

# The impact and potential role of Curious Minds Taranaki

June 2020



**venture**  
TARANAKI  
Te Puna Umanga



# Stakeholder – acknowledgement and disclaimer

This report was prepared following extensive consultation with key stakeholders. Their contribution was appreciated and provided vital insights.

The stakeholders are not responsible for any errors or omissions in this report.

The stakeholders spoken to when preparing this report were:

- Craig Billington – ESR
- Alex Thompson – NIWA
- Marc Lubbers – Plant & Food Research
- Christine Harper – Manaaki Whenua – Landcare Research
- Kirby-Jane Hallum – GNS Science
- Helen Gerrard – Taranaki Regional Council/Assessment Panel Member
- Andrew Brock – Bishop's Action Foundation/Assessment Panel Member
- Penny Dixon – Inglewood High School/Assessment Panel Member
- Marlene Benson – Te Rūnanga o Ngāti Mutunga
- Sera Gibson – Te Kotahitanga o Te Atiawa/Taranaki Mouna Project
- Danny Broughton – Te Kaahui o Rauru
- Karen Schumacher – Experience Pūrangi
- Karen Pratt – Project Reef Life
- Myles Webb – Auroa School
- Heather Dallas – Ngamatapouri School
- Keri Wanoa – Whiri Design (and also works at TSB Community Trust)
- Ben Plummer – Drone Technologies
- Eve Kawana-Brown – Massey University/Venture Taranaki
- Michelle Jordan – Venture Taranaki. Previously an Assessment Panel Member and the manager with responsibility for Curious Minds Taranaki

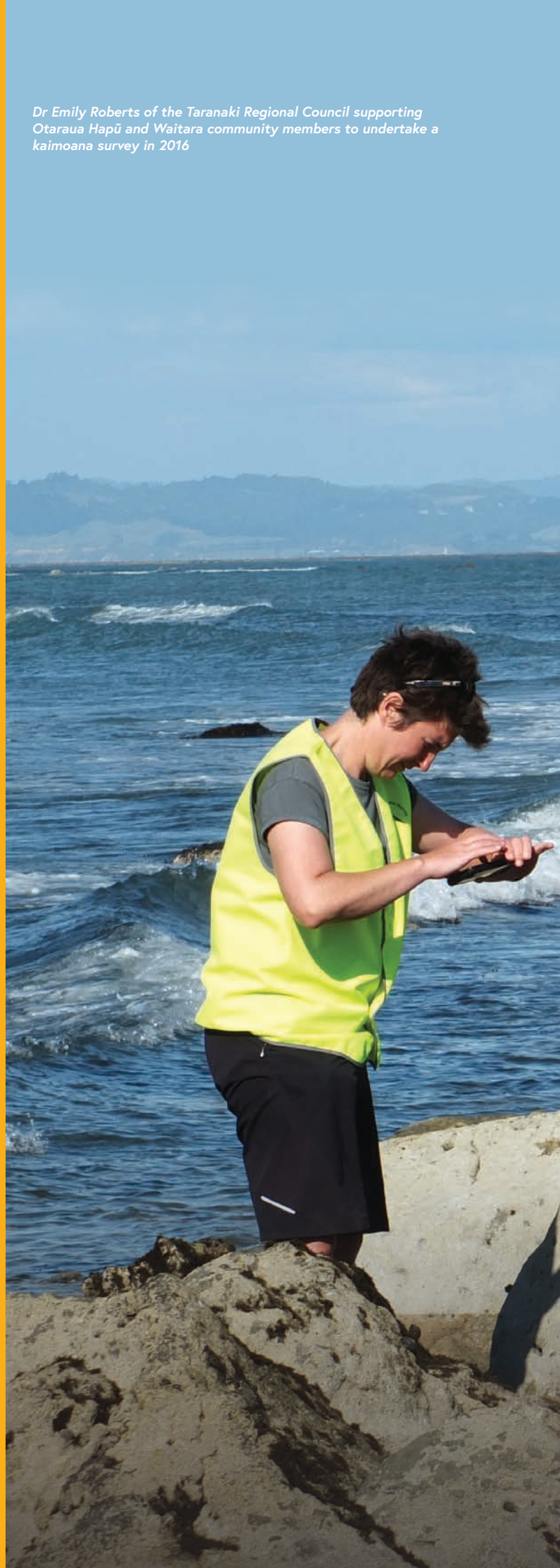
Insights were also provided by Curious Minds Taranaki Coordinator Josh Richardson and Anne Probert who has management responsibility for Curious Minds Taranaki.

## PHOTOS AND IMAGES

The photos and images in this report are used with the permission of the Venture Taranaki Trust.

*Cover Photo: Mimi School students undertaking a geological assessment of local mudstone as part of the Papa Pokepoke project in 2020*

*Dr Emily Roberts of the Taranaki Regional Council supporting Otaraua Hapū and Waitara community members to undertake a kaimoana survey in 2016*





# The impact and potential role of Curious Minds Taranaki

A report prepared for Venture Taranaki Trust by John Haylock,  
Absolute Certainty Limited

June 2020



**CURIOUS  
MINDS**   
HE HIHIRI | TE MAHARA

**venture**  
TARANAKI  
Te Puna Umanga





Oakura School students search for Koko the kiwi on Maunga Taranaki with the Taranaki Kiwi Trust in 2020

# Executive Summary

**In 2015 Venture Taranaki was contracted by MBIE to run a pilot of the Participatory Science Platform ("PSP"). This programme was designed to bridge the gap between community groups, schools, iwi, businesses and science providers, and to encourage young people to become more involved with science.**

The Taranaki PSP programme was branded as "Curious Minds Taranaki"<sup>1</sup> and has been delivered in partnership with the Taranaki Regional Council. The pilot phase finished at the end of 2017 with the programme continuing in Taranaki. Venture Taranaki is currently contracted to deliver the PSP in Taranaki until December 2021.

Fifty community-based science projects have now been funded via Curious Minds Taranaki. There has been significant support for projects with an environmental science lens (30 of 50 projects) but less for two key areas of the Taranaki economy – Food and Fibre (13/50) and, in particular, Energy (3/50).

Māori engagement with Curious Minds Taranaki projects has been significant with several projects being managed by iwi, hapū or other Māori-led organisations and many other projects involving Māori as key stakeholders. Mātauranga Māori has been a key part of several projects. The participants in several projects have increased their engagement with their local Māori community.

Engagement with local educational groups has also been significant with half of Taranaki's schools having had involvement with at least one project. More than 1,700 young people have participated in Curious Minds Taranaki projects.

Massey University has been involved in several projects but there has been relatively little involvement by other universities and by the Crown Research Institutes. Ideally, wider engagement with universities and Crown Research Institutes would have occurred.

It is often suggested that the best community science projects are driven by the community, and not by research providers. This helps ensure the project is addressing a real community need and the community involved is developing a better understanding and appreciation of science. In contrast, when projects are developed and led by research providers there are risks the outcomes the research providers are seeking become more important than community outcomes and the community involved are viewed and used as data collectors only with less understanding and engagement with science skills and methodologies. Community driven science projects also provide opportunity for identifying problems and exploring issues in ways that may not have been readily apparent to a traditional science provider.

It appears that the majority of Curious Minds Taranaki projects have been initiated by community groups. While

<sup>1</sup> There is potential for confusion with three different uses of the phrase "curious minds". In this document the strategic plan is referred to as "A Nation of Curious Minds", the national contestable fund is called "Unlocking Curious Minds" and the Taranaki PSP programme is referred to as "Curious Minds Taranaki".

some researcher-driven projects have been funded, care has been taken to ensure appropriate community involvement. It is suggested that Curious Minds Taranaki projects should largely remain community-driven.

Many funded Curious Minds Taranaki projects were developed by parties with an existing relationship with research providers. Some have involved the development of new relationships. While it is good to strengthen existing relationships, it is also healthy for community groups in the region to develop new relationships.

MBIE's document "A Nation of Curious Minds" had a key objective to: *"Encourage and enable better engagement with science and technology in all sectors of New Zealand"*. The projects supported by Curious Minds Taranaki have involved just over 3,000 participants from a diverse range of organisations and 97 science experts. While there was no measure of participatory science activity in Taranaki prior to the launch of Curious Minds Taranaki, it appears highly likely that the programme has helped participating community groups implement better engagement with science and technology providers.

Venture Taranaki has delivered the Curious Minds Taranaki programme in line with the deliverables specified in its contract with MBIE:

- It has identified and worked with community groups with an interest in participatory science projects and engaged with them to develop and progress locally relevant projects that are pedagogically and scientifically robust
- It has publicised Curious Minds Taranaki in Taranaki and also supported MBIE's national promotional efforts
- It has maintained a register of Curious Minds Taranaki projects
- It has explored and implemented connections between projects

While Venture Taranaki has delivered Curious Minds Taranaki in line with expectations, a number of areas where delivery could be enhanced are suggested:

## 1 ENCOURAGE MORE ENERGY AND FOOD AND FIBRE RELATED APPLICATIONS

- There have been relatively few projects that are relevant to two of the key innovation intensive areas of Tapuae Roa and Taranaki 2050 – Energy, and Food and Fibre. It is suggested that encouragement be given to projects in these areas. This could be a target of 1-2 projects per year encouraged by messaging that indicates that projects in these two areas will be "favourably received".
- Leveraging opportunities with Ara Ake to support community-led energy sector ideas.
- Working with the food and fibre sector to support community groups looking to undertake research

in this space. Leveraging the relationships and momentum generated through the Branching Out programme and other similar initiatives could be an effective way of achieving this.

## 2 PROVIDE FURTHER SUPPORT FOR THE APPLICATION AND ASSESSMENT PROCESS

- Some applicants have struggled with the science knowledge expected when completing applications.
- A model application or applications should be developed and made available to new applicants. This would help parties inexperienced with science funding applications to understand what is expected of them. Ideally the model application should incorporate Mātauranga Māori.
- Online resources should also be developed that take applicants through key steps in developing a science application.
- A mentoring programme for new applicants should be developed. This role is already partly fulfilled by the Taranaki Regional Council. The TRC's role could be extended or mentoring provided by other parties (including past successful applicants).
- Ideally there should be a Māori scientist on the Assessment Panel.

## 3 STRONGER LINKAGES BETWEEN PROJECTS AND KEY PEOPLE COULD BE ENCOURAGED

- The networking benefits of Curious Minds Taranaki should be enhanced.
- Venture Taranaki could develop a webinar series for projects to report back on their progress and outcomes.
- Venture Taranaki should consider holding several networking events each year – perhaps at locations relevant to a project.
- Venture Taranaki should encourage past project managers to become involved in mentoring the managers of new projects.

## 4 ENCOURAGE STRONGER RESEARCH PROVIDER PRESENCE AND ENGAGEMENT IN TARANAKI

- There are increasing opportunities in Taranaki for engagement by universities, Crown Research Institutes and other research providers. This will ideally involve in-person contact but can also take advantage of wider community acceptance of online meetings following the Covid-19 lockdown.
- Explore opportunities arising from the Branching Out project and other food and fibre related initiatives in Taranaki.
- Explore opportunities arising from the operation of Ara Ake.



- Explore opportunities arising from the presence of key CRI/University staff in Taranaki e.g. Alex Thompson (NIWA).
- Develop relationships with the stakeholder, engagement and/or business managers at the Crown Research Institutes and universities.

## 5 ENCOURAGE BETTER MANAGEMENT OF INTELLECTUAL PROPERTY

- There are some Curious Minds Taranaki projects that have developed or have potential to develop valuable intellectual property.
- Venture Taranaki Enterprise Advisors should support these projects with initial advice on intellectual property and commercialisation and support for any subsequent commercial development.

## 6 SURVEY PARTICIPANTS AND SURVEY THEM SOME MORE

- Many of the impacts of Curious Minds Taranaki projects are long term – e.g. whether students study science at tertiary level
- Venture Taranaki should carry out annual surveys of all Curious Minds Taranaki projects – both current and past. This would help assess the long-term impact of Curious Minds Taranaki including interface with the broader ecosystem and strategic development of the region.



*John Coplestone of Industrial Chemistry Services helping Stratford Primary School students with their investigation into composting methodologies in 2016*



*Taipuni Ruakere and his son measuring pāua at Ahu Ahu Reef as part of the Seachange Surveys project in 2020*

# Introduction

**The participatory science platform ("PSP") was developed and funded by MBIE "to encourage and enable better engagement in science and technology in all sectors of New Zealand".**

The Taranaki component of the PSP is branded as Curious Minds Taranaki. Since 2015 it has been managed by Venture Taranaki Trust (VT) in partnership with the Taranaki Regional Council.

Funding rounds for Curious Minds Taranaki occur once or twice a year. Applications for community-based science projects are made by community, iwi or educational groups or a research provider. While one party is the lead project manager, all projects involve collaboration amongst one or more other partners.

VT employs a Project Coordinator to manage Curious Minds Taranaki. The Project Coordinator is assisted by an Assessment Panel that reviews and provides advice on which projects to fund.

The Coordinator's role includes:

- Promoting Curious Minds Taranaki to encourage good applications
- Supporting applicants as they prepare their proposals
- Advising the Assessment Panel on applications
- Communicating outcomes of the assessment process to applicants

- Contracting successful applicants
- Supporting projects as they are implemented
- Collecting project reports on completion
- Publicising outcomes from the projects
- Reporting to MBIE on the performance of Curious Minds Taranaki

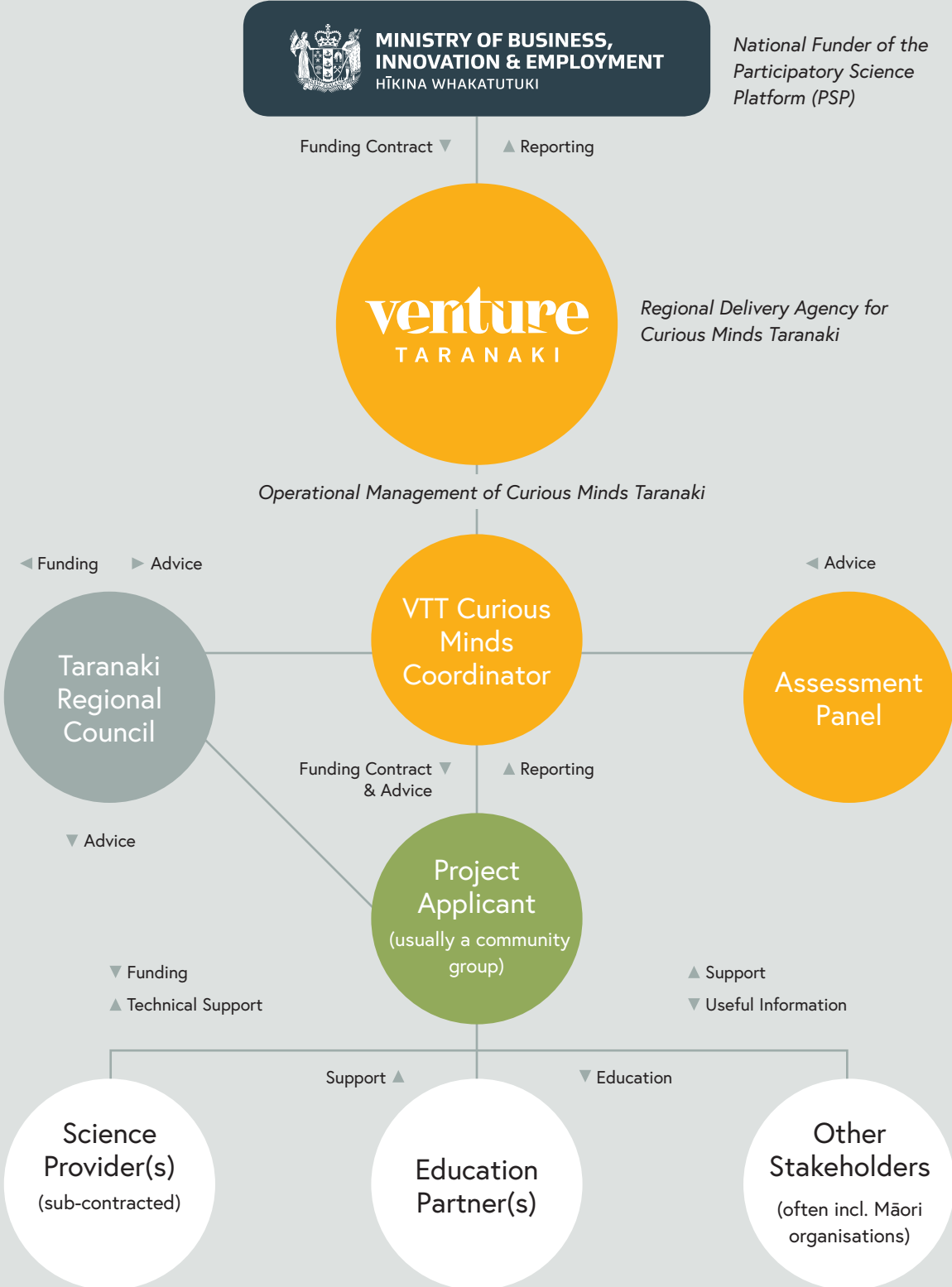
Fifty participatory science projects have now been supported by Curious Minds Taranaki with total funds allocated of \$814,793.

VT has requested a strategic review of Curious Minds Taranaki. This process involved engagement with 20 stakeholders including project managers (from community groups, iwi and schools), research providers, technology support partners, assessment panel members, the Taranaki Regional Council and the VT team.

This three-part report summarises the outcomes of the strategic review:

- Part A - Explores whether Curious Minds Taranaki has operated in the way that was intended
- Part B - Evaluates and discusses the impact of Curious Minds Taranaki
- Part C - Provides suggestions for how the future operation of Curious Minds Taranaki could be enhanced

# The Operational Structure of Curious Minds Taranaki





# Part A: The Participatory Science Platform

## A Nation of Curious Minds – He Whenua Hihiri I Te Mahara

The genesis of Curious Minds Taranaki was in New Zealand's strategic plan for science in society "A Nation of Curious Minds, He Whenua Hihiri I Te Mahara" which was published by the Ministry and Business Innovation & Employment (MBIE) and launched in July 2014.

"A Nation of Curious Minds" was one of several reports which recognised that science education in New Zealand needed to change and develop so that more New Zealanders would be able to contribute to the country's increasingly knowledge and innovation-oriented economy. For example, the then Prime Minister's Chief Science Adviser Sir Peter Gluckman prepared "Looking ahead: Science education in the 21st century" in 2011 and the Royal Society released "Future Science Education" in 2012.

The Royal Society Report noted:

*"Schooling needs to equip people to **do things with knowledge**, to use knowledge in inventive ways, in new contexts and combinations. Rather than providing access to a fixed stock of knowledge, the task now is to equip people to enter and navigate the constantly shifting networks and flows of knowledge that are a feature of 21st century life. An individual's stock of knowledge is important as a foundation for their personal cognitive development: however, for it to be useful as a foundation for their participation in social and economic life, the individual must be able to connect and collaborate with other individuals holding complementary knowledge and ideas."*

These reports were encouraging greater development of science as an economic and social enabler – an enabler that requires connection and collaboration between people and organisations.

"A Nation of Curious Minds" developed these themes further and suggested (p5) that:

*"All New Zealanders should feel encouraged and equipped to deal with the challenges and opportunities presented by science and technology, and be capable of participating in the debates involving science. We also need an environment that helps New Zealanders to use our natural curiosity to interrogate, decide on and make the most of our new developments and technologies."*

The benefits of New Zealanders having widespread community understanding of and support for science has been particularly evident in 2020 during the ongoing Covid-19 pandemic. New Zealanders have, in general, respected and supported the scientific approach taken by the Ministry of Health and the New Zealand Government. This respect and support for science has been a key component of the country's relative success.

The economic challenges created by Covid-19 will be a further test of the ability of New Zealand people and businesses to innovate with new ideas or new ways of operating.

The action plan outlined in "A Nation of Curious Minds" had a key objective to:

*"Encourage and enable better engagement with science and technology in all sectors of New Zealand".*

The action plan from "A Nation of Curious Minds" (shown below in summary) includes three action areas and an integrating action – **the participatory science platform** (or "PSP"). The platform is described (p8) as:

*"integrating all three Action Areas through a platform to engage students, communities and scientists in participatory science".*

# A Nation of Curious Minds

## OBJECTIVE

ENCOURAGE AND ENABLE BETTER ENGAGEMENT WITH SCIENCE AND TECHNOLOGY IN ALL SECTORS OF NEW ZEALAND

## NEW ACTIONS

ENHANCING THE ROLE OF EDUCATION	PUBLIC ENGAGING WITH SCIENCE AND TECHNOLOGY	SCIENCE SECTOR ENGAGING WITH THE PUBLIC	SUPPORTING ACTIONS
<ul style="list-style-type: none"> <li>• Science Skills in Education initiative</li> <li>• Teachers in Industry project</li> <li>• Review positioning and content of digital technology within the New Zealand Curriculum/Te Marautanga o Aotearoa</li> <li>• Increase the science and technology content in initial teacher education</li> </ul>	<ul style="list-style-type: none"> <li>• New contestable fund for science and technology outreach and initiatives for harder-to-reach audiences</li> <li>• Better connect business/educators/learners/local government with the science sector</li> <li>• Increase girls' participation in science/ICT study and careers</li> <li>• Better connect museums/zoos/science centres with the science community</li> <li>• Parents and whānau to be more engaged with science</li> </ul>	<ul style="list-style-type: none"> <li>• Implement a participatory science platform</li> <li>• The Royal Society of New Zealand to develop a code of practice for public engagement for scientists</li> <li>• Public engagement in implementing the National Science Challenges</li> <li>• Access to public engagement training for researchers</li> <li>• Increase the profile of researchers in pūtaiao/mātauranga Māori</li> </ul>	

## PARTICIPATORY SCIENCE PLATFORM

The Participatory Science Platform is one key initiative from "A Nation of Curious Minds" that has been funded and delivered. A second key initiative that has been funded and implemented from "A Nation of Curious Minds" was the development of a contestable fund to support projects that excite and engage New Zealanders who have fewer opportunities to experience and connect with science and technology. This contestable fund is branded as "Unlocking Curious Minds" and is available nationwide<sup>2</sup>.

The concept for a Participatory Science Platform was discussed in more detail on pages 31-32 of "A Nation of Curious Minds":

*"The participatory science platform builds on traditional concepts in citizen science and enhances these through collaborative approaches more common to community-based participatory research. Participatory science is a method of undertaking scientific research where volunteers can be meaningfully involved in research*

*in collaboration with science professionals (including postgraduate students or researchers and private sector scientists) and builds on international models of engagement.*

*The goal is to involve schools/kura and/or community-based organisations such as museums and associations in projects with broad appeal, that have both scientific value and pedagogical rigour, and that resonate with the community.*

*The participatory science platform has the potential to:*

- offer inspiring and relevant learning opportunities for students and teachers
- engage learners and participants beyond the school/kura community to reach parents, whānau and wider communities
- offer researchers opportunities to become involved in locally relevant lines of enquiry, where data can be enriched by the local knowledge and contribution of citizens.

<sup>2</sup> <https://www.curiousminds.nz/funding/unlocking-curious-minds/>



The participatory science platform is built on four core components and incorporates mātauranga Māori:

- 1 A process that seeks ideas for participatory science projects both from the community (including early childhood education services and kōhanga reo, schools/kura, museums and other organisations, iwi authorities or community associations) and from science professionals (from post-graduate students to principal investigators in both the public and private sectors)
- 2 A managed process for evaluating these ideas for both pedagogical potential (in the case of schools/kura) and scientific quality, and for ensuring their practicality and relevance to the participating partners (science sector and community-based)
- 3 A web-based match-making process between interested community-based partners and science professionals
- 4 A resource for teachers and other community or learning leaders to assist in developing their projects to robust standards.

The monitoring and evaluation activities that were suggested to reveal the impacts of "A Nation of Curious Minds" were based around the plan's three core outcomes (see below). This commentary provides us with information that can be used to assess whether Curious Minds Taranaki, as a participatory science platform initiative, is helping to achieve the outcomes that were intended for the programme.

Many of the action areas and their resulting outcomes have been and remain the responsibility of other parties involved in New Zealand's science and education system. Curious Minds Taranaki may have some impact on these other areas but they are not the programme's core focus.

The three core outcomes suggested for the implementation of the overall plan from "A Nation of Curious Minds" (p36-37) are listed below. The components of the outcomes that are suggested by the author of this report to be most relevant to Curious Minds Taranaki are highlighted in red:

### **"Outcome 1: More science and technology competent learners and more choosing STEM-related career pathways**

We will know we're making progress on this when:

- we achieve greater student demand for STEM courses and qualifications at all levels of the qualifications framework (1–10)
- we have developed greater teacher confidence in teaching for science, technology and mathematics (STM) outcomes
- teachers have improved access to the resources they need to teach STM subjects and links between the STM curriculum and career pathways are clarified.

### **Outcome 2: A more scientifically and technologically engaged public and a more publicly engaged science sector**

We will know we're making progress on this when:

- a greater proportion of New Zealanders across all sectors of society are engaged with, and value, science and technology
- there is more in-depth media reporting on science and technology based on robust scientific evidence
- there are increased opportunities for the public to learn about, and be involved in, scientific research and uptake continues to grow across all tiers of society
- there are more opportunities for the public and the science sector to engage in discussion about societal use and limits of new technology and applications for existing technology.

### **Outcome 3: A more skilled workforce and more responsive science and technology**

In the longer term, we expect that progress towards outcomes 1 and 2 will contribute to New Zealand's economic growth and improved social and environmental outcomes through:

- a greater number of New Zealanders with the skills needed to support creativity, innovation and knowledge uptake and use
- publicly funded science and technology are more responsive to the needs of New Zealanders."

The key impacts intended for the participatory science platform (and therefore Curious Minds Taranaki) that are suggested by the areas highlighted in red can be summarised as:

- Increased interest in science and technology by school students
- Stronger engagement by the wider community in science and technology
- Greater involvement in science and technology projects by the community
- A more responsive science and technology community
- A greater contribution to economic growth by the science and technology community

These five impacts provide the foundation for the evaluation of Curious Minds Taranaki carried out in preparing this report (See Section B). These impacts have been assessed in conjunction with an assessment of the specific requirements in the PSP contracts between MBIE and VT.

# Curious Minds Taranaki – the local PSP programme

In 2015 MBIE launched a pilot of the Participatory Science Platform in three diverse areas – Taranaki, South Auckland and Otago. VT and the Taranaki Regional Council jointly applied to deliver the PSP in the Taranaki region. The bid was successful and VT was contracted to be the key delivery agent for the PSP in Taranaki. The Taranaki Regional Council was a core supporting partner and remains in this role.

The local PSP initiative was launched in 2015 and branded as "Curious Minds Taranaki". In the past four and a half years, 50 Taranaki-based community science projects have been supported through the programme. These projects have involved collaboration between a wide range of community groups, educational organisations, iwi and research providers. The projects have been delivered across the Taranaki region (see Appendix 1).

The PSP pilot was also run in Otago and South Auckland. In Otago the delivery agency was Otago Museum and the programme was branded as "Otago Science into Action". In South Auckland the delivery agency was Comet Auckland, an education trust, and the programme was branded as "SouthSci".

Three quite different delivery agencies were chosen in the three pilot regions, according to MBIE staff at the time, to test what impact the type of agency may have on outcomes<sup>3</sup>. Differences can be expected. For example, of the three agencies VT could be expected to have a more overt focus on economic development as an outcome. In contrast Comet could be expected to focus more strongly on social outcomes and Otago Museum more on educational and research outcomes.

In 2018 the pilot phase of PSP finished and delivery of the programme continued, but only in the three original pilot areas - Taranaki, Otago and South Auckland.

Funding in Taranaki is committed and contracted to VT for delivery until 31 December 2021.

# MBIE – Venture Taranaki PSP contracts

Since 2015 VT has had several contracts with MBIE to deliver the PSP in Taranaki for specified periods of time. The original contract noted:

*"The objectives of the Platform are to:*

- *Engage students, schools, kura and/or community based organisations with science professionals (participatory science project participants) in collaborative participatory science projects that have both scientific value and pedagogical rigour and that resonate with the community;*
- *Offer researchers opportunities to become involved in locally relevant lines of enquiry, where high quality and locally relevant scientific outputs can be created through harnessing the local knowledge and contributions of citizens."*

These objectives have remained consistent through subsequent contracts for delivery of the PSP in Taranaki.

The specific tasks that VT as the recipient of funding is required to complete have changed very slightly from the original contract to the current version.

The current contract notes that VT shall use the funding to:

- a) *"Identify and work with participants in participatory science projects to engage them in processes to develop and progress research ideas which are pedagogically and scientifically robust and locally relevant.*
- b) *Publicise the Platform pilot in the relevant region in accordance with communications guidelines provided by the Ministry including actively facilitating and contributing to the Curious Minds website and social media channels.*
- c) *Maintain a register of participatory science projects and participants in the relevant region that is suitable for publication on the Curious Minds website and meets the quality standard set by the Ministry.*
- d) *In conjunction with the Ministry explore connections between the participatory science projects and other Curious Minds initiatives and where possible, implement activities to maximise the value of both."*

---

<sup>3</sup> Rather ironically, if this was a test it was an unscientific trial as the three regions are quite different – including for example their resources for delivering participatory science e.g. Otago has a major university and other research facilities, Taranaki doesn't. It would be very difficult to make any meaningful conclusions about differences in regional delivery based on the organisation type due to the strong influence of other regional differences.





Taranaki Kiwi Trust, and Drone Technologies NZ trialling their kiwi monitoring system with Oakura School students

The current contract also notes that VT shall allocate the funding to projects. Amounts funded must not exceed \$20,000 (GST exclusive per project). In allocating the funding VT will:

- a) "Allocate the funding on the basis of criteria, documentation and directions provided by the Ministry, using processes that are fair, consistent and transparent to potential and actual funded parties;
- b) Elect and enter into Project Funding Contracts with successful participants ensuring that such contracts provide for the Recipient's obligations under this Agreement;
- c) Manage and monitor each Project Funding Contract to ensure that the funded party fulfils its obligations under that contract;
- d) Ensure that payments are conditional on the Recipient receiving funding for the payment due under this agreement."

The requirements of these contracts provide a clear summary of what VT was expected to do in delivering the PSP in Taranaki. Section B of this report contains some commentary on how VT has performed against these requirements.

## Regional Development in Taranaki

During the period in which Curious Minds Taranaki has operated, the region has carried out two significant regional economic development exercises. During 2017 and 2018 the Tapuae Roa Strategy and Action Plan was developed. Then, following the Government's withdrawal of new block offer permits for oil and gas exploration in 2018 and wider local and global focus on lowering emissions, the Taranaki 2050 Roadmap was developed. The Taranaki 2050 Roadmap is focused on an intergenerational transition of the Taranaki region to a low-emissions future.

The core structure of Tapuae Roa is summarised in the diagram below. It is focused around actions to deliver four futures and four foundations. It would be strategically advantageous to the Taranaki community for science, research and technology projects to be carried out that support the four foundations and the four futures.

# THE MISSION

*“Where talent becomes enterprise”  
‘Kia eke panuku’*

*Making people the centre of development*

VISION  
GOALS  
VALUES

## ATTRACTIVE LIFESTYLE



*The Taranaki lifestyle offering retains and attracts people*

**Whanaungatanga: Relationships**  
*The people of Taranaki are at the heart of the strategy*

## TALENTED PEOPLE



*Taranaki is a place where talented people want to live and work*

**Kaitiakitanga: Guardianship**  
*Sustainability of our natural environment is paramount*

## MODERN, HIGH-VALUE ECONOMY



*Taranaki has the highest proportion of technology-enabled and digitally-focussed enterprises in regional NZ*

**Tuakana teina: Succession**  
*Thinking long term, preparing for the next generation*

STRATEGY

## FUTURES

ENERGY FUTURES

MĀORI ECONOMY FUTURES

FOOD FUTURES

VISITOR SECTOR FUTURES

## FOUNDATIONS

TALENT, ENTERPRISE & INNOVATION

ACCESS AND CONNECTIVITY

VIBRANCY AND LIVEABILITY

INVESTMENT

ACTION PLAN

## LEADERSHIP AND OVERSIGHT

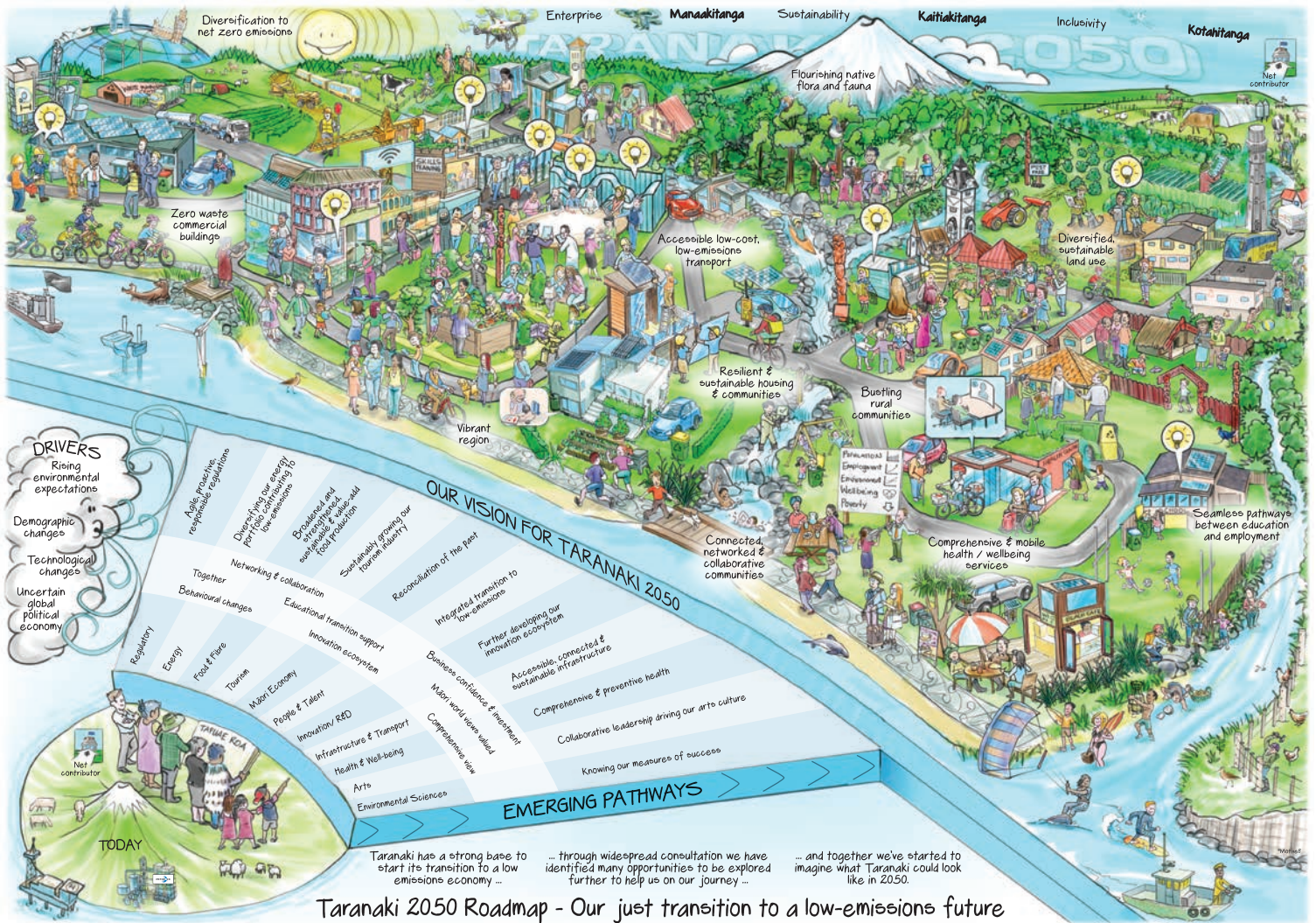
MAYORAL FORUM / IWI / VENTURE TARANAKI / COUNCILS

FUNDING AND DELIVERY

Local councils, regional council, central government, iwi, business, private investors, trusts and philanthropic organisations and individuals

DELIVERY

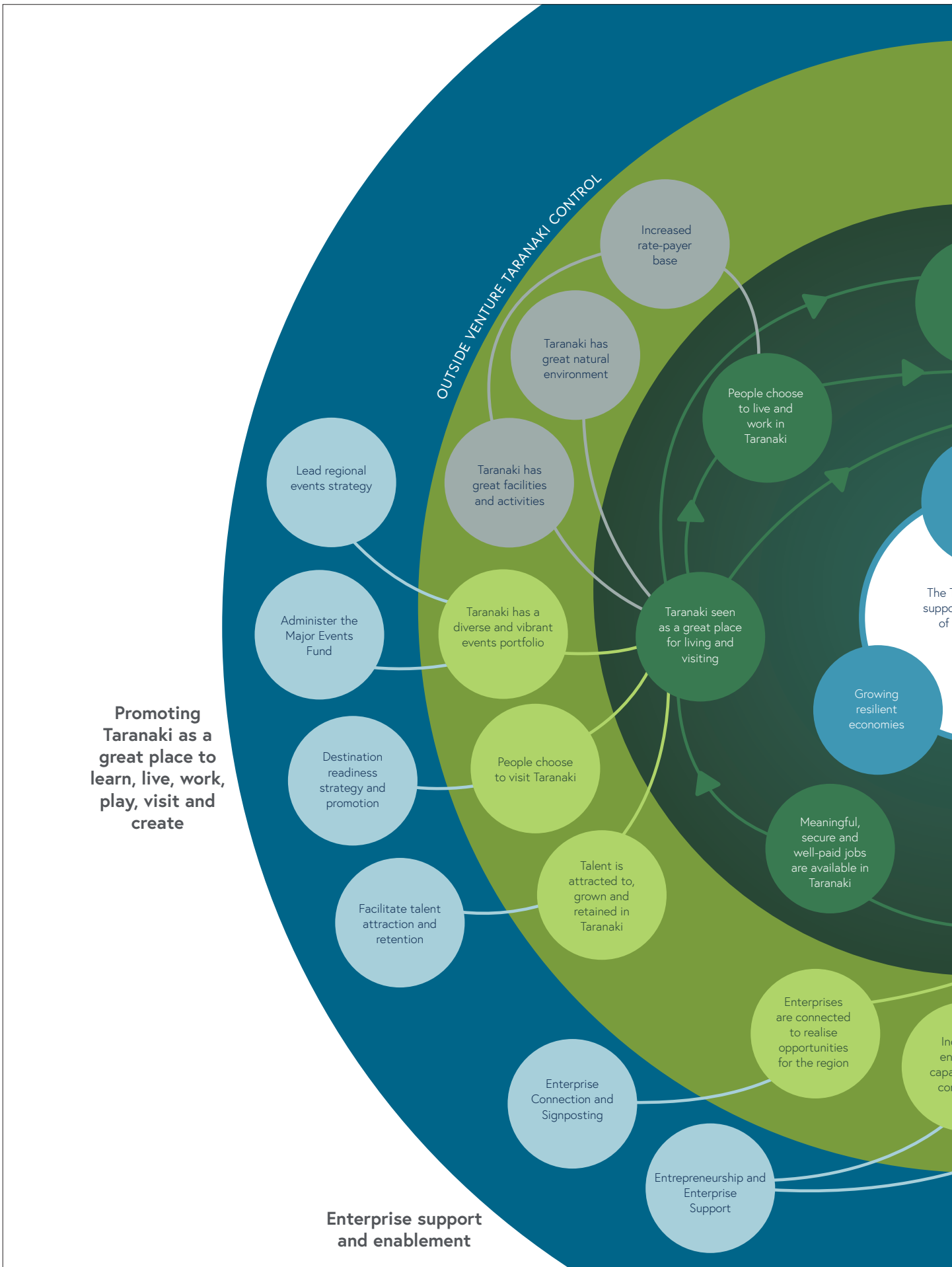




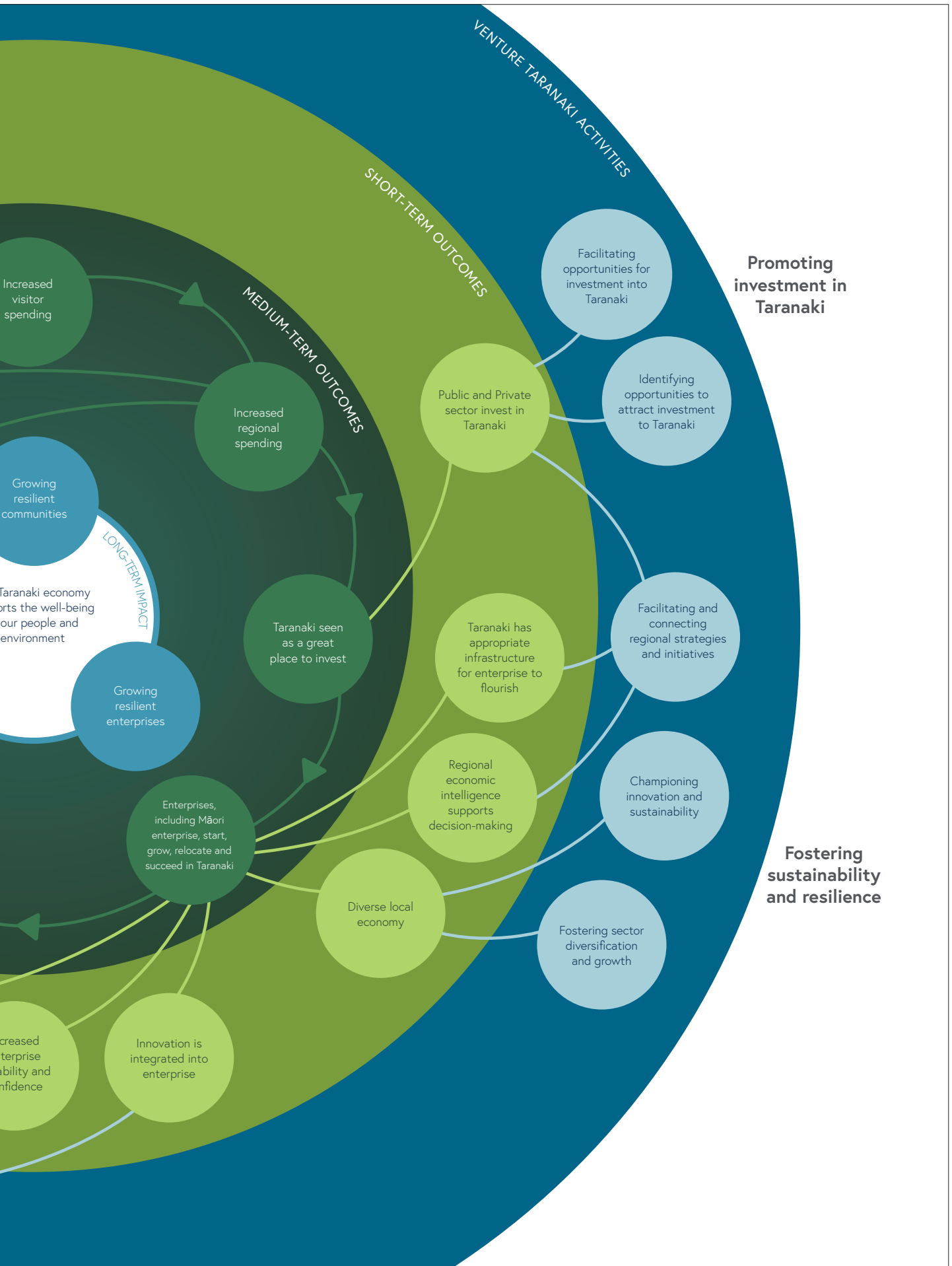
**The Taranaki 2050 process is summarised in the 2050 Roadmap**

Similarly, it would be strategically advantageous to the Taranaki community for science, research and technology projects to be carried out that support the eleven action areas of Taranaki 2050 (see lower left of the Roadmap).

In 2019 VT also prepared an Impact Strategy clearly showing the activities, outcomes and long-term impact the organisation is intending to achieve (see following page).







# Part B: Evaluation of Curious Minds Taranaki

**This section of the report explores whether Curious Minds Taranaki has operated in the way that was intended by MBIE and whether it has supported regional development outcomes targeted by Tapuae Roa and Taranaki 2050.**

## Achievement of key impacts suggested in "A Nation of Curious Minds"

As noted earlier the key impacts suggested for the Participatory Science Platform in "A Nation of Curious Minds" can be summarised as:

- Increased interest in science and technology by school students
- Stronger engagement by the wider community in science and technology
- Greater involvement in science and technology projects by the community
- A more responsive science and technology community
- A greater contribution to economic growth by the science and technology community

The following notes address whether Curious Minds Taranaki delivered these impacts.

## Increased interest in science and technology by school students

Curious Minds Taranaki is one of many influences on whether students are interested in science and technology.

In future years it may be possible to measure whether there has been an increased interest in science and

technology by monitoring the courses of tertiary study chosen by school leavers. At the moment it is too early to make any objective assessment. The majority of students, including almost all the primary and intermediate students who have participated in Curious Minds Taranaki projects since the implementation of the first projects in 2015, are still at school.

While an objective measurement is not yet possible there is anecdotal evidence from the school teachers and project managers spoken to when preparing this report of an increasing interest in science and technology by school students.

This increased interest has been sparked principally by the practical, real world focus of the projects in comparison to the theoretical nature of much science teaching. There were several comments by Project Managers on how enthused students were by the Curious Minds Taranaki projects they were involved in and how the projects are a great contrast with traditional science. After an enjoyable day out in the field at Experience Pūrangi one student from Kaimata School was heard saying with a smile: "We thought science meant being in a white coat in a lab".

This focus on real problems is particularly significant at primary school where classes can conduct longer and more involved projects than is possible at secondary level. The one-hour classes at High School restrict field work and NCEA is more prescriptive than the primary school curriculum.

While Curious Minds Taranaki is usually thought of as a science programme, it has also encouraged enthusiasm for technology. Several projects have involved quite young children in technologies such as drones or acoustic monitoring. Teachers and project managers commented on the confidence the children have gained from using such technologies.

While objective evidence of increased interest in science and technology by students would be valuable, there was overwhelming anecdotal enthusiasm for the programme from those spoken to. I was left with no doubt over the programme's impact on increasing the level of interest by students in science and technology.

This impact was also widespread. There are 97 schools in Taranaki. 48 of these (or 49%) have taken part in Curious Minds Taranaki projects.



## Stronger engagement by the wider community in science

Similarly, there is no simple and easy way to quantitatively measure whether there has been stronger engagement by the wider community as a direct result of Curious Minds Taranaki.

With some 50 projects either delivered or underway it is likely that most of the people participating in those projects are more strongly engaged in science, and, in some cases, so will their families (particularly when young people are involved).

Curious Minds Taranaki has provided significant input of new funding into Taranaki for community-based projects. It is likely that some of these projects would not have occurred, or would have been constrained in delivery, without Curious Minds Taranaki funding.

While the mere act of channelling new funding will have increased engagement, the level of engagement will be affected by how Curious Minds Taranaki has been delivered, and how each individual project has been delivered.

There will be variation in project delivery – some have clearly been at a high standard while others have faced challenges. From speaking to parties involved in projects there are some key lessons:

- The drive for community science projects should ideally come from the community or from a collaborative discussion between community and research provider. Care needs to be taken with projects initiated by the researcher to ensure the community participants are involved in the project beyond being data collectors.
- The development of a project and its methodology should nevertheless involve researcher contribution as early as practicable to ensure that the project is robust.
- There should be a passionate driver of the project from the community. Someone who is strongly interested in the subject area and committed to the research being carried out, while also being a good organiser and motivator.
- There is a need to a focus on communication channels to keep participants and the wider community informed and involved. This includes reporting on the project as it is implemented – not just providing feedback at the end.

The level of community involvement will naturally vary from project to project. There was again clear anecdotal evidence from the parties spoken to when preparing this report that there had been good levels of engagement. Parents have become involved alongside their children. Hapū have been connected more strongly to their local school. Iwi have worked more closely with the Regional Council.

## Greater involvement in science projects by the community

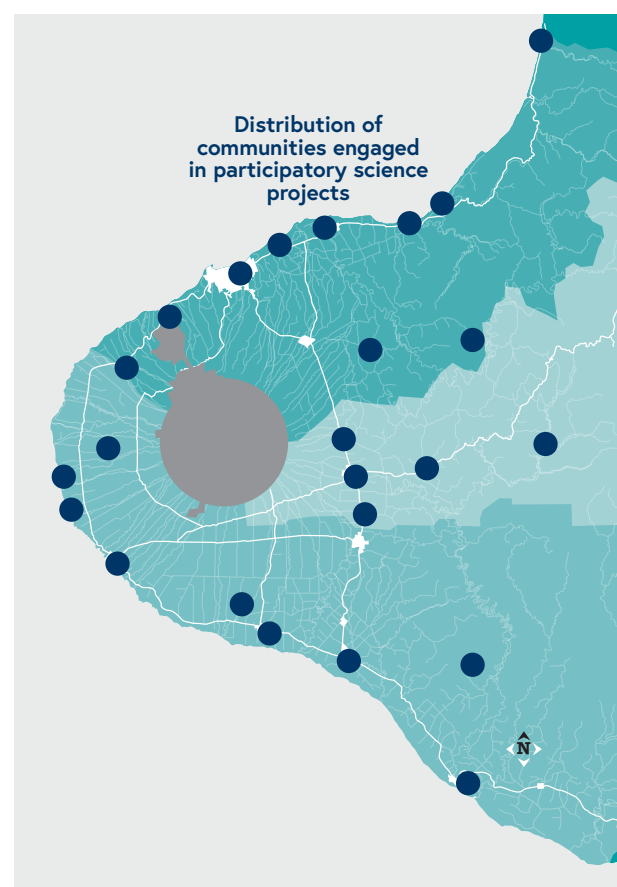
With 50 projects having received Curious Minds Taranaki funding there is again little doubt there has been an increased level of involvement in science projects by the community.

Participation has been measured. The 50 projects have involved:

- 97 science experts
- 3,056 participants including 1,721 youth
- People from across Taranaki – 60% from New Plymouth District, 14% from Stratford District and 26% from South Taranaki District.

In a region of just under 120,000 people these are significant levels of involvement.

VT Case Study Booklet on Curious Minds Taranaki produced in 2020 has a diagram showing the wide distribution of projects across the region:



## A more responsive science and technology community

The focus on community science since the release of "A Nation of Curious Minds" in 2014 has changed the way in which research providers work. The provision of funding, including via the Participatory Science Platform, has changed behaviour.

Community engagement has increased, notably with the Māori community. It was clearly indicated to me that the Crown Research Institutes have significantly increased their resources dedicated to engagement with Māori. This is not necessarily as a direct result of Curious Minds Taranaki but from a range of concurrent initiatives of which Curious Minds Taranaki is one.

What was encouraging to hear was that there are many researchers who enjoy the community engagement aspect of their work. They love science and love working with communities to increase interest in and support for science. This enjoyment of engagement is not universal amongst researchers but has increased in recent years.

Curious Minds Taranaki has encouraged researchers to be more responsive. The depth of this is still relatively limited. Massey University has been most heavily involved in Curious Minds Taranaki projects alongside the Taranaki Regional Council. The involvement of other universities and the Crown Research Institutes has been limited. This, not surprisingly, appears to be because of the lack of an on-the-ground presence of these organisations and their staff in Taranaki. The Crown Research Institutes are financially constrained by a general dependence on project-by-project funding (often commercially focussed) that means their ability to offer support to additional community projects is limited, particularly when travel is involved.

There was nevertheless a recognition by the representatives of research organisations spoken to that there is value to them in building community relationships.

VT could build relationships with these other parties and encourage greater engagement by them in Taranaki.

## A contribution to economic growth

This is perhaps the impact which is hardest to confirm. Many of the Curious Minds Taranaki projects do not provide easily measurable direct commercial returns. There has been strong focus in Curious Minds Taranaki on biodiversity and other environmental projects. This is likely due to community interest in and support for these issues. There are also well-established community groups with a common interest in these issues.

That said there are projects with obvious economic benefit, and Curious Minds Taranaki has wider economic benefit by encouraging greater interest in the STEM area, widely regarded as being crucial to economic development. One issue explored later in this report is to ensure that intellectual property associated with Curious Minds Taranaki projects is considered carefully in project proposals and contracts. This is an important matter for commercially focused projects. VT Business Advisors could support this process.

There is opportunity for community groups and researchers to explore and develop Curious Minds Taranaki projects that are more clearly commercially focused. For example, the energy sector is a significant part of the Taranaki economy and transitioning to a low-emissions future. Only three of the 50 projects funded so far have had a link to the energy sector. With the establishment of Ara Ake in Taranaki (as New Zealand's new energy development centre) the region will, for the first time, have an innovation institution that, through its networks and initiatives, can offer connections to tertiary level expertise.

Such engagement also provides researchers with the opportunity to either establish or reinforce their social licence to operate with public funding support.

## MBIE – Venture Taranaki PSP contracts

Since 2015 VT has had several contracts with MBIE to deliver the PSP in Taranaki. These contracts have retained the same two core objectives that were noted earlier.

These objectives are noted below along with some comments on how VT has performed. While the review process carried out for this report was strategic and not a detailed operational review of how each project performed, the feedback from stakeholders spoken to was positive. VT has clearly met MBIE's requirements.



Contract Objectives for Curious Minds Taranaki	Comment on how well each objective has been achieved
<p><i>Engage students, schools, kura and/or community based organisations with science professionals (participatory science project participants) in collaborative participatory science projects that have both scientific value and pedagogical rigour and that resonate with the community;</i></p>	<p>A wide range of community organisations including schools and kura (and their members or students) have engaged in projects that involve science professionals. 48 of the 97 schools in Taranaki have participated in Curious Minds Taranaki. 24 Community and iwi organisations have also led projects with a range of other community groups engaged as collaborators on projects.</p> <p>An application was prepared for each project. This was reviewed by an Assessment Panel which investigated the level of collaboration between the parties, the degree of scientific value and pedagogical rigour and community interest and support. While these factors varied between projects a high standard has been maintained.</p>
<p><i>Offer researchers opportunities to become involved in locally relevant lines of enquiry, where high quality and locally relevant scientific outputs can be created through harnessing the local knowledge and contributions of citizens.</i></p>	<p>Researchers have been offered opportunity to be involved in projects with Taranaki-based community groups. The Taranaki Regional Council (23 projects), the Department of Conservation (9 projects) and Massey University (6 projects) have been particularly strongly involved.</p> <p>Projects have been of a high quality, have been locally relevant and have harnessed contributions from the community.</p> <p>While quality and contribution varies from project to project the overall standard has been consistently high.</p>

The current contract with MBIE notes that VT shall use the funding to deliver several key outcomes.

Deliverables for Curious Minds Taranaki	Comment on the deliverables
<p>a. <i>Identify and work with participants in participatory science projects to engage them in processes to develop and progress research ideas which are pedagogically and scientifically robust and locally relevant.</i></p>	<p>VT has promoted Curious Minds Taranaki extensively to community groups in Taranaki, then worked with parties which identified projects to develop their proposals. This has often involved identifying suitably qualified research partners to work with the community group to ensure high quality proposals are prepared.</p> <p>The proposals presented to the Assessment Panel for consideration are largely of high quality. Occasionally, applications have not been of the required standard. Applicants have been given feedback and offered support to develop a better application.</p>
<p>b. <i>Publicise the Platform pilot in the relevant region in accordance with communications guidelines provided by the Ministry including actively facilitating and contributing to the Curious Minds website and social media channels</i></p>	<p>VT has publicised Curious Minds Taranaki extensively to attract good applications.</p> <p>There has also been post-project publicity which helps create a positive loop by promoting outcomes in the community and encouraging further applications.</p> <p>VT has also supported MBIE promotional activity – particularly with case studies of successful projects.</p> <p>Venture Taranaki coordinates with Te Apārangi – Royal Society of NZ which is the organisation contracted to deliver communications for Curious Minds nationally. This leads to stories for the Curious Minds website<sup>4</sup> as well as stories in the media on both a regional and national scale.</p>
<p>c. <i>Maintain a register of participatory science projects and participants in the relevant region that is suitable for publication on the curious Minds website and meets the quality standard set by the Ministry</i></p>	<p>Venture Taranaki has maintained a comprehensive database of projects and provided information to MBIE.</p>

4 [www.curiousminds.nz](http://www.curiousminds.nz)

Deliverables for Curious Minds Taranaki	Comment on the deliverables
d. <i>In conjunction with the Ministry explore connections between the participatory science platform and other Curious Minds initiatives and where possible, implement activities to maximise the value of both</i>	<p>Venture Taranaki has collaborated with the Science Learning Hub<sup>5</sup>:</p> <ul style="list-style-type: none"> <li>• Facilitating connection with local projects</li> <li>• Creating resources that get hosted on the Science Learning Hub website</li> <li>• Running an annual workshop on the connection between education and science</li> </ul> <p>Venture Taranaki has also supported several projects which have bid for Unlocking Curious Minds<sup>6</sup> funding but only one has so far been successful.</p>

The current contract also notes that Venture Taranaki shall allocate the funding to projects. Amounts funded must not exceed \$20,000 (GST exclusive) per project. In allocating the funding Venture Taranaki will:

a. <i>"Allocate the funding on the basis of criteria, documentation and directions provided by the Ministry, using processes that are fair, consistent and transparent to potential and actual funded parties;</i>	<p>The Assessment Panel comprises an excellent mix of capabilities<sup>7</sup> and has allocated funding in line with MBIE requirements.</p> <p>MBIE representatives including the PSP National Coordinator<sup>8</sup> have sat in on Assessment Panel meetings and been happy with the process.</p>
b. <i>Elect and enter into Project Funding Contracts with successful participants ensuring that such contracts provide for the Recipient's obligations under this Agreement</i>	Venture Taranaki has appropriately managed the process of contracting each party responsible for project management.
c. <i>Manage and monitor each Project Funding Contract to ensure that the funded party fulfils its obligations under that contract;</i>	Almost all contracts have gone according to plan. There have been some relatively minor issues with some projects. Where these issues could not be worked through some funding has been returned.
d. <i>Ensure that payments are conditional on the Recipient receiving funding for the payment due under this agreement.</i>	This has occurred.

Venture Taranaki has delivered Curious Minds Taranaki in line with MBIE contractual expectations. Ongoing dialogue with the PSP National Coordinator (from 2015-2019) confirmed that Venture Taranaki has good systems in place and has delivered to expectations.

<sup>5</sup> Another Curious Minds initiative hosted by the Wilf Malcolm Institute of Educational Research and the University of Waikato – [www.sciencelearn.org.nz](http://www.sciencelearn.org.nz)

<sup>6</sup> Unlocking Curious Minds is another programme that was identified in "A Nation of Curious Minds". It is a contestable fund available throughout New Zealand that "supports projects that enhance or broaden the connection and engagement of 'hard to reach' New Zealanders by:

- supporting education and community outreach initiatives that focus on science and technology
- broadening participants' ability to engage with science and technology
- promoting the relevance of science and technology in their lives
- encouraging engagement in societal debate about science and technology issues facing the country."

<sup>7</sup> It is suggested that it would be ideal to include a Māori scientist on the Assessment Panel.

<sup>8</sup> This role operated from 2015-2019. It has now been disestablished.



# Has Curious Minds Taranaki supported Tapuae Roa and Taranaki 2050?

While it is vital that Curious Minds Taranaki is managed in line with MBIE requirements it would be optimal for Taranaki if the programme also supported regional development outcomes.

An analysis has been carried out by the Curious Minds Taranaki Coordinator matching the focus of the 50 Curious Minds Taranaki projects against:

- The four Foundations and four Futures of Tapuae Roa, and
- The 11 Action Areas of Taranaki 2050.

This analysis reveals that some areas have been more strongly supported by Curious Minds Taranaki projects than others. Please note that a project can support more than one area.

Tapuae Roa Future/Foundation	Number of projects
Energy Futures	3
Food Futures	12
Māori Economy Futures	35
Visitor Sector Futures	10
Enterprise and Innovation	50
Accessibility & Connectivity	3
Vibrancy & Liveability	39
Investment	0

Taranaki 2050 Action Area	Number of projects
People & Talent	50
Innovation R&D	50
Health & Well-being	40
Tourism	12
Arts	4
Environmental Science	30
Māori Economy	33
Food & Fibre	13
Infrastructure & Transport	7
Regulatory	12
Energy	3

As Curious Minds Taranaki is an initiative focused around building science capability in the community it is understandable that every project supports the "Enterprise and Innovation" foundation of Tapuae Roa and the "People & Talent" and "Innovation R&D" action areas of Taranaki 2050.

It is good to see the widespread support for the Māori economy areas by Curious Minds Taranaki projects. This reflects the frequent involvement of iwi and hapū in projects as well as many project teams investigating areas that align with Te Ao Māori

At the other end of the spectrum some areas have received relatively little interest from Curious Minds Taranaki projects.

This is not surprising for some areas, such as for example:

- From Tapuae Roa – "Investment", "Accessibility & Connectivity" and "Visitor Sector Futures"
- From Taranaki 2050 – "Arts", "Infrastructure & Transport", "Regulatory" and "Tourism".

It is however, surprising how few Curious Minds projects have been focused on two key current and future sectors of the regional economy, namely:

- From Tapuae Roa – "Energy Futures" and "Food Futures"
- From Taranaki 2050 – "Energy" and "Food & Fibre".

It is surprising because both energy and food sectors are important sectors of the Taranaki economy that are strongly focused on innovation and R&D.

There appears to be an opportunity for Curious Minds Taranaki to encourage more projects focused on the Energy and Food & Fibre sectors. Both sectors are also of significance to rural areas which have suffered from depopulation and lack of job opportunities. Venture Taranaki should continue to work with community groups in rural Taranaki.

The impending establishment of Ara Ake also provides opportunity for the community, the local energy sector, and Ara Ake to work in collaboration on Curious Minds Taranaki projects.

Similarly, the current investment in the "Branching Out" Project and other food initiatives provides opportunity for the food sector and the community to identify potential collaborative Curious Minds Taranaki projects.

# Part C: Suggested improvements or enhancement for Curious Minds Taranaki

**The review and evaluation process carried out in preparing this report and summarised in Part B shows that Curious Minds Taranaki has been implemented in line with the ideals originally outlined for a participatory science platform in "A Nation of Curious Minds" (2014) and in the subsequent contracts for delivery between MBIE and Venture Taranaki.**

Some 20 stakeholders were spoken to in preparation of this report. Their feedback was largely very positive with a few relatively minor criticisms made.

Several areas for operational improvement were identified through this process.

This section outlines the areas of improvement or enhancement that are recommended.

## 1 ENCOURAGE MORE ENERGY AND FOOD AND FIBRE RELATED APPLICATIONS

As noted above there have been relatively few projects that are directly relevant to two of the key innovation intensive areas of Tapuae Roa and Taranaki 2050 – namely Energy, and Food and Fibre. It is important for the development of the Taranaki region that innovation continues to occur in these two key areas and that young people are encouraged to study for and develop skills and capabilities that support the energy and food and fibre sectors.

It is suggested that encouragement be given to projects that are focused on either energy or food and fibre. This encouragement should be shown by messaging that indicates that projects in these two areas will be "favourably received".

A target of 1-2 projects per year that focus on each sector is suggested as being reasonable.

This still leaves the majority of funding that is currently available able to be applied to projects in other areas.

As noted above, the contract with MBIE specifically notes that the funding shall be used for research ideas that are "locally relevant" or that "resonate with the community".

These phrases or similar are used several times in the contract and suggest that encouraging projects that support the local regional development plan is appropriate and should be acceptable to MBIE.

Nevertheless, it is suggested that Venture Taranaki discuss the opportunity of encouraging energy and food and fibre projects with MBIE before doing so.

There are two other projects that Venture Taranaki is involved with that would also be supported by a focus on energy and food and fibre research projects – these are the establishment of Ara Ake, and the "Branching Out" project. Bearing this in mind it is suggested that:

- Venture Taranaki should encourage Ara Ake to work with industry groups, research providers and community groups to develop energy sector ideas.
- Venture Taranaki should work with the food and fibre sector to support community groups looking to undertake research in this space. Leveraging the relationships and momentum generated through the Branching Out programme could be an effective way of achieving this.

These two actions provide good opportunity for researchers to work closely with the Taranaki community to develop relevant projects, encourage interest in science and technology, and help the organisations and industry sectors involved to maintain and enhance their social licence to operate.

## 2 PROVIDE FURTHER SUPPORT FOR THE APPLICATION AND ASSESSMENT PROCESS

The skills and capabilities of the people that have applied for Curious Minds Taranaki support have varied. The majority have prepared solid applications though some have not provided sufficient information (including the required budgetary detail) while others have showed a lack of understanding of the scientific process and methodology e.g. not understanding what a hypothesis is or poor awareness of statistical techniques.

It is likely there are other groups whose members have not had the confidence to apply even though they had projects with potential.



*Ngamatapouri School students investigating water quality as part of a wider study they undertook on the Waitotara Awa in 2019*

It is suggested that Venture Taranaki could provide further help with the application and assessment process:

- A model application or applications should be developed and made available to new applicants. This would help parties inexperienced with science funding applications to understand what is expected of them. It would also make it clear the level of budgetary information that is required.
- Ideally there should be a model application including a Mātauranga Māori focus.
- Online resources should also be developed that take applicants through key steps in developing a science application.
- A mentoring programme for new applicants should be developed. This role is already partly fulfilled by the Taranaki Regional Council. The TRC's role could be extended or mentoring provided by other parties (including past successful applicants).
- Ideally there should be a Māori scientist on the Assessment Panel.

While Venture Taranaki is capable of developing model applications and online resources it is suggested that this would be best done in conjunction with MBIE and the other PSP providers.

### 3 STRONGER LINKAGES BETWEEN PROJECTS AND KEY PEOPLE COULD BE ENCOURAGED

Curious Minds projects tend to occur in isolation from one another. It was clear from talking to project managers that those that have been in contact with other project managers have benefitted from doing so. It is suggested that Venture Taranaki encourage more networking

between projects and also with potential applicants. This networking should involve:

- Venture Taranaki developing a webinar series for project managers to talk about their project and its genesis, and to report back on their progress and outcomes
- Venture Taranaki holding several networking events each year – perhaps at locations relevant to a project. Funding would need careful consideration as the community groups involved usually would not have funds available for such events. Care would also need to be taken regarding the involvement of young people at these events.
- As noted above Venture Taranaki should encourage past project managers to become involved in mentoring the managers of new projects.

### 4 ENCOURAGE STRONGER RESEARCH PROVIDER PRESENCE AND ENGAGEMENT IN TARANAKI

This recommendation is directed right at the core of why Venture Taranaki originally bid for the PSP programme in Taranaki. The region has no university campuses or crown research institute offices. This has made it relatively difficult for local community groups, schools, iwi and businesses to engage with science professionals and vice versa. It is also likely to make it more challenging for young people from Taranaki to see science as a viable career option.

This gap in the region's innovation eco-system has long been recognised as a restriction on regional development and was highlighted in the Tapuae Roa Strategy (2017) and Action Plan (2018), and in the Taranaki 2050 Roadmap (2019).



There are signs of improvement.

The establishment of Ara Ake will, for the first time, give the region a significant innovation institution that will be well connected to tertiary level expertise. This will encourage the universities and research institutions to invest time in building relationships with Ara Ake and the energy sector of Taranaki. The "Branching Out" project that has been supported by significant Ministry for Primary Industries funding also involves a range of research providers. It provides opportunity to build momentum around innovation in the food and fibre sector.

For the first time one of the Crown Research Institutes has a person based in Taranaki. NIWA Research Development Stakeholder Manager Alex Thompson now lives in Taranaki<sup>9</sup>. Alex has good links with several other CRLs and with MBIE (where she previously worked). Venture Taranaki should continue to build a relationship with her and explore opportunities regarding Curious Minds projects.

The growing recognition of the viability of working from home or at a distance (as a result of the Covid-19 lockdown) may encourage more people to be based in Taranaki. This should be encouraged by Venture Taranaki. A good example is American geologist Cynthia Werner who lives in Taranaki and has been the Project Manager and research provider on the Our Mountain, Our Volcano project.

The growing comfort with video-conferencing tools such as Zoom will also decrease the challenge of the distance from providers based in other regions that Taranaki has faced. This should provide greater opportunity for local projects to involve research providers based outside Taranaki.

While it will be ideal to build relationships with people such as Alex Thompson or Cynthia Werner who are based in Taranaki, the reality is that the vast majority of New Zealand's research community will remain based elsewhere. It is important that Venture Taranaki continue to build relationships with key influencers in the major research organisations such as stakeholder and engagement managers and/or business managers.

Areas of opportunity to further leverage the PSP include:

- Exploring opportunities for Curious Minds Taranaki projects arising from the "Branching Out" project and other food and fibre initiatives
- Exploring opportunities for Curious Minds Taranaki projects arising from the operation of the Ara Ake
- Exploring opportunities resulting from the presence of key university or research institute staff in Taranaki
- Developing relationships with Māori science leaders plus the stakeholder, engagement and/or business managers at the Crown Research Institutes and universities.

## 5 ENCOURAGE BETTER MANAGEMENT OF INTELLECTUAL PROPERTY

While most Curious Minds Taranaki projects provide information of value to participants the knowledge created is generally not of wider commercial value.

There are however, some Curious Minds Taranaki projects that have developed or have potential to develop valuable intellectual property. An example is the Sound Lures project being carried out by Auroa School. This project could lead to a device that is widely deployed generating a commercial return for a manufacturer.

In a commercial R&D project, intellectual property ownership is usually addressed via contract. There is potential for intellectual property issues on Curious Minds Taranaki projects to become messy where there is commercial value – particularly where there is considerable volunteer input, including from parties who are also providing commercial services.

It is suggested that Venture Taranaki Enterprise Advisors support these projects with early advice on intellectual property and commercialisation and support for any subsequent commercial development.

## 6 SURVEY PARTICIPANTS AND CONTINUE TO SURVEY THEM

There is plenty of anecdotal evidence of the enthusiasm and support for Curious Minds Taranaki from community groups, schools and researchers. This was clearly expressed through the interviews conducted for this report and through the case studies on Curious Minds Taranaki projects that Venture Taranaki has published.

As noted earlier in this report it is not yet possible to objectively measure the impact of Curious Minds Taranaki on outcomes such as the number of students studying science and technology subjects at tertiary level. This is partly the result of the range of other factors that impact on this outcome and partly because most students involved in Curious Minds Taranaki projects are still at school. This reinforces that some of the desired outcomes from the investment in the participatory science platform are long term.

It is suggested that Venture Taranaki survey the managers and educational and science partners of all 50 funded projects for their views on the impact of Curious Minds Taranaki funding and support. Such a survey should be carried out every year. This would help gauge the long-term impacts of the programme as well as maintaining the network of parties involved in and supporting Curious Minds Taranaki.

---

<sup>9</sup> Having moved here as she has two sons attending Green School



Jamie Silk of Sustainable Taranaki working with Ōpunakē Kindergarten as part of their behaviour change study on recycling in 2020

# Concluding comments

**Since Curious Minds Taranaki was implemented in 2015 there has been substantial engagement by a wide range of people and organisations with community-based science projects in the region.**

Young people have been engaged at almost exactly half of all Taranaki schools. In many cases their parents and other family members have also been engaged with projects being carried out in their local communities.

Several Iwi and hapū groups have been involved in projects along with other Māori organisations. Many of the funded projects have included Mātauranga Māori in their research. These projects provide excellent examples of how the scientific and Mātauranga Māori approaches can work together and complement one another to create more well-rounded investigations.

Tertiary education and research organisations have engaged with the Taranaki community and supported projects with science knowledge, skills and capabilities.

Businesses have provided projects with science and technology support.

The programme has clearly supported the objective from "A Nation of Curious Minds" of encouraging and enabling better engagement with science and technology of all sectors in New Zealand.

While Curious Minds Taranaki has clearly been a successful initiative, it has potential to develop further.

Some key sectors of the economy have received relatively little focus from Curious Minds Taranaki – notably energy, and food and fibre. Encouraging projects in these areas also offers the opportunity for engagement by the community with the strong science and technology capabilities often present within energy or food and fibre businesses while also providing avenues for these businesses and their staff to contribute back to the communities in which they are based.

While Curious Minds Taranaki has been a very inclusive programme, some potential applicants are still challenged by the project application and management process. Some improvements could be made to help make it easier for these parties to become involved and better understand the scientific process.

There are also many skilled scientists and technologists based in other parts of New Zealand who could contribute to Taranaki projects but who do not have linkages with the region. It is important for Venture Taranaki and the region's community groups to continue to reach out and develop relationships on a national not just a regional level.

To paraphrase the introduction to "A Nation of Curious Minds":

- Science is everywhere
- Curiosity is key
- Taranaki needs curious minds

# Appendix 1: The projects funded from Curious Minds Taranaki

Year	Project Name	Organisation	Project Lead	Science Partner	Education Partner	Other Collaborators	Aim/Research Question(s)
2015	Kiwi Presence in Egmont National Park	Taranaki Kiwi Trust	Michelle Bird	Halema Jamieson - TRC, Dean Caskey - TRC, Jess Scrimgeour - DOC, Jerome Guillotel DOC.	Oakura School, Ngaere School	Taranaki Conservationists, New Plymouth Tramping Club, Taranaki Alpine Club, Forest and Bird Taranaki, Mt Egmont Alpine Club	Has Egmont National Park Kiwi Conservation Programme successfully increased kiwi numbers and survival?
2015	Project Ultra - Pekapeka in Purangi	East Taranaki Environment Trust	Karen Schumacher	Sian Portier, Halema Jamieson - TRC, Marshall Day Acoustics, Erin Griffiths	Kaimata School	Taranaki Bats	Where are long tailed bats most prevalent at Purangi and are there any anthropogenic impacts on those habitats?
2015	Project Hotspot	Nga Motu Marine Reserve Society	Emily Roberts	Emily Roberts - TRC, Josh Richardson, Elise Smith - MAIN Trust, Shane Orchard, Halema Jamieson - TRC, Callum Lilley - DOC, Hannah Hendricks - DOC	Oakura School, Highlands Intermediate	Department of Conservation, NatureWatch NZ, MetOcean Solutions	Capture local knowledge on four coastal threatened species in Taranaki. Where are their hotspots? Why do they occur? What are the greatest threats?
2015	Waitara Kaimoana Survey	Otaraua Hapū & Waitara Alive	Donna Eriwata	Emily Roberts - TRC, Josh Richardson		Shane Orchard - NatureWatch NZ	What has changed about our reefs, reef animals and reef animal stocks during a 14 year hiatus (from scientific survey)?
2015	Project Reef Life	South Taranaki Underwater Club	Karen Pratt	Thomas McElroy - TRC, Josh Richardson	Hawera High School, Patea Area School	Auckland University, Te Papa, NIWA, Victoria University, Otago University, Nga Motu Marine Reserve Society	What makes the South Taranaki marine environment unique?
2015	Te Moeone - Growing for the Future	Ngati Tawhirikura Hapū	Glen Skipper	Dr Nick Roskruge - Massey Uni, Dr Craig McGill - Massey Uni, Mesulame Tora - Massey Uni, Zirsha Wharemate - Massey Uni, Russell How		Tahuri Whenua, Taranaki Seed Savers	How can we increase the health and vigour of regionally adapted (Taranaki) cultivars? What are the nutritional characteristics of our heirloom cultivars?



Year	Project Name	Organisation	Project Lead	Science Partner	Education Partner	Other Collaborators	Aim/Research Question(s)
2016	Maru Wai Matara	Te Whenua Tomuri Trust	Emily Bailey	Dr Johnathan Jarman - Taranaki DHB, Dr Richard Storey - NIWA, Doreen Day - Hill Laboratories	Te Pi'ipi'inga Kākano mai i Rangiātea Kura Kaupapa, Te Kura Kaupapa o Tamarongo	Ngai Tahu, Taranaki Regional Council, Puniho Pa, Parihaka Pa	How safe are our streams for swimming? How safe are our fish (tuna) and plants for eating? How healthy is the ecosystem from a cultural perspective?
2016	Project Hotspot	Nga Motu Marine Reserve Society	Emily Roberts	Emily Roberts - TRC, Elise Smith - MAIN Trust, Shane Orchard - NWNZ, Halema Jamieson - TRC, Callum Lilley - DOC, Hannah Hendricks - DOC, Josh Richardson, Mariana Horigome - MetOcean Solutions	Coastal Taranaki School, Auroa School, Manaia School, Hawera Intermediate School	Department of Conservation, NatureWatch NZ, MetOcean Solutions	Capture local knowledge on four coastal threatened species in Taranaki. Where are their hotspots? Why do they occur? What are the greatest threats?
2016	Project Reef Life	South Taranaki Underwater Club	Karen Pratt	Thomas McElroy - TRC, Josh Richardson, Michelle Kelly - NIWA, Professor Jonathan Gardner - Victoria Uni, Dr Craig Radford - Auckland Uni, Andrew Stewart - Te Papa	Hawera High School, Patea Area School	Auckland University, Te Papa, NIWA, Victoria University, Otago University, Nga Motu Marine Reserve Society	What makes the South Taranaki marine environment unique?
2016	CAPOW! Curious About Processing Organic Waste	Stratford and Matapu Schools	Marlene Lewis	John Coplestone - Industrial Chemistry Services, Nadine Ord-Walton - TRC	Stratford Primary School		What is the best practicable way to manage all organic waste on site at Stratford and Matapu Primary Schools?
2016	Full STEaM Ahead!	Opunake School	Lorraine Williamson	Michael Lawley - EcolInnovations, Michael Corkill - Corkill Systems	Opunake School	EcolInnovations, Corkill Systems, Meridian Energy, Clifton Terrace School	What renewable energy sources are available to Opunake Primary School to support their Kitchen Garden Technology Room.
2016	REV IT	New Plymouth Boys' High School	Steven Leppard	Greg Trowbridge - Falcon Engineering, Les Wong - Falcon Engineering	NPBHS, FDMC, Waitara HS, Inglewood HS	Francis Douglas Memorial College, Waitara High School, Inglewood High School	To research design and build an electric vehicle and test it against its petrol powered equivalent.
2016	Stone v.s. Metal	Puke Ariki	Kelvin Day	Russell Beck	Manukorihi Intermediate	Tohunga Whakairo	Were the Motunui Panels carved using stone or metal tools?

Year	Project Name	Organisation	Project Lead	Science Partner	Education Partner	Other Collaborators	Aim/Research Question(s)
2017	Toko School Distillation Investigation	Toko School	Sue Fergus	Jim Bennett - Still Valley, Sue Rine	Toko School		Create a sustainable, natural products that we can both use at our school and offer to the school community as alternatives to commonly used harsh chemical products.
2017	A Pesky Problem - Te Namu Hakirara	Woodleigh School	Cara Rankin	Jim Bennett - Still Valley, Sue Rine	Woodleigh School		How can we naturally repel insects in the bush setting so our learning is more comfortable, and we can visit the bush area more often?
2017	South Taranaki Project Earth: Ready Rehearsed Resilient	Hawera High School	Abigail Pratt	Jonathan Proctor - Massey University	Hawera High School	Taranaki Regional Council	Find out the way in which Mount Taranaki last erupted & how it will erupt again, and from this, deduce how prepared we are as a community to combat this natural disaster in terms of emergency management.
2017	Pest Trapping in the Makahu Valley	Makahu School	Chris Mattock	Jordan Lasenby - TRC, Elise Smith - MAIN Trust		Taranaki Kiwi Trust, MAIN Trust, Department of Conservation, Wild for Taranaki	What is the distribution of pests in relation to where we have identified kiwi and bats being present?
2017	Dotterel Defenders	Taranaki Conservationists	Emily Roberts	Emily Roberts - TRC, Samantha Mortensen - Taranaki Conservationists, Halema Jamieson - TRC	Coastal Taranaki School, Rahotu School	Komene 13B Māori Reservation Trust, Ngatitara Oaonui Sandy Bay Society, Egmont Plains Community Board, MAIN Trust, DM Consultants	Investigate the main threats to New Zealand dotterel in Taranaki and use this research to implement measures to better protect.
2017	Tracking Fur Babies in Taranaki	Wild for Taranaki	Elise Smith	Heidy Kikillus - Cat Tracker NZ, Elise Smith - MAIN Trust	Central School, Makahu School	NPDC, SPCA	How far do domestic cats travel from home and what influences this behaviour?
2017	Ko Nga Kowhitiwhiti	BTW Compay Ltd, Otaraua Hapū	Greg Larkin and Donna Eriwata	Greg Larkin - BTW Company, David Riley - Todd Energy	Waitara High School	Manukorihi Hapū	What instream ecology and environmental quality indicators exist at a location of known watercress collection and why is watercress not growing at other instream locations where growing conditions appear to be ideal?

Year	Project Name	Organisation	Project Lead	Science Partner	Education Partner	Other Collaborators	Aim/Research Question(s)
2017	Inanga Ora Ki Te Awa O Waitara	Otaraua Hapū, Waitara Alive	Vicky Dombroski and Donna Eriwata	Darin Sutherland - TRC, Shane Orchard	Waitara High School		We aspire to show how it was, how it is now, why the difference and how we as a Community can help enrich and save the Whitebait Spawning habitat, which will in the future help maintain these areas and help bring some of our Native fish species off the Endangered Animal list.
2017	Bug ALERT!	East Taranaki Environment Trust	Karen Schumacher	Taranaki Regional Council	Kaimata School		Do wetland sites with higher plant diversity support higher abundances and diversity of aquatic macro-invertebrates and terrestrial invertebrates?
2017	Project Wi-Finding	Massey University	Eve Kawana-Brown	Dr Faraz Hasan - Massey Uni, Dr Fakhru Alam - Massey Uni, Jason Holton - Primo, Mathew Harrison - Primo, Kelly Ellis - Primo	New Plymouth Boys' High School, New Plymouth Girls' High School	Primo Wireless, Internet NZ	How can we improve wireless connectivity in the greater Taranaki region?
2017	Schoolyard Blues	Massey University	Eve Kawana-Brown	Cathy Lang - Fonterra, Alistair Carr - Massey Uni	Hawera High School		How do micro-organisms work for, and against, people in the context of cheesemaking for human consumption?  How can science and technology play a role in the development of foods (cheese) for NZers' consumption and for NZ's export industry?
2018	CatMap	MAIN Trust NZ	Elise Smith	Jo Fitness	Welbourn School		Are pet cats entering bush or significant conservation areas, and what do cat owners know about where their cats go?  Are there any changes in the roaming behaviour during the seasons, and night/day in winter/spring/summer?



Year	Project Name	Organisation	Project Lead	Science Partner	Education Partner	Other Collaborators	Aim/Research Question(s)
2018	Soil Fertility and Health Trials	Midhirst School	Graham Sands	Sur Rine	Midhirst School	Cherryle Prew	How can we create a healthy soil for fruit trees?
2018	Finding Little Blue	Nga Motu marine Reserve Society	Anne Scott	Elvisa Robb	Devon Intermediate		This project will investigate the condition of Little Blue Penguin populations along the Taranaki coast, particularly in the North Taranaki area.
2018	Project Litter - Tapuae Trash Trackers	Highlands Intermediate School	Pat Swanson	MetOcean Solutions		TRC	What types of litter are to be found on the Tapuae Marine Reserve shoreline? Where does the rubbish originate from? What are the possible effects on marine species of the litter?
2018	Bug ALERT! 2	East Taranaki Environment Trust	Louise McLay	TRC	Egmont Village School, Ratapiko School		Do wetland sites with higher plant diversity support higher abundances and diversity of aquatic macro-invertebrates and terrestrial invertebrates?
2018	Kimihia Kermit	Te Rūnanga o Ngāti Mutunga	Marlene Benson	Patrick Stewart	Mimi School		What frogs are present and where in the North Taranaki area? What information is currently available to support whether the frog population in north Taranaki is declining or increasing?
2018	Trashformers	Upcycle Taranaki	Erin Strampel and Steve Bates	Falcon Engineering	NPBHS		What building materials can we replace with recycled plastic alternatives? How does degraded plastic compare to recycled plastic? What blends of raw materials could be combined to make even stronger, more durable product or building material?
2018	Wi-DemystiFied	Massey University	Eve Kawana-Brown	Massey University			How can we improve wireless connectivity in the greater Taranaki region?

Year	Project Name	Organisation	Project Lead	Science Partner	Education Partner	Other Collaborators	Aim/Research Question(s)
2019	Our Mountain, Our Volcano	Cynthia Werner	Cynthia Werner	Cynthia Werner		Te Atiawa Iwi Charitable Trust	An exercise of discovery about the Taranaki volcano, to develop a greater understanding about the current state of volcanic activity of Mt. Taranaki
2019	Waitotara River Monitoring Project	Ngamatapouri School	Heather Dallas	TRC, Andrew Hornblow, Drone Technologies Ltd	Ngamatapouri School		How does the Water Quality Assessment data and visual appearance of the Waitotara River at Ngamatapouri change over the course of a year?
2019	Te Āhua o ngā Kūrei	Te Rūnanga o Ngāti Mutunga	Anne-Maree Mckay and Marlene Benson	TRC - Thomas McElroy, Robertson Environmental	Urenui, Uruti, Mimi Schools	Clifton Community Board, Robertson Environmental	What is the current state of the Urenui and Mimitangiatua Estuaries and what current and future threats may impact the health of the estuaries?
2019	Healthy Living Soil	Organic Farm NZ Taranaki/ Whanganui	Ursula Bil-Teitink	Soil Food Web, Sue Rine	Landbased Training	New Start Gardens, Seedsavers Taranaki, Freeman Farms, All Things Saffron, Plymouth Farm, Te Moeone	What is healthy soil and how can we create healthy soil on the properties included in this study?
2019	I Whio that I could live here	Te Korowai o Ngāruahine Trust	Bart Jansma	Bart Jansma, TRC, DOC	Manaia Primary School, Auroa Primary School	Taranaki Mounga Project, Ngāti Haua, Ngāti Tū, Fish and Game Taranaki	Is the Kaupokonui River a suitable habitat for Whio? What is current health of the Kaupokonui River? What actions might help to restore the Kaupokonui habitats for Whio?
2019	Pūrangi Pekapeka	East Taranaki Environment Trust	Brent Woodhead	Department of Conservation, Taranaki Regional Council, Sound Counts, Jono More	Inglewood High School, Puke Ariki	Catlin Bats	What is the distribution of long-tailed bats in our project area? Has increased predator control benefited long-tailed bat?

Year	Project Name	Organisation	Project Lead	Science Partner	Education Partner	Other Collaborators	Aim/Research Question(s)
2019	Fish food and fringes	MAIN Trust NZ	Elise Smith	Dr Jo Fitness, Taranaki Regional Council, Department of Conservation, Ornithological Society NZ, Bright Sparks NZ	Rawhitiroa School, Ngaere School, Hawera High School	Rotokare Scenic Reserve, Normanby Lions Club, Wild for Taranaki, East Taranaki Environment Trust	<p>What invertebrates are present in riparian margins that vary in the stages of restoration?</p> <p>How do these relate to other environmental conditions e.g. moisture and light?</p> <p>Which aspect of the invertebrate community are useful indicators of restoration success?</p>
2019	Seachange Surveys	Wild for Taranaki	Nicole Sturgess	Shane Orchard, MAIN Trust, Taranaki Regional Council, Department of Conservation, Ministry for Primary Industries	Highlands Intermediate, Okato Learning Group	Nga Mahanga a Tairi Hapū, Nga Motu Marine Reserve Society, Taranaki Conservationists	<p>What is the current state of our paua populations residing on Ahu Ahu Reef and Tapuae Reef?</p>
2019	Sustainable energy generation for use in electric vehicles	New Plymouth Girls' High School	Athol Hockey	New Plymouth Girls' High School – Science Department, Open Polytechnic – Michael Fenton	New Plymouth Girls' High School	Plug n Play/ Jaycar (Jacques Schoeman and others), Tohonohono Marae, Alan Winch – Rivet, E2 Bikes – Ken Agar	<p>What is the most efficient renewable energy generation method for charging the batteries that are used in small electric vehicles?</p>



Year	Project Name	Organisation	Project Lead	Science Partner	Education Partner	Other Collaborators	Aim/Research Question(s)
2020	Haurapa Kiwi	Taranaki Kiwi Trust	Celine Filbee	Sian Portier, Drone Technologies	Oakura School	Taranaki Mounga Project	Can transmitted kiwi be tracked using drones?
2020	He Tangata, He Whenua, He Oranga	Whiri Design	Keri Wanoa	AgResearch	Te Piipiinga Kakano Mai Rangiatea	Mako Jones, Rangimarie Arts and Crafts, Hemi Sundgren, Wonoa Four, Textile Design Lab, AUT	That traditional indigenous dyes and pedagogies can be applied and give quality grade properties to 21st Century fashion textile and garment production processes.
2020	Our Green Ōpunakē Journey	Sustainable Taranaki, Opunake Kindergarten	Steve Francis	Silk Advisory, Alexandra Vernal	Opunake Kindergarten, EnviroSchools	South Taranaki District Council	Does timely, relevant information at point of purchase drive better recycling and do personal or social commitments drive more or longer lasting change?
2020	Ground Breaking Mushrooms	The Bishop's Action Foundation	Simon Cayley	Spotswood College Science Department	Spotswood College	NPDC, Ozone, The Depot cafe	What is the best substrate to mix with spent coffee grounds, and at what ratio, to produce the most mushrooms?
2020	Exploring a place for VR in Dementia	Alzheimers Taranaki	Linda Jones	Dr Linda Jones, Massey University, Valencia University		Puke Ariki	What patterns of interest, enthusiasm and deficit are evident when people recently diagnosed with dementia (PWD) and their partners, are escorted on a prepared visit to a museum exhibiting local material? What do PWD and their partners report during and following a series of virtual reality (VR) experiences with content specifically linked to the museum study findings?
2020	Auroa School Sound Lures	Auroa School	Myles Webb	Andrew Hornblow, Taranaki Regional Council	Auroa School	South Taranaki District Council, New Plymouth Airport, Oeo Road Farms Group, Lake Rotokare Scenic Reserve, Project Mounga, DOC	Can sound lures increase the effectiveness of pest trapping?
2020	Papa Pokepoke	Te Rūnanga o Ngāti Mutunga	Marlene Benson	GNS, Verum Group	Urenui, Uruti, Mimi Schools		What is the physical make-up of papa, how did it originate?  What are the properties of fired and unfired papa?
2020	Seachange Surveys 2	Wild for Taranaki	Danielle Gibas	Nicole Sturgess, Taranaki Regional Council, MPI, DOC, MAIN Trust NZ, Drone Technologies	Green School NZ, Omata School, Coastal Taranaki School, Highlands Intermediate	Nga Motu Marine Reserve Society, Taranaki Iwi, Nga Mahanga a Tairi,	What visual indicators (i.e. seaweed, boulder uniformity) are used by experienced fishermen to identify suitable paua habitat?  Using these visual indicators, is it possible to screen for suitable paua habitat at our sites, using a combination of drone and ground truth surveys, prior to our paua surveys (transect and time count)?

**venture**  
TARANAKI  
Te Puna Umanga

**Taranaki's Regional Development Agency**

25 Dawson Street, PO Box 670  
New Plymouth 4340, New Zealand

T+64 6 759 5150  
E [info@venture.org.nz](mailto:info@venture.org.nz)

[www.taranaki.info](http://www.taranaki.info)

An initiative of



Te Kaunihera-ā-Rohe o Ngāmotu

**New Plymouth  
District Council**

With support from

