

National Science Challenges

Terms of Reference for Mid-Way Reviews

April 2018



MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

newzealand.govt.nz

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Introduction

The Ministry of Business, Innovation & Employment (MBIE) will undertake a mid-way review of each National Science Challenge in 2018.

These Terms of Reference outline the process for the review of each Challenge and the roles of each party involved. Appendix 1 provides information on each Challenge and its review timeline.

For further information please e-mail contactNSC@mbie.govt.nz.

Background to the National Science Challenges

The 11 National Science Challenges (NSC) are a set of mission-led science investments that help to address some of the most fundamental issues New Zealand faces for its future development. The process of identifying the Challenges involved significant public engagement and recommendations by an independent NSC panel.

NSC funding is to support research, science, or technology, or related activities that have the potential to:

- respond to the most important, national-scale issues and opportunities identified by science stakeholders and the New Zealand public
- promote collaboration across a number of research providers and involve a broad portfolio of multi-disciplinary research activity
- enable government to take a more long-term strategic approach to managing and coordinating mission-led science investments.

The NSCs involve alignment and co-ordination of research to generate greater impact and value from the Government's science investment. NSC funding is devolved funding, contracted to a host organisation. Each NSC has its own governance and management structures to make decisions about programme funding, stakeholder engagement, and public outreach. Each NSC is required to run a contestable process for a proportion of its funds to enable new entrants and new ideas into the Challenge.

Review background

Purpose

The Government allocated funding for the NSCs for ten years to 30 June 2024. Funding was allocated to each Challenge initially for the period to 30 June 2019 (first round of funding) with subsequent funding for the second round subject to the results of a mid-way review ('Review').

In May 2015, MBIE issued a Performance Framework Guidance Document (refer www.mbie.govt.nz/info-services/science-innovation/national-science-challenges/documents-image-library/key-documents/NSC-performance-framework-guidance-document.pdf). This framework aims to measure the extent to which each Challenge is achieving its objective and, in general, whether the aims of the NSC policy are being met. The framework states that MBIE will review all Challenges and the NSC policy at the mid-way point in 2018.

Following the Review, the Science Board will make funding decisions for each Challenge for the second round of funding for the period from 1 July 2019 to 30 June 2024.

Along with a review of each Challenge, MBIE will also conduct an NSC policy review. This policy review will identify the key barriers and the opportunities to achieve the policy objectives of the NSC programme and will inform Ministers' decisions on future NSC strategic policy and funding and MBIE's decisions about NSC operational policy.

The information to be provided by individual Challenges outlined in Appendix 3 will be one input into the policy review. The policy review will also consider advice from the Science Board.

Challenges will have an opportunity to provide additional input into the policy review process. The findings of the policy review will be made public.

Principles

MBIE has developed the following set of principles for the Review, consistent with Cabinet decisions.

- > **The Review will look at the performance of each Challenge and the NSC policy as a whole.**
 - > The review of all 11 Challenges will inform Science Board decisions on future funding and will provide input to a review of the NSC policy.
 - > The review of NSC policy will inform Ministerial decisions on strategic policy and funding and MBIE decisions on operational policy.
- > **The Review will be fit for purpose.**
 - > MBIE will seek to maintain the stability needed for science outcomes.
 - > The scale of the Review process will be commensurate with the stage of development of the NSCs, the scale of funding, and the need to minimise the workload for all parties while meeting accountability requirements.
 - > MBIE will draw on existing information sources where possible.

- > **The Review will have clarity of roles, processes, and decision-making.**
 - > The Review will assess how each NSC is progressing against its contract. It will not directly compare Challenges with each other.
 - > The Review will take into account the different start times and funding levels specific to each Challenge.
 - > The way in which information will feed into the policy review and review of each Challenge review will be clear.
- > **The Review will cover past performance and will look to the future.**
 - > Challenge plans for future funding will form part of the Review.
 - > The Review will be constructive and provide an opportunity to make sure the Challenges are well placed to deliver the outcomes sought from the NSC policy.

Review process

Review panels

MBIE will form a five-member review panel for each Challenge. All members will be independent of the Challenge.

The Chair of each panel will be required to demonstrate experience and ability to chair meetings, lead and mediate discussions, encourage consensus, resolve conflicts, and identify and handle conflicts of interest. The chair will ideally have experience with NSCs or similar research assessment processes.

The remainder of the panel will comprise up to four other members able to contribute skills in the following areas:

Science strategy and excellence

- Ability to assess a Challenge's science strategy and ability to conduct high-quality research

Governance and management

- Ability to assess the soundness of a Challenge's governance and management arrangement
- Hands-on experience in management of research activities (preferably of a scale similar to the NSCs) including IP

Vision Mātauranga (VM)

- Ability to understand and analyse the VM aspect of the Challenge
- Good understanding of Māori research needs and opportunities

Delivery of impacts and assessment of benefits

- Knowledge of a Challenge's specific sector, its science, and ability to determine whether the research programme will deliver impacts of the scale sought by the NSCs
- Ability to assess the plausibility of the relationship between research and outcomes/benefits.

Panel members may have expertise and experience in more than one area. International panel members in some cases may be required. Each Challenge will be advised of the members of the panel reviewing the Challenge by the end of 2017.

The role of each review panel will be to prepare a report for the Science Board with an assessment of performance and a recommendation for future funding of each Challenge. MBIE will also provide information to the Science Board alongside the panel report.

Conflicts of interest

Persons directly involved in a proposal for Challenge funding cannot be appointed to the review panel for that Challenge. However, panel members can sit on a panel that assesses a proposal that involves an organisation that employs the panel member, provided that the panel member does not have a close relationship with the organisation's team/department that benefits directly from Challenge funding.

Before receiving documentation about a Challenge, review panel members will be asked to agree to declare interests and sign confidentiality agreements. Panel members will be asked

to identify potential conflicts once they receive documentation and will be asked to withdraw themselves in the event of potential conflicts of interest that cannot be managed. Panel chairs will manage any conflicts during panel meetings.

Review criteria

The review of each Challenge will look at both past performance and future strategies with an emphasis on future performance.

- The *New Zealand Gazette* notice dated 12 September 2017 outlines the assessment criteria that each review panel will use to review a Challenge’s future strategy. The review panel will use no other criteria.

The Gazette notice is available online at <https://gazette.govt.nz/notice/id/2017-go4685> and is copied in Appendix 2.

- The review panel will inform its assessment of a Challenge’s future strategy by reviewing the Challenge’s performance during the first funding period using the Performance Framework Guidance Document.

Documentation used for the review

The review panel members will receive the following documents. MBIE will provide information to panel members to brief them on their required role as panel members, NSC policy, and the New Zealand science system.

Documents provided by each Challenge

- > Progress Report for 2017/18
- > Overview of progress to date over the period of the Challenge
- > Financial information on unspent funding
- > Future Strategy (long-term view, five-year strategy, scenario planning)
- > Supplementary Information (optional)

The timing for the submission of these documents is shown in the timeline for each Challenge in Appendix 1. Appendix 3 provides further information on the requirements for these documents.

The review panel may ask the Challenge (via MBIE) to clarify aspects of its documentation before the panel meeting.

For reporting in 2018, regular Forward-looking Plans will not be required. For the content of progress reports, MBIE will provide guidance in 2018.

Report from the chair of each Challenge’s science advisory panel

MBIE will contract with the chair of each Challenge’s science advisory panel (or equivalent) to provide an independent written assessment of the quality of the Challenge’s science and its best research team approach in terms of both performance to date and future plans. The assessment will be based on the chair’s knowledge of the Challenge, its 2017/18 Progress Report, and Future Strategy.

The report should evaluate science quality, progress, and relevance of research at the project, programme, and Challenge levels, including:

- relative strength of the proposed research for achieving project outcomes and the relevance of projects for achieving the Challenge's mission
- quality of the science
- quality and relevance of the major research questions
- strength and capability of project teams.

The chair of the science advisory panel must also outline what steps the Challenge has taken to verify independently that its science is internationally robust and of high quality.

This report will be supplemented by a meeting or tele- or video-conference between the chair and the review panel during the panel meeting.

Documents provided by MBIE

- > MBIE’s analysis of a Challenge’s Progress Report 2017/18. In its analysis MBIE may suggest specific questions that the review panel may wish to ask of the Challenge.
- > Existing documents:
 - > Original proposal for funding from the Challenge, including any resubmitted research and business plans, if relevant
 - > Letter from MBIE to Challenge hosts advising the Science Board’s funding decision
 - > NSC Investment Contract and Challenge Programme Agreement (including any variations)
 - > 2015/16 and 2016/17 NSC Progress Reports and MBIE analysis
 - > Feedback letter from Paul Stocks (MBIE’s Deputy Chief Executive – Labour, Science and Enterprise) after his visit to the Challenge governance group meeting
 - > Reports on any previous reviews that Challenges have undergone and any other documentation relevant to each Challenge (case by case).

Review panel meeting

The review panel for each Challenge will meet for two and a half days in Wellington.

Key Challenge and host organisation personnel will be required to present to the panel on Day 2, preferably in person (tele- or video-conferencing can be arranged but this is not preferred). Challenges are encouraged to involve the chairs of their kāhui and governance group and may invite end-user representatives. Challenge personnel are also asked to be available for any follow-up questions on Day 3. Tele- or video-conferencing is acceptable for Day 3.

DAY	AGENDA
1	Afternoon/evening: Panel preparatory meeting and dinner
2	Preparation and discussion Challenge presentation(s) and Q & A session(s) on documentation provided
3	Review panel writes report Follow-up questions with Challenge (if required)

A meeting in person, or by tele- or video-conference, between the review panel and the chair of the Challenge’s science advisory panel or equivalent will take place at some point during Days 2 and 3.

Representatives from MBIE, including Danette Olsen (Manager, Strategic Investments) and investment managers with responsibility for MBIE’s relationship with each Challenge, will also attend the review panel meeting to support the panel members and/or to observe.

Review panel report

The review panel will prepare a summary of findings including recommendations in the form of a written report approximately one month following the panel meeting. The review panel members will address the review assessment criteria and provide an executive summary that identifies key themes and recommendations on future funding and any suggestions to improve future performance.

The review panel’s report will be shared with the Challenge host organisation and MBIE. The Challenge host organisation will have the opportunity, on behalf of the Challenge, to identify any factual errors and omissions and comment on the balance of findings in the report. The review panel will finalise the report after receiving feedback from the host organisation via MBIE.

Science Board’s funding decision

MBIE will provide the Science Board with:

- > the final review panel report
- > the Challenge’s response to the panel report
- > all written review material
- > advice on the review panel’s report and recommendations for funding within current funding envelopes, and potential adjustments to funding envelopes.

The Science Board will make decisions on funding for the 11 Challenges for the period from 1 July 2019 to 30 June 2024 using information from the review of the individual Challenges. Decisions will take into account past performance of the Challenges, their plans for the second period of funding, and the amount of time that the Challenge has operated to date.

The Science Board has the ability to make funding decisions on Challenges within the envelope specified in the *Gazette* notice. The Minister of Research, Science and Innovation is responsible for policy decisions and jointly responsible with the Minister of Finance for funding decisions at the programme level. Joint Ministers can change the funding envelopes for individual Challenges. Any such decision would take into account advice from the Science Board and MBIE.

MBIE will consider the level of overall funding for the Challenges as part of the policy review. MBIE’s advice to Ministers will take into account Science Board advice. Increases in overall Challenge appropriations beyond current levels, if warranted, will follow standard government processes, which will normally be a Cabinet decision and consideration through the annual Budget process. There is no guarantee that the Review will result in additional funding.

Contracting

MBIE will work with the Challenge following the Science Board meeting if amendments are needed to the Challenge's Future Strategy. Contracts including the Future Strategy and revised Key Performance Indicators specific for each Challenge, to be discussed and agreed, will be finalised by June 2019.

Review costs

MBIE will cover costs such as review panel member fees, travel, accommodation, meals, and a report fee for the chair of the science advisory panel. The Challenge members are expected to meet all of their own expenses associated with the preparation and participation in the Review.

Appendix 1: Challenge summary information and timelines

Summary - A Better Start: E Tipu e Rea

The objective of the Challenge is to improve the potential of young New Zealanders to have a healthy and successful life.

The host organisation is the **University of Auckland** and other Challenge members are Auckland University of Technology, Waikato University, Massey University, Victoria University of Wellington, University of Canterbury, University of Otago, and AgResearch.

The Challenge includes leading experts in researching improved methods and tools to predict, prevent and treat obesity, and identifying and addressing learning and mental health problems in children and teenagers. The Challenge's research strategy is new for New Zealand as it targets at-risk children early, engages their communities, draws together different disciplines, and takes a holistic approach to obesity, learning, and mental health difficulties, which are frequently studied in isolation. The Challenge will use 'big data' as captured by a range of government agencies, to inform progress in reaching key developmental milestones in each of these areas.

The Challenge was launched **on 19 February 2016**.

The Government has allocated **\$34.7 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$14.2 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - A Better Start: E Tipu e Rea

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress Report, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
4 July	Challenge submits Future Strategy to MBIE.
16 July	Chair of the Challenge science advisory panel submits report to MBIE.
26 July	MBIE sends documentation and briefing material to panel members.
31 July	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
5-7 August	Review panel meets.
5 August	Panel preparatory work.
6 August	Panel discussion. Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
7 August	Panel discussion and report-writing.
6 or 7 August	Chair of the science advisory panel discusses report with panel in person or by tele- or video-conference.
By 29 August	Panel sends draft report to MBIE.
By 31 August	MBIE sends panel's draft report to Challenge.
By 12 September	Challenge provides feedback on panel's draft report to MBIE.
End September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - Ageing Well: Kia eke kairangi ki te taikaumātuatanga

The objective of the Challenge is to harness science to sustain health and well-being into the later years of life.

The host organisation is the **University of Otago** and other Challenge members are the University of Auckland, Auckland University of Technology, Waikato University, Massey University, Victoria University of Wellington, University of Canterbury, AgResearch, and the Centre for Research Evaluation and Social Assessment.

The Challenge researches how to sustain health and wellbeing as people age, enabling all New Zealanders to reach their full potential into the later years of life. Research includes work to optimise brain and body health, as well as to reduce disability and moderate the impact of age-related illness such as dementia, stroke, depression, and frailty. The Challenge aims to enhance the independence and tino rangatiratanga of older individuals and their whānau, and encourage age-friendly physical environments. It is working to ensure older people continue to live a meaningful life through social integration and engagement, in a society that values their ongoing contributions of knowledge and experience.

The Challenge was launched on **4 March 2015**.

The Government has allocated **\$34.9 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$14.6 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - Ageing Well: Kia eke kairangi ki te taikaumātuatanga

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress Report, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
2 July	Challenge submits Future Strategy to MBIE.
16 July	Chair of the Challenge science advisory panel submits report to MBIE.
23 July	MBIE sends documentation and briefing material to panel members.
26 July	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
1-3 August	Review panel meets.
1 August	Panel preparatory work
2 August	Panel discussion Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
3 August	Panel discussion and report-writing
2 or 3 August	Chair of the science advisory panel discusses report with panel in person or by tele- or video-conference.
By 28 August	Panel sends draft report to MBIE.
By 30 August	MBIE sends panel's draft report to Challenge.
By 12 September	Challenge provides feedback on panel's draft report to MBIE.
End September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - Building Better Homes, Towns, and Cities: Ko ngā wā kāinga hei whakamāhorahora

The objective of the Challenge is to improve the quality and supply of housing and to create smart and attractive urban environments.

The host organisation is the **Building Research Association of New Zealand** and other Challenge members are Auckland University of Technology, Lincoln University, Massey University, University of Auckland, University of Canterbury, University of Otago, Waikato University, Victoria University of Wellington, Opus, PrefabNZ, and Scion.

The Challenge seeks innovative, affordable and flexible solutions for our homes, towns and cities. This will enable the Challenge to create residential environments that suit the needs of New Zealand's multi-cultural society. Included among these are effects of accelerating climate change and dynamic population shift. Research outcomes will support New Zealanders to embrace change, and to understand what sustainable and effective land-use means for our 21st century lives.

The Challenge was launched on **5 May 2016**.

The Government has allocated **\$47.9 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$23.6 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - Building Better Homes, Towns, and Cities: Ko ngā wā kāinga hei whakamāhorahora

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress Report, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
13 July	Challenge submits Future Strategy to MBIE.
27 July	Chair of the Challenge science advisory panel submits report to MBIE.
6 August	MBIE sends documentation and briefing material to panel members.
14 August	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
19-21 August	Review panel meets.
19 August	Panel preparatory work
20 August	Panel discussion Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
21 August	Panel discussion and report-writing
20 or 21 August	Chair of the Challenge science advisory panel discusses report with panel in person or by tele- or video-conference.
By 7 September	Panel sends draft report to MBIE.
By 10 September	MBIE sends panel's draft report to Challenge.
By 17 September	Challenge provides feedback on panel's draft report to MBIE.
End September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - The Deep South: Te Kōmata o Te Tonga

The objective of the Challenge is to understand the role of the Antarctic and Southern Ocean in determining New Zealand's climate and future environment.

The host organisation is **NIWA** and other Challenge members are Victoria University of Wellington, University of Otago, GNS Science, Landcare Research, New Zealand Antarctic Research Institute, and Antarctica New Zealand.

The Challenge's research will enable New Zealanders to adapt, manage risk, and thrive in a changing climate. Through collaboration with communities and industry, the Challenge guides planning and policy to enhance resilience and exploit opportunities. The Challenge framework of five linked programmes connects society with scientists, and combines community engagement with a world-class earth systems model to better predict New Zealand's climate.

The Challenge was launched **on 5 August 2014**.

The Government has allocated **\$51.1 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$24.0 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - The Deep South: Te Kōmata o Te Tonga

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
25 June	Challenge submits Future Strategy to MBIE.
6 July	Chair of the Challenge science advisory panel submits report to MBIE.
12 July	MBIE sends documentation and briefing material to panel members.
17 July	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
22-24 July	Review panel meets.
22 July	Panel preparatory work
23 July	Panel discussion Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
24 July	Panel discussion and report-writing
23 or 24 July	Chair of the Challenge science advisory panel discusses report with panel in person or by tele- or video-conference.
By 24 August	Panel sends draft report to MBIE.
By 27 August	MBIE sends panel's draft report to Challenge.
By 10 September	Challenge provides feedback on panel's draft report to MBIE.
End September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - Healthier Lives: He Oranga Hauora

The objective of the Challenge is to reduce the burden of major New Zealand health problems.

The host organisation is the **University of Otago** and other Challenge members are the University of Auckland, Auckland University of Technology, Waikato University, Massey University, Victoria University of Wellington, University of Canterbury, Malaghan Institute, ESR, and AgResearch.

The Challenge undertakes innovative research aimed at significantly reducing the death and disease burden of some of New Zealand's leading health problems. The Challenge tackles cardiovascular disease, cancer, diabetes and obesity, with the goal of reducing their overall health burden. The work includes initiatives led by Māori researchers and has a strong community involvement. The Challenge also focuses on translating its innovations into practical solutions and research for effective health policy and practice

The Challenge was launched on **4 December 2015**.

The Government has allocated **\$31.3 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$13.7 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - Healthier Lives: He Oranga Hauora

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
27 June	Challenge submits Future Strategy to MBIE.
13 July	Chair of the Challenge science advisory panel submits report to MBIE.
19 July	MBIE sends documentation and briefing material to panel members.
24 July	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
29-31 July	Review panel meets.
29 July	Panel preparatory work Panel discussion
30 July	Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
31 July	Panel discussion and report-writing
30 or 31 July	Chair of the Challenge science advisory panel discusses report with panel in person or by tele- or video-conference.
By 27 August	Panel sends draft report to MBIE.
By 29 August	MBIE sends panel's draft report to Challenge.
By 10 September	Challenge provides feedback on panel's draft report to MBIE.
End September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - High-Value Nutrition: Ko ngā kai whai painga

The objective of the Challenge is to develop high-value foods with validated health benefits to drive economic growth.

The host organisation is the **University of Auckland** and other Challenge members are Massey University, University of Otago, AgResearch, and Plant and Food Research.

The Challenge will enable the transformation of New Zealand's food and beverage industry to become an exporter of high-value foods with scientifically proven health benefits. Informed by insights into the needs of consumers in Asia and globally and identified opportunities where investment in food science can have significant economic impact, the Challenge conducts research into metabolic health, gastrointestinal health, immune health, and weaning foods for health. The Challenge will also broaden its portfolio of research into complementary areas, for example foods for improved physical activity and mobility.

The Challenge was launched on **1 April 2014**.

The Government has allocated **\$83.8 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$30.6 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - High-Value Nutrition: Ko ngā kai whai painga

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress Report, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
15 June	Challenge submits Future Strategy to MBIE.
29 June	Chair of the Challenge science advisory panel submits report to MBIE.
5 July	MBIE sends documentation and briefing material to panel members.
10 July	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
15-17 July	Review panel meets.
15 July	Panel preparatory work
16 July	Panel discussion Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
17 July	Panel discussion and report-writing
16 or 17 July	Chair of the Challenge science advisory panel discusses report with panel in person or by tele- or video-conference.
13 August	Panel sends draft report to MBIE.
15 August	MBIE sends panel's draft report to Challenge.
31 August	Challenge provides feedback on panel's draft report to MBIE.
Mid September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - New Zealand's Biological Heritage: Ngā Koiora Tuku Iho

The objective of the Challenge is to protect and manage New Zealand's biodiversity, improve our biosecurity, and enhance our resilience to harmful organisms.

The host organisation is **Manaaki Whenua - Landcare Research** and other Challenge members are Auckland University of Technology, Lincoln University, Massey University, University of Auckland, University of Canterbury, University of Otago, Waikato University, Victoria University of Wellington, AgResearch, ESR, GNS Science, NIWA, Plant and Food Research, and Scion.

The Challenge aims to reverse the decline of New Zealand's biological heritage by protecting and managing native biodiversity, improving biosecurity, and enhancing resilience to harmful organisms. The Challenge includes research on ways to reduce rates of incursion or establishment by foreign invader species, and to enhance and restore the resilience of vulnerable ecosystems to prevent biodiversity loss and to mitigate the effects of global change. The Challenge's national partnership delivers a step change in research innovation, technologies, and sector action to help reduce the increasing pressures on our environment.

The Challenge was launched on **29 August 2014**.

The Government has allocated **\$63.7 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$25.8 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - New Zealand's Biological Heritage: Ngā Koiora Tuku Iho

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress Report, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
9 July	Challenge submits Future Strategy to MBIE.
23 July	Chair of the Challenge science advisory panel submits report to MBIE.
30 July	MBIE sends documentation and briefing material to panel members.
2 August	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
8-10 August	Review panel meets.
8 August	Panel preparatory work
9 August	Panel discussion Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
10 August	Panel discussion and report-writing
9 or 10 August	Chair of the Challenge science advisory panel discusses report with panel in person or by tele- or video-conference.
31 August	Panel sends draft report to MBIE.
3 September	MBIE sends panel's draft report to Challenge.
14 September	Challenge provides feedback on panel's draft report to MBIE.
End September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - Our Land and Water: Toitū te Whenua, Toiora te Wai

The objective of the Challenge is to enhance primary sector production and productivity while maintaining and improving our land and water quality for future generations.

The host organisation is **AgResearch** and other Challenge members are ESR, GNS Science, Landcare Research, NIWA, Plant and Food Research, Scion, Waikato University, University of Auckland, Massey University, Lincoln University, University of Otago, and Lincoln Agritech.

The Challenge aims to enhance the production and productivity of New Zealand's primary sector, while maintaining and improving the quality of the country's land and water for future generations. The way New Zealand uses and manages its land and water will be transformed by Challenge research on gaining greater value from global markets, innovative resilient land and water use, and building collaborative capacity. These drivers, along with research to connect them, form the themes that focus the Challenge's multi-disciplinary approach that includes research expertise from a wide range of organisations.

The Challenge was launched on **26 January 2016**.

The Government has allocated **\$96.9 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$27.6 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - Our Land and Water: Toitū te Whenua, Toiora te Wai

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress Report, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
4 July	Challenge submits Future Strategy to MBIE.
16 July	Chair of the Challenge science advisory panel submits report to MBIE.
26 July	MBIE sends documentation and briefing material to panel members.
31 July	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
5-7 August	Review panel meets.
5 August	Panel preparatory work
6 August	Panel discussion Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
7 August	Panel discussion and report-writing
6 or 7 August	Chair of the Challenge science advisory panel discusses report with panel in person or by tele- or video-conference.
29 August	Panel sends draft report to MBIE.
31 August	MBIE sends panel's draft report to Challenge.
12 September	Challenge provides feedback on panel's draft report to MBIE.
End September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - Resilience to Nature's Challenges: Kia Manawaroa – Ngā Ākina o Te Ao Tūroa

The objective of the Challenge is to enhance New Zealand's resilience to natural disasters.

The host organisation is **GNS Science** and other Challenge members are NIWA, Scion, University of Auckland, Massey University, Victoria University of Wellington, University of Canterbury, Lincoln University, University of Otago, Opus International Consultants, and the Building Research Association of New Zealand.

The Challenge is enhancing our ability to anticipate, adapt, and thrive in the face of ever-changing natural hazards. Working closely with research users, the Challenge is developing technical resilience solutions and applying them in high-priority geographic and economic settings. This includes developing Māori-specific tools and business strategies to make communal assets more resilient and enhance kaitiakitanga. In rural economies, work is aimed at strengthening value chains and using future scenarios to identify effective interventions. In cities, the Challenge looks to build in resilience in growing populations, housing, and transport systems. For vulnerable coastlines, the Challenge integrates community and governance views to design innovative pathways that balance our desire to live near the sea with resilience to hazards brought about by sea level rise and climate change.

The Challenge was launched on **30 June 2015**.

The Government has allocated **\$59.4 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$19.6 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - Resilience to Nature's Challenges: Kia Manawaroa – Ngā Ākina o Te Ao Tūroa

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress Report, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
11 July	Challenge submits Future Strategy to MBIE
27 July	Chair of the Challenge science advisory panel submits report to MBIE.
2 August	MBIE sends documentation and briefing material to panel members.
7 August	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
12-14 August	Review panel meets.
12 August	Panel preparatory work
13 August	Panel discussion Challenge and host organisation meet panel. Challenge submits Supplementary Information (optional).
14 August	Panel discussion and report-writing
13 or 14 August	Chair of the Challenge science advisory panel discusses report with panel in person or by tele- or video-conference.
4 September	Panel sends draft report to MBIE.
6 September	MBIE sends panel's draft report to Challenge.
14 September	Challenge provides feedback on panel's draft report to MBIE.
End September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - Science for Technological Innovation: Kia kotahi mai – Te Ao Pūtaiao me Te Ao Hangarau

The objective of the Challenge is to enhance the capacity of New Zealand to use physical and engineering sciences for economic growth.

The host organisation is **Callaghan Innovation** and other Challenge members are Auckland University of Technology, Lincoln University, Massey University, University of Auckland, University of Canterbury, University of Otago, Waikato University, Victoria University of Wellington, GNS Science, Scion, AgResearch, and Lincoln Agritech.

The Challenge aims to tackle our big high-tech challenges to grow the economy. The research areas of focus cover materials, manufacturing and design; sensors, robotics and automation; and IT data analytics and modelling. The mission to unlock the science and innovation potential of Māori knowledge, resource and people is integrated into all the Challenge's activity and its way of working. The Challenge has three related components: technical capacity for bold and ambitious research, and human and relational capacity to ensure researchers work with industry and businesses so that science is not left 'stranded in the lab'.

The Challenge was launched on **16 September 2015**.

The Government has allocated **\$106 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$33.3 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline- Science for Technological Innovation: Kia kotahi mai – Te Ao Pūtaiao me Te Ao Hangarau

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress Report, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
20 June	Challenge submits Future Strategy to MBIE
29 June	Chair of the Challenge science advisory panel submits report to MBIE.
9 July	MBIE sends documentation and briefing material to panel members.
12 July	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
18-20 July	Review panel meets.
18 July	Panel preparatory work
19 July	Panel discussion Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
20 July	Panel discussion and report-writing
19 or 20 July	Chair of the Challenge science advisory panel discusses report with panel in person or by tele- or video-conference.
17 August	Panel sends draft report to MBIE.
20 August	MBIE sends panel's draft report to Challenge.
3 September	Challenge provides feedback on panel's draft report to MBIE.
Mid September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Summary - Sustainable Seas: Ko ngā moana whakauka

The objective of the Challenge is to enhance utilisation of our marine resources within environmental and biological constraints.

The host organisation is **NIWA** and other Challenge members are University of Auckland, Waikato University, Victoria University of Wellington, University of Canterbury, University of Otago, GNS Science, and Cawthron Institute.

The Challenge's work is focused on enhancing the utilisation of New Zealand marine resources within environmental and biological constraints. To achieve this, the Challenge involves leading experts, including Māori, in researching ecosystem-based management. This enables researchers to provide decision-makers with up-to-date information about marine ecosystems alongside information about cultural, economic, social and environmental values. The aim is that the New Zealand marine environment is understood, cared for, and used wisely for the benefit of all, now and in the future.

The Challenge was launched on **4 September 2014**.

The Government has allocated **\$71.1 million** for this Challenge over ten years to 30 June 2024.

First period funding is **\$31.3 million** (the first period refers to the time between the launch of the NSC and 30 June 2019).

Timeline - Sustainable Seas: Ko ngā moana whakauka

DATE	ACTION
2018	
31 May	Challenge sends Overview of Progress, 2017/18 Progress Report, and information on unspent funding to MBIE.
June	MBIE assesses the 2017/18 Progress Report. MBIE gives feedback to the Challenge on its 2017/18 Progress Report.
26 June	Challenge submits Future Strategy to MBIE
11 July	Chair of the Challenge science advisory panel submits report to MBIE.
16 July	MBIE sends documentation and briefing material to panel members.
20 July	MBIE passes onto the Challenge any specific questions from the panel or requests for areas to be addressed during Challenge presentation(s) to the panel.
26-28 July	Review panel meets.
26 July	Panel preparatory work
27 July	Panel discussion Challenge and host organisation meet with panel. Challenge submits Supplementary Information (optional).
28 July	Panel discussion and report-writing
27 or 28 July	Chair of the Challenge science advisory panel discusses report with panel in person or by tele- or video-conference.
27 August	Panel sends draft report to MBIE.
29 August	MBIE sends panel's draft report to Challenge.
10 September	Challenge provides feedback on panel's draft report to MBIE.
End September	Panel finalises report.
October	Science Board meets.
November	MBIE sends out letter re Science Board's funding decision.
2019	
January	MBIE and Challenge commence contracting process (subject to Science Board funding decision).
1 July	New contracts and funding (subject to Science Board funding decision) take effect for the period 1 July 2019 – 30 June 2024.

Appendix 2: Excerpt from *New Zealand Gazette* notice

This is an excerpt of the full *Gazette* at <https://gazette.govt.nz/notice/id/2017-go4685>. The schedules for each Challenge are not copied here.

Criteria for Proposals for Second Period National Science Challenges Funding

Pursuant to the Research, Science, and Technology Act 2010

General introduction

In August 2012, the Government agreed to the creation of the National Science Challenges policy. The Challenges are a set of mission-led science investments that will help to address some of the most fundamental issues New Zealand faces for its future development. The process of identifying the Challenges involved significant public engagement and recommendations by an independent National Science Challenge Panel.

Over 2014 and 2015 the Science Board made funding decisions for the 11 National Science Challenges for the first funding period ending 30 June 2019.

The Science Board will make funding decisions on proposals for these 11 National Science Challenges for the second funding period from 1 July 2019 to 30 June 2024.

Definitions

- **Additionality** – research, progress and impact generated by the collaborative, mission-led Challenge approach that would not otherwise have happened.
- **Mission-led science investments** – the funding of research, science, or technology or related activities directed at achieving a specific outcome.
- **Outcome** – the likely or achieved short- and medium-term effects of an intervention’s outputs.
- **Related activities** – includes engagement with communities, schools, businesses and end-users of research to support/ensure technology transfer and uptake of research; capability development directly associated with the research planned; science communication and promotion; and providing for open access and reuse of data.
- **Relevant schedule** – the schedule that outlines the specific Challenge objective, themes and outcomes.
- **Science priorities** – areas of research, science, technology and related activities that the government has identified as key priorities, including the Primary Sector Science Roadmap and Conservation and Environment Science Roadmap.

Notice to the Science Board

1.1 In this notice, I:

- (a) specify that the Science Board is to make funding decisions on proposals for National Science Challenges funding under section 10(3)(b) of the Research, Science, and Technology Act 2010 for the period 1 July 2019 to 30 June 2024; and
- (b) set the criteria for the assessment of proposals for National Science Challenges second period funding for 1 July 2019 to 30 June 2024 under section 8(1) of the Research, Science, and Technology Act 2010.

General policy objective

2.1 The general policy objective of National Science Challenges funding is to fund research, science, or technology, or related activities that have the potential to:

- (a) respond to the most important, national-scale issues and opportunities identified by science stakeholders and the New Zealand public;
- (b) promote collaboration across a number of research providers and involve a broad portfolio of multi-disciplinary research activity;
- (c) enable government to take a more long-term strategic approach to managing and coordinating mission-led science investments;
- (d) complement other science priorities; and
- (e) give effect to the Vision Mātauranga policy.

Vision Mātauranga policy

3.1 The Vision Mātauranga policy aims to unlock the science and innovation potential of Māori knowledge, resources and people for the benefit of New Zealand. It focuses on four themes:

- (a) Indigenous Innovation – contributing to economic growth through distinctive science and innovation;
- (b) Taiao/Environment – achieving environmental sustainability through iwi and hapū relationships with land and sea;
- (c) Hauora/Health – improving health and social well-being; and
- (d) Mātauranga – exploring indigenous knowledge and science and innovation.

Science Board to make decisions on proposals for National Science Challenges funding

4.1 The Science Board will make funding decisions on proposals for National Science Challenges funding for the period 1 July 2019 to 30 June 2024 in accordance with the Research, Science, and Technology Act 2010.

4.2 In making funding decisions on proposals for National Science Challenges funding, the Science Board will allocate funds from the National Science Challenges appropriation in Vote Business, Science and Innovation.

4.3 The Science Board must make funding decisions on proposals for National Science Challenges funding in accordance with:

- (a) the Public Finance Act 1989 and the relevant Appropriation Acts for Vote Business, Science and Innovation;
- (b) the funding amounts and specific criteria as outlined in the relevant schedule of this notice (the “Relevant Schedule”); and
- (c) the following general eligibility criteria and assessment criteria set out in clauses 5.1-6.2.

4.4 In making funding decisions on proposals for National Science Challenges second period funding, the Science Board must consider the Challenge’s future strategy and activities, informed by the Challenge’s performance over the first funding period, and take into account the amount of time the Challenge has operated to date.

General eligibility criteria for National Science Challenges funding proposals

5.1 For a proposal to be assessed against the criteria in clause 6.1 and 6.2, the proposal must:

- (a) be to undertake research, science, or technology, or related activities that are in a Challenge specified in the Relevant Schedule;
- (b) be made under one Challenge as specified in the Relevant Schedule;
- (c) meet any requirements specified in the Relevant Schedule;
- (d) be made by a legal entity (based in New Zealand) representing a comprehensive range of organisations and individuals with a track record in the research area of the Challenge;
- (e) not be made by or include a department of the public service as listed in Schedule 1 of the State Sector Act 1988;
- (f) not be solely for the benefit of the applicant (which includes the organisations and individuals it represents);
- (g) not be for capital expenditure;
- (h) be for research, science, or technology, or related activities, the majority of which are to be undertaken in New Zealand, unless the Science Board considers that there are compelling reasons to consider the proposal, despite the amount of research, science, or technology, or related activities being proposed to be undertaken overseas;

- (i) meet any applicable timing, formatting, system or other similar administrative requirements imposed by the Ministry of Business, Innovation, and Employment in supplying administrative services to the Science Board under section 10(7) of the Research, Science, and Technology Act 2010; and
- (j) advise that the proposed funding recipient will, and the Science Board is of the view that it can, adhere to the terms and conditions of funding set out in an investment contract determined by the Science Board.

Assessment criteria for National Science Challenges funding proposals

6.1 A proposal that has been assessed as eligible for National Science Challenges funding under clause 5.1 must also be assessed having regard to whether:

(a) The proposal is collaborative and responds to the most important, national-scale issues for New Zealand and the Challenge objective

The Science Board must consider to what extent the Challenge’s strategy for research, science, technology and related activities in the second funding period builds on the Challenge’s activities in the first funding period to:

- provide a strategic, integrated and multidisciplinary portfolio of research, science, technology and related activities that meets the Challenge objective and outcomes (having reference to the themes), and the needs of end-users;
- build on and make best use of relevant New Zealand and international research, capabilities and user communities, including accessing funding and support from a range of sources; and
- give effect to the Vision Mātauranga policy in clause 3.1.

6.2 In doing this, the Science Board must have regard to the extent to which the proposal meets the following criteria:

(a) The research, science, and technology will be of excellent quality

The Science Board must consider to what extent the Challenge’s strategy for research, science, technology and related activities in the second funding period will deliver excellence, and builds on the Challenge’s activities in the first funding period to:

- make best use of, and build the skills and expertise of New Zealand researchers to deliver the Challenge objective and outcomes (having reference to the themes), leveraging international researchers and research organisations, and allowing for the dynamic introduction of new capability, research and researchers;
- contribute to science quality, across a portfolio which appropriately balances high risk, high return research and new knowledge generation with incremental research and helping end-users to take up research (horizons balance), and appropriately balances science disciplines; and

- give effect to the Vision Mātauranga policy in clause 3.1.

(b) The proposal is focused on delivering impact

The Science Board must consider to what extent the Challenge’s strategy for research, science, technology and related activities in the second funding period will deliver impact, and builds on the Challenge’s activities in the first funding period to:

- realise a credible pathway to create the impacts necessary to achieve the Challenge’s objectives and outcomes (having reference to the themes);
- deliver benefits and additionality to New Zealand and to New Zealand science; and
- give effect to the Vision Mātauranga policy in clause 3.1

(c) Decision-making and accountability arrangements are sound and enduring

Based on the Challenge’s performance during the first funding period and any proposed changes, the Science Board must confirm that the Challenge’s governance, management, and financial structures, including decision-making and accountability arrangements, are effective, appropriate and give effect to the Vision Mātauranga policy in clause 3.1.

Revocation of Previous Notices

7.1 I hereby revoke the following notices:

- (a) The notice titled “Criteria for Proposals for National Science Challenges Funding” published as a supplement to the *New Zealand Gazette*, 1 October 2013, No 135, page 3071;
- (b) The notice titled “Criteria for Proposals for National Science Challenges Funding” published as a supplement to the *New Zealand Gazette*, 31 January 2014, No 12, page 285; and
- (c) The notice titled “Amendment to Criteria for Proposals for National Science Challenges Funding” published in the *New Zealand Gazette*, 15 January 2015, Issue No 3, Notice No. 2015-go250.

Dated at Wellington this 21st day of August 2017.

HON PAUL GOLDSMITH, Minister of Science and Innovation.

Appendix 3: Documentation contents

References to ‘you’ and ‘your’ in this appendix refer to the Challenge.

The emphasis in the mid-way review will be very much on future strategy. Past performance will serve as a guide only. The information listed under **1. Past Performance** is a suggestion only to supplement information that you already provide to MBIE as part of your regular reporting. Most of your effort should focus on **2. Future Strategy**.

Page limits are a guide only. They should ideally not be exceeded. Bear in mind that the review panel members are likely to find concise documents more compelling reading.

1. Past Performance

In addition to your Progress Report for 2017/18, please provide the following information.

1.1 Overview of progress

The review panel will make a recommendation to the Science Board on future funding informed by the Challenge’s past performance.

The review panel will make as much use as possible of existing material that you have already produced as part of your regular reporting. However, consider what additional information, if any, might be useful to enable the review panel to assess your performance against the NSC Performance Framework.

For example, you may wish to highlight briefly what you have achieved over the period of the Challenge to date. Provide a frank assessment of what you consider has been successful to date in your performance against the Challenge objective, and what significant issues remain (you should cover these issues in your Future Strategy). Outline how the Challenge has progressed to date against its original plan and the criteria in the original *Gazette* notice establishing each Challenge.

Questions you may wish to consider to help the review panel understand your past performance include the following.

- What progress have you made against the Challenge objective?
- How has the Challenge strategy developed over the period to date?
- What have you achieved that you are particularly proud of?
- What difficulties did you face in developing and implementing the Challenge to date?
- What steps have you taken to overcome those difficulties?
- What strategic trade-offs have you needed to make?
- What steps have you taken to build a collaborative approach to Challenge research that responds to the most important, national-scale issues for New Zealand and the Challenge objective?
- What successful relationships have you developed with stakeholders and end users, including Māori?

- What steps have you taken to create research, science and technology of excellent quality?
- What steps have you taken to ensure that the Challenge is delivering impact?
- What changes have you made to decision-making and accountability arrangements, and why?

Page limit: 3 pages.

1.2 Financial information

Identify projected uncommitted funding and outline why the funding will not be spent. Uncommitted funding is defined as any funding that will not be contracted at 30 June 2019.

Page limit: 1 page

2. Future Strategy

2.1 Long-term view

Outline your long-term view of what the area in which the Challenge operates will look like over the long term if the next five years of the Challenge are successful.

Page limit: 1 page

2.2 Five-year strategy

Outline the Challenge's future strategy for the next five years (1 July 2019 to 30 June 2024).

Information should be at a high level. Detailed information on projects and implementation plans is not required. For example, discussion on research should refer to priorities, with no need to detail specific research projects.

If you are proposing a significant change from what is set out currently in your Research and Business Plans, please explain why you are proposing this change and how it will help the Challenge meet its objective. You do not need to justify any matters you addressed in the Research and Business Plans already approved by the Science Board. For instance, if the Plans outline how you consider your research themes help the Challenge to meet its objective, you do not need to repeat this justification.

If you wish to add or remove a theme(s) to enable you to meet the Challenge objective, please explain why. Note that Challenge objectives cannot be changed.

The five-year strategy will be assessed against the criteria in the *Gazette* notice (refer Appendix 2).

1. ***Your five-year strategy will need to address the overarching criterion: How will the Challenge be collaborative and respond to the most important, national-scale issues for New Zealand and the Challenge objective?***

Consider the following questions.

- What is the Challenge’s five-year strategy for research, science, technology and related activities in the second funding period?
- To what extent does the strategy build on the Challenge’s activities in the first funding period?
- How did you develop this strategy? Who did you work with? How?
- How does the strategy provide a strategic, integrated and multidisciplinary portfolio of research, science, technology and related activities?
- How does this portfolio meet the Challenge objective and outcomes (having reference to the themes)? How will the strategy help New Zealand achieve a step change in relation to the Challenge objective?
- Does the Challenge propose new themes in addition to those existing or a reduction or change in current themes?
- How does this portfolio meet the needs of end users? Does the portfolio provide appropriate focus or balance? How does the portfolio align with relevant sector strategies, plans, and related research?
- How does the strategy build on and make best use of relevant New Zealand and international research, capabilities and user communities, including accessing funding and support from a range of sources?
- How does the strategy give effect to the Vision Mātauranga policy?

Suggested page limit: approximately 10-20 pages

2. Your five-year strategy will need to address subcriterion (a): how will the Challenge ensure the research, science, and technology will be excellent quality:

Consider the following questions.

- How does the five-year strategy make best use of and build the skills and expertise of New Zealand researchers to deliver the Challenge objective and outcomes (having reference to the themes), leveraging international researchers and research organisations, and allowing for the dynamic introduction of new capability, research and researchers?
- How does the strategy contribute to science quality, across a portfolio that appropriately balances high-risk/high-return research and new knowledge generation with incremental research and helping end users to take up research (horizons balance), and appropriately balances science disciplines?

Suggested page limit: 3-5 pages.

3. Your five-year strategy will need to address subcriterion (b): how will the Challenge focus on delivering impact.

Consider the following questions.

- How does the strategy realise a credible pathway to create the impacts necessary to achieve the Challenge’s objectives and outcomes (having reference to the themes)?
- How does the strategy deliver benefits and additionality to New Zealand and to New Zealand science?

Suggested page limit: 3-5 pages.

4. *Your five-year strategy will need to address subcriterion (c): how will the Challenge ensure decision-making and accountability arrangements are sound and enduring*

Consider the following questions.

- What changes (if any) do you propose to the Challenge’s governance, management, and financial structures, including decision-making and accountability arrangements, and what is the rationale for these changes?
- How will you ensure that the resulting decision-making and accountability arrangements are effective, appropriate and give effect to the Vision Mātauranga policy?

Use 1-2 pages to address this criterion. If you are proposing significant changes from the current decision-making and accountability arrangements, you may need to write more.

Also include a 1-page diagram of the Challenge’s governance, management, and operational structure for the period from 1 July 2019 to 30 June 2024, and highlight any aspects of the structure where you are proposing a change from existing arrangements.

5. *Include a 1-page 5-year indicative budget for your overall strategy.*

2.3 Scenario planning

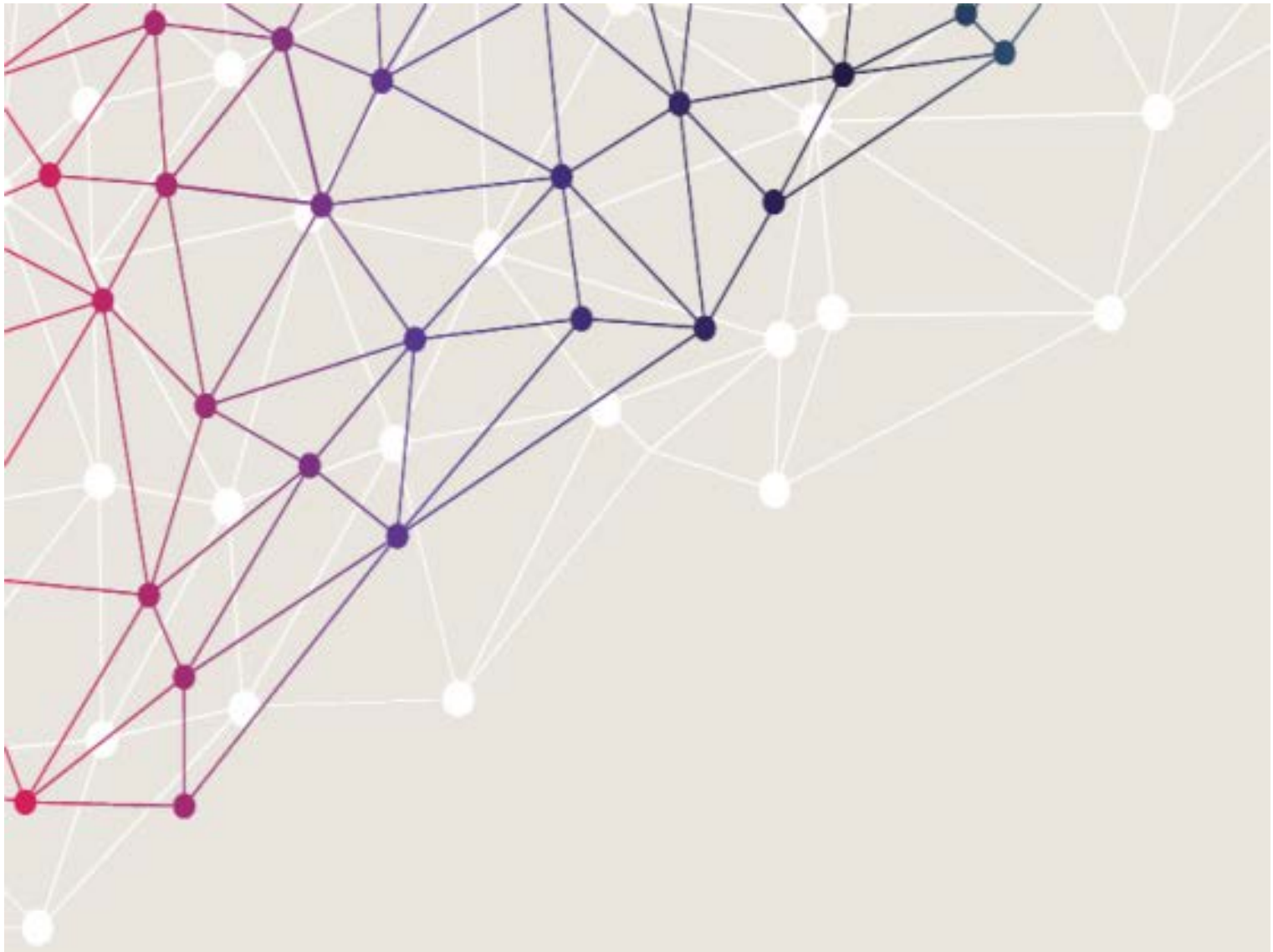
Briefly describe in broad terms what other impacts and science achievements the Challenge may be able to achieve if more funding were available. Focus on research priorities. A list of specific research projects that might benefit from extra funding is not required.

Page limit: 1 page

3. Supplementary Information (optional)

Provide any evidence of Challenge performance that you consider may be useful and not sufficiently covered in other material provided. Examples might include key publications, copies of papers, governance group meeting minutes, publications that have appeared since annual reporting etc. MBIE will use your progress reports to provide to review panel members and the Science Board a list of all publications, commissioned reports or presentations (paid), hui, patents, and published datasets funded through the Challenge. Therefore, this information does not need to be included.

This information is optional and should be kept brief. It does not need to be provided with your Future Strategy document. Any supplementary information that you provide will not be sent to panel members for advance reading but will be given to them for reference purposes on the day of the panel meeting.



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