Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata

Unlocking New Zealand's environmental information

Summary document

July 2026

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High-quality environmental information is essential for good decision making, effective environmental management and public accountability. Improving the ways we collect, manage, and use this information will help New Zealand respond to environmental challenges more effectively.

Introduction

Throughout my tenure as the Parliamentary Commissioner for the Environment, I have consistently drawn attention to the fundamental weaknesses in the New Zealand environmental information system.

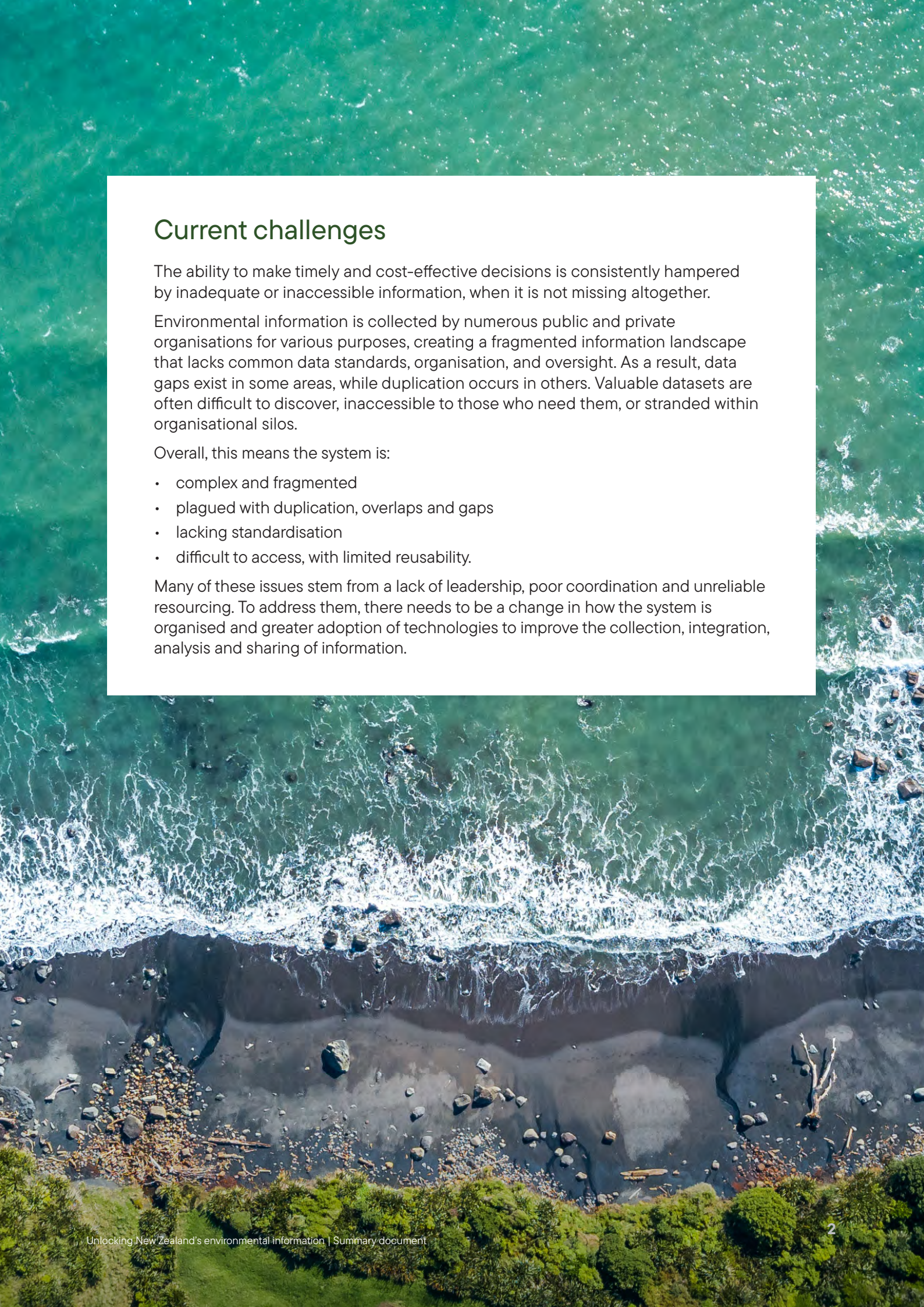
My report, *Unlocking New Zealand's environmental information*, brings together those concerns and outlines how we can make better use of existing information, while investing in and embracing innovative technologies that can provide deeper insights into our environment.

Critical resource

Environmental information includes data gathered from monitoring, surveys, research, modelling, and observations about air, water, land, biodiversity, and climate. The environment isn't static, and neither is the information we gather about it. To be useful, environmental information needs to be continually collected and updated.

It is a foundational asset that helps government agencies, councils, businesses, Māori and communities understand environmental pressures and track long-term changes. It is a key input to environmental decision making, adaptive management and long-term environmental stewardship. It can reduce uncertainty and compliance costs, and support investment decisions.

Decision-makers have little hope of being able to judge whether environmental expenditure represents value for money if they cannot be confident that environmental outcomes are accurately described and tracked.



Current challenges

The ability to make timely and cost-effective decisions is consistently hampered by inadequate or inaccessible information, when it is not missing altogether.

Environmental information is collected by numerous public and private organisations for various purposes, creating a fragmented information landscape that lacks common data standards, organisation, and oversight. As a result, data gaps exist in some areas, while duplication occurs in others. Valuable datasets are often difficult to discover, inaccessible to those who need them, or stranded within organisational silos.

Overall, this means the system is:

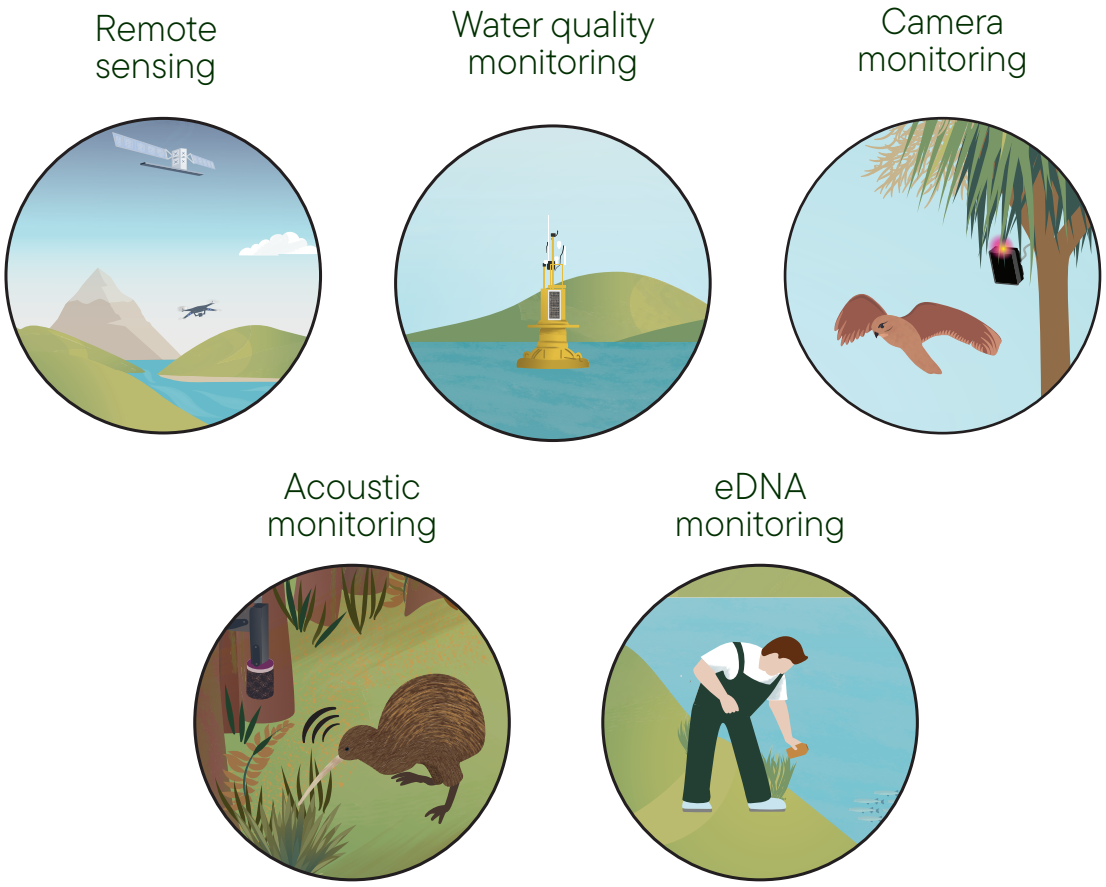
- complex and fragmented
- plagued with duplication, overlaps and gaps
- lacking standardisation
- difficult to access, with limited reusability.

Many of these issues stem from a lack of leadership, poor coordination and unreliable resourcing. To address them, there needs to be a change in how the system is organised and greater adoption of technologies to improve the collection, integration, analysis and sharing of information.

Building a stronger system

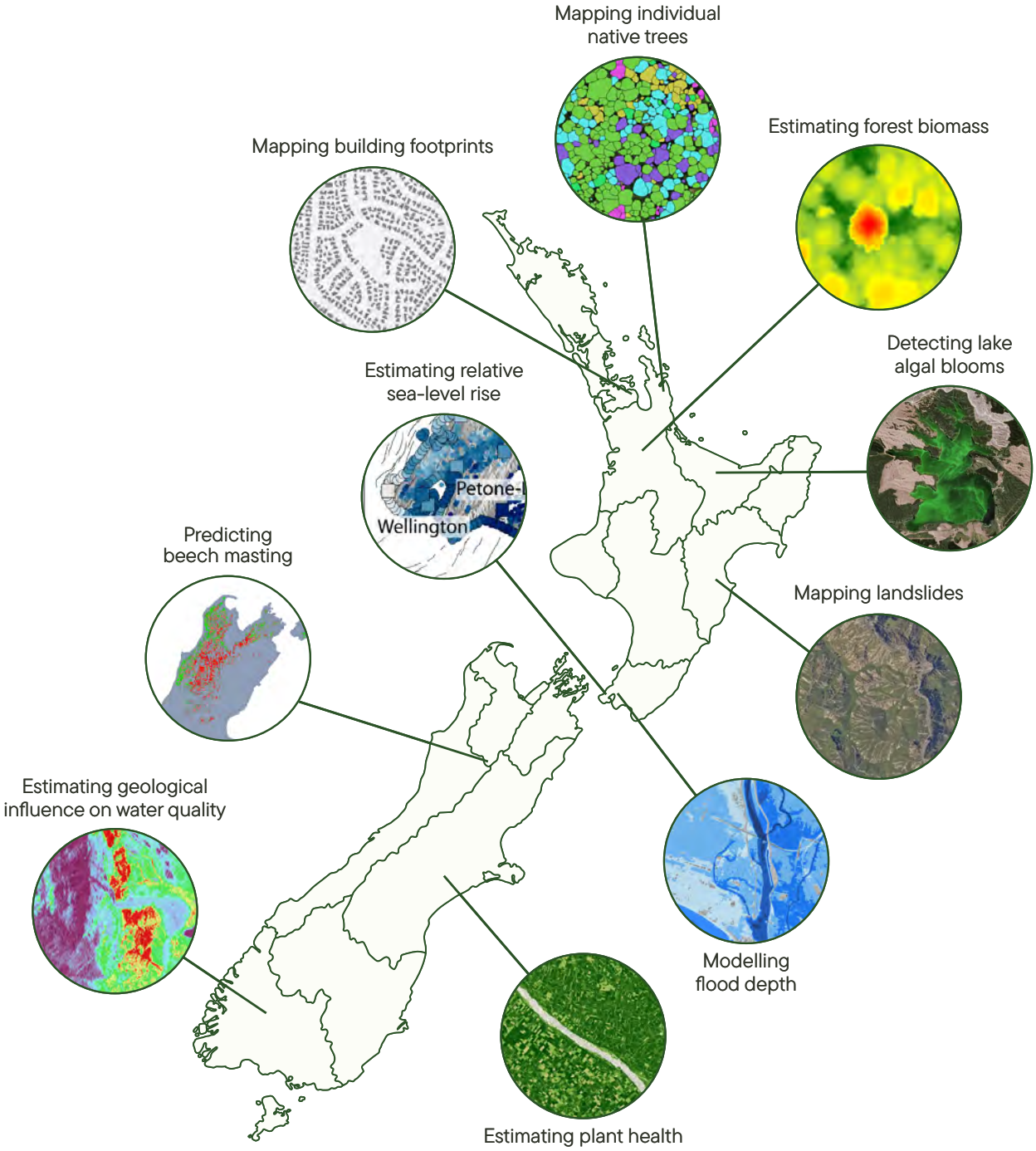
Harnessing innovative technologies

Rapid advances in sensor technology, data processing and digital infrastructure are transforming the way we monitor our environment. These advances open up new ways and new opportunities to improve our understanding and stewardship of New Zealand's environment and to assess the effectiveness of environmental policies.



The report discusses five monitoring technologies that could, if implemented widely, improve our environmental information base.

Remote sensing enables more widespread and frequent data collection – often in areas that are not easily accessible. Although remote sensing is not new, the pace of its development is reducing costs and opening doors to novel applications.



Remote sensing is providing invaluable insights across New Zealand. Applications include mapping features such as buildings and landslides, contributing to flood and sea-level rise modelling, and estimating plant health and forest biomass. Many applications now leverage artificial intelligence to improve and automate analysis. See the report for image sources and further information.

Advances in automated, place-based and high-frequency monitoring can tell us what is happening in near real-time. High-frequency water quality monitoring is particularly valuable at complementing existing networks as it can detect both sudden or rapid events and gradual or subtle changes.

Cameras and acoustic (sound) monitoring devices are increasingly being deployed to improve biosecurity and biodiversity monitoring in remote locations, including marine environments, over extended periods of time. Cameras are effective for studying elusive or nocturnal species, while acoustic monitoring is particularly useful for detecting vocal species, such as kiwi and marine mammals.

Environmental DNA (eDNA) is another innovative technology. By analysing genetic material found in water, soil or air, eDNA monitoring can help assess ecosystem health, detect invasive species and monitor environmental outcomes. The use of eDNA has already helped identify new populations of freshwater fish and detect biosecurity threats.

Additionally, developments in artificial intelligence and digital infrastructure make it increasingly feasible to collect and process information at scales previously unachievable. AI primarily serves as an enabling technology that enhances the ability to process, interpret, and use information. For instance, it is being used to map individual native trees for biodiversity and carbon assessments, and analyse high-frequency data from new place-based devices such as water quality monitoring sensors.

Physical and digital infrastructure developments, such as in-sensor processing (edge computing), communications technology, and cloud computing, are also enabling better utilisation of these transformative data processing and sensor technologies.

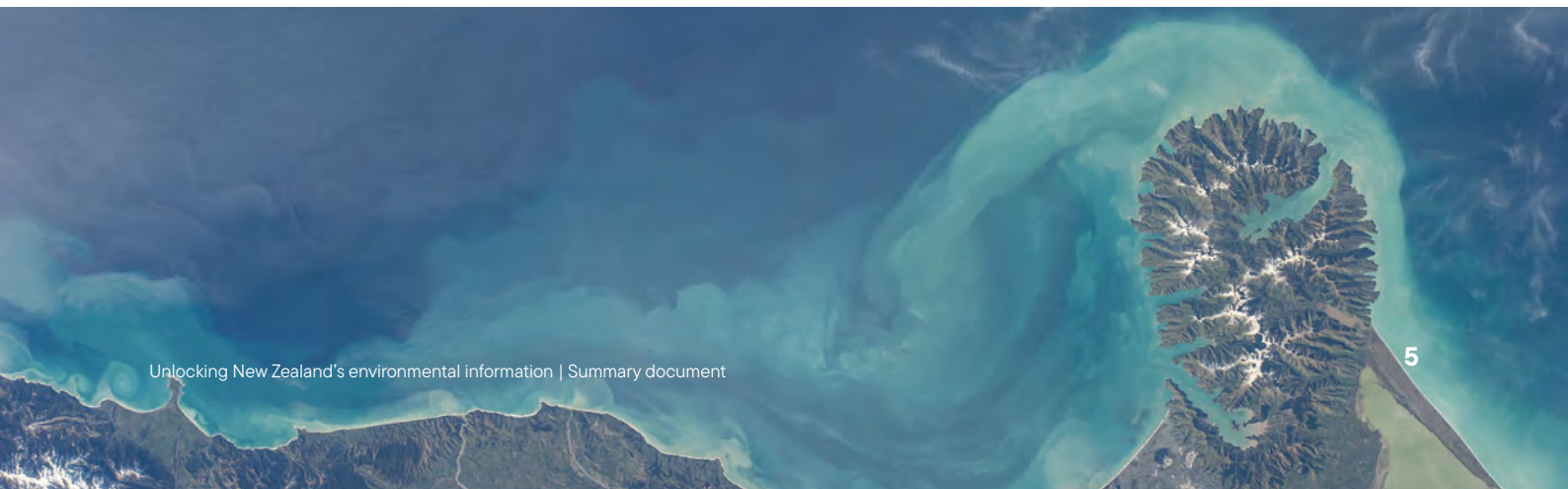
These technological advances could be game-changers for New Zealand's environmental information system. However, their benefits can only be fully realised if accompanied by broader reforms to governance, standards, data management, and who does what.

Addressing system wide challenges

Many of the existing issues within our environmental information system stem from a lack of leadership. There is no 'champion' with central oversight advocating for and driving change across the system. Strong leadership is vital to set priorities and direct the long-term strategic investments required to build the environmental information system of the future – as well as the capacity and capability of users to engage with it.

Trust is equally important. Public trust in environmental decision making depends on transparent, accessible and credible information. While some information must remain protected, many barriers to sharing are unnecessary. Open environmental information strengthens accountability and supports informed public debate.

Greater clarity about legal requirements, consistent data-sharing principles, and better digital infrastructure would make it easier for organisations to share and use information appropriately. Common data standards are critical, ensuring that information is collected and managed in ways that allow it to be easily found, shared, combined, and compared.

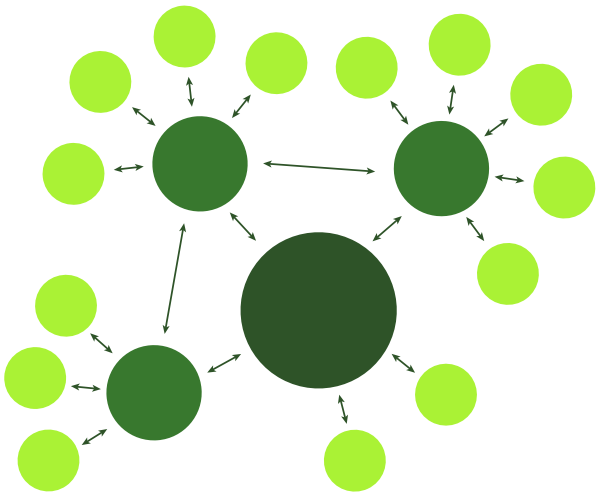


Conclusion

New Zealand has a unique opportunity to address these long-standing issues. Current reforms of resource management, science, water services, local government, conservation, and environmental reporting systems provide a once-in-a-generation opportunity to place information at the centre of environmental management. Seizing this opportunity to establish strong national leadership, common data standards and shared infrastructure will set these reforms up for success. Strong foundations will enable the widespread application of technological advances that can enable better monitoring, deeper environmental insights, and more informed decision making.

The announcements made in Budget 2026 suggest that the recommendation in my 2025 note to set up a federated information system has been taken up (see figure below).[1] This is a welcome first step, with approximately $41 million to be invested in the digital foundations of the new planning system and an additional $68.4 million for the environmental data that underpins it.[2] This investment signals a positive start towards improving environmental information and the digital system that supports it, but it cannot be the only step. To make the most of a federated system and our environmental information, we need to ensure this initial investment is maintained and expanded beyond just the planning system.

Environmental information needs to be treated as critical national infrastructure and managed accordingly.



A federated system connects data and information held across multiple organisational systems through shared standards and coordination arrangements.

1 PCE, 2025. A federated system to improve environmental information. www.pce.parliament.nz/media/ksxlm5rj/pce-note_federated-environmental-information-system-april-2025.pdf

2 Bishop, C., Watts, S. and Court, S., 2026. Funding to boost resilient planning system. Press release, 28 May 2026. www.beehive.govt.nz/release/funding-boost-resilient-planning-system; Grigg, N., 2026. Environmental Reporting Act legislation introduced. Press release, 16 June 2026. www.beehive.govt.nz/release/environmental-reporting-act-legislation-introduced; The $68.4 million includes $7.4 million to be invested in the New Zealand Flood Map.

Recommendations

In *Unlocking New Zealand's environmental information*, I make three recommendations that address the coordination and leadership of New Zealand's environmental information system. The fourth recommendation concerns the implementation of regional spatial plans to ensure transparency in the underlying information on which they are developed. The recommendations are:

1 The Minister for the Environment should develop a long-term environmental information plan for New Zealand that sets out the steps required to:

- implement a federated information system;
- improve the use of existing data, and
- unlock the potential of innovative technology.

This should include addressing issues of trust, access, sharing, privacy, data sovereignty, ownership of information, and technological uptake.

2 The Government should revise the mandate of the Environmental Protection Authority to give it responsibility for the coordination, leadership and management of New Zealand's environmental information system.

3 The Government should task the revised Environmental Protection Authority to identify, source and maintain a set of critical remote sensing products for the benefit of all of New Zealand.

4 The Minister responsible for the Planning Bill (once enacted) should require councils to disclose the information that has been relied on in developing proposed regional spatial plans and ensure that submissions on these plans can comment on the adequacy of that information when they are notified.

Simon Upton

Parliamentary Commissioner for the Environment
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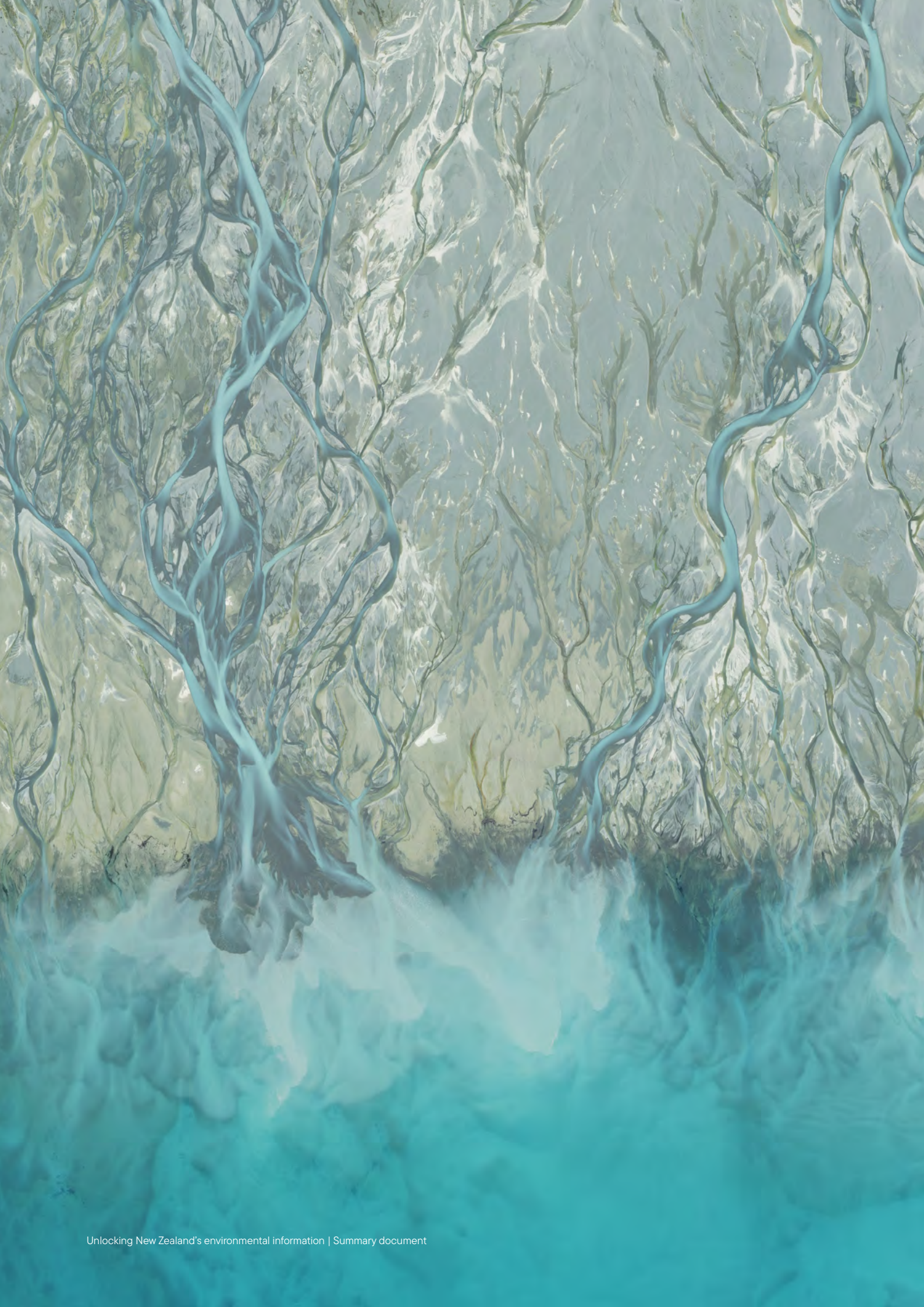

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