The Aotearoa Circle

Mā te Kaitiakitanga ko te Tōnuitanga
Prosperity Through Guardianship

THE AOTEAROA CIRCLE

Natural Infrastructure Plan

Embedding, maintaining and enhancing our natural infrastructure to achieve economic prosperity for Aotearoa New Zealand.

Contents

Introduction

Why investment in natural infrastructure matters

By recognising natural infrastructure as the productive infrastructure that it actually is, we can strengthen our economy, reduce risk, create jobs, and build a future we can proudly say we helped shape.

Aotearoa New Zealand's economy is intrinsically linked to the environment. With 70% of our exports reliant on natural resources, investing in resilience and natural capital is not a trade-off - it is a win-win.

That's why we believe our Natural Infrastructure Plan presents a 1 + 1 = 3 investment: it addresses today's challenges while building capacity for tomorrow.

It also points to the need for a shift in conversation beyond hard engineering solutions that may appear cheaper upfront, but often cost more over time in maintenance, repairs and lost co-benefits.

We understand why infrastructure matters. Roads move goods and services. Pipes deliver water and power. Bridges connect communities and enable commerce.

Natural infrastructure is less visible and therefore less valued. It exists in wetlands, native forests, dunes, rivers and floodplains. It quietly provides flood mitigation, water filtration, erosion control, carbon sequestration and temperature regulation without invoices, contracts or maintenance schedules.

Nature may be the most undervalued infrastructure asset we have. And because we undervalue it, we underinvest in it.

For too long, we have framed economic growth and environmental health as competing interests. This Plan demonstrates that we can - and must – achieve both. By doing so we can capitalise on the multiple benefits that investment in natural infrastructure offers - often with lower, long-term operating costs.

And as the New Zealand Infrastructure Commission Te Waihanga has identified, long-term strategy and planning are essential to guiding infrastructure investment and enhancing national resilience. This Plan adds a powerful tool to our infrastructure toolkit to support this.

Practical Actions

The Natural Infrastructure Plan has been developed through a coalition of 200+ contributors with over 10,000 combined hours of research, debate and collaboration. It reflects deep expertise and shared ambition.

What it is not is a list of aspirations. Instead, it provides practical actions from clear policy levers for government to significant opportunities for business, leadership and investment.

The plan also includes six case studies demonstrating the measurable benefits of incorporating nature-based solutions into infrastructure planning.

It encourages decision-makers to widen the lens through which infrastructure investments are assessed.

The Investment Decision Toolkit, for example, provides a structured way to evaluate natural infrastructure alongside traditional engineered solutions.

Public agencies, private companies and iwi can use these tools to compare options, assess long-term value and capture multiple co-benefits.

When making decisions that will shape infrastructure for decades, the greatest risk is not choosing the wrong option. The greatest risk is failing to consider all available options.

Natural infrastructure is not an environmental add-on. It is a credible, investable infrastructure asset.

By investing in natural infrastructure, we can reduce the risk in insurance, improve returns on investment, and know we will have enduring growth.

The question is no longer whether we can afford to invest in natural infrastructure.

It is whether we can afford not to.

Vicki Watson

Chief Executive
The Aotearoa Circle

About The Aotearoa Circle

The Aotearoa Circle, a unique leadership organisation, convenes public and private sector partners to tackle complex climate and nature challenges that threaten economic growth and future prosperity.

We know that our economy is intrinsically linked to our natural capital, yet it has been declining for decades.

That's why we have a mission and a deadline. If nature loss is not halted and reversed by 2035, Aotearoa New Zealand will reach a tipping point with lasting consequences for our economy, communities and global standing.

Our work considers pressing climate change and nature challenges facing our key sectors - from agriculture, energy and seafood to transport, finance, and tourism. We do this by delivering practical, cross-sector solutions that reduce risk, strengthen resilience, and ultimately aim to restore natural capital.

The Circle is guided by Guardians (our Board) and strengthened by future voices through our Rangatahi Advisory Panel (RAP) who actively participate in major workstreams, including the development of this plan.

Formed in 2019, our co-founder Sir Rob Fenwick stated at the time that, “Time is running out for the treasures of nature that we love, and it is worth using every last breath, all of our collective energy, to save our land and secure our future.”

Sir Rob’s vision continues to inspire and guide us each day.

www.theaotearoacircle.nz

What is natural infrastructure?

When reading this plan, it is important to understand what is meant by the term '**Natural Infrastructure'**. A suitable place to start is to understand what is defined as '**infrastructure'**.

Infrastructure includes fixed, long-lived solutions that facilitate the production of goods and services. It enables vital services that drive a productive economy, safeguards communities, helps achieve broader environmental goals, and supports our wellbeing. Our infrastructure is vital to our way of life, supporting almost everything we do[1].

By comparison, **Natural Infrastructure** includes fixed, long-lived natural assets[2] that facilitate the production of goods and services. Natural infrastructure enables vital services that drive a productive economy, safeguards communities, helps achieve broader environmental goals, and supports our wellbeing. Our natural infrastructure is vital to our way of life, supporting almost everything we do.

Nature as a provider of goods and services

Natural infrastructure describes the natural or semi-natural structural elements of ecosystems and landscapes that are important for delivering goods and services. Examples of goods and services delivered by natural infrastructure are presented in **Table 1.**

As with infrastructure, natural infrastructure depreciates when it is misused, poorly managed, or overused. However, with three key differences:

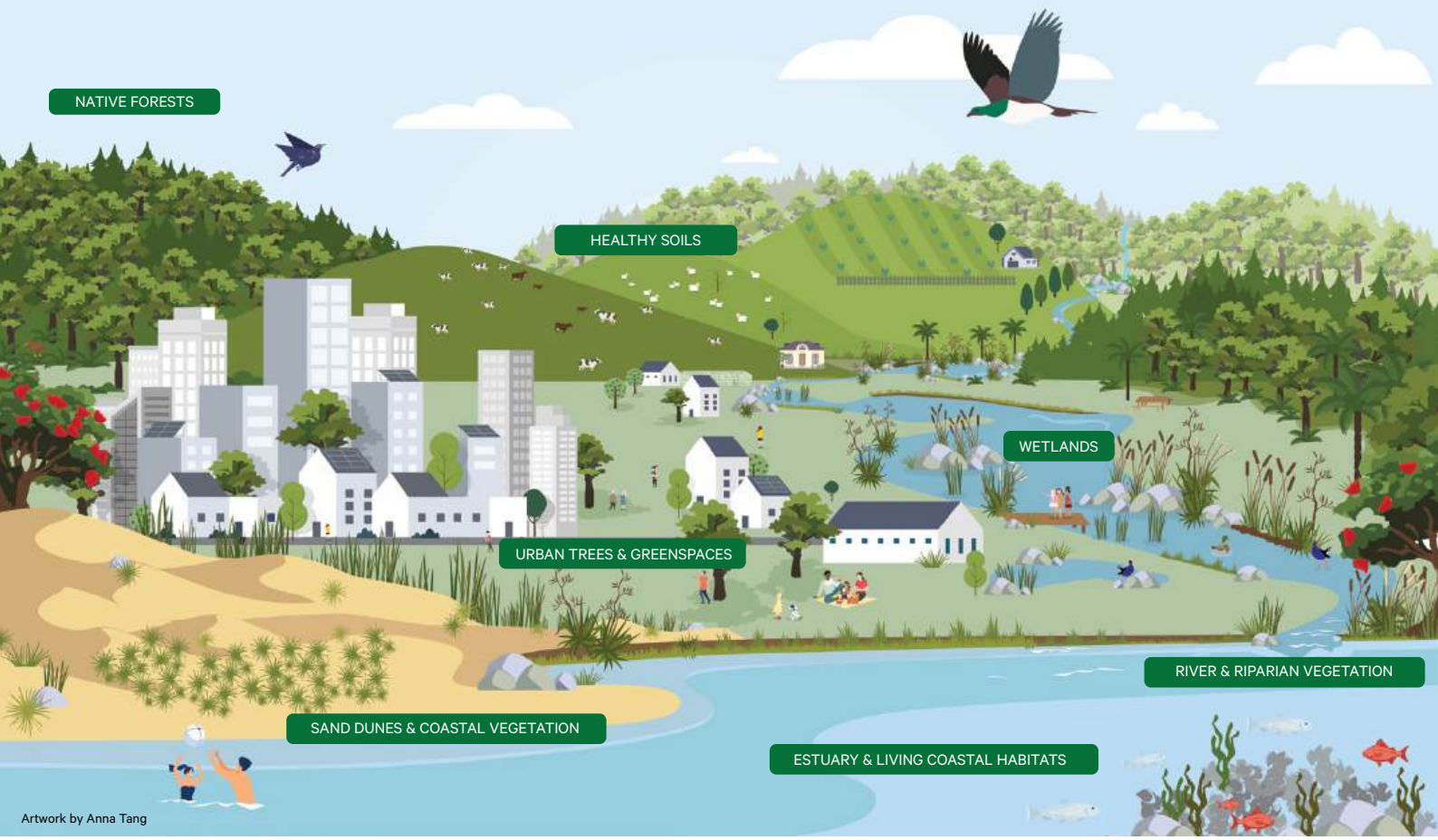
1. Damage to an ecosystem is in many cases irreversible; at best the system takes a long while to recover
2. It is not possible to replicate depleted or degraded ecosystems. Even if restoration is undertaken, the ecosystem may not be quite the same as before
3. Ecosystems can collapse abruptly without much warning (i.e. reach a 'tipping point')[3].

1 Te Waihanga - the New Zealand Infrastructure Commission. 2025. https://media.umbraco.io/te-waihanga-30-year-strategy/mepk0cfb/Natural Infrastructure Plan-draft-layout-28aug.pdf

2 The world's stocks of long-lived natural assets are often called by the generic name 'natural capital'.

3 Dasgupta, P. (2025). On Natural Capital: The Value of the World Around Us. London, UK.

What is natural infrastructure?



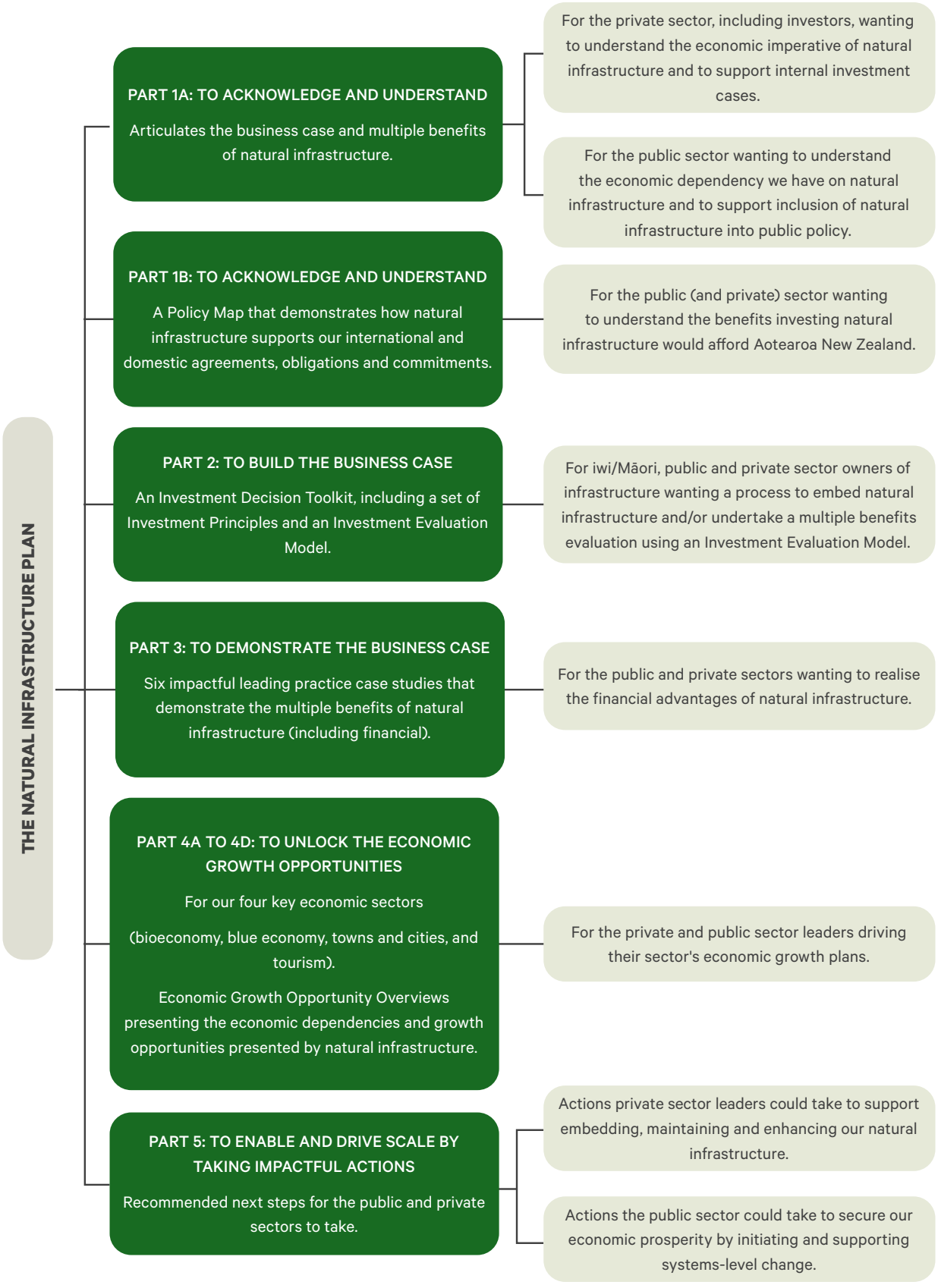
Artwork by Anna Tang

NATURAL INFRASTRUCTURE	SERVICES IT PROVIDES
NATIVE FORESTS	• Stabilises slopes and reduces erosion and landslides • Regulates water (slows runoff, sustains baseflows, improves quality) • Habitat for native species; supports cultural values and recreation • Stores carbon over long timeframes; provides local cooling and shade
RIVER & RIPARIAN VEGETATION	• Filters sediment, nutrients and some pathogens before they reach waterways • Shades streams, lowering temperatures for aquatic life • Stabilises banks and reduces erosion • Provides habitat corridors for native species and inanga spawning areas
WETLANDS	• Temporarily store floodwaters and buffers stormwater • Retain water and supports drought resilience • Filter nutrients and contaminants, improving water quality • Sequester and stores carbon (notably peat systems) • Provide habitat and mahinga kai values
URBAN TREES & GREENSPACES	• Reduce urban heat and provide shade for people and places • Intercept rainfall and reduce stormwater runoff • Improve air quality and support urban biodiversity and wellbeing
SAND DUNES & COASTAL VEGETATION	• Trap and stabilise sand, reducing coastal erosion • Buffer storm surge and waves; enable natural shoreline adjustment • Provide habitat for coastal species and protect communities and assets inland
ESTUARY & LIVING COASTAL HABITATS	• Attenuate waves and help stabilise shorelines • Filter water, cycle nutrients and improve clarity • Store “blue carbon” in sediments and vegetation • Provide nursery habitat that supports fisheries and biodiversity
HEALTHY SOILS	• Provide the foundation for food production by cycling nutrients, retaining moisture and supporting fertile land • Reduce erosion and sediment loss when healthy, protecting waterways and downstream ecosystems • Help buffer flooding by absorbing, storing and slowly releasing water across the landscape • Filter contaminants and improve water quality before water reaches rivers, estuaries and aquifers • Store carbon and support soil biodiversity that underpins ecosystem resilience

Structure of the Natural Infrastructure Plan

The Natural Infrastructure Plan comprises several sections framed against five objectives. Each has a specific purpose and intended audience.

Note: Parts 1B, 2, 3 and 4A-4D are available as separate PDFs to download.



Acknowledgements

We would like to acknowledge the many people and organisations who have helped bring this plan together. The people recognised here directly contributed to the content of the plan. For those participating in individual engagements and providing information, guidance or advice, please see **Page 81**

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- **Pip Best** and **Matt Scott,** EY New Zealand.

11 November 2025 Future Voices Forum facilitators that support the Future Voices Forum were:

- **Aaron Hewson**, AGMARDT
- **Aleida Powell**, Genesis
- **Hannah Mason,** BNZ
- **Imogen Brankin**, Silver Fern Farms
- **Kimberly Edge**, Fonterra
- **Logan Schokking**, formerly Westpac
- **Nicola Mulvay**, Mercury
- **Temuera Hall**, ASB.

Natural Infrastructure Plan – Individual Sections

Part 1B: The Policy Map

- **Nicola Swan, Alana Lampitt, Kate Wilson Butler, Georgie Austin-Ellis and Emmalene Lake** from Chapman Tripp for many of the summaries of international and domestic agreements, commitments, and obligations. In addition, summaries and content were provided by **Katherine Short** and **Emma Brosnahan.**

Part 2: The Investment Decision Toolkit

- The Investment Evaluation Model was developed, leveraging the Mauri Model initially developed by **Dr. Kēpa Morgan.**
- Input on the Investment Principles and the Investment Evaluation Model was provided by the ASB (**Anthony Ririnui, Juliet Tainui-Hernandez, Tawa Campbell-Seymour and Temuera Hall**), **Miranda James**, (ANZ), **Sam Parsons** (Boffa Miskell), **Genevieve Smith** (Beca), **Dr Dan Hikuroa, Katherine Short** (F.L.O.W. Collaborative), **Helen Mahoney** (Local Government Funding Agency), and **John Blyth** (Beca).
- Technical peer review for the investment principles and the Investment Evaluation Model was provided by **Dr Robin Mitchell** and the team at Nature Positive, **Dr Dan Hikuroa**, and **Geoff Simmons** (Parliamentary Commissioner for the Environment).

Part 3: The Case Studies

Project Lead: **Genevieve Smith**, Beca

For each case Study:

Kaipara Moana Remediation, Kaipara

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- **Lisette Rawson.**

Tangaroa Stream flood resilience scheme, New Plymouth

- **Kelly Armfield** (New Plymouth District Council)
- **Geoff White** (Manukorihi Hapū).

Queensland Reef Credit Scheme, Australia

- **Amy Bassnet** (Eco Markets Australia)
- **Goslik Schepers** (Eco Markets Australia)
- **Anjali Nelson** (GreenCollarAU)
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South-West Christchurch Resilient Urban Development, Christchurch

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- **Hannah Lewthwaite** (Christchurch City Council)
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Auckland Airport, Auckland

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- **Robyn Simcock** (Manaaki Whenua - Landcare Research)
- **Jonathan Moores** (NIWA)
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Part 4: The Sector Growth Opportunities

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- **Genevieve Smith**, Beca

4D: Blue Economy

- **Katherine Short**, Principal and Director, F.L.O.W. Collaborative Ltd.

Thank you to all involved.

160
Engagement sessions

170
Attendees - Executive Forum

60
Attendees - Future Voices Forum

10,000+
Combined hours contributed

Our partners are at the heart of everything we do - driving meaningful change through genuine collaboration.

The Natural Infrastructure Plan simply wouldn't have been possible without their commitment to our kaupapa.

Our Partners

Premium

JANE TAYLOR
Former Guardian
The Aotearoa Circle

Leading

Active

Air New Zealand
Alliance Ecology
Bay of Plenty Regional Council
Beca
Bioeconomy Science Institute
Boffa Miskell
BRANZ
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DLA Piper
DNA Design
Earth Sciences New Zealand
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KPMG New Zealand
Land Information NZ
Local Government New Zealand
Marsh
MartinJenkins
Mercury
Ministry for Primary Industries
MBIE
Ministry of Foreign Affairs & Trade
Ministry of Transport
Moana New Zealand
Nature Positive Limited
New Zealand King Salmon
New Zealand Post
New Zealand Trade & Enterprise
Ngāi Tahu Holdings
Ngāpuhi Asset Holdings Limited
Ngāti Whātua Ōrākei Whai Rawa Ltd
Pāmu
Port of Tauranga
PwC New Zealand
QBE Insurance
Rabobank
Ravensdown
RealNZ
Rio Tinto | NZAS
Sanford
Sealord
Sudima Hotels
T & G Global Limited
Te Puni Kōkiri
Toitū Envirocare
Tourism Holdings Limited
Tourism New Zealand
Wellington City Council

Executive Summary

Executive Summary

Aotearoa New Zealand's long-term economic prosperity and national resilience fundamentally depend on the health and performance of natural infrastructure.

This Natural Infrastructure Plan is the first coordinated, long-term plan to embed, maintain, and enhance the natural infrastructure that underpin the country's enduring prosperity.

It is a Plan that responds to clear evidence that despite nature delivering significant economic benefits, it is undervalued, underinvested in, and increasingly degraded, leaving Aotearoa New Zealand exposed to escalating climate, environmental, and financial risks.

It is a Plan that can help Aotearoa New Zealand, and its economy, communities and businesses realise the significant growth and resilience opportunities presented by investing in natural infrastructure.

A. Why a Natural Infrastructure Plan is needed?

Natural Infrastructure includes fixed, long-lived natural assets that facilitate the production of goods and services. Natural infrastructure enables vital services that drive a productive economy, safeguards communities, helps achieve broader environmental goals, and supports our resilience.

Our natural infrastructure is vital to our way of life, supporting almost everything we do. It is a significant part of why people choose to live, work, and play in Aotearoa New Zealand.

Natural Infrastructure supports our key economic sectors, including the bioeconomy, tourism, the Blue Economy, and urban development. A healthy environment enhances the resilience of food systems, supports natural air filtration and ensures water infrastructure can withstand the challenges of climate change and extreme weather[9].

Many of our most prominent economic activities and consumption patterns are actively reducing nature's ability to sustain critical ecosystem services upon which our economy depends[10]. Today in Aotearoa New Zealand, 63% of ecosystems are threatened[11]. Our bioeconomy is estimated to deliver direct benefits equivalent to 27% of New Zealand's GDP[12]. Current expenditure to protect and enhance the natural environment is equivalent to 1.4% of total expenditure[13]. This infrastructure deficit creates mounting financial exposure, more so as climate-related hazards- flooding, storms, erosion, and land instability - drive increasing costs for communities, businesses, and government.

Commercial growth opportunities and market access increasingly depend on verified environmental performance and expectations are increasing. For our bioeconomy, addressing our natural infrastructure deficit is fundamental to Aotearoa New Zealand's sustained productivity, market credibility and access, and long-term sector competitiveness. For our tourism sector, protecting and restoring indigenous biodiversity maintains and enhances assets that support premium nature-based experiences and strengthen destination competitiveness.

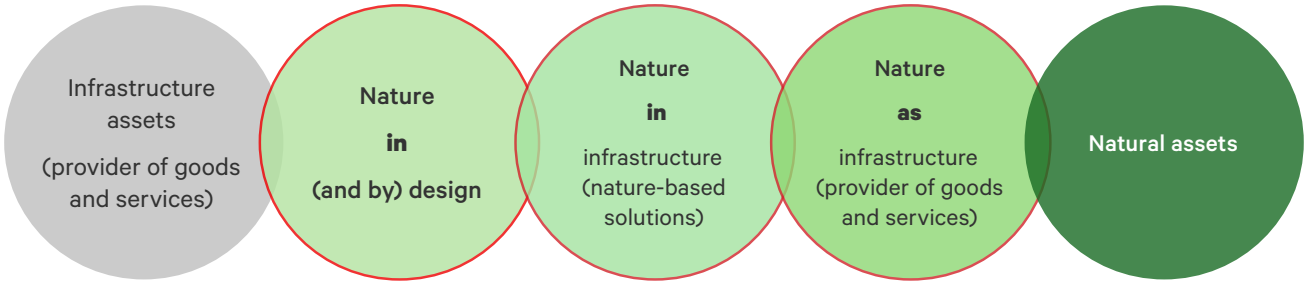
B. Vision and ambition of the Natural Infrastructure Plan: nature as core and critical infrastructure

The Plan's **vision** is to shift national thinking and systems so that natural infrastructure is recognised as essential infrastructure equal in importance to roads, electricity networks, and water systems. Having a single coordinated national plan which supports embedding, mainstreaming and enhancing our most critical supplier of goods and services – natural infrastructure - is vital to securing productive and enduring economic prosperity.

The **ambition** of the Natural Infrastructure Plan is not one of accepting 'business as usual' and merely investing to mitigate the 'environmental' impacts of our activities. Rather, it is an ambition that has the **goal of halting and reversing nature loss at its core so Aotearoa New Zealand can build economic value and resilience** and remain an innovative and competitive country into the future. It is an ambition focused on **systems-level changes** that support investment to deliver measurable and substantive long-term positive and resilient outcomes for our natural assets **and** the economy.

9 Ministry for the Environment & Stats NZ, 2025. https://environment.govt.nz/publications/our-environment-2025/
10 New Zealand BIOFIN Assessment, 2025
11 Ministry for the Environment & Stats NZ, 2025. https://environment.govt.nz/publications/our-environment-2025/
12 WWF–New Zealand. (2024). A nature positive Aotearoa. https://wwf.org.nz/news/nature-positive/nature-positive-aotearoa
13 WWF–New Zealand. (2024). A nature positive Aotearoa. https://wwf.org.nz/news/nature-positive/nature-positive-aotearoa

The scope of natural infrastructure covered in the Natural Infrastructure Plan



C. Objectives of the Plan

The Natural Infrastructure Plan has five overarching objectives:

1. To acknowledge and understand the economic dependency and business imperative for natural infrastructure
2. To build the business case tools that support the integration of nature-based solutions in infrastructure projects
3. To demonstrate a financially sound business case for nature-based solutions in infrastructure projects
4. To unlock our key economic sector growth opportunities presented by investing in natural infrastructure
5. To enable and drive scale by taking impactful actions that reinforce natural infrastructure as core infrastructure.

D. Natural Infrastructure Plan Section Summaries

Part 1: The business imperative and multiple benefits of natural infrastructure

Through achieving the ambition of this Plan, and by embedding, maintaining and enhancing our natural infrastructure, we **can protect the goods and services that underpins the prosperity and resilience of Aotearoa New Zealand's economy**.

Well-functioning natural infrastructure **reduces risks, strengthens infrastructure resilience, enhances productivity, reduces long-term public expenditure, and creates new economic opportunities**.

The **greatest key economic sector commercial growth opportunities** arise from our economy's dependencies and impacts on nature. For example, the Hauraki Gulf provides ecosystem services that are annually valued at over $5 billion, with total natural assets estimated at between $40-100 billion[14]. The impacts, economic dependencies, and commercial growth opportunities for each of our four key sectors are discussed within each **Economic Sector Opportunity Overviews**. The four key sectors are the bioeconomy, tourism, Blue Economy and towns and cities.

Nature-based solutions, within infrastructure, such as wetlands for flood management, dune restoration for coastal protection, or forests for erosion control can provide **value for money, longer lasting and more adaptable benefits** than traditional infrastructure.

Part 2: The business case tool to support nature-based solutions in infrastructure

An Investment Decision Toolkit, with supporting tools, has been developed as part of this Plan. The Toolkit's purpose is to give nature-based solutions an equal opportunity to be objectively, consistently, and effectively evaluated when users evaluate potential infrastructure solutions.

Adopting a key set of Investment Principles could support greater investment in natural infrastructure. These principles outline what must be true for natural infrastructure investment to be credible, fair, consistent and effective.

Part 3: Demonstrating the fiscal and economic case for natural infrastructure

Six case studies were selected and analysed for their fiscal and economic benefits and against the Investment Principles.

The studies demonstrate how applying natural infrastructure to our infrastructure challenges is not only financially cost efficient and effective but capable of delivering numerous multiple benefits.

Recognising that **value means the net fiscal, economic and wellbeing benefits of an asset or investment proposal over its life cycle,** the six case studies demonstrate that:

Natural infrastructure delivers value for money. For example, Kirimoko Park, a subdivision in Wanaka, used a Water Sensitive Design approach which meant the subdivision was 22% more cost effective than a traditional approach for managing its stormwater. Using natural infrastructure delivered improved private development yield, avoided hard infrastructure costs, avoided costs of future proofing and avoided environmental remediation costs.

Natural infrastructure delivers risk and resilience, environmental, cultural and social value. For example, the Kaipara Moana Remediation project will provide 712 new employment opportunities for the region. Using a natural infrastructure approach will also improve on-farm productivity and provide a benefit-to-cost ratio of 22% and payback period of 4.5 years due to increased pasture income.

We encourage readers to read the six case studies for full analysis of the demonstratable benefits of nature-based solutions.

Part 4: A call for collective action

The Natural Infrastructure Plan outlines seven key outcomes requiring leadership from government, iwi/Māori, business, and communities.

Taking rapid action will help secure our economic prosperity whilst strategically positioning Aotearoa New Zealand internationally, where international market expectations are high. We need to act now to reduce our risk, improve our resilience, and maintain our global reputation and market presence.

14 Clough, P., Bealing, M., & Huang, T. (2023). Valuing the Hauraki Gulf: An ecosystem services and natural capital approach. NZIER report to the Hauraki Gulf Forum. New Zealand Institute of Economic Research.

E. Long term desired outcomes and actions to embed natural infrastructure (In progress or proposed)

Outcome 1:
The assets and liabilities of our natural infrastructure are understood and accounted for.

Action:
Develop an internationally aligned natural asset accounting system, that includes all iwi/Māori interests, to enables us to understand our natural infrastructure assets and liabilities (including stocks and flows, and how they are changing).

Outcome 2:
Natural infrastructure, as a strategic economic asset, is supported by a sound business case, and national long-term stewardship.

Action:
Support natural infrastructure investment, and its multiple benefits (including financial, environmental, social and cultural), by including natural infrastructure in public sector investment frameworks, planning strategies, and asset stewardship governance frameworks.

Outcome 3:
Natural infrastructure is embedded into the planning and environmental system, asset insurability, and National Risk and Resilience Frameworks.

Action:
The economic impacts and dependencies we have on natural infrastructure is embedded into natural hazard planning and National Risk and Resilience Frameworks. Natural infrastructure investment is supported through spatial planning, streamlined consenting and insurance controls.

Outcome 4:
Innovative funding and finance mechanisms enable public and private capital flows into natural infrastructure.

Action:
Implement and/or scale enduring innovative funding and finance mechanisms, including revenue generating models, that support domestic and international investment to embed, maintain and enhance our stocks of natural infrastructure.

Outcome 5:
Sector-level investment in natural infrastructure supports long-term economic resilience and commercial growth.

Action:
Key economic sectors acknowledge and respond to the impacts, economic dependencies, and growth opportunities through inclusion improved accountability, national strategies, and improved supply chain resilience.

Outcome 6:
Nature as infrastructure is understood and natural infrastructure investments are confidently and competently delivered.

Action:
Training and competency programmes and leadership, supported by guides and Communities of Practice, bolster collective understanding and technical capability.

Outcome 7:
Credible data and verification support natural infrastructure investment decision-making.

Action:
Develop platforms that house and enable access to consistent and reliable decision-useful data supported by dependable third-party verification of natural infrastructure investments.

F. 2026 opportunities for the public and private sectors

We appreciate that in a general election year there are limits as to what can be undertaken and achieved by the public sector. These three options provide key opportunities to get progress underway. The private sector also have three priority recommendations for 2026.

(I) PUBLIC SECTOR – 2026 OPPORTUNITIES

1. Definitions

- Include 'natural infrastructure' in the definition of infrastructure – specifically section 3, the New Zealand Planning Bill (2025) with a cross reference to the Natural Environment Bill (2025)

2. Recognition and Inclusion

- Recognise Aotearoa New Zealand's economic dependency on natural infrastructure as a national risk by including this in the National Risk and Resilience Framework[1].

3. Collective Understanding and Capability

- Bolster central and local government understanding of natural infrastructure, including its ecosystem and resiliency benefits, to ensure it is included as options in infrastructure solutions

(II) PRIVATE SECTOR – 2026 OPPORTUNITIES

1. Awareness

- The insurance sector takes a lead on raising awareness of the benefits of natural infrastructure to demonstrate how insurance can remain accessible

2. Fund

- Continue to work on innovative funding models and finance mechanisms that can fund natural infrastructure at scale

3. Collective Understanding and Capability

- Bolster private sector capability by showcasing and sharing case studies of natural infrastructure to better understand the financial and multiple benefit opportunities.

Setting the scene:

Securing economic growth and prosperity through positive change

A. Why Aotearoa New Zealand needs a national plan for our natural infrastructure

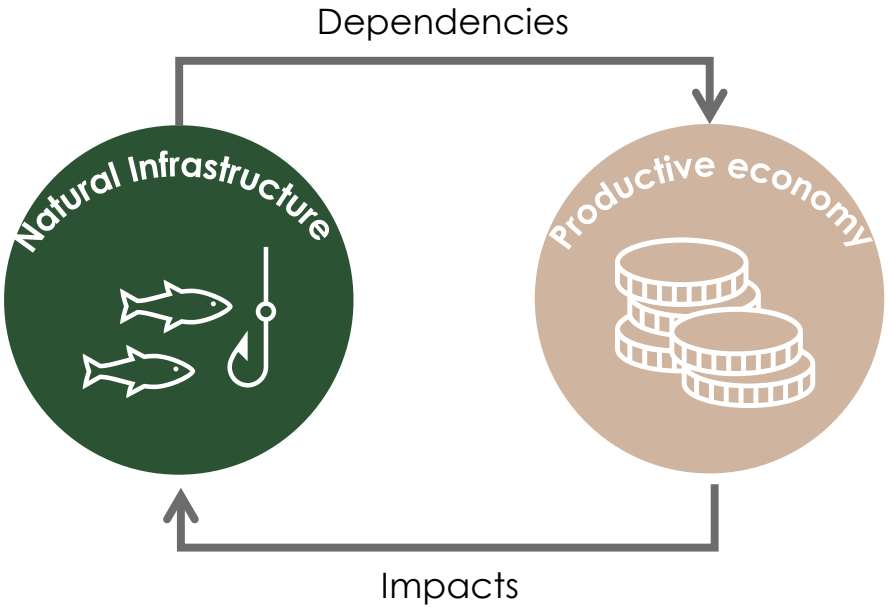
"Nature is our most fundamental piece of infrastructure."-
David Carter, The Aotearoa Circle Guardian and Steering Committee Member

(i) Aotearoa New Zealand's economy is unequivocally tied to the natural environment

Nature is central to our economic prosperity, and identity as a nation. 'Clean and green' is Aotearoa New Zealand's global brand and our relationship with Te Taiao / the natural world is one of our defining characteristics as a nation[15]. Our industries, services, products, and trade depend on the fundamental processes, the material goods, and the regulatory services provided by nature.

When thriving, natural infrastructure can buffer us from the impacts of severe weather events, provide a range of valuable goods, such as food and fibre, and sustain the clean air, freshwater, and healthy seas and soils we depend upon.

Nature and its services are not only an integral part of our national infrastructure system, but also infrastructure in its own right – and when we consider its role in increasing our resilience to the effects of climate change – it needs to be recognised, maintained, and invested in as critical infrastructure for Aotearoa New Zealand.



15 WWF–New Zealand. (2024). A nature positive Aotearoa. https://wwf.org.nz/news/nature-positive/nature-positive-aotearoa

However, this provision of goods and services from our natural assets is often taken for granted and not priced into our economic activity. They are seen as 'free'.

Aotearoa New Zealand's economic and financial systems have an unsustainable relationship with nature. At present, **Aotearoa New Zealand has a 'nature-negative' economy.** Our economic activities are degrading and depleting nature at unprecedented rates. Biodiversity, a key indicator for nature change, continues to decline, with 63% of Aotearoa New Zealand ecosystems currently threatened[16].

For example, our bioeconomy depends on the condition and performance of natural infrastructure systems, yet many of these systems are degraded, fragmented, or unable to keep pace with increasing climate, land-use, and market pressures. Declining soils, waterways, forests, wetlands, and erosion-prone slopes are reducing the reliability of ecosystem functions essential for food, fibre, and bio-based manufacturing[17].

For our tourism sector, the top motivation for holiday visitors (76%) to travel to Aotearoa New Zealand continues to be experiencing our landscapes and scenery[18]. Visitor spending remains critical for economic growth. For example, tourism on Public Conservation Land and Waters (PCLW) generated $4.3billion pre-pandemic, though this declined to $3.4 billion in recent years underscoring the importance of restoring international visitor flows and strengthening destination resilience[19].

Although our economy, and our future economic prosperity, depends on our natural assets, our current economic system and planning approaches do not fully recognise the value of our natural assets. Simply put, there is no structured way to integrate the value of our natural infrastructure into financial decisions.

(ii) We are underinvesting in our natural infrastructure

Conversely, many of our most prominent economic activities and consumption patterns are actively reducing nature's ability to sustain critical ecosystem services upon which our economy depends[20].

With our bioeconomy delivering economic benefits equivalent to 27% of New Zealand's GDP, and with nature directly or indirectly supporting all economic activities, continued loss of our natural assets is exposing Aotearoa New Zealand to significant economic risks[21]. A survey conducted by The Aotearoa Circle ahead of its October 2025 Executive Forum, involving 170 senior leaders, found that 83% believe New Zealand's businesses and communities are at risk due to underinvestment in natural infrastructure.

Further, whilst infrastructure investment has delivered economic and social benefits, this has often been at the expense of natural systems. Land use change, resource extraction, ecosystem modification, and pollution have degraded the natural assets that underpin Aotearoa New Zealand's long-term prosperity. A healthy environment enhances the resilience of food systems, supports natural air filtration and ensures water infrastructure can withstand the challenges of climate change and extreme weather[22]. While mitigation requirements (included in regulations and policies) were intended to reduce harm, the net value of nature continues to decline.

(iii) Natural infrastructure presents strategic growth opportunities for Aotearoa New Zealand

Market access increasingly depends on verified environmental performance and expectations are increasing. The increasing focus on environmental performance in key export markets means Aotearoa New Zealand's products may lose access to premium buyers if our credentials do not meet expectations. This could occur as countries raise barriers to imports which don't meet their local expectations on nature management. Even where access is retained, premium value for Aotearoa New Zealand products may no longer be available[23].

For example, the UK-New Zealand and EU-New Zealand free trade agreements (FTA) require demonstrated environmental performance as

16 Ministry for the Environment & Stats NZ, 2025. https://environment.govt.nz/publications/our-environment-2025/
17 Ministry for the Environment & Stats NZ (2025). Our Environment 2025.
18 Tourism New Zealand. (2024). International visitor spend up $1.3b on previous year. Retrieved from: https://www.tourismnewzealand.com/news-and-activity/international-visitor-spend-up-1-3b-on-previous-year/
19 DOC, 2019
20 New Zealand BIOFIN Assessment, 2025
21 WWF–New Zealand. (2024). A nature positive Aotearoa. . https://wwf.org.nz/news/nature-positive/nature-positive-aotearoa
22 Ministry for the Environment & Stats NZ, 2025. https://environment.govt.nz/publications/our-environment-2025/
23 WWF–New Zealand. (2024). A nature positive Aotearoa. https://wwf.org.nz/news/nature-positive/nature-positive-aotearoa

conditions of trade access and the UK FTA includes the mauri of Marine Ecosystems (Article 22.9)[24]. Strategic investment in natural infrastructure is therefore not an environmental add-on but a fundamental prerequisite enabling and accelerating our key economic sectors returns.

For our bioeconomy, addressing our natural infrastructure deficit is fundamental to Aotearoa New Zealand's sustained productivity, market credibility, and long-term sector competitiveness. For our tourism sector, protecting and restoring indigenous biodiversity maintains and enhances assets that support premium nature-based experiences and strengthen destination competitiveness.

(iv) The interconnected crises of climate change and biodiversity loss present fiscal risks

Today, Aotearoa New Zealand and the rest of the world, currently face the interconnected crises of climate change and biodiversity loss. As our climate continues to change for the foreseeable future Aotearoa New Zealand will face more frequent and extreme risks from natural hazards and declining ecosystem services.

Extreme weather events and biodiversity loss over the next 10 years are ranked the two greatest risks globally by the World Economic Forum[25] [26].

Accordingly, to address global financial risks that are caused by declining biodiversity, it is critical that investment into natural infrastructure is significantly increased.

Global investment in nature in 2022 amounted to $200billion USD, only a third of the investments needed to achieve global climate change and biodiversity targets by 2030[27]. While private finance for nature has grown significantly in the past four years, from around $9.4billion USD in 2020 to over $102billion USD in 2024, governments continue to provide well over 80% of funding for natural infrastructure[28].

As shown in **Figure 4**, in Aotearoa New Zealand during the 2025-26 fiscal year, government agencies have budgeted approximately $2.6billion of expenditure on either environmental protection or resource management activities, down from $3.6billion the year before[29]. While our bioeconomy is estimated to deliver direct benefits equivalent to 27% of New Zealand's GDP, government expenditure to protect and enhance the natural environment is equivalent to only about 1.4% of total expenditure[30].

24 Ministry of Foreign Affairs and Trade (MFAT) (2022). Free Trade Agreement between New Zealand and the United Kingdom of Great Britain and Northern Ireland. Available at: https://www.mfat.govt.nz/assets/Trade-agreements/UK-NZ-FTA/NZ-UK-Free-Trade-Agreement.pdf (Accessed: [26 November 2025]).

25 World Economic Forum. (2026). Global risks report 2026 (21st ed.). World Economic Forum. https://www.weforum.org/publications/global-risks-report-2026/

26 UNEP, 2023

27 United Nations Environment Programme. (2023). State of finance for nature 2023. United Nations Environment Programme. https://www.unep.org/resources/state-finance-nature-2023

28 UNEP FI 2024

29 Parliamentary Commissioner for the Environment. (2025). Estimate of environmental expenditure 2025/26: Method and results. https://pce.parliament.nz/media/gdxlv45i/estimate-of-environmental-expenditure-2025-26-method-and-results

30 WWF–New Zealand. (2024). A nature positive Aotearoa. https://wwf.org.nz/news/nature-positive/nature-positive-aotearoa

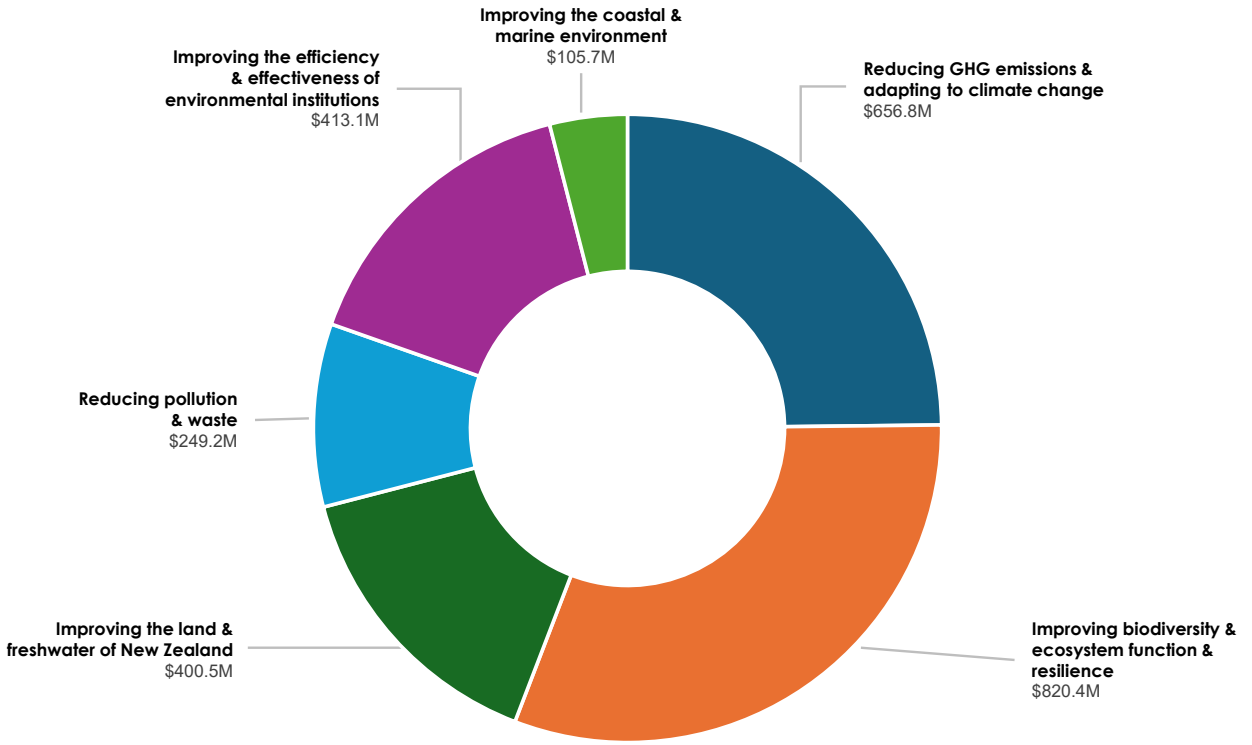


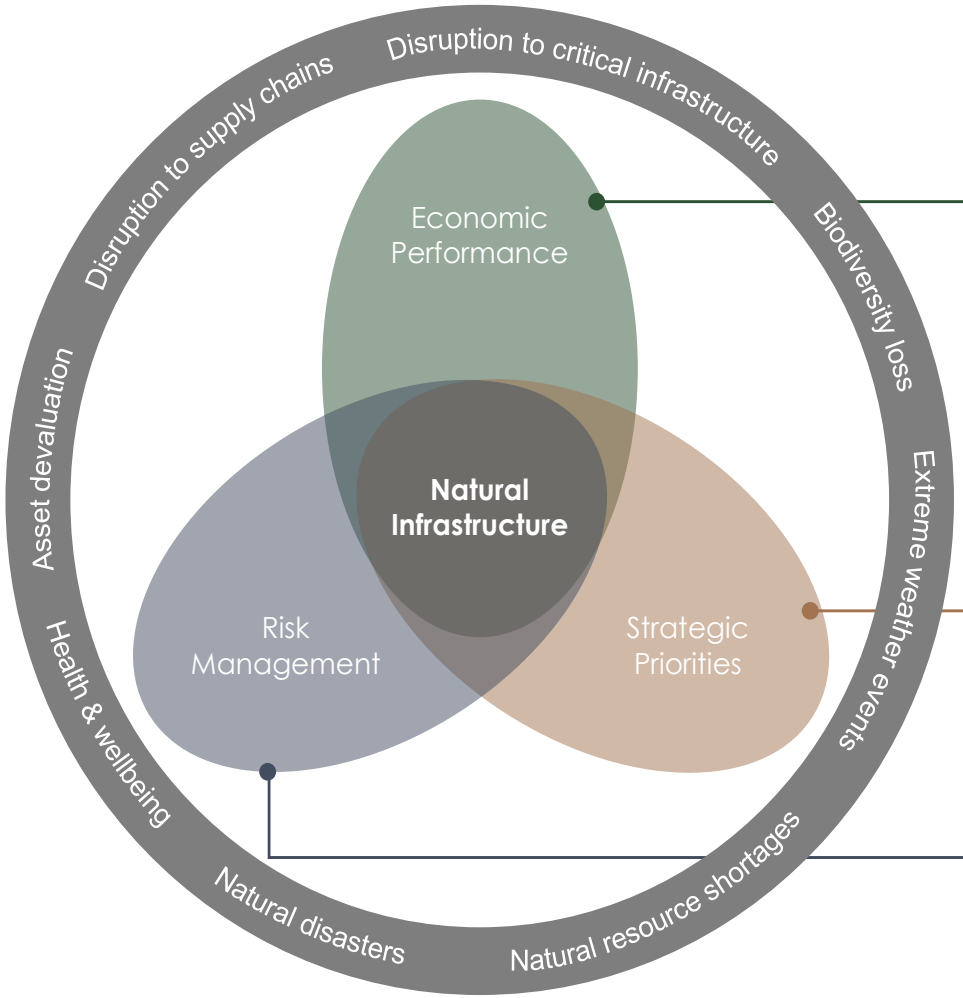
Figure 4: Government expenditure on environmental protection or resource management activities.

Natural infrastructure is critical for an enduring economy, improved resilience, higher living standards and incomes, and for widening the options available for Aotearoa New Zealand sectors to improve economic prosperity.

Figure 5a shows the **financial advantages** of embedding, maintaining and enhancing Aotearoa New Zealand's natural infrastructure. Benefits include new revenue streams, reduced exposure to physical risks, improved reputation and bank, and increased access to capital.

Figure 5b shows the Natural infrastructure benefits in addressing risks and realising the commercial opportunities.

Figure 5a: Financial advantages of developing natural infrastructure



New Zealand's National Risks

Financial advantages of developing natural infrastructure

Resource Efficiency
- Reduced exposure to raw material and natural resource price volatility
- Reduced reliance on natural resources and resilience to shortages

Products & Services
- New revenue streams from development of green solutions
- Reduced costs of raw materials and production inputs

Capital flow & Financing
- Increased access to green funds, bonds, and linked loans
- Access to new capital markets for nature-based projects
- Debt finance term relief for nature-based outcomes

Reputation & Brand
- Improved reputation among customers and consumers
- Improved stability of operations and working conditions
- Increased sector brand value
- Improved access to overseas markets

Regulatory Requirements
- Reduced operation and compliance costs from reduced dependencies on natural resources, energy, or impacts on nature

Physical Risks
- Reduced natural hazard response and repair costs
- Increased productivity due to resilient natural resource supply chains
- Decreased capital expenditure for adaptation
- Reduced write-offs and early retirement of existing assets
- Decreased risk of insurance withdrawal or premium increase

Figure 4b: Natural infrastructure benefits in addressing risks and realising the commercial opportunities

Natural Infrastructure Risks

Acute Hazards

Occurrence of short term, specific events that cause the sudden damage or loss of natural infrastructure and ecosystem services that economic activities rely upon. For example flooding or wildfire.

Chronic Hazards

Gradual changes to the state of nature that cause the degradation or decline of natural infrastructure and ecosystem services that economic activities rely upon over time. For example, changes to annual mean rainfall.

Market Transition Risks

Policy & Legal

Changes in the policy context due to new policies to create positive impacts on nature or mitigate negative impacts see certain economic activities fail to meet regulations and increase liability

Reputation

Changes in societal, customer, or community perceptions perception concerning a sectors actual or perceived nature impacts, reducing demands for products or services

Market

Changing dynamics in overall sector markets, including changes in consumer preferences and investor sentiments, reduce market value of a sector. For example, nature degrading activities are unable to access green capital markets or improved financing terms

Technology

Substitution of existing economic activities with products or services with a reduced impact on nature and/or reduced dependency on nature. For example, the replacement of fossil fuels with renewable energies

Natural Infrastructure Opportunities

Acute Hazards

Natural infrastructure buffers against the occurrence of short term, specific natural hazard events, protecting against the sudden damage or loss of ecosystem services that economic activities rely upon

Chronic Hazards

Natural infrastructure conserves and restores the ecosystem services that economic activities rely upon, mitigating the effects of gradual changes to climate and the state of nature over time

Market Transition Opportunities

Policy & Legal

Economic activities use natural infrastructure to create positive impacts on nature or mitigate negative impacts to meet changing policy requirements

Reputation

Society, customers, or community stakeholders hold a positive perception of an economic sectors due to the positive nature impacts, derived from natural infrastructure, increasing demand

Market

Changing dynamics in overall sector markets, including changes in consumer preferences and investor sentiments, increase market value of a sector due to early adoption and use of natural infrastructure supporting positive impacts

Technology

Products or services that integrated natural infrastructure within economic activities displace existing products or services due to positive impacts on nature and/or reduced dependency on nature

B. Purpose and vision

An effective, long-term, co-ordinated natural infrastructure plan is needed to manage our critical economic dependency on nature; a plan to revert from a 'nature negative' economy to a 'nature positive' economy.

For example, nature as a core infrastructure asset critical for resilience, visitor experience quality or long-term sector value should be embedded in the tourism sector growth plans. Tourism New Zealand research showing nature remains the core motivator for international visitors.

For the Blue Economy, the opportunity for a coherent national Blue Economy strategy means global investors would have certainty about Aotearoa New Zealand's long-term direction, commitment to marine ecosystem health, and policy stability.

Having a single plan which supports embedding, mainstreaming and enhancing our most critical supplier of goods and services – natural infrastructure - is key to securing a productive and enduring economic prosperity.

How we get there - the actions we need to collectively take to secure our economic resilience and realise the economic growth opportunities - are contained within this Plan.

"We need to change the mindset. Nobody questions the value of a highway, but they question the value of nature."
*- **Local council representative***

(i) Securing economic growth and prosperity

Our vision is to change the mindset – to bring traditional infrastructure and natural infrastructure together to help achieve enduring prosperity for Aotearoa New Zealand.

The Natural Infrastructure Plan is a co-ordinated, long-term plan which outlines how we best harness natural infrastructure to support enduring economic prosperity.

This is a plan that changes the conversation to encourage us to collectively articulate and acknowledge the business imperative for natural infrastructure.

The plan encourages decision-makers and leaders to better understand the financial exposure risks and the long-term value that could be generated by investing in natural infrastructure and provides pathways for doing so.

C. Ambition

The ambition of the Natural Infrastructure Plan is one that reinforces natural infrastructure as our most fundamental piece of infrastructure – infrastructure critical to our economic prosperity. It is an ambition that has the goal of halting and reversing nature loss at its core. It is an ambition focused on systems-level changes that support investment to deliver measurable and substantive long-term positive outcomes to our natural assets **and** the economy.

It steps away from accepting 'business as usual' and merely investing to mitigate the 'environmental' impacts of our activities.

It is an ambition focused on **embedding, maintaining and enhancing** our natural infrastructure, as shown in **Figure 6**.

Figure 6: Ambition of the Natural Infrastructure Plan[31]

	BUSINESS AS USUAL Investment which mitigates impact to natural infrastructure	**TRANSITION** Investment which embeds natural infrastructure	**AMBITION** Investment which embeds, maintains and enhances natural infrastructure
SCOPE	Harnessing infrastructure investment to create economic benefits often at the expense of nature	Harnessing natural infrastructure investment to proactively create resilient outcomes to nature and the economy	
OUTCOME	Investment that is expected to deliver positive economic outcomes attaining to net-neutral natural infrastructure (i.e. no net loss)	Investment which embeds natural infrastructure with positive environmental outcomes relatives to current state	Investment which embeds, maintains and enhances natural infrastructure to deliver substantive and measurable positive outcomes
WHO?	Investment for people	Investment for people and nature	Integrated investment for nature (which includes people)
APPROACH	Investment to deliver positive outcomes to the economy *and* mitigate impacts to nature	Investment to deliver positive outcomes to the economy *and* to nature - relative to business-as-usual	Investment to deliver measurable and substantive long-term positive outcomes to nature *and* the economy
OUTCOMES	Mitigates nature-related liabilities	Uses natural infrastructure to improve resilience and protect against more than physical risks	
	Provides short-term economic returns	Delivers medium-term economic growth	Delivers intergenerational economic, social and cultural growth
	Meets minimum legislative requirements	Goes above legislative requirements	
INVESTMENT CRITERIA	Investment in activities that address adverse impacts on nature through the following: • Avoidance, reduction and offsetting of negative project impacts on nature.	Investment which contributes to the nature positive goal of halting and reversing nature loss through one or more of the following activities: • Restoration and conservation of biodiversity or ecosystem services • Reduction of the direct drivers of biodiversity or ecosystem services loss • Integration of Nature-based Solutions across economic sectors • Design and implementation of policy, tools, or other sectoral instruments enabling (a) to (c).	
		Investment that must also meet all the following criteria: • Does not introduce significant adverse environmental risks and impacts that exacerbate the direct drivers of nature loss • Does not introduce risks of conversion of natural or critical habitat • Does not introduce risks of adverse impacts on Critically Endangered or Endangered species • Have a clear causal pathway with measurable indicator(s) to demonstrate positive outcomes for biodiversity or ecosystem services.	

31 Adopted from the World Bank Nature Finance Taxonomy: https://www.worldbank.org/en/topic/environment/publication/mdb-common-nature-finance-taxonomy

(i) Reimagining our future - our Rangatahi vision for 2055

"We need to start building for our mokopuna, not for our election cycles".

- **Rangatahi Advisory Panel member**

In developing this plan, The Aotearoa Circle engaged more than 60 Rangatahi and asked them to imagine what Aotearoa New Zealand could be if we invested to embed, maintain and enhance our natural infrastructure. This was their vision.

(a) Taiao - credible ambition and outcomes through valuing the natural world

Unanimously, when Rangatahi imagine Aotearoa New Zealand in 2055, they picture a nature positive environment where the built environment and natural environment have come together, enabling a resilient, strong and prosperous Aotearoa New Zealand. They imagine Kiwis who can genuinely and proudly stand behind the 100% New Zealand brand.

"We must start valuing nature."
Rangatahi Advisory Panel member

Our Rangatahi imagine a country where vast areas of wetlands and estuaries have been restored. A country where green buildings and sponge cities are standard. A country of interconnected communities knitted together through green spaces and accessible environments.

They imagine a cultural shift from considering natural assets as free resources to valuing nature as a fundamental service provider that underpins our resilience and economic prosperity.

If this vision was achieved, they believe investment in natural assets, such as wetlands, dunes, forests, mangroves and our marine environment, would be 'naturally' included in the development of core infrastructure - without debate.

Looking forward, Rangatahi envisage an Aotearoa New Zealand where education and training courses become solution-focused and inspiring. One where career shifts in sustainability are possible and new opportunities exist across the country because communities invest in natural infrastructure. They envisage a world with improved recreation, wellbeing and social connectivity.

(b) Tangata whenua and community co-creation

Rangatahi shared a vision that by 2055, Aotearoa New Zealand's identity will be one of interconnectedness between people and the natural world, with governance systems that reflect Te Ao Māori values and intergenerational thinking. They envisage Māori leadership with effective and early participation of tangata whenua being central to implementing natural infrastructure.

Their vision is one where science and mātauranga Māori form the basis for selecting solutions and indigenous ecological knowledge is collectively acknowledged as essential to enduring and resilient outcomes. They envisage solutions which respect and safeguard local communities and iwi/Māori.

(c) Economic growth and prosperity through investment in natural infrastructure

"Why the infrastructure deficit? Nature is sending invoices we can't afford to pay."
Rangatahi Advisory Panel member

Rangatahi have a vision for a country where nature and the economy are working in harmony.

Where natural infrastructure is seen as a critical supplier of goods and services, a risk mitigant, an economic enabler, and a growth opportunity.

They envisage a country that has lower disaster recovery costs, reduced insurance costs, new employment opportunities, and stronger economic growth through value-added exports.

In this future, natural infrastructure is 'the norm' because it lasts longer and appreciates in value. Aotearoa New Zealand is proactive in its planning approach and thinks intergenerationally with strategies that achieve a common vision. This version of Aotearoa New Zealand is seen globally as a thought leader in sustainable urban and rural planning, attracting trade, talent and investment.

(d) Rangatahi's vision is one focused on balance

"Infrastructure improves lives but so do wetlands, rivers, sand dunes and forests".
*- **Rangatahi Advisory Panel member***

Wetlands provide critical flood management services and are restored in the process –providing communities with increased resilience from adverse weather events and more employment opportunities through new tourism ventures and reducing the cost of rebuilding infrastructure to keep pace with climate change. Wetlands form infrastructure that is built to last.

Native forests and riparian planting provide water retention and erosion control services and are protected in the process – providing the bioeconomy with improved productivity and resilience from drought and ensuring the sector can meet international standards and maintain revenue from overseas trade.

Mangroves and dunes serve as coastal buffers meaning these environments are conserved - increasing resilience of marae, wahi tapu and coastal communities against coastal storm surges, improving marine water quality, and enabling lower insurance costs and avoiding insurance withdrawal.

Kelp forests, seaweed beds and shellfish habitats are seen as critical marine infrastructure and are sustainably used - providing employment opportunities for a thriving Blue Economy, and attracting international investment through innovative products only Aotearoa New Zealand's marine environment can provide.

D. Objectives

The Natural Infrastructure Plan has five overarching objectives, as outlined in **Figure 7.** These are described in more detail below.

Figure 7: The purpose and five objectives of the Natural Infrastructure Plan

Objective 1: To acknowledge and understand economic dependency and imperative for natural infrastructure

For Aotearoa New Zealand to collectively acknowledge and understand the economic dependency, and business imperative, of natural infrastructure.

To summarise the key policy benefits embedding, maintaining and enhancing our natural infrastructure could deliver in support of our international and domestic commitments, obligations and agreements.

To outline how nature-based solutions can address infrastructure challenges.

Objective 2: To build the business case tools that supports the integration of nature-based solutions in infrastructure projects

To develop an **Investment Decision Toolkit** that supports the integration of nature-based solutions into infrastructure investment decisions, including the fundamental aspects of value creation and financial performance.

To support credible investment by developing a set of guiding **Investment Principles**, aligned with the ambition of the Natural Infrastructure Plan.

To develop an **Investment Evaluation Model** which supports the multiple benefits evaluation of a proposed infrastructure project (either a traditional or nature-based solution approach) over the short, medium and long-term time horizons.

Objective 3: To demonstrate a financially sound business case for nature-based solutions in infrastructure projects

> ***"Investing in natural infrastructure doesn't compete with infrastructure, it enhances and complements."***
> **Financial institution representative**

Through six leading practice case studies, demonstrate how:

- Applying natural infrastructure can not only support, but replace or enhance traditional infrastructure, whilst delivering value-for-money
- Using natural infrastructure provides a fiscally and economically sound alternative to traditional infrastructure approaches.

Objective 4: To unlock our key economic sector growth opportunities

For Aotearoa New Zealand's four key economic sectors (bioeconomy, Blue Economy, towns and cities, and tourism), identify the key economic dependencies and sector economic growth opportunities that investment in natural infrastructure investment would support.

Objective 5: To enable and drive scale by taking impactful actions that reinforce natural infrastructure as core infrastructure

To outline the recommended impactful actions required to reinforce natural infrastructure as core infrastructure and achieve the ambition of the Natural Infrastructure Plan: actions that remove barriers, realise the opportunities and support the enduring embedding, maintaining and enhancement of our natural infrastructure.

(i) Matters and activities within the scope of the Natural Infrastructure Plan

The Aotearoa Circle has adopted a broad definition of natural infrastructure that reflects the full range of ways our natural infrastructure contributes to Aotearoa New Zealand's economic prosperity.

In line with the ambition of the plan, matters and activities in scope include actions, structures, and investments that embed, maintain or enhance natural or semi-natural systems to deliver, support, or enhance infrastructure services.

This includes natural or semi-natural structural elements of ecosystems and landscapes, as well as fixed, long-lived nature-based solutions that facilitate the production of goods and services.

The scope actions that incorporate natural systems into design, planned and engineered nature-based solutions that work with natural processes, and ecosystems that directly provide goods and services such as water regulation, hazard mitigation, climate regulation, and cultural or recreational benefits. The includes nature as infrastructure – such as wetlands, dunes, forests, rivers, coastal systems, and marine environments as they provide essential goods and services for people and the economy.

(ii) Matters and activities outside the scope of the Natural Infrastructure Plan

Matters outside the scope of the plan include fixed traditional built assets such as concrete seawalls, pipes, dams, or storm drains. These assets do not meet the definition of natural infrastructure because they do not use natural or semi-natural systems. Further, they do not embed, maintain or enhance our natural assets.

Activities outside the scope of the plan include actions focused solely on impact mitigation, including offsetting, actions to achieve or maintain compliance, corporate (nature-based) reporting, and/or compensation. These activities are considered to align with the status quo 'Investment which mitigates impacts on our natural infrastructure' and are therefore outside of the ambition and realm of the plan.

Only interventions that actively draw on natural infrastructure to deliver substantive and measurable positive outcomes to nature (and therefore our ensuring economic prosperity) are in scope.

Part 1A:

Acnowledging and understanding the economic imperative of our natural infrastructure

I. Natural Infrastructure in Aotearoa New Zealand

(i) The goods and services provided by natural infrastructure

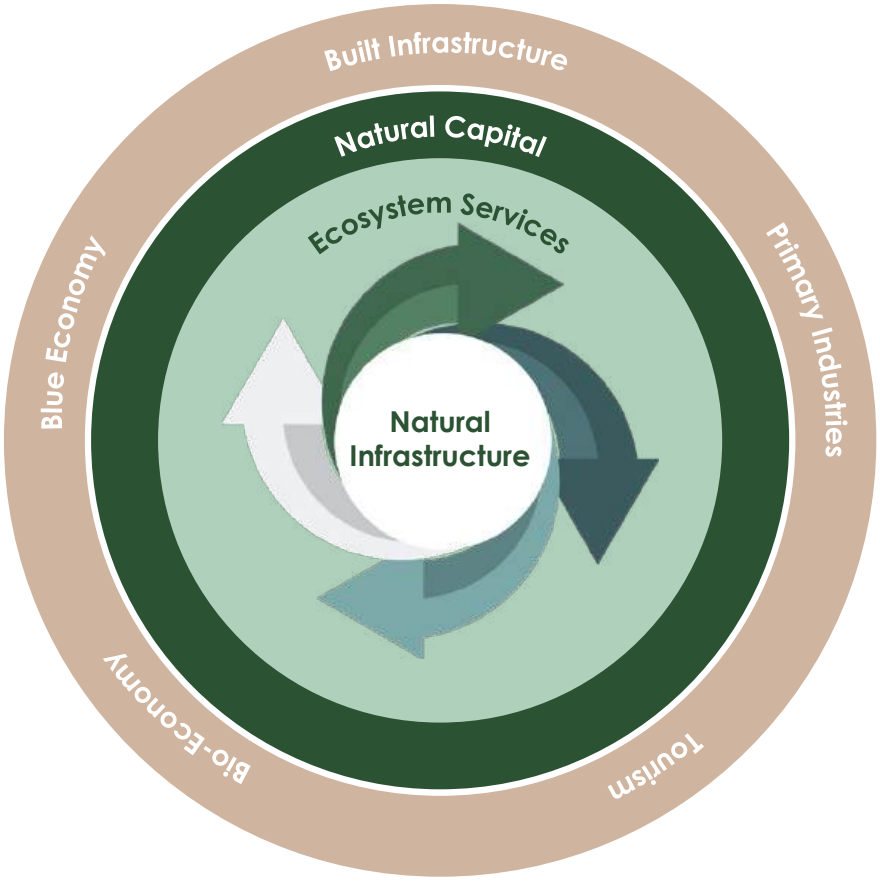
By embedding, maintaining and enhancing our natural infrastructure, we can protect the goods and services that underpins the prosperity and resilience of Aotearoa New Zealand's economy.

Natural infrastructure strategically leverages the benefits and services provided by natural ecosystems to meet infrastructure needs and address environmental challenges. By conserving or incorporating natural infrastructure, such as floodplains, wetlands, and forests, into the built environment, benefits can be generated such as protection of network infrastructure from extreme weather events, flood control, and improved water quality.

Natural infrastructure applies strategically planned networks of **ecosystem services**, which, if embedded, maintained and enhanced, delivers a wide range of economic benefits.

Examples of the infrastructure services provided by nature are provided in **Table 4** and **Table 5.** They include:

- **Provisioning services** – material outputs, such as food and fibre
- **Cultural services** – non-material benefits, such as spiritual, aesthetic, and recreational values
- **Regulating services** – indirect benefits, such as carbon removal and water filtration
- **Supporting services** – fundamental processes, such as soil formation.



(ii) Service benefits from natural infrastructure

Table 4: The five types of economic benefits natural infrastructure services provide[1]





INFRASTRUCTURE & ASSETS	PROVISIONING SERVICES	CULTURAL SERVICES	REGULATING SERVICES	SUPPORTING SERVICES
The physical network of natural ecosystems and landscape features that support or fully provide the required **infrastructure functions.** These may include: **Resilience to hazards:** Buffering the direct impacts of natural hazards like flooding, erosion, and land instability. **Economic prosperity:** Providing land, water, raw materials, and other natural resources required for economic activities. **Safeguard communities:** Conserving community values and functional needs for natural resources, raw materials, and cultural and social identity.	The material outputs and tangible **goods** and products obtained from ecosystems that are we use or **trade**. These may include: **Food:** Crops, livestock, fish, fruits, and vegetables, nuts. **Freshwater:** Water for drinking, irrigation, and industrial use. **Raw materials:** Fibre (e.g. wool, cotton), timber, and biomass fuels. **Medicinal resources:** Natural compounds from plants, fungi, and animals used in medicines and pharmaceuticals.	The spiritual, recreational, aesthetic, and tourism related benefits that underpin Aotearoa New Zealand's **cultural and social identity and wellbeing.** These may include: **Cultural heritage:** Taonga natural resources, species, and landscapes. **Mātauranga Māori:** Natural environments used for education and knowledge sharing. **Outdoor recreation:** The spaces and places used for outdoor recreation and eco-tourism. **Landscape character:** The scenic beauty, visual diversity, soundscapes, and landscapes that provide for the visual and sensory enjoyment of nature.	The regulation of natural processes that help to maintain **a stable and resilience environment and economy.** These may include: **Climate regulation:** Forests, wetlands, and oceans sequester carbon, helping to mitigate climate change. **Air and water quality:** Wetlands and forests filter pollutants to maintain clean water supplies and improve air quality. **Flood and erosion:** Mangroves, wetlands, and forests reduce flood impacts and protect coastlines. **Pollination:** Insects and birds pollinate plants and crops, critical for food and fibre production.	The fundamental processes that underpin a functioning natural environment and **support other ecosystem services.** These may include: **Soil formation:** Ecosystems that support the creation and maintenance of fertile soils. **Nutrient cycling:** Ecosystems that recycle nutrients essential for plant growth, such as nitrogen and phosphorus. **Primary production:** Photosynthesis in plants that underpin the food chain. **Habitat provision:** Ecosystems that provide habitats for species diversity, supporting biodiversity resilience.
DIRECT BENEFITS			INDIRECT BENEFITS	

1 Source: Boffa Miskell Limited

Table 5: Ecosystem services provided by natural infrastructure[32]

ECOSYSTEM SERVICE	DESCRIPTION
Air filtration	The filtering of air-borne pollutants through deposition, uptake, fixing and storage by plants.
Biological control services	The reduction of incidences of species that affect biomass production or human activity.
Biomass provisioning	The growth of cultivated and wild plants for food, fibre, fodder, or energy, livestock and livestock products, and other biomass for various uses.
Flood mitigation	Linear coastal and riparian landscapes, vegetation, and ecosystems that mitigate the impacts of tidal surges and floods, provide physical barriers, and manage peak water flows.
Genetic material	Ecosystem contributions from biota used for economic purposes, including breeding, gene synthesis, or product development.
Global climate regulation	Ecosystem contributions to regulating atmospheric and oceanic chemical composition affecting global climate through the removal and storage of carbon and other GHG
Local climate regulation	Ecosystem contributions to regulating ambient atmospheric conditions through the presence of vegetation that improves the living conditions for people and supports economic production.
Pollination	The contributions of wild pollinators to crop fertilisation and biodiversity.
Recreation-related services	Ecosystem contributions enabling people to enjoy the environment through physical and experiential interactions.
Soil and sediment retention	Ecosystem contributions, particularly the stabilising effects of vegetation that reduce soil and sediment loss and support environmental use.
Soil quality regulation	The decomposition of organic and inorganic materials and to the fertility and characteristics of soils
Solid waste remediation	the transformation of organic or inorganic substances, through the action of micro-organisms, algae, plants and animals that mitigates their harmful effects.
Spiritual, artistic and symbolic services	Ecosystem contributions recognized for cultural, historical, aesthetic, or religious significance.
Storm mitigation	The contributions of vegetation and landscapes in mitigating the impacts of wind, sand, and other storms on local communities.
Visual amenity	Ecosystem contributions to local living conditions through visual and sensory benefits.
Water flow regulation	The regulation of river flows and groundwater and lake water tables, derived from the ability of ecosystems to absorb and store water, and gradually released water during dry periods
Water purification	The restoration and maintenance of the chemical condition of surface water and groundwater bodies through the breakdown or removal of nutrients and other pollutants by ecosystem components
Water supply	The combined ecosystem contributions of water flow regulation, water purification, and other ecosystem services to the supply of water of appropriate quality for various uses.

32 Source: Boffa Miskell Limited

(iii) Risk and resilience benefits from natural infrastructure

Aotearoa New Zealand's National Risk and Resilience Framework[33] identifies the most significant potential crises, known as National Risks[34], that could have serious immediate and/or long-term effects on New Zealand's economy and environment.

Additionally, the World Economic Forum[35] identify the most significant global risks where environmental, societal and technological challenges threaten global stability and progress.

Natural infrastructure can provide a range of direct and indirect benefits to increase resilience to these risks. **Table 6** provides examples of the benefits natural infrastructure can provide to address both Aotearoa New Zealand's applicable national risks and key global risks.

Table 6: The multiple benefits of natural infrastructure for addressing Aotearoa New Zealand's National Risks and Key Global Risks.

Benefit Domain	FINANCIAL	RISK & RESILIENCE		ENVIRONMENTAL			SOCIAL	CULTURAL
Benefit Typology	Financial opportunities through reduced costs and improved asset values	Disruptions to a systemically important supply chain (major trade, food security or mahinga kai)	Disruptions to, or failure of, critical infrastructure	Biodiversity loss and ecosystem collapse (incl pest or disease incursion)	"Severe weather events (e.g. flooding & wildfire) "	"Natural resource shortages (e.g. caused by drought)"	Changes in social and recreational amenity	Changes in cultural amenity
Natural Infrastructure Benefits - Nature's Contributions to People (NCP)	Avoided/reduced CAPEX	Improved/reduced service disruption ("loss of function")	Improved/ maintained availability of insurance	Increased/ maintained abundance and diversity of native species	Reduced emissions/ Improved emissions mitigation; increased nature-based carbon storage permanence & sequestration	Improved/ maintained groundwater and/ or surface water quality and/or quantity and/ or recharge and storage	Improved access and recreational use of the natural environment	Expanded/ maintained cultural/ spiritual settings & learning/inspiration opportunities. Supporting identities.
	Avoided/reduced OPEX	Improved/ maintained primary sector productivity/ outputs	Improved/ maintained insurance premiums	Improved/ maintained presence of endangered/ threatened species	Reduced/avoided surface runoff and associated erosion/ slips (incl climate adaptation)	Improved/ maintained marine water quality or marine flow regime	Improved/ maintained livelihood opportunities	Increased/ maintained cultural property/land value
	Avoided/reduced consenting and/or compliance costs	Increased/ maintained food security	Improved/ maintained asset protection and resilience (incl climate change resilience)	Improved/ maintained habitat (incl aquatic) protection/ restoration	Improved/ maintained surface water flows and/ or flood protection and/or stability - inland or coastal (incl climate adaptation)	Improved/ maintained Material NCP (e.g. Energy, food, materials, medicinal, biochemical & genetic resources)	Improved/ maintained tourism opportunities	Expanded/ maintained mahinga kai
	Increased/ maintained property/land value	Improved resilience of operations and supply chains		Improved/ maintained Regulating NCP (e.g. pollination, seed dispersal, air-soil-water quality, water flows, natural pest control etc)		Improved/ maintained biomass	Improved/ maintained community engagement and wellbeing (including physical and psychological experiences)	
	Improved/ maintained asset design life	Reduced loss of useable land due to improved resilience or integrity		Improved/reduced use of High-Impact Commodities				
	Improved/new revenue streams/ investment due to the provision of Ecosystem Services to benefiting parties			Improved/ maintained terrestrial habitat extent				
	New and improved products, services and/or brand value			Improved/ maintained aquatic habitat condition				
	Improved/ maintained Return on Investment							

33 https://www.dpmc.govt.nz/our-programmes/risk-and-resilience/national-risk-and-resilience-framework
34 https://www.dpmc.govt.nz/our-programmes/risk-and-resilience/national-risk-and-resilience-framework/new-zealands-national-risks
35 https://www.weforum.org/publications/global-risks-report-2026/

II. Nature-related economic dependencies and impacts applicable to our key economic sectors

The greatest opportunities to use natural infrastructure arise from our economy's dependencies and impacts on nature.

Aotearoa New Zealand's built infrastructure, bioeconomy, Blue Economy, and tourism sectors all highly depend on nature. Their economic prosperity is dependent on the provision of sustainable and resilient natural materials and resources, the regulatory services provided by nature, the fundamental processes facilitated by nature. However, without infrastructure investment that delivers positive outcomes for nature and the economy, Aotearoa New Zealand's core economic sectors often generate impacts on nature.

For Aotearoa New Zealand's economic system to deliver benefits to nature, it is important first to understand the dependencies of Aotearoa New Zealand's economic sectors on natural assets, along with their impacts on nature assets. This involves quantifying the value of ecosystem services, assessing how they are used in economic activities, considering the impact of economic activities on the natural environment, and developing strategies to address these impacts.

To ensure natural infrastructure achieves the greatest benefits for both the economy and nature, solutions should be targeted towards improving the extent, condition and resilience of natural assets that economic activities have the greatest dependency on, and/or mitigating the greatest impacts of economic activities on natural assets.

Figure 8 shows the categories of impacts and economic dependencies on natural infrastructure.

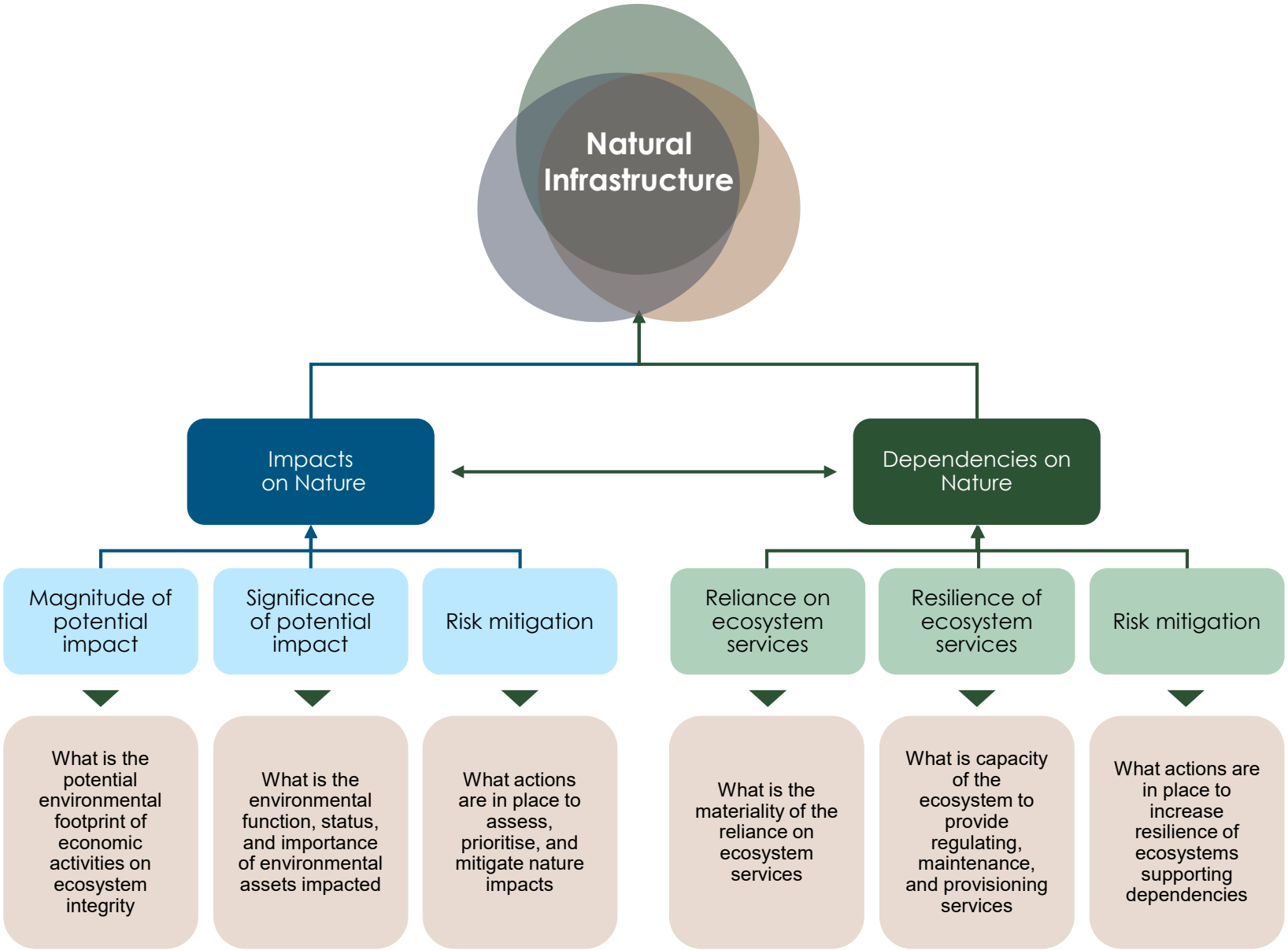
Economic dependencies

Dependencies are the natural assets and ecosystem services that an economic activity relies on to function effectively. An economic activity, for example, may be dependent on the ecosystem services of water flow, water quality regulation, pollination, and protection from natural hazards like flooding and land instability to function effectively.

Economic impacts

Impacts refer to a change in the quality or quantity of natural assets and ecosystem services needed to provide economic functions, caused by the economic activity. Impacts can be positive or negative and can be the result of the environmentally degrading effects of certain economic activities, such as land use, resource use, and pollution.

Figure 8: The impacts and economic dependencies on natural infrastructure.



(i) Aotearoa New Zealand's economic dependencies on natural infrastructure

Aotearoa New Zealand's infrastructure and economy is dependent on the various services provided by natural assets, either directly or indirectly. This includes provisioning services such as water flow and regulating and maintenance services such as the mitigation of hazards like fires and floods, and the storage of carbon.

Opportunities to use natural infrastructure are highest where economic activities and sector productivity are highly dependent on ecosystem services. i.e. where certain economic activities cannot remain financially viable in the absence of ecosystem services. An example of this is Aotearoa New Zealand's bioeconomy, which is highly dependent on the supply of fresh, uncontaminated water for food and fibre production.

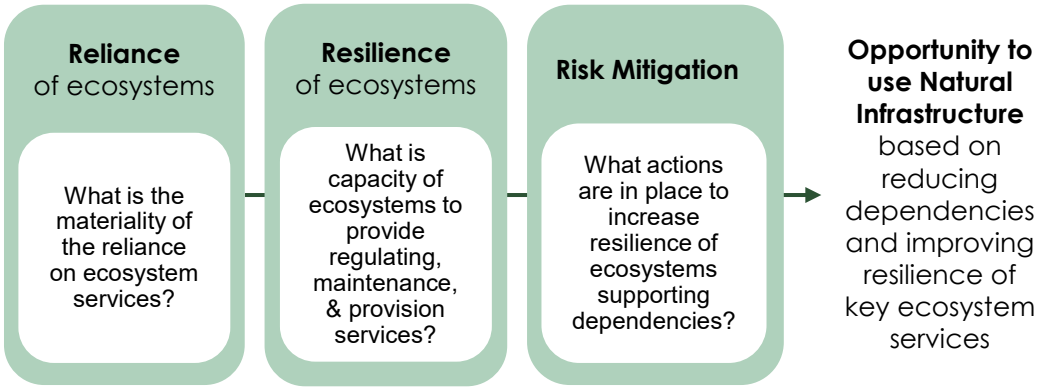


Figure 9: Journey from economic dependency to realising the commercial growth opportunities from natural infrastructure

As shown in **Figure 9**, the dependencies of economic activities on natural assets hinge on both the reliance of an activity on ecosystem services, and the ability of the ecosystem to continue to provide those services long-term. Frequently, an economic activity's reliance on ecosystem services can also reduce the resilience of the ecosystem services, due to impacts such as over-use of resources and pollution. Additionally, the effects of climate change may gradually reduce the resilience of ecosystem services like freshwater supply, as global changes in climate systems alter regional rainfall patterns in Aotearoa New Zealand. Therefore, investing in natural infrastructure that reduces an activities reliance on ecosystem services and/or improves the resilience of the ecosystem services can provide benefits to both the economy and nature.

The sector economic dependencies on natural assets were assessed against the core provisioning and regulating ecosystem services, critical to the function and productivity of the sectors economic activities. **Appendix 2** contains more information regarding the methodology and ratings for each economic sector, activity, and asset class.

For our four key economic sectors, the economic dependencies of the sector are discussed within each Economic Sector Opportunity Overview**, delivered as part of this plan.**

(ii) Aotearoa New Zealand's impacts on natural infrastructure

The negative impacts of economic activities on natural assets can undermine the provision of ecosystem system services which the sectors productivity and prosperity depend on.

Aotearoa New Zealand's infrastructure and economy have impacts on natural assets and the ability of those assets to provide essential ecosystem services. Today's economic impacts on nature shape tomorrow's dependencies. Negative impacts on nature today will continue to erode the health and resilience of nature and create a number of physical risks to the future viability of the sector to produce goods and services.

Considering the current action the financial sector and Aotearoa New Zealand's trade partners are taking to halt and reverse the decline in the state of nature, businesses that cause negative impacts on nature could also face an increasing level of transition risk. Ongoing negative impacts on nature can result in policy non-compliance and legal liabilities, reputational harm, and reduce access to green markets globally.

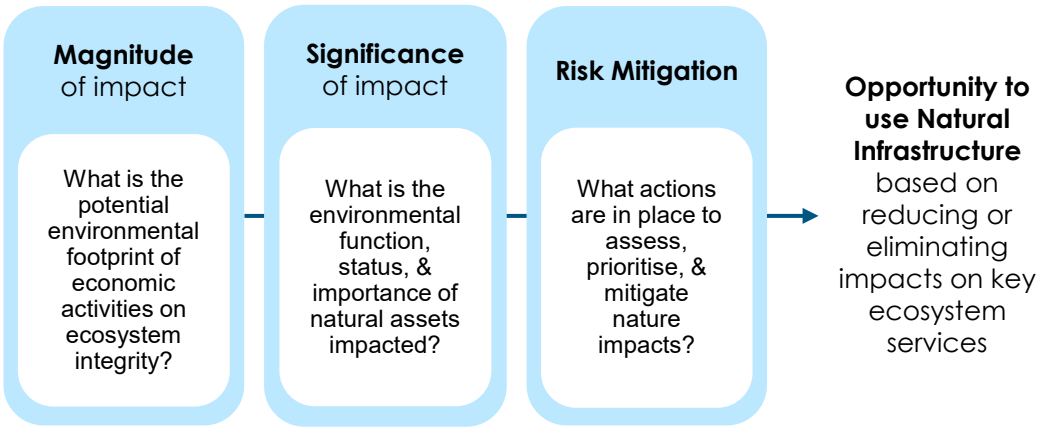


Figure 10: Opportunities to use natural infrastructure can be targeted towards mitigating or eliminating the impacts of economic activities on natural assets

Natural infrastructure can support economic activities to deliver positive impacts on nature, reducing exposure to physical risks, improving policy and market compliance, and growing the resilience of future natural assets required for prosperity.

The impacts of an economic activity on natural assets is closely related to both the magnitude of the impact (i.e. the degree to which activities exacerbate pressures on the state of nature), and the environmental and cultural significance of the location impacted (i.e. is the area impacted of high biodiversity value or cultural significance). Appendix 2 contains more information regarding the methodology and ratings for each economic sector, activity, and asset class.

For our four key economic sectors, the economic impacts from the sector are discussed within each Economic Sector Opportunity Overview**, delivered as part of this plan.**

Part 1B:

Key international and domestic agreements, obligations and commitments that embedding, maintaining and enhancing natural infrastructure could support.

I. Natural infrastructure supporting Aotearoa New Zealand's key international and domestic agreements, obligations and commitments

(i) Purpose

The policy maps presented as a separate **Natural Infrastructure Plan handout** cover international and domestic agreements, obligations, and commitments which are relevant to, and supported by, natural infrastructure.

Embedding, maintaining and enhancing our natural infrastructure (in line with the Ambition of the Natural Infrastructure Plan), would help prevent threats and accelerate investment opportunities, which in turn would support Aotearoa New Zealand's abilities to meet its existing domestic and international commitments.

Tables 1 – 3 within the Policy Map align with the eight key natural infrastructure threats and opportunities provided in Table 6.

The content for the Policy Map was developed as of 8 December 2025.

It is beyond the scope of the Policy Map to provide commentary on Aotearoa New Zealand's performance against international agreements, obligations, and commitments. Nor does the Natural Infrastructure Plan provide commentary as to the efficiency, reliability or effectiveness of actions to comply with existing domestic legislation, policies, frameworks and plans.

(ii) Key international Multi-Lateral Environmental Agreements as well as our other international obligations and commitments

Part I of the Policy Map demonstrates how embedding, maintaining and enhancing our natural infrastructure benefits our international **Multi-Lateral Environmental Agreements (MEAs)** as well as our other **international obligations and commitments** (notably those contained within **key Free Trade Agreements**). The MEAs exclusively focus on environmental protection, setting binding obligations for issues like climate change, biodiversity and pollution control. The primary goal of free trade agreements is economic cooperation and market access. Environmental provisions within these agreements act as both a lever for advancing natural infrastructure and are a safety net to prevent environmental backsliding.

The tables in the Policy Map relate to MEAs and international obligations and commitments as of 8 December 2025 and do not include (for example) treaties that are subject to ongoing negotiations, or which Aotearoa New Zealand has signed but not yet ratified.

(iii) Existing domestic legislation

Part II of the Policy Map demonstrates how applying natural infrastructure would support our existing legislation.

Specifically, Table 2 in the Policy Map provides an overview of Aotearoa New Zealand's existing national legislation that would be supported by mainstreaming the use of, and investment in, natural infrastructure.

This relates to legislation as of 8 December 2025 and does not include changes to key legislation such as the Resource Management Act, 1991.

(iv) Current government policies, frameworks and plans

Part III of the Policy Map outlines the existing Government policies, frameworks and plans which would be supported by embedding, maintaining, and enhancing our natural infrastructure.

The content for the Policy Map was developed as of 8 December 2025.

Table 3 of the Policy Map provides an overview of Aotearoa New Zealand's Government policies, frameworks and plans that would be supported by mainstreaming the use of, and investment in, natural infrastructure.

See Part 1B, The Policy Map, for futher information.

(v) Next steps

When considering our domestic legislative environment (included in our domestic legislation, policies frameworks and plans), although collectively intended to reduce harm, the net value of our natural infrastructure continues to decline as outlined in Part 1A of the Natural Infrastructure Plan.

To embed, maintain and enhance our natural infrastructure and achieve the ambition of the Natural Infrastructure Plan, system-level changes (including domestic legislation, policies, frameworks and plans) are required.

There are three key opportunities presented to public sector agencies in relation to natural infrastructure and our international and domestic agreements, obligations and commitments:

- **Polices which are effective at reducing the impact**: There is an opportunity to review the effectiveness of our domestic legislation, policies, frameworks and plans, to mitigate and reduce the negative impact activities are having on nature infrastructure. Further, when legislation is reviewed, take the opportunity to integrate an enabling environment which supports embedding, maintaining and enhancing our natural infrastructure.
- **Policies which consider economic dependencies**: There is an opportunity to consider the economic dependency we have on natural infrastructure when reviewing, revising, and/or replacing our agreements, obligations and commitments.
- **The new planning and environmental system:** There is an opportunity for the public sector to consider the domestic and international commitments and obligations as part of the new planning and environmental system, and to incorporate changes to our stocks and flows of natural infrastructure as a natural hazard.

For further detail on the system-level changes, and other recommendations, please refer to **Part 5** of the Natural Infrastructure Plan.

Part 2:

Investment Decision Toolkit: Providing the business case tools for nature-based solutions in infrastructure

(I) Purpose

An Investment Decision Toolkit, with supporting tools, has been developed as part of the Natural Infrastructure Plan. Collectively, they provide the opportunity for public sector agencies and local councils (Users) with a consistent framework to objectively consider nature-based solutions when making infrastructure investment decisions.

This framework gives nature-based solutions an equal opportunity to be objectively, consistently and effectively evaluated when Users evaluate potential infrastructure solutions.

This Investment Decision Toolkit includes a **process** Users may wish to follow when evaluating potential infrastructure project design options. It is supported by the following tools:

- A set of **Investment Principles** to support credible, fair, consistent, and effective multiple evaluation. This includes:
    - A **checklist of points to consider** for Users against each Investment Principle
- The **Investment Evaluation Model**. This comprehensive tool includes:
    - A **set of suggested performance indicators** to aid in the multiple benefit evaluation of natural infrastructure
    - A **multiple benefits evaluation framework (including financial, environmental, social, and cultural).**
    - The Investment Evaluation Model includes the ability to assess benefits over the **immediate, short, medium, and long-term time horizons.**

Collectively, these tools give nature-based solutions a 'level playing field' when evaluating investment options. It allows Users to evaluate relevant key multiple benefits associated with the solutions, and conversely, the key negative externalities, so these can be factored into the decision-making process.

This is important because longer term horizons are considered – and with this - the life of the asset, inclusive of design, construction, operation, maintenance and decommissioning costs – can be evaluated.

These tools do not however provide technical guidance on how to design, implement or operate a nature-based solution. Nor do these tools provide commentary as to the effectiveness, efficiency and reliability of the current government investment management frameworks upon which these tools have been developed.

(II) Integrating natural infrastructure into the investment life cycle

Treasury's investment life cycle was used as the basis for the Investment Decision Framework.

This life cycle outlines four distinct phases to achieve broad outcomes: intentions, planning, delivery and benefits realisation. Although designed for traditional infrastructure, this investment life cycle applies equally as well to natural infrastructure. This is illustrated aptly below.

For more information refer to Treasury's investment lifecycle and process map[36] and DPMC's 2023 Investment Management and Asset Performance Circular[37]

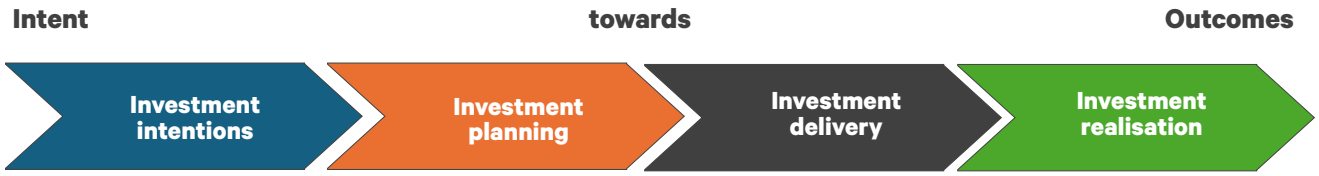


Figure 11 outlines how natural infrastructure investment can integrate into the existing government investment life cycle.

(III) Investment principles

These guiding principles outline what must be true for natural infrastructure solutions to be credible. These are principles, not prescriptive requirements.

PRINCIPLE	DESCRIPTION
Taiao	Credible ambition and outcomes through valuing the natural world
People	There are opportunities for tangata whenua and community co-creation
Strategic alignment	There is alignment with the infrastructure priorities New Zealanders need
Value for money	There are direct and indirect benefits and outcomes from the investment
Deliverability	The solution achieves positive intergenerational multiple outcomes.

36 https://www.treasury.govt.nz/information-and-services/public-sector-leadership/investment-management-system
37 https://www.dpmc.govt.nz/sites/default/files/2023-09/co-23-09-investment-management-asset-performance.pdf

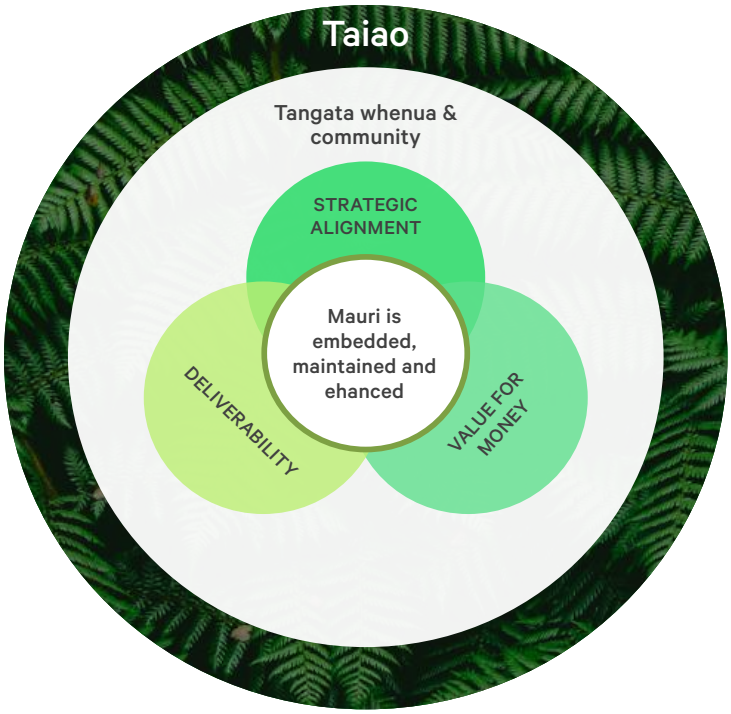


Figure 12 Investment Principles to support credible natural infrastructure investment

(IV) About the nature-based solutions Investment Evaluation Model

Finally, a comprehensive Investment Evaluation Model has been developed to support the multiple benefit analysis for a nature-based solution to an infrastructure challenge. The Model however can also be used to evaluate the value for money aspects of one or many infrastructure designs - whether opting for a traditional approach or a nature-based approach.

This Model was developed using the original Mauri Model developed by Dr. Kēpa Morgan and The Aotearoa Circle wishes to acknowledge Dr. Morgan and his team accordingly. Dr. Morgan originally created the Mauri Model Decision Making Framework and mauri-0-meter in 2004 while researching Lake Rotorua's water quality for his Doctoral Studies at the University of Auckland. More information on the Mauri Model is available: https://www.maurimodel.nz

The Model is a decision-making framework that combines a stakeholder assessment of worldviews, with a qualitative impact assessment using a range of indicators to determine the multiple benefits of nature-based solution, and to evaluate trends over time. The Model uses the concept of mauri as the measure of sustainability.

(V) Next steps

To embed, maintain and enhance our natural infrastructure and achieve the ambition of the Natural Infrastructure Plan, a greater use of nature-based solutions presents an opportunity for infrastructure investors. These tools support integrated decision-making.

Iwi/Māori and private companies are encouraged to utilise the Investment Evaluation Model.

For readers wishing to see the business case for nature-based solutions demonstrated, we encourage readers to read the six case studies developed as part of the Natural Infrastructure Plan.

Part 2: The Investment Decision Toolkit is available as a seperate PDF to download.

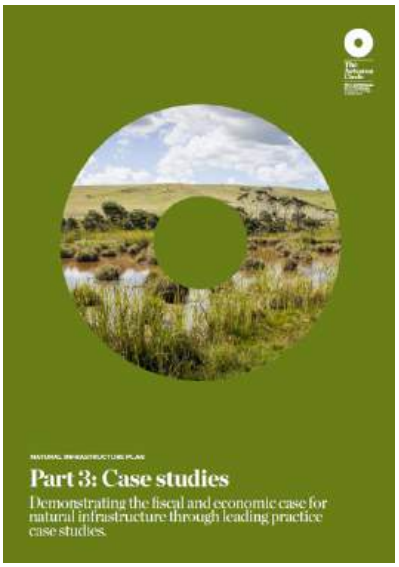
Part 3:

Demonstrating the fiscal and economic case for natural infrastructure through leading practice case studies

I. Demonstrating the business case for natural infrastructure through practical case studies

(i) Purpose

The **six case studies** developed as part of the Natural Infrastructure Plan demonstrate how applying natural infrastructure to our infrastructure challenges is not only financially cost efficient and effective but capable of delivering numerous multiple benefits.



These case studies show how a nature-based alternative can be a cost-effective way to support, enhance, or replace traditional infrastructure.

They show how natural infrastructure offers strategic alignment with our infrastructure challenges whilst providing cost efficient value-for-money alternatives to traditional infrastructure delivery.

In addition, **the six case studies** outline that using natural infrastructure also affords investors with an extensive range of multiple benefits and outcomes.

We encourage readers to read the six case studies for full analysis of the demonstratable benefits of nature-based solutions.

(ii) Evaluating the successful outcomes of the case studies

Each of the six case studies were evaluated against the following:

- **Deliverability**: using key Investment Principles developed by The Aotearoa Circle to support natural infrastructure investment, (refer to **"What makes a good natural infrastructure project – Guiding principles to support credible natural infrastructure investment**) each study was assessed to unpack the principles they applied to successfully deliver their multiple benefits.
- **Strategic alignment:** the case studies were evaluated against Aotearoa New Zealand's **national infrastructure priorities**[38].
- **Value for money**: using the multiple value and benefits Evaluation Framework for natural infrastructure developed by The Aotearoa Circle to support the Natural Infrastructure Plan, the value for money for each case study was evaluated.

38 https://tewaihanga.govt.nz/our-work/infrastructure-priorities-programme/assessment-criteria

Table 1: Overview of case studies demonstrating the business case for natural infrastructure

Case study	Title	Existing network infrastructure supported	Economic sector(s) supported	Economic growth facilitated by the natural infrastructure	Delivers financial benefits	Delivers positive environmental benefits	Delivers social / cultural benefits
1	**Kaipara Moana Remediation, Auckland/Northland**	Water and waste	Bioeconomy Blue Economy	Sustaining primary production, local jobs, protecting harbour and key fishery nursery	✓	✓	✓
2	**Tangaroa Stream flood resilience scheme, Taranaki**	Water and waste	Towns and cities	Protection of residential and business assets for economic continuity and city growth	✓	✓	✓
3	**Queensland Reef Credit Scheme, Australia**	Water and Waste	Bioeconomy Blue Economy Tourism	Sustaining primary production, tourism/fisheries value protection and growth	✓	✓	
4	**South-West Christchurch Resilient Urban Development**	Water and waste	Towns and cities	Residential and industrial urban development/uplift	✓	✓	✓
5	**Auckland Airport, Innovative Stormwater Project**	Water and waste Ports and airports	Towns and cities	Airport operational expansion	✓	✓	
6	**Kirimoko Park Residential Development, Wanaka**	Land transport Water and waste	Towns and cities	Development costs reduction, supporting urban growth	✓	✓	✓

(iii) Natural infrastructure supports alignment with Aotearoa New Zealand's Infrastructure Strategy's five key objectives

To demonstrate their contribution towards priority outcomes, each case study was assessed against the five key long-term strategic objectives for New Zealand's infrastructure. These five objectives include:

- **Enabling a net-zero carbon emissions Aotearoa New Zealand** through rapid development of clean energy and reducing the carbon emissions from infrastructure.
- **Supporting towns and regions to flourish** through better physical and digital connectivity and freight and supply chains.
- **Building attractive and inclusive cities** that respond to population growth, unaffordable housing and traffic congestion through better long-term planning, pricing and good public transport.
- **Strengthening resilience to shocks and stresses** by taking a coordinated and planned approach to risks based on good-quality information.
- **Moving to a circular economy** by setting a national direction for waste, managing pressure on landfills and waste-recovery infrastructure and developing a framework for the operation of waste-to-energy infrastructure[39].

As shown in **Figure 1** below, **each case study aligned with at least one key national infrastructure objective.**

Collectively, the case studies directly contribute towards supporting towns and regions to flourish, building attractive and inclusive cities, and strengthening resilience to shocks and stresses.

Figure 1: Selected case studies: collective alignment with the Infrastructure Strategy's five key objectives.

Enabling a net-zero carbon emissions Aotearoa	Supporting towns and regions to flourish	Building attractive and inclusive cities	Strengthening resilience to shocks and stresses	Moving to a circular economy
• Moving to a low emissions energy sector • Reducing emissions produced by infrastructure	• Accessing safe and reliable infrastructure • Securing and integrating freight and supply chains and services • Use of technology to improve regional advantage	• Taking a long-term approach to infrastructure in our cities • Integrating land-use regulation and infrastructure • Easing pressure on infrastructure networks	• A coordinated approach to critical infrastructure investment • A planned approach to adapting climate change • Improving information and tools for resilience	• Setting a national direction for waste • Managing pressure on landfill and waste recover facilities • Developing waste-to-energy for the waste we produce

39 https://tewaihanga.govt.nz/our-work/infrastructure-priorities-programme/assessment-criteria

(iv) Natural infrastructure delivers value for money

Recognising that '**value' means the net fiscal, economic and wellbeing benefits of an asset or investment proposal over its life cycle**, each case study was assessed against the multiple value and benefits Evaluation Framework developed by The Aotearoa Circle to support the natural infrastructure investment. The multiple value associated with natural infrastructure assessed included financial, risk and resilience, environmental, social and cultural value.

The collective and measurable value afforded by the case study projects is provided in **Figure 2**.

The case studies demonstrate that natural infrastructure delivers financial value. For example,

- **Case study 1:** KMR delivered improved economic prosperity and Return-on-Investment. The Return-on-Investment is $3.94 per $1 invested. This will primarily be returned to the local and national economies. The payback period for these investments has been estimated at 3.63 years (for benefits to permanently outweigh costs).
- **Case study 2:** The nature-based solution saved $400,000 in CAPEX, almost 7% of the total budget by taking a less intrusive, more natural approach to daylighting, with less earthworks, less soil disturbance, and less impact to taonga.
- **Case study 3:** The Queensland Reef Credit Scheme has delivered a positive return-on-investment of between 5 and 10 times the initial investment.
- **Case study 4:** The Christchurch City Council has avoided $14million in capital costs to date by favouring a natural infrastructure solution.
- **Case Study 5:** Auckland Airport, through use of a Coupled Wetland Biofilter will save on operational and maintenance costs, as well as benefit from an extended design life.
- **Case study 6:** Kirimoko Park used a Water Sensitive Design approach meant the subdivision design was 22% more cost effective than a traditional approach to stormwater management. Using natural infrastructure delivered improved private development yield, avoided hard infrastructure costs, avoided costs of future proofing and avoided environmental remediation costs.

Further financial performance of these natural infrastructure investments is provided in the six case studies.

(v) Natural infrastructure delivers reduced risk and improved resilience, as well as environmental, cultural and social value

The case studies demonstrate that natural infrastructure delivers reduced risk and improved resilience, as well as environmental, cultural and social value. For example,

- **Case study 1:** The Kaipara Moana Remediation project will provide 712 new employment opportunities for the region. The actions will also improve on-farm productivity and provide a benefit-to-cost ratio of 22% and payback period of 4.5 years due to increased pasture income.
- **Case study 2:** Tangaroa Stream has provided improved flood resilience for public and private assets, including resilience for approximately 60 properties, an intermediate school, a high school, a Marae, a Community Pool and associated roading network.
- **Case study 3:** Provides a model to drive international investment which delivers on environmental improvements to land and water quality, thereby restoring and protecting an asset which contributes AU$9 billion to Australia's economy[40].
- **Case study 4:** The Christchurch City Council has delivered on improved flood resilience whilst integrating economic growth and urban development. Due to the use of natural infrastructure the flood risk has reduced, meaning that the land has been able to be developed to accommodate city growth, whilst also providing improved protection of hundreds of properties in the downstream river. This helps reduce insurance premiums for home and business owners[41].
- **Case study 5:** For Auckland Airport, the nature-based solution required a third of the land compared to a traditional approach, freeing up valuable space for aeronautical activities. The design also benefits local biodiversity with around 20,000 native plants

40 https://www.barrierreef.org/uploads/GBRValue-FullReport-Oct25.pdf
41 Treasury data shows insurers honing in on flood-risk properties | RNZ News

within the wetland and 2,600 within the raingarden.

- **Case study 6:** The Kirimoko Park division has improved drainage and flood management, improved water quality, improved infrastructure resilience, as well improved hydrology. By contrast, should a 'business as usual' traditional infrastructure approach been used, the benefit would have been solely linked to drainage and flood management.

Further details on the multiple benefits from these natural infrastructure investments is provided.

Part 3: Case Studies is available to download as a seperate PDF.

Figure 2: Case study collective multiple benefits and value for money delivered by using natural infrastructure.

The shaded boxes highlight the benefits of each Natural Infrastructure solution.

Benefit Domain	FINANCIAL	RISK & RESILIENCE		ENVIRONMENTAL			SOCIAL	CULTURAL
Benefit Typology	Financial opportunities through reduced costs and improved asset values	Disruptions to a systemically important supply chain (major trade, food security or mahinga kai)	Disruptions to, or failure of, critical infrastructure	Biodiversity loss and ecosystem collapse (incl pest or disease incursion)	Severe weather events (e.g. flooding & wildfire)	Natural resource shortages (e.g. caused by drought)	Changes in social and recreational amenity	Changes in cultural amenity
Natural Infrastructure Benefits - Nature's Contributions to People (NCP)	Avoided/reduced CAPEX	Improved/reduced service disruption ("loss of function")	Improved/ maintained availability of insurance	Increased/ maintained abundance and diversity of native species	Reduced emissions/ Improved emissions mitigation; increased nature-based carbon storage permanence & sequestration	Improved/ maintained groundwater and/ or surface water quality and/or quantity and/ or recharge and storage	Improved access and recreational use of the natural environment	Expanded/ maintained cultural/ spiritual settings & learning/inspiration opportunities. Supporting identities.
	Avoided/reduced OPEX	Improved/ maintained primary sector productivity/ outputs	Improved/ maintained insurance premiums	Improved/ maintained presence of endangered/ threatened species	Reduced/avoided surface runoff and associated erosion/ slips (incl climate adaptation)	Improved/ maintained marine water quality or marine flow regime	Improved/ maintained livelihood opportunities	Increased/ maintained cultural property/land value
	Avoided/reduced consenting and/or compliance costs	Increased/ maintained food security	Improved/ maintained asset protection and resilience (incl climate change resilience)	Improved/ maintained habitat (incl aquatic) protection/ restoration	Improved/ maintained surface water flows and/ or flood protection and/or stability - inland or coastal (incl climate adaptation)	Improved/ maintained Material NCP (e.g. Energy, food, materials, medicinal, biochemical & genetic resources)	Improved/ maintained tourism opportunities	Expanded/ maintained mahinga kai
	Increased/ maintained property/land value	Improved resilience of operations and supply chains		Improved/ maintained Regulating NCP (e.g. pollination, seed dispersal, air-soil-water quality, water flows, natural pest control etc)		Improved/ maintained biomass	Improved/ maintained community engagement and wellbeing (including physical and psychological experiences)	
	Improved/ maintained asset design life	Reduced loss of useable land due to improved resilience or integrity		Improved/reduced use of High-Impact Commodities				
	Improved/new revenue streams/ investment due to the provision of Ecosystem Services to benefiting parties			Improved/ maintained terrestrial habitat extent				
	New and improved products, services and/or brand value			Improved/ maintained aquatic habitat condition				
	Improved/ maintained Return on Investment							

(vi) Next Steps

It is envisaged that public and private sector leaders draw inspiration and ideas from these case studies when considering an infrastructure investment.

We encourage readers to read the six case studies for full analysis of the demonstratable benefits of nature-based solutions.

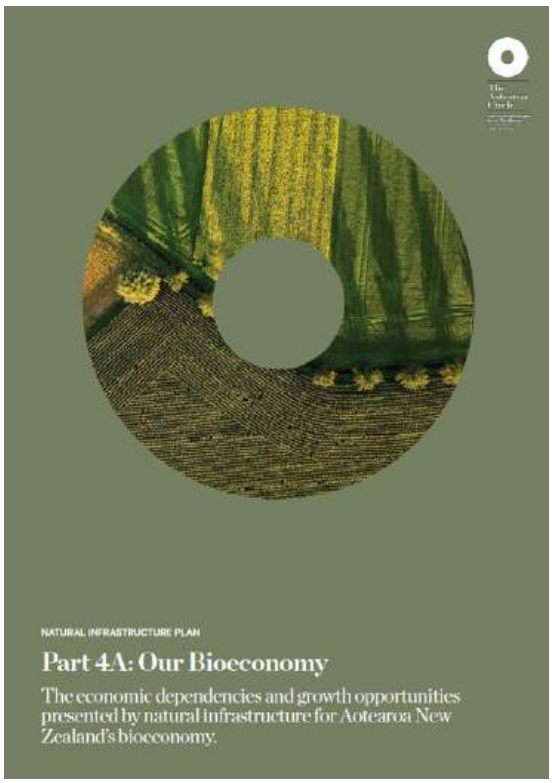
It is envisaged that natural infrastructure is seen as critical infrastructure, and that by using nature to improve our resilience, we can support both urban development and nature development. These case studies aptly demonstrate you can do both and a natural infrastructure investment delivers not only financial benefits, but also environmental, resilience, cultural and social benefits.

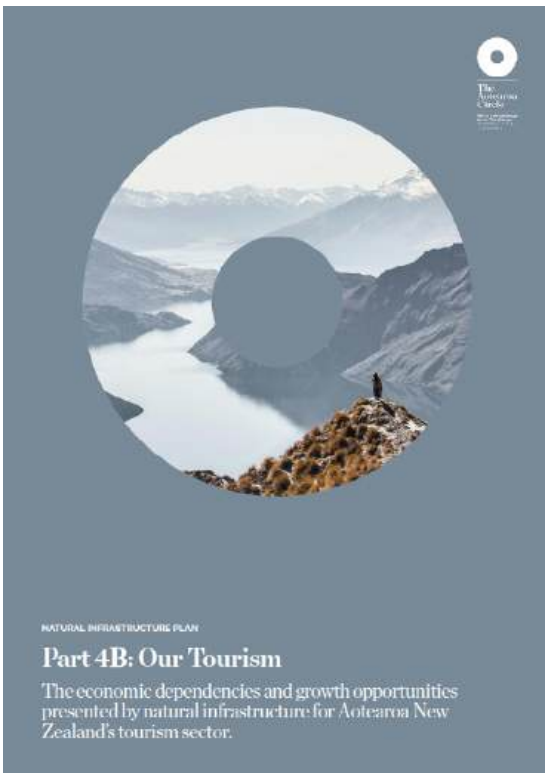
Part 4:

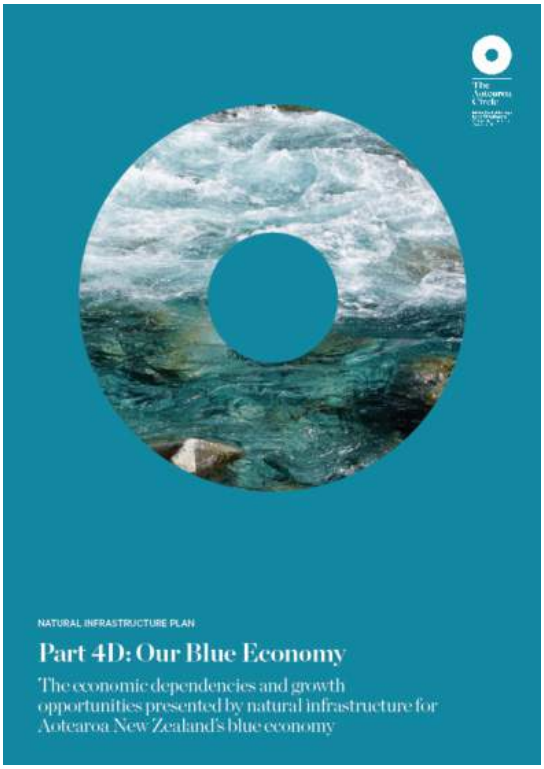
Strategic growth opportunities presented by natural infrastructure

Aotearoa New Zealand's strategic growth opportunities presented by natural infrastructure

To support this Plan, The Aotearoa Circle has developed four Economic Sector Opportunity Overviews.







I. Reducing the risk and improving the resilience of towns and cities through investment in natural infrastructure

Natural infrastructure plays an essential role in making our towns and cities safer, functioning, livable, and more efficient in terms of transport, water, energy, public spaces, businesses, and housing.

The opportunities in using natural infrastructure lie in the potential to unlock constrained land for housing, improve the quality and attractiveness of urban places, strengthen supply chains, and reduce the cost and consequences of natural hazards.

For example, with a key national risk[42] being inundation and flooding, the use of natural infrastructure such as wetlands, floodplains, and daylighted streams (uncovering and restoring natural waterways obscured or diverted by urban infrastructure), can reduce flood risk, enhance biodiversity, provide public amenity, while lowering capital and maintenance costs.

Integrated catchment planning can connect water networks, bringing region-wide resilience to drought, unlocking land value, helping to mitigate disruptions to, or failure of, critical infrastructure, and systemically important supply chains.

The use of spatial planning, embedding natural infrastructure in planning and regulatory frameworks, and integrating mātauranga Māori are key opportunities for strengthening towns and cities. Better quality developments, that maximise green corridors of natural infrastructure, can drive uplift in property and land values, contribute to livable communities, and drive improved environmental outcomes.

To realise these benefits, system-wide opportunities could be taken up including:

- Long-term, apolitical policy
- Better alignment between central and local government
- Regulatory reforms that embed nature into planning and decision-making
- Improved spatial planning to identify areas for protection and development
- Funding shifts from reactive rebuilding to proactive adaptation
- Mechanisms such as biodiversity net gain and nature asset registers will also help bring nature onto balance sheets.

For more details refer to the Economic Sector Opportunity Overview for our towns and cities.

42 Department of the Prime Minister and Cabinet. (2025). New Zealand's National Risks. https://www.dpmc.govt.nz/our-progammes/risk-and-resilience/national-risk -and-resilience-framework/new-zealands-national-risks

II. Unlocking growth in the tourism sector through investment in natural infrastructure

Aotearoa New Zealand's tourism sector stands at a pivotal juncture. Over the next three decades, the industry's resilience, economic prosperity, and competitive advantage will depend on effective stewardship and strategic investment in natural infrastructure.

Far more than picturesque scenery, Aotearoa New Zealand's wetlands, native forests, and resilient coastlines are foundational infrastructure assets; living systems that deliver critical financial, social, cultural and environmental value that underpin the distinctive visitor experiences that set Aotearoa New Zealand apart.

For our tourism sector, protecting and restoring indigenous biodiversity maintains and enhances assets that support premium nature-based experiences and strengthen destination competitiveness.

Tourism is a cornerstone of our economic prosperity, contributing $13.3 billion annually to GDP and accounting for 3.7% of Aotearoa New Zealand's total economic output[43]. The sector supports thousands of jobs across regions and is a major export earner, reinforcing its central role in both urban and rural economic development[44].

Aotearoa New Zealand's strategic growth roadmap for tourism is ambitious. By 2026, the Ministry of Business, Innovation and Employment (MBIE) aims to restore international visitor numbers to pre-pandemic levels and to double export earnings from $9.9 billion to $19.8 billion by 2034[45]. Achieving these targets will require investment in workforce development, mixed-use infrastructure, and enhanced visitor experiences. Success will also rely on the condition and resilience of the natural infrastructure that support access, safety and high-quality visitor experiences.

To support economic growth and prosperity, natural infrastructure must be recognised and treated as core infrastructure. Nature's integration into planning and investment is essential for supporting delivery of growing visitor expectations, responding to international standards and expectations, and building a high value, future ready industry.

Natural infrastructure provides a foundation for long term commercial performance of our tourism sector, as well as strengthening the climate change resilience of access routes, protecting iconic natural landscapes, and enhancing the quality of visitor experiences.

Activity is already underway across the country, and emerging projects demonstrate value. Operators such as RealNZ[46], are investing in restoring native habitats and wetland regeneration is improving water quality and biodiversity. Coastal restoration strengthens protection for communities and key visitor locations. These examples show that investment in living systems can deliver measurable gains for tourism, resilience, and improved environmental outcomes.

Progress is constrained by fragmented engagement across the sector, insufficient integration of natural infrastructure into investment planning, and limited understanding of the economic benefits it provides. Capability gaps, variable data quality, and misaligned incentives between public and private stakeholders restrict coordinated action and long-term investment.

Integrating natural infrastructure into tourism planning, investment decisions and regulatory frameworks will protect the landscapes visitors come to experience while reducing long-term operating and recovery costs. Coordinated investment and innovation, grounded in Te Taiao, will ensure that Aotearoa New Zealand's tourism industry remains resilient, competitive and able to deliver enduring value for communities, visitors and the environment.

For more details refer to the Economic Sector Opportunity Overview for our tourism sector.

43 MBIE, Tourism Growth Roadmap. Retrieved from: https://www.mbie.govt.nz/dmsdocument/30792-tourism-growth-roadmap

44 Stats NZ. Tourism Satellite Account: Year ended March 2023 retrieved from: https://www.stats.govt.nz/information-releases/tourism-satellite-account-year-ended-march-2023/

45 MBIE, Tourism Growth Roadmap, https://www.mbie.govt.nz/immigration-and-tourism/tourism/tourism-growth-roadmap#:~:text=Tourism%20Growth%20Roadmap%20Objectives:,in%20tourism%20and%20hospitality%20jobs.

46 https://www.realnz.com/en/conservation/conservation/key-conservation-projects/

III. Unlocking growth in the bioeconomy sector through investment in natural infrastructure

Aotearoa New Zealand's bioeconomy is a cornerstone of national prosperity, covering around 60% of land, employing a quarter of the workforce, and generating over 80% of goods exports[47]. National strategies aim to double the value of food and fibre exports by 2034 while improving environmental performance.

For our bioeconomy, addressing our natural infrastructure deficit is fundamental to Aotearoa New Zealand's sustained productivity, market credibility, and long-term sector competitiveness.

Achieving this growth relies on the enduring management of natural assets namely soils, water, forests, and biodiversity as well as more resilient traditional infrastructure (roads, ports, water, energy, and telecommunications).

The bioeconomy is facing significant challenges from climate change, declining natural systems, degraded catchments, erosion-prone landscapes, and the loss of natural buffering assets like wetlands (around 90% have disappeared[48]). These pressures threaten productivity, supply chain reliability, and export credibility. Fragmented governance and slow adoption of nature-based solutions further constrain greater resilience.

Investing in natural infrastructure - catchment restoration, riparian planting, wetlands, and afforestation - offers major opportunities to stabilise production, reduce risks, enhance feed and biomass reliability, support high-value, low-emission products, and strengthen market access.

Initiatives like the Mountains to Sea programme in the Bay of Plenty[49] demonstrate how coordinated catchment-scale restoration can deliver resilience, economic and environmental benefits including reduced sedimentation, improved water quality, stronger supply chains, regional resilience and employment opportunities.

Realising the bioeconomy's opportunities to thrive require policy settings and investment frameworks that recognise natural infrastructure as core productive assets. Targeted incentives such as co-investment in priority catchments, asset-classification approaches, sustainability-linked finance, and ecosystem-services payments have the potential to unlock long-term, catchment-wide benefits not yet fully reflected in business cases.

Clear government direction through infrastructure planning, investment frameworks, and verified-outcome finance tools can mobilise capital at scale supporting a resilient, high-value bioeconomy and strengthening Aotearoa New Zealand's position in markets where measurable environmental performance is increasingly essential for competitiveness.

For more details refer to the Economic Sector Opportunity Overview for our bioeconomy.

47 https://environment.govt.nz/publications/aotearoa-new-zealands-first-emissions-reduction-plan/circular-economy-and-bioeconomy/

48 https://www.doc.govt.nz/news/media-releases/2025-media-releases/further-losses-predicted-for-wetlands-in-future/

49 Rijkse, W. C. & Guinto, D. F. (2010). Soils of the Bay of Plenty, Vol. 1: Properties and Classification of the Soils of the Bay of Plenty. Bay of Plenty Regional Council Publication 2010/11-1.

IV. Securing Aotearoa New Zealand's Blue Economy growth potential through strategic investment in natural infrastructure.

Aotearoa New Zealand's marine economy currently includes significant shipping, port, tourism, and seafood sectors (fishing and aquaculture). Today's marine economy contributes $10 billion annually (3.9% of GDP), supports 70,000 jobs and is projected to achieve $14 billion in exports by 2035 should a deliberate Blue Economy transition be adopted[50].

Transitioning to a regenerative Blue Economy is a strategic ambition to take Aotearoa New Zealand beyond the current marine economy. This transition would provide enduring ocean health and community prosperity by fostering innovation, and resilient and responsible practices[51].

The Blue Economy transition depends upon natural infrastructure for economic prosperity.

All marine economy sectors are vulnerable to environmental pressures such as climate change-induced marine heatwaves, increasingly severe and frequent storms and sedimentation, biosecurity risks, and sea-level rise[52 53 54]. Increased investment in traditional and natural infrastructure, technology, and workforce support is required to respond to these, and to enable emerging opportunities for transitioning to a Blue Economy.

A Blue Economy delivers strong and measurable economic returns.

The opportunities for increased economic value through greater investment in natural assets within the Blue Economy are clear. Global experiences show that every dollar invested in marine natural infrastructure delivers 2 to 12 times in societal benefits through avoided damage, reduced operational costs, and enhanced productivity. These benefits arise from limiting impacts such as trawling, dredging, and the accumulation of pollutants including microplastics[55 56 57]. Kelp forests generate significant value for fisheries on an annual per hectare basis, while also sequestering carbon dioxide[58]. The Hauraki Gulf provides ecosystem services that are annually valued at over $5 billion, with total natural assets estimated at between $40-100 billion[59]. For these and many more reasons, strategic investment in natural infrastructure is not only socially and culturally important - it's an economic growth prerequisite.

Fragmented governance structures create systemic risks and obscure opportunities for blue economic growth.

In Aotearoa New Zealand marine governance, legislation, policy and regulation occur across 14 agencies[60]. This creates inefficiencies for marine sector industries. Despite significant research such as the Sustainable Seas Science Challenge[61], the uptake of available knowledge to develop a Blue Economy for Aotearoa New Zealand has been limited. Data is also fragmented, meaning investments that deliver

50 https://www.un.org/regularprocess/sites/www.un.org.regularprocess/files/rok_part_2.pdf
51 Westpac NZ. (2025). A sustainable marine sector - Transitioning to a blue economy. Westpac New Zealand. https://www.westpac.co.nz/about-us/media/shifting-to-a-sustainable-marine-economy-could-contribute-14bn-by-2035/
52 Ministry for the Environment & Stats NZ. (2024). New Zealand's Environmental Reporting Series: Our marine environment 2022. https://environment.govt.nz/publications/our-marine-environment-2022/
53 Parliamentary Commissioner for the Environment. (2023). Ocean acidification: Summary for policymakers. https://pce.parliament.nz/
54 Department of Conservation. (2024). Marine biosecurity threats and responses. https://www.doc.govt.nz/nature/pests-and-threats/marine-pests/
55 Beck, M. W., et al. (2018). The global flood protection savings provided by coral reefs. Nature Communications, 9(1), 2186. https://doi.org/10.1038/s41467-018-04568-z
56 Narayan, S., et al. (2016). The effectiveness, costs and coastal protection benefits of natural and nature-based defences. PLOS ONE, 11(5), e0154735. https://doi.org/10.1371/journal.pone.0154735
57 Costanza, R., et al. (2014). Changes in the global value of ecosystem services. Global Environmental Change, 26, 152-158. https://doi.org/10.1016/j.gloenvcha.2014.04.002
58 Trevathan-Tackett, S. M., et al. (2015). Comparison of marine macrophytes for their contributions to blue carbon sequestration. Ecology, 96(11), 3043-3057. https://doi.org/10.1890/15-0149.1
59 Clough, P., Bealing, M., & Huang, T. (2023). Valuing the Hauraki Gulf: An ecosystem services and natural capital approach. NZIER report to the Hauraki Gulf Forum. New Zealand Institute of Economic Research.
60 Severinsen, G. and Peart, R. (2022). The Breaking Wave: Oceans Reform in Aotearoa New Zealand. Environmental Defence Society.
61 Sustainable Seas National Science Challenge. (2024). Guidance on building Aotearoa New Zealand's blue economy. https://www.sustainableseaschallenge.co.nz/

environmental outcomes are often undervalued when investment decisions are made.

Cross-sector collaboration is essential to unlock Blue Economy potential. Standards for identifying and valuing marine nature-positive activities are immature[62]. The absence of cross-sector coordination limits the opportunity to develop an aspirational national Blue Economy strategy and the associated governance reforms required to support it. Regional clusters such as Murihiku Regeneration (Southland) and the experience of Moananui (Nelson Tasman) have demonstrated that integrated, place-based approaches which are anchored in marine ecosystem health, iwi/Māori leadership, and shared data can rapidly unlock growth opportunities which individual sectors cannot achieve alone. These models show how coordinated investment in natural infrastructure, aligned policy frameworks, and collaborative planning can simultaneously reduce operational risks (from climate impacts, biosecurity threats, and market volatility) while creating new revenue streams and attracting transformative capital.

There is an opportunity to attract and mobilise new investment in marine sector innovation, and research and development by creating consistent standards, simplifying governance arrangements, and generating projects that are larger in nature to draw meaningful capital[63].

A national strategy which enables cross-sector collaboration (i.e. modelled on successful regional clusters domestically and internationally) supported by streamlined marine governance would position Aotearoa New Zealand to capitalise on emerging Blue Economy opportunities at scale.

A national Blue Economy strategy is essential to unlock economic growth potential and manage systemic risks.

Aotearoa New Zealand's vast Exclusive Economic Zone (EEZ), our strategic location in the South Pacific, the richness of marine fauna and flora, and the many opportunities for regenerative Blue Economy development require a nationally coordinated, cross-sector strategy for shared knowledge, collaboration and innovation.

Against the background of large capital flows into "ocean clusters" internationally, i.e. where regional coordination of Blue Economy activities has attracted significant investment and rapid growth, the development of a national Blue Economy strategy is a significant opportunity to position Aotearoa New Zealand competitively.

A successful national Blue Economy strategy would place Aotearoa New Zealand in a position to deliver its full economic, social and environmental promise by: enabling the Blue Economy to deliver measurable financial returns; guiding Blue Economy sectors to reduce systemic risks from climate impacts, biosecurity threats, and market volatility; support the streamlining of fragmented governance to lower business costs and attracting transformative investment; and charting a course to establish Aotearoa New Zealand as a global leader in sustainable ocean management.

Why natural infrastructure is fundamental to this national strategy?

Healthy marine ecosystems underpin all marine economy sectors. Degraded ecosystems increase operational costs, reduce productivity, weaken market access, and amplify vulnerability to climate change. Conversely, strategic investment in marine natural infrastructure including kelp forests, seagrass meadows, wetlands, and reef systems delivers cost savings through reduced dredging and operational expenses. It also strengthens climate resilience, supports market access for high-value exports, and enables new revenue streams through blue carbon and ecosystem service markets. Natural infrastructure is therefore not an environmental add-on but economic core infrastructure.

For more details refer to the Economic Sector Opportunity Overview for our marine and Blue Economy.

62 International Finance Corporation. (2024). Guidelines for blue finance Version 2.0. World Bank Group. https://www.ifc.org/content/dam/ifc/doc/2024/guidance-for-blue-finance-v2-0.pdf

63 European Investment Bank. (2023). The blue economy: Finance and investment for ocean sustainability. EIB. https://www.eib.org/en/publications/the-blue-economy

Part 5:

Enabling and driving scale by taking impactful actions

I. Natural infrastructure - a collective responsibility: why integrating science with Māori values matters

Aotearoa New Zealand's future resilience and economic prosperity depend on natural infrastructure. Actions to embed, maintain and enhance this infrastructure are a collective responsibility, with responses grounded in both science and mātauranga Māori.

Aotearoa New Zealand's history has been shaped by two value systems – one centred on ownership of land and assets, and another centred on intergenerational belonging, accountability, and reciprocity between tangata (people), whenua (the blue-green biosphere), and taonga (treasured resources). **Rebalancing these value systems is essential if we are to restore the ecological foundations that support wellbeing, economic prosperity and national identity[64].**

Mātauranga Māori provides a relational, values-based knowledge system that considers natural infrastructure to be living, interconnected, and dynamic. It is not myth or metaphor, but a **rigorous knowledge tradition** that uses systematic observation, measurement, inductive reasoning, hypothesis testing and continual verification across generations, as described in the research literature on mātauranga Māori knowledge systems[65]. Pūrākau and maramataka (Māori lunar calendar), for example, are codified environmental knowledge frameworks built from centuries of empirical observation of Aotearoa New Zealand's hydrology, climate rhythms, coastal dynamics and ecological boundaries.

At the heart of mātauranga Māori is whakapapa, a genealogical framework that connects people, landscapes, waters, climate systems and species in a single relational network. This aligns closely with modern science, which emphasises system interdependence, cumulative impacts, and feedback loops between land use, biodiversity, hydrology, climate and human wellbeing[66]. Where science has traditionally acted as an external observer, mātauranga Māori centres participatory experience of environmental systems, embedding ethics and social responsibility into knowledge creation.

The integration of science and mātauranga Māori is therefore not about privileging one system over another but recognising each as valid, evidence-based, and complementary. Science offers quantification and engineering confidence; mātauranga Māori offers long historical baselines, finely tuned place-based knowledge and a values-centred framing of stewardship. Both rely on empirical data, systematic method and iterative refinement, consistent with Hikuroa's demonstration that mātauranga Māori **"provides insight into geomorphology, climate, ecology and environmental change through methodical, evidence-based practices"** [67].

Collective responsibility means collective stewardship

Stewardship of natural infrastructure requires iwi, hapū, local communities, scientists, councils and central government to work collectively. Māori stewardship concepts such as rangatiratanga, manaakitanga and kaitiakitanga provide frameworks for long-term intergenerational care – frameworks urgently needed as climate impacts intensify and natural infrastructure degrades.

This perspective illuminates why many current crises reflect deeper historical imbalances. Ecological decline is inseparable from the disruption of tangata–whenua relationships, the undervaluing of biosphere mauri, and the dominance of extractive models that treated nature as expendable rather than foundational.

Rebuilding natural infrastructure requires us to reverse this imbalance by treating natural infrastructure as living assets with stocks, flows, limits and thresholds, not infinite externalities.

In this integrated approach, natural infrastructure

64 KĀINGA - Tangata, Whenua, Taonga (P. Tapsell 2023 BWB Ltd, WGN) Afterword: One Planet (p170-175) Lest We Forget.
65 Mātauranga Māori: the ūkaipō of knowledge in New Zealand – discusses mātauranga Māori as an empirical, methodical knowledge system; details pūrākau, maramataka, whakapapa, systems thinking and the relational framing of tangata–whenua–taonga.
66 Hikuroa (2018) PPI Briefing – explains equivalence between scientific method and mātauranga Māori methodologies; provides examples of Māori environmental knowledge in geomorphology, climate science, hazard understanding and ecosystem management.
67 ibid.

becomes both a technical and cultural responsibility. It invites us to combine hydrological and climate modelling with pūrākau that capture centuries of flood events; engineering design with maramataka-based understanding of environmental rhythms; and policy frameworks with whakapapa-based ethics of reciprocity and guardianship. It also requires recognising iwi/Māori leadership is critical to shaping resilient futures.

By weaving together science and Mātauranga Māori, Aotearoa New Zealand can build a durable, inclusive and future-focused foundation for natural infrastructure – one that honours both our past and our obligations to generations yet to come.

II. Seven impactful outcomes

If we don't attribute the correct value to our natural capital, we will fail to see investment in natural capital.
Financial institution representative

We developed these recommendations through significant research and stakeholder engagement. We acknowledge and thank those who have provided their time, experience, advice, and guidance to help shape these recommendations.

Taking rapid action will help secure our economic prosperity whilst strategically positioning Aotearoa New Zealand internationally, where international market expectations are high. We need to act now to reduce our risk, improve our resilience, and maintain our global reputation and market presence.

The tables overleaf provide an overview of the recommendations to support the **Ambition of the Natural Infrastructure Plan**.

We encourage readers to review **the six case studies** – these are great examples of the changes we seek already being implemented.

We encourage those readers involved in our four key economic sectors (bioeconomy, Blue Economy, towns and cities, and tourism) to review the **Economic Growth Opportunity Overviews**, which present the economic dependencies, impacts, and commercial growth opportunities presented by investment in natural infrastructure.

(i) A call for collective action

The tables below provide detail on The Aotearoa Circle's seven key outcomes.

These actions focus on accounting for our natural assets, strengthened governance, aligned incentives, build capability and data accessibility, and provide natural infrastructure with the investment platform it is currently missing.

Implementing these recommendations, and achieving the Ambition of the Natural Infrastructure Plan, requires a collective response and collective leadership – from the public, private and philanthropic sectors.

In preparing these recommendations we have endeavored to capture the **potential Responsible Parties** who play a role in achieving the Ambition of the Natural Infrastructure Plan. Whilst The Aotearoa Circle has provided suggested allocations of accountability on who is best to lead each recommendation, we invite proactive leadership from all.

(ii) Timing

The recommendations reflect the urgency with which action is required: nature loss and climate impacts are accelerating, and failing to value natural infrastructure jeopardises economic resilience, global market access, and community wellbeing.

Generally, we have presented our recommendations in priority order and presented them in three phases.

- Phase **One** is an **immediate action**, which private sector and the Government can commence immediately. Some may require legislative change (e.g. responsibility), however, when identified as a priority action, they have been included within Wave One. Ideally these to be implemented within one to two years.
- Phase Two is a **short-term action**, where private sector and the Government may need to conduct additional research or industry consultation prior to implementation. These are more likely to be implemented within three to five years.
- Phase Three presents **medium-term actions**, which require more extensive co-development and consultation, as well as legislative change. These therefore are timed within five to ten years.

Reflective of the criticality of the current state, there are no long-term actions.

III. Long term desired outcomes and actions to embed, maintain and enhance our natural infrastructure

Outcome 1:
The assets and liabilities of our natural infrastructure are understood and accounted for.

Action:
Develop an internationally aligned natural asset accounting system, that includes all iwi/Māori interests, to enables us to understand our natural infrastructure assets and liabilities (including stocks and flows (and how they are changing)).

Outcome 2:
Natural infrastructure, as a strategic economic asset, is supported by a sound business case, and national long-term stewardship.

Action:
Support natural infrastructure investment, and its multiple benefits (including financial, environmental, social and cultural), by including natural infrastructure in public sector investment frameworks, planning strategies, and asset stewardship governance frameworks.

Outcome 3:
Natural infrastructure is embedded into the planning and environmental system, asset insurability, and National Risk and Resilience Frameworks.

Action:
The economic impacts and dependencies we have on natural infrastructure is embedded into natural hazard planning and National Risk and Resilience Frameworks. Natural infrastructure investment is supported through spatial planning, streamlined consenting and insurance controls.

Outcome 4:
Innovative funding and finance mechanisms enable public and private capital flows into natural infrastructure.

Action:
Implement and/or scale enduring innovative funding and finance mechanisms, including revenue generating models, that support domestic and international investment to embed, maintain and enhance our stocks of natural infrastructure.

Outcome 5:
Sector-level investment in natural infrastructure supports long-term economic resilience and commercial growth.

Action:
Key economic sectors acknowledge and respond to the impacts, economic dependencies, and growth opportunities through inclusion improved accountability, national strategies, and improved supply chain resilience.

Outcome 6:
Nature as infrastructure is understood and natural infrastructure investments are confidently and competently delivered.

Action:
Training and competency programmes and leadership, supported by guides and Communities of Practice, bolster collective understanding and technical capability.

Outcome 7:
Credible data and verification support natural infrastructure investment decision-making.

Action:
Develop platforms that house and enable access to consistent and reliable decision-useful data supported by dependable third-party verification of natural infrastructure investments.

Outcome 1: The assets and liabilities of our natural infrastructure are understood and accounted for.

Accounting for our assets and liabilities would allow Aotearoa New Zealand to make better planning, environmental and investment decisions, such as:

- Enable the value of our natural assets to be incorporated into land (and marine) land-use and investment decisions
- Identify and prioritise the restoration and/or protection of land and marine environments
- Prevent higher value land and marine environments from degradation and/or destruction (e.g. wetlands)
- Allow for development in areas where the natural assets are of a lower value.

Action: **Develop an internationally aligned Natural Asset Accounting System, that includes all iwi/Māori interests, to enables the public and private sectors to understand our natural infrastructure assets and liabilities (including stocks and flows and how they are changing).**		
Implementation pathways include:	**Potential responsible parties include:**	**Timeframes:**
• **Environmental accounting:** Continue, prioritise and strengthen MfE's work to co-create with iwi/Māori a national environmental accounting framework for natural infrastructure to assess and quantify the stocks and flows of natural infrastructure (and how they are changing over time). This includes use of internationally agreed frameworks such as the UN System of Environmental and Economic Accounts (SEEA)[68], developing standard definitions of ecosystem services[69] and incorporation of mātauranga Māori and Te Ao Māori. • Supported this through investment in the necessary science to enable performance measuring and monitoring.	MfE Earth Sciences New Zealand Cawthron Institute	Phase I
• **Environmental accounting:** Build on existing work[70] to include the multiple benefits value of Park and Conservation Land (PCL), into **Treasury's Investment Statement**[71], acknowledging PCL is not a saleable asset.	Treasury	Phase II
• **National accounting (macro level):** Include natural infrastructure asset classes into **Treasury's Asset Classifications**[72].	Treasury	Phase II
• **National accounting (macro level):** Using international norms, account for natural assets in **Treasury's Balance Sheet**[73] (recognising Aotearoa New Zealand's nature-related assets and liabilities) or develop a separate set of **Natural Capital Accounts** (like the UK Natural Capital Accounts or the World Bank's WAVES project)[74][75]. Ensure inclusion of all iwi/Māori interests and Te Tiriti arrangements.	Treasury	Phase III
• **Economic sector accounting**: Leverage the national environmental accounts to support evaluation of the 'value of our nature infrastructure' at a sector level by accounting for the ecosystem services provided by, required by, and utilised by our key economic sectors including our towns and cities, tourism, bioeconomy, and blue economy. Integrate this into the National Risk and Resilience Framework.	MBIE MPI DPMC	Phase III
• **Long-term fiscal outlook:** Integrate our economic dependency on natural infrastructure into Treasury's 40-year outlook on Aotearoa New Zealand's fiscal future[76].	Treasury	Phase III

68 https://seea.un.org
69 https://www.treasury.govt.nz/sites/default/files/2018-08/LSF-capturing-natural-capital-in-decision-making.pdf
70 https://www.doc.govt.nz/globalassets/documents/about-doc/role/managing-conservation/assessing-the-value-of-pcl/the-value-of-public-conservation-land.pdf
71 https://www.treasury.govt.nz/publications/investment-statement/he-puna-hao-patiki-investment-statement-2025#the-investment-statement-is-one-of-the-treasury-s-three-stewardship-reports
72 https://www.treasury.govt.nz/information-and-services/financial-management-and-advice/assets-liabilities/what-we-own
73 https://www.treasury.govt.nz/publications/financial-statements-government
74 https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapitalaccounts/2024#:~:text=1.-,Main%20points,£489%20billion%20in%202022.
75 https://www.wavespartnership.org
76 https://www.treasury.govt.nz/publications/ltfp/he-tirohanga-mokopuna-2025

Outcome 2: Natural infrastructure, as a strategic economic asset, is supported by a sound business case, and national long-term stewardship.

Action: **Support natural infrastructure investment, and its multiple benefits (including financial, environmental, social and cultural), by including natural infrastructure in public sector investment frameworks, planning strategies, and asset stewardship governance frameworks.**		
Implementation pathways include:	**Potential responsible parties include:**	**Timeframes:**
• **Investment Framework**: Build on the **Investment Framework** and **Investment Principles** (and Blue Economy Principles[77]) to enable natural infrastructure analysis within existing (and future) government investment management and investment decision-making systems.	Treasury	Phase I
• **National cost benefit analysis**: Integrate the multiple benefits included in the **Investment Evaluation Model** and associated indicators (developed as part of this Plan) into **Treasury's CBAx** tool[78] and Treasury's Investment Management System[79]. Showcase the **six case studies** developed as part of this plan to illustrate the business case for natural infrastructure investment.	Treasury DPMC Infrastructure Commission	Phase I
• **Infrastructure funding:** Leverage the infrastructure funding and financing reforms to enable and strengthen natural infrastructure investment.	Treasury	Phase I
• **Use national instruments to expedite infrastructure investments that deliver economic and positive environmental outcomes (in line with the ambition of the Plan):** Develop a National Instrument that simplifies, standardises, and reduces consenting requirements for natural infrastructure investments that are in line with the ambition of the plan (i.e. investments that maintain and/or enhance our natural infrastructure).	MfE	Phase II
• **Government accountability and apolitical strategic clarity:** Strengthen cross-government and public–private accountability to support intergenerational direction and stewardship of natural infrastructure. This includes: ○ Integrate natural infrastructure into long-term apolitical infrastructure strategies ○ Establish national targets and clearer cross-government accountability mechanisms (e.g. reporting, independent oversight) to improve the condition of our natural infrastructure.	Responsible Ministers Supported by: Public Service Commission	Phase II
• **Climate adaptation and resilience:** Integrate natural infrastructure into the business case for climate adaptation and resiliency planning. This includes planning that supports options other than like-for-like replacements and incentivises a verified shift from a reactive to proactive response. For example, the Tairāwhiti Transition Programme Business Case is a 30-year plan to stabilise around 100,000 hectares of erosion-prone land[80].	Central government Local councils Local Government Funding Agency Insurers	Phase II

77 https://backend.sustainableseaschallenge.co.nz/assets/dms/Summaries/Blue-economy-principles/Blue-economy-principles-Summary.pdf
78 https://www.treasury.govt.nz/information-and-services/public-sector-leadership/investment-management/investment-planning/treasurys-cbax-tool
79 https://www.treasury.govt.nz/information-and-services/public-sector-leadership/investment-management-system
80 https://www.gdc.govt.nz/council/news/media-releases/transition-programme-business-case-released

Outcome 3: Natural infrastructure is embedded into the planning and environmental system, asset insurability, and National Risk and Resilience Frameworks.

Action: **The economic impacts and dependencies we have on natural infrastructure is embedded into natural hazard planning and National Risk and Resilience Frameworks. Natural infrastructure investment is supported through spatial planning, streamlined consenting and insurance controls**		
Implementation pathways include:	**Potential responsible parties include:**	**Timeframes:**
The planning and environmental system (including associated national instruments)		
Integrate our economic dependency on natural infrastructure explicitly into the new planning and environmental system: Use the new planning and environmental system to support embedding, maintaining and enhancement of natural infrastructure investment in line with the ambition of the plan. Include our economic dependency on nature in the definition of a 'natural' hazard'.	MfE	Phase I
Include negative changes to our stocks and flows of natural infrastructure (i.e. the availability and condition of the goods and services provided by nature) as a natural hazard: Ensure the new planning and environment system, and associated national instruments, recognise the current availability and condition of our natural infrastructure, the economic dependency we have on natural infrastructure, and the role natural infrastructure plays in reducing natural hazard risks.	MfE	Phase I
Support integrated long-term spatial planning: Develop integrated long-term (50–100 year) catchment-wide integrated spatial plans. Include requirements for spatial plans to identify areas for protection, restoration, development and blue-green networks as well as areas where development is viable.	MfE Local and Regional councils	Phase II
Strengthen marine infrastructure: Strengthen consenting pathways so marine natural infrastructure (e.g., shellfish beds, kelp forests, dunes) is embedded, maintained and enhanced. Integrate natural infrastructure into marine spatial planning and address governance barriers that impede coastal and offshore ecosystem restoration.	MfE MPI Regional Councils DOC	Phase II Phase III

Action: **The economic impacts and dependencies we have on natural infrastructure is embedded into natural hazard planning and National Risk and Resilience Frameworks. Natural infrastructure investment is supported through spatial planning, streamlined consenting and insurance controls**		
Implementation pathways include:	**Potential responsible parties include:**	**Timeframes:**
Risk & resilience		
Risk Assessment: Integrate the role, and benefits of natural infrastructure into the second National Climate Change Risk Assessment 2026[81].	MfE Climate Change Commission	Phase I
National risk and resilience frameworks: Integrate Aotearoa New Zealand's economic dependency on natural infrastructure into core National Risk and Resilience Frameworks. This includes the new National Risk and Resilience Framework[82].	DPMC	Phase I
Oversight: Enable cross government oversight and engagement on natural infrastructure resilience as part of the new National Resilience system and supporting governance arrangements (such as the National Resilience Board and the Natural Hazards Board).	DPMC	Phase I
Align development areas with long-term spatial plans. Strengthen opportunities for input into decision-making between local government, banks and insurers on development viability and location, so that permitted development does not occur in inappropriate or high-risk locations or areas where nature is providing critical goods and services.	Local government Insurers Financial institutions	Phase II
Scenario planning: Develop national integrated scenarios for Aotearoa New Zealand for nature and climate. Integrate these into the Treasury's 40-year outlook on Aotearoa New Zealand's fiscal future[83].	MfE Treasury	Phase II
Insurance risk: Improve how resilience offered by natural infrastructure is reflected in insurance risk models so that communities who maintain or improve natural infrastructure maintain accessible and available insurance.	Insurers	Phase II
Long-term insights: Enable and integrate a focus on natural infrastructure within agency medium (5-10 years) and long term (40 years) strategic assessments, including analysis of the trends, drivers, economic dependencies, risks, economic dependencies, and opportunities associated with Aotearoa New Zealand's natural infrastructure.	DPMC MfE Treasury	Phase II Phase III
Existing legislation, policies, frameworks and plans		
With a risk and economic resilience lens, review the effectiveness of domestic legislation, policies, frameworks, and plans to mitigate the negative impacts on natural infrastructure (stocks and flows and how they are changing) (refer to the **Policy Map**).	Lead Public Sector Agency	Phase II
When existing legislation, policies, frameworks, and plans are reviewed, take the opportunity to build an enabling environment that supports the embedding, maintaining and enhancing of our natural infrastructure (in line with the ambition of the Plan).	MfE DOC MPI MBIE	Phase II Phase III

81 https://www.climatecommission.govt.nz/our-work/adaptation/national-climate-change-risk-assessments/2026-national-climate-change-risk-assessment
82 https://www.dpmc.govt.nz/our-programmes/risk-and-resilience/national-risk-and-resilience-framework
83 https://www.treasury.govt.nz/publications/ltfp/he-tirohanga-mokopuna-2025

Outcome 4: Innovative funding and finance mechanisms enable public and private capital flows into natural infrastructure.

Action: Implement and/or scale innovative enduring funding and finance mechanisms, including revenue generating models, that support domestic and international investment to embed, maintain and enhance our stocks of natural infrastructure.		
Implementation pathways include:	**Potential responsible parties include:**	**Timeframes:**
• **Nature credit market:** Continue to prioritise work underway and develop an ambitious and credible nature credit market – one that achieves measurable improvements in outcomes in line with the ambition of this plan (noting credits apply only to new natural infrastructure, not existing). Actions include: ○ Establishing a clear set of principles for a nature credit market, anchored against the international Integrity Council for the Voluntary Carbon Market international principles[84] ○ Supporting the development of a central registry for nature credits ○ Incentivise the embedding and enhancement of native forestry in the emissions trading scheme (which might require a higher carbon price). Support this with strengthened market governance and clarifying market information.	MfE Market participants	Phase I
• **Prioritise and/or scale innovative funding and finance structures.** These could include: ○ Mechanisms that provide early access to funding (e.g. advancing funds through pre-investment grants, facilities, or early-stage financing tools) ○ Investment structures where cost owners and benefit owners may differ to encourage fair distribution of costs. This could include pooled funds, cross-boundary catchment financing models or mechanisms that allocate costs proportionally to resilience gains delivered to downstream communities, utilities, or insurers. At a local level, this may also include targeted rates for local communities and other place-based solutions ○ Blended finance structures between government and the private sector. This could include concessional debt or equity; first loss-tranches; guarantees or grants ○ Implement structures that reward landowners, businesses, and councils for embedding, maintaining, and enhancing natural infrastructure in line with the ambition of this pln. For example, outcomes-based stewardship payments encouraging and rewarding stewardship, such as payments for ecosystems services or resilience-linked rates or tax relief ○ Incentive based structures and contracts supporting the use of verified nature-based solutions (like IS Ratings and Green Star).	Private investors Financial institutions Insurers Central Government Local and Regional councils Local Government Funding Agency	Phase II
• **Enable more revenue generation and risk-based pricing models, such as** ○ Catchment wide or regional Payment for Ecosystem Services (PES) schemes that allow benefits to be aggregated and monetised. This should include **"ecosystems as a resilience service"** pricing models which recognise agreed investments in areas where natural infrastructure provides critical resilience functions. At a local level, this could include targeted rates for local communities. These investments require long-term, cross-party agreement and funds must be ringfenced for specified outcomes. ○ Applying a natural-infrastructure equivalent to the waste levy / tax which taxes intensive or damaging land use and incentivises land use dedicated to embedding, maintenance, and enhancement of natural infrastructure. The waste levy is an example of risk-based pricing tied to avoided public costs, and any natural-infrastructure equivalent should be specific and ringfenced.	Local and Regional councils Financial institutions Treasury	Phase II
• **Ensure sufficient funding is available to support Aotearoa New Zealand's** National Biodiversity Strategies and Action Plan (NBSAP)[85] and Global Biodiversity Framework[86] commitments. Bolster cross-agency coordination and funding to support delivery on these commitments.	MfE DOC	Phase III

84 https://icvcm.org
85 https://www.unep.org/topics/nature-action/global-biodiversity-framework/national-biodiversity-strategies-and-action
86 https://www.unep.org/resources/kunming-montreal-global-biodiversity-framework

Outcome 5: Sector-level investment in natural infrastructure supports long-term economic resilience and commercial growth.

Action: Key economic sectors acknowledge and respond to the impacts, economic dependencies, and growth opportunities through inclusion improved accountability, national strategies, and improved supply chain resilience		
Implementation pathways include:	**Potential responsible parties include:**	**Timeframes:**
• **Accountability:** Strengthen public sector accountability to international agreements, obligations, and commitments (refer to the Policy Map for details) (e.g. through inclusion in government agency mandates and responsibilities of public sector agencies, Letters of Expectations etc).	Responsible Ministers	Phase I
• **Blue Economy:** Establish a national Blue Economy Strategy to guide long-term resilient and enduring marine economic development. Support this with grants and funding to drive innovative, early-stage R&D to support growth in aquaculture, coastal restoration, IMTA[87], and marine biotechnology.	Private sector leaders MPI InvestNZ	Phase I
• **Economic resilience and growth:** Integrate the impacts and economic dependency on natural infrastructure into long-term apolitical sector growth strategies. Have these strategies realise the commercial growth opportunities presented by embedding, maintaining and enhancing natural infrastructure.	MBIE MPI Key economic sector leaders	Phase II
• **Private sector accounting:** Private sector leaders demonstrate leadership, and encourage others in the sector to following, by better accounting for the benefits of natural infrastructure by using Natural Capital Accounting Standards such as SEEA[88], or NCP[89], or recognised frameworks such as TNFD.	Private sector leaders	Phase II
• **Tourism:** Establish holistic integrated Spatial and Destination Management Plans including a National Spatial Management Framework that links regional tourism areas and provides aligned and consistent planning across regional boundaries. Support these plans with revenue generating mechanisms dedicated to investment in tourism infrastructure.	MBIE DOC Tourism sector leaders	Phase II
• **Domestic supply chains and R&D**: Address domestic supply chain constraints for materials used in nature-based solutions (e.g. plants, landfill space). This includes increasing the capacity and response times of nurseries, having available waste infrastructure (e.g. plants, mature trees, access to areas to manage earthworks soil etc). Support via R&D investment into native flora and fauna to further understand the goods and services provided. Leverage international connections to fund R&D into agriculture, environmental and nature-based solutions.	Local government Private sector leaders	Phase II

87 https://www.cawthron.org.nz/our-news/opinion-how-multi-trophic-aquaculture-imta-could-transform-a-major-nz-primary-industry/
88 https://seea.un.org
89 https://capitalscoalition.org/capitals-approach/natural-capital-protocol/?fwp_filter_tabs=guide_supplement

Outcome 6: Nature as infrastructure is understood and natural infrastructure investments are confidently and competently delivered.

Action: Training and competency programmes and leadership, supported by guides and Communities of Practice, bolster collective understanding and technical capability		
Implementation pathways include:	**Potential responsible parties include:**	**Timeframes:**
• **Grow collective understanding:** Bolster central and local government understanding that undeveloped land is land providing our economy with valuable goods and services and nature is understood and appreciated as critical infrastructure. This includes strengthening awareness of natural asset concepts (stocks and flows), ecosystem service benefits, resiliency benefits, and the economic consequences of underinvestment. Reposition views that degraded or undeveloped land is not "waste" land - rather it is a functioning piece of natural infrastructure (delivering valuable services to our economy).	MfE DOC DPMC Infrastructure Commission Industry bodies	Phase I
• **Capability and competency:** Develop a natural infrastructure capability and competency strategy. Stakeholders/key partners include iwi/Māori, industry, insurers, research bodies, NGOs, and central and local government.	Local Government New Zealand	Phase II
• **Community of Practice:** Grow a national Community of Practice to facilitate knowledge sharing. Establish and maintain central current 'single source of truth' for practitioners, knowledge sharing and collaboration.	Infrastructure New Zealand Local Government New Zealand	Phase II
• **Technical guidance:** Leverage and expand the **Investment Decision Framework, Investment Principles** and **multiple benefits Investment Evaluation Model** developed as part of this plan to provide local and central government a practical (how to) guide to nature-based solutions.	Treasury	Phase II
• **Private sector leadership: S**howcase leaders to build and secure wider private sector understanding that natural infrastructure is critical and core infrastructure. This could use showcasing leaders who embed the **Investment Principles** and **multiple benefits Investment Evaluation Model** (developed as part of this plan).	The Aotearoa Circle Public Sector Leaders Local Government New Zealand	Phase II Phase III

Outcome 7: Credible data and verification support natural infrastructure investment decision-making.

Action: Develop platforms that house and enable access to consistent and reliable decision-useful data supported by dependable third-party verification of natural infrastructure investments.		
Implementation pathways include:	**Potential responsible parties include:**	**Timeframes**
• **Standard definition:** Set a standard definition for nature-based solutions that aligns with international standards (such as UNEP Finance Initiative[90] and IUCN[91]) and key nature-finance taxonomies (such as ICMA[92]) and incorporates mātauranga and Te Ao Māori.	MfE DOC	Phase I
• **Add 'natural infrastructure' to the definition of 'infrastructure'**: Create a definition in the New Zealand Planning Bill (2025), Section 3, with cross reference in the Natural Environment Bill (2025).	MfE Treasury	Phase I
• **Data definitions and access:** Define the data requirements (at a stocks and flow level) needed to help identify and prioritise the key opportunities for, and the benefits of, natural infrastructure at a site, catchment, and marine ecosystem level. Provide insurers, local government, iwi/Māori, researchers and NGOs with the data platforms that enable natural infrastructure investment.	Earth Sciences New Zealand Bioeconomy Science Institute Cawthron Institute MfE, DOC and MPI Insurers Iwi/Māori	Phase II
• **Data - scientific investment:** Support investment in the necessary science to support performance measuring and monitoring. Improve data accessibility and availability by strengthening Earth Science New Zealand, Cawthron Institute, Stats New Zealand, MfE, and DOC's capacity and capabilities.	Treasury (budget)	Phase II
• **Systems**: Complete the Aotearoa New Zealand specific ecosystem typology, leveraging work undertaken to date[93].	MfE	Phase II
• **Verification**: Establish credible third-party verification systems for natural infrastructure investments that ensure consistency and validate compliance with minimum standards. Align these standards and systems with internationally recognised frameworks to enable flexible, cost-effective, and dependable services.	Private sector leaders	Phase III
• **Verification**: Provide training to bolster local capacity in providers competent to credibly and reliably verify nature-based solutions.	Private sector leaders	Phase III
• **Integration**: Incentivise the use of the third-party verification by including requirements within public and private sector funding decisions.	Funding and finance sector Local Government Funding Agency	Phase III

90 https://www.unepfi.org/nature/nature/nature-based-solutions/ -
91 https://iucn.org/our-work/topic/iucn-global-standard-nature-based-solutions
92 https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/
93 https://environment.govt.nz/publications/national-ecosystem-typology/

Action: Develop platforms that house and enable access to consistent and reliable decision-useful data supported by dependable third-party verification of natural infrastructure investments.		
Implementation pathways include:	**Potential responsible parties include:**	**Timeframes**
• **Standard metrics**: When available and finalised, have the private sector, central and local government adopt the standardised Nature Positive Initiative metrics for nature[94] and marine ecosystems[95]. Adopting international metrics may support exporters to meet current and future market expectations and central government to demonstrate compliance with international agreements, obligations and commitments. This standardisation would support credible verification.	MfE DOC MPI Private sector leaders	Phase III

94 https://www.naturepositive.org/metrics/
95 https://www.naturepositive.org/news/blog/nature-positive-marine-metrics/

IV. Where to from here?

The Aotearoa Circle wants to see the momentum Aotearoa New Zealand has gained from the conversations had in developing this Plan continue.

Whilst this plan serves to provide the strategic intent (the 'why is this Plan important' and 'what needs to be done'), it was beyond the scope of this initiative to delve into 'how' the recommendations will be achieved.

What is clear is the scale of risk the state of our natural infrastructure presents to our economy, the risk and resilience benefits to be gained, and the commercial growth opportunities if we get this right.

Contact us

For questions or additional information on the Natural Infrastructure Plan, contact The Aotearoa Circle.

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Key acknowledgements

The Aotearoa Circle is deeply appreciative of all who contributed to this work. The passion, knowledge, support and enthusiasm for work critical to Aotearoa New Zealand's economic prosperity has resulted in a robust, strong and enduring plan.

A
AGMARDT, Lee-Ann Marsh
ANZ Bank, Dean Spicer and Miranda James
ASB Bank, Juliet Tainui-Hernandez, Anthony Ririnui, Tawa Campbell-Seymour, James Paterson, Carrie Gage, Turi MacFarlane, and Temuera Hall
Aquaculture New Zealand
Auckland Airport, Andrea Marshall and Joy Morse
Auckland Council, Leigh Steckler, and Greer Lees
Auckland Transport, Cathy Bebelman

B
Bank of New Zealand (BNZ), Pamela Tindall and Rebekah Cain
Batstone Associates, Chris Batstone
Bay of Plenty Regional Council, Nic Newman and Santiago Bermeo
Beca, Genevieve Smith and David Carter
Bioeconomy Science Institute, Fiona Carswell and Lucy Baragwanath
Boffa Miskell, Sam Parsons
BRANZ, Karla Falloon

C
Cawthron Institute, Volker Kuntzsch and Jane Symonds
Chapman Tripp, Alana Lampitt, Kate Wilson-Butler, and wider team
Christchurch City Council, Tony Moore, Brent Smith, Sarah Oliver, Hannah Lewthwaite and Peter Christensen
Christchurch International Airport Limited, Claire Waghorn
Climate Change Commission, Karen Lavin and Robin Campbell
Contact Energy, Kim Kelleher

D
Department of Conservation, Stephanie Rowe, Ewan Delany, Martin Rodd, and David Van Der Zouwe
Department of the Prime Minister and Cabinet, Tamzin Linnell, Lisa Daniell, Johanna Peterson, and Abigail Enghirst
Deloitte New Zealand, Louise Aitken, Grant Frear, and Florence Arke

E
Earth Sciences New Zealand, Vonda Cummings and Jonathan Moores
Eco Markets Australia, Amy Bassnet and Goslik Schepers
EnviroNZ, Glen Jones and Prashant Praveen
EU Trade Delegation in New Zealand, Diane Lacoste and Bridgette McLellan
EY New Zealand, Pip Best and Matt Scott

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Fisheries New Zealand
F.L.O.W Collaborative, Katherine Short
Fonterra, Annalise Davies
Forest & Bird, Carl Morgan

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Genesis Energy, Kate van Praagh, Tracey Hickman, and Kate Ferguson
Goodman Property, Tom Slade
Great South - Southland Regional Development Agency, Bobbi Brown
GreenCollarAU, Anjali Nelson and Charlotte Fladgate

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Horticulture New Zealand, Kate Scott

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ICNZ (Insurance Council of New Zealand), Kris Faafoi and James Baigent
Indevin Group, Jess Thomas and Tara Smith
Infrastructure New Zealand
InvestNZ, Chris Burgess

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Kaipara Moana Remediation, Justine Daw and Lisette Rawson
Koru Environmental, Sue Ira
KPMG New Zealand, Alec Tang

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Local Government New Zealand, Simon Randall and Scott Necklen
Lincoln University, Paora Tapsell
Local Government Funding Agency, Helen Mahoney and Nick Howell
Lyttleton Port Company, Graeme Sumner and Dr Crystal Lenky

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Manaaki Kaimai Mamaku Trust, Louise Saunders
Manaaki Whenua - Landcare Research, Robyn Simcock
Manukorihi Hapū, Geoff White
Ministry of Business, Innovation and Employment, Jason Leppens, Saskia Vervoorn, and Mark Aliopranti
Ministry of Foreign Affairs and Trade (MFAT), Nathan Glassey and Peter Kell
Ministry for Primary Industries (MPI), Sarah Cumming, Megan Linwood, and Jenny Cameron
Ministry for the Environment (MfE), David Ross, Sally Baguley, Morgan Fitzgerald, Andrew Marshall, David Mead, and David Chittenden
Ministry of Transport, Marian Willberg

N
Natural Hazards Commission Toka Tū Ake, Jo Horrocks
Nature Positive, Dr Robin Mitchell and Katherine Dixon
New Plymouth District Council, Kelly Armfield
New Zealand Infrastructure Commission, Te Waihanga, Geoff Cooper, Jon Butler, and Peter Nunns
Ngāi Tahu Holdings, Katy Glenie
New Zealand Forest Owners Association (FOA), Elizabeth Heeg
New Zealand Trade and Enterprise (NZTE), Eloise Joiner
Nine West Consulting, Erica Miles

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Otago Regional Council, Anita Dawe

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Pāmu, Annabel Davies
Parliamentary Commissioner for the Environment (PCE), Geoff Simmons
Port of Tauranga, Blair Hamill
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PwC New Zealand, Annabell Chartres, and Camden Howitt

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Rabobank, Robert Siveter
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Silver Fern Farms, Kate Beddoe and Catrina Rowe
Sudima Hotels, Kanika Jhunjhnuwala

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T&G Global, Adrienne Sharp
Tasman District Council, David Arseneau and Lisa McGlinchey
Te Ohu Kaimoana, Kylie Grigg and Kayla Martin
Te Puni Kōkiri, Joanna Pohatu and Martin Mariassouce
Te Uru Kahika, Graeme Campbell
The Nature Conservancy, Abbie Reynolds
Treasury New Zealand, Rebecca Wembri, Mela **Greenslade,** Jacinta Gould, and Nicky Lynch
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Appendices

Appendices

Appendix 1: About the Natural Infrastructure Plan

Underlying principles applied when developing the Plan

Reflecting that public and private sector collaboration is core to the values and purpose of The Aotearoa Circle, the plan was developed using the following core principles (refer to **Figure 2**). These principles were informed by engagement with key public and private sector partners undertaken throughout July and August 2025.

Figure 2: Underlying principles used when delivering the Natural Infrastructure Plan

Appendix 2: Detailed analysis to support the economic dependencies on, and potential impacts from, our key economic sectors on natural infrastructure

I. Methodology - using the ENCORE tool

To identify the scale of New Zealand's economic dependence and impacts on our natural infrastructure, core economic sectors were assessed to identify the potential dependency and impact each economic activity may have on nature.

For each dependency a rating was assigned using the scale of Very High (VH), High (H), Medium (M), Low (L), or Very Low (VL). By rating dependencies and impacts on natural infrastructure, we can determine which ecosystem services are more critical to economic prosperity and what to prioritize when planning natural infrastructure investments.

The ENCORE tool (Exploring Natural Capital Opportunities, Risks and Exposure) was used to explore dependencies and impacts[96]

The ENCORE tool is maintained and continuously improved by Global Canopy, the United Nations Environment Programme Finance Initiative (UNEP FI), and the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), who together form the ENCORE Partnership, previously known as The Natural Capital Finance Alliance.

Materiality ratings in ENCORE are designed for comparison of materiality across the entire economy, not within a specific sector. Each materiality rating is based on a set of quantitative or qualitative indicators.

The economic sectors assessed in this section were categorised according to the **International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4.** These economic sectors were further broken down into the economic activities within each sector.

Given the scale and diversity of the activities involved, each sector (water and waste, electricity and gas, telecommunications, transport infrastructure) and bio-economy sector (agriculture, horticulture, and forestry) were independently assessed.

Sector dependencies on natural infrastructure were assessed against the core provisioning and regulating ecosystem services, critical to the function and productivity of the sectors economic activities.

Sector impacts on natural infrastructure were assessed against the pressures on nature, considering the pressures of economic activities against the five drivers of nature change, including climate change, land use change, resource use, pollution and invasive species.

The results of this assessment have been summarized and discussed in the Sector Growth Opportunity Chapters, elivered as part of Objective 4 of the Natural Infrastructure Plan.

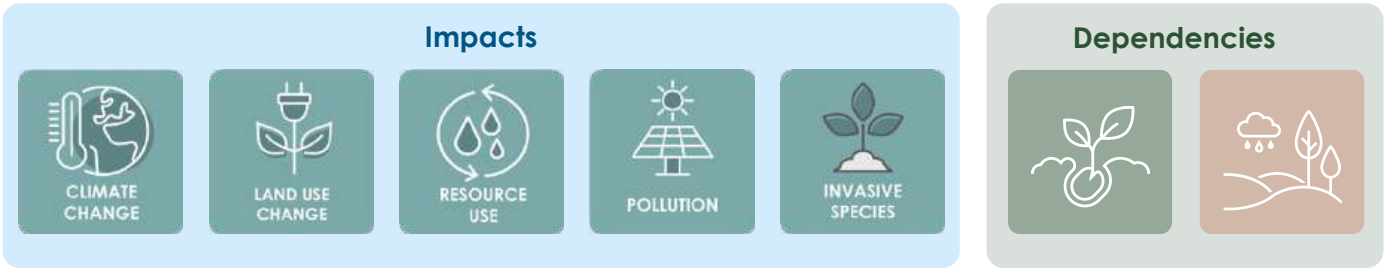

Figure 5A1: Impact and Dependency categories

96 ENCORE

II. Aotearoa New Zealand's economic dependencies on natural infrastructure

Identifying economic dependencies

To identify the scale of Aotearoa New Zealand's economic dependence on natural assets, core economic sectors were assessed to identify the potential dependency each economic activity may have on nature. For each dependency a rating was assigned using the scale of Very High (VH), High (H), Medium (M), Low (L), or Very Low (VL). By rating dependencies on natural assets, we can determine which ecosystem services are more critical to the economic prosperity of each sector and what must be prioritised when planning natural infrastructure investments.

Table 7: Water & waste dependencies

Dependencies		Water collection, treatment, & supply	Waste collection, treatment, & disposal	Remediation & other waste management services	Sewerage
Provisioning Services	Biomass provisioning services	VL	N/A	N/A	N/A
	Water supply and storage	M	M	M	L
Regulating Service	Global climate change mitigation	VL	VL	VL	VL
	Local climate (micro and meso) regulation	L	L	N/A	N/A
	Air filtration services	M	M	VL	VL
	Soil and sediment retention services	M	VL	VL	VL
	Solid waste remediation	VH	VH	VH	VH
	Water purification services	VH	M	M	M
	Water flow regime regulation services	M	M	M	H
	Flood protection and mitigation services	VL	M	M	H
	Storm mitigation services	L	L	M	H
	Biological pest controls	VL	VL	VL	VL

Table 8: Renewable electricity generation dependencies

Dependencies		Hydropower energy production	Solar energy production	Wind energy production	Geothermal energy production
Provisioning Services	Biomass provisioning services	N/A	N/A	N/A	N/A
	Water supply and storage	VH	M	VL	M
Regulating Service	Global climate change mitigation	VH	VH	VH	VL
	Local climate (micro and meso) regulation	L	M	M	L
	Air filtration services	N/A	N/A	N/A	VL
	Soil and sediment retention services	VH	M	M	H
	Solid waste remediation	L	N/A	N/A	L
	Water purification services	L	N/A	N/A	M
	Water flow regime regulation services	VH	M	M	L
	Flood protection and mitigation services	VH	M	H	M
	Storm mitigation services	M	M	M	VL

Table 9: Other electricity & gas production and distribution dependencies

Dependencies		Biomass energy production	Fossil fuels energy production	Manufacture & distribution of gas	Transmission & distribution of electricity
Provisioning Services	Biomass provisioning services	H	N/A	N/A	N/A
	Water supply and storage	L	H	VL	VL
Regulating Service	Global climate change mitigation	VL	M	VL	VL
	Local climate (micro and meso) regulation	L	L	L	L
	Air filtration services	VL	VL	VL	N/A
	Soil and sediment retention services	L	M	L	L
	Solid waste remediation	L	M	L	L
	Water purification services	M	M	M	N/A
	Water flow regime regulation services	L	H	VL	VL
	Flood protection and mitigation services	VL	M	VL	M
	Storm mitigation services	VL	L	VL	M

Table 10: Built infrastructure – Telecommunications dependencies

Dependencies		Wired communications	Wireless communications	Satellite communications	Other communications
Provisioning Services	Water supply and storage	VL	VL	VL	VL
Regulating Service	Global climate change mitigation	VL	VL	VL	VL
	Local climate (micro and meso) regulation	L	L	L	L
	Soil and sediment retention services	L	L	M	VL
	Biological control services	VL	N/A	N/A	VL
	Water flow regime regulation services	L	L	L	VL
	Flood protection and mitigation services	M	L	M	VL
	Storm mitigation services	M	L	M	VL

Table 11: Built infrastructure - Land transport dependencies

Dependencies		Transport via railways	Passenger air transport	Freight air transport	Land transport
Provisioning Services	Water supply and storage	VL	VL	VL	VL
Regulating Service	Global climate change mitigation	M	M	M	M
	Local climate (micro and meso) regulation	L	L	L	L
	Air filtration services,	VL	VL	VL	VL
	Soil and sediment retention services	H	L	L	L
	Water flow regime regulation services	L	L	L	L
	Flood protection and mitigation services	M	M	M	M
	Storm mitigation services	M	M	M	M

Table 12: Bioeconomy – Horticulture dependencies

Dependencies		Growing of perennial crops	Growing of cereals, leguminous crops, & oil seeds	Growing of vegetables	Growing of fibre crops
Provisioning Services	Biomass provisioning services	VH	VH	VH	VH
	Genetic material services	VH	VH	VH	VH
	Water supply and storage	H	H	VH	H
Regulating Service	Global climate change mitigation	VH	VH	VH	VH
	Local climate (micro and meso) regulation	VH	VH	VH	VH
	Air filtration services	M	M	M	M
	Soil quality regulation services	VH	VH	VH	VH
	Soil and sediment retention services	VH	VH	VH	VH
	Solid waste remediation	M	M	M	M
	Water purification services	VH	VH	VH	VH
	Water flow regime regulation services	H	H	VH	H
	Flood protection and mitigation services	H	H	H	M
	Storm mitigation services	H	H	H	M
	Pollination Services	VH	H	H	VH
	Biological/pest control services	H	H	H	H

Table 13: Bioeconomy – Agriculture dependencies

Dependencies		Farming of cattle (beef & dairy)	Farming of sheep and goats	Farming of pigs	Farming of poultry
Provisioning Services	Biomass provisioning services	VH	H	H	H
	Genetic material services	M	M	M	M
	Water supply and storage	H	H	H	M
Regulating Service	Global climate change mitigation	M	M	M	M
	Local climate (micro and meso) regulation	M	M	M	M
	Air filtration services	M	M	M	M
	Soil quality regulation services	H	H	H	L
	Soil and sediment retention services	VH	VH	M	M
	Solid waste remediation	M	L	M	M
	Water purification services	H	H	H	H
	Water flow regime regulation services	H	H	H	H
	Flood protection and mitigation services	M	M	M	M
	Storm mitigation services	H	H	H	H
	Biological/pest control services	M	M	M	M

Table 14: Bioeconomy – Silviculture & forestry dependencies

Dependencies		Silviculture & other forestry activities	Gathering of non-timber forest products
Provisioning Services	Biomass provisioning services	VH	VH
	Genetic material services	VH	L
	Water supply and storage	H	H
Regulating Service	Global climate change mitigation	VH	VH
	Local climate (micro and meso) regulation	VH	H
	Air filtration services	M	L
	Soil quality regulation services	VH	H
	Soil and sediment retention services	VH	VH
	Solid waste remediation	M	H
	Water purification services	VH	VH
	Water flow regime regulation services	M	H
	Flood protection and mitigation services	H	M
	Storm mitigation services	M	VL
	Pollination Services	M	M
	Biological/pest control services	H	M

Table 15: Blue Economy dependencies

Dependencies		Aquaculture	Fisheries	Sea and coastal water transport
Provisioning Services	Biomass provisioning services	VH	VH	N/A
	Genetic material services	M	H	N/A
	Water supply and storage	H	H	L
Regulating Service	Global climate change mitigation	M	VH	M
	Local climate (micro and meso) regulation	H	M	L
	Air filtration services	M	L	VL
	Soil quality regulation services	M	M	N/A
	Soil and sediment retention services	VH	VH	L
	Solid waste remediation	VH	VH	N/A
	Water purification services	VH	VH	M
	Water flow regime regulation services	H	H	M
	Flood protection and mitigation services	H	M	H
	Storm mitigation services	H	H	H
	Biological/pest control services	H	H	N/A

III. Aotearoa New Zealand's economic impacts on our natural infrastructure

Identifying economic impacts

To identify the scale of Aotearoa New Zealand's economic impacts on natural assets, core economic sectors were assessed to identify the potential impacts each economic activity may have on nature. For each impact a rating was assigned using the scale of Very High (VH), High (H), Medium (M), Low (L), or Very Low (VL). By rating impacts on natural assets, we can determine which economic activities and sectors are most harmful to natural assets and the provision of ecosystem services needed for economic prosperity. The sector economic impacts on natural assets were assessed against the pressures on nature, considering the pressures of economic activities against the five drivers of nature change.

Table 16: Water & waste impacts

Impacts		Water collection, treatment, & supply	Waste collection, treatment, & disposal	Remediation & other waste management services	Sewerage
Pressures on Nature	Disturbances (e.g. light and noise)	M	H	H	VH
	Area of freshwater use	H	N/A	N/A	M
	Emissions of GHG	M	H	H	H
	Area of seabed use	N/A	N/A	N/A	M
	Emissions of non-GHG air pollutants	M	M	M	L
	Other biotic resource extraction	N/A	N/A	N/A	N/A
	Generation and release of solid waste	L	M	M	M
	Area of land use	H	M	M	L
	Emission of toxic pollutants to water and soil	M	H	M	VH
	Emission of nutrient pollutants to water and soil	N/A	H	M	VH
	Volume of water used	L	M	M	L
	Introduction of invasive species	N/A	M	M	VH

Table 17: Built infrastructure - Renewable electricity generation impacts

	Impacts	Hydropower energy production	Solar energy production	Wind energy production	Geothermal energy production
Pressures on Nature	Disturbances (e.g. light and noise)	H	VL	M	M
	Area of freshwater use	H	L	N/A	N/A
	Emissions of GHG	L	N/A	N/A	M
	Area of seabed use	N/A	N/A	N/A	N/A
	Emissions of non-GHG air pollutants	N/A	N/A	N/A	H
	Other biotic resource extraction	N/A	N/A	N/A	N/A
	Generation and release of solid waste	L	VL	VL	VL
	Area of land use	M	L	H	L
	Emission of toxic pollutants to water and soil	N/A	L	VL	M
	Emission of nutrient pollutants to water and soil	N/A	N/A	N/A	N/A
	Volume of water used	L	L	L	M
	Introduction of invasive species	N/A	N/A	N/A	N/A

Table 18: Built infrastructure - Other electricity & gas production and distribution impacts

Impacts		Biomass energy production	Fossil fuels energy production	Manufacture & distribution of gas	Transmission & distribution of electricity
Pressures on Nature	Disturbances (e.g. light and noise)	H	VH	M	L
	Area of freshwater use	N/A	M	M	L
	Emissions of GHG	H	VH	H	VL
	Area of seabed use	N/A	N/A	N/A	L
	Emissions of non-GHG air pollutants	H	VH	M	L
	Other biotic resource extraction	M	N/A	N/A	N/A
	Generation and release of solid waste	H	H	L	L
	Area of land use	H	M	M	M
	Emission of toxic pollutants to water and soil	M	VH	VH	L
	Emission of nutrient pollutants to water and soil	M	N/A	N/A	N/A
	Volume of water used	M	M	L	VL
	Introduction of invasive species	N/A	N/A	N/A	N/A

Table 19: Built infrastructure – Telecommunications impacts

Impacts		Wired communications	Wireless communications	Satellite communications	Other communications
Pressures on Nature	Disturbances (e.g. light and noise)	L	L	M	L
	Area of freshwater use	L	N/A	L	N/A
	Emissions of GHG	L	L	L	L
	Area of seabed use	M	N/A	N/A	M
	Emissions of non-GHG air pollutants	VL	VL	VL	VL
	Other biotic resource extraction	N/A	N/A	N/A	N/A
	Generation and release of solid waste	VL	VL	VL	VL
	Area of land use	VL	VL	VL	VL
	Emission of toxic pollutants to water and soil	L	L	N/A	L
	Emission of nutrient pollutants to water and soil	N/A	N/A	N/A	N/A
	Volume of water used	VL	VL	VL	VL
	Introduction of invasive species	N/A	N/A	N/A	N/A

Table 20: Land transport impacts

	Impacts	Transport via railways	Passenger air transport	Freight air transport	Land transport
Pressures on Nature	Disturbances (e.g. light and noise)	M	VH	VH	M
	Area of freshwater use	L	L	L	L
	Emissions of GHG	M	H	H	M
	Area of seabed use	N/A	L	L	L
	Emissions of non-GHG air pollutants	M	M	M	L
	Other biotic resource extraction	N/A	N/A	N/A	N/A
	Generation and release of solid waste	L	VL	VL	VL
	Area of land use	M	M	M	M
	Emission of toxic pollutants to water and soil	L	L	L	L
	Emission of nutrient pollutants to water and soil	L	L	L	VL
	Volume of water used	M	M	M	L
	Introduction of invasive species	VH	VH	VH	L

Table 21: Bioeconomy – Horticulture impacts

Impacts		Growing of perennial crops	Growing of cereals, leguminous crops, & oil seeds	Growing of vegetables	Growing of fibre crops
Pressures on Nature	Disturbances (e.g. light and noise)	M	M	M	M
	Area of freshwater use	H	M	H	H
	Emissions of GHG	M	M	M	M
	Area of seabed use	N/A	N/A	N/A	N/A
	Emissions of non-GHG air pollutants	M	H	M	H
	Other biotic resource extraction	N/A	N/A	N/A	N/A
	Generation and release of solid waste	H	H	H	H
	Area of land use	H	H	H	H
	Emission of toxic pollutants to water and soil	H	H	H	H
	Emission of nutrient pollutants to water and soil	H	VH	H	H
	Volume of water used	H	VH	H	H
	Introduction of invasive species	H	VH	M	M

Table 22: Bioeconomy – Agriculture impacts

Impacts		Farming of cattle (beef & dairy)	Farming of sheep and goats	Farming of pigs	Farming of poultry
Pressures on Nature	Disturbances (e.g. light and noise)	M	M	M	M
	Area of freshwater use	H	H	H	L
	Emissions of GHG	H	H	M	M
	Area of seabed use	N/A	N/A	N/A	N/A
	Emissions of non-GHG air pollutants	H	H	H	H
	Other biotic resource extraction	N/A	N/A	N/A	N/A
	Generation and release of solid waste	VH	H	H	H
	Area of land use	VH	H	H	H
	Emission of toxic pollutants to water and soil	H	H	H	H
	Emission of nutrient pollutants to water and soil	H	H	H	H
	Volume of water used	H	H	H	H
	Introduction of invasive species	H	M	M	M

Table 23: Bioeconomy – Silviculture & forestry impacts

Impacts		Silviculture & other forestry activities	Gathering of non-timber forest products
Pressures on Nature	Disturbances (e.g. light and noise)	H	VL
	Area of freshwater use	N/A	N/A
	Emissions of GHG	VH	N/A
	Area of seabed use	N/A	N/A
	Emissions of non-GHG air pollutants	VH	N/A
	Other biotic resource extraction	N/A	VH
	Generation and release of solid waste	L	H
	Area of land use	VH	N/A
	Emission of toxic pollutants to water and soil	H	N/A
	Emission of nutrient pollutants to water and soil	H	N/A
	Volume of water used	M	M
	Introduction of invasive species	H	VL

Table 24: Blue Economy impacts

	Impacts	Aquaculture	Fisheries	Inland water transport	Sea and coastal water transport
Pressures on Nature	Disturbances (e.g. light and noise)	M	H	M	VH
	Area of freshwater use	H	H	M	L
	Emissions of GHG	M	M	H	H
	Area of seabed use	H	H	N/A	M
	Emissions of non-GHG air pollutants	N/A	M	VH	H
	Other biotic resource extraction	VH	H	N/A	N/A
	Generation and release of solid waste	H	H	M	M
	Area of land use	M	N/A	N/A	N/A
	Emission of toxic pollutants to water and soil	H	M	L	L
	Emission of nutrient pollutants to water and soil	H	N/A	M	L
	Volume of water used	M	M	L	L
	Introduction of invasive species	H	M	H	VH

Appendix 3: Other key information

Key terms and definitions

Table 2 provides a listing of **key terms and definitions**. Revisiting or revising these key terms and their definitions lay outside of the scope of the Natural Infrastructure Plan.

Table 2: Key terms used in the Natural Infrastructure Plan

KEY TERM	DEFINITION	REFERENCE/SOURCE
Biodiversity	Biodiversity, or biological diversity, means the variability among living organisms from all sources, including land, marine and freshwater ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and across ecosystems. Biodiversity increased an ecosystem's resilience to shocks and reduces risks to the goods and services is produces[97].	Department of Conservation (DOC)
Bioeconomy	The bioeconomy describes the parts of the economy that use renewable biological resources to produce food, products and energy.	Ministry for the Environment (MfE)
Biomass	Renewable organic material from plants and animals, which can be measured in quantity (for example, the biomass in a forest)[98].	Dasgupta, P
Blue Economy	Marine activities that generate economic value and contribute positively to social, cultural and ecological wellbeing.	Sustainable Seas
Ecosystems	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit[99].	IPBES
Ecosystem services	The world's stocks of natural assets which include geology, soil, air, water and all living things. It is from this natural capital that humans derive a wide range of services, often called ecosystem services, which make human life possible[100].	IPBES
Externalities	Unaccounted-for consequences for others of events for which we are responsible. The qualifier 'unaccounted-for' means that the consequences in question follow without prior engagement with those who are affected. They can be positive or negative[101].	Dasgupta, P
Infrastructure	Includes fixed, long-lived solutions that facilitates the production of goods and services. Infrastructure enables vital services that drive a productive economy, safeguards communities, helps achieve broader environmental goals, and supports our wellbeing. Our infrastructure is vital to our way of life, supporting almost everything we do[102]. Infrastructure does not include cultural assets, specialist military equipment or ICT business systems.	Treasury Te Waihanga - the New Zealand Infrastructure Commission.
National hazard	The most significant potential crises, known as National Risks, that could have serious immediate and/or long-term effects on New Zealand's safety, prosperity and/or national security.	Department of the Prime Minister and Cabinet (DPMC) MfE

97 Dasgupta, P. (2025). On Natural Capital: The Value of the World Around Us. London, UK.
98 Dasgupta, P. (2025). On Natural Capital: The Value of the World Around Us. London, UK.
99 https://www.ipbes.net/glossary
100 https://www.ipbes.net/glossary
101 Dasgupta, P. (2025). On Natural Capital: The Value of the World Around Us. London, UK.
102 Te Waihanga - the New Zealand Infrastructure Commission. 2025. https://media.umbraco.io/te-waihanga-30-year-strategy/mepk0cfb/Natural Infrastructure Plan-draft-layout-28aug.pdf

KEY TERM	DEFINITION	REFERENCE/SOURCE
Nature	A holistic term that encompasses the living environment (Te Taiao[103]), which includes all living organisms, including people, and the ecological processes that sustain them. By this definition, people are a significant part of nature. Nature comprises of interconnected realms: land, ocean, freshwater, and atmosphere, with society found at the centre, interacting all realms. This includes people, financial institutions, and infrastructure, all of which depend upon, and have impacts on nature.	DOC
Natural assets	Natural assets describe natural or semi-natural structural elements of ecosystems and landscapes that are important to deliver benefits for the environment and people. These are the components of the natural environment that can be used by humans.	MfE
Nature-based solutions	Actions to protect, conserve, restore, and sustainably use and manage natural or modified terrestrial, freshwater, coastal, and marine ecosystems. Nature-based solutions address social, economic, and environmental challenges effectively and adaptively, while simultaneously providing human wellbeing, ecosystem services and resilience and biodiversity benefits[104].	UNEP (modified)
Nature finance	Nature Finance is defined as finance, contributing to the nature positive goal of halting and reversing nature loss and supporting the implementation of the Kunming-Montreal Global Biodiversity Framework through one or more of the following activity groups: a) Restoration and conservation of biodiversity or ecosystem services b) Reduction of the direct drivers of biodiversity or ecosystem services loss c) Integration of nature-based solutions across economic sectors d) Design and implementation of policy, tools, or other sectoral instruments enabling (a) to (c).	Finance for Biodiversity Foundation and UNEP
Natural infrastructure	Natural Infrastructure includes fixed, long-lived natural assets that facilitates the production of goods and services. Natural infrastructure enables vital services that drive a productive economy, safeguards communities, helps achieve broader environmental goals, and supports our wellbeing. Our natural infrastructure is vital to our way of life, supporting almost everything we do. The world's stocks of natural infrastructure are often called by the generic name 'Natural Capital'.	The Aotearoa Circle
Nature positive	A global societal goal defined as '**Halt and Reverse Nature Loss by 2030 on a 2020 baseline and achieve full recovery by 2050'**. Delivering the Nature Positive goal requires measurable net-positive biodiversity outcomes through the improvement in the abundance, diversity, integrity and resilience of species, ecosystems and natural processes. The Nature Positive goal is designed to drive society to deliver a measurable absolute improvement in the state of nature against a defined baseline, which will in turn improve nature's ability to contribute to human wellbeing.	Nature Positive
Natural resources	Natural and physical resources that includes land, water, air, soil, minerals, and energy, all forms of plants and animals (whether native to New Zealand or introduced), and all structures. The material resources are drawn directly from nature.	RMA, 1991
Resilience	National resilience is the ability of a country to absorb, adapt to, recover from and transform through shocks and stresses.	DPMC

103 Te Taiao: world, earth, natural world, environment, nature, country.

104 United Nations Environment Program (UNEP) EA.5/Res.5": https://digitallibrary.un.org/record/3999268?ln=en&v=pdf

Defining the breadth of natural infrastructure

For the purposes of this plan, The Aotearoa Circle has adopted a broad definition of natural infrastructure to reflect the full range of ways our natural infrastructure contributes to Aotearoa New Zealand's economic prosperity.

The continuum below (**Figure 3**) expands on this further and shows that natural infrastructure captures nature in (and by) design, nature **in** infrastructure (e.g. nature-based solutions used within in support or, or in lieu of traditional infrastructure), or nature **as** infrastructure (as a provider of critical goods and services that that delivers essential goods and services for communities, the economy, and the environment.

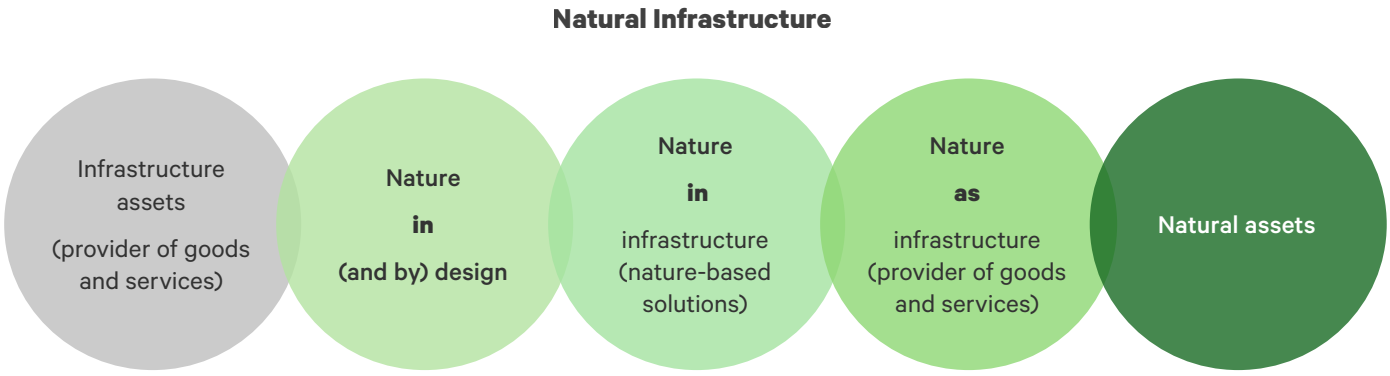

Figure 3: Continuum between infrastructure assets and natural assets

(i) Natural infrastructure vs traditional infrastructure

Traditional infrastructure investments seek to mitigate the adverse impacts on nature of built infrastructure like seawalls.

Investing in **natural infrastructure** does not compete with traditional infrastructure. Instead, it enhances, complements, and in some cases substitutes for built infrastructure by delivering long lived, resilient, and environmentally positive outcomes.

Specifically, natural infrastructure investments include solutions that either integrate nature positive practices into infrastructure or deliver substantive nature positive outcomes.

Natural infrastructure captures a broad range of transformative solutions that contribute to the achievement of natural positive goals. Natural infrastructure delivers benefits to nature and the economy by managing the risks to nature commonly associated with infrastructure development[105]. These include:

- Significant adverse environmental risks and impacts that would exacerbate the drivers of nature loss
- Risks of conversion of natural habitats or critical habitat is not accounted for
- Adverse impacts on critically endangered or threatened species are not considered.

Infrastructure providers in Aotearoa New Zealand are increasingly using natural infrastructure approaches for managing natural hazards, safeguarding communities, and growing economic prosperity.

105 World Bank Nature Finance Common Principles. November 2025. https://thedocs.worldbank.org/en/doc/4628591725d5cb7d5bc-5c50104efd5bb-0320012025/original/MDB-Common-Principles-FINAL.pdf

Table 3 provides example of natural infrastructure approaches used in Aotearoa New Zealand to address natural hazards.

Table 3: Examples of traditional infrastructure approaches and natural infrastructure approaches for common hazards in Aotearoa New Zealand

HAZARD	SOLUTIONS WHICH MITIGATE IMPACT TO OUR NATURAL INFRASTRUCTURE	SOLUTIONS WHICH EMBED NATURAL INFRASTRUCTURE	SOLUTIONS WHICH EMBED, MAINTAINS AND ENHANCES NATURAL INFRASTRUCTURE
Coastal Flooding	Seawalls and coastal defenses	Beach nourishment	Dune protection and restoration
Fluvial Flooding	Dams and levees	Bioswales and constructed wetlands	Wetland restoration and protection
Pluvial flooding	Storm drains and concrete channels	Riparian buffer planting	River and floodplain rehabilitation
Land instability	Retaining walls and terracing	Landcover management	Afforestation and reforestation
Coastal erosion	Groynes and breakwaters	Mangrove buffer planting	Living shorelines

The Natural Infrastructure Plan, including its associated separate parts, have been prepared by The Aotearoa Circle in collaboration and consultation with Circle Partners and other key stakeholders to stimulate discussion, improve understanding and support consideration of nature as critical national infrastructure. The plan reflects the views at the time of publication and is intended for general information purposes only.

While reasonable care has been taken in the preparation of this document, The Aotearoa Circle makes no representations or warranties, express or implied, as to the accuracy, completeness, or currency of the information. Readers are urged to seek their own independent professional advice on specific matters before acting on any information contained in this Plan.

4 March 2026

The Aotearoa Circle

The Aotearoa Circle

Mā te Kaitiakitanga ko te Tōnuitanga
Prosperity Through Guardianship

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