



Toitū Te Whenua
Land Information
New Zealand



Department of
Conservation
Te Papa Atawhai

Long-term Insights Briefing

Summary of Consultation from 18 October to 14 November 2021



Pohutukawa in bloom (Photo credit: Eve Manning) (Source: Department of Conservation)

Department of Conservation Te Papa Atawhai

Toitū Te Whenua Land Information New Zealand

Summary of Consultation from 18 October to 14 November 2021

Topic: How can innovation in the way we use information and emerging technology help biodiversity thrive?

This document provides a summary of submissions on the topic and content of Department of Conservation Te Papa Atawhai and Toitū Te Whenua Land Information New Zealand's Long-term Insights Briefing (LTIB). Thank you to everyone who took the time to provide a submission. Your input will help build and strengthen the briefing.

Summary

The Department of Conservation Te Papa Atawhai (DOC) and Toitū Te Whenua Land Information New Zealand (Toitū Te Whenua) are producing a joint Long-term Insights Briefing (LTIB). Between 18 October and 14 November 2021 we consulted on the proposed topic:

How can innovation in the way we use information and emerging technology help biodiversity thrive?

The consultation document can be found [here](#).

Following consultation, the proposed topic of the Long-term Insights Briefing has been confirmed and the wording updated to:

How can we help biodiversity thrive through the innovative use of information and emerging technologies?

We received 47 submissions during the consultation period. Overall, submissions were supportive of the proposed topic and positive suggestions were made for areas to cover.

Most people responding to the consultation document focused on emerging technology, specifically biotechnology. These submissions took a variety of positions in regard to the use of biotechnology. Some supported exploring the topic, noting the potential benefits of adding to our biodiversity toolkit. Some submissions were strongly opposed to the use of biotechnology that alters organisms, though not all of these opposed the exploration of the broad biotechnology sub-topic. Submissions were supportive of the information aspect of the topic.

Themes from responders included:

- the need for oversight and transparency over any decisions to use new technology
- the importance of including and giving influence to a diversity of views
- the preference to fully explore the potential of nature-based solutions before considering biotechnology solutions
- distinguishing between biotechnologies that offer insights (such as eDNA) and biotechnologies that alter organisms (such as gene drives)
- a need for better coordination to ensure accessibility and effectiveness of data and information.



Kākā, Kapiti Island (Photo credit: Lance Tomuri)

for, the long-term protection of Aotearoa New Zealand's biodiversity.

It is becoming increasingly important that we leverage information and emerging technologies to work together in new ways. With numerous examples of emerging information and technologies being developed and used internationally, this Long-term Insights Briefing provides an opportunity to consider how these developments could apply in Aotearoa New Zealand.

We are keeping the proposed topic for the Long-term Insights Briefing and have amended the wording slightly

The topic we proposed for the Long-term Insights Briefing was:

[How can innovation in the way we use information and emerging technology help biodiversity thrive?](#)

This covers the two focus areas: new and improved information, and the use of biotechnology. The [consultation document](#) has a more detailed description of the proposed topic.

We have decided to retain the proposed topic for our Long-term Insights Briefing. In light of feedback, the wording has been refined to emphasise biodiversity:

[How can we help biodiversity thrive through the innovative use of information and emerging technologies?](#)

The majority of submissions supported the proposed topic. Where submissions were not supportive of the topic, this was related to the use of biotechnology. These submitters noted concerns around risks, and these will directly inform the risk section of the Long-term Insights Briefing.

Submission analysis has revealed trends, risks and opportunities and, for the most part, an acknowledgement that New Zealand is not fully equipped to respond to them. The detail provided in submissions means the topic is in line with the statutory purpose of the Long-term Insights Briefing – specifically, bringing information into the public domain and supporting national conversations on challenges and opportunities facing New Zealand over the medium- to long-term. The Long-term Insights Briefing will not be a means to implement new technology, such as biotechnology, but an opportunity to engage in a national discussion that explores all aspects of the topic.

What is a Long-term Insights Briefing?

A Long-term Insights Briefing explores the medium and long-term trends, risks and opportunities facing Aotearoa New Zealand and potential options for responding to them. It aims to stimulate debate and, by looking to the long-term, tries to ensure we are ready to make decisions that achieve our vision. Consulting on the topic allows public feedback and ensures that Briefings are relevant and focused on what matters for Aotearoa New Zealand. This public feedback is considered when departments make the final decision on the topic for their Long-term Insights Briefings.

Find out more about Long-term Insights Briefings and see what other agencies have released:

- [Long-term Insights Briefings](#)
- [List of released Long-term Insights Briefings](#)

Our Long-term Insights Briefing

Our topic reflects the importance of biodiversity to Aotearoa New Zealand and the need for new approaches to solve the biodiversity crisis. Many of our plants, birds, bats, insects, fungi, reptiles and fish aren't found anywhere else in the world. The natural environment is important to Aotearoa New Zealand and, despite our best efforts, we are losing species at an alarming rate. Biodiversity faces a global crisis and Aotearoa is not immune. We face many challenges and will only experience more in the future, for example the effects of climate change, introduced and invasive pest species and unsustainable use of natural resources.

DOC and Toitū Te Whenua work together and across government to support national biodiversity and related biosecurity priorities, policies and strategies. Both organisations have roles in, and responsibilities

Methodology for submission analysis

The consultation document posed questions which were used to structure submission analysis. The questions were to help submitters focus their thoughts and encourage comments on specific points of interest. These questions were:

- Do you agree that the Long-term Insights Briefing should focus on new and improved information and biotechnology to find ways to care for Aotearoa New Zealand's biodiversity in the future? Why or why not?
- Are there any parts of information or biotechnology that you think need to be covered in the Long-term Insights Briefing? This can include applications in other sectors and disciplines, international approaches, social innovation, and any unintended consequences.
- How can we make sure we include other forms of expertise when making decisions about the use of information and biotechnology? Examples include mātauranga Māori, social science and citizen science?
- What else should DOC and Toitū Te Whenua consider?
- Are there any other topics you would like the Department of Conservation or Toitū Te Whenua to consider for future briefings?

The project team reviewed all submissions to reveal and collate themes using qualitative analysis. This involved each team member reading all submissions before they were randomly allocated for individual analysis. All themes and sub-themes were identified and summarised for each submission. Following individual consideration, the team brought all submission summaries together to jointly identify and interrogate overarching themes that reflected different points of view. This analysis was grouped under the five questions asked in the consultation document. Identified themes and subthemes were

adjusted and updated as they became more distinct throughout collation. Once it emerged there were clear themes repeated across the five questions, the project team decided it would be simpler to structure the summary of submissions around these themes.

In a separate process, all submissions were reviewed and analysed by a single member of the team not involved in the random allocation of submissions. This separate consideration was used as a quality control measure to cross-check identified themes and prevent bias in analysis from group consideration.

There were some submissions that did not specifically state their support or opposition to the proposed topic. These submissions indicated a view on the use of innovation in information and/or biotechnology itself.

Who we heard from

We received 47 submissions during the consultation period. We received submissions from:

- 17 individuals / no organisation specified
- 7 iwi, hapū and Māori organisations
- 7 non-governmental organisations
- 6 industry groups and representative bodies
- 3 private companies
- 3 universities
- 3 Crown research institutes and national science challenges
- 1 regional council

What we heard from submissions

Of the two sub-topics (new and improved information, and the use of biotechnology) submitters generally provided their feedback on the use of biotechnology. Few submissions commented on both sub-topics in detail.

Twenty-nine submissions expressed support towards the topic. Of those, 23 submissions supported the proposed topic as a whole, one submission only supported the biotechnology aspect, and five submissions only supported the information aspect. Eleven submissions did not support the proposed topic, one submission did not agree with both sub-topics, and 10 submissions did not agree with the biotechnology aspect. Seven submissions did not specify.

Kauri snail, Mangamuka Reserve (Source: Department of Conservation)



What we heard from those who submitted on behalf of iwi, hapū and Māori organisations

We heard from seven iwi, hapū and Māori organisations. Two supported the proposed topic, one did not, and the other four did not specify. These submissions on behalf of Treaty partners have been highlighted to ensure that Māori aspirations for the future are strongly reflected in our Long-term Insights Briefing. The submissions on behalf of iwi, hapū and Māori organisations have also been included in the overall analysis.

There were a variety of key themes highlighted from Māori submitters. One key message was the importance of protecting indigenous biodiversity. One submitter suggested not holding a human-centric view and instead respecting te taiao for its own sake. Another strong theme was the need for Māori to be involved at all stages. Suggestions for achieving this included involving Te Puni Kōkiri, including communities directly in the discussion, and having hau kāinga participate in any decisions about using biotechnology at place.

Some submitters suggested how current initiatives could be used to help biodiversity thrive. There was support for natural solutions, and on-the-ground methods for restoring biodiversity. We heard that the conservation system as a whole needed to be more aligned to be effective, and it was noted that DOC and Toitū Te Whenua are not the only groups that manage land in Aotearoa. The current work to reform the Resource Management Act 1991, and the proposed National Policy Statement on Indigenous Biodiversity were suggested as vehicles to protect

biodiversity. A few submitters highlighted that existing Treaty Settlements needed to be included in research and analysis for the Long-term Insights Briefing.

One submission supported the continued use of citizen science. Another submission highlighted how Mātauranga Māori could be included into monitoring and pointed us toward the Wai Ora Cultural Monitoring Framework.

Another key theme was the importance of understanding the risks associated with biotechnology, and the need for good governance and decision-making. Some submitters supported the proposed topic to further our understanding of biotechnology and its risks. One group was strongly opposed to biotechnology and did not support the topic because of its inclusion. Submitters were concerned with potential unintended consequences and of not being able to control biotechnology. There was a clear message that there needed to be good control over biotechnology and that those holding that power should not have any conflicts of interest.

What we heard from all submitters

Agreement on protecting biodiversity

Regardless of the methods used for protection, there was agreement on the importance of protecting biodiversity. Many submitters said that indigenous biodiversity was precious and a taonga. The reasons for supporting or not supporting the biotechnology sub-topic were informed by a shared desire to protect biodiversity. For example, biotechnology was suggested as a pest control method while other

New Zealand sea lions (Photo credit: Debbie Freeman) (Source: Department of Conservation)



submissions stated biodiversity was too precious to jeopardise with potential unintended consequences from biotechnology.

Another key theme was how biodiversity is impacted by climate change, and that climate change should be considered in the Long-term Insights Briefing. It was noted that climate change impacts on biodiversity and that biodiversity can help mitigate climate change (for example, through carbon sinks).

The consensus around protecting biodiversity was a key reason we have decided to keep the proposed topic, to further explore innovation that can help biodiversity thrive.

Most submitters support the new and improved information sub-topic

The submissions that directly addressed the new and improved information topic were supportive. There was consensus that data collection and use is important, and that better information could support better decision-making. We heard that in the future information collection and use will need to be well planned, standardised, clear and organised. Submitters highlighted the need for clarity around roles and mandates, ownership, and funding for information collection and use.

Making data consistent and able to be scaled from a local to a national level was highlighted as a key issue. Being able to integrate current, non-consistent datasets with new systems and innovations would be important to enable information to reflect long-term trends. A robust decision-making process was seen as important.

We heard there is a need for data and information to be accessible to ensure it is used effectively. Related was the emphasis on the principles of open data, with centralisation and accessibility for all users. Data sovereignty was another key principle. It was suggested that those who collect data should retain control of it. Fifteen submitters discussed data accessibility, data sovereignty and the question of ownership. There was a contrast between submissions that wanted open data and those that favoured data sovereignty.

Submitters described how the principle of Māori data sovereignty supports the realisation of Māori and iwi aspirations. We heard that any work with Māori data must be done in partnership with tangata whenua. Treaty obligations and settlements need to be taken into account. Rongoā Māori was given as an example of an area where concepts of sovereignty and intellectual property are more established.

There were suggestions about how to change best practice in data collection. We heard there is a need to provide technical expertise and to upskill groups that are collecting data. There is also a need for increased funding to support this upskilling. Submitters also suggested incorporating mātauranga Māori into monitoring.

Citizen science was described as a useful tool for increasing participation in data collection. Submissions suggested standardising data collected through citizen science so it can be used more broadly. Submitters noted that citizen science can be prone to error, and that needs to be accounted for. We also heard the need for data collected through citizen science to be meaningful for the communities doing the work. It was suggested that the groups and individuals who collect data should own it.

Submitters described the opportunities and innovation possible with new methods of information collection. The development of new technology provides an opportunity to monitor in places that have traditionally been challenging to collect data from, such as the ocean.

Some are supportive of the emerging technology sub-topic to help biodiversity thrive

Fifteen responses were strongly opposed to the use of biotechnology, but there was mixed opinion on whether biotechnology could be explored as a topic in the Long-term Insights Briefing. The majority of submissions strongly opposing the use of biotechnology were from individuals. Some submitters noted there was limited or no social license for either a conversation about, or action on, biotechnology. A number of other submitters indicated that the topic created risks to social license. Some noted that the two topic areas – information and biotechnology – had different levels of established social license, which should be accommodated when developing the Long-term Insights Briefing itself.

There was a strong message that there are risks associated with biotechnology. This includes the irreversibility or 'genie out of the bottle' nature of gene editing technologies such as CRISPR and gene drives. Submitters asked that we note the risk of unintended consequences, including on non-target species or species in their home habitat (such as possums in Australia). We heard that it was important to consider whether biotechnology creates new problems in the attempt to find solutions. Thirteen submitters highlighted the need for risk assessment in relation to biotechnology.

There was support, for current legislative settings (for example, the Hazardous Substances and New Organisms Act 1996) that prevent the uptake of biotechnology to remain in place. We specifically heard the desire to preserve New Zealand's genetic engineering (GE) free status in line with this legislation. There was also strong support for existing, non-biotechnology tools to protect biodiversity, especially ones that provided employment.

Submitters also supported the precautionary principle, an approach to innovation that encourages caution to avoid harm from unknown consequences. We recognise there are a variety of interpretations of the precautionary principle in use. In this context submitters emphasised there is a need for a robust, risk-based approach that avoids causing new problems.

A number of submitters stated that biotechnology should specifically not be used on taonga species or on public conservation land. Eight submitters supported the principle that biotechnology should be limited to control tools used on pests and not on indigenous biodiversity.

Some submitters are not supportive of biotechnology aspect of the emerging technology sub-topic

Many submissions supported the biotechnology aspect of the emerging technology topic to further a national conversation, build social license and increase understanding of biotechnology and its potential risks and benefits. We heard some of the potential benefits (like improving animal welfare), and that there was an opportunity cost of not adopting new technologies. Submitters noted that current tools were not halting a decline in biodiversity and that using new methods, including biotechnology, would be important for biodiversity to thrive.

When considering the use of biotechnology, submitters emphasised the importance of a robust scientific process and a risk-based approach. It was noted that biotechnology could widen the tools available and that it would be a complement to, and not completely replace, current technology. It was noted that emerging problems may need new tools.

There was a mix of opinions on whether biotechnology would be cheaper than current technology.

Considerations for biotechnology to be covered in the Long-term Insights Briefing

Submitters suggested some key themes to consider including in the biotechnology sub-topic of the Long-term Insights Briefing and these are listed below.

Submitters across all groups noted there should be no action without partnership with tangata whenua. Treaty obligations (especially WAI262), settlement and redress packages and a te ao Māori view must be considered. Rongoā Māori was provided as an example where concepts of sovereignty and intellectual property are more established and could be drawn on.

We heard that science needed to be at the centre of this discussion and that it should be funded, robust, unbiased and in-depth.

Many submitters noted the need for a robust process for the use of biotechnology. There were a lot of suggestions of what a good process would look like, including:

- transparency and honesty
- robust risk assessment
- robust scientific process
- a decision-making structure
- accountability for decisions
- consideration for regional decision-making
- an ethical framework
- clearly stated costs, uncertainties, risks, benefits and trade-offs
- accountability for funding
- managing and declaring conflicts of interests
- ensuring those with pecuniary interests in biotechnology are not making or benefiting from decisions.

Submitters emphasised that it was important to include and give influence to a diversity of views. This includes:

- subject matter experts
- those outside the formal education system
- the international community
- recreational users
- industry
- those with opposing views
- kaumātua and kuia
- young people
- environmental non-governmental organisations.

Thirteen submitters highlighted the need to empower and encourage participation with good engagement strategies.

Submissions discussed what appropriate governance of biotechnology would look like. This included on-the-ground knowledge, and lessons from research being able to influence innovation and have real-time feedback into decision making. We heard engagement would be important in governance and could be supported by community collaboration, advisory groups, resourcing people, education and using different mediums (such as the arts).

International governance was also discussed. Submissions noted that biotechnology is an international issue as it will not stay within borders. The international community needs to share knowledge and make decisions together.

Submitters distinguished between biotechnology that offers insights (for example, eDNA) and biotechnology that alters organisms (like gene drives). It was also noted that there is a distinction between traditional (DNA) and modern (gene editing) biotechnology. Some biotechnology tools may be more acceptable, and it is important the technology discussed is properly understood.

There was a strong opinion against outdoor use and outdoor experiments with biotechnology. Submitters had mixed opinion on whether indoor experiments to understand biotechnology should be allowed.

We heard that biotechnology could provide benefits to animal welfare, compared with current pest control methods.

It was noted that we need to be willing not to proceed with biotechnology. The discussion cannot be pre-determined and the decision needs to be open to other solutions. There was a preference for nature-based solutions with biotechnology only used as a last resort. Seven submitters said we needed to be open to solutions from all areas.

Other things to consider

Broader suggestions for things to consider emerged through consultation.

- Submitters said that we should consider a non-anthropocentric view and the intrinsic value of nature. We were asked: what would nature want?
- We were asked how the topics are relevant to the marine domain. It was suggested that we should consider how the marine domain offers examples of topic-related insights.
- Submitters asked about the appropriateness of agencies to be fostering a national conversation on biotechnology. As there have already been national conversations, the desire for further discussion should be driven by the general public.
- It was suggested that the primary industries and tourism sectors should be included.
- Behaviour change, education, habitat restoration, collaboration in communities, and organic farming were suggested as alternative solutions.
- It was suggested to decrease the amount of poison used in pest control.
- Submitters asked how the Long-term Insights Briefing could integrate with climate change planning and other government work.
- We were asked how biotechnology could change, or negatively impact, the human experience of nature.

Next steps

Te Papa Atawhai and Toitū Te Whenua are currently using the submissions to help inform drafting of the Long-term Insights Briefing. Consultation on the draft Long-term Insights Briefing will again take place in mid-2022, before the Briefing is finalised. Once finalised, the document will be presented to Parliament.



Herekino forest river (Source: Department of Conservation)



Te Kāwanatanga o Aotearoa
New Zealand Government