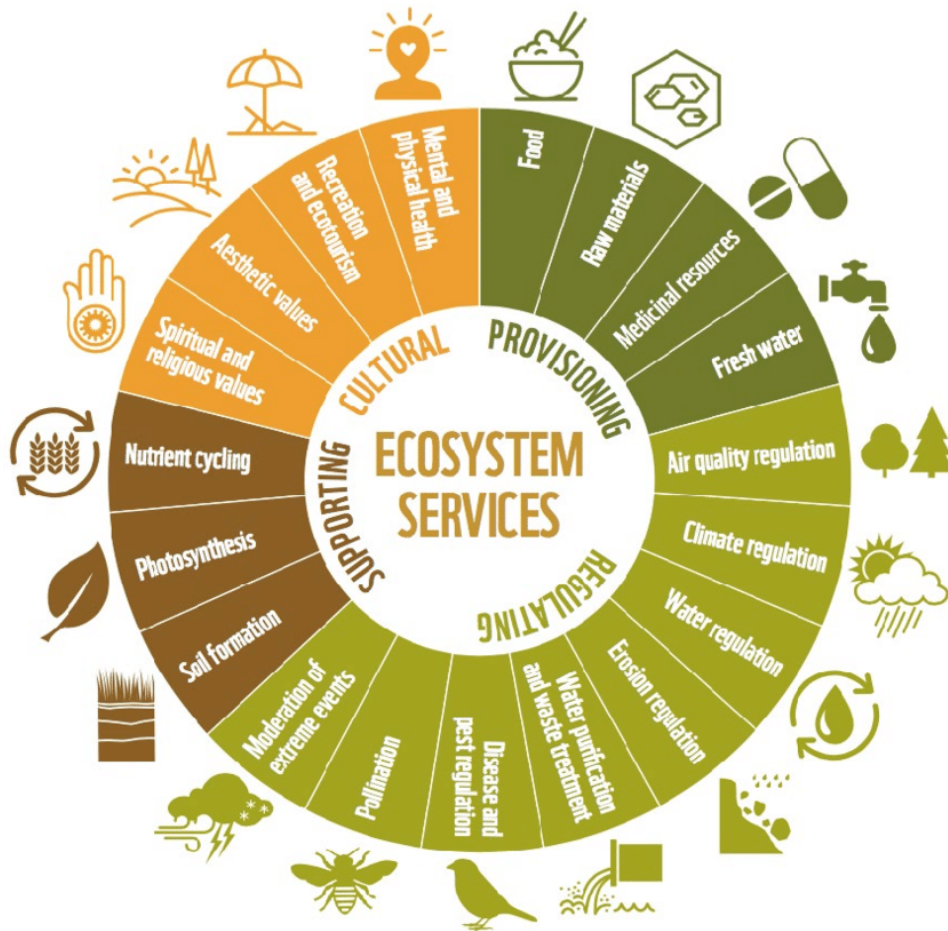
Precision drone-based weed suppression, when carefully calibrated and supported by aerial monitoring, provides a safe and cost-effective pathway for transitioning steep post-forestry landscapes toward native-dominated vegetation.

Its value lies not only in suppressing weeds, but in supporting regeneration trajectories—using drones to do the heavy lifting while natural processes drive long-term recovery.

Choice Modelling for Restoration

Image credit: Erik van Eyndhoven





Study's Purpose

There is a need for more targeted evidence to inform the design of incentive programmes that support native revegetation on private land in ways that are both ecologically effective and attractive to landholders.

Part 1: Interviews

Table 1. High-level summary of the number, type, and location of the farms where the landowners were interviewed (type of farm is the primary farming or land-use activity)

Region	Dairy	Grazing	Horticulture	Lifestyle	Forestry	Total
<i>Northland</i>	3	3	-	-	-	6
<i>Waikato</i>	5	4	-	-	-	9
<i>Hawke's Bay</i>	-	7	-	1	-	8
<i>Nelson/Tasman</i>	1	3	1	3	1	9

Part 2: Survey

Table 2. Attributes and attribute levels

Attributes	Restoration types	Attribute levels
Species (only for native reforestation)	Native reforestation	• Only natives • Mix of natives and exotics
Establishment & maintenance	Native reforestation, wetland restoration, riparian planting	• The landowner is responsible • The programme is responsible
Contract length	Native reforestation, wetland restoration, riparian planting	• 10 years • 20 years
Annual payments	Native reforestation, wetland restoration	\$100, \$300, \$700, \$1,500, and \$3,000 per hectare per year for the length of the contract. If the programme is responsible for establishment and maintenance, the \$3,000 payment is not included.
	Riparian planting	\$100, \$300, \$700, \$1,500, and \$3,000 per year per kilometre of riparian buffer for the length of the contract. If the programme is responsible for establishment and maintenance, the \$3,000 payment is not included.



Rural Decision Makers

SUR  **EY**

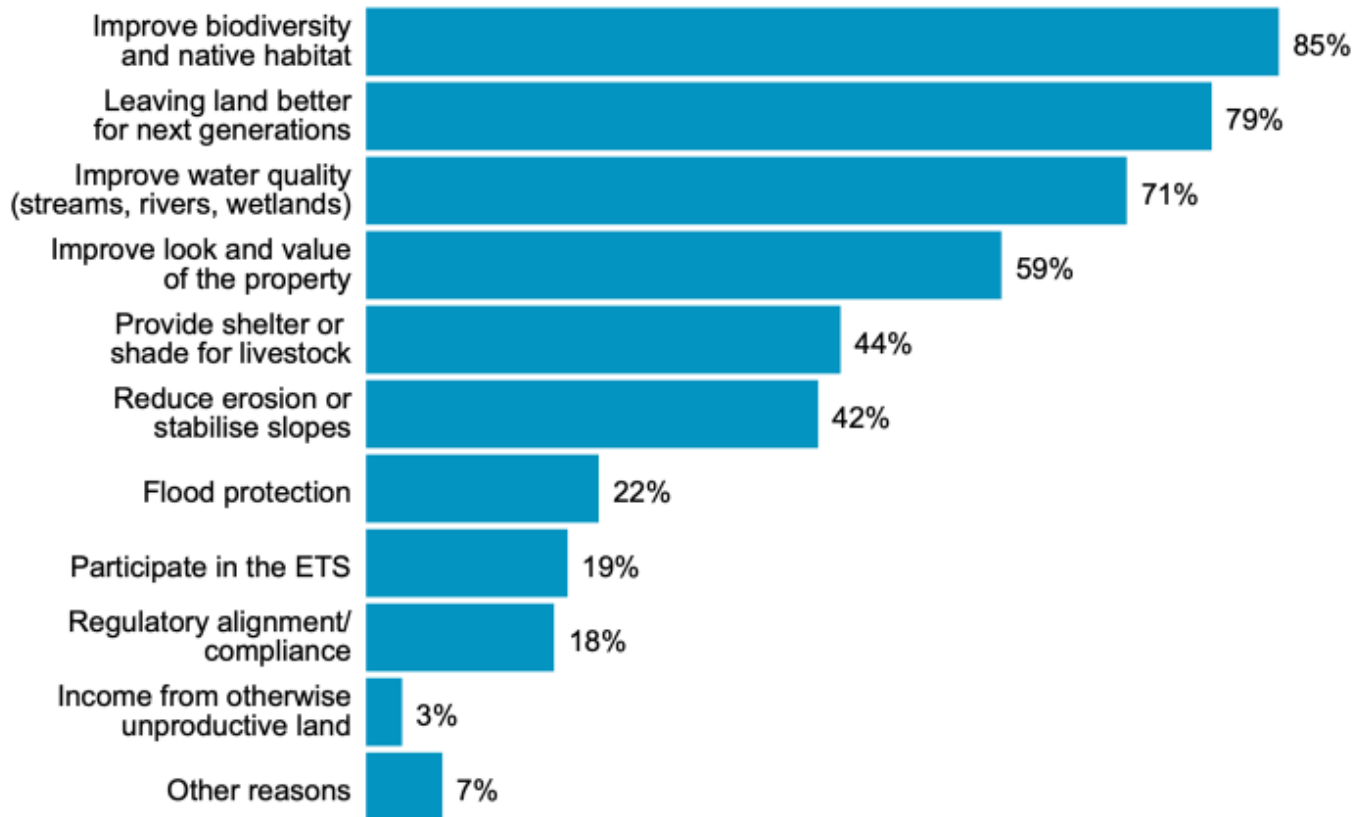


Survey Sample

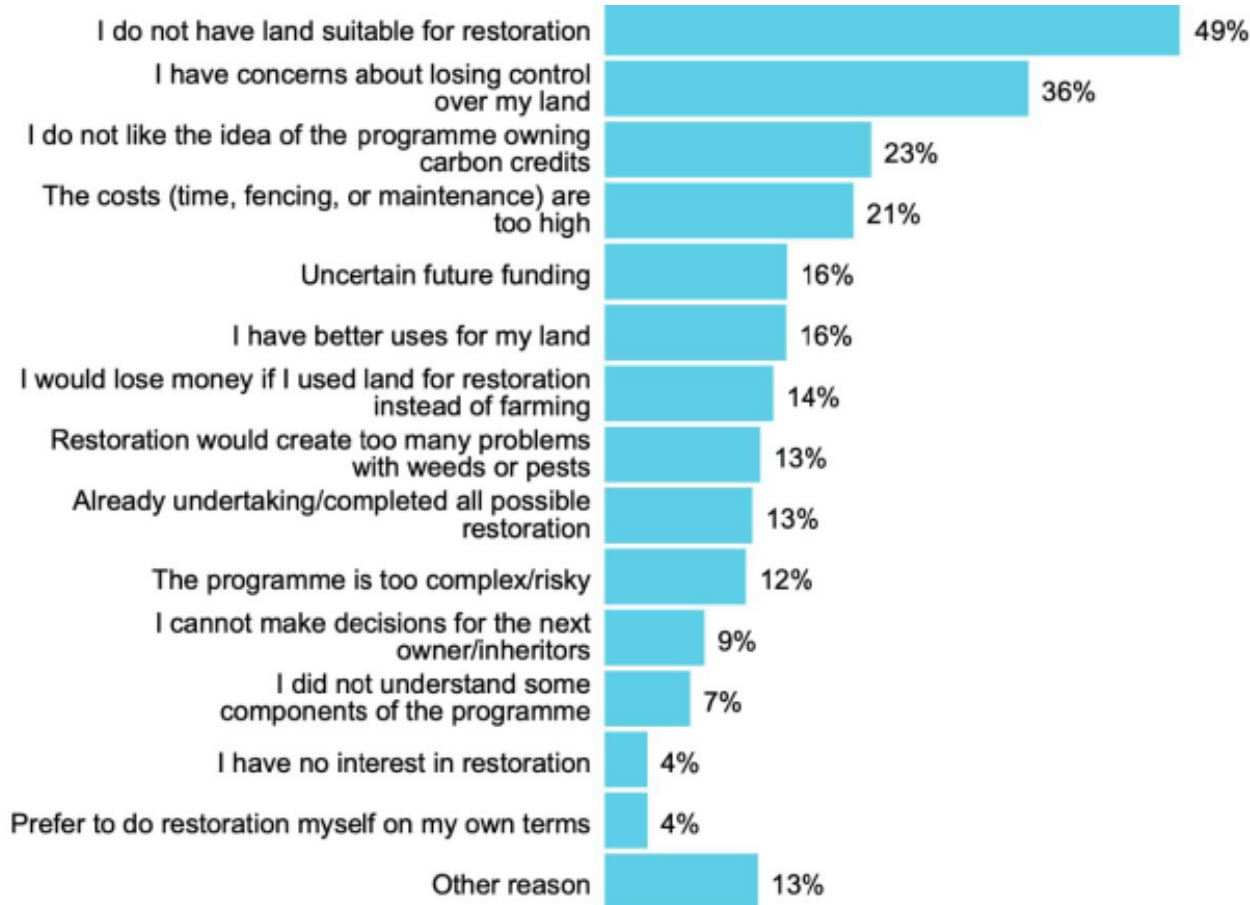
601 respondents started the survey, and 403 completed it.

This corresponds to an overall response rate of 40% (relative to invitations) and a completion rate of 67% among those who started the survey.

Reasons to participate in restoration activities



Reasons not to participate in restoration activities



Baseline participation

Table 7. Baseline participation and extent of enrolment by revegetation type

	Native reforestation	Wetland restoration	Riparian planting
Baseline programme attributes			
Payment, \$000 per year, per ha or km	1	1	1
Natives + exotics	Natives only		
TNC establishes and maintains	No	No	No
Contract length, years	10	10	10
Reference property characteristics			
Median topography	Rolling	Rolling	Rolling
Median property size	28.5 ha	87.5 ha	90 ha
Median proportion of leased land	0	0	0
Predicted outcomes for the baseline programme and property			
Probability of participation	35%	33%	31%
Committed area or length when participating	2.8 ha	2.4 ha	1.8 km

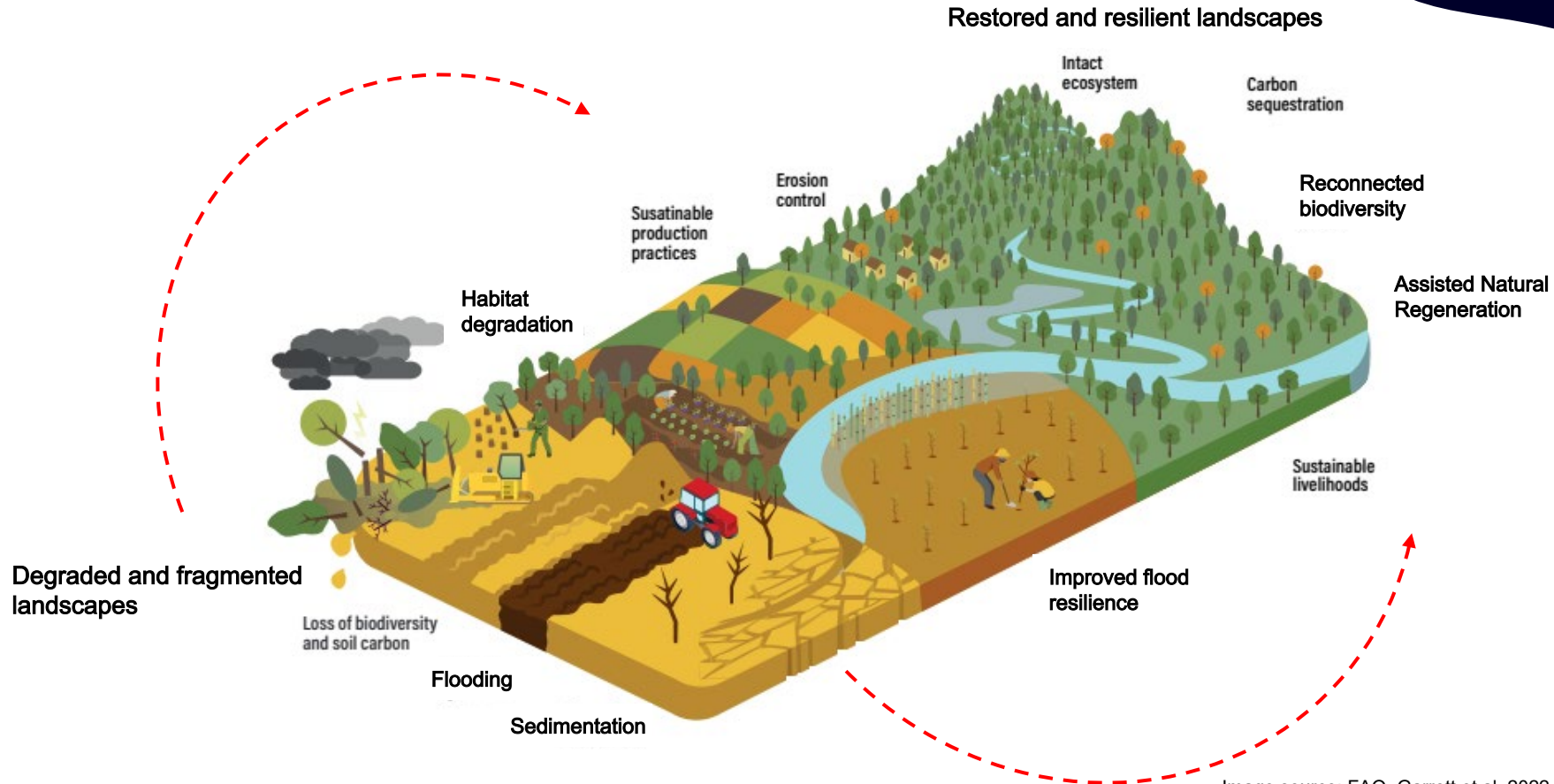
Note: Values are predicted for a representative property characteristic. Programme attributes are set at baseline levels, as indicated.

Unlocking Sustainable Financing for Lowland Restoration

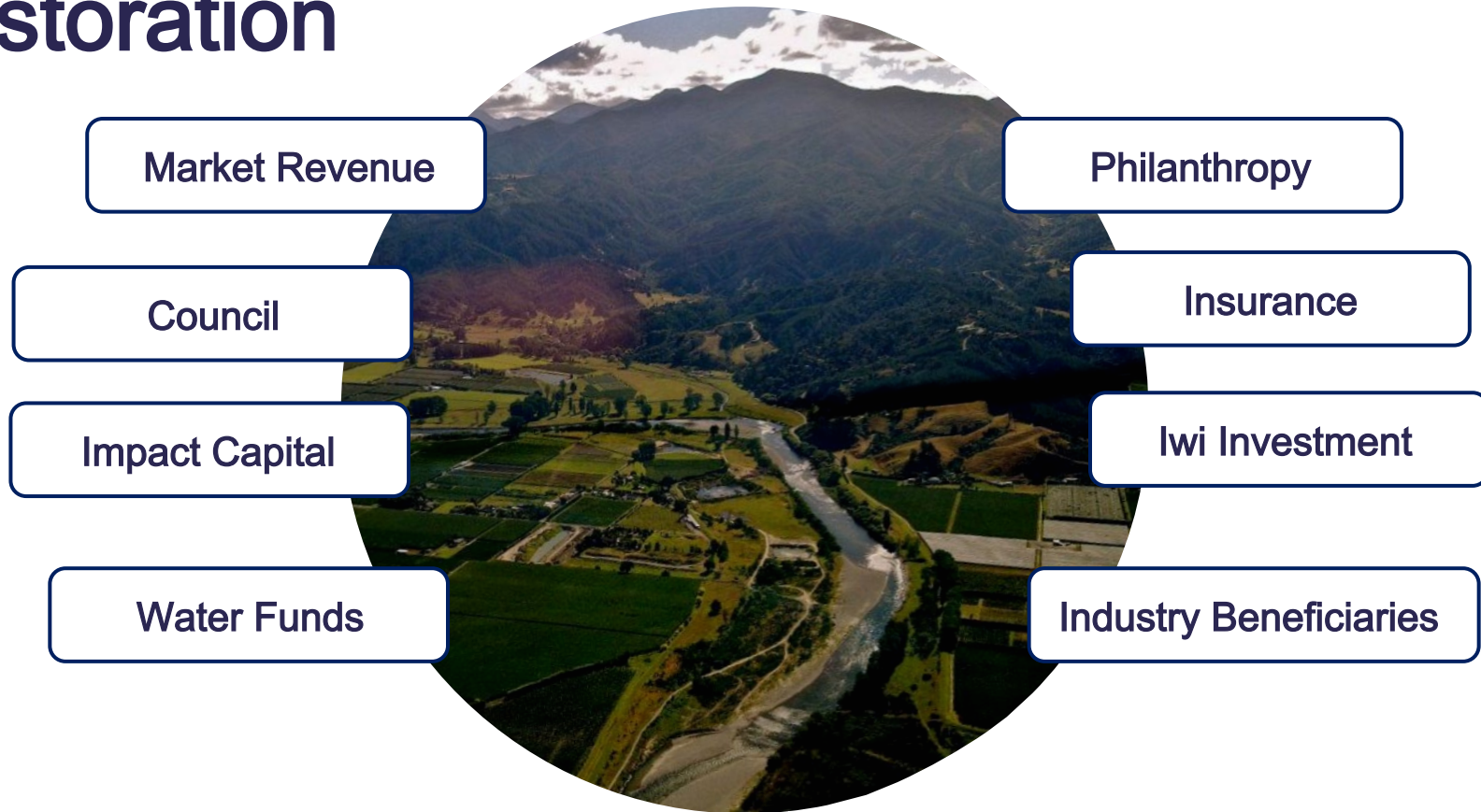
Image credit: Tim Cuff/ TNC Oceania Photo Competition 2025



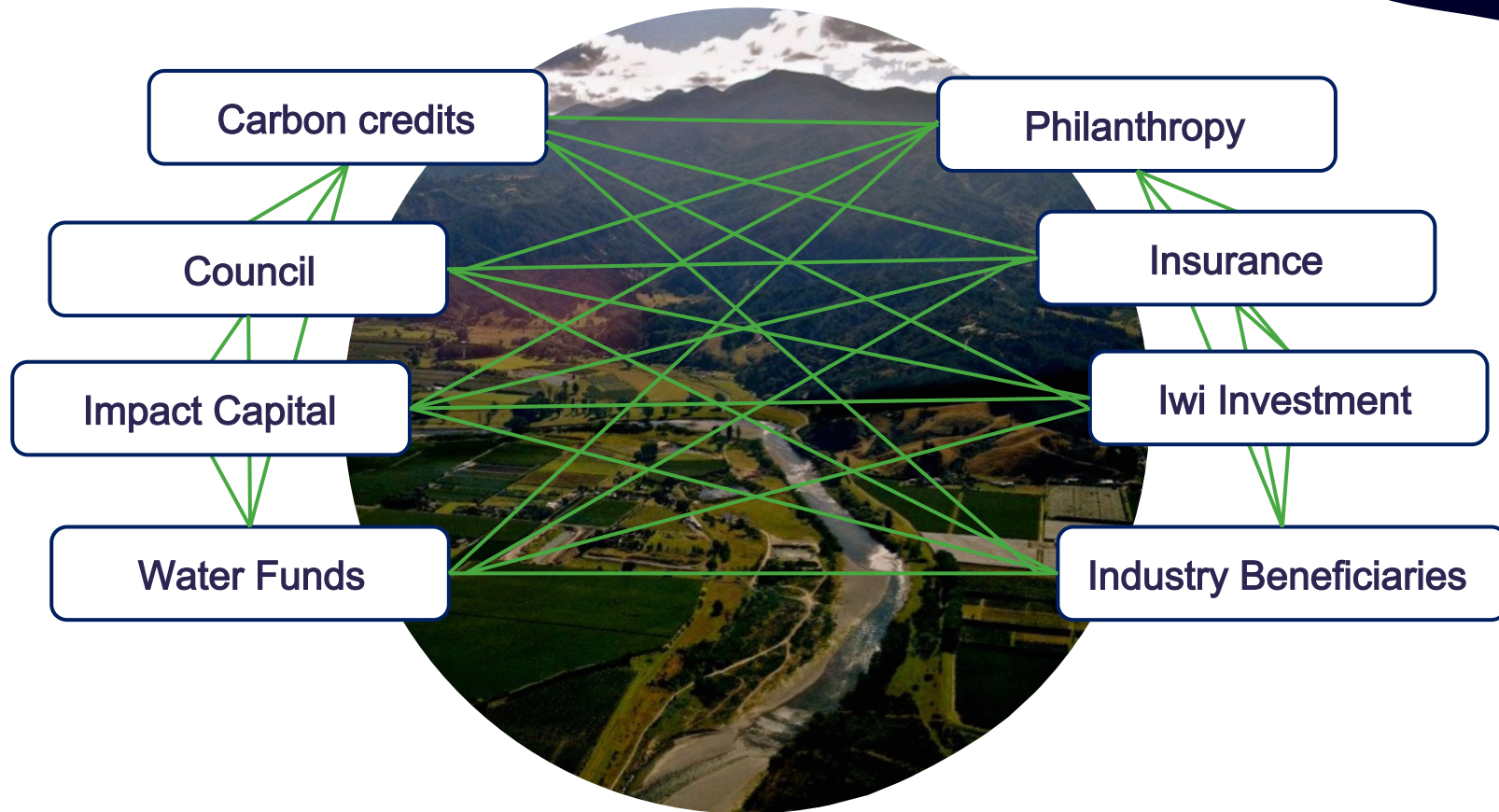
The opportunity for Te Taihū



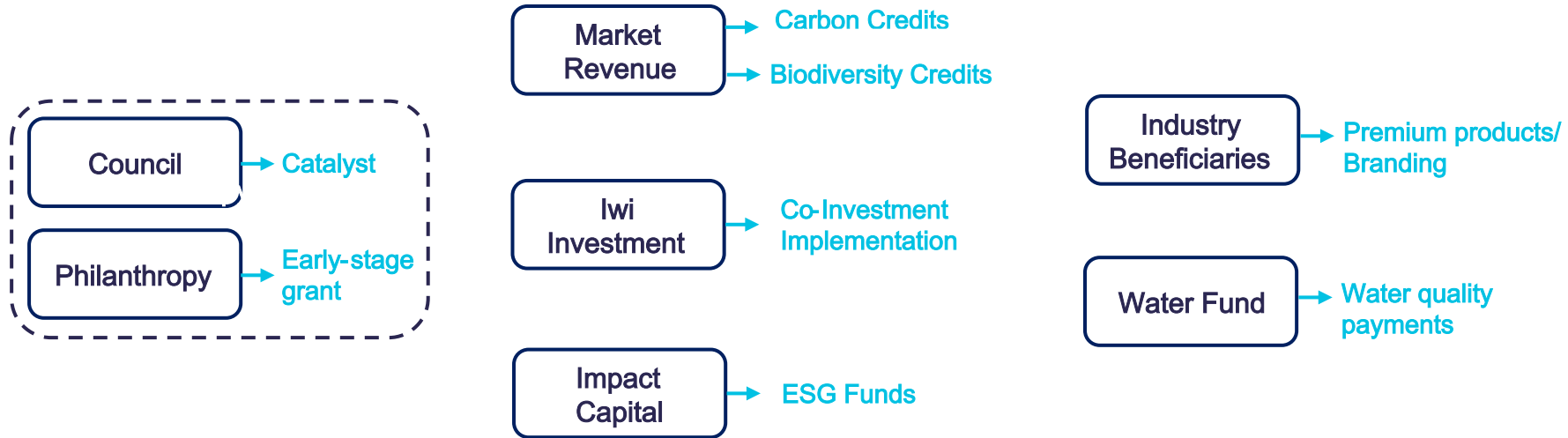
The shift: From funding to financing restoration



What is sustainable finance?



Unlocking blended finance Example



Sustainable financing pathway for the Restoring Lowlands Project

Mar 2026-Feb 2027–Feasibility

- Carbon feasibility
- Nature-based solutions feasibility
- Optimisation Framework for reduced sedimentation, increased biodiversity and flood resilience outcomes
- Pilots to test restoration approaches

Aim:

- Explore optimal targeting and financial feasibility of restoration in Motueka, Moutere and Riuwaka catchments
- Pilot catchment scale restoration
- Co-design iwi-council-industry partnerships for catchment scale restoration governance and investment mechanism

Mar 2027 and beyond

- If found ecologically and economically feasible, scale through further restoration implementation and blended finance mechanism design

Further information

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