



agenda

Te Komiti Rangahau o Unitec | Unitec Research Committee

Date:	2022-09-08
Scheduled Start:	1300h
Scheduled End:	1500h
Location:	Microsoft Teams

SECTION 1 NGĀ KUPU ARATAKI | PRELIMINARIES

1. Karakia Timatanga | Opening Prayer
2. Mihi Whakatau | Welcome from the Chair
3. Membership
4. Terms of Reference

SECTION 2 STANDING ITEMS

1. Ngā Whakapāha | Attendance, Apologies & Quorate Status
2. Pitopito Kōrero o Ngā Hui | Minutes of the Previous Meetings
3. Mahia Atu | Matters Arising

SECTION 3 MEA HEI WHAKAAE | ITEMS TO APPROVE

1. 2023 ECR Fund Grants Advisory Committee (GAC) Membership

SECTION 4 WHAKAWHITI KŌRERO | ITEMS FOR DISCUSSION

1. Guidelines for Non-Degree Teaching Research Track

SECTION 5 NGĀ TUKUNGA | ITEMS TO RECEIVE

1. 2021 Unitec Annual Research Report
2. 2022 Research Productivity Traffic Light (RPTL) Report
3. 2022 ECR Funding Progress Reports
 - a. Dr Kristie Cameron
 - b. Dr Mary Yan
 - c. A/P Renata Jadresin-Milic
4. ECR Fellowship Scheme – Open for Applications

SECTION 6 KUPU WHAKAMUTUNGA | CLOSING

1. Ētahi Kaupapa Anō | Any Other Business
2. Komiti Self-Assessment
3. Karakia Whakamutunga | Closing Karakia

SECTION 1 NGĀ KUPU ARATAKI | PRELIMINARIES

Item 1.1 Karakia Tīmatanga | Opening Prayer

KARAKIA TĪMATANGA	OPENING PRAYER
<i>Manawa mai te mauri nuku</i>	<i>Embrace the power of the earth</i>
<i>Manawa mai te mauri rangi</i>	<i>Embrace the power of the sky</i>
<i>Ko te mauri kai au</i>	<i>The power I have</i>
<i>He mauri tipua</i>	<i>Is mystical</i>
<i>Ka pakaru mai te pō</i>	<i>And shatters all darkness</i>
<i>Tau mai te mauri</i>	<i>Cometh the light</i>
<i>Haumi ē, Hui ē, Tāiki ē!</i>	<i>Join it, gather it, it is done!</i>

Item 1.2 Mihi Whakatau | Welcome from the Chair

Item 1.3 Te Komiti Rangahau o Unitec Membership

Marcus Williams (Associate Professor)	Chair and Director Research and Enterprise
Daisy Bentley-Gray (New and Emerging)	Nominee of Director, Pacific Success
Dr Catherine Mitchell (Early Career)	Nominee of Director, Māori Success
Dr Helen Gremillion (Associate Professor)	Healthcare and Social Practice
Dr Yusef Patel (Early Career)	Architecture
Duaa Alshadii (New and Emerging)	Building Construction
Dr Lian Wu (Associate Professor)	Healthcare and Social Practice
Dr Hamid Sharifzadeh (Associate Professor)	Computing and Information Technology
Dr Leon Tan (Associate Professor)	Creative Industries
Dr Kristie Cameron (Early Career)	Environmental & Animal Sciences
Dr Mitra Etemaddar	Applied Business
Robyn Gandell (Early Career)	Bridgepoint
Subject Librarian (representation rotates)	Learning and Achievement
Vacant	One member nominated by the Student Council
Arun Deo	Research Advisor

In attendance: Brenda Massey

Acting URC Secretary

Item 1.4 Te Komiti Rangahau o Unitec Terms of Reference

The powers and functions of Te Komiti Rangahau o Unitec (URC) shall be to:

- a. Foster the conduct of research, and support the achievement of Unitec's strategic research, enterprise and innovation priorities.
- b. Propose and advise on strategic directions and priorities for research, enterprise, and innovation.
- c. Provide expert advice on institutional policy.
- d. Develop protocols and guidelines and make recommendations in relation to the conduct of research, enterprise, and innovation.
- e. Oversee the Grants Advisory Committee and the reporting of funded projects.
- f. Encourage and enhance the development of the research, enterprise, and innovation culture along with student and staff research capability, with emphasis on the development of Māori and Pacific research capability.
- g. Oversee the monitoring of research outputs and research reporting.
- h. Foster Māori and Pacific, transdisciplinary, collaborative and externally engaged research, enterprise, and innovation.

SECTION 2 STANDING ITEMS

Section 2.1 Ngā Whakapāha | Attendance, Apologies & Quorate Status

RECOMMENDATION

That the committee accepts the apologies of today's meeting.

Section 2.2 Pitopito Kōrero o Ngā Hui | Minutes of the Previous Meetings

refer to [pg5](#)

RECOMMENDATION

That the committee approves the minutes of the meeting of 2022-07-14.

Section 2.3 Mahia Atu | Matters Arising

refer to [pg13](#)

SECTION 3 MEI HEI WHAKAAE | ITEMS TO APPROVE

Section 3.2 2023 ECR Fund Grants Advisory Committee (GAC) Membership

refer to [pg14](#)

SECTION 4 WHAKAWHITI KŌRERO | ITEMS FOR DISCUSSION

Section 4.1 Guidelines for Non-Degree Teaching Research Track

refer to [pg15](#)

SECTION 5 NGĀ TUKUNGA | ITEMS TO RECEIVE

Section 5.1 2021 Unitec Annual Research Report

refer to [pg24](#)

Section 5.2 2022 Research Productivity Traffic Light (RPTL) Report

refer to [pg101](#)

Section 5.3 2022 ECR Funding Progress Reports

refer to [pg107](#)

- a) Dr Kristie Cameron - refer to [pg108](#)
- b) Dr Mary Yan - refer to [pg111](#)
- c) A/P Renata Jadresin-Milic - refer to [pg114](#)

Section 5.4 ECR Fellowship Scheme – Open for Applications

refer to [pg118](#)

SECTION 6 KUPU WHAKAMUTUNGA | CLOSING

Section 6.1 Ētahi Kaupapa Anō | Any Other Business

Section 6.2 Komiti Self-Assessment

refer to [pg127](#)

Section 6.3 Karakia Whakamutunga | Closing Karakia

TE KARAKIA WHAKAMUTUNGA	CLOSING PRAYER
<i>Ka wehe atu tātou</i>	<i>We are departing</i>
<i>I raro i te rangimārie</i>	<i>Peacefully</i>
<i>Te harikoa</i>	<i>Joyfully</i>
<i>Me te manawanui</i>	<i>And resolute</i>
<i>Haumi ē, Hui ē, Tāiki ē!</i>	<i>We are united, progressing forward!</i>



minutes

Te Komiti Rangahau o Unitec | Unitec Research Committee

Date:	2022-07-14
Scheduled Start:	1300h
Scheduled End:	1500h
Location:	Microsoft Teams

MEETING OPENED:	1300h
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SECTION 1 – NGĀ KUPU ARATAKI | PRELIMINARIES

Item 1.1 Karakia Tīmatanga | Opening Prayer

Item 1.2 Mihi Whakatau | Welcome from the Chair

The Chair warmly welcomed members of the committee to the meeting including proxy members Sana Saleem and Eltahir Kabbar.

SECTION 2 – STANDING ITEMS

Item 2.1 Ngā Whakapāha | Attendance, Apologies & Quorate Status

Members Present

1. Marcus Williams (Chair)
2. Arun Deo
3. Daisy Bentley-Gray
4. Sana Saleem (proxy for Nora Md Amin)
5. Helen Gremillion
6. Yusef Patel
7. Kristie Cameron
8. Eltahir Kabbar (proxy for Hamid Sharifzadeh)
9. Lian Wu

Total members represented: 9 members

Apologies

1. Nora Md Amin
2. Robyn Gandell
3. Hamid Sharifzadeh

4. Leon Tan
5. Cat Mitchell
6. Helen Gremillion (for early departure, 2pm)

Total apologies: 6 members

Absent

Duaa Alshadli

MOTION

That the committee accepts the apologies for today's meeting.

Moved: Yusef Patel

Seconded: Helen Gremillion

MOTION CARRIED

Quorate Status

A minimum of 9 representatives is required; the meeting was quorate.

Hunga Mahi | Staff in Attendance

1. Brenda Massey, Acting Secretary

Item 2.2 Pitopito Kōrero o Ngā Hui | Minutes of Previous Meeting

MOTION

That the committee approves the minutes of the 2022-06-09 meeting as a true and accurate record.

Moved: Helen Gremillion

Seconded: Kristie Cameron

MOTION CARRIED

Item 2.3 Mahia Atu | Matters Arising

David Airehrour has left Unitec. He will be replaced by a new member from the School of Applied Business from September.

Action: Marcus Williams to send David Airehrour a formal letter of gratitude thanking him for his services to the committee.

Agenda Item	Action	Responsible	Outcome
4.1	<p>Communicate to Research Partner Penny Thomson:</p> <ol style="list-style-type: none"> 1) That in forthcoming IRP communications and Research Leader hui, Research Leaders should be strongly urged to review staff members' IRPs before submission to help improve their quality. 2) To please update the links in the IRP template so users can click through to the new Teams research documentation repository. 	Brenda Massey	Complete

4.1	Check with Julie McGregor, Learning and Development Lead, as to whether goals from IRPs are being detailed in ADEPs, as is required to happen.	Marcus Williams	Complete. IRPs are required to be uploaded, but the ADEP system is not able to be electronically checked. No further action will be taken due to human resource constraints.
5.1	<p>Work collaboratively on the formulation of a narrative and recommendations to the ELT and HoSs around the analysis undertaken on Māori versus non-Māori teaching-researchers and non-teaching researchers at Unitec.</p> <p>Meet to discuss the potential to undertake a similar exercise in the Pacific space.</p> <p>Utilise the Research Bank to review the research that has been conducted on or with Māori by non-Māori researchers at Unitec and report findings back to the committee.</p>	<p>Marcus Williams / Cat Mitchell</p> <p>Marcus Williams / Daisy Bentley-Gray</p> <p>Nora Md Amin</p>	<p>Complete. Memos have been sent to the ELT and HoSs.</p> <p>Complete. This work is underway and will be reported at a future meeting. Note that this work is different to the work undertaken by Sana, Daisy and Arun previously to produce a directory of all Pacific research being undertaken by both Pacific and non-Pacific researchers at Unitec.</p> <p>In progress.</p>
5.2	Draft letters thanking A/Ps Terri-Ann Berry and Dan Blanchon for their research centre reports.	Brenda Massey	Complete
5.3	<p>Draft letters thanking Min Hall, A/P Renata Jadresin Milic and Dr Marleen Baling for their ECR reports.</p> <p>Encourage any ECR who might have the capacity to lead a project next year to apply for the 2023 ECR Project Fund round.</p>	<p>Brenda Massey</p> <p>All</p>	<p>Complete</p> <p>Complete</p>

SECTION 3 – MEA HEI WHAKAAE | ITEMS TO APPROVE

Section 3.1 Research Centre Applications

Applications to establish two new research centres: the Digital Heritage Research Centre (A/P Renata Jadresin Milic as Director) and the Centre for Research in Education for Healthcare

Professionals (A/P Samantha Heath as Director) were presented to the committee for approval. Both applications are endorsed by the DCE Academic and the relevant Heads of School.

The establishment of a centre is an institutional acknowledgement of the focussed research capability which exists within the institute. The centres respond to the Unitec Research Strategy, which endeavours to apply focus to Unitec's research activities, and they allow for teams and groups of researchers to work together collaboratively on research projects. The majority of Unitec's external research funding is won by Unitec's research centres and generally the overheads these grants attract support their ongoing activities.

Digital Heritage Research Centre – summary of discussion

- This is an impressive application with a significant group of collaborators including students.
- There are well established and ongoing industry partnerships.
- The applicant has a track record of winning external funding.
- The centre will also include staff from Landscape Architecture.
- 3D scanning of buildings and landscapes is becoming increasingly important in architectural research. 3D scanning of whole sites can help us to understand sensitive issues, for example around the protection and preservation of wāhi tapu (sacred sites). 3D scanning has wide application and is an emerging field.
- Digital heritage is an emerging discipline nationally and internationally and there is increasing demand for 3D scanning expertise, e.g., from big architectural companies.

MOTION

That the committee supports the establishment of the Digital Heritage Research Centre.

Moved: Lian Wu

Seconded: Yusef Patel

MOTION CARRIED

Action: Marcus Williams to issue formal notification of this outcome to A/P Renata Jadresin-Milic.

Centre for Research in Education for Healthcare Professionals – summary of discussion

- In 2021 A/P Samantha Heath won a prestigious Whitinga Fellowship from The Royal Society/Te Apārangi, which is providing her with 0.8FTE to undertake a two-year research project of national importance.
- Samantha is Co-Research Leader for the School of Healthcare and Social Practice and has significant experience in administration and communication and in leading research teams that include new and emerging and early career researchers.
- This would be Unitec's first research centre focussed on education.
- It is timely that research is being undertaken into health, public health and healthcare education, particularly in the areas of aged care and literacy in learners.
- It is good to see that the centre will be located at the Waitakere Campus where most healthcare staff and students are based.
- Some of the benefits of the centre do not seem to have been as well leveraged or articulated as they could have been. This could have implications if the text presented in the application informs, for example, requests to secure external funding or resources. It was suggested that the applicant gives further consideration to the benefits of the centre and reframes these accordingly. For instance: which inequalities, exactly, will the centre address (referenced early in the application in only a general way)? Would doing so mean that

Unitec/Te Pūkenga is filling a niche in the healthcare-related research space? Providing context about university vs ITP research in healthcare could be useful here.

- The committee expressed strong support of, and confidence in, the applicant's leadership, capability and ability to generate research momentum within the School of Healthcare and Social Practice and see the centre as a valuable addition to Unitec's research landscape.

MOTION

That the committee supports the establishment of the Centre of Research in Education for Healthcare Professionals.

Moved: Helen Gremillion

Seconded: Lian Wu

MOTION CARRIED

Action: Marcus Williams to issue formal notification of this outcome to A/P Samantha Heath.

Section 3.2 Annual Research Centre Report – Cybersecurity Research Centre

The committee received the 2021 Research Centre Report from the Cybersecurity Research Centre.

- The School of Computing and Applied Technology is enjoying good and consistent leadership at the moment, which has helped to support the emergence of a new Centre Director, Denis Lavrov, who has led the writing of this report.
- The centre has continued to win grants following receipt of a large MBIE Endeavour Fund grant received in 2014 for STRATUS, a cybersecurity research project that ran for six years, including another large Endeavour Fund grant.
- The centre holds a \$120k commercialisation contract for R&D on cybersecurity software, in which Unitec owns a 15% stake of the IP.
- The centre plays a vital role in connecting Unitec with industry. There are a number of initiatives being undertaken, which have been well publicised in the media.
- Denis will be attending regular meetings with the School of Computing and Applied Technology which will facilitate more opportunities for staff engagement with the activities of the centre.

MOTION

That the committee accepts the annual report from the Cybersecurity Research Centre.

Moved: Eltahir Kabbar

Seconded: Kristie Cameron

MOTION CARRIED

Action: Marcus Williams to issue a letter thanking Denis Lavrov for his outstanding report and for his commitment to, and leadership of, the Cybersecurity Research Centre.

SECTION 4 - WHAKAWHITI KŌRERO | ITEMS FOR DISCUSSION

Section 4.1 PBRF Section Reference Group - Consultation Paper 6

The committee considered the proposals and approaches developed by the PBRF Sector Reference Group (SRG) for membership criteria and working methods of the peer review panels which will be convened for the Quality Evaluation (QE) 2025.

Marcus Williams attended a cross-sector discussion with research managers at some of the universities and other ITPs about the various options presented in the consultation paper and shared these discussions with the committee during consideration of this item. He will be providing Unitec's position on the consultation, informed by both the cross-sector discussion and by feedback received from this committee, to the Rangahau Research Forum following this hui.

Feedback provided by the committee was as follows (in red):

Panel chairing provisions

Do you support the proposal to adopt a co-chairing model, with one Co-Chair required to have expertise in Māori knowledge? – support.

Panels composition

Do you support the proposed new approach and expectations for ensuring appropriate panel representation of the diversity of Aotearoa New Zealand and of the sector? - support (replace “expected to” with “normally required to” with expectations to report back to TEC “why not”).

Panel sizes and subject area coverage

Note that the TEC will consult with former panel members on the current ratio of 35 submitted EPs per panel member, and the SRG's recommendation will be based on this feedback. – support.

Do you support **Option 1**: retain the Medicine and Public Health panel, or **Option 2**: split the panel into two new panels, one for Medicine and one for Public Health? The committee felt this was a decision best considered by researchers who would be submitting to this panel/panels. Committee member Lian Wu is a medical researcher and advocated for Option 1. He noted the workload for this panel would be large, and a lot of research straddles both areas (e.g., Covid-19 research). The committee were supportive of Lian's recommendation and Marcus will present Option 1 as being Unitec's preference.

Panel and subject area names

Do you support renaming the Māori Knowledge and Development Panel as the Mātauranga Māori Panel? – support.

Panel membership criteria

TEC welcomes any comments you have on the TEC's intended approach to the panel membership criteria, or any additional criteria that should be considered. – support main points.

Panel member training

TEC welcomes any comments on the TEC's intended approach to the panel training, or any additional training topics that should be considered. – there should be training for panels on the shift from assessing output-based portfolios to assessing portfolios that provide opportunity for researchers to articulate a narrative around partnering and impact. In addition, there will be a lot of reference to Covid-19 in people's platform statements and the panels should receive some training on applying a consistent approach to these references separately from any special circumstances.

Panel-specific guidelines

TEC welcomes any comments on the TEC's intended approach to the panel-specific guidelines, or any additional topics that should be considered. - encourage calling for the Chairs early (at least by November) as it takes time to develop new guidelines.

Section 4.2 Proposed Research Centre Procedure Amendments

The committee discussed and were supportive of the proposed amendments to Unitec's Research Centre Procedure.

Action: Marcus Williams to update the Research Centre Procedure accordingly.

SECTION 5 - NGĀ TUKUNGA | ITEMS TO RECEIVE

Section 5.1 2021 Early Career Research Fund Final Report – Dr Cat Mitchell

The committee received the final report from Dr Cat Mitchell, recipient of 2021 Early Career Researcher (ECR) Contestable Funding.

The committee noted that one of the recommendations arising from Cat's research is to "increase investment in Māori researchers/ academics including a focus on recruiting, growing, promoting and supporting more Kaupapa Māori supervisors (including making research more possible for Māori staff within the organisation)" and that it is timely that the Unitec Research Strategy Action Plan was recently updated with this aspiration in mind.

ECR funding aims to support ECRs to move onto seeking external funding and with general capability development and advancement, and these outcomes have been achieved in this instance.

Action: Marcus Williams to write to Cat Mitchell thanking her for her report and congratulating her on the successful completion of her project.

SECTION 6 - KUPU WHAKAMUTUNGA | CLOSING

Section 6.1 Ētahi Kaupapa Anō | Any Other Business

This committee is charged with providing leadership in the research space, and with the move towards Te Pūkenga it would be good for Unitec researchers to receive regular communications and updates, where possible, about the future of research within Te Pūkenga.

Action: Marcus Williams to regularly schedule any updates on research from Te Pūkenga for sharing and discussion at future committee meetings.

Section 6.2 Komiti Self-Assessment

An opportunity was given for the committee to reflect on their self-assessment provocations. The committee was reminded that feedback can be emailed to the Chair or the Secretary at any time (in confidence if requested).

Committee member Daisy Bentley-Gray thanked Marcus for his leadership of the committee and thanked Brenda and Arun for supporting her involvement in the committee. She reflected that it has been easy as a new and emerging researcher and as a Pacific representative to be part of the committee, and to share in, support and contribute to the discussions.

Section 6.3 Karakia Whakamutunga | Closing Karakia

MEETING CLOSED: 1420 h

SUMMARY OF ACTIONS

Agenda Item	Action	Responsible	Outcome
2.3	Send David Airehrour a formal letter of gratitude thanking him for his services to the committee.	Brenda Massey/ Marcus Williams	
2.3	Utilise the Research Bank to review the research that has been conducted on or with Māori by non-Māori researchers at Unitec and report findings back to the committee.	Nora Md Amin	
3.1	Issue formal notification of the URC's endorsement of the establishment of the Digital Heritage Research Centre and the Centre for Research in Education for Healthcare Professionals to A/P Renata Jadresin-Milic and A/P Samantha Heath respectively.	Marcus Williams	
3.2	Issue a letter thanking Denis Lavrov for his outstanding report and for his commitment to, and leadership of, the Cybersecurity Research Centre.	Brenda Massey/ Marcus Williams	
4.2	Update the Research Centre Procedure.	Marcus Williams	
5.1	Write to Cat Mitchell thanking her for her report and congratulating her on the successful completion of her project.	Brenda Massey/ Marcus Williams	
6.1	Regularly schedule any updates on research from Te Pūkenga for sharing and discussion at future committee meetings.	Marcus Williams	

MATTERS ARISING

Agenda Item	Action	Responsible	Outcome
2.3	Send David Airehrour a formal letter of gratitude thanking him for his services to the committee.	Brenda Massey/ Marcus Williams	Complete
2.3	Utilise the Research Bank to review the research that has been conducted on or with Māori by non-Māori researchers at Unitec and report findings back to the committee.	Nora Md Amin	Verbal update will be provided
3.1	Issue formal notification of the URC's endorsement of the establishment of the Digital Heritage Research Centre and the Centre for Research in Education for Healthcare Professionals to A/P Renata Jadresin-Milic and A/P Samantha Heath respectively.	Marcus Williams	Complete
3.2	Issue a letter thanking Denis Lavrov for his outstanding report and for his commitment to, and leadership of, the Cybersecurity Research Centre.	Brenda Massey/ Marcus Williams	Complete
4.2	Update the Research Centre Procedure.	Marcus Williams	Complete
5.1	Write to Cat Mitchell thanking her for her report and congratulating her on the successful completion of her project.	Brenda Massey/ Marcus Williams	Complete
6.1	Regularly schedule any updates on research from Te Pūkenga for sharing and discussion at future committee meetings.	Marcus Williams	Complete. This action has been added to the committee's annual work plan.

Unitec New Zealand Limited

Meeting of Te Komiti Rangahau o Unitec | Unitec Research Committee

Date of Meeting: 8 September 2022

Title	2023 ECR Fund Grants Advisory Committee (GAC) Membership
Provided by:	A/P Marcus Williams, Director Research and Enterprise
For:	APPROVAL

Recommendation/s

That the committee approves the membership of the 2023 ECR Fund Grants Advisory Committee (GAC), a sub-committee of the Unitec Research Committee, as follows:

GAC membership who will consider every application:

A/P Marcus Williams, Director Research and Enterprise

Dr Hinekura Smith, Ngā Wai a te Tūi Māori & Indigenous Research Centre

A/P Evangelia Papoutsaki, Research Ethics Administrator, Tūāpapa Rangahau

GAC membership who will consider specific applications:

2 x academics specifically selected for each applicant, chosen from outside of the applicant's school where possible, but with relevant discipline or transdisciplinary expertise. Bespoke members will be selected by Tūāpapa Rangahau.

Purpose

Seven early career researchers submitted registrations of interest for 2023 Early Career Research Funding. They have each been invited to submit full applications before 5pm on Monday, 7 October 2022. The full applications will need to be assessed by members of the GAC.

Next Steps

GAC members will read, consider, and provide feedback on the applications, convening on 22 November 2022 to decide whether the applications should be funded. Applicants will be notified of the outcome of their applications on or before 2 December 2022.

Unitec New Zealand Limited

Meeting of Te Komiti Rangahau o Unitec | Unitec Research Committee

Date of Meeting: 8 September 2022

Title	Guidelines for Non-Degree Teaching Research Track
Provided by:	A/P Marcus Williams, Director Research & Enterprise
For:	DISCUSSION

Recommendation

That the committee discusses new proposed Guidelines for Non-Degree Teaching Research Track.

Purpose

The purpose of this procedure is to:

- Define the process for achieving a research track for staff who are not teaching on a degree.
- Ensure that all staff who are achieving excellence in research can be supported, including those not teaching on degree level programmes.
- Ensure that all staff who are achieving excellence in research can be eligible for PBRF.
- Ensure that there are robust processes in place to assess excellence in research toward achieving the Non-Degree Teaching Research Track.

Key Points

This procedure involves:

- Identifying eligible staff who are achieving excellence in research and are not teaching on degree level programmes.
- Assessing the level of excellence achieved by the Non-Degree Teaching Researcher through consideration of verified outputs in Unitec's Research Output Management System (ROMS).
- Ensuring the relevant Head of School and the Director Research and Enterprise agree the eligible staff member qualifies for, and should be, supported.
- The eligible staff member producing an approved Individual Research Plan outlining a pathway toward submitting a PBRF portfolio in the next round.
- Ensuring the eligible staff member's Position Description is updated to explicitly state the undertaking of research is a responsibility of that staff member.

Attachments

- Guidelines for Non-Degree Teaching Research Track
- Non-Degree Teaching Research Track Application Form



GUIDELINES FOR NON-DEGREE TEACHING RESEARCH TRACK

Purpose

The purpose of this procedure is to:

- Define the process for achieving a research track for staff who are not teaching on a degree.
- Ensure that all staff who are achieving excellence in research can be supported, including those not teaching on degree level programmes.
- Ensure that all staff who are achieving excellence in research can be eligible for PBRF.
- Ensure that there are robust processes in place to assess excellence in research toward achieving the Non-Degree Teaching Research Track.

Scope

This procedure applies to:

- Full time or part time tenured staff who are achieving excellence in research and are not teaching on degree level programmes (limited tenure staff are normally not eligible; casual staff are not eligible).
- The relevant Head of School of eligible staff.
- The Director Research and Enterprise.
- The Research Advisor.
- The Research Partners.

Procedure

This procedure involves:

- Identifying eligible staff who are achieving excellence in research and are not teaching on degree level programmes.
- Assessing the level of excellence achieved by the Non-Degree Teaching Researcher through consideration of verified outputs in Unitec's Research Output Management System (ROMS).
- Ensuring the relevant Head of School and the Director Research and Enterprise agree the eligible staff member qualifies for, and should be, supported.
- The eligible staff member producing an approved Individual Research Plan outlining a pathway toward submitting a PBRF portfolio in the next round.
- Ensuring the eligible staff member's Position Description is updated to explicitly state the undertaking of research is a responsibility of that staff member.

Identifying eligible staff

- Non-Degree Teaching Researchers may self-identify by contacting Tūāpapa Rangahau, Unitec's Research and Enterprise Office.

- Non-Degree Teaching Researchers may be identified by Tūāpapa Rangahau, their line manager and/or their Head of School.

Assessing the level of research excellence

- The ROMS shell of the applicant must be up-to-date, and the research outputs therein must have been verified.
- The Research Advisor, the Director Research and Enterprise and the Research Partners must concur that the level of verified productivity in ROMS is, or would be by the deadline, equivalent to an excellence rating in the PBRF.
- This assessment will be verified on the template appended to this guideline.

Ensuring approvals

- The Non-degree Teaching Staff Research Track Application Form (appended to this guideline) must be approved by the relevant Head of School.
- The Non-degree Teaching Staff Research Track Application Form must be approved by the Director of Research and Enterprise

Individual Research Plans

- The Non-degree Teaching Researcher must complete an Individual Research Plan outlining a pathway toward submitting a PBRF portfolio in the next round.
- The Non-degree Teaching Researcher's Individual Research Plan must be approved by the relevant Head of School.
- The Non-degree Teaching Researcher's Individual Research Plan must be approved by the Director of Research and Enterprise

Position Description

- The Director Research and Enterprise will work with HR to ensure that the Position Description of the successful Non-Degree Teaching Researcher applicant is accordingly adjusted in draft.
- The adjusted draft Position Description will be shared with the Non-Degree Teaching Researcher applicant and the Head of School for approval.
- The new Position Description will be filed appropriately.

Responsibilities

Role	Responsibilities
Non-Degree Teaching Researchers	<ul style="list-style-type: none"> • Ensures ROMS is up-to-date, and all outputs have been verified. • Completes an Individual Research Plan outlining a pathway toward submitting a PBRF portfolio in the next round. • Completes the Non-Degree Teaching Staff Research Track Application Form. • Approves their new Position Description.

Heads of School	<ul style="list-style-type: none"> • Approves the Non-Degree Teaching Researcher's Individual Research Plan outlining a pathway toward submitting a PBRF portfolio in the next round. • Approves the Non-Degree Teaching Researcher's Non-Degree Teaching Staff Research Track Application Form. • Approves the Non-Degree Teaching Researcher's new Position Description.
Director Research and Enterprise	<ul style="list-style-type: none"> • Concurs that the level of verified productivity in ROMS is, or would be by the deadline, equivalent to an excellence rating in the PBRF. • Approves the Non-Degree Teaching Researcher's Individual Research Plan as a pathway toward submitting a PBRF portfolio in the next round. • Approves the Non-Degree Teaching Researcher's Non-Degree Teaching Staff Research Track Application Form. • Works with HR to ensure that the Position Description of the successful Non-Degree Teaching Researcher applicant is adjusted in draft to explicitly state that the undertaking of research is a responsibility of that staff member. • Obtains the approval of the successful Non-Degree Teaching Researcher applicant and their Head of School of the new Position Description.
Research Advisor	<ul style="list-style-type: none"> • Identifies eligible staff who are achieving excellence in research and are not teaching on degree level programmes. • Once eligible staff have been identified, assesses the level of excellence achieved through verified outputs in Unitec's Research Output Management System (ROMS). • Concurs that the level of verified productivity in ROMS is, or would be by the deadline, equivalent to an excellence rating in the PBRF.
Research Partners	<ul style="list-style-type: none"> • Identifies eligible staff who are achieving excellence in research and are not teaching on degree level programmes. • Concurs that the level of verified productivity in ROMS is, or would be by the deadline, equivalent to an excellence rating in the PBRF. • Ensures the relevant Head of School and the Director Research and Enterprise agree the eligible staff member qualifies for, and should be, supported.
Human Resources	<ul style="list-style-type: none"> • Works with the Director Research and Enterprise to ensure that the Position Description of the successful Non-Degree Teaching Researcher applicant is adjusted in draft to explicitly state that the undertaking of research is a responsibility of that staff member. • Files the new Position Description appropriately once it has been approved by the successful Non-Degree Teaching Researcher applicant and their Head of School.

Reference Documents

- Non-Degree Teaching Staff Research Track Application Form
 - [Individual Research Plan Template](#)
 - [Unitec Research Strategy 2020-2024](#)
-

Approval Details

Version number	1	Issue Date	1 August 2022
Approval authority:	Te Komiti Mātauranga Academic Committee	Procedure Owner:	Director Research & Enterprise
Contact Person	Research Advisor	Date of Next Review	August 2024



NON-DEGREE TEACHING STAFF RESEARCH TRACK

Application Form

Declarations:

1. I have met with a Tūāpapa Rangahau Research Partner and discussed this process, which they have supported in principle.

Yes ☐

No ☐

2. I have attached my approved Individual Research Plan outlining a pathway toward submitting a PBRF portfolio for the next round.

Yes ☐

No ☐

3. I have submitted for the most recent Internal PBRF Quality Evaluation.

Yes ☐

No ☐

4. My ORCID number is:

5. My ROMS profile is up-to-date, and my outputs have been verified.

Yes ☐

No ☐

Signatures:

Applicant

Signed:

Dated:

Head of School (signature denotes approval of this application)

Signed:

Dated:

Next Steps:

Submit this signed and completed application form to a Tūāpapa Rangahau Research Partner.

NB: Decisions on applications will be made in consideration of the Non-Degree Teaching Research Track Guidelines.

For Tūāpapa Rangahau Purposes Only

Signatures:

Tūāpapa Rangahau Research Partner

Signed:

Dated:

Unitec Research Advisor

Signed:

Dated:

Director Research and Enterprise

Signed:

Dated:

Unitec New Zealand Limited

Meeting of URC – Te Komiti Rangahau o Unitec | Unitec Research Committee

Date of Meeting: 2022-09-08

Title	Unitec 2021 Research Annual Report
Provided by:	Marcus Williams, Director, Tūāpapa Rangahau
Authored by:	Arun Deo & Marcus Williams, Tūāpapa Rangahau
For:	APPROVAL

Recommendation/s

That the URC endorses the Unitec 2021 Research Annual Report.

Purpose

Accompanying this memo is the Unitec 2021 Research Annual Report, produced by Tūāpapa Rangahau; partnering research and enterprise. It provides a comprehensive summary of Unitec's Research and Enterprise activity for the 2021 year.

Background

Whāia te iti kahurangi, ki te tuohu koe me he maunga teitei.

Seek the treasure you value most dearly: if you bow your head, let it be to a lofty mountain.

The treasure of 2021 was the highly successful joint research symposium with Manukau Institute of Technology, with outstanding keynote speakers including Dr Sereana Naepi, Co-Chair, Early Career Researcher Forum, Royal Society Te Apārangi, a lively and topical panel discussion on the new research landscapes in Aotearoa (Horonuku Hou) with four women researchers of diverse backgrounds from across the motu (Invercargill to Whangārei), five research excellence awards and over 130 presentations from staff and students. Yet it was also another challenging year as we continued to face down the Covid-19 pandemic, teaching online in a five-month lockdown with a total travel ban. In addition, a three-month asbestos scare locked people out of one of our largest teaching and research buildings, requiring several funded research projects to start from scratch due to zero access to laboratories and long-term botanical trials. Despite these obstacles, the continued leadership, dedication and drive of the committed research staff and supportive managers at Unitec prevailed to produce the outcomes summed up in this report. Directors of Research Centres, Research Leaders in Schools, Principal Investigators of funded projects, committee members, teaching researchers and my Tūāpapa Rangahau (research office) colleagues rose, as they always do, to face these challenges. All this in the context of a sector undergoing profound reform and the relentless change and disruption

which comes with that. These pages contain the data and the narratives of a research success story in the context of the Aotearoa New Zealand vocational education sector, that continues to be quite remarkable. This document reports on the second year of the Unitec Research Strategy 2020–2024, in which we:

- » ensure our research is Te Tiriti aligned and conducted in the spirit of our partnership;
- » continue to support and consolidate our four flourishing research centres: Ngā Wai a Te Tūī, Māori and Indigenous Research Centre; the Cybersecurity Research Centre; the Applied Molecular Solutions Research Centre; and the Environmental Solutions Research Centre;
- » resource a well-organised research-capability development infrastructure for staff and students, which is aligned with our priorities, through our Research Partners, Research Leaders, funding products and suite of Research Professional Development offerings;
- » prioritise and proactively develop industry and community partnership for all our research, through our Research Voucher scheme, Research Partner Enterprise and the partnering requirements of our internal research funding products;
- » incentivise student research integration into our research projects and funding programmes.

The Unitec Research Strategy was deliberately developed with the emerging goals of the Review of Vocational Education in mind so that it placed our researchers in the best possible position to support and be prepared for Te Pūkenga and the start date in January 2023. Our focus on Te Tiriti o Waitangi, industry/community partnerships, student-integrated research and our four future-focused research centres – Cybersecurity, Applied Molecular Solutions, Environmental Solutions and Māori and Indigenous research – is a strong indicator of the critical value of truly applied research to Aotearoa New Zealand as it faces off the challenges of climate change, digital futures and a more equitable society.

Next Steps

After the approval, this report will be made available to the internal stakeholders of Tūāpapa Rangahau.

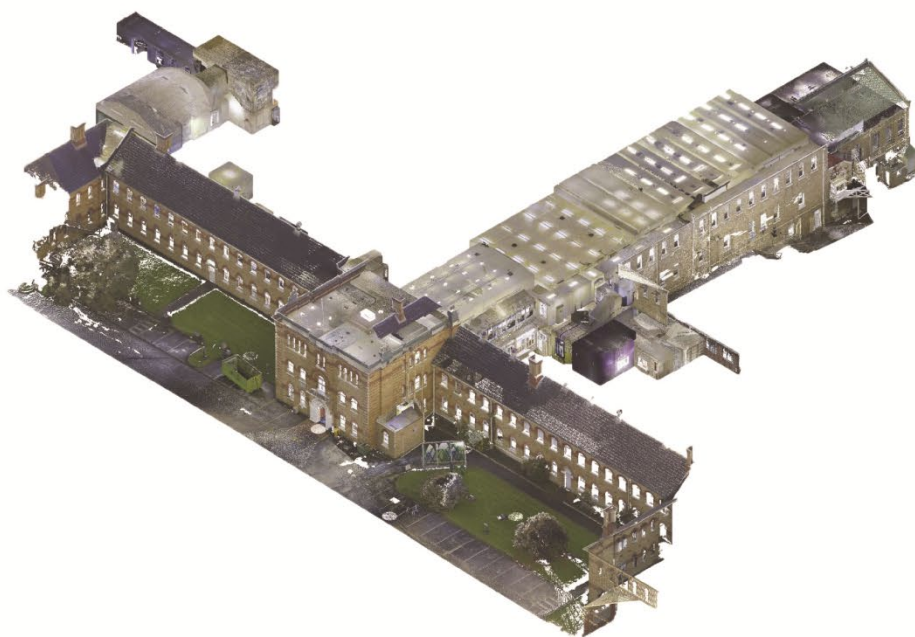
Contributors

- » Arun Deo – Research Advisor, Tūāpapa Rangahau.
- » Marcus Williams – Director, Tūāpapa Rangahau

Attachments

Please refer to the attachment: Research Annual Report 2021.pdf

Unitec Research Annual Report 2021



Prepared by Tūāpapa Rangahau;
partnering research & enterprise



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1 Introduction

Whāia te iti kahurangi, ki te tuohu koe me he maunga teitei.

Seek the treasure you value most dearly: if you bow your head, let it be to a lofty mountain.

The treasure of 2021 was the highly successful joint research symposium with Manukau Institute of Technology, with outstanding keynote speakers including Dr Sereana Naepi, Co-Chair, Early Career Researcher Forum, Royal Society Te Apārangi, a lively and topical panel discussion on the new research landscapes in Aotearoa (Horonuku Hou) with four women researchers of diverse backgrounds from across the motu (Invercargill to Whangārei), five research excellence awards and over 130 presentations from staff and students. Yet it was also another challenging year as we continued to face down the Covid-19 pandemic, teaching online in a five-month lockdown with a total travel ban. In addition, a three-month asbestos scare locked people out of one of our largest teaching and research buildings, requiring several funded research projects to start from scratch due to zero access to laboratories and long-term botanical trials. Despite these obstacles, the continued leadership, dedication and drive of the committed research staff and supportive managers at Unitec prevailed to produce the outcomes summed up in this report. Directors of Research Centres, Research Leaders in Schools, Principal Investigators of funded projects, committee members, teaching researchers and my Tūāpapa Rangahau (research office) colleagues rose, as they always do, to face these challenges. All this in the context of a sector undergoing profound reform and the relentless change and disruption which comes with that. These pages contain the data and the narratives of a research success story in the context of the Aotearoa New Zealand vocational education sector, that continues to be quite remarkable. This document reports on the second year of the Unitec Research Strategy 2020–2024, in which we:

- » ensure our research is Te Tiriti aligned and conducted in the spirit of our partnership;
- » continue to support and consolidate our four flourishing research centres: Ngā Wai a Te Tūi, Māori and Indigenous Research Centre; the Cybersecurity Research Centre; the Applied Molecular Solutions Research Centre; and the Environmental Solutions Research Centre;
- » resource a well-organised research-capability development infrastructure for staff and students, which is aligned with our priorities, through our Research Partners, Research Leaders, funding products and suite of Research Professional Development offerings;
- » prioritise and proactively develop industry and community partnership for all our research, through our Research Voucher scheme, Research Partner Enterprise and the partnering requirements of our internal research funding products;
- » incentivise student research integration into our research projects and funding programmes.

The Unitec Research Strategy was deliberately developed with the emerging goals of the Review of Vocational Education in mind so that it placed our researchers in the best possible position to support and be prepared for Te Pūkenga and the start date in January 2023. Our focus on Te Tiriti o Waitangi, industry/community partnerships, student-integrated research and our four future-focused research centres – Cybersecurity, Applied Molecular Solutions, Environmental Solutions and Māori and Indigenous research – is a strong indicator of the critical value of truly applied research to Aotearoa New Zealand as it faces off the challenges of climate change, digital futures and a more equitable society.



Associate Professor Marcus Williams, Director

Tūāpapa Rangahau, Partnering Research and Enterprise

2 Executive Summary

This research report is structured around the [Unitec Research Strategy 2020–2024](#) (Section 8.1). The strategy responds strongly to Manaakitia Te Rito, the purpose statements coming out of the Reform of Vocational Education (RoVE), Te Pūkenga and the learning of the Unitec research community since the previous five-year version. The strategy has three Priorities and three related Goals, with Key Performance Indicators (KPIs) designed to measure progress toward these goals. They are:

- » **Priority One** – Research that is aligned with Te Tiriti o Waitangi.

***Goal One:** Unitec has strong Māori research leadership, capability, excellence, partnerships, processes and governance.*

Report highlights:

- Ngā Wai a Te Tūī, Māori and Indigenous Research Centre generated \$2,478,511 external research income (ERI), contributing 75% of the total ERI at Unitec in 2021. The Centre also won eight externally funded projects in 2021.
- Māori academics produced a total of 30 research outputs in 2021 and Pacific academics produced 28 research outputs.
- Successful Unitec/MIT Research Symposium with greater Māori focus and involvement. Highlights are:
 - Two Māori keynote speakers and one Māori panellist.
 - Māori researchers scooped five out of the 15 awards.

- » **Priority Two** – A flourishing, collaborative research culture.

***Goal Two:** The diverse people of Unitec have fit-for-purpose capability development and support toward sustainable, collaborative research productivity and excellence.*

Note: The highlights, in bold font, represent the Key Performance Indicators (KPIs) of research at Unitec.

Report highlights:

- Building staff capability in research – six different workshops and retreats organised in 2021, which were attended by a total of 220 staff.
- Early Career Researcher (ECR) Fund – four recipients supported.
- ECR Fellowships – one recipient supported.
- Early Career Researcher Support Fund – Return from Parental Leave Fund – two recipients supported.
- New Researcher Project Start-up Fund (NRPSF) – one recipient supported.
- **Research outputs – a total of 486 (297 quality-assured and 189 non-quality-assured, an average of 1.61 quality-assured outputs to FTE of degree teaching staff).**
- **76 student-integrated research outputs** (research outputs where the co-authors were current or recent Unitec students).
- Apart from the Research Dissemination Funding, various other funds were available to staff in 2021. These included: Collaborative Research Dissemination Fund; Conference Seed Fund; Wairaka: Natural Environment, History and Culture Fund; Asbestos Lockout Fund and Student Integrated Research Output funding.
- **Research Productivity Traffic Light (RPTL) – 93%-degree programmes green-lit.**
- Ethics – 61 applications approved.
- Postgraduate scholarships – 49 scholarships awarded.

- » **Priority Three** – Partnered research and innovation.

***Goal Three:** Research that is industry/community partnered and promotes innovation.*

Report highlights:

- **45 industry-funded projects.**
- 28 proposals for external funding submitted: 19 successful.
- A total of \$2,877,626 of grants won.
- **\$3,312,907 as total external research income (ERI).**
- The Cybersecurity Research Centre contributed \$535,379 as ERI.
- The Applied Molecular Solutions Research Centre (AMSRC) contributed \$85,035 as ERI and won three new grants.
- The Environmental Solutions Research Centre (ESRC) contributed \$122,969.
- Five industry scholarships awarded in which students are partnered with community or companies.
- Unitec/MIT Research Symposium open to ITP sector – with over 400 registrations, 10 ITPs participating, 121 presentations, 13 posters, five research excellence awards, three keynote speakers and a panel discussion.
- There were nine presentations from Unitec staff at the ITP Research and Innovation Symposium. A total of 20 staff co-authored these nine presentations.
- Unitec ePress published quality-assured research outputs for 43 Unitec staff members and 18 staff members from other institutions in Te Pūkenga.

The Research Strategy Action Plan (Section 8.2) provides a detailed breakdown of how we will achieve the three goals and how the six [KPIs](#)² measure our progress toward these goals.

The six Key Performance Indicators (KPIs) for research are:

1. **Rangahau Māori Productivity** – productivity in this context is aggregated as quality-assured (QA) outputs by Māori staff, funded projects with named Māori staff, Māori supervisors, Level 9 and 10 Māori postgraduate scholarships, QA outputs that demonstrate excellence in Vision Mātauranga, accredited Vision Mātauranga and kaupapa Māori rangahau professional development achievements, and rangahau Māori research stories in the media.
2. **Quality Assured (QA) Research Outputs** – recognised research outputs that have been through a peer-review process or have been specifically commissioned. This is presented as a ratio of counts of the number of QA outputs to FTE of degree teaching staff.
3. **Research Productivity** – measure of staff teaching on degree programmes who meet the agreed levels of research in the Research Productivity Traffic Light. This is measured as the ratio of research-active staff to the total number of staff on a degree programme.
4. **External Research Income (ERI)** – income received from external sources for research purposes calculated on the project milestones achieved and spending to date, in a particular year. This is measured in dollars.
5. **Industry-Funded Projects** – research and enterprise projects Unitec is receiving funding for, where the services Unitec is providing are applied contract research or consultancy, from all funders excluding any governmental contestable funding sources. This is measured as a count of the number of projects.
6. **Student-Integrated Research** – a measure of student input into staff-engaged research including authorship, contributions to wānanga, creative outputs, studentships, research-assistant positions, awards or other contributions (as defined by the PBRF). This is measured as a count of the number of research outputs.

² This hyperlink takes you to Unitec's Power BI Portal. You will need to login into this Portal using your own credentials and once you are into Power BI refer to the **Research Dashboard**.

The first section of the report relates to Priority and Goal One, the second to Priority and Goal Two and finally Priority and Goal Three.

3 Priority One (Research that is aligned with Te Tiriti o Waitangi)

Unitec will ensure that its support for research, governance and processes is aligned with Te Tiriti o Waitangi. In this way, Unitec will exemplify leadership in Māori research in the ITP sector and in Aotearoa. The principle of rangatiratanga expressed through our partnership document, Te Noho Kotahitanga, will apply to research at Unitec: that Māori will have authority over and responsibility for all research related to Māori dimensions of knowledge. Vision Mātauranga will be integrated into all research processes and researchers will be supported to understand and fulfil these requirements. We will resource and grow the numbers and capability of Māori researchers, including Māori supervisors of our postgraduate programmes. We will actively seek and maintain partnerships with iwi, hapū, Māori businesses, institutions and peak Māori bodies. We will evolve our research office appropriately to ensure Māori research governance and rangatiratanga.

This section of the report highlights:

- » The activities of Ngā Wai a Te Tūi, Māori and Indigenous Research Centre.
- » Postgraduate examinations (including completions by Māori and Pacific students).
- » Research outputs by Māori and research outputs by Pacific academics.
- » Māori postgraduate scholarship.

3.1 Ngā Wai a Te Tūi, Māori and Indigenous Research Centre

‘E koekoe te tūi, e ketekete te kākā, e kūkū te kererū – The tūi chatters, the parrot gabbles, the wood pigeon coos’.

This whakataukī refers to the many different voices and the various versions of stories, and that through the strengths of these together, in good balance, can create powerful and beautiful harmony.

Established in 2019, Ngā Wai a Te Tūi Māori & Indigenous Research Centre (NWiTT) continues to lead transformative and innovative Māori and Indigenous research that responds to the needs and aspirations of whānau, hapū, marae, iwi and communities. Through collaborative partnerships, NWiTT engages in multi-disciplinary kaupapa Māori research that centres mātauranga Māori (the goals, aspirations and issues from an Indigenous lens) Māori concepts, knowledge, theories and practice to advance and respond to contemporary issues within society.

NWiTT has also become a source of mātauranga within the context of Te Whare Wānanga o Wairaka, evidenced in the number of internships and postgraduate support work done across schools within the institution. Two key examples are - MAI ki Wairaka, a Māori postgraduate network programme funded by Ngā Pae o te Māramatanga, Aotearoa New Zealand’s Māori Centre of Research Excellence and a Kaupapa Māori Summer Internship programme in partnership with Te Hīringa Hauora, Māori Health Promotions agency.

Led by Professor Jenny Lee-Morgan (Waikato-Tainui), NWiTT comprises a fast-growing multidisciplinary team to respond and lead whānau, hapū, iwi and community research.

Figure 1: Ngā Wai a Te Tūi Māori & Indigenous Research Centre team members (left to right: Ngāhuia Eruera, Rau Hoskins, Irene Kereama-Royal, Rihi Te Nana, Kate Lee, Maia Ratana, Jenny Lee-Morgan, Jo Gallagher, Bernadette Lee, Mihiterina Williams.



The team included, in 2021, Professor Leonie Pihama (Te Ātiawa, Ngāti Māhanga, Ngā Māhanga ā Tairi), Irene Kereama-Royal (Ngāpuhi, Ngāti Tuwharetoa, Ngāti Raukawa Te Au Tonga, Parehauraki), Dr Hinekura Smith (Te Rārawa, Ngāpuhi), Dr Nālani Wilson-Hokowhitu (Kānaka Maoli), Dr Catherine (Cat) Mitchell (Taranaki), Rau Hoskins (Ngāpuhi, Ngāti Hau), Jacqueline Paul (Ngāpuhi, Ngāti Tuwharetoa, Ngāti Kahungunu ki Heretaunga) and Ngāhuia Eruera (Ngāti Awa, Ngāi Tūhoe, Tūhourangi, Ngaiterangi, Ngāti Rangitihi, Ngāti Tamaterā), supported by a team of research assistants, administrators and community researchers.

The Centre is fully funded by external research projects and it is through the critical collaboration with external partnerships that NWAaTT is able to be self-sustainable. Recognition is extended to these partnerships and organisations who funded research projects in 2021:

- » Ngā Pae o te Māramatanga
- » Auckland War Memorial Museum
- » The Royal Society Te Apārangi
- » Iwi Collective Partnership (ICP)
- » Lifewise Trust
- » Te Hīringa Hauora / Health Promotion Agency.

3.1.1 The 2021 research projects:

The 2021 major research projects of NWAaTT included the following:

- » **Lifewise Trust – Manaaki Rangatahi** is a collective rūpū representing organisations who provide various services to rangatahi across Tāmaki Makaurau. Manaaki Rangatahi sees the impact homelessness has on rangatahi and works tirelessly to ensure they have a safe place to go and people who support them. Support workers have pointed out that accommodating rangatahi temporarily in motels is not safe or appropriate as it leaves them vulnerable and isolated and, in some cases, rangatahi are choosing to return to unsafe home environments or to live on the streets rather than reside in temporary accommodation provided by the government. Consequently, Manaaki Rangatahi is urging the Government to provide better solutions for emergency housing for rangatahi that is safe and has wraparound support. They are also calling for a clear strategy that addresses the causes and impacts of youth homelessness and ultimately an end to youth homelessness once and for all.

Manaaki Rangatahi have indicated that there is a need for research that supports what they are seeing on the ground to help them obtain funding to better support rangatahi experiencing homelessness. The research team, led by Professor Jenny Lee-Morgan, will work alongside Manaaki Rangatahi to gather information and outline the major issues and barriers that rangatahi encounter that lead to homelessness and inhibit their ability to obtain safe, secure, and supported housing. This Rangahau aims to provide an overview of youth homelessness for the Manaaki Rangatahi ki Tāmaki Makaurau collective, documenting and outlining key issues and barriers that rangatahi are facing. The research will also examine where and how data is being collected and how this can help Lifewise to better understand rangatahi homelessness.

- » **Kia tika te hī ika: Exploring fisheries tikanga and mātauranga amongst the ICP Iwi Partners:** Fishing in Aotearoa New Zealand was first practiced according to tikanga (customs) within whānau, hapū and iwi, and founded in te Ao Māori. Colonisation brought laws and customs that were imposed on tikanga practices. One hundred and fifty years later, the Fisheries Treaty Settlement recognised Iwi Māori as quota owners. However, they had to modify their practices and behaviours to fit in with legislation, which separated customary and commercial fishing. This is an artificial split for Māori; in the past whānau and hapū managed the resource to fit the need. This project is developing transformative fisheries practice based on tikanga Māori to

improve the social, cultural and ecological goals of the Iwi Collective Partnership (ICP) as an example of fisheries leadership in Aotearoa. The rangahau, co-led by Irene Kereama Royal, asks: *what can tikanga do to inform commercial fishing practice?*

- » **Retracing the Storylines of Pacific Women Voyagers and Navigators:** Dr Nālani Wilson-Hokowhitu won a Royal Society Te Apārangi Marsden Fund grant during her time at University of Waikato and brought the project with her when she joined NWaTT in 2021. As a Kanaka 'Oiwī mother, voyager, artist, curator and scholar with mo'okii'auhau (genealogies) to Moloka'i Nui a Hina and Kanak'aukai, the voyaging people of Kalapana, Hawai'i, one of the overall aims of the research is to expound upon the genealogical interconnections between Kanaka Maoli women voyagers and navigators throughout Moananuiakea. The research project will utilise m'oki'auhau as methodology, focusing on three specific locations in Hawa'i, Tahiti and Aotearoa to keep the project achievable within the Marsden Fast-Start timeline and parameters. This project will investigate and re-centre Pacific Indigenous knowledges by researching the storylines of Pacific women voyagers and visionaries to unravel what this body of knowledge reveals about feminine epistemologies, ontologies, women in leadership, gender and Pacific women's power. A long-term aim of the research will be to engage with the wider region of Moananuiakea, in particular Nālani seeks to re-story the connections between Hina/Hine/Ine/Sima/Sina and Ni'anoa.

3.1.2 Research conferences:

The ongoing impact of Covid-19 during 2021 caused many conferences and symposiums to be cancelled or rearranged to be held online. Unfortunately, one casualty of the ongoing pandemic was NWaTT's conference "Te Pā Ka Rito: Kāinga Māori Research Conference", which was scheduled to be held on the 14th and 15th of October, face-to-face, at Te Noho Kotahitanga Marae at Unitec. The conference aimed to locate Māori research as a critical part of the growth of the pā contributing to the development of flourishing Māori communities. The circumstances of the Covid outbreak and the uncertainties this created, made things too difficult, both for people wanting to participate and for NWaTT as the host and organising rūpū. While consideration was given to re-organising an online conference, the preference of NWaTT was for a face-to-face hui. The conference is now likely to be held late 2022.



NWaTT researchers made significant contributions to both the Unitec/MIT Research Symposium (see Sections 3.5 and 5.8.1) and the Institutes of Technology and Polytechnics Research and Innovation Symposium (see Section 5.8.2), with the MOKO project, led by Professor Jenny Lee-Morgan, winning the Māori Excellence Awards category at the former (see Section 5.8.1.11 for full details).

3.1.3 NWaTT – external research income

In total, Ngā Wai a Te Tūi generated \$2,478,511 in external research income in 2021 from active contracts won and/or novated since its establishment. NWaTT also won or novated eight new grants with contract value of \$2,388,544 in 2021.

:

Project Code	Funder	Contract Value	Project Title/Subject
RE20010	Ngā Pae o te Māramatanga	\$18,000	MAI ki Wairaka
RE21004	Ngā Pae o te Māramatanga	\$30,000	Manaakitanga: A marae response to Covid-19
RE21005	Auckland Museum	\$1,748,231	Te Mana o Rangitāhua
RE21008	Royal Society Te Apārangi	\$300,000	Retracing the storylines of Pacific women voyagers and navigators
RE21013	Ngā Pae o te Māramatanga	\$6,300	Hono Mai Matariki 2021
RE21015	Iwi Collective Partnership	\$176,013	Kia tika te hī ika: Exploring fisheries tikanga and mātauranga amongst the ICP Iwi Partners
RE21016	Lifewise Trust	\$40,000	Maanaki Rangatahi
RE21017	Health Promotion Agency	\$70,000	Kaupapa Māori research internship programme
	Total	\$2,388,544	

Table 1: Grants won by Ngā Wai a Te Tūi in 2021

3.2 Postgraduate examinations and completions

Tūāpapa Rangahau manages and administers the examination of all 90-credit and higher theses for Unitec's masters and doctoral programmes. Figure 2 shows the number of theses (90 or more credits) submitted for examination since 2011. The number of submissions of theses in 2021 is lower than the previous years. This is due to the closure of some postgraduate programmes and some students having to pause their studies due to the Covid-19 pandemic.

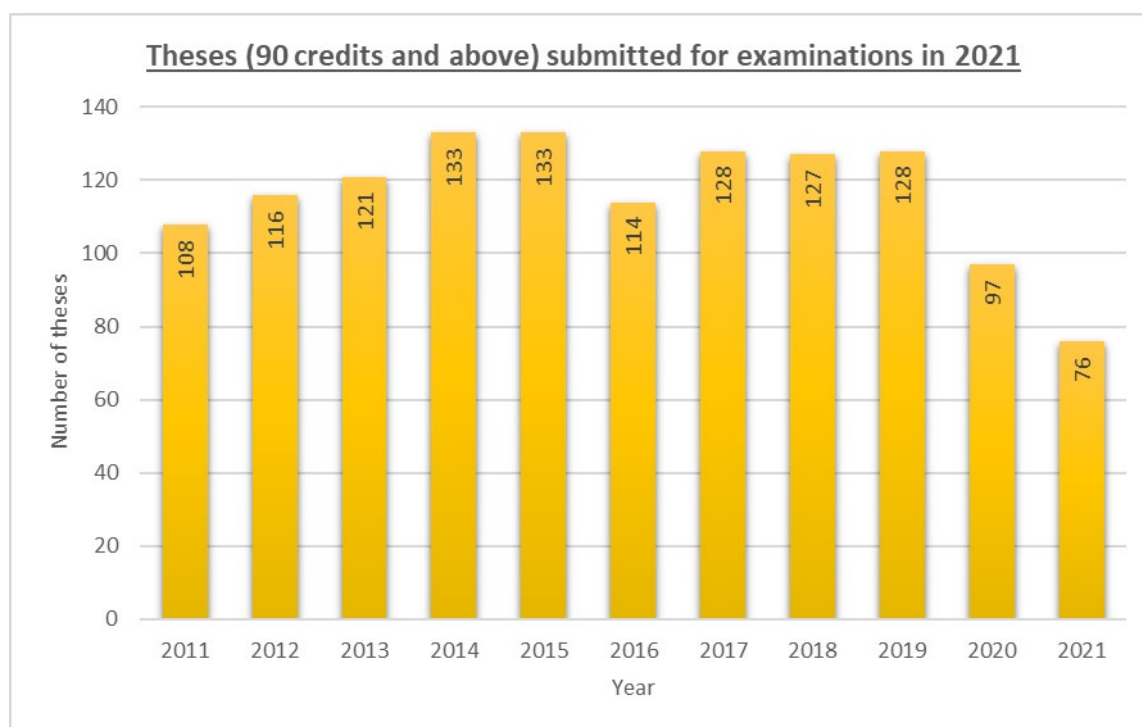


Figure 2: Theses (90+ credits) submitted for examination.

3.2.1 Completions by Māori and completions by Pacific students

In 2021, there were 76 theses (90 or more credits) submitted for examination and out of these 66 were successful completions. Out of these, there were four completions by students who identified themselves as Māori, and four by students who identified themselves as Pacific.

3.2.2 Dean's Award for A+ postgraduate students

In 2021 there were six master's completions with an A+ grade. Due to the Covid-19 pandemic, the award ceremony was cancelled. The award ceremony, attended by family, supervisors and leaders of programmes, is usually held annually.

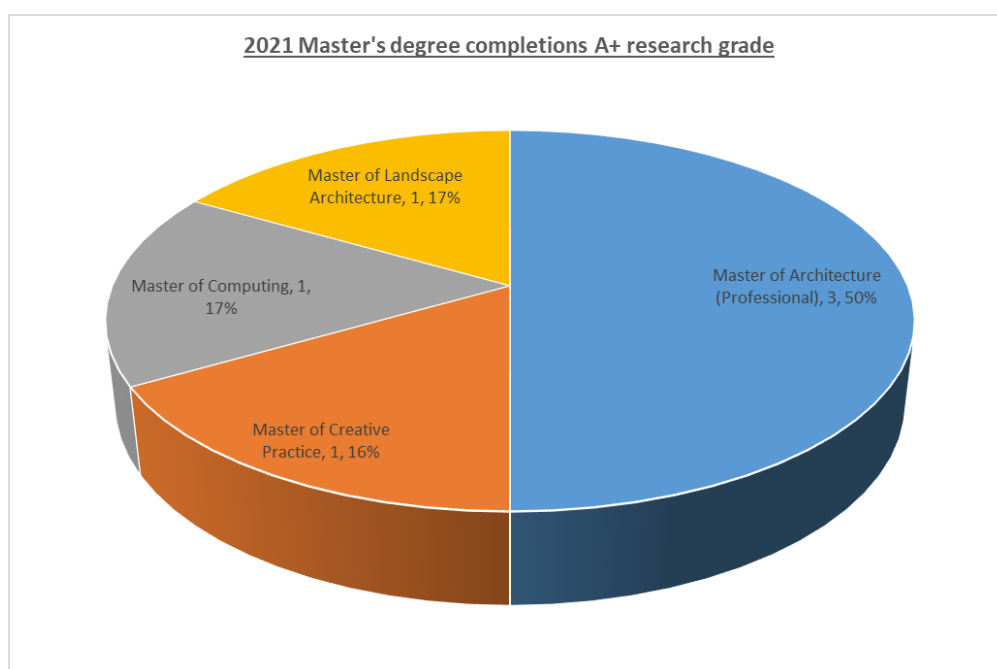


Figure 3: Master's degree completions A+ research grades.

3.3 Māori Postgraduate Scholarship

Kelsey Metcalfe, from the Master of Architecture (Professional) programme, was awarded the Postgraduate Māori Scholarship in 2020 and this continued in 2021. Her success story for this scholarship is highlighted below:

"I was fortunate enough to be awarded the postgraduate Māori scholarship through Unitec whilst studying my Master of Architecture (Professional). As a full-time postgraduate student, you can imagine the amount of work that had to be put in, which meant that finding time to earn money was extremely difficult and, at times, not possible. Without any stable income, it became extremely difficult to focus on my studies whilst wondering how I was going to be able to afford to keep going. Being awarded this scholarship was extremely crucial in ensuring my success, it gave me peace of mind knowing that I no longer had to worry about how I was going to afford to keep studying and focus that energy on my studies. I am so grateful to have studied at Unitec, especially for the support they have given me with this scholarship."

Kelsey is now the Site Co-ordinator for MAI ki Wairaka, hosted in Ngā Wai a Te Tūi. MAI ki Wairaka supports Māori and Indigenous postgraduate students throughout Aotearoa New Zealand and, as a national network of key sites, forms an integral part of Te Pae Whakatairanga Hiranga, the Capability Building programme of Ngā Pae o te Māramatanga, the Māori Centre of Research Excellence (CoRE).

3.4 Research outputs by Māori and research outputs by Pacific academics

This section highlights the research productivity of Unitec's Māori and Pacific academics. Detailed reporting on the research productivity is presented in Section 4.3.

Figure 4 illustrates the research outputs by Māori academics.

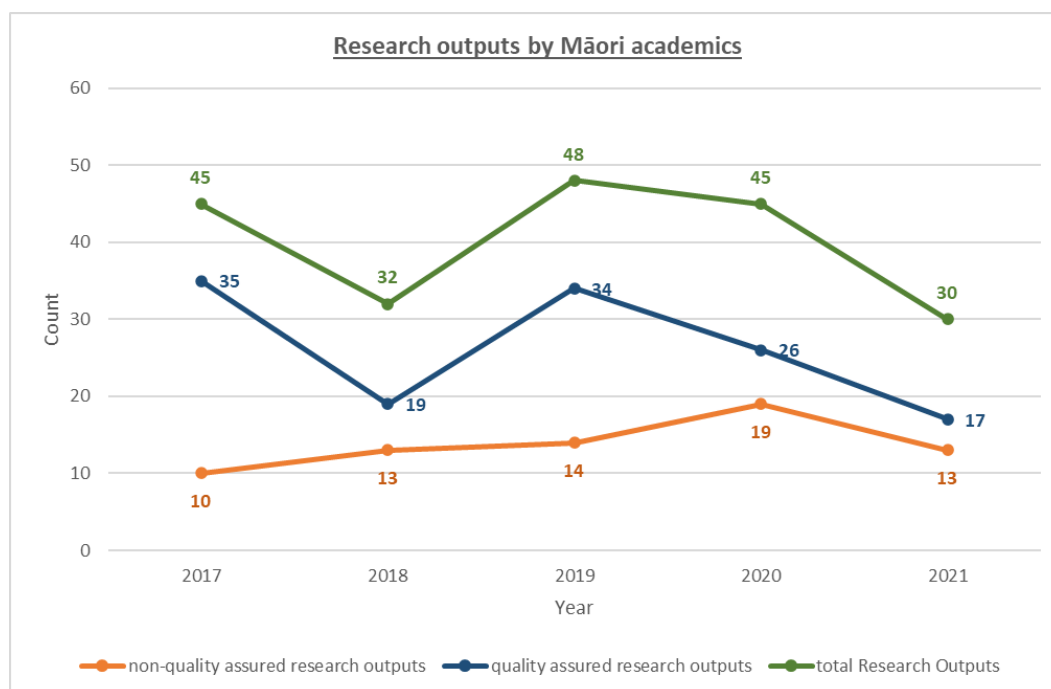


Figure 4: Research outputs by Māori academics.

Figure 5 illustrates the research outputs by Pacific academics.

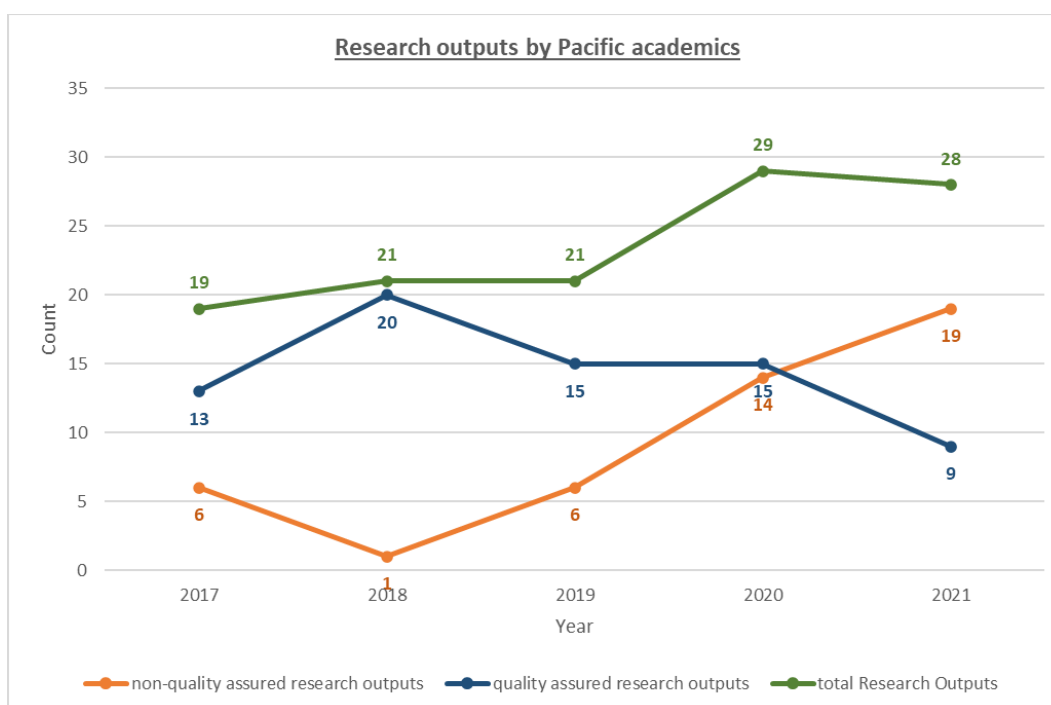


Figure 5: Research outputs by Pacific staff.

3.5 Unitec/MIT Research Symposium – Māori context highlights

The 2021 Unitec/MIT Research Symposium, Rangahau Horonuku Hou – New Research Landscapes, was a Te Tiriti aligned event with a significant presence of Māori researchers [Section 5.8.1 covers the symposium in detail]. The key highlights are presented below:

- Two community-partnered Māori speakers, Pania Newton (Ngāpuhi, Waikato, Ngāti Mahuta, Ngāti Maniapoto) and Hineamaru Ropati (Ngāti Hine), were the keynote speakers on day two of the symposium. [Refer to Section 5.8.1.3 for more details.]
- One of the four panellists of the symposium was a Māori speaker, Dr Hinekura Smith (Te Rārawa, Ngāpuhi). [Refer to Section 5.8.1.5 for more details.]
- Research with Impact Winner – Māori-led and centred research. The research project Ka Pu te Ruha – Ka Hao te Rangatahi – When the Old Net is Cast Aside the New Net Goes Fishing (Authors: Tepora Emery, Mamaeroa Merito, Waitiahoaho Emery, Auroa Rikiti, Takiri te Ata Raerino and Freddy-Ray Collier). The second runner-up of this category also had some Māori authors. [Refer to Section 5.8.1.9 for more details.]
- In the Māori Research Excellence Awards category, numerous impressive research projects were shared. [Refer to Section 5.8.1.11 for more details.]
The winners were as follows:

Winner: The MOKO research team: Prof Jenny Lee-Morgan, Ngāhuia Eruera, Kim Penetito, Pania Newton, Moana Waa, Hineamaru Ropati, Luella Linaker, Kathelyn Evans (Unitec).

Title: Marae Ora, Kāinga Ora.

First Runner-Up: Chantal Baker-Smith (Unitec).
Title: The Tale of the Rugby Ball and Me: The Whakapapa of Female Rugby in Aotearoa.

Second Runner-Up: Diane Tamati and Dr Catherine Mitchell (Unitec).
Title: Mā te Huruhuru, Ka Rere te Manu: Gaining Insights into the Experiences of Postgraduate Tauira Māori within Vocational Education.
- The first runner-up of the Early Career Researcher Excellence award was awarded to a Māori recipient. Dr Catherine Mitchell's (Unitec) research project Mā te Huruhuru, Ka Rere te Manu: Gaining Insights into the Experiences of Postgraduate Tauira Māori within Vocational Education, co-authored with Diane Tamati (Unitec), won this award. [Refer to Section 5.8.1.13 for more details.]

4 Priority Two (A flourishing, collaborative research culture)

Unitec will grow a productive, diverse, student-integrated, engaged and sustainable research workforce with the necessary resourcing and infrastructure. There will be an inclusive pipeline of support for developing the capability of our people and empowering them toward transformative outcomes for our communities; from the beginnings of their research independence through to leadership at the highest level, as expressed in Unitec's Research Competencies. Grounded in Te Tiriti and Te Noho Kotahitanga partnership, this will be inclusive and provide opportunity for the diverse cultures and individuals who make up our institution, and the varied nature of that activity we call research and its related enterprises. This pipeline will be aligned with, and actively support, the initiatives at the heart of Te Manaakitia te Rito, Unitec's Renewal Strategy.

This section of the report highlights:

- » Building staff capability in research
- » Supporting our researchers – internally funded research projects
- » Focusing on research productivity – research outputs
- » Research dissemination support to schools
- » Professoriate
- » Research Productivity Traffic Light (RPTL)
- » Research partnering
- » School research plans
- » Performance Based Research Fund (PBRF)
- » Ethics
- » Postgraduate studies and student-engaged research
- » Non-completions research

4.1 Building staff capability in research

Unitec needs “engaged and inspired staff” who have the capability and expertise to address and respond to a wide range of social, industrial and environmental challenges. Capable staff foster the development of “highly employable lifelong learners” who will contribute to a “highly skilled, innovative and enterprising New Zealand workforce”.

In 2021, Tūāpapa Rangahau continued to prioritise raising the capability of Unitec staff, particularly those teaching on degree-level programmes, to undertake research, disseminate their research findings, and attract external research and development funding to progress their initiatives.

Unitec researchers are at various stages in their research careers, therefore capability-development initiatives were tailored to Unitec staff according to whether they were new and emerging (beginner), early career (well published, intermediate) or advanced (senior leader, professoriate) researchers. The capability-development initiatives were also targeted to respond to the requirement to lift, and to maintain at a high level, Unitec's research productivity (as measured by the Research Productivity Traffic Light [RPTL] in Section 4.6).

4.1.1 Developing our staff – Research Professional Development series

Tūāpapa Rangahau's Research Professional Development series is designed to improve the level of staff research capability, to encourage and assist staff to disseminate the results of their research and to link staff to industry-partnered opportunities. A part-time staff member at Tūāpapa Rangahau, in the role of Research Professional Development Liaison, organises the series each year and facilitates several of its components.

Figure 6 shows the numbers of staff who enrolled in research workshops and writing retreats in 2021. As in the past, uptake in 2021 indicates high levels of staff engagement across the institute, in spite of constraints due to Covid-19. Several offerings were quickly adapted to an online format.

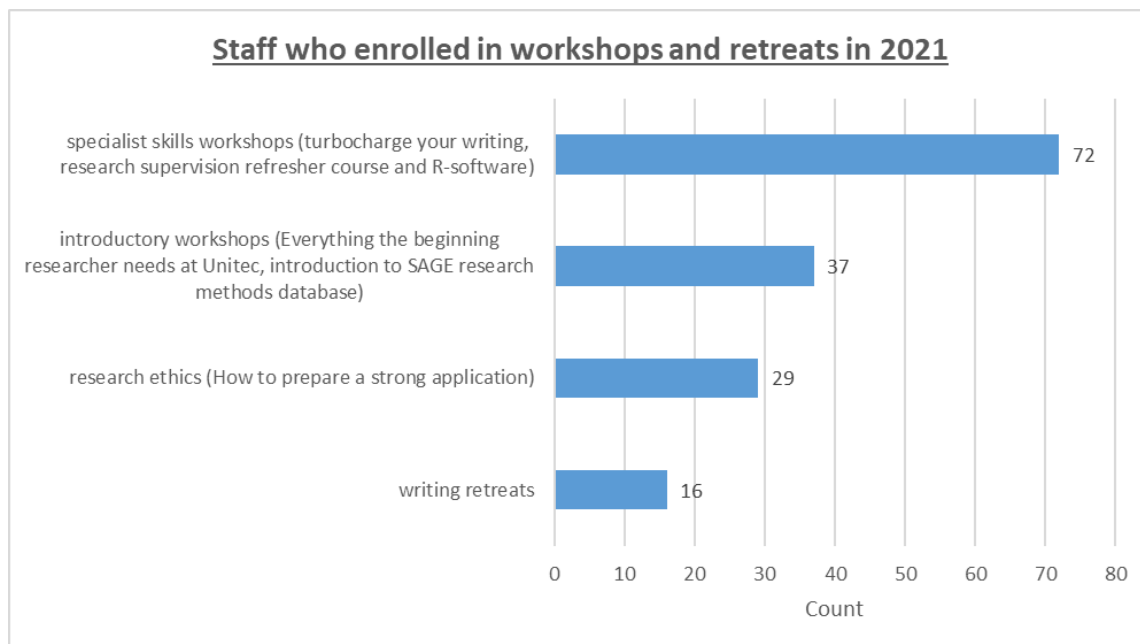


Figure 6: Staff who enrolled in workshops and retreats in 2021.

Writing retreats require an application and selection process and allow staff members to devote dedicated time and energy to producing research outputs in a supportive and collegial, yet intensive, environment. Early indications are that specialist skills workshops, alongside the writing retreats, led to increased levels of research activity and output dissemination. These events also served to lift staff morale and inspired greater confidence that research is supported and valued at Unitec. The introductory workshops remain popular and serve an important induction function.

Figure 7 shows the numbers of staff who enrolled in the specialist skills workshops.

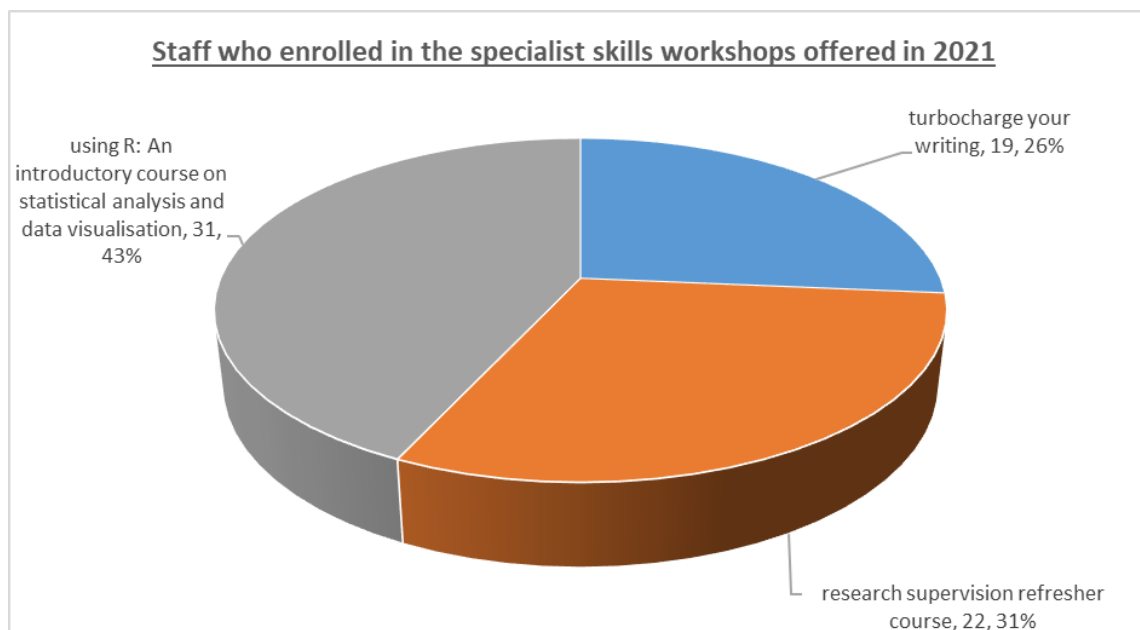


Figure 7: Staff who enrolled in the specialist skills workshops offered in 2021.

Considering the popularity of the R workshop in 2020, this offering was expanded in 2021, with 31 people accommodated. In addition, in 2021 Tūāpapa Rangahau ran a set of workshops aimed at professional development specifically for Level 9 and 10 supervisors. Figure 8 shows the numbers of staff enrolled in these workshops.



Figure 8: Staff who enrolled in workshops aimed at professional development specifically for Level 9 and 10 supervisors in 2021.

In 2021 Unitec continues to offer a highly successful, year-long research skills and development course via Nelson Marlborough Institute of Technology. Places on this course were made available to Unitec staff on a contestable basis (via a formal expression-of-interest application). Fully funded by Tūāpapa Rangahau, the course is open to emerging researchers at Unitec and focuses on academic writing for high impact, as well as developing long-range plans for research and dissemination productivity. As part of course requirements, participants commit to submitting a high-quality piece of writing to a peer-reviewed journal. Five Unitec staff members participated in the course in 2021 and, in spite of Covid impacts affecting progress for some, most cited its enormous benefits in progressing their research skills and plans, and in motivating ongoing research activity.

Eight staff members completed the Successful Postgraduate Supervision course in 2021. This blended and ‘flipped’ course is very highly regarded, and serves as a permanent resource for postgraduate supervision practice. Two additional courses on offer (online) include Writing a Successful Grant Application and Managing a Research Contract. Course participation is largely self-managed; any Unitec staff member can self-enrol to access course resources and learning activities.

Evaluation data for the 2020 Research Professional Development series reveal very positive reception and benefits. For instance, all but one of 13 staff members who responded to a survey about their experiences on a writing retreat in 2021 rated the overall experience a 9 or 10 (on a scale of 1–10). The following narrative comments from these respondents are indicative:

- » *“The event was well organised and the location was perfect; enables total focus on work project.”*
- » *“I worked on two articles for submission as well as a poster. One article submitted and published, and one poster presented. Another article to be submitted later this year.”*
- » *“Excellent time to focus on writing [and] also a good opportunity to find out what others at Unitec are researching and gain some expert advice on research in general.”*

- » *“Retreats offer time, space, environment and like-minded people, all key ingredients for research mahi.”*
- » *“I was able to focus on and complete two conference presentations. This was significant, as I find it difficult to set aside time within my working week to focus on my research outputs due to a high workload.”*

4.1.2 Writing support

Tūāpapa Rangahau continues to offer writing support to staff members, through the services of a contractor, to assist with preparing research text for publication. Staff members receiving writing support are also guided through the process of submission to journals where necessary and are given help with responding to reviewer feedback when requested. This service is particularly valuable for new and emerging researchers, and researchers from programmes not always related closely to academia such as the Bachelor of Applied Technology (BAT). This offering represents a worthwhile investment in Unitec’s staff in supporting them towards achieving quality-assured research outputs. In 2021, six individual staff members, as well as eight groups of authors (each group working on a multi-authored publication) from Ngā Wai a Te Tūi, received writing assistance.

4.2 Supporting our researchers – internally funded research projects

In 2021, Unitec had one annual contestable funding round for staff-initiated research projects: The Early Career Researcher (ECR) Fund. Applications for ECR funding are appraised by a Grants Assessment Committee, a sub-committee of the Unitec Research Committee.

In 2021, four ECR projects were awarded contestable funding totalling **\$54,485**.

The 2021 awardees are listed in Table 2 below, along with selected highlights from some funded projects.

4.2.1 Early Career Researcher (ECR) Fund

The ECR contestable fund supports both emerging and established early-career researchers at Unitec to develop their capability, capacity and career progression.

Lead Researcher	School	Project name
Dr Catherine Mitchell	Learning and Achievement	Ma te huruhuru, ka rere te manu: Postgraduate supervision and writing support for tauira Māori within a vocational education context
Dr Marleen Baling	Environmental and Animal Sciences	Testing the feasibility of identifying reptile species using eDNA from tracking tunnels
A/P Renata Jadresin-Milic	Architecture	Digitalisation of heritage in NZ, Phase Two
Min Hall	Architecture	Project Pātūtū, Stage 2

Table 2: 2021 Early Career Researcher Fund projects supported.

While several of these ECR projects are still underway, a few 2021 highlights to date are:

- » **Dr Catherine Mitchell** – Ma te huruhuru, ka rere te manu: Postgraduate supervision and writing support for tauira Māori within a vocational education context.
This study arises out of the recognition of the need to address the long history of inequitable outcomes in tertiary education for Māori. A situation which, despite growing attention from a range of parties including educational institutions, the government and researchers, continues today. In simple terms, as Richardson et al. (2018) point out, Māori students generally do not

attain the same levels of tertiary success as Pākehā New Zealanders across all levels of higher education including postgraduate study. There is a growing body of educational research which points to the challenges faced by Māori within formal learning environments. Recent Ministry of Education figures show that despite similar levels of participation in education, the achievement of Māori system-wide is not equivalent to that of non-Māori, highlighting persistent educational inequities within Aotearoa New Zealand. As the Ministry of Education (2017) acknowledges, “a significant proportion of Māori are not seeing the benefits of education at all levels – in early learning, schooling and tertiary education”.

- » **Dr Marleen Baling** – Testing the feasibility of identifying reptile species using eDNA from tracking tunnels.

The aim of this study was to determine the ability to use eDNA from footprints for species identification. Wildlife monitoring is one of the essential steps for determining the effectiveness of conservation, restoration and biosecurity efforts in a given area. In Aotearoa New Zealand, reptiles can be very cryptic and very hard to catch using conventional traps. Thus, it is a difficult taxonomic group for which to gain information on the population (e.g., distribution, population size). Recent applications of tracking tunnels to monitor reptiles in the wild have resulted in the successful detection of species in low density. However, we still cannot identify species from footprints, which limits the capability of the tracking tunnels to only the presence–absence of reptiles in the given area. This study initiated to test the feasibility of obtaining eDNA from footprints off tracking-tunnel cards to identify skink species. At this point, they acquired the necessary footprints from two types of cards from the field over the summer of 2021/22. However, due to the lack of resources, they were unable to continue the lab work part of the project. In this project, they have made significant connections with the stakeholders (Bream Head Trust, Kopuawaiwaha 2B2 Trust, Auckland Council, Department of Conservation) and formed a new collaboration with Landcare Research Manaaki Whenua. Dr Baling plans to continue with the DNA marker design with Landcare Research and identify sources of funding to cover the laboratory costs.

- » **A/P Renata Jadresin-Milic** – Digitalisation of heritage in NZ, Phase Two.

The project was funded by Tūāpapa Rangahau in 2020 and 2021, and Phase Three is approved for 2022. The team is using modern digital technologies and showing the relevance of the results to the public (community), professionals and the industry. This is an applied research project, externally partnered, that includes students engaging directly, has an impact on teaching, and creates ongoing industry connections and connections with the community. The team wanted to record as many buildings as possible in the project and raise awareness of heritage problems in Aotearoa New Zealand. Numerous heritage buildings are abandoned and under the threat of disappearance, and the team is saving them by recording them. Furthermore, this is what and how our students learn by doing what they need to know about both heritage and new technology. In 2021–22, the research detected currently low engagement with digital heritage by heritage professionals, although the use of modern digital technologies facilitates and improves conservation practices and processes. It is not applied as much as it might be, internationally and in Aotearoa New Zealand. Some of the reasons for this are (lack of) education and a negligible number of professional or academic papers in local journals, but also the fact that it is not yet recognised as an important element in the protection of architectural heritage in local practice, nor in the circles of heritology theorists.

In 2022, the team will engage in conversations with architects, engineers, surveyors from the sector, councils and government organisations such as Heritage NZ. The methodology will be a two-stage study that includes a survey (electronic questionnaire) and focus groups.

» **Min Hall – Project Pātūtū (Stage Two)**

The project is the second stage of a project that began in 2019. It addresses the dilemma faced when planning to build thousands of new houses in Aotearoa New Zealand, while also trying to reduce greenhouse-gas emissions. The overall aims of the project are:

- to investigate the use of homegrown bio-based materials, timber and straw, to construct prefabricated wall panels for house construction;
- to investigate the suitability of such a method for community self-build housing initiatives and for commercial uptake.

A degree of nimbleness was required regarding the specific objectives, which were adjusted twice during the research period 2020–22. An ongoing investigation of overseas prefabricated timber and straw-bale panels led to the developed design of four wall panels, a process begun in Stage One. During Stage One of the project, one of these panel designs was used to construct a full one-third scale structure during a Bachelor of Architectural Studies elective course. The house was exhibited at Aotearoa's largest trade show, BuildNZ, in 2019.

In Stage Two, physical models of the four panel designs were modelled at one-third scale. One was selected and integrated into the design of a simple two-bedroom house. Master of Architecture students contributed to the research by way of producing drawings of the models, undertaking WUFI training for analysis of the thermal performance of the house and designing a production facility. Three refereed papers reporting on the project are underway and scheduled for completion during 2022 and 2023.

The research to date demonstrates that it is possible to use a prefabricated timber and straw-bale wall system, using raw materials grown in Aotearoa New Zealand, which satisfies the NZBC. The chosen panel, the Pātūtū Panel, was developed with the idea of its being suitable for manufacture and use by community and iwi groups, as well as by commercial construction companies.

4.2.2 Early Career Researcher (ECR) Fellowships

Each year, Tūāpapa Rangahau offers Early Career Researcher (ECR) Fellowships to Unitec researchers. The main purpose of the fellowships is to support and strengthen the establishment and development of ECR careers and the development of new research leadership. ECRs are providing the renewal of research culture at Unitec and will be the future leaders of research and enterprise at Unitec. There are two types of fellowships available: one to support the implementation of research projects, and another to support professional research and research leadership development.

In 2021, one ECR fellowship worth \$15,000 was awarded to Tui Matelau.

Tui Matelau utilised this funding to write a short-form book using the findings from her PhD thesis and published under the Routledge CRC Press Focus series, a programme of short-form publications.

As a Māori researcher, she examined Māori identity construction; the research she produced enhances her own research leadership, capability and process. Once the findings are disseminated, they will hopefully enhance the research leadership, capability and processes of other researchers interested in Māori identity construction.

4.2.3 Early Career Researcher Support Fund – Return from Parental Leave Fund

In 2020, Tūāpapa Rangahau introduced this new fund to support Early Career Researchers (ECRs) returning from parental leave. ECRs and research diversity in general are increasingly important

priorities in research environments such as TEOs, CoREs, CREs and the Royal Society. Tūāpapa Rangahau aimed to grow capacity in these areas by proactively supporting them. Parental leave affects staff in the earlier phases in their career and a very small gesture of support can make a tremendous difference.

There were two recipients in 2021: Dr Hoa Nguyen and Dr Sarah Wells each received up to \$2,000 in support.

Hoa and Sarah both are experienced researchers, and both used this funding towards the preparation of their 2025 PBRF Evidence Portfolios.

Hoa spent this funding on teaching-buyout time to focus on research publication and keep herself on track for the PBRF application.

Sarah utilised this funding to increase the competitiveness of a Marsden Fund proposal, and towards the submission of her research in peer-reviewed articles for journals such as *Zootaxa*, *Marine Biology* and the *Biological Journal of the Linnean Society*.

4.2.4 New Researcher Project Start-up Fund (NRPSF)

The NRPSF is targeted to support research projects with strong mentor–mentee relationships and goals.

In 2021 Cameron Moore received this funding of \$10,000.

Cameron Moore (School of Architecture) – Gummer and Ford

This project will set the foundation for the appropriate exploration of this important topic from Aotearoa New Zealand's history of architecture, one that will significantly contribute to society's understanding of its culture, identity and history. It will also explore the application of historical knowledge and research in contemporary architectural teaching and design. In the long term, further development of the project will place Aotearoa New Zealand on the world map as one of the few countries that offers this type of education to architectural students. Consequently, architects trained in Aotearoa New Zealand will be able to appropriately respond to a broad range of clients. Manuscript completed by December 2021.

4.3 Focusing on research productivity – research outputs

Research outputs have been a key measure of Unitec's research performance for some time, which enables longitudinal data to be reported. Research outputs are a key way in which researchers contribute to the store and accumulation of human knowledge. They include articles, books, conference papers and less traditional forms of research dissemination such as patents, websites, films, exhibitions and reports for industry, government, etc.

This year's annual target, as outlined in Unitec's 2021 Annual Report to the Tertiary Education Commission, was to produce 383 quality-assured³ outputs. As demonstrated in the results that follow, we did not meet our annual target for this measure. The 2021 figures are indicative only because busy teaching and researching staff have not yet fully reported their outputs. We expect the final figures to increase in 2022.

³ Quality assurance means that the research output has undergone a peer-review process before publication and assures the consumer of the research of its veracity.

4.3.1 Total Unitec research outputs

A total of 486 research outputs were delivered in 2021. Some 297 (61%) were quality assured (QA) and the remaining 189 (39%) were not quality assured (non-QA). Figure 9 shows the overall count, which is considerably lower than in 2020.

Recording research outputs is a retrospective process because staff continue to add research outputs to Unitec's research output management system (ROMS) each year. As new staff publish, they also add their research activity for previous years. These retrospective additions mean that the research outputs for each year continue to rise.

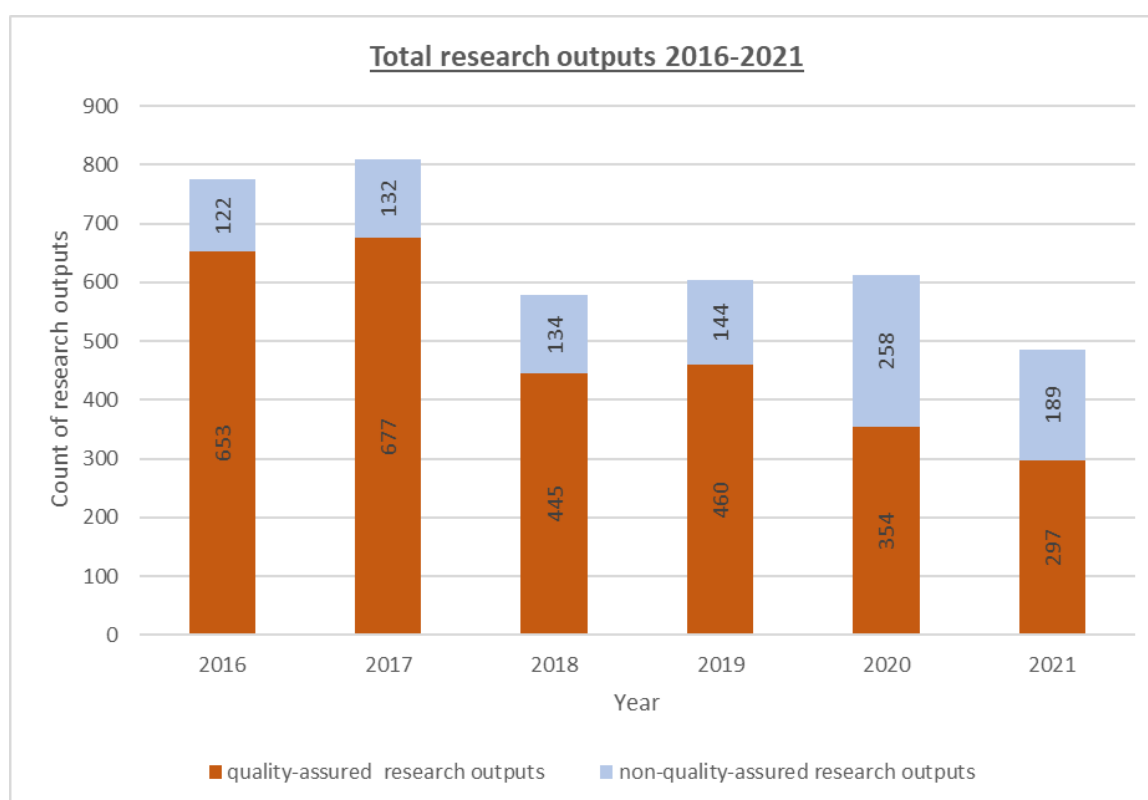


Figure 9: Quality- and non-quality-assured research outputs.

The decline of outputs, both QA and non-QA between 2016 and 2018 is explained by Unitec's transformation programme, which saw 75 PBRF-rated staff leave the organisation in the 2016 voluntary redundancy. Also, from 2018, investment in research travel was almost completely cut, due to the very negative financial implications post-transformation. These effects were compounded in 2020 and 2021 by the increased pressures of teaching online during the Covid-19 pandemic and the total travel bans through most of this period.

The number of QA research outputs as a percentage of total outputs produced annually dropped from 2018, see Figure 10. This may be partly due to an increase in research activity that tends to occur towards the end of a PBRF cycle (2017 was the last year for research publication for the most recent PBRF round).

The year 2021 showed a slight increase (by three percentage points) in the percentage of QA research outputs when compared to the 2020 percentage. During the Covid-19 pandemic, there were multiple lockdowns and closed borders in 2020 and 2021, and staff were unable to disseminate their research outputs at events and sources that counted as quality assured. However, the slight increase in the percentage of QA outputs could be due to more staff engagement in disseminating their research outputs virtually and more publishing in journals.

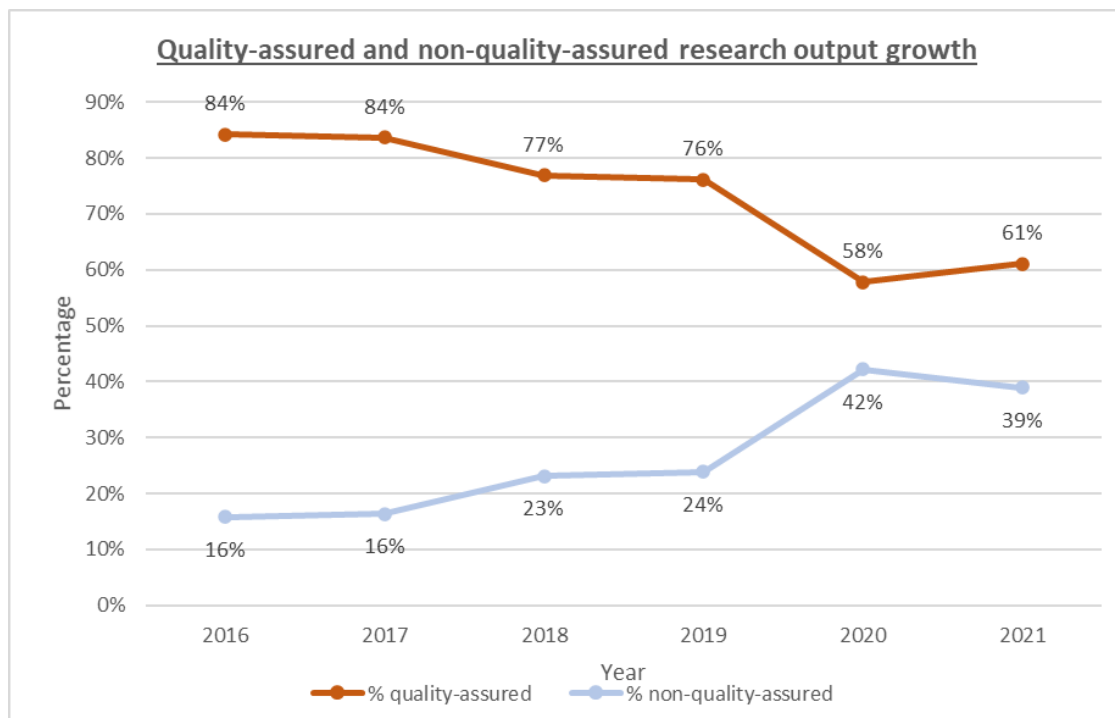


Figure 10: Quality-assured and non-quality-assured research output growth.

4.3.2 Research outputs by School

Figure 11 illustrates the total quality-assured and non-quality-assured research outputs produced by each School in 2021. The category 'Others' represents research outputs from Academic Development, Tūāpapa Rangahau and Ngā Wai a Te Tūi.

Note – School of Bridgepoint and School of Trades and Services do not offer degree programmes, therefore research is not a compliance priority.

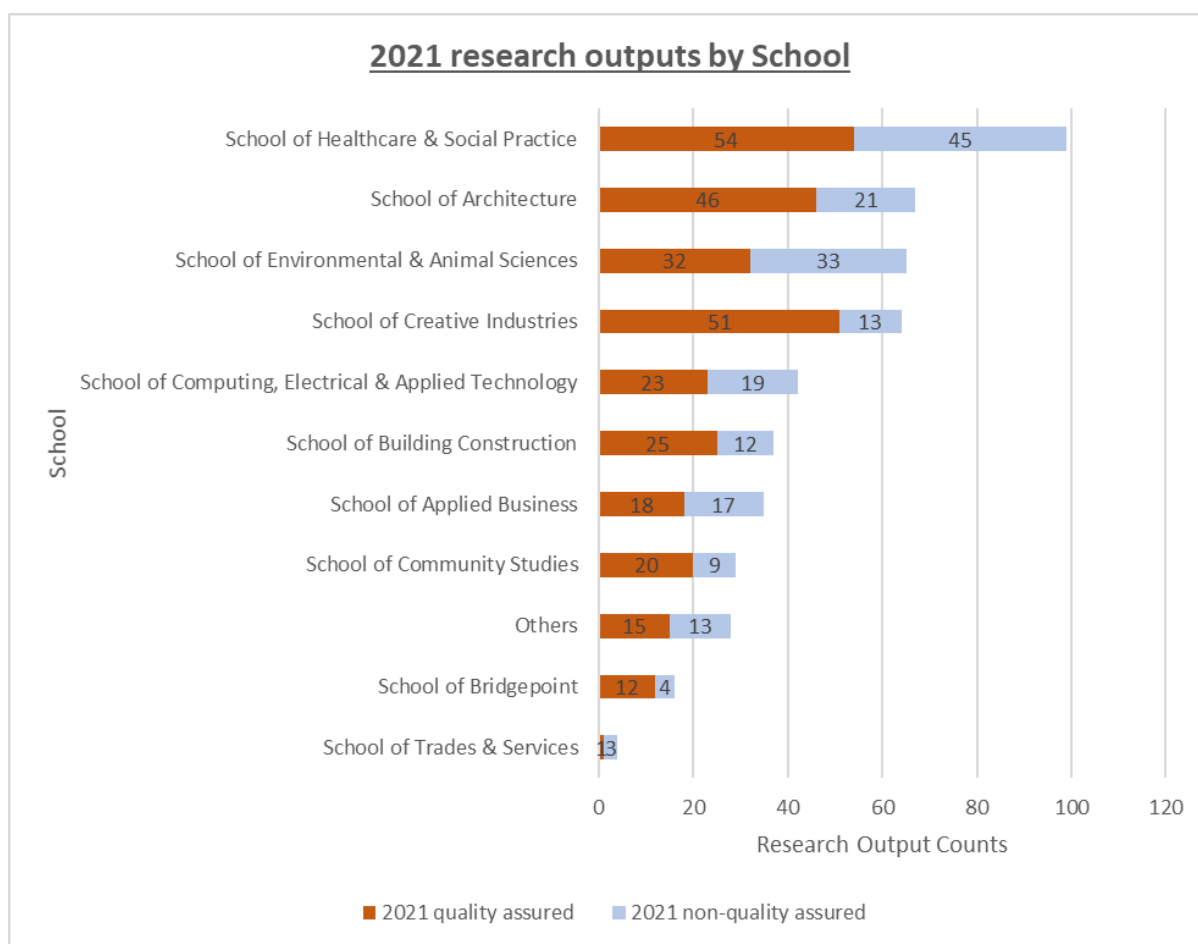


Figure 11: 2021 QA and non-QA research outputs by School.

While it is acknowledged that not all 2021 research outputs were included in ROMS at the time of this report, the current results show a high degree of variability in research output productivity across the Schools. However, these total counts need to also be seen in the context of the total research-active FTE within each School. Table 3 shows the number of QA research outputs achieved per research-active FTE within each School.

School	QA outputs per research-eligible FTE
School of Creative Industries	2.35
School of Healthcare and Social Practice	1.88
School of Architecture	1.74
School of Environmental and Animal Sciences	1.65
School of Community Studies	1.10
School of Building Construction	0.99
School of Applied Business	0.99
School of Computing, Electrical and Applied Technology	0.88

Table 3: QA research outputs per research-active FTE in 2021.

In 2021, Unitec produced an institutional average of 1.61 QA research outputs per research-active FTE. The target for 2021 was 1.5 QA research outputs per FTE of degree teaching staff. The School of Creative Industries was the clear front-runner, followed closely by the School of Healthcare and Social Practice and the School of Architecture.

4.3.3 Student-integrated research

Student-integrated research is part of Priority Two in the Research Strategy and sets out to encourage the mutual benefits of staff and students working together. The parameters of this Key Performance Indicator (KPI) do not cover all related activity, but it is a significant measure of student input into staff-engaged research, including authorship, contributions to wānanga, creative outputs, studentships, research assistant positions, awards or other contributions (as defined by the PBRF). This is measured as a count of the number of research outputs. This KPI was approved in 2019 by the Unitec Research Committee and 2020 is the first year for reporting this.

Year	Count research outputs, where the co-authors were current or recent Unitec student(s)
2020	70
2021	76

Table 4: Count research outputs, where the co-authors were current or recent Unitec student(s).

4.4 Research Dissemination

Disseminating research through attendance and presentations at academic conferences and publishing in books and journals is an important and necessary part of academic careers. This provides opportunities to generate peer-reviewed research outputs (one measure of an academic's productivity), to provide staff professional development and networking opportunities, and to gain the latest knowledge and advances regarding a specific discipline. Unitec provides the Research Dissemination Fund, managed by Tūāpapa Rangahau, to support academic staff in the dissemination of new knowledge at approved fora, toward the benefit of the stakeholders that we serve.

4.4.1 Research Dissemination Funding

A total of \$104,000 was available across Unitec's Schools to support research dissemination, but not all of this was spent. The second half of 2021 was greatly impacted due to Covid-19, involving several long lockdowns and travel restrictions. Conference attendance and presentations were done virtually. A sub-total of \$46,993 was used to support 38 individuals to disseminate their research (averaging \$1,236 per person).

There were 32 conference presentations. Out of these, 26 presented at Aotearoa New Zealand conferences and six presented at international conferences.

The remaining funds were used to assist with writing, publishing and exhibiting research work. A sustainable resourcing model for research dissemination, which builds the foundations for the 2025 PBRF submission, is the basis of the model used for distributing resources. The allocation of resources for research dissemination at Unitec is a collaborative process between Schools and Tūāpapa Rangahau. The process of prioritisation aims to ensure that the resourcing gets to where it is needed most to make the biggest impact on our priorities. In addition to Unitec funding, three staff were partially funded by external organisations to disseminate their research outputs, providing a strong indication of the quality and relevance of their research.

4.4.2 Collaborative Research Dissemination Fund

Covid-19, multiple lockdowns and changing alert levels affected research dissemination at Unitec in 2020 and 2021, with increasing travel costs and with travel's contribution to climate change additional contributing factors. Without mitigating action, these circumstances are likely to have a deleterious effect on our expected PBRF performance in 2025.

The CoLab Research Dissemination Fund is a response to these challenges. It is a framework for encouraging collaborative research and its subsequent dissemination, through a competitive funding

mechanism. The challenge was to invent and describe a collaborative approach to research dissemination that results in research outputs for multiple staff.

The projects funded were:

» **Dr Yusef Patel and A/P Renata Jadresin-Milic – School of Architecture:**

Asylum journal. This publication provided a platform for the dissemination of the innovative design and kaupapa Māori research undertaken by students and staff in the School of Architecture and by those in practice. A new, peer-reviewed section was the collaborative aspect that received recognition through funding and sat alongside examples of student work. The School of Architecture used the funding to print physical copies of the journal and disseminated it to architectural firms, the National Library and institutional libraries. The peer-reviewed section was administered, edited and disseminated digitally via Unitec's ePress, which increased the reach of the journal. The intention was to grow the *Asylum* publication beyond Unitec to a broader national and international audience. The publication encouraged student researchers and academic staff to publish papers on pedagogical innovation, fabrication investigations, industry collaboration and architectural research.

» **Dr Rebecca Wood and Gina Ferguson – School of Creative Industries**

Gina and Rebecca worked with Dorita Hannah to curate *The Space Between*, an exhibition and symposium at Unitec, which made visible the creative research practice of our staff to both students and stakeholders. Twelve staff exhibited their work, alongside external stakeholders and students. Covid-19 delayed the project, which was successfully completed early in 2022, as the situation changed sufficiently to allow people to gather again.

4.4.3 Conference Seed Fund

Conferences are a valuable part of the research and enterprise ecology, with the potential for creating networking opportunities, publicity, industry engagement and research income, and/or as part of a larger research-development programme. Bidding for national and international conferences or developing a specialised new conference is time consuming.

The Conference Seed Fund (CSF) was intended to provide the initiator with support to undertake bid responses, develop conference plans and to pursue the concomitant sponsorship necessary to fund these. The fund was introduced to assist staff to undertake the development of a business case to stage a new conference or to make a bid to host an international conference.

Tūāpapa Rangahau also supported staff to participate in conference organising committees led by other institutions, which can advantage Unitec in the following ways:

- » enhancing Unitec's profile;
- » contributing to the staff member's PBRF portfolio;
- » strengthening strategically important research partnerships and networks.

In 2021 Tūāpapa Rangahau supported funding into two conferences:

- » NZABA – convenor Dr Kristie Cameron (School of Environmental and Animal Sciences)
- » NZPIC – organised by Dr Maryam Mirzaei (School of Applied Business)

NZABA (organised by the School of Environmental and Animal Sciences): Hosting the annual New Zealand Association for Behaviour Analysis (NZABA) conference involved the convening of academics

and students from Aotearoa New Zealand tertiary organisations to discuss how Applied Behaviour Analysis is being used in Aotearoa New Zealand from a human and animal perspective. Research was shared by oral and poster presentation. The content included experimental behaviour analysis, modelling and mathematical approaches to behaviour, through to the behaviour of companion animals in applied settings and also human behaviour. Unitec was accepted by the NZABA committee to hold the conference at its Mt Albert campus because of Unitec's substantial Animal Behaviour, Welfare and Canine Behaviour and Training programmes.

NZPIC (organised by the School of Applied Business): The 41st Anniversary NZPIC (NZ Production and Inventory Control Society) Conference was collaboratively convened and was a highly successful example of industry partnership. It was co-organised by Dr Maryam Mirzaei from the School of Applied Business and hosted at Unitec's Mt Albert Campus.



Figure 12: 41st Anniversary Conference on Supply Chains in Transition, a group of conference attendees at Unitec (source: NZPIC website).

4.4.4 Wairaka: Natural Environment, History and Culture Fund

This fund originates from Priority Three in the 2020–2024 Unitec Research Strategy – Action Plan: *Foster research into Wairaka, our place: the natural environment, history and wairua.*

Early Career Researcher **Tanya White** (School of Creative Industries) was the first recipient of this fund in 2021. She was awarded \$10,000.

Her research project was designed to provide an Indigenous mapping of the whenua, and an overview of the unique biodiversity and taonga that exist within Wairaka campus, Unitec. The aim was to provide strategic direction as to how the Unitec (Te Pūkenga ki Wairaka) community works towards its responsibilities of kaitiakitanga, namely the protection, restoration and sustainable use of the whenua.

Te Waiunuroa o Wairaka is the life force that flows within the Wairaka campus. It is the source of a rich biodiversity, with a range of rongoā Māori plants (medicinal plants), rākau (trees), and native and exotic

flora and fauna species, some that need to be protected and enhanced. The protection and restoration of rongoā Māori within te taiao (the environment) through applications of kaitiakitanga will have positive impact on the health, social wellbeing, and success of students at Unitec.

This research strengthens Unitec's institutional capabilities to better understand and implement principles of Te Noho Kotahitanga into daily practice. It will also assist toward providing local solutions to global concerns regarding loss of biodiversity.

4.4.5 Asbestos Lockout Fund

In 2021, the asbestos lock-out caused significant challenges for Unitec because research involving living organisms could not be maintained, and therefore failed. The funding agencies were happy to extend the deadline, but not to cover any extra costs involved. The cost had to be covered by Unitec, so Tūāpapa Rangahau allocated \$15,000 to rebuild the research projects and complete them as per contract milestones.

4.4.6 Student-Integrated Research Output Funding

In 2021, \$10,000 was available. The purpose of this fund is to increase the number of research outputs involving student input into staff-engaged research. The following researchers received this funding in 2021 for their projects:

- » **Cesar Wagner** (School of Architecture) received \$295 funding for a conference registration with **Dhruti Rathod** (student).

They co-authored a peer-reviewed paper at the XXVIII International Seminar on Urban Form (ISUF) Conference 2021, Glasgow, Scotland (online event), entitled "The condition of public spaces: The role of sensory-experience design". The conference addressed the role of urban morphology in delivering prosperous and sustainable cities, in line with the United Nations Sustainable Development Goals (SDGs) and, in particular, SDG 11 "Sustainable Cities and Communities".

- » **Kristina Naden** and **Dr Kristie Cameron** (School of Environmental and Animal Sciences) received \$180 funding for a conference registration with **Rebecca McKay-Day** (student).

They did an oral presentation and poster presentation at the NZVNA (NZ Veterinary Nurses Association)/NZVA (NZ Veterinary Association) conference in Christchurch. Their study aimed to provide a method for testing food preference in the beetle *Dermestes maculatus*, as part of the NSCI7731 Negotiated Research course. Preference testing in *D. maculatus* has been limited; this was the first study to test food preference in these invertebrates and has informed food-preparation methods for those who use *D. maculatus* colonies, such as hobbyists, museums and educational institutions.

4.5 Professoriate

Ko te amorangi ki mua, ko te hāpai ō ki muri.

The leader is in front and the food bearers behind.

The professoriate comprises researchers who have gained national and international recognition and have reputations as leaders in their disciplines. The goal for the Unitec professoriate is to share their knowledge, skills, time, passion, listening ears and selves with colleagues, students and industry stakeholders for the betterment of society. This is done in a wide range of ways, depending on the strengths and opportunities available to each individual member. The professoriate advocate for their disciplines, teaching and research by collaborating, presenting, engaging in public and building teams

across the organisation to catalyse research potential at Unitec. Supervising new and emerging researchers is a key part of the professoriate's mission.

The professoriate run the Unitec Professorial Research Mentoring Framework, which involves every member mentoring an emerging researcher through to co-authorship in a recognised publication, or supporting researchers to be the lead on their own paper. This framework continues to contribute to the overall aim that every degree programme will be green lit in the Unitec Research Productivity Traffic Light (research engaged).

Members of the professoriate show leadership across many aspects of the institute; here is a small selection with examples:

Name	Leadership examples
Associate Professor Dan Blanchon	Director, Applied Molecular Solutions Research Centre; Head of School, Environmental and Animal Sciences; Principal Investigator on externally funded research projects; Curator, Unitec Herbarium; Co-Editor, <i>Perspectives in Biosecurity</i> .
Associate Professor Hamid Sharifzadeh	Principal Investigator on externally funded research projects; Academic Programme Manager, Bachelor of Computing Systems, Graduate Diploma in Computing, Postgraduate Diploma in Computing, Master of Computing, Doctor of Computing; Co-Research Leader for School of Computing, Electrical and Applied Technology.
Professor Jenny Lee-Morgan	Director, Ngā Wai a Te Tūi, Māori and Indigenous Research Centre; Principal Investigator on multiple externally funded research projects; Leadership team, Ngā Pae o te Māramatanga.
Associate Professor Samantha Heath	Winner in 2021 of a Whitinga Fellowship for early career researchers from the Royal Society Te Āparangi; Research Leader for the School of Healthcare and Social Practice; active member of the Unitec Early Career Research Forum.
Associate Professor Diane Fraser	Transdisciplinary researcher and teacher across Environmental and Animal Sciences; champion of student-integrated research projects and work-based learning innovator; procurer of externally funded studentships and stipends toward research projects, benefiting organisations and bearing credits toward their degree.

Associate Professor Linda Kestle	Principal Investigator on externally funded research projects; team leader of externally funded, industry partnered, multi-Unitec-team-member, winning project of 2020 Unitec Research with Impact Award; Co-Research Leader for School of Building Construction. Nationally recognised advocate for women in the construction industry.
Associate Professor Marcus Williams	Director Research and Enterprise; Chair of two sub-committees of Te Komiti Mātauranga; Principal Investigator on externally funded research projects; leading two workstreams for the ITP sector's Rangahau Research Forum.
Associate Professor Nigel Adams	Deputy Chair of the Unitec Research Ethics Committee (Health Research Council-accredited); liaison for animal research ethics; Principal Investigator on externally funded projects.
Associate Professor Terri-Ann Berry	Founder and Director, Environmental Solutions Research Centre; Principal Investigator on multiple externally funded research projects; innovator in industry partnered and funded research; Co-Research Leader for School of Building Construction.

Table 5: Leadership examples from the Unitec Professoriate.

4.6 Research Productivity Traffic Light (RPTL)

In order to monitor the extent to which degree programme teaching and supervision is underpinned by research activity, a NZQA requirement, Te Komiti Mātauranga (Academic Committee) approved the use of the Research Productivity Traffic Light (RPTL). The RPTL Report was first presented to Te Komiti Mātauranga in 2012 and has been repeated every year since then. The longitudinal nature of the RPTL productivity metric means trends and forecasting for the research activity of Unitec's degree programmes can be reported.

The Unitec Research Strategy 2020–2024 outlines Unitec's aspiration regarding RPTL performance, stating that all programmes at degree level and above will be rated 'green' by 2020.

In the context of a tertiary education organisation that has experienced unprecedented and unparalleled disruption during the 10 years of RPTL reporting, this document summarises the RPTL results for Unitec's degree programmes up to 2022.⁴

4.6.1 Research Productivity Traffic Light terms of reference and methodology

Following is an overview of the key terms of reference and methodology approved by Te Komiti Mātauranga:

⁴ 2022 RPTL results are based on the research outputs data from 2020 and 2021, and hence it is reported in this 2021 Research Annual Report.

- » The criteria for inclusion are permanent full-time or part-time staff, or staff on contracts of 12 months or more, with an FTE of at least 0.2 who significantly taught and/or supervised on degree and above level courses during Semester One 2022.
- » For the purposes of the RPTL a 'research active' staff member is defined as someone who has produced at least two eligible research outputs that are verified in ROMS (Unitec's Research Output Management System) within the past two years. For part-time staff, the criteria are at least one research output for the two previous audited years.
- » The current 2022 report is based on staff research activity as recorded in ROMs for the 2020 and 2021 period.

4.6.2 The 2022 Research Productivity Traffic Light results

The RPTL analysis uses a traffic-light colour system to represent levels of research activity in each degree programme:

- » **Green** is the required standard, where at least 75% of staff teaching and/or supervising on the programme are producing the required number or more outputs for the two-year period under review.
- » **Amber** is marginal, with 50–74% of staff producing the required number or more outputs.
- » **Red** is below standard, with under 50% of staff achieving the required number of outputs.

In the 2022 reporting period, Unitec maintained the consistent gains made since the RPTL report was introduced in 2012 (see Table 6 and Figure 13 below). The percentage of green-lit programmes went down from 100% in 2021 to 93% in 2022. In 2022 there were 29 active degree programmes, while in 2021, there were 31, a difference of two programmes. These two programmes were taught out at the end of 2021 and are no longer active.

Programme Status	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Count of green-lit programmes	9	10	14	19	21	28	27	33	28	31	27
Count of amber-lit programmes	7	8	9	12	16	8	5	7	3	0	2
Count of red-lit programmes	11	9	7	4	3	5	8	2	3	0	0
Total	27	27	30	35	40	41	40	42	34	31	29
Programme Status	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Percentage of green-lit programmes	33%	37%	47%	54%	53%	68%	68%	79%	82%	100%	93%
Percentage of amber-lit programmes	26%	30%	30%	34%	40%	20%	13%	17%	9%	0%	7%
Percentage of red-lit programmes	41%	33%	23%	11%	8%	12%	20%	5%	9%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 6: Total number and percentage of green-, amber- and red-lit degree programmes 2012–2022.

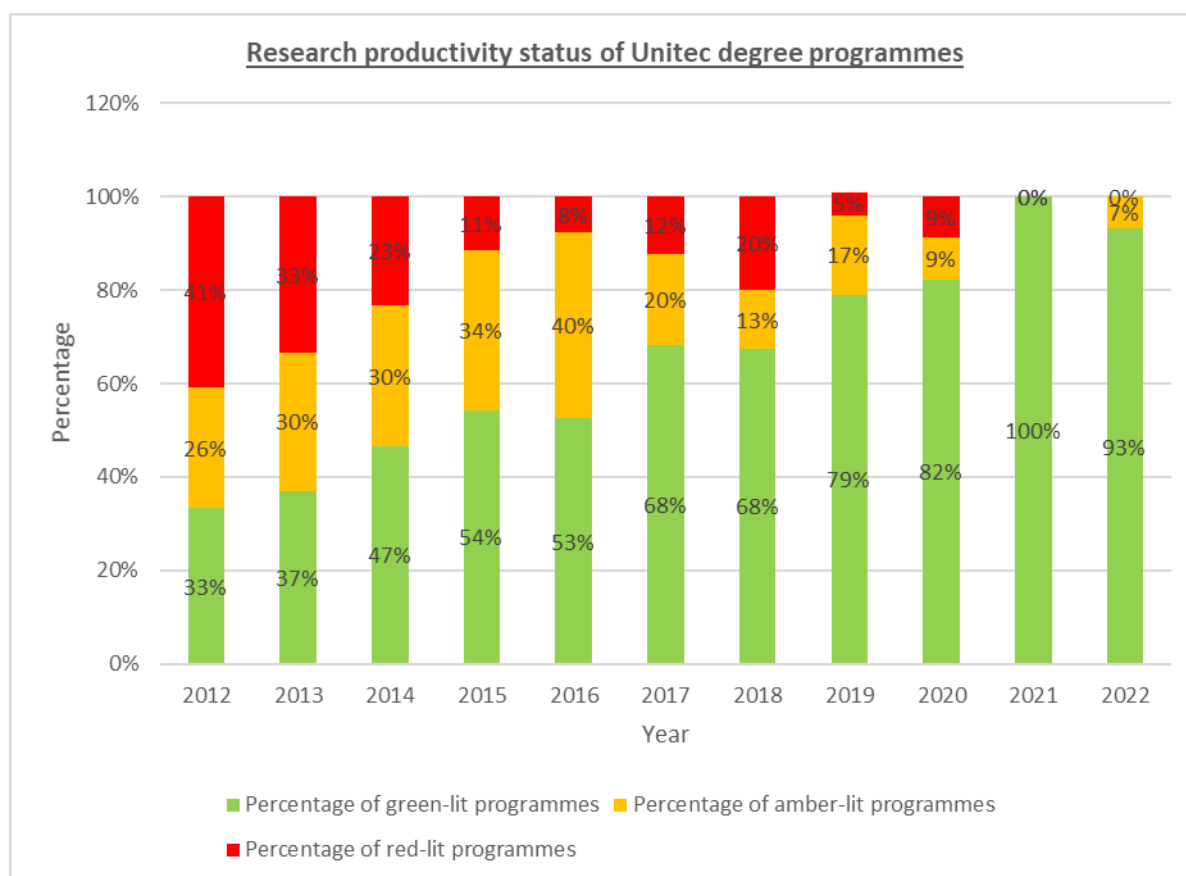


Figure 13: Percentage of green-, amber- and red-lit degree programmes 2012-2022

Figure 13 also illustrates the research productivity results and trends for the institute over the last 10 years.

4.6.3 Highlights

- » Ninety-three percent of the programmes are green lit, and the remaining are amber lit. There are no red-lit programmes.
- » A total of 21 programmes have more than 80% of their staff green lit. Out of these, 14 programmes have 100% of their staff green lit.
- » Some programmes' green percentage figure was affected by new staff who joined the programme. A majority of these new staff have either just started their academic career or were research inactive in their previous role.

The excellent progress Unitec has made since 2012 in raising research activity at degree level has been largely maintained in 2022, despite the pandemic. It is critical that individual and school research planning continues as a dynamic process which is integrated into academic management, and that the necessary actions are collaboratively implemented by Tūāpapa Rangahau's Research Partners with Research Leaders and Heads of Schools, to maintain these strong results in the coming years.

4.7 Research partnering

The Research Development Programme (RDP) initiative was implemented seven years ago to support programmes to improve on their research productivity, so staff engage in research activities and

develop a strong research culture. To measure research productivity, Tūāpapa Rangahau has tracked individual progress with the Traffic Light system to optimise resources toward the ultimate goal of 100% green-lit programmes. The following measures were first used in 2019 but were adapted to the Covid environment for 2021, where necessary, and moved online during Covid lockdown periods:

- » Attendance, where appropriate and accessible, at School staff meetings to promote our funding mechanisms and services. Many meetings were moved online due to pandemic impact.
- » Clear, concise and regular communication with Research Leaders to ensure they are well informed.
- » Quarterly Research Leaders' Hui set up as a forum for Research Leaders to share their experiences and plan for the upcoming months. These were partially moved online in response to Covid impacts.
- » Continued implementation of the new co-designed, performance-based systems for research time allocation.
- » Actively encouraging research clusters, mentoring and collaboration, especially in those programmes that needed extra support.
- » Reviewing and improving early career researcher (ECR) initiatives to grow and nurture research capability and leadership, including establishing new annual events such as the Unitec ECR Forum Research Spiel, and a joint event with EIT promoting ECR networking and connection.

These measures allowed us, despite the pandemic-related disruptions, to have 93% of our degree programmes green lit. Tūāpapa Rangahau plans to support Research Leaders in 2022 by stabilising these gains and firmly entrenching the recently created research cultures in the schools that formerly had low research activity. Tūāpapa Rangahau recognises the extra pressure on workloads due to the pandemic impact and that this could adversely affect these outcomes and require additional support.

4.8 School research plans

All Schools that have degree programmes at Unitec are required to develop research plans. The purpose of the plans is to help Schools undertake research that is:

- » integrated into programme curricula, teaching and learning;
- » Te Tiriti aligned and growing Māori and Pacific capability;
- » working toward the six Unitec research KPIs (Section 2);
- » clustered, collaborative and maximising resources, with research groups identified;
- » co-ordinated into a cohesive and shared vision.

These are reviewed annually by the Unitec Research Committee and serve as an important artefact for programme reviews and degree monitor visits.

In 2021, Tūāpapa Rangahau worked closely with Research Leaders and Heads of Schools and implemented the review of the school research plans created in 2020. The following highlights the status of the review process:

- » Review successfully completed:
 - School of Community Studies
 - School of Healthcare and Social Practice
- » Review partially or almost completed:
 - School of Applied Business
 - School of Architecture

- School of Computing, Electrical and Applied Technology
 - School of Creative Industries
 - School of Environmental and Animal Sciences
- » Did not engage in the review process:
- School of Building Construction

Due to the Covid lockdowns in 2021, the work on the review of the School research plans was put on hold, a decision made by the Director Research and Enterprise, Tūāpapa Rangahau.

The Research Leaders, Heads of Schools and academic staff were under extreme pressure during this period while they were focusing on the delivery of their courses, which was a priority. This is one of the reasons five of the schools mentioned above could not complete the review process.

The School of Bridgepoint and School of Trades and Services were excluded because they offer sub-degree programmes and do not have the NZQA research-compliance requirements.

4.9 Performance Based Research Fund (PBRF)

Due to Covid-19, the TEC moved the next PBRF Quality Evaluation (QE) by two years, which makes 2026 the next assessment year and December 2025 the final deadline for reporting outputs and outcomes.

The Unitec Research Committee (URC) decided that mid-2021 was the best time for an internal evaluation, noting that Unitec always runs a rehearsal for the PBRF QE halfway between the last QE and the next. The Ministry of Education confirmed its response to the panel recommendations of the 2019 NZ Tertiary Education Commission review of PBRF in early 2021, supporting most of the recommendations.

However, only after the implementation of the Sector Reference Group consultation would the framework for the 2026 PBRF QE be totally clear. Consequently, the URC decided to base the internal evaluation on an informed prediction, rather than on the framework of the last QE in 2018, soon to be redundant.

Some investment was made in the software used for developing portfolios (ROMS) to assist staff to begin to understand the new PBRF framework, with an emphasis on partnership and impact. This shift from a purely output-based framework to one that allows researchers the opportunity to communicate details about the depth of partnerships they have with stakeholders, and the impact they are aiming for and achieving, is very much aligned with the existing emphasis of the Unitec Research Strategy.

Guidelines for the internal PBRF QE were developed by Tūāpapa Rangahau, a review team was assembled, online workshops run and one-to-one tutorials offered, providing support for research staff toward the forthcoming rehearsal, which required them to submit a draft portfolio through ROMS.

Then the August lockdown hit, and it became impossible to continue with the internal evaluation, which was postponed until 2022.

4.10 Ethics

The Unitec Research Ethics Committee (UREC) assesses ethics applications for research projects involving human participants. Animal ethics proposals are contracted out to AgResearch.

In 2021, 61 ethics applications were received from Unitec staff and students, and all were approved during the course of the year. This is a slight decrease in the number of applications from 2020, and below numbers from 2018. More than half of the ethics applications were submitted by students completing master's degrees (34) and the rest by academic staff members (27).

Following review and implementation of significant recommendations by both Tūāpapa Rangahau and UREC, the quality of applications from both staff and students is improving, with significantly less revision being needed before approval.

There was also a slight increase in low-risk applications (17 in 2021 in comparison to 14 in 2020). This has been attributed to Covid-19 and more research being done remotely using anonymous questionnaires, rather than interviews, which proved difficult to conduct under lockdown measures.

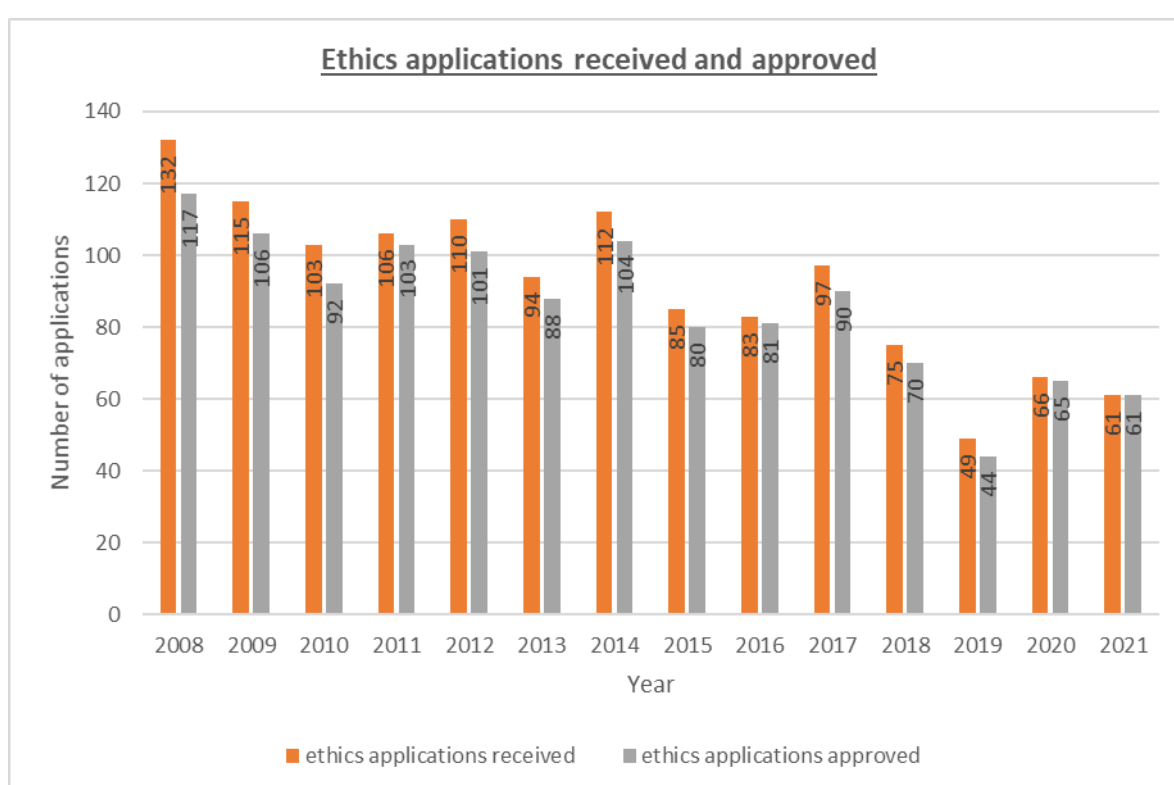


Figure 14: Staff and student ethics applications received and approved.

The HRC Ethics Committee accepted the 2021 Annual Ethics Report and re-approved UREC for another three years until December 2025. They were impressed by the process of joint review that includes a diverse range of perspectives; the membership numbers and diversity with expertise in Māori and Pacific communities; and the valuable inclusion of a student representative.

4.11 Postgraduate studies and student-engaged research

Engaging students in research is an important way to broaden their educational experience and to make the taught subjects more accessible to them.

4.11.1 Postgraduate scholarships

Each year Tūāpapa Rangahau provides postgraduate scholarships to students across Unitec's postgraduate programmes, supporting our students to succeed. These scholarships are advertised, awarded and administered by Tūāpapa Rangahau in close partnership with the relevant Academic Programme Managers.

In 2021, \$250,000 of scholarship funding supported 49 students from seven postgraduate programmes. The funding also supported two priority groups (Māori-specific scholarships and Pasifika-specific scholarships) plus a Bold Innovator Scholarship and five Industry Scholarships.

4.11.2 Scholarship's success stories

Below are some of the 2021 postgraduate scholarship success stories:

Dr Rebecca Wood commented on behalf of Creative Industries' postgraduate students.

"The narrative for all of our Creative Industries postgraduate students is that the scholarship takes some pressure off the financial burden of managing as a student – surviving in the most expensive city in Aotearoa as a student and in meeting materials costs."

Tyrone Te Waa – Master of Creative Practice

"Tyrone works in sustainable ways by using mostly found materials, so his material costs are relatively low. His scholarship allowed him to focus on his work, easing some of the pressures of staying afloat financially while studying. Tyrone Te Waa completed his MCP (his final exam was in December 2021), and his final work for examination was included in a group show *The New Net Goes Fishing*, at Tim Melville Gallery. In July 2021, Tyrone's work was also shown at the Sanc Gallery in his solo show *Clingwrap*. Tyrone recently received an award from The Arts Foundation.

<https://www.thearts.co.nz/artists/tyrone-te-waa>

<https://www.timmelville.com/exhibition/a-new-net/>

<https://www.sancgallery.com/exhibitions/tyrone-te-waa-clingwrap>

Kieran Cooper – Master of Architecture (Professional)

"The MArCP Research Scholarship has provided much-needed financial support to assist me with completing my Master of Architecture (Professional) degree. It allowed me to balance work and study and achieve First Class Honors, which had been a dream of mine when I first started studying again as a mature student. Without this scholarship I dare say I would not have been able to make that dream a reality."

Fatimah Aljarash – Master of Applied Practice (Social Practice)

Fatimah Aljarash received MAP-SP scholarship funding in 2021 and graduated the same year. Her project focused on the unique needs of Arab migrant families in Aotearoa New Zealand navigating systems and support services that present barriers for them when trying to support a child in the family with autism. Fatimah's external examiner suggested that she write and disseminate a resource pamphlet for Arab families in this situation, based on her research findings.

Jimmy Ma'ia'i – Master of Creative Practice

Completing his MCP in 2022, Jimmy also received the Toloa Tertiary Scholarship to cover his fees this year.

Kelsey Metcalfe – Master of Architecture (Professional) – Postgraduate Māori Scholarship

Section 3.3 highlights Kelsey's success story.

4.12 Non-completions research

In 2019, Unitec identified parity targets for Māori, Pacific, International and Under 25 students. In conversation with Unitec Academic Committee members, it was agreed that better understanding of the reasons why students withdraw from study would be helpful toward achieving these parity goals.

Funding was made available to each of the Priority Group Student Success directors toward research which could improve this understanding. The Director Pacific Success had a project well underway and utilised the funding toward this project, which was completed in the latter part of 2020.

The Directors Student Success for Māori (Toni Vaughan), Under 25s (Andrea Thumath) and International (Annette Pitovao) teamed together with the Director Research (Associate Professor Marcus Williams) and a project was designed with assistance from Academic Consulting (Lyn Lavery).

Research ethics approval and Phase One of the project was completed, see 2020 report for details.

Phase Two was conducted in 2021 and consisted of one-on-one interviews conducted either via videoconference (Zoom® or Microsoft Teams®) or telephone and ranged from 35–45 minutes in duration. A total of 18 individuals took part in the research (see Table 7). The majority were domestic students who were under 25 years of age. Efforts were made to recruit equal numbers across the three priority groups. Unfortunately, as the research relied on volunteering participants who have essentially not completed their studies, and was also conducted during the Covid-19 pandemic, it proved challenging to recruit enough international students to the sample.

Gender	
Female	10
Male	8
Age group	
Under 25 years	15
25 years and over	3
Ethnicity	
Māori	5
Pacific	2
Other	11
Student type	
Domestic	15
International	3

Table 7: Non-completions research demographic data (counts).

The interviews will be written up and a full report will go to Te Komiti Mātauranga in 2022, alongside the research from the Director Pacific Success.

5 Priority Three (Partnered research and innovation)

Research at Unitec will concentrate on opportunities and problems identified by Māori, industry and community partners. Strong, enduring partnerships will be facilitated and valued, with investment in capacity building, innovation and leadership in this space. The reciprocity created by these partnerships will enhance opportunity for student work-integrated learning.

This section of the report highlights:

- » Increasing external engagement
- » Joint research with universities, other ITPs and CRIs
- » Seeking external funding
- » Delivery of externally funded projects
- » Greater research focus, industry scholarships, Unitec Bold Innovators scholarship
- » Telling our research stories
- » Unitec ePress
- » Unitec Research Blog.

5.1 Increasing external engagement

Building partnerships to meet the needs of industries and to improve student success is central to achieving Unitec's vision and Research Strategy.

5.1.1 Building external relationships through research

Unitec continues to forge valuable industry partnerships, and its reputation for focusing on applied and impactful research has built confidence with its partners that it can deliver both breakthrough discoveries and practical, low-cost solutions that are readily implementable.

A characteristic of Unitec researchers in 2021 was a readiness to get alongside industry partners and jointly seek pragmatic approaches to the challenges of delivering research projects in a Covid-disrupted world. This was particularly true of research relying on field work, where research methods needed to be improvised, timeframes and budgets constantly revised, resources reallocated, and national and regional travel fitted within fleeting windows of opportunity. The flexibility and pragmatism applied by Unitec researchers in 2021 to deliver on their contracts was acknowledged by many funders choosing to award next-phase funding and/or provide timeframe extensions.

5.1.2 Institutes of Technology and Polytechnics (ITP) Research and Enterprise Voucher scheme

The ITP Research and Enterprise Voucher scheme aims to seed new relationships with communities, iwi and businesses by subsidising the cost of our research services to kick-start research collaborations and develop staff capability. In the course of delivering on a contract, we are facilitating professional development for staff in the commercial arena (outside of traditional academia) and engaging directly with end users. Where practical, we are involving students in the projects to give them valuable exposure to the industry and community research environment. This creates real-world opportunities for staff and students through increased industry engagement, as well as the opportunity to foster joint projects around commercialisation and the creation of intellectual property.

In 2021 we used the research voucher scheme strategically to strengthen our Cybersecurity Research Centre by providing a research voucher to genetic information security start-up GeneCrypt. Unitec utilised the experience gained and technology developed during the MBIE-funded STRATUS research

project that concluded early in 2021, to create a novel file format for encrypting genetic data. This method has been taken up by GeneCrypt and has resulted in them signing a \$120,000 research contract with Unitec for 2022. This research contract and the research voucher allowed Unitec to hire a dedicated bioinformatician and data analyst to grow the capacity of the Unitec cybersecurity research team. The project attracted media interest and helped build Unitec's reputation for applied cybersecurity innovation (<https://www.stuff.co.nz/technology/300366509/kiwi-startup-encrypts-dna-to-protect-most-important-data>).

In Social Practice, a research voucher for Parliamentary Services was successfully delivered for the Honorable Phil Twyford. Dr Hoa Nguyen and David Kenkel investigated the situation of Tuvaluans without visa rights in Aotearoa New Zealand, and how the current situation has overall detrimental impacts on our society and significant human-rights implications. The research generated significant media interest and was noticed by several cabinet ministers (<https://www.rnz.co.nz/international/pacific-news/458898/new-report-highlights-plight-of-undocumented-tuvaluan-migrants>).

These examples demonstrate how the Unitec research voucher programme can kick-start research of national importance to Aotearoa New Zealand and help our academics to create significant impact.

5.1.3 Industry-funded projects

Industry-funded projects are defined as research and enterprise projects Unitec is receiving funding for, where the services Unitec is providing are applied contract research or consultancy, from all funders excluding any governmental contestable funding sources. This is measured as a count of the number of projects.⁵ Figure 15 shows the counts of industry-funded projects for Unitec from 2016 to 2021.

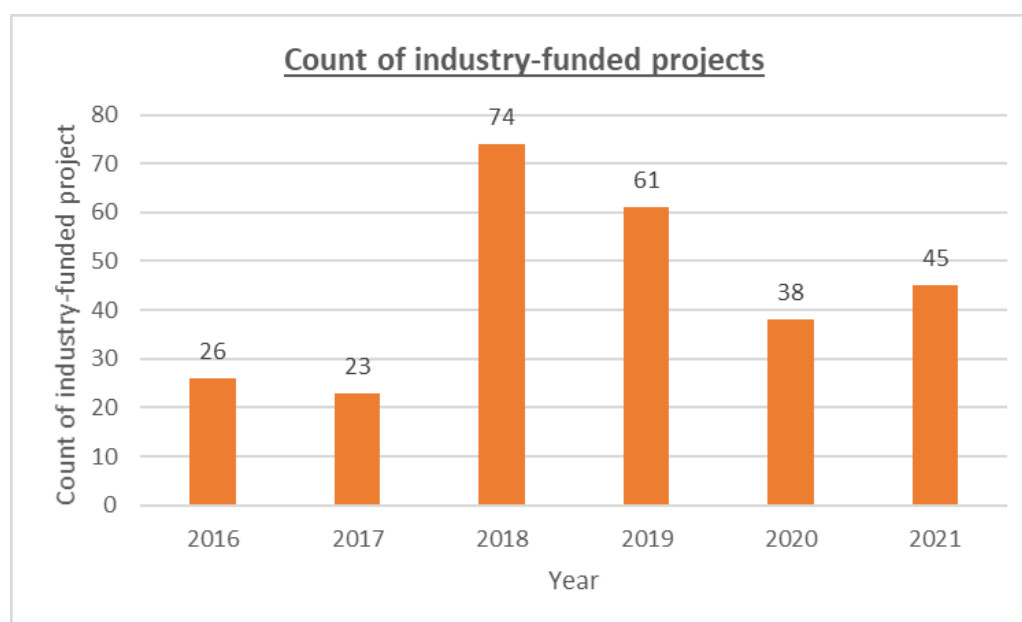


Figure 15: Unitec industry-funded project counts between 2016 and 2021.

⁵ There was a slight change in the definition of industry-funded projects in 2018 to include public sector, and where the service Unitec is providing is applied contract research or consultancy. Prior to this, only funding from private sector was included. Thus the 2018 figures reported are comparatively higher than those of 2016 and 2017.

Figure 16 shows the Schools' contribution to industry-funded projects in 2021.

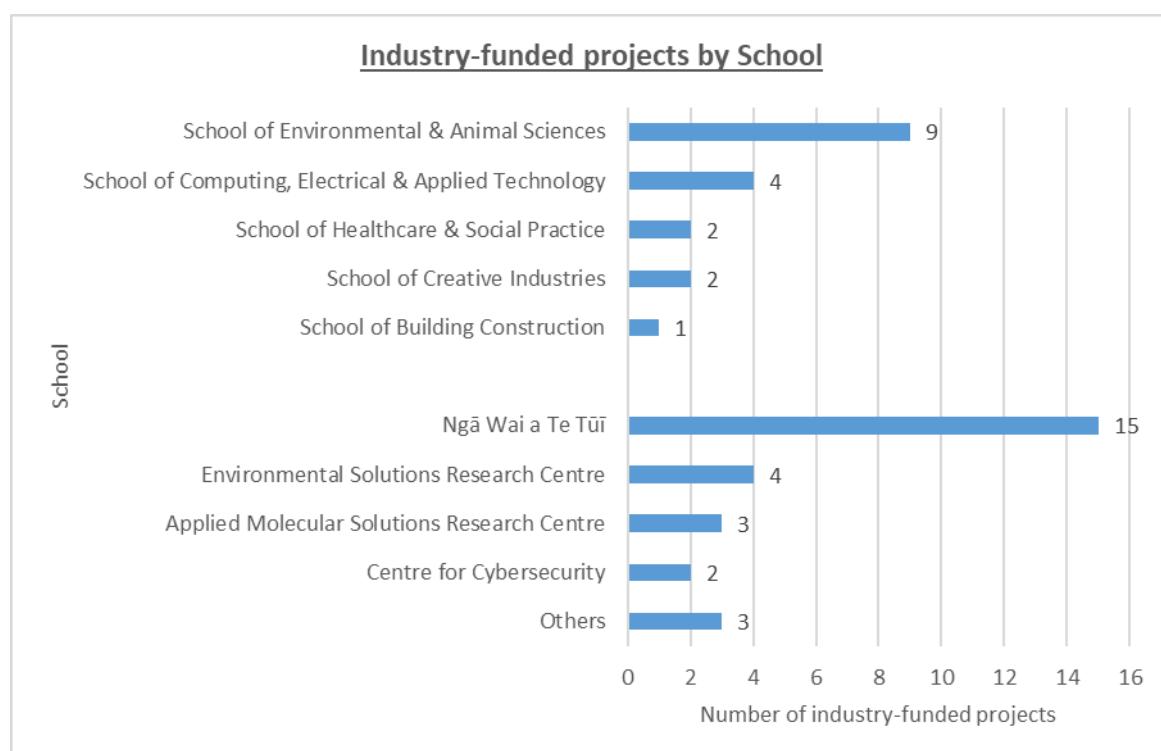


Figure 16: Schools' contribution to industry-funded projects count.

5.1.4 Commercialisation

In early 2021 the MBIE-funded STRATUS cybersecurity research project concluded. STRATUS (Security Technologies Returning Accountability, Trust and User-centric Services in the Cloud) was a multi-partnered, \$13m six-year cybersecurity research programme led by the University of Waikato, on which Unitec held the \$2m contract to deliver Research Aim 4. Due to Covid-19 impacts, MBIE extended the funding for six months, providing for a new end date in early 2021 and additional funding to enhance Unitec's commercialisation efforts. An expert from Scown Strategic was engaged to support Unitec's commercialisation efforts, and industry engagement led to several promising opportunities. Most excitingly, negotiations that were begun in late 2020 with Auckland genetic information security start-up GeneCrypt led in 2021 to an IP agreement to commercialise technology developed by the Unitec team as part of STRATUS. This led to a \$120,000 research contract in 2022 with a very significant opportunity for Unitec to partner with GeneCrypt during their growth journey. Due to the rapidly increasing threat level in cybersecurity, there is a great market demand for novel cybersecurity solutions and interest in research teams being able to deliver them. Unitec's deep reservoir of intellectual property developed during the STRATUS projects sets it up well for future commercialisation opportunities in this booming field and we are growing our capabilities, including the hiring of a bioinformatician and data analyst funded by the GeneCrypt project.

In 2021, a major Aotearoa New Zealand ventilation-system company HRV entered into a research collaboration with Unitec's Environmental Solutions Research Centre (ESRC) to test the quality of their products in real-world applications, using indoor air-quality sensors developed in collaboration between ESRC and Unitec's School of Computing, Electrical and Applied Technology. The industry partner expressed great interest in developing these sensors further and licensing the underlying design to include them in future generations of their product family. This work has led to a \$206,000 research contract for research in 2022 and 2023, with considerable future commercialisation potential.

5.2 Joint research with universities, other Institutes of Technology and Polytechnics (ITPs) and Crown Research Institutes (CRIs)

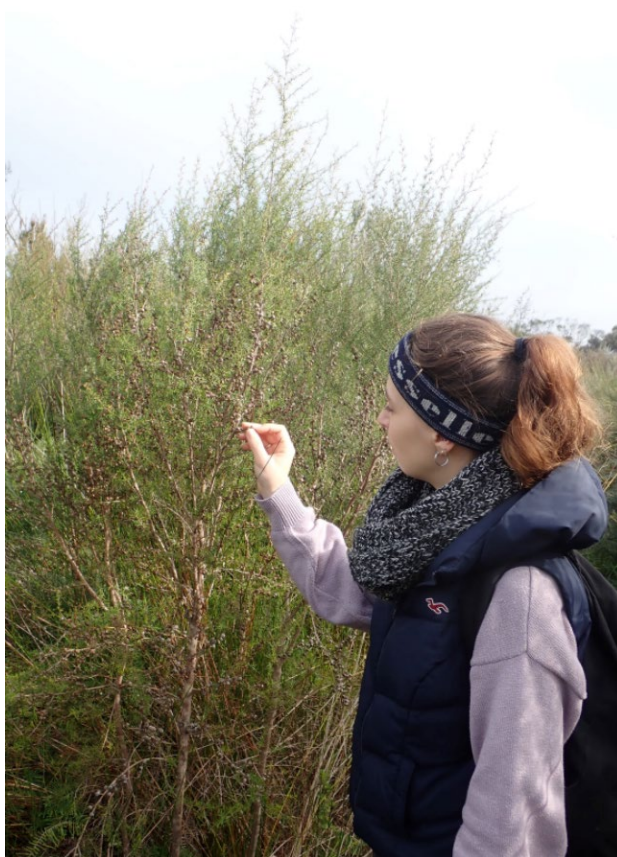
Unitec has embraced a collaborative approach to its research with other universities and institutes of technology to leverage capability on several externally funded projects. A prime example was Unitec's collaboration with SIT and NorthTec to undertake a Lotteries funded project to monitor waterway microplastic pollution in Southland through community mobilisation (citizen science). It brought together skill sets from three different ITP subsidiaries to achieve a research project that could not be done separately. In this case, bringing together the subject-matter expertise of researchers at SIT and NorthTec, with the project oversight and grant-contract management at Unitec. This experience provides a template for future research collaborations between subsidiary ITPs within Te Pūkenga super organisation.

Other research collaborations continue with Universities of Auckland, Canterbury and Waikato. A notable collaboration is Ngā Wai a Te Tūi's affiliation with Ngā Pae o te Māramatanga (NPM), Aotearoa New Zealand's Māori Centre of Research Excellence hosted by the University of Auckland. This network partnership of 21 research entities, including Unitec, focuses on realising the creative potential of Māori communities and bringing about change both nationally and globally. One NPM programme hosted by Ngā Wai a Te Tūi is MAI Ki Wairaka (MAI). Led by Professor Jenny Lee-Morgan, the MAI programme aims to provide a kaupapa Māori support network for Māori and Indigenous postgraduate students here at Unitec (Te Whare Wānanga o Wairaka), and other MAI students in this area.

Unitec also works with Crown Research Institutes such as Landcare Research. Associate Professor Peter de Lange from the School of Environment and Animal Sciences is leading a Department of Conservation-funded revision of kahikātoa/mānuka (*Leptospermum scoparium*).

Figure 17: Luzie Schmid with *Leptospermum repo*, Kopouatai.

Kahikātoa is an economically and ecologically important plant that is now threatened by myrtle rust disease. While the global pandemic has slowed down the revision due to the curtailing of field work, Peter and third-year student Luzie Schmid described one new species of kahikātoa, *Leptospermum repo*, last September, and have a further paper in preparation sorting out a further three species (two new to science). De Lange, along with palynologists and plant reproductive biologists, published a paper in *PLOS One* on the discrimination of kahikātoa and rāwiri (*Kunzea*) pollen – important for the honey industry.



5.3 Seeking external funding

Competitive funding creates dynamism and the opportunity for new ideas. Government agencies, businesses, charitable trusts and foundations invest in, and are important users of, research. Research and innovation can inform decision making and provide better and more effective services across social, health and environmental functions.

5.3.1 2021 success stories

In 2021, there were three outstanding success highlights for external funding. These were:

5.3.1.1 MBIE Science Whitinga Fellowship

In 2021, the Government decided to fund a new one-off fellowship, the MBIE Science Whitinga Fellowship administered by The Royal Society Te Apārangi. The objective of the funding was to support early-career researchers with the potential to excel in a research career (captured in the name of the Fellowship, Te Whitinga Mai o te Rā, which can translate to “the rising of the sun”) who may otherwise be lost from the system due to the impact of the Covid-19 pandemic on their career path.

Figure 18: MBIE Science Whitinga Fellowship recipient Samantha Heath.



The Society received a total of 239 eligible applications. Thirty fellowships of two years in length were awarded by a competitive process for research undertaken in any field, including the humanities, Mātauranga and social science.

Only one fellowship was awarded to a researcher from an ITP: Unitec’s Associate Professor Samantha Heath, from the School of Healthcare and Social Practice. Samantha’s research project is titled Fit For the Future: Reimagining Nurse Preparation for Practice in New Zealand’s Changing Demography. The Fellowship funding will enable Samantha to continue work on the undergraduate nursing curriculum to support students to meet the healthcare needs of older adults as expected demographic changes in Aotearoa New Zealand’s population unfold.

5.3.1.2 Lottery Environment and Heritage Grant

In 2021, the research leadership of the 16 subsidiaries of Te Pūkenga (the Rangahau Research Forum) worked together to demonstrate how research undertaken by the ITP sector can be powerful for Aotearoa. One of the things the forum wanted to achieve was to win external funding together. A call was issued for motivated, creative Te Pūkenga researchers who wished to get involved.

Figure 19: Lottery Environment and Heritage Grant recipient Dr Christine Liang.

Unitec guided the development and submission of a successful application for Lottery Environment and Heritage Funding for a project that used ‘citizen science’ to monitor microplastic pollution in Southland’s waterways.

The Principal Investigator for this project was Dr Christine Liang from Southern Institute of Technology. The research is titled Micro-Investigators: Monitoring of Waterway Microplastic Pollution in Southland, New Zealand through Citizen Science.

Part of the funding went towards assembling sampling kits that allowed Invercargill primary school pupils to collect microplastics data. The project involved staff from SIT, Otago Polytechnic and NorthTec.



A larger application to MBIE's Unlocking Curious Minds Fund for a follow-on project that would have involved staff from NorthTec, Unitec, Toi Ohomai, EIT, Otago Polytechnic and SIT was highly ranked but ultimately, and unfortunately, unsuccessful.

5.3.1.3 Auckland Council Funding – Āwhina Mai Tātau Katoa (AMTK)

Paul Woodruffe, School of Creative Industries, secured funding from Auckland Council to partner with Āwhina Mai Tātau Katoa (AMTK) a community-based organisation that supports marginalised people who are in social housing or sleeping rough in the city.

Figure 20: Rob Smith (centre left) and Paul Woodruffe (centre right) of AMTK with Datacom staff post Hackathon.



The research aims to address homelessness in the Karangahape Road business precinct by engaging street whānau who are currently without constructive activities, or a place to establish healthy and supportive community-building activities. The funding has supported co-design and delivery of creative workshops and capacity-building activities with street whānau to improve their skills and capacity, as well as securing a creative space for this through the Auckland Methodist Church.

Some of the AMTK research team were former street whānau, and the project afforded them an immersive opportunity to learn valuable administrative and business skills as project co-ordinators.

5.3.2 Funding proposal submissions and success rates

Competition for grants has never been more intense. For example, the Ministry of Business, Innovation and Employment (MBIE) has noted that the quality of applications to its Endeavour Fund continues to be very high. In 2021, the success rate for applications to the Endeavour Fund's two investment mechanisms, Smart Ideas and Research Programmes, decreased to 13% overall and there was a significant increase in Smart Ideas applications received. In 2021 the success rate for Smart Ideas was 12.5% from 416 concepts, compared to 17.3% from 283 concepts in the 2019 investment round.⁶ While the same number of Research Programmes applications were received in 2021 as 2020, the average funding request was higher.

Figure 21 illustrates the number of proposals submitted by Unitec researchers for external funding, the number of successful proposals and the proposal success rates since 2011.

⁶ The 2020 Smart Ideas round was cancelled because of the impact of the Covid-19 lockdown.

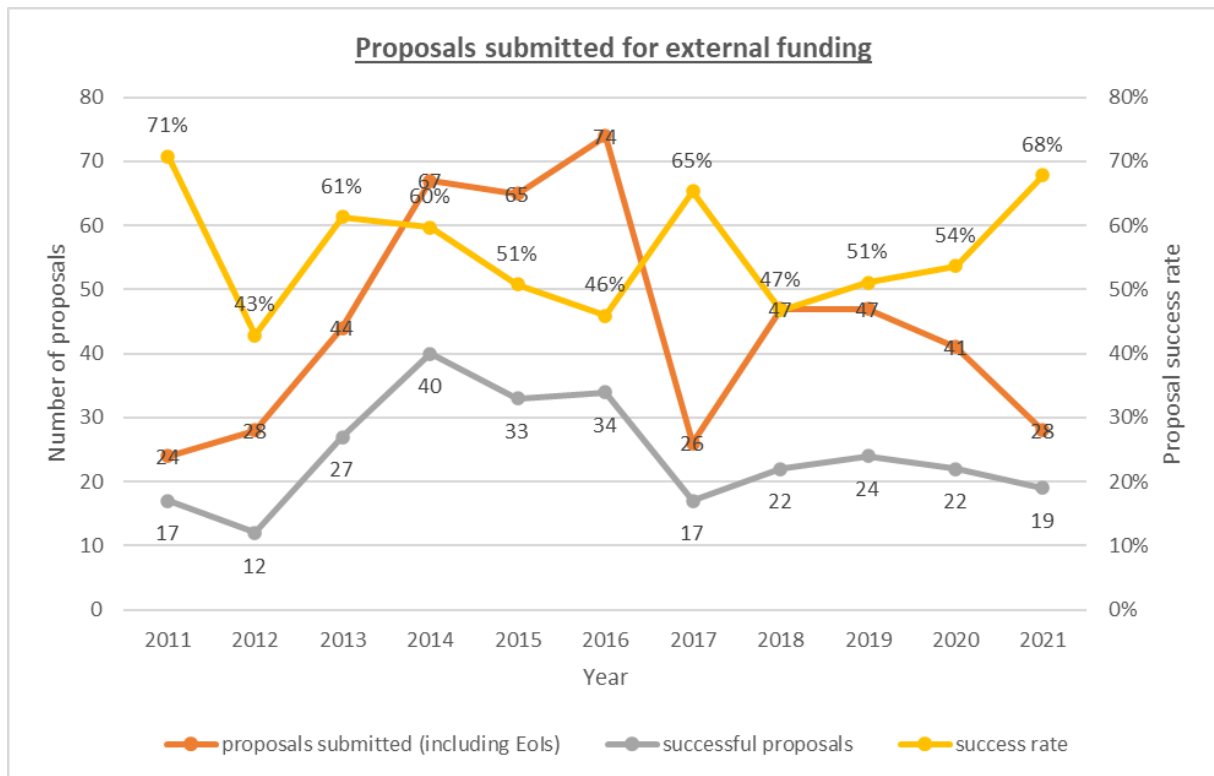


Figure 21: Proposals submitted for external funding 2011–2021.

Figure 22 illustrates the total grants Unitec has won since 2011.

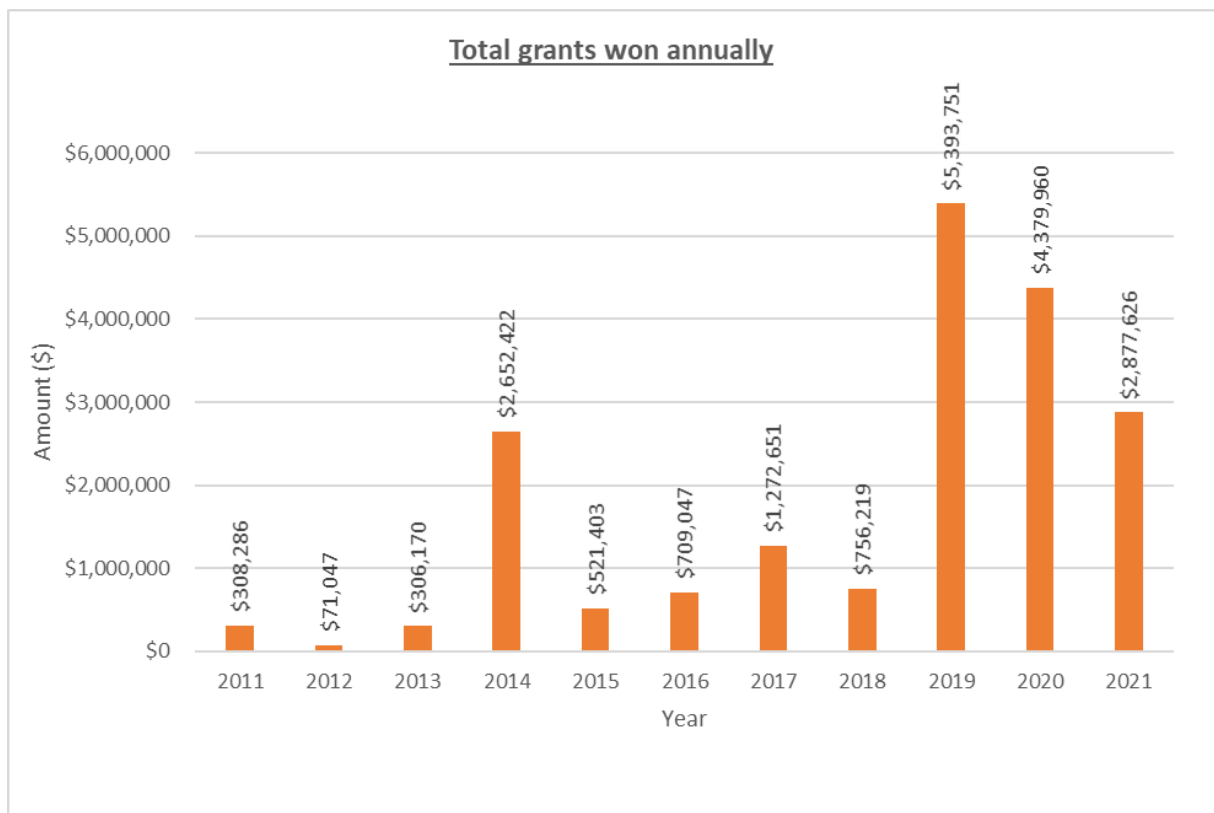


Figure 22: Total grants awarded annually 2011–2021.

NB: The comparatively larger amounts won in 2014, 2019, 2020 and 2021 relate to successful applications made to MBIE's Endeavour Fund.

5.3.3 Organisations funding our research

External Research Income is included as a performance measure in the PBRF on the basis that it provides a good proxy for research quality. The underlying assumption is that external research funders are discriminating in their choice of who to fund and that they allocate their limited resources to those they see as undertaking research of a high quality.

Most of Unitec's external research funding comes from government agencies, with a much smaller percentage of grants (16% of grants won) coming from businesses and charitable trusts.

Funding source	Total funding received
Non-government	\$56,500
Government	\$2,821,126
Total	\$2,877,626

Table 8: Sources of ERI in 2021.

In 2021, \$7,114,145 of funding was sought. A breakdown of the outcomes of these applications is depicted in Table 9.

Application status	Total funding sought
Awarded	\$2,877,626
Declined	\$4,236,519
Total	\$7,114,145

Table 9: Outcome of submitted applications 2021.

The funders and amounts of Unitec's five biggest grants in 2021 are depicted in Table 10.

Funders of five biggest grants in 2021	Source of funding	Total funding awarded	Principal Investigator
Auckland Museum	MBIE Endeavour Fund Research Programme	\$1,748,231	Prof Jenny Lee-Morgan
Royal Society	Whitinga Fellowship	\$320,000	A/P Samantha Heath
Royal Society	Marsden Fund	\$300,000	Dr Nalani Wilson-Hokowhitu
Iwi Collective Partnership	Sustainable Seas National Science Challenge (NIWA)	\$176,013	Prof Jenny Lee-Morgan
Health Promotion Agency	Internship Programme	\$70,000	Dr Hinekura Smith

Table 10: Funders and amounts of Unitec's five biggest grants in 2021

It should be noted that the Covid-19 pandemic has had a major impact on the world economy and this is likely to have long-term adverse impacts, not only on the amount of external funding available going forward, but also on the research, science and innovation workforce itself.

5.4 Delivery of externally funded projects

The successful delivery of an externally funded research project hinges on the Principal Investigator's ability to lead, co-ordinate and perform the research. Operational and administrative assistance and advice from institutional support teams including Tūāpapa Rangahau, Finance, HR and IMS is vital to ensuring the smooth and timely delivery of contracted research.

In 2021, Tūāpapa Rangahau provided research management and research administration support to Unitec Principal Investigators in the delivery of 44 active externally funded projects worth over \$15 million in contract value.

5.4.1 Total Unitec external research income (ERI)

The total external research income (ERI) for any given year is a strong indicator of the external value and magnitude of research efforts for that year. For these reasons, it is one of Unitec's KPIs within the Research Strategy, where Unitec seeks to increase the total value of ERI by 10% per annum.

Total ERI is an annual measure of the amount of income Unitec earned delivering research services to external parties. ERI is the income we have earned during a financial year, not what we have been awarded. Unitec measures the ERI earned each year by determining the percentage of project progress made that year for each active research project. Each project's percentage is then multiplied by its respective awarded amount to provide the project ERI for that year. Total 2021 ERI is the sum of ERI calculations from all 44 active externally funded research projects.

Longitudinal data from 2010 onwards shows that Unitec has significantly increased its external research efforts in the years 2015–17, dropped in 2018, and significantly increased in 2019. The major drop in 2018 was due to the change in the accounting principle that is used to calculate ERI. Due to this new process, the ERI will be low at project start-up but will gradually increase as the percentage of the project completed increases and is recognised. The investment-plan calculation did not incorporate the complexity discussed above and requires adjustment for future years.

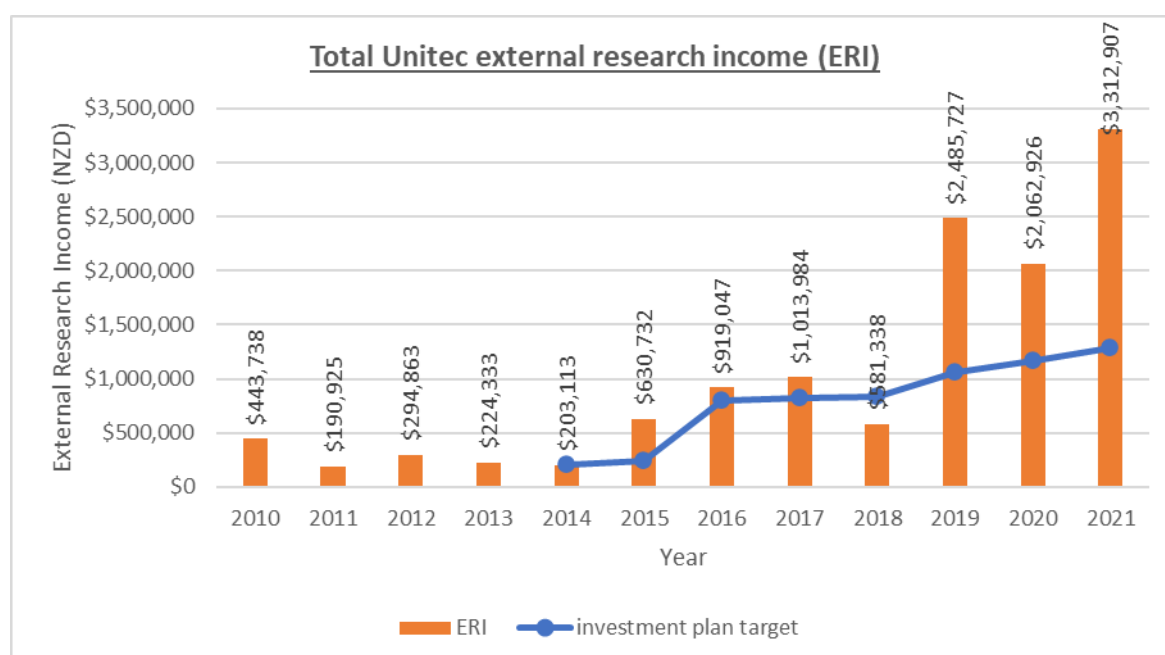


Figure 23: Unitec ERI between 2010 and 2021.

5.4.2 External research income by School and Research Centre

To promote School-level engagement in externally funded research opportunities, ERI is reported at School and Research Centre level.

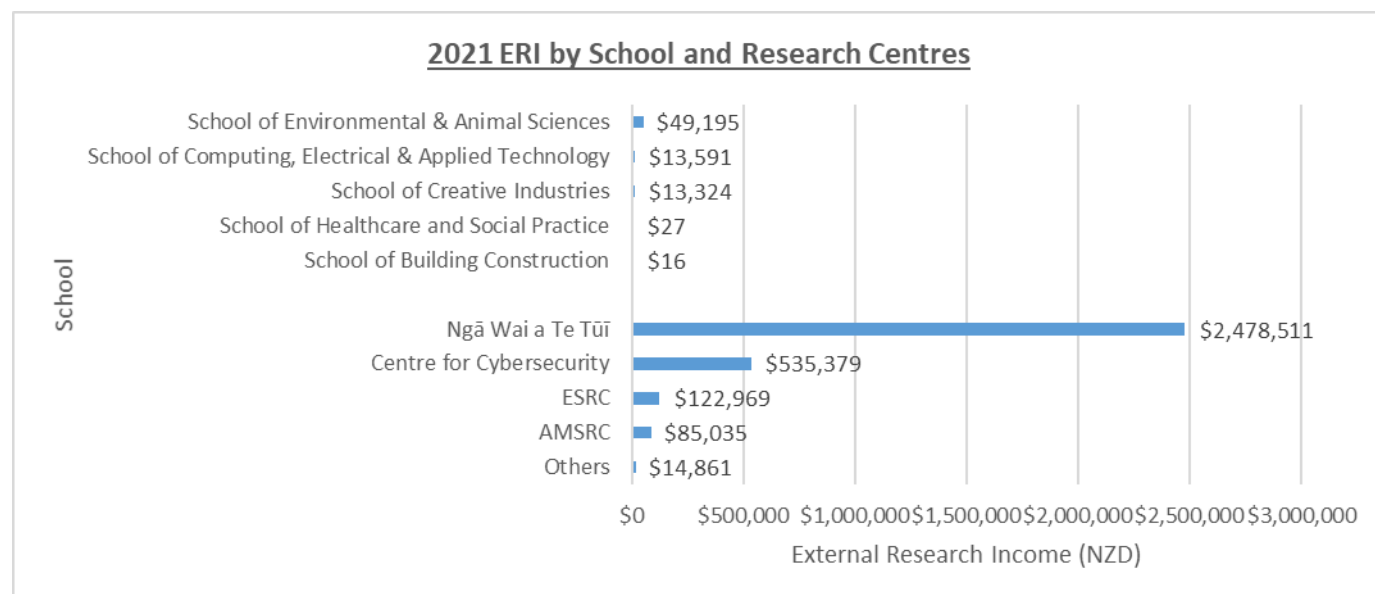


Figure 24: 2021 ERI by School and Research Centres.

Five out of eight Schools that offer degree programmes achieved some level of ERI in 2021. However, there was significant variability in ERI performance between Schools, ranging from \$16 to \$49,195 (average of \$9,519 per School, excluding the Applied Molecular Solutions Research Centre (AMSRC), the Cybersecurity Research Centre, Ngā Wai a Te Tūi, Environmental Solutions Research Centre (ESRC) and others).

The four research centres contributed 98% of Unitec's total ERI for 2021 and the Schools contributed 2%. Ngā Wai a Te Tūi (Section 3.1) contributed 75%, Cybersecurity Research Centre 16%, Environmental Solutions Research Centre 4% and AMS Research Centre 3%. This statistic attests to the effectiveness of the driver in the 2015–2019 Research Strategy, to focus our research at Unitec by establishing Strategic Research Foci. These foci have enabled the growth of new research centres.

5.4.3 Performance Based Research Fund (PBRF) ERI

ERI is one of the three assessment elements of the PBRF's mixed performance-assessment regime. ERI is included as a measure because it is a strong proxy indicator of the quality and relevance of the research TEO's conduct. In 2016, the PBRF metric was changed to increase the incentives for TEOs to win ERI, particularly from non-government sources. The Quality Evaluation (individual staff portfolio) portion was reduced from 60% to 55% and the ERI portion was increased from 15% to 20%. Starting in 2015, the government also introduced requirements for ERI to be reported in four different categories, based on funding source. From 2017 onwards, the PBRF funding formula used the category weightings in Table 11 to calculate PBRF ERI funding allocations.

Funding source category	ERI Weighting	ERI Amount	ERI Percentage
NZ government contestable funds	1.0	\$3,243,820	97.9%
NZ public-sector contract research	1.0	\$7,000	0.2%
Overseas research income	1.5	\$8,857	0.3%

NZ non-government income	2.0	\$53,231	1.6%
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Table 11: PBRF ERI weightings and amount by funding source.

Central government's changes to the PBRF signal the growing importance of externally funded, industry- and community-relevant research. It also signals a continued push for TEOs to rely less on the public purse to fund research. These signals align well with Unitec's Research Strategy 2020–2024, which aims for greater external engagement, an applied research focus and ongoing ERI growth.

Table 11 also shows the relative split of 2021 ERI by funding source. Nearly 98% of Unitec's ERI was earned from New Zealand government contestable funds and the remaining 2% from either New Zealand public-sector contract research, overseas research income or New Zealand non-government income.

5.5 Greater research focus

Without a doubt, the most significant development proposed in the 2015–2019 Unitec Research and Enterprise Strategy was the creation of Strategic Research Foci for Unitec. A heightened degree of focus for research and enterprise activity (mission-led research) is a national and international trend, allowing even a relatively small institution to have greater impact in a specialised zone of activity. The 2020–2024 Unitec Research Strategy details 'sandpits' that suggest important future-focused areas for research important to Aotearoa and Tamaki Māhaurau. It also cites that school research plans will identify research groups, which will form the seeding ground for future research centres at Unitec. The Strategic Research Foci initiative has resulted in four thriving research centres at Unitec and two more are being developed for consideration by the Unitec Research Committee in 2022.

5.5.1 The Cybersecurity Research Centre

Unitec's most established centre was approved in 2012. The Cybersecurity Research Centre was set up to encourage digital innovation in Schools, including outside of computing and across disciplines. Former director of the centre Professor Christian Probst has been an Adjunct Professor on a MBIE Endeavour-funded project based in Germany since 2020. He continues to lead the project Assessing Reidentification Risks of Anonymised Data Sets with Bayesian Probabilistic Programming, which contributed \$346,584 as external research income in 2021.

Denis Lavrov, who also works on this project and has been based in the centre since its inception, has recently initiated and is currently running CybeR&DaaS at Unitec, a cybersecurity consultancy which in 2021 won \$15,000 Phase One funding from a start-up called GeneCrypt. This is the first commercialisation funding in the history of Unitec, developing security software for securing the digital human genome, in which Unitec has a 15% share in all GeneCrypt's profits. Phase Two and Three funding estimated to be between \$500K–\$1M is under negotiation. Toward the end of 2021, Unitec recruited Bio-data Analyst James Love, who has joined Denis on this exciting project. Several other companies and organisations are looking into partnering with CybeR&DaaS, including cybersecurity firm SafeStack and the Inland Revenue.

Denis is considering leading the centre as director going forward, with significant history in this space, starting with the STRATUS project in 2012 (MBIE Endeavour Research Programme, \$12.5m over six years); he led the STRATUS technical team to successful completion of the project, achieving all milestones. He has produced over 15 novel technologies in the field of cybersecurity. Some have contributed back to academia (rRVM, COR-Honeypot), others have been co-developed together with industry partners (CRaaS, LogSpider). The STRATUS project contributed \$188,794 as external research income in 2021.

The total ERI contributed by this centre in 2021 was \$535,379.

The centre has significantly contributed to the culture of innovation at Unitec and has a national reputation.

5.5.2 The Applied Molecular Solutions Research Centre

Established in 2016 as a Strategic Research Focus and approved by the Unitec Research Committee in 2020 as a Research Centre, the Applied Molecular Solutions Research Centre (AMSRC) is based on the ongoing technological revolution in biology that is associated with the ability to identify organisms rapidly and efficiently using DNA obtained from small amounts of biological or environmental material. The growth in the availability of genetic data is transforming our understanding of the world around us. Genomic data unlocks opportunities for decision making that relate to the protection of natural resources, and animal, human and plant health. These genetic resources can be used, for example, to create rapid diagnostic tests for diseases that affect humans, crops or livestock. They can also be used for more comprehensive studies that characterise whole communities of organisms, describe the physiology of an animal, or investigate the adaptive functions of genes in given ecological situations.

The Director of AMSRC is Associate Professor Dan Blanchon, who is also Head of the School of Environmental and Animal Science (EAS). This results in a research centre that is highly integrated into science teaching and communication. This can manifest in a variety of ways, for example:

- » As well as credit-bearing student research projects in the Bachelor of Applied Science and Bachelor of Veterinary Nursing, two paid student internships were offered in 2021 by the AMSRC. Warren Anne Fajardo, a third-year Unitec Bachelor of Applied Science student, was awarded a summer studentship for summer 2020–21. She worked with Dr Marleen Baling on the feasibility of detecting eDNA from tracking tunnels. Anne did fieldwork at various locations: Bream Head, Tāwharanui, Mataia and Rangitoto Island. Luzie Schmid, another undergraduate student from the Bachelor of Applied Science, had a second fellowship, working with Associate Professor Peter de Lange on the systematics of species of *Leptospermum* (mānuka or kahikātoa).
- » Between the various Covid-19 disruptions, AMSRC demonstrated the use of PCR and gel electrophoresis in a workshop for the Girl Guides (21 January 2021, 25 attendees).
- » Unitec/AMSRC co-hosted the SRARNZ (Society for Research on Amphibians and Reptiles in NZ) Semi-Virtual Conference in February 2021 at the Mt Albert Campus. Unitec was one of three hubs (the others being Wellington and Alexandra) and the Unitec involvement was led by Dr Marleen Baling.

In partnership with the School of Environmental and Animal Sciences, AMSRC has been developing its Māori partnering capability through appointments and collaboration. Unitec Honorary Research Fellows assist the team to learn about and understand Māori perspectives, to better partner and collaborate; Dr Nick Waipara, the late Kamera Raharaha and Hema Wihongi were appointed. Dr Nick Waipara is an active collaborator in the externally funded climbing asparagus and asbestos projects.

More recently for the asbestos project (a collaboration between ESRC and AMSRC), collaboration has been sought with mana whenua in the Nelson region to work with them on the asbestos deposits in the Cobb Valley area. Discussions have been held with Wakatū Incorporated (made up of four hapū from the top of the South Island) to look at possible collaborative opportunities. Connected with this, contact was made with Mana Whenua ki Mōhua (Ngāti Rārua, Ngāti Tama and Te Ātiawa), whose rohe contains the asbestos mine. Peter de Lange and Dan Blanchon attended a hui with them in Tākaka on 31 March 2021, where the project was discussed, and feedback and advice sought. They supported the project in principle and were

enthusiastic about collaboration and potentially holding some wānanga. After further discussion with their respective rūnanga, full support was given for the application for a research permit from the Department of Conservation, which was later granted. The aim is to have representatives of the mana whenua as team members, to make their kaitiaki role easier and to share knowledge (including mātauranga Māori if appropriate), and this has been built into an MBIE Endeavour Fund application (submitted 2022).

In addition, in the asbestos MBIE Endeavour Fund application, it has been proposed to support the use of kaupapa Māori research methodology to explore how rāhui can provide healing and remediation of asbestos-contaminated sites. Rāhui enables the environment to recuperate and regenerate without the presence and impacts of humans. Its purpose is both physical and spiritual protection. It is intended that this research will establish a kāhui of knowledge holders and practitioners who enact rāhui to explore appropriate monitoring methods, e.g., 'cultural health indicators' or 'mauri' that would inform regulated environmental reporting. This part of the project will be led by Dr Nick Waipara and Tanya White (kaihautū at Unitec), in collaboration with Dan Blanchon. Funding for a Māori postgraduate (Master of Science) student has been included in the Endeavour application.

AMSRC received funding from Tūāpapa Rangahau in 2020 for the acquisition of a real-time PCR machine (Bio-rad CFX Connect Real-Time PCR detection system). This piece of equipment (similar to those used in the detection of Covid-19) allows researchers to rapidly detect targeted DNA and quantify the amount of DNA present in a sample, and do this for different species. This equipment is currently being used to track changes in mould species and the amount of mould over time in indoor environments, for a large commercial partner.

A specialised asbestos laboratory for handling samples, extracting DNA and culturing microbes from asbestos-containing materials has been set up on the Mt Albert campus. This is already being used for the ESRC/AMSRC joint asbestos project.

Despite disruptions caused by asbestos-related building closures and Covid, AMSRC staff produced 13 peer-reviewed written outputs in 2021, five online conference presentations, and five posters and one presentation at the online Unitec/MIT Research Symposium. Publications covered a range of topics including lichen molecular ecology, *Salmonella* in wild reptiles, parasites in captive reptiles, skink conservation, new gecko species, new plant species, asbestos bioremediation, indoor air quality, and butterfly genetics. In 2021 there were 19 active research projects in AMSRC, led by Dr Marleen Baling, Dr Sarah Wells, Associate Professor Peter de Lange, Associate Professor Dan Blanchon and Associate Professor Terri-Ann Berry, with components led by Erin Doyle and Tianyi Tang.

AMSRC generated \$85,035 in external research income in 2021, and won three new grants:

Funding source	Amount applied for	Project	Result
2021 Department of Conservation	NZ\$24,269	Determining conservation threat status of lichens	<i>Successful</i>
2021 Auckland Zoo Conservation Fund	NZ\$50,508	Reptile disease screening	<i>Successful</i>
2021 Auckland Council (in partnership with Kiwicare Ltd, WWF and David Jung Design Ltd.)	NZ\$11,500	Vinepod Project (trialling a novel herbicide delivery product)	<i>Successful</i>

Table 12: Grants won by the Applied Molecular Solutions Research Centre in 2021.

5.5.3 Ngā Wai a Te Tūī, Māori and Indigenous Research Centre

Refer to Section 3.1 of this report for details.

5.5.4 The Environmental Solutions Research Centre

Led by Associate Professor Terri-Ann Berry, the Environmental Solutions Research Centre (ESRC) is highly collaborative; it fosters transdisciplinary research initiatives that push the boundaries of current disciplinary silos, with 24 Unitec researchers on the team, from six different schools and two other Unitec research centres.

Established in 2019, the ESRC involves chemists, biologists, engineers, epidemiologists, geographers, and building and construction experts. These members collaborate with industry leaders from various fields such as waste management and minimisation, air quality, wastewater treatment and civil engineering, who work on complex and multigenerational challenges such as asbestos-contaminated soil, indoor air quality and plastic reduction in construction.

National external collaborators from both academia and industry currently include Mark Roberts (Auckland Council), Dr Julie Bennett (University of Otago), Dr Guy Coulson (NIWA), Andre Halkyard (Focus Analytics), Chris Masterton (HRV), Annette Day (Naylor Love), Julie Roberts (Mitre 10), Simon Burden (Buildlink), Regan Burke (CivilShare), Andrew Schunke (Watercare) and Dr Ferdinand Oswald (University of Auckland). International collaboration partners include Dr Robyn Hardy (University of Canberra), Professor Edward Emmett and Professor Brenda Casper (University of Pennsylvania), Professor Joe Testa (University of Pennsylvania and Fox Chase Cancer Center), Professor Elena Belluso and Associate Professor Ruggero Vigliaturo (University of Torino), Dwayne Carroll (Marley), Mark Finney (Marley/Aliaxis) and Kon Skaliaris (Marley/Aliaxis).

One of the many projects executed by the centre in 2021, the plastic minimisation project supported by BRANZ Funding has led to ESRC being the first recipient of the new MfE Plastic Innovation Fund (PIF) in collaboration with industry partners Marley. ESRC projects are deeply partnered with and heavily supported by industry, for example, Naylor Love, Benton Residential, Fletcher Living, Savory Construction, Legendary Homes and Mitre 10 Mega. This research has had an extraordinary and almost immediate impact and is drawing attention from other commercial and industry sectors, e.g., Scaffolding, Access and Rigging Association NZ (SARNZ) and the brewery sector.

The 2021 findings concluded:

- » Polyethylene was the dominant plastic type found on construction sites, PVC also contributed significantly to the waste stream. Plastic packaging of materials was not a single area of concern as plastic building componentry and protection materials contributed significantly to the construction and demolition industry's plastic waste.
- » Waste diversion successes were achieved due to a number of practical solutions devised by the team, such as the design and trial of permanent plastic-collection bins (with appropriate drainage). The greatest gain came from the inclusion of an option to enable purchasers to select for the use of packaging for all materials ordered on an online customer portal. Over a 12-month period, only 3% of materials were supplied with packaging as 97% of the purchases opted out of requesting it. Additionally, the main supplier of PVC pipes (Marley) agreed to accept all (clean) offcuts from construction sites for one of its principal contractors, which was another positive outcome.
- » Researchers at ESRC predict that it should be feasible to recycle closer to 80% of the plastic waste from construction with better management systems, as well as finding new avenues of

waste diversion, which requires the collaboration between building, education, waste, retail and governance sectors. ESRC has applied for co-funding with Marley (part of the Aliaxis group) to the Plastic Innovation Fund to continue with this highly impactful research. The funding was approved by MfE in May 2022.



Figure 25: German Hernandez and Joanne Low (ESRC Research Associates) auditing plastic waste from a site owned by Naylor Love, Auckland.

- » MfE-funded asbestos bioremediation project: Analysis of asbestos samples located externally to buildings has identified that fibre structure has been modified by the action of the lichen *Xanthoparmelia scabrosa*. To the best of our knowledge, this is the first report of in-situ asbestos-fibre modification worldwide and gives us great hope for the future of bioremediation.
- » HRV-funded indoor air-quality research: Following installation of mechanical ventilation, indoor particulate matter concentrations had reduced in the majority of the homes tested (86.7%) with mean reductions ranging from 52–91%, compared with pre-installation. When surveyed, occupants found that they were more satisfied with the effectiveness of their current heating system, and generally found less extreme thermal sensations (i.e., very hot or very cold), post installation.
- » ESRC has actively engaged students into its research activities. Final-year-project students from the Civil Engineering BEngTech degree have been involved in research in fulfilment of course MG7101 (Engineering Development Project) and also those on the Capstone Project course within Computer Sciences. Research that has included students includes waste minimisation for construction research with Prajil Thomas (BEngTech); indoor air-quality research with Cameron Brown (BEngtech), Vibesh Bhawan (BEngTech), Trudi Lapwood (NZDS), Davinder Kaur (Capstone, Comp Sci), Yuyan Zhou (Capstone, Comp Sci) and Yiwei Gu (Capstone, Comp Sci).

- » ESRC generated \$122,969 in external research income in 2021.

5.6 Industry scholarships

In 2021, the previously named IBM scholarships were renamed Industry Scholarships, fully funded by Unitec. These are dedicated to the purpose of encouraging and supporting industry-partnered postgraduate research and are contestable, implemented by the Postgraduate Research and Scholarships Committee (PGRSC). Students must demonstrate that, in partnership with their supervisor, they have secured an industry or community partner, who is actively supportive, preferably contributing resources.

The PGRSC selected the candidates who demonstrated the highest-level qualities in adherence to Te Tiriti, applied/industry research and transdisciplinary research. Five scholarships were offered to Master of Architecture (Professional) students:

- » **Loren-Crystal Pitt**
Topic: Conservation & Heritage
Industry Partners: Heritage New Zealand and St James Church in Mt Eden.
- » **Lorraine Kapurubandara**
Topic: Conservation & Heritage
Industry Partner: AsBuilt
- » **Alyssa Haley**
Topic: Technology & Fabrication
Industry Partners: Panuku Development Auckland, Ecoply, and Proclima
- » **Jayna Patel**
Topic: Environmental & Sustainability
Industry Partners: The Foundation for Arable Research, Futurebuild, Tāwharau Builders and Pro Clima.
- » **Laura Acton**
Topic: Conservation & Heritage
Industry Partner: DPA Architects.

5.7 Unitec Bold Innovators Scholarship

The Bold Innovators Scholarship is worth \$12,000 and awarded yearly, based on the potential of the concept for social, environmental and/or economic impact, the academic and general performance of the applicant and the ability of Unitec to support the concept. This is determined through a selection process implemented by Tūāpapa Rangahau, involving a panel with relevant expertise.

This year's recipient of the Bold Innovators Scholarship is **Danae Ripley**. She recently completed her Master of Creative Practice specialising in painting. Danae has long had a passion for art writing and throughout her studies at Unitec regularly contributed to art news publications.

Figure 26: Bold Innovators Scholarship recipient Danae Ripley.



For her scholarship project, she created a transmedia presentation of artists' work in the age of Covid, by writing a series of essays about 10 artists from diverse backgrounds and at different levels of their careers. The artists are primarily from Unitec, spanning undergraduate levels, alumni and staff.

"The writing you usually read about New Zealand artists is about those already in the big shows or galleries," she says. "I really liked the idea of writing about lesser-known artists as a practising painter myself, with an insight into the studio processes, to make it accessible and exciting. It's about connecting the visual ideas to their conceptual ideas. It's what I really enjoy – it's like solving a big puzzle."

Danae says she strives to translate into words what she sees in each artist's work.

"What I enjoy most is discovering tendencies in the language that occur again and again. So, for one artist, I've followed this theme that she likes to create agitations in the studio, something gritty and off edge that she responds to. For another, I focused on the atmosphere that she makes in her drawings, and how empty space can have a huge presence in them."

Danae, who also tutors design students in the Bachelor of Creative Enterprise and works as a research assistant at Unitec, will finish her book later this year.

The scholarship also gives awardees access to Unitec resources like mentors on topics such as entrepreneurship, education, business models, and how to create connections to fast-forward their dreams. Danae hopes this will assist her to achieve her dream of being a professional painter and art writer.

"What I would love to do most is make money from painting. I really see myself always writing so if I could find both, that is a lovely dream – until you have to [pay to] live, of course!"

Unitec's Research Partner – Enterprise Gregor Steinhorn commented, "Early career for young artists is often a time of uncertainty and the impact of the pandemic closing down opportunities for exhibitions and other in-person events has heavily added to this strain. Danae's work opens up new ways to use the digital realm to expose audiences to new talent. As such, it is a very timely project that gives Unitec staff and students opportunities in these challenging times."

5.8 Telling our research stories

Tūāpapa Rangahau promotes Unitec research stories via the Unitec/MIT Research Symposium, the ITP Research Symposium, Unitec ePress and the Unitec Research Blog.

5.8.1 Unitec/MIT Research Symposium

The annual Unitec Research Symposium was convened in partnership with MIT in 2021, strengthening the academic relationship between the two organisations and demonstrating the will of the staff to collaborate. The jointly populated Steering Committee pushed for keynote speakers, panel discussions and an extension of the research awards into the Māori and Pacific research domains, which were successfully added to the familiar Research with Impact, Early Career Researcher and Undergraduate Research Excellence Awards.

The symposium was open to participants across the ITP sector and ran over two full days with over 400 registrations, 10 ITPs participating, 121 presentations, 13 Posters, five research excellence awards, three keynote speakers and a panel discussion.

After a joint mihi and karakia by Pae Arihi Hare Paniora (Unitec) and Kaumātua Vince Hapi (MIT), there was a keynote address from Dr Sereana Naepi, Co-Chair, Early Career Researcher Forum, Royal Society Apārangi, then into the parallel sessions. Just the first session streams included Māori Research, Pacific Research, Nursing Education, Ecology, Restoration and Citizen Science, Business Communication and Corporate Social Responsibility, and Youth, Graduate and New Teacher Wellbeing.

Day Two saw keynotes from Pania Newton and Hineamaru Ropati, marae-based co-researchers on the four-year MBIE Endeavour-funded research project Marae Ora, Kāinga Ora: Marae-led Housing Interventions that Develop Kāinga (MOKO), led by Professor Jenny-Lee Morgan, and a panel discussion chaired by Associate Professor Marcus Williams with Dr Hinekura Smith (Unitec), Aiono Manu Fa'aea (MIT), Dr Christine Liang (SIT) and Anthea Raven (NorthTec).

5.8.1.1 Keynote Speakers

The keynote speaker selection process was guided by the Steering Committee, comprised of researchers from MIT and Unitec. Sereana, Pania and Hineamaru were chosen because they represented core values of the ITP research culture and strategy: strongly developing Māori, Pacific, early career and community-partnered research.

5.8.1.2 Keynote speaker Day One – Dr Sereana Naepi

With a PhD from the University of British Columbia, Sereana was founding Associate Director of [All My Relations](#), an Indigenous research centre at Thompson Rivers University (Canada) and co-founded the Indigenous research development programme [Knowledge Makers](#) in Canada.

Sereana is a mother of two who says: "Daughter, sister, mother, wife, friend and Pasifika academic: these roles not only describe me but also my philosophy in life. As the saying goes, it takes a village to raise a child, and as a child of the Pacific I owe my success not only to my hard work and dedication but also to the community of people who have helped and supported me along the way."



Figure 27: Keynote speaker Day One, Dr Sereana Naepi.

Sereana is dedicated to addressing and challenging systemic inequalities within academia through storytelling. She is driven by a desire to see an education sector where her daughters can thrive, where researchers are supported and where ancestral knowledge is valued. Teaching on the sociology programme at the University of Auckland, Sereana undertakes research using Pacific research methodologies, has been awarded international research grants, and publishes both nationally and internationally on equity and higher education. Recent projects include data-informed approaches to equity in universities in Aotearoa New Zealand and indigenisation efforts in Canada.

5.8.1.3 Keynote co-speakers Day Two – Pania Newton and Hineamaru Ropati

Pania Newton (Ngāpuhi, Waikato, Ngāti Mahuta, Ngāti Maniapoto) is an Aotearoa lawyer and activist for Māori land rights. In 2016 Newton, alongside her five cousins, established the group Save Our Unique Landscape (SOUL) to protect their ancestral land at Ihumātao in South Auckland.

Pania is a kaitiaki and project co-ordinator for her marae and iwi. She is currently a co-researcher for Makaurau Marae on the research project Marae Ora, Kāinga Ora: Marae-led Housing Interventions that Develop Kāinga (MOKO).

Figure 28: Keynote co-speaker Day Two, Pania Newton.



Hineamaru Ropati (Ngāti Hine) has worked in all sectors of our community, locally, nationally and internationally, specialising in building capacity, programme development and delivery.

She is a game changer in many sectors, who assists in revitalising te reo Māori and enhancing tikanga through a Māori lens. She is a kaitiaki and Marae Research Co-ordinator for Papatūānuku Kōkiri Marae under the korowai of the MOKO project, as well as the Kai Oranga Lecturer – Tāmaki for Te Wānanga o Awanuiārangi. One of the many highlights of her career was being invited to present at the Food and Agriculture Organization of the United Nations Conference in Cusco, Peru, in 2014 on behalf of Te Waka Kai Ora.

Figure 29: Keynote co-speaker Day Two, Hineamaru Ropati.



These speakers are two of the five community partners on the MOKO research project, which is a \$3.5m MBIE Endeavour Fund Research Programme led by Professor Jenny Lee-Morgan, Director of Ngā Wai a Te Tūi, Māori and Indigenous Research Centre, Unitec. The project partners with five urban South Auckland marae on a ground-breaking research project to support their aspirations to strengthen their communities and explore a holistic notion of kāinga ora and community wellbeing beyond the existing focus on marae-led housing interventions.

The five participating marae are:

- » Makaurau Marae (mana whenua)
- » Papatūānuku Kōkiri Marae (mātāwaka)
- » Manurewa Marae (mātāwaka)
- » Papakura Marae (mātāwaka)
- » Mataatua Marae (taura here)

Critical to the MOKO research is the work undertaken with communities and stakeholders to formulate collective solutions, strategies and activities through the reproduction of new knowledge that emerges from the study. Community participation and the engagement of community-based researchers, named in this project as Marae Research Co-ordinators (MRC), are therefore prerequisites to understanding and enhancing community wellbeing and kāinga.

5.8.1.4 Panel Discussion

The panel discussion aimed to provoke discourse about the symposium's theme: Rangahau Horonuku Hou – New Research Landscapes. The panellists responded to questions from the panel chair in order to explore themes on the future of research in tertiary education in Aotearoa generally, but particularly in the ITP sector as we rapidly approach a metamorphosis into Te Pūkenga.

There were four panellists from four different institutes; one each from Invercargill and Whangārei, and two from Tāmaki Makaurau. They were:

5.8.1.5 Panellist 1 – Dr Hinekura Smith (Te Rārawa, Ngāpuhi)

Dr Hinekura Smith is a senior Māori Postgraduate Advisor, Ngā Wai a Te Tūi, Māori and Indigenous Research Centre, Unitec Institute of Technology.

Since June 2021, Hinekura Smith has been Kaupapa Māori advisor and supervisor across a range of postgraduate programmes at Unitec and a researcher in Ngā Wai a Te Tūi. She is the Emerging Researchers Leader for Ngā Pae o te Māramatanga (NPM), providing leadership of Te Kupenga o MAI, NPM's Māori and Indigenous Doctoral Network. Hinekura has a strong background in teaching and education, starting with secondary school teaching, then lecturing at Te Puna Wānanga, School of Māori and Indigenous Education at the University of Auckland.



Figure 30: Panellist 1, Dr Hinekura Smith.

As a researcher, Hinekura is interested in the continued reclamation and revitalisation of Māori language, culture and identity through education – particularly for Māori women and children.

5.8.1.6 Panelist 2 – Aiono Manu Fa'aea

Aiono Manu Fa'aea is a senior Pasifika Manager at Manukau Institute of Technology (MIT) and Kaitautoko Equity Pasifika at Te Pūkenga.

Aionu Manu Fa'aea manages the Pasifika Development Office (PDO) at MIT, which drives to implement MIT's Pasifika Strategic Plan 2018–2023, and acts as the hub for Pasifika research, cultural-intelligence workshops and community engagement. 'Aiono' is a chiefly title bestowed on her by her father's family from the village of Fasito'o-uta in Upolu, Sāmoa.

Figure 31: Panellist 2, Aiono Manu Fa'aea.

Aiono Manu is a practising ethnomusicologist and educator. She has extensive experience in Auckland secondary schools, teaching music, social studies and English; and at the University of Auckland's Anthropology Department, lecturing in ethnomusicology. She is an educational adviser to the Ministry of Education and NZQA and has been a musical advisor to the film industry.



She has recently been seconded to Te Pūkenga, sharing the role of Kaitautoko Equity Pacific with Sua Tauti, Ara Institute of Canterbury, until July 2022.

5.8.1.7 Panelist 3 – Dr Christine Liang

Dr Christine Liang is a Programme Manager at the School of Environmental Management, Southland Institute of Technology (SIT).

Christine is committed to citizen science and empowering students to utilise science towards better environmental management. She says, "Supervising student research is one of the most rewarding aspects of my teaching." Christine has been named a finalist in this year's Women of Influence Awards in the Environment category.

Figure 32: Panellist 3, Dr Christine Liang.

She led a citizen-science project that uses crowd-sourced data to quantify microplastics in waterways and now leads a Lotteries Foundation-funded project in this area involving three ITPs. This project has led to the development of a \$150,000 funding application to MBIE also on microplastics, this time involving six ITPs across Aotearoa.



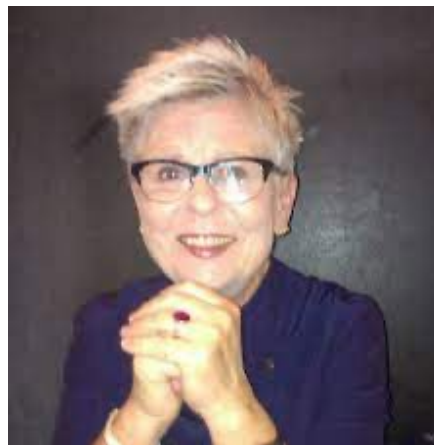
5.8.1.8 Panelist 4 – Anthea Raven

Anthea Raven is a lecturer teaching in the Bachelor of Applied Social Work at NorthTec.

Anthea's formative research experience examined sexist attitudes towards the employment of women and the exclusion of lesbians in equal-opportunities policies. Since graduating she has led key social-work projects including the implementation of Family Violence Intervention at Auckland DHB and Gender Pay Equity for social workers in the (then) Child, Youth and Family Services.

Figure 33: Panellist 4, Anthea Raven.

She has recently been the lead researcher on a study of student hardship at NorthTec. Anthea has a strong interest in research as a method of social-work practice. She considers it is important for students and practitioners to understand how knowledge is constructed, and to use this to build a repertoire of evidence-based practice. Anthea subscribes to the view that knowledge is power and, importantly, she uses research as a strategy for student empowerment and self-determination.



5.8.1.9 Research with Impact Awards

The Research with Impact Awards were developed to acknowledge the importance of research impact in the ITP sector and to encourage other researchers to think of their research in terms of impact.

The judges were:

- » Prof Martin Carroll (Head Judge) – DCE Academic, Unitec/MIT
- » Dr Wiremu Manaia - (DCE Māori, MIT)
- » Annette Pitavao – Director Student Success, Unitec

The nominees for this category were:

- » Dr Cris de Groot (Unitec)
Title: Hypothesis-Driven Designing for Carpooling Applications
- » Dr Sarah Probine (MIT), Yo-Heta Lensen (Unitec), Helen Wrightson (Unitec), Jo Perry (MIT), Dr Rachael Burke (Toi Ohomai) and Keiko Whitley (Toi Ohomai)
Title: Inquiry-Based Project Learning in Early Childhood: Time to Develop Localised Understanding of this Pedagogical Approach
- » Dr Tepora Emery, Mamaeroa Merito, Waitiahoaho Emery, Auroa Rikiti, Takiri te Ata Raerino and Freddy-Ray Collier (Toi Ohomai)
Title: Ka Pu te Ruha – Ka Kao te Rangatahi – When the Old Net is Cast Aside the New Net Goes Fishing
- » Dr Christine Liang (SIT)
Title: Making the Invisible Visible: Lessons Learned from Micro-Investigators, a Microplastics Citizen-Science Programme in Southland

The awards went to:

- » **Winner:** Dr Tepora Emery, Mamaeroa Merito, Waitiahoaho Emery, Auroa Rikiti, Takiri te Ata Raerino and Freddy-Ray Collier
- » **First Runner-Up:** Dr Christine Liang

- » **Second Runner-Up:** Dr Sarah Probine , Yo-Heta Lensen, Helen Wrightson, Jo Perry , Dr Rachael Burke and Keiko Whitley

5.8.1.10 Undergraduate Student Research Excellence Awards

The Undergraduate Student Research Excellence Awards were developed to encourage staff–student integrated research and industry/community-partnered student research.

The judges were:

- » Dr Katy Mann Benn (Head Judge) – Team Leader Learning and Achievement, Unitec
- » Sam Lotu-liga – DCE Pasifika, Unitec
- » Adrienne Kohler – Senior Communications Partner, Unitec.

The awards went to:

- » **Winner:** Lydia Charteris (School of Environmental and Animal Sciences, Unitec)
Supervisor: Caralyn Kemp
Title: Stressless Weaning of Guide-Dog Puppies.
- » **First Runner-Up:** Kayla Briden (School of Environmental and Animal Sciences, Unitec)
Supervisor: Kristie Cameron
Title: Flock Hierarchy and the Feeding Behaviours of Free-Range Hens
- » **Second Runner-Up:** Pramith Waidyaratne (School of Building Construction, Unitec)
Supervisor: David Phillips
Title: Analysing and Forecasting Daily Water Level Fluctuations in Water Supply Dams

5.8.1.11 Māori Research Excellence Awards

The Māori Research Excellence Awards were new in 2020 and were developed in response to Priority One in the 2020–2024 Research Strategy, to be Te Tiriti aligned.

The judges were:

- » Dr Hinekura Smith (Head Judge) – Ngā Wai a Te Tūi, Unitec
- » Rau Hoskins – Lecturer and Māori Studio Director, School of Architecture, Unitec

The awards went to:

- » **Winner:** The MOKO research team: Prof Jenny Lee-Morgan, Ngāhuia Eruera, Kim Penetito, Pania Newton, Moana Waa, Hinemaru Rōpati, Luella Linaker, Kathelyn Evans (Unitec)
Title: Marae Ora, Kāinga Ora
- » **First Runner-Up:** Chantal Baker-Smith (Unitec)
Title: The Tale of the Rugby Ball and Me: The Whakapapa of Female Rugby in Aotearoa
- » **Second Runner-Up:** Diane Tamati and Dr Catherine Mitchell (Unitec)
Title: Mā te Huruhuru, Ka Rere te Manu: Gaining Insights into the Experiences of Postgraduate Tauira Māori within Vocational Education

5.8.1.12 Pacific Research Excellence Awards

The Pacific Research Excellence Awards were developed in partnership with the Pacific Centre to acknowledge and encourage the emerging research culture in our Pacific communities of staff and students.

The judges were:

- » Dr Tui Matelau (Head Judge) – Lecturer, Bridgepoint, Unitec
- » Linda Aumua, Head of School, Healthcare and Social Practice, Unitec

The awards went to:

- » **Winner:** Louise Rummel, Karen Clarke, Sandra McDonald, Cath Dickey, Yvonne Kainuku and Grace Benson (MIT)
Title: Learning and Teaching of Cultural Best Practice: How Far Have We Come? How Far Have We Got to Go? What Contribution Have Pacific Nurses Made to This Journey?
- » **First Runner-Up:** Maureen Fepuleai (MIT)
Title: Feagaiga: The Sacred Brother–Sister Covenant – Past, Present and Future
- » **Second Runner-Up:** Tina Dawber (MIT)
Title: Teu Taa’I Koe (I Will Hit You). Physical Discipline and the Tongan Parenting Style: A Therapy Programme for Change in Attitudes and Behaviour

5.8.1.13 Early Career Researcher Excellence Awards

The Early Career Researcher Excellence Awards were developed in partnership with the Early Career Research Forum to acknowledge and encourage the next generation of research leaders.

This was a People’s Choice Award. There were 23 contestants and a total of 122 votes cast.

The awards went to:

- » **Winner:** Daisy Bentley-Gray (Unitec) – 21 votes
Co-Author: Mary Noella Lim
Title: The Challenges of Female Pacific Business Students During Covid-19 Lockdowns in Auckland.
- » **First Runner-Up:** Dr Catherine Mitchell (Unitec) – 18 votes
Co-Author: Diane Tamati
Title: Mā te Huruhuru, Ka Rere te Manu: Gaining Insights into the Experiences of Postgraduate Tauira Māori within Vocational Education
- » **Second Runner-Up:** Shannon Wallis (Unitec) – 12 votes
Co-Authors: Charles Lemckert, Robyn Hardy and Terri-Ann Berry
Title: Bioengineered Treatment Processes for Hazardous Waste

5.8.2 Institutes of Technology and Polytechnics Research and Innovation Symposium

The ninth ITP Research and Innovation Symposium was jointly convened by Weltec/Whitireia and the Open Polytechnic. As in 2020, it ran completely online, with outstanding participation. For the first time, 18 peer-reviewed papers will be published in proceedings by Unitec’s ePress in 2022.

<https://www.openpolytechnic.ac.nz/2021-itp-symposium/>

The following Unitec staff presented at this symposium:

- » Dr H. McCallum-Haire, Ngā Wai a Te Tūi Māori and Indigenous Research Centre
- » MD Raham, School of Building Construction
- » Professor J. Lee-Morgan, R. Aperehama, Dr J. Mane, Ngā Wai a Te Tūi, Māori and Indigenous Research Centre
- » N. Eruera, K. Penetito, P. Newton, M. Waa, H. Ropati, B. Mio, L. Linaker, K. Evans, Ngā Wai a Te Tūi, Māori and Indigenous Research Centre
- » R. Te Nana, W. Paul, I. Farnham, Ngā Wai a Te Tūi, Māori and Indigenous Research Centre
- » Dr C. Mitchell, Ngā Wai a Te Tūi, Māori and Indigenous Research Centre
- » M. Ratana, Ngā Wai a Te Tūi, Māori and Indigenous Research Centre
- » T. Afrin, School of Community Studies
- » M. Vyas, School of Healthcare and Social Practice (poster session)

5.9 Unitec ePress

Unitec ePress is an online publisher of peer-reviewed, quality-assured academic work by Unitec staff, students and associates. It publishes academic work in a range of formats on the ePress website (<https://www.unitec.ac.nz/epress/>) and provides a supportive publishing environment for current and emerging researchers.

The ePress publishing schedule for 2021 was as follows:

- » One issue of the journal *Whanake* published
- » One issue of the journal *Perspectives in Biosecurity* published
- » One issue of the journal *Asylum* published
- » *Unitec Research Symposium 2020 Proceedings* published
- » One *Perspectives in Biosecurity* Short Communication published
- » Four Occasional and Discussion Papers published
- » One Research Report published, a pilot paper in collaboration with MIT research office
- » One Research Report under review

The completed publications above represent quality-assured research outputs for 43 Unitec staff members and 18 staff members from other institutions in Te Pūkenga, a significant increase from 2020.

A high point in 2021 was the agreement with Open Polytechnic to publish the proceedings of their 2020 ITP Symposium. This is a significant publication of 18 peer-reviewed papers. In addition, ePress will publish the proceedings of Rangahau Horonuku Hau – New Research Landscapes, the MIT/Unitec Research Symposium 2021, with 14 papers submitted. These two upcoming proceedings, to be published in 2022, represent important partnering with other members of Te Pūkenga, and publishing opportunities for staff in the ITP sector to further disseminate their research.

ePress Editor Marie Shannon and Executive Editor Associate Professor Evangelia Papoutsaki are part of Te Pūkenga Publications and Dissemination Work Stream, who are forming a proposal for the future of research publishing in Te Pūkenga.

ePress is committed to giving new and emerging researchers access to an open-source publishing platform, while maintaining high standards of academic integrity through the double-blind peer-review process. The ePress editor is able to support new and emerging researchers by reviewing papers prior to submission and giving authors guidance on structure and writing clarity.

5.10 Unitec Research Blog

The blog proudly presents our research stories, news and other information about research at Unitec (<https://www.unitec.ac.nz/UnitecResearchBlog/>), and feeds into Tūāpapa Rangahau's social media platforms via Facebook (<https://www.facebook.com/UnitecResearch>) and Twitter (<https://twitter.com/UnitecResearch>).

The blog is an important means of telling our research stories, particularly now that *Advance* is no longer being published.

The decision that in 2021 the blog writing would be shared among a group of staff members, co-ordinated and edited by ePress, has been very successful, and has resulted in regular and engaging posts about a range of applied research projects.

Posts published in 2021 were:

- » [Rangitahi ki te Kāinga: A Research Project that Investigates Housing for Rangatahi Māori](#)
- » [Unitec Researcher Collaborates with Deaf Community on Mental Health Study](#)
- » [Understanding and Improving Indoor Air Quality](#)
- » [Collaborative Research Project Explores the Role of Art in Building Capability, Wellness and Entrepreneurship](#)
- » [Unitec Researchers Investigate Ways to Share Data Without Disclosing Identities](#)
- » [Unitec Researchers Facilitate Better Asbestos Awareness](#)
- » [Studying the Efficacy of Drawing for Healthcare Students](#)
- » [Unitec Staff and Students Present at Recent SPARNZ Conference](#)

Figure 34 below shows researchers of the project, Rangatahi ki te Kāinga, a research project that investigates housing for rangatahi Māori.



Figure 34: Rangatahi ki te Kāinga researchers (L-R): Jacqueline Paul, Maia Ratana, Pania Newton and Hanna-Marie Monga. Photo: Tuputau Lelaulu.

6 Priorities for 2022

There is no doubt that preparing for Te Pūkenga is the key priority for 2022 and all teams in Tūāpapa Rangahau are concentrating on developing Standard Operating Procedures for everything we do, from Postgraduate Examinations and Supervision Register Audits to raising a Purchase Order and novating a head contract from MBIE.

The Rangahau Research Forum will be running national workshops on PBRF, consulting with the PBRF Sector Reference Groups, developing a national ethics committee, advising on Te Pūkenga consultations and forming national Research Communities of Practice, to name a few initiatives.

Finally, and most significantly, the Internal PBRF Quality Evaluation at Unitec had to be postponed due to Covid-19. The year 2021 was halfway between the last PBRF Assessment in 2018 and the next, planned for 2025. The purpose of this ‘rehearsal’ is to re-engage researchers in the PBRF process and give them feedback on their progress, equipping them to better perform in the next review. This will be a high priority in 2022.

7 Conclusion

Over the last five years, Unitec has undergone unprecedented change and become a much smaller organisation. Change is accelerating and it is about to gain momentum again with Te Pūkenga looming large. 2021 was the first year of the integrated executive leadership model with MIT. The Unitec Research Committee responded by reaching out to MIT, which resulted in an outstanding joint symposium with 10 other ITPs also participating. The Southern Institute of Technology's Dr Christine Liang was a finalist in the Research With Impact awards for her microplastics research. The Unitec research grants development team supported Christine toward a successful Lotteries Commission Grant for her work, finding other science collaborators across the sector through the ITP Rangahau Research Forum. My point is, there is serious potential for collaborative, applied, impactful research in this sector that is meaningfully partnered into community and industry. This type of research is not well served in Aotearoa and the country needs it. Te Pūkenga provides a golden opportunity to take this to the next level.

8 Appendices

8.1 Appendix 1: Unitec Research Strategy 2020–2024

UNITEC Research Strategy 2020-2024

NB – in keeping with Unitec process on strategies, a separate action plan will outline how we implement the actions, how we show the progress of that implementation and what indicators we use to measure success.

Vision

To undertake research of excellence that aligns to Te Tiriti o Waitangi and has transformative outcomes for the communities we serve.

Mission

We undertake impactful research in order to provide significant economic, social, cultural and environmental benefits to Māori, Aotearoa New Zealand communities, industries and the environment. We do this by igniting the power of our founding document, Te Tiriti o Waitangi, partnering with tangata whenua, our communities and industry. This partnering is at the heart of our value proposition and is fundamental to research from the beginning of the process, through to the dissemination of the outcomes. Unitec's strengths lie in its kaupapa Māori capability, its applied and practical focus, its mixture of programmes involving research and enterprise at postgraduate and undergraduate levels, and its strong relationships with community and industry. We will develop these strengths through focused, sustainable research and enterprise activity that is Treaty aligned, integrated with teaching and learning and undertaken within networks of stakeholders and partners, enabling effective knowledge transfer. In these networks we aim to contribute to better knowledge bases for decision making, improved wellbeing, socioeconomic resilience, cultural diversity, flourishing communities and improved productivity, policy, technologies, products or processes.

Background

During the 2015–2019 Research Strategy period, three Strategic Research Foci were developed: the Cybersecurity Focus, the Applied Molecular Solutions Focus and the Kaupapa Māori Focus. Through mechanisms such as the Research Voucher Scheme, the strategy successfully drove institutional change toward higher levels of industry-partnered research, resulting in many funded projects. Coupled with an emphasis on building staff capability and research leadership, Unitec has experienced growth in its research, with externally funded research increasing by 450%, increased external partnering with 184% more industry-funded projects, improvement in excellence with a 97% success rate through the PBRF Quality Evaluation, and increased NZQA compliance with 91% of degree programmes research compliant. The Kaupapa Māori Focus led to the appointment of two highly respected Māori professors, and the establishment of Ngā Wai a Te Tūī, Māori and Indigenous Research Centre, which is now leading numerous externally funded projects, including an Endeavour Fund Research Programme and a National Science Challenge project.

This next strategic period will see Unitec continue investing in our Strategic Research Foci with an emphasis on rangatiratanga, embedding a flourishing, diverse and sustainable research culture and weaving strong, enduring industry/community partnerships.

Te Tiriti o Waitangi and Te Noho Kotahitanga

Unitec will uphold Te Tiriti o Waitangi, the founding document of our nation and its principles, through our research. Our commitment to Te Noho Kotahitanga, which express Unitec's Treaty partnership and its principles, underpins the values and kaupapa of our organisation, including our approach to research.



Rangatiratanga – Authority and Responsibility

Whakaritenga – Legitimacy

Kaitiakitanga – Guardianship

Mahi Kotahitanga – Co-operation

Ngākau Māhaki – Respect

 <p>RANGATIRATANGA AUTHORITY AND RESPONSIBILITY</p>	 <p>WHAKARITENGA LEGITIMACY</p>	 <p>KAITIAKITANGA GUARDIANSHIP</p>	 <p>MAHI KOTAHITANGA CO-OPERATION</p>	 <p>NGĀKAU MĀHAKI RESPECT</p>
<p><i>E whakarite ana te Whare Wānanga o Wairaka ki te pūtake ake o te rangatiratanga o te Māori me ngā mātauranga Māori.</i></p> <p>Unitec accepts the principle that Māori have authority over and responsibility for all teaching and learning relating to the Māori dimensions of knowledge.</p>	<p><i>E whakarite ana te Whare Wānanga o Wairaka ki te mana o tena, o tena, ki te noho kotahi, ki te puaki i tona ake reo, ki te whakamahi i ngā rawa mo ngā iwi katoa.</i></p> <p>Unitec believes that each partner has a legitimate right to be here, to speak freely in either language, and to put its resources to use for the benefit of all.</p>	<p><i>E whakarite ana te Whare Wānanga o Wairaka ki te kaitiakitanga o ngā taonga mātauranga.</i></p> <p>Unitec accepts responsibility as a critical guardian of knowledge.</p>	<p><i>E whakarite ana te Whare Wānanga o Wairaka kia tau he ngākau māhaki i roto i ngā mahi katoa.</i></p> <p>Unitec affirms that a spirit of generosity and co-operation will guide all its actions.</p>	<p><i>E whakarite ana te Whare Wānanga o Wairaka ki te whakanui i ngā taonga tuku iho o ngā ao e rua, a hikoi ki mua. Ko te Māori me te Pākehā e mahi tahi ana mo Te Whare Wānanga o Wairaka.</i></p> <p>Unitec values each partner's heritage and customs, current needs and future aspirations. Māori and Pākehā working together within Unitec.</p>

Vision Mātauranga

Unitec acknowledges and actively supports staff in engaging with the Vision Mātauranga policy as outlined by the Ministry of Business, Innovation and Employment. The policy aims to unlock the innovation potential of Māori knowledge, resources and people to assist New Zealanders to create a better future.

Code of Practice and Research Ethics

Research at Unitec will function within Ngā Tikanga Whakahaere (Unitec's Code of Conduct) and the research-specific Code of Professional Standards and Ethics developed by the Royal Society Te Apārangi. All human research is conducted with guidance from the Unitec Research Ethics Committee, an accredited research ethics committee, and animal research is overseen by an approved committee.

Priorities

The Unitec Research Strategy 2020–2024 has three key priorities that underpin our goals, our actions and the way we measure success:

Priority One – Research that is aligned with Te Tiriti o Waitangi

Priority Two – A flourishing, collaborative research culture

Priority Three – Partnered research and innovation

Priority One – Research that is aligned with Te Tiriti o Waitangi

Unitec will ensure that its support for research, governance and processes is aligned with Tiriti o Waitangi. In this way, Unitec will exemplify leadership in Māori research in the NZIST sector and in Aotearoa. The principle of rangatiratanga expressed through our partnership document, Te Noho Kotahitanga, will apply to research at Unitec: that Māori will have authority over and responsibility for all research related to Māori dimensions of knowledge. Vision Mātauranga will be integrated into all research processes and researchers will be supported to understand and fulfil these requirements. We will resource and grow the numbers and capability of Māori researchers, including Māori supervisors on our postgraduate programmes. We will actively seek and maintain partnerships with iwi, hapū, Māori businesses, institutions and peak Māori bodies. We will evolve our research office appropriately to ensure Māori research governance and rangatiratanga.

GOAL ONE:

Unitec has strong Māori research leadership, capability, excellence, partnerships, processes and governance

Actions:

- Review research policy, guidelines and processes to ensure rangatiratanga
- Review all funding frameworks, guidelines and processes to incorporate Vision Mātauranga
- Increase Māori postgraduate supervisors and student scholarships
- Provide professional development by Māori for Māori researchers and postgraduate supervisors
- Support and resource Ngā Wai a Te Tūi appropriately
- Review capability and plan for institutional research co-governance and leadership
- Tell stories of Māori research projects, outcomes and success

Priority Two – A flourishing, collaborative research culture

Unitec will grow a productive, diverse, student-integrated, engaged and sustainable research workforce with the necessary resourcing and infrastructure. There will be an inclusive pipeline of support for developing the capability of our people and empowering them toward transformative outcomes for our communities, from the beginnings of their research independence through to leadership at the highest level, as expressed in Unitec's Research Competencies. Grounded in Te Tiriti and Te Noho Kotahitanga partnership, this will be inclusive and provide opportunity for the diverse cultures and individuals who make up our institution and the varied nature of that activity we call research and its related enterprises. This pipeline will be aligned with and actively support the initiatives at the heart of Te Manaakitia te Rito, Unitec's Renewal Strategy.

GOAL TWO:

The diverse people of Unitec have fit-for-purpose capability development and support toward sustainable, collaborative research productivity and excellence

Actions:

- Provide high-quality, diverse, multi-level research professional development
- Implement formalised research planning at individual and School levels
- Support degree teachers to be research engaged
- Increase research excellence and productivity
- Develop Research Groups in every School offering degree programmes
- Develop Research Centres, facilitate concomitant business planning and annual evaluations
- Support Strategic Research Foci
- Support emerging and early-career researchers; grow leaders
- Collate, authenticate, sustainably disseminate and publicise research
- Support and resource postgraduate student research
- Increase student involvement in research
- Foster research into Wairaka, our place, its natural environment, history and wairua
- Embed sustainability into all funding guidelines

Priority Three – Partnered research and innovation

Research at Unitec will concentrate on opportunities and problems identified by Māori, industry and community partners. Strong, enduring partnerships will be facilitated and valued, with investment in capacity building, innovation and leadership in this space. The reciprocity created by these partnerships will enhance opportunity for student work-integrated learning.

GOAL THREE:

Research that is industry/community partnered and promotes innovation

Actions:

- Weave, ignite and nurture long-term partnerships across community, academia and industry
- Facilitate subsidised research consultancy
- Implement industry/community-partnered postgraduate research scholarships
- Provide industry partnering, IP, innovation and commercialisation advice and practical support
- Develop reputation through the establishment of Research Centres with strong partnerships
- Identify areas of future importance and opportunity; Research Sandpits

Glossary

Ngā Tikanga Whakahaere – Unitec’s Code of Conduct

NZIST – the New Zealand Institute of Skills and Technology incorporating 16 Institutes of Technologies and Polytechnics

Research Centres – Formally structured research institutes governed by the Unitec Research Committee
 Research Competencies – Detailed description of what it means to be research competent at Unitec
 Research Groups – Informal groups of researchers around a theme, identified in School Research Plan
 Research Sandpits – areas of future research importance and opportunity

Strategic Research Foci – Research Centres that receive seed funding from Unitec Te Manaakitia te Rito – Unitec’s Renewal Strategy 2019–2022

Te Noho Kotahitanga – Unitec’s Partnership agreement under Te Tiriti o Waitangi, the founding document of Aotearoa New Zealand

8.2 Appendix 2: Unitec Research Strategy Action Plan

Unitec Research Strategy – Action Plan				
Priority One	Goal one	KPI	Action Summary	Actions
Research that is aligned with Te Tiriti o Waitangi Unitec will ensure that its support for research, governance and processes is aligned with Tiriti o Waitangi. In this way, Unitec will exemplify leadership in Māori research in the NZIST sector and in Aotearoa. The principle of rangatiratanga expressed through our partnership document, Te Noho Kotahitanga, will apply to research at Unitec: that Māori will have authority over and responsibility for all research related to Māori dimensions of knowledge. Vision Mātauranga will be inūegrated into all research processes and researchers will be supported to understand and fulfil these requirements. We will resource and grow the numbers and capability of Māori researchers, including Māori supervisors of our postgraduate	Unitec has strong Māori research leadership, capability, excellence, partnerships, processes and governance.	Rangahau Māori productivity; QA outputs that demonstrate excellence in Vision Mātauranga, QA outputs by Māori staff, funded projects with named Māori researchers and accredited Vision Mātauranga and Kaupapa Māori professional development	Review research policy, guidelines and processes to ensure rangatiratanga	Consult with Māori researchers on how we do the management of contracts and the appropriate appointment of Māori researchers for these projects. At the appropriate interval, review policy to ensure rangatiratanga. Review funding frameworks to update Vision Mātauranga sections
			Review all funding frameworks, guidelines and processes to incorporate Vision Mātauranga	Review guidelines and processes as above Ensure appropriate Māori representation on research funding application assessment panels
			Increase Māori postgraduate supervisors and student scholarships	Appoint an expert Kaupapa Māori Supervisor/Advisor Work with the postgraduate committee to increase Māori scholarships Develop strong Mahi Kotahitanga between programme and Māori scholarship committees Facilitate writing retreats for Māori postgraduate students
			Provide professional development by Māori for Māori researchers and postgraduate supervisors	Support and provide administrative backup to the Kaupapa Māori Supervisor/Advisor to provide professional development for Māori researchers and supervisors Provide administrative support for the Māori and Pacific Postgraduate Support Roopu
			Support and resource Ngā Wai a Te Tūi appropriately	Provide contract oversight, compliance support and administrative expertise
			Review capability and plan for institutional research co-governance and leadership	Consult with Ngā Wai a Te Tūi on a research governance model in line with Te Tiriti Consider research office structure in line with above

programmes. We will actively seek and maintain partnerships with iwi, hapū, Māori businesses, institutions and peak Māori bodies. We will evolve our research office appropriately to ensure Māori research governance and rangatiratanga.				<p>Consult with Unitec Research Committee on this</p> <p>Submit a relevant proposal to ELT</p>
			Tell stories of Māori research projects, outcomes and success	<p>Advocate to Unitec Corporate Comms for Māori research stories</p> <p>Publish Māori research in ePress</p> <p>Include Māori research stories in the Unitec Research Blog</p>

Unitec New Zealand Limited

Meeting of URC - Te Komiti Rangahau o Unitec | Unitec Research Committee

Date of Meeting: 2022-09-08

Title	2022 Research Productivity Traffic Light (RPTL) Report
Provided by:	Marcus Williams, Director, Tūāpapa Rangahau
Authored by:	Arun Deo & Marcus Williams
For:	INFORMATION

Recommendation

That the committee receive the 2022 Research Productivity Traffic Light (RPTL) Report and inform its members about the 2022 RPTL results.

Purpose

It is a NZQA requirement to monitor the extent to which degree programme teaching and supervision is underpinned by research activity.

The benefit of this is to observe the research engagement of staff teaching and/or supervising in degree programmes at School, programme and individual staff level and to provide research support or allocate research resources, where needed, based on this data.

Key Points

The RPTL report communicates the outcome of a consistent, rigorous and trackable audit, based on published criteria for what designates the inclusion of a staff member and what constitutes a verified research output that meets the regulated national standard, archived in the Research Output Management System that Unitec utilises. The pride with which the outcome in the 2022 RPTL is announced by the teams listed below needs no justification, given the unparalleled disruption in the organization over the ten years that this audit has occurred.

Information/Background

In order to monitor the extent to which degree programme teaching and supervision is underpinned by research activity, the Academic Committee approved the use of the Research Productivity Traffic Light (RPTL) Report. This report was first presented to the Academic Committee in 2012 and was

repeated every year since then. The longitudinal nature of the RPTL productivity metric means trends and forecasting for the research activity of Unitec's degree programmes can be reported.

The attached report summarises the 2022 RPTL results for Unitec's degree programmes.

RPTL Terms of Reference and Methodology

Following is an overview of the key terms of reference and methodology approved by Academic Committee:

- » The criteria for inclusion are permanent full time or part time staff, or staff on contracts of 12 months or more, with an FTE of at least 0.2 who significantly taught and/or supervised on degree and above level courses during Semester One 2022.
- » For the purposes of the RPTL a 'research active' staff member is defined as someone who produces at least two eligible research outputs that are verified in ROMS (Unitec's Research Output Management System) within the past two years. For part-time staff the criteria are at least one research output for the two previous audited years.
- » The current 2022 report is based on staff's research activity as recorded in ROMs for 2020 and 2021 period.

Contributors

- » Arun Deo – Research Advisor, Tūāpapa Rangahau.
- » Marcus Williams – Director, Tūāpapa Rangahau
- » Heads of Schools
- » Research Leaders

Attachments

Please refer to the attachment: 2022 Research Productivity Traffic Light (PRTL) Report.pdf.

2022 Research Productivity Traffic Light (RPTL) Report

Background

In order to monitor the extent to which degree programme teaching and supervision is underpinned by research activity, a NZQA requirement, the Academic Committee approved the use of the Research Productivity Traffic Light (RPTL). The RPTL Report was first presented to the Academic Committee in 2012 and was repeated every year since then. The longitudinal nature of the RPTL productivity metric means trends and forecasting for the research activity of Unitec's degree programmes can be reported.

The Unitec Research Strategy 2020-2024 outlines Unitec's aspiration regarding RPTL performance, stating that all programmes at degree level and above will be rated "green" by 2020.

In the context of a tertiary education organisation which has experienced unprecedented and unparalleled disruption during the 10 years of RPTL reporting, this document summarises the RPTL results for Unitec's degree programmes up to 2022.

RPTL Terms of Reference and Methodology

Following is an overview of the key terms of reference and methodology approved by Academic Board:

- » The criteria for inclusion are permanent full time or part time staff, or staff on contracts of 12 months or more, with an FTE of at least 0.2 who significantly taught and/or supervised on degree and above level courses during Semester One 2022.
- » For the purposes of the RPTL a 'research active' staff member is defined as someone who produces at least two eligible research outputs that are verified in ROMS (Unitec's Research Output Management System) within the past two years. For part-time staff the criteria are at least one research output for the two previous audited years.
- » The current 2022 report is based on staff's research activity as recorded in ROMs for 2020 and 2021 period.

The 2022 Research Productivity Traffic Light (RPTL) Results

The RPTL analysis uses a traffic light colour system to represent levels of research activity in each degree programme:

- » **Green** is the required standard, where at least 75% of staff teaching and/or supervising on the programme are producing the required number or more outputs for the two-year period under review.
- » **Amber** is marginal, with 50-74% of staff producing the required number or more outputs.
- » **Red** is below standard with under 50% of staff achieving the required number of outputs.

In the 2022 reporting period, Unitec maintained the consistent gains made since the Traffic Light report was introduced in 2012 (see Table 1 and Figure 1 below). The percentage of green lit programmes went down from 100% in 2021 to 93% in 2022. In 2022, there were 29 active degree programmes while in 2021, there were 31. There is a difference of 2 programmes. These two programmes were taught out at the end of 2021 and are no longer active.

Programme Status	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Count of green lit programmes	9	10	14	19	21	28	27	33	28	31	27
Count of amber lit programmes	7	8	9	12	16	8	5	7	3	0	2
Count of red lit programmes	11	9	7	4	3	5	8	2	3	0	0
Total	27	27	30	35	40	41	40	42	34	31	29
Programme Status	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Percentage of green lit programmes	33%	37%	47%	54%	53%	68%	68%	79%	82%	100%	93%
Percentage of amber lit programmes	26%	30%	30%	34%	40%	20%	13%	17%	9%	0%	7%
Percentage of red lit programmes	41%	33%	23%	11%	8%	12%	20%	5%	9%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 1: Total number and percentage of green, amber and red lit degree programmes 2012-2022

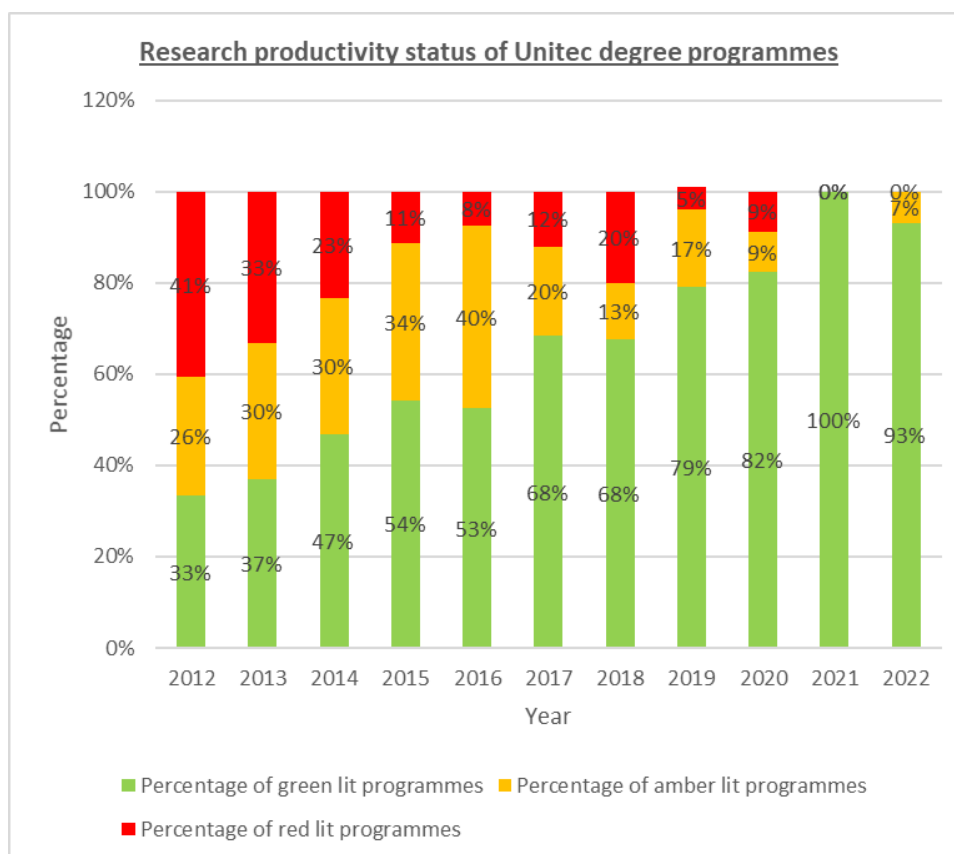


Figure 1: Total number of green, amber and red lit degree programmes 2012-2022

Highlights:

- » Ninety-three percent of the programmes are green lit, and the remaining are amber lit. There are no red lit programmes.
- » A total of 21 programmes have more than 80% of their staff green lit. Out of these, fourteen programmes have 100% of their staff green lit.
- » Some programmes' green percentage figure was affected by the new staff who joined the programme. A majority of these new staff either just started their academic career or were research inactive in their previous role.

Table 2 below shows the RPTL results for the individual programmes. The column "Percentage point change from 2021" shows the progress the programmes made since last year.

School	Programme	Count of Staff Teaching in Degree Programmes in 2022	Count Green Lit Staff	Count of Amber Lit Staff	Count of Red Lit Staff	RPTL Status in 2022 (Based on 2020/2021 Research Activity)	Percentage Point Change from 2021	RPTL Status in 2021 (Based on 2019/2020 Research Activity)	RPTL Status in 2020 (Based on 2018/2019 Research Activity)	RPTL Status in 2019 (Based on 2017/2018 Research Activity)	RPTL Status in 2018 (Based on 2016/2017 Research Activity)
School of Applied Business	Bachelor of Business	16	16	0	0	100%	6%	94%	82%	64%	52%
	Master of Applied Business	8	8	0	0	100%	0%	100%			
	Master of Professional Accounting	5	5	0	0	100%	20%	80%			
	Postgraduate Diploma in Applied Business	8	8	0	0	100%	0%	100%	100%	100%	80%
School of Architecture	Bachelor of Architectural Studies	21	19	0	2	90%	6%	84%	80%	87%	84%
	Bachelor of Landscape Architecture	8	6	0	2	75%	-5%	80%	78%	86%	88%
	Master of Architecture (by Project)	4	4	0	0	100%	0%	100%	100%	100%	100%
	Master of Architecture (Professional)	21	21	0	0	100%	8%	92%	88%	88%	85%
	Master of Landscape Architecture	3	3	0	0	100%	0%	100%	75%	86%	88%
School of Building Construction	Bachelor of Construction	10	8	0	2	80%	-2%	82%	62%	75%	60%
	Bachelor of Engineering Technology	21	15	4	2	71%	-9%	80%	50%	48%	35%
School of Community Studies	Bachelor of Teaching (ECE)	9	7	0	2	78%	-11%	89%	78%	80%	40%
	Master of Osteopathy (Teach Out)	8	5	2	1	63%	-15%	78%	78%	73%	82%
School of Computing, Electrical & Applied Technology	Bachelor of Applied Technology	6	5	0	1	83%	-17%	100%	25%	80%	38%
	Bachelor of Computing Systems	14	11	1	2	79%	-6%	85%	73%	93%	93%
	Bachelor of Engineering Technology	21	15	4	2	71%	-9%	80%	50%	48%	35%
	Doctor of Computing (Teach Out)	4	3	1	0	75%	-25%	100%	80%	100%	100%
	Master of Computing	7	6	1	0	86%	-14%	100%	86%	100%	100%
	Postgraduate Diploma in Computing	8	7	1	0	88%	-13%	100%	88%	100%	100%
School of Creative Industries	Bachelor of Creative Enterprise	9	9	0	0	100%	0%	100%	100%	82%	100%
	Bachelor of Design and Contemporary Arts	9	9	0	0	100%	100%				
	Bachelor of Performing and Screen Arts	11	10	0	1	91%	6%	85%	80%	80%	47%
	Master of Creative Practice	12	12	0	0	100%	0%	100%	87%	86%	100%
	Postgraduate Diploma in Creative Practice	11	11	0	0	100%	0%	100%	100%	85%	100%
School of Environmental & Animal Sciences	Bachelor of Applied Science (Natural Sciences)	17	14	1	2	82%	-6%	88%	76%	88%	83%
	Bachelor of Veterinary Nursing	12	9	1	2	75%	0%	75%	80%		
School of Healthcare & Social Practice	Bachelor of Health Science (Medical Imaging)	6	6	0	0	100%	0%	100%	83%	100%	43%
	Bachelor of Nursing	12	9	1	2	75%	-18%	93%	36%	25%	21%
	Bachelor of Social Practice	10	10	0	0	100%	11%	89%	90%	85%	100%
	Master of Applied Practice (Social Practice)	10	10	0	0	100%	0%	100%	88%	100%	100%

Table 2. The Traffic Light scores for all Unitec degree programmes 2018 to 2022

Conclusion

The excellent progress Unitec has made since 2012 raising research activity at degree level has been largely maintained in 2022, despite the pandemic. It is critical that individual and school research planning continues as a dynamic process which is integrated into academic management and that the necessary actions are collaboratively implemented by Tūāpapa Rangahau's Research Partners with Research Leaders and Heads of Schools, to maintain these strong results in the coming years.

Unitec New Zealand Limited

Meeting of Te Komiti Rangahau o Unitec | Unitec Research Committee

Date of Meeting: 8 September 2022

Title	2022 Early Career Researcher (ECR) Funding Progress Reports
Provided by:	Brenda Massey, Senior Grants Advisor
For:	REVIEW

Recommendation

That the committee receives progress reports from three of the four recipients of 2022 Early Career Researcher (ECR) Funding and notes that a progress report from the fourth recipient will be provided at the next meeting.

Purpose

The purpose of this paper is to report to the committee concerning the progress towards outcomes and expenditure of the 2022 ECR funded projects.

Information/Background

The ECR Fund provides annual, contestable funding to emerging and established early career researchers at Unitec in order to develop their capability, capacity and career progression as a Principal Investigator on a high quality, externally partnered, applied research project that meets the evaluation criteria. Provision of one progress report and one final report is required as part of the accountability requirements of the fund.

Attachments

- 2022 ECR Progress Report – Dr Kristie Cameron
- 2022 ECR Final Report – Dr Mary Yan
- 2022 ECR Final Report – A/P Renata Jadresin Milic

Early Career Researcher Fund 2022 Progress Report

Email your completed Progress Report to bmassey@unitec.ac.nz before **5pm on Wednesday, 31 August 2022**. Instructions in red italics may be removed before submission.

Researcher:	Dr Kristie Cameron
Project Title:	Relative Numerosity and Absolute Number Discrimination in Dogs Part 2.
Amount of Grant:	\$6,000

Provide an update on the project's overall progress

Summarise progress towards your aims/objectives; note any highlights of your project to date.

The study is progressing. We have eight dogs (aimed for 10) with two owners unable to commit to the duration of the project. Currently half the dogs are in the second condition and we are optimistic they will finish by December.

Outline progress with respect to the relevant milestones identified in your application for funding

Milestone Date	Anticipated Achievement	Activities and Progress
May 2021	Project started as Negotiated Research – 1 st exp	Complete
Feb 2022	Continuance and start of 2 nd exp to start (delayed due to covid)	Started. Delayed due to covid and the hiring process of RA
Feb-May/mid 2022	Research assistant to complete research weekly	Started and continuing
End 2022	Estimated completion date for Exp 2 & 3	On track.

Outline any variations to your project [if applicable]

If there have been any changes in terms of timeframes, budget, personnel or planned outputs note these here.

Nothing at this point. There may be an extension into the summer to complete the final few dogs based on how long it is taking for the dogs to complete each condition.

Outline any new opportunities to come from this project so far

Are there new connections, funding sources or opportunities for your own research, Unitec teams or the work of others which are emerging in this project? How could these opportunities be pursued in this or future projects?

I have made preliminary inquiries with the Police dog programme in Hamilton to investigate application to their dogs and skill base. This research is being presented in an oral talk at the NZABA conference in August. Two new NR students have been recruited, thus this project has involved four BASCI students and a BASCI graduate.

Financial Update

- Comment on the status of your project's budget.*
- In the update, keep to the original budget items.*

- *If it is likely that you will not spend all your allocated funding, please articulate this here, as this will give the Unitec Research Committee the option of reallocating funds to other worthy projects.*

Item	Amount approved	Amount spent to date ¹	Remaining funds (i.e. amount approved less amount spent to date)	Anticipated amount to be spent by the end of the funding term*
Personnel	\$5,000	1842.77	3157.26	5000
Travel	\$500	500	0	
Materials/ equipment	\$500	256.25	143.75	500
Total	\$6,000		3301.52	6000

* If the anticipated amount to be spent by the end of the funding term is more or less than the amount approved, please explain why:

Self-assessment: The Early Career Researcher Fund aims to develop early career researchers' capability, capacity and career progression as a Principal Investigator on a high-quality applied research project. How well do you believe you have managed your project to date?

I believe that I have managed this project well in terms of personnel (including my RA, as well as fostering the learning and achievement of Negotiated Research students). I believe that this project was optimistic as working with owners is difficult in terms of finding appropriate animals and working with busy people to find consistent times to conduct the research.

I have started writing up this paper for submission to *Behavioural Processes*.

Have you completed the "Managing a research contract" course on Moodle?

Yes ☐ No ☒

Do you wish to highlight any other matters relevant to this project?

Yes ☐

No ☒

¹ If you are unsure, you can check these figures with Asma Muir amuir@unitec.ac.nz

Reminders:

- There will be no rollover of funds into 2023.
- All purchase orders, invoices, expense claims and applications to travel connected with your project must be signed off by the Director Research and Enterprise.
- You must notify Tūāpapa Rangahau of publications as and when they occur (via email to research@unitec.ac.nz).
- You must notify Tūāpapa Rangahau of any significant changes to your planned research.
- A final report on your project is due before 31 March 2023.

NB: Please keep in mind that in addition to the Unitec Research Committee, your report may be viewed by the Chief Executive, Heads of School and/or external stakeholders. Any problems or issues that you would prefer not to highlight in this report can be discussed, in confidence if requested, with the Director of Research and Enterprise, your Research Partner or with Brenda Massey, Senior Grants Advisor.

Early Career Researcher Fund 2022

Progress Report

Email your completed Progress Report to bmassey@unitec.ac.nz before **5pm on Wednesday, 31 August 2022**. Instructions in red italics may be removed before submission.

Researcher:	Dr Mary Yan
Project Title:	Yacon prebiotic functional drinks
Amount of Grant:	\$3,500

Provide an update on the project's overall progress

There have been four major activities in the past five months:

1. Three types of products were designated after marketing research and an initial assessment of the alternative product formats for yacon.
2. The potential ingredients were selected and trialed in different combination and composition to produce a mixture that are sensory and cost acceptable.
 Nine formulas were trailed to evaluate four quality attributes include visual appearance, sweetness, flavor, and overall by two researchers and three industrial partners.
3. Ethics application and additional documents for consumer study (e.g. participant information sheet, participant consent form, questionnaires) have been submitted to UREC. It has been reviewed and approved in July 2022.
4. Product sensory test (consumer studies) has been commenced, and to be completed by 2nd September.

In addition:

A draft manuscript aimed for nutrition journals is in progress.

Outline progress with respect to the relevant milestones identified in your application for funding

Milestone Date	Anticipated Achievement	Activities and Progress
Apr-Aug 2022	Formulation trials	<p>Completed</p> <p>Working with Yacon New Zealand, product types were defined, ingredients were selected, formulas were tested.</p> <p>Three-type prototypes were produced:</p> <ul style="list-style-type: none"> • Yacon NZFOS+ with collagen • Yacon NZFOS+ with blackcurrant • Kids range NZFOS+ with vitamin C

Jul 2022	Ethics application for sensory test to be submitted	Completed Reviewed and approved
Aug 2022	Product sensory test	Data collection commenced, and to be completed by 2 nd September
Jul-Sep 2022	Product shelf stability test	On track
Jul-Oct 2022	Data compilation	On track
Dec 2022	Estimated completion date	

Outline any variations to your project [if applicable]

No changes to date following approval of ECR fund.

Outline any new opportunities to come from this project so far

While conducting the project, Mary have had meetings with industrial partners, Yacon New Zealand Ltd. In promoting NZ-grown yacon products, the company has a long-term plan for the development of value-added food products that could benefit local and international populations. We will work together to develop more healthier food products.

Financial Update

Item	Amount approved	Amount spent to date ¹	Remaining funds (i.e. amount approved less amount spent to date)	Anticipated amount to be spent by the end of the funding term*
Personnel	\$300		\$300	\$300 (will be paid once the student completed a professional services form)
Professional services	\$1,200	0	\$1,200	\$1,200 (for product shelf-life microbial test, will be conducted in Sep-Oct 2022)
Materials	\$2,000	\$1,000	\$1,000	\$2,000
Total	\$3,500	\$1,000	2,500	\$3,500

* If the anticipated amount to be spent by the end of the funding term is more or less than the amount approved, please explain why:

Self-assessment: The Early Career Researcher Fund aims to develop early career researchers' capability, capacity and career progression as a Principal Investigator on a high-quality applied research project. How well do you believe you have managed your project to date?

Have you completed the "Managing a research contract" course on Moodle?

Yes ☒ No ☐

Completed the course in June 2018.

¹ If you are unsure, you can check these figures with Asma Muir amuir@unitec.ac.nz

Do you wish to highlight any other matters relevant to this project?

Yes ☒ I had discussions with Yacon New Zealand about the packaging including packaging materials and packaging size. We will be happy to see our products in the real world.

No ☐

Reminders:

- There will be no rollover of funds into 2023.
- All purchase orders, invoices, expense claims and applications to travel connected with your project must be signed off by the Director Research and Enterprise.
- You must notify Tūāpapa Rangahau of publications as and when they occur (via email to research@unitec.ac.nz).
- You must notify Tūāpapa Rangahau of any significant changes to your planned research.
- A final report on your project is due before 31 March 2023.

NB: Please keep in mind that in addition to the Unitec Research Committee, your report may be viewed by the Chief Executive, Heads of School and/or external stakeholders. Any problems or issues that you would prefer not to highlight in this report can be discussed, in confidence if requested, with the Director of Research and Enterprise, your Research Partner or with Brenda Massey, Senior Grants Advisor.

Early Career Researcher Fund 2022

Progress Report

Email your completed Progress Report to bmassey@unitec.ac.nz before **5pm on Wednesday, 31 August 2022**. Instructions in red italics may be removed before submission.

Researcher:	A/P Renata Jadresin Milic
Project Title:	Digitalisation of Heritage in NZ Phase Three
Amount of Grant:	\$24,500

Provide an update on the project's overall progress

The research already detected (in 2020-2021) currently low engagement with digital heritage by heritage professionals, although the use of modern digital technologies facilitates and improves conservation practices and processes. It is not applied as much as it might be, internationally and in Aotearoa New Zealand. The original overall research questions in the project have been:

- *What is the current state of knowledge in the practice of New Zealand regarding the digitalisation and archiving of heritage buildings?*
- *What buildings in New Zealand should be recorded and digitalised (vulnerable, in the process of transformation and degradation, abandoned)?*

These questions are further refined now to better articulate the potential and value of this phase of the project – Digitalisation of Heritage in NZ, Phase Three. The focus of 'phase 3' of the research project overall and the current funding application is to establish:

- *What levels of understanding of Digital Heritage (tools, equipment, software) there is in our professionals/ architects/ heritage architects?*
- *What buildings (heritage buildings) would they prioritise to be digitally recorded? And Why (what would be their criteria for the selection)?*

In 2022, the main emphasis so far has been on:

- 1) Survey that investigate what is being practised by heritage professionals and the architectural/building industry. The research includes conversations and interviews with architects and engineers from the sector, district councils, and government organisations such as Heritage NZ, with the primary aim to learn how New Zealand could and may benefit from some modifications in policies it has at the moment; to gain an understanding of what would be valuable for all stakeholders to help heritage buildings be retained and adaptively reused, and not demolished. Adaptive reuse of heritage buildings is directly connected with sustainability and environmental topics through related fields of energy retrofit and seismic retrofit, and we see a lot of potentials for change that may improve our environment to help us all live in a healthier world. We strongly believe that schools of architecture in New Zealand should play a role in helping this happen and take responsibility for calling for the change/modifications in policies.
- 2) Establishment of the Digital Heritage Research Centre.
- 3) Preparation for MBIE Endeavour Funding application.
- 4) Tireless work as ICOMOS NZ Board member and "Legislation and Policy" committee member. (I took an active part in writing: - ICOMOS NZ Submission to the Environment Committee Resource Management (Enabling Housing Supply and Other Matters) Amendment Bill; Preparation of Submissions and Letters to: Minister of Conservation; Minister for Arts, Culture and Heritage; Draft approach to Kathryn Ryan in regards to the respect for heritage areas, including what goes up next to them without holding back on development; etc. As a member of the ICOMOS NZ

Specialist Committee "Advocacy & Communications", I was selected to be the centrepiece for implementing ICOMOS Mentorship Pilot Programme. I also contributed to the ICOMOS New Zealand Charter Practice Notes and Best Practice Guidelines Scoping Report.)

Outline progress with respect to the relevant milestones identified in your application for funding

Milestone Date	Anticipated Achievement	Activities and Progress
March 2022	Finish quantitative aspects of the research (conversations and interviews with architects and engineers from the sector, district councils, and government organisations such as Heritage NZ)	In Progress. Ethics approval obtained 04 June, Qualtrics survey launched in July and concluded in August; now – analysis of the survey results and planning of focus groups in September (to discuss further the constraints, barriers and facilitative factors encountered by professionals related to the use of digital heritage).
July 2022	Develop and systematise data that directly answer the research questions	In Progress. Same as above: Qualtrics survey launched in July and concluded in August; now – analysis of the survey results and planning of focus groups in September
Throughout 2022	Disseminate quantitative aspects of the research – refereed journal article + and dissemination in community, between heritage professionals, academics and industry.	In Progress. Dissemination in media and community so far: - Lecture for ICOMOS NZ and Historic Places Aotearoa (April, 2022), The Digital Realm and New Zealand Heritage: Bringing Architectural Theory and Practice into the Modern Architects Workflow. "Heritage Bites" - Digital lunchtime talks on historic heritage matters. - Attention in Media (audio and video recording): "3D technology being used to save heritage buildings", RNZ 25 May 2022 - "3D-tech helps preserve New Zealand's most important buildings" ArchitectureNow, 5 July 2022. Dissemination in industry: - Property and Build has us on the front page of its latest issue, "Preserving History: Heritage Buildings Go Digital", September 2022 - Infrastructure. Engineering. "Digitally driven heritage conservation" August 2022
Throughout 2022	Digital library and Project webpage developed further, to include new 3D modelling of heritage buildings (sites).	In Progress.
By end 2022	Confirming funding from other sources, hopefully. Establishing a new Unitec Research Centre that deals with heritage in Aotearoa New	In Progress. July 2022: Digital Heritage Research Centre established/approved at the Unitec Research Committee meeting.

	Zealand, and offers a possibility to protect and keep numerous heritage buildings and sites.	July 2022: Steps towards MBIE Endeavour Funding; Max Kennedy's initial assessment of my concept for the Endeavour Fund; and series of meetings with significant group of collaborators to develop the application further.
December 2022	Estimated completion date	

Outline any variations to your project [if applicable]

A small change/addition in terms of people involved:

Jeff Honey, our Unitec colleague, became involved to help me set the Qualtrics survey up, and now to support me in the presentation of the result and reporting.

Jeff signed a confidentiality form to cover for any eventuality of him helping me in data analysis in the study. Jeff is also a member of the Research Association of NZ (RANZ), which means he adheres to (and is protected by) the RANZ code of conduct which covers all things about student and staff privacy (<https://www.researchassociation.org.nz/code-privacy>).

Outline any new opportunities to come from this project so far

MBIE Endeavour Funding is recognised as a possible source/opportunity for funding for this research project and the work of the Digital Heritage Research Centre. The funding application is being developed.

Through feedback about the work so far we got from Max Kennedy, this is a timely and important project that fits well with Endeavour in an area MBIE does not have much funded. He also acknowledged this is a pressing problem to solve. However, "it needs to demonstrate science stretch to make it fundable. It needs to turn from a preservation activity into a science research project." – now we are focusing our work on this.

New connections – Nothing has been finally confirmed yet. However, multiple opportunities have been recognised for national and international collaborations. The 3D scanning technology is used in many related areas, so we now contact all to see if there are any synergies with our work – to try in partnership "to demonstrate science stretch" and make our work fundable.

Financial Update

Item	Amount approved	Amount spent to date ¹	Remaining funds (i.e. amount approved less amount spent to date)	Anticipated amount to be spent by the end of the funding term*
Personnel (PI)	\$16,000	\$16,000	/	\$16,000
Personnel (RAs)	\$7,500	\$ 3,705	\$3,795	\$7,500
Printing, materials, other expenses	\$1,000	/	\$1,000	\$1,000
Total	\$24,500	\$19,705	\$4,795	\$24,500

¹ If you are unsure, you can check these figures with Asma Muir amuir@unitec.ac.nz

** If the anticipated amount to be spent by the end of the funding term is more or less than the amount approved, please explain why:*

Self-assessment: The Early Career Researcher Fund aims to develop early career researchers' capability, capacity and career progression as a Principal Investigator on a high-quality applied research project. How well do you believe you have managed your project to date?

I am satisfied with how I have managed the Project in 2022 so far. The project team again includes students, young research assistants, architectural historians, as well as national and international professionals in the field.

In 2022, the main emphasis has been on disseminating the results; survey design and results analysis; and establishing the Digital Heritage Research Centre. This has been extended to include preparation for applying for significant external funding. While the co-funding with my industry partners is in place and a number of industry partners want to work with us and donate their equipment, software and skills (the contributions that the partners brought so far are significant), we still need to secure more significant funding. I still need to develop a more comprehensive collaboration with the Unitec School of Engineering and Applied Technology (Duaa Alshadii), and the School of Environmental and Animal Sciences (Dr Glenn Aguilar). There is also a possibility to involve students of Unitec's existing GIS courses (in the Bachelor of Applied Sciences of the School of Environmental and Animal Sciences and National Diploma in Surveying of the School of Construction) for drone image acquisition and processing.

Have you completed the "Managing a research contract" course on Moodle?

Yes

✓

No ☐

Do you wish to highlight any other matters relevant to this project?

Yes ☐

No ✓

Reminders:

- There will be no rollover of funds into 2023.
- All purchase orders, invoices, expense claims and applications to travel connected with your project must be signed off by the Director Research and Enterprise.
- You must notify Tūāpapa Rangahau of publications as and when they occur (via email to research@unitec.ac.nz).
- You must notify Tūāpapa Rangahau of any significant changes to your planned research.
- A final report on your project is due before 31 March 2023.

NB: Please keep in mind that in addition to the Unitec Research Committee, your report may be viewed by the Chief Executive, Heads of School and/or external stakeholders. Any problems or issues that you would prefer not to highlight in this report can be discussed, in confidence if requested, with the Director of Research and Enterprise, your Research Partner or with Brenda Massey, Senior Grants Advisor.

Unitec New Zealand Limited

Meeting of Te Komiti Rangahau o Unitec | Unitec Research Committee

Date of Meeting: 8 September 2022

Title	ECR Fellowship Scheme - Open for Applications
Provided by:	A/P Marcus Williams, Director Research & Enterprise
For:	INFORMATION

Recommendation

That the committee notes that the call for applications for Early Career Researcher (ECR) Fellowships for Semester 1 2023 is now open.

Background

ECR Fellowships respond particularly to the need for the concentrated time and mental space needed to develop research capability, opportunity, productivity, planning and/or networks for ECRs at Unitec. The central purpose of the fellowships is to support and strengthen the establishment and development of ECR careers and the development of new research leadership. There are two types of fellowships available:

1. Fellowship One: to support the implementation of research projects.
2. Fellowship Two: to support professional research and research leadership development.

Key Points

Applications for ECR Fellowships for Semester 1 2023 are being accepted from now **until 5pm, Friday, 30 September 2022.**

Attachment

ECR Fellowship Application Form

ECR Fellowship Guidelines



Early Career Research Fellowship Application Form

1. Applicant

NAME	SCHOOL	POSITION TITLE	ORCID NUMBER

All Unitec researchers should have an ORCID number. You can register for one here <https://orcid.org/>

RESEARCH PARTNER	
HEAD OF SCHOOL	

☐ **FELLOWSHIP ONE – UNITEC ECR RESEARCH** Support to concentrate on research projects.

☐ **FELLOWSHIP TWO – UNITEC ECR LEADERSHIP DEVELOPMENT**

Support to develop new research opportunities, write up or disseminate research, develop grants, network for ambitious projects and/or to undertake professional development.

2. Applicant's Checklist:

I have my HoS agreement in principle on a preferred timing of a fellowship	Yes <input type="checkbox"/> No <input type="checkbox"/>
I have lecturer(s) in mind that could replace me for the duration	Yes <input type="checkbox"/> No <input type="checkbox"/>
I have agreed with my HoS and APMs on potential replacement teachers	Yes <input type="checkbox"/> No <input type="checkbox"/>
I have developed this proposal with my Research Partner	Yes <input type="checkbox"/> No <input type="checkbox"/>
I have attached my Individual Research Plan	Yes <input type="checkbox"/> No <input type="checkbox"/>
I am a member of the Unitec ECR forum	Yes <input type="checkbox"/> No <input type="checkbox"/>
I have attached the CV of my advisor	Yes <input type="checkbox"/> No <input type="checkbox"/>

* If successful you will need an email evidencing your HoS agreement when buying out staff time.

3. Description

Give a description of the project or your dissemination plan, grant application, partnership development plan, professional development opportunity or combination of the above. Please explain if your project involves student integrated research. If applicable, please also confirm you have addressed any issues of sustainability.

4. Advisor

Describe your mentor, why they are relevant, what you hope to gain from the relationship and provide your advisors CV.



Early Career Research Fellowship Application Form

5. Partnerships

RESEARCH TEAM	NAME	INDUSTRY/COMMUNITY ORGANISATION/TERTIARY INSTITUTION
Team member		
Team member		
Team member		

List the proposed team members, industry, community organisations and or tertiary institutions you have or are seeking to engage.

6. Vision Mātauranga

Give a description of how the project might engage with Māori and how the project might work toward unlocking the innovation potential of Māori knowledge, resources and people to assist New Zealanders to create a better future, where appropriate. If Vision Mātauranga is not relevant, explain why not. *See guidelines for more information.

If yes, which of these four Vision Mātauranga themes can be associated with your research. *Tick as many as applicable and explain for each one ticked.*

- ☐ **Indigenous Innovation** (economic growth through distinctive research and development)
- ☐ **Taiao** (environmental sustainability)
- ☐ **Hauora/Oranga** (health and social wellbeing)
- ☐ **Mātauranga** (indigenous knowledge)

7. Practicalities

Describe the “in principle” agreements or discussions that you have had, including potential replacement and the basic structure.

For example, I request a full semester with no teaching and XXX (persons name) is available and agreeable by all parties to replace me. I request release from one of my courses for an entire year, but this is contingent on finding replacement teaching, which is very challenging.

8. Milestones

Present a timeline with dates by which you expect to achieve key objectives so that Tūāpapa Rangahau can help you manage the fellowship. Note if approved you will be required to submit a signed Project Plan with the project milestones.



Early Career Research Fellowship Application Form

ACHIEVEMENT OF KEY OBJECTIVES	DATE

7. Outcomes *List the outcomes that you expect to come from the fellowship*

OUTCOME	DATE OUTPUT WILL BE PRODUCED

8. Declarations (ECR Fellow)

The Applicant must declare any other scholarships or grants they have applied for, or intend to apply for *(If applicable confirm date/funding type + agency/project title/amount)*

I declare that to the best of my knowledge the information I have provided is true and correct; that ethics approval will be sought and obtained prior to the commencement of the research, if required; and that **I hold a position at Unitec that meets the eligibility criteria in the guidelines.** Where appropriate, I will acknowledged all authors in alignment with Unitec values. I acknowledge that Tūāpapa Rangahau will be monitoring my progress on the project and the expenditure of my grant if I am allocated funding

Signed: _____
[please sign by typing your full name]

Dated: _____

Applicant's Manager to approve and pass this application to the relevant people below for approval.

I have read and support this application and, if funded, will ensure that adequate time is given to meaningfully utilise the support proposed and that there are no impediments to a successful outcome.

Signed: _____
[please sign by typing your full name]

Dated: _____

Email your completed, fully signed Application Form to your Research Partner, [Penny Thomson](#). You will be advised, in writing, of the outcome of your application following the Unitec Research Committee's meeting subsequent to your application.



Early Career Researcher Fellowship Guidelines

1. Rationale

These are guidelines for Early Career Researcher (ECR) Fellowships, responding particularly to the need for the concentrated time and mental space needed to develop research capability, opportunity, productivity, planning and/or networks for Early Career Researchers at Unitec. The central purpose of the Fellowships is to support and strengthen the establishment and development of ECR careers and the development of new research leadership. Early Career Researchers are providing the renewal of research culture at Unitec and will be the future leaders of research and enterprise at Unitec.

There are two types of fellowships available;

FELLOWSHIP ONE: to support the implementation of research projects

FELLOWSHIP TWO: to support professional research and research leadership development

2. Underlying principles

- To invest in our research future, based on high quality, emerging researchers;
- To provide for the establishment of high quality research track records;
- To foster research leadership;
- To provide opportunities for researchers to gain skills, experience and knowledge;
- To support career development and to support innovative and valuable research activities and outcomes.

3. Criteria *you must meet both criteria*

3.1 All of the following three criteria have to be fulfilled for eligibility.

The applicant must (1) be :

- a permanent full time Unitec employee or
- a permanent part-time Unitec employee or
- on a fixed term contract of two years or more

and is (2) employed on an **FTE of 0.2** or more and (3) *teaches 0.2 FTE or more on any course in a degree level programme and/or supervises on a 90 credit or higher postgraduate programme.* *Note there are exceptions for non-degree teaching research staff, please contact the Research Office for details.



Early Career Researcher Fellowship Guidelines

3.2 The applicant must be a member of the Unitec ECR Forum for which they must meet the definition of an ECR at Unitec. This definition distinguishes between those researchers at the very beginning of their research activities, such as master's or doctoral candidates, or practitioners and/or teachers making a transition to research activity, and *independent, early career researchers*:

An **ECR** at Unitec lies between 'emerging/beginner' and 'senior/advanced'. An ECR is within 10 years (prior to the closing date for full applications for ECR funding) of becoming an 'independent' researcher, which is defined as one or both of the following, whichever comes first:

1. A researcher who has been awarded a PhD or a professional doctorate with a significant research component.
2. A researcher who has been the primary author of an independently investigated (i.e. unsupervised, disseminated quality assured research output. This criterion excludes conference presentations and typically also excludes very short written outputs.

Time taken for parental leave is not counted as part of the 10-year window (i.e. one year of parental leave would extend the eligibility period to 11 years since achieving criterion 1 or 2). Note that other forms of extended leave may be considered by negotiation with Tūāpapa Rangahau.

3.3 Any application for this fellowship must be developed from the outset with full knowledge and *support in principle*, of the relevant Head of School.

4. Fellowship Outcomes

- Strengthening of Unitec support for emerging research leaders;
- Development of research leadership;
- Development of industry and institutional research partnerships;
- Development of external grant applications or other contract arrangements
- Development and recognition of high quality researchers;
- Increase in volume and quality of research outcomes, reflecting Unitec research priorities.
- Deepened Unitec research culture;



Early Career Researcher Fellowship Guidelines

5. Vision Mātauranga

[Vision Mātauranga](#) is a policy about innovation, opportunity and the creation of knowledge that highlights the potential contribution of Māori knowledge, resources and people. There are four themes:

- Indigenous Innovation, which involves contributing to economic growth through *distinctive research and development*;
- Taiao, which is concerned with achieving *environmental sustainability* through iwi and hapū relationships with land and sea;
- Hauora/Oranga, which centres around improving *health and social wellbeing*; and
- Mātauranga, which involves exploring *indigenous knowledge*.

Where research projects are of relevance to Māori or involve Māori, Tūāpapa Rangahau expects that applicants are in consultation with Māori at the planning stage, so as to achieve the best possible outcomes. Unitec's Research Ethics Committee has produced [Guidelines for Māori and Community Social and Cultural Responsiveness](#) to assist researchers who intend undertaking research that may involve Māori participants (through random selection), involve Māori, Māori centered research and kaupapa Māori research. If unsure about the relevance of the proposed study for Māori, researchers should consult Unitec's [Research Partners](#) or [Kaihautu Mātauranga Māori](#).

Examples of relevance could include proposals that involve biomedical research of significance to Māori health, social research, educational research, entrepreneurship, indigenous research, natural hazards, native flora and fauna, anthropology, the environment, sporting and cultural activities, literature, and language (even if the approach to these topics is seemingly irrelevant, such as algorithm development, biochemical pathways or mechanical properties).

ECR Fellowships applicants need to indicate whether or not Māori will be directly involved or impacted by the project. If Vision Mātauranga is not relevant, you should explain why not.

FELLOWSHIP ONE: to support the implementation of research projects

Purpose:

- To provide for Unitec ECRs opportunity to pursue quality research that will help establish their research track record;
- To support the development of high quality, applied, potentially impactful research;
- To support the development of research expertise and leadership at Unitec;
- To provide Unitec ECRs with the time and resource required to achieve these outcomes;
- To facilitate Unitec ECRs with high quality support, in the form of research mentorship.



Early Career Researcher Fellowship Guidelines

Support:

The Research Fellowship is intended to support the conduct of emerging research and therefore could provide different forms of support:

- Teaching and administration relief, to provide time to conduct the research (duration determined in negotiation with Head of School and Research Partner)
- It can be portable to existing research projects;
- Research expenses (NB – the ECR Contestable Research Fund templates need to be utilised if new project funding is being sought in addition to teaching buy out);
- Mentorship - receipt of a Research Fellowship will be contingent on suitable mentorship arrangements (internal or external);
- 3 months to 1 year duration, part or full time, (determined in negotiation with Head of School and Research Partner);
- Under normal circumstances would only be held once;

Assessment:

- Clearly defined research project (description of research, including relationship to existing research projects or programmes);
- High quality research design (reflecting Unitec research priorities); potential for opportunity, engagement and impact (description of potential; impact defined broadly);
- Potential to provide opportunity for other Unitec researchers
- Appropriately industry engaged and partnered;
- Strong mentorship arrangements in place (defined broadly, may include culturally appropriate forms of guidance and support related to proposed project);
- Realistic outcomes identified;
Participation in Unitec research events;
- Clearly defined research project (description of research, including relationship to existing research projects or programmes);
- Inclusion of student integrated research;
- Issues of sustainability are addressed - if applicable.



Early Career Researcher Fellowship Guidelines

FELLOWSHIP TWO: to support professional research and research leadership development

Purpose:

- To provide for Unitec ECRs opportunity to pursue a clearly defined applied research publication or research dissemination project that will establish and/or strengthen their research track record;
- To support the development of an industry partnered, team based external research grant application or contract;
- To support the professional development of research expertise and leadership;
- To provide Unitec ECRs with the time and resource required to achieve these outcomes.

Support:

The Research Fellowship is intended to support the dissemination of research and professional development in research and research leadership;

- Teaching and administration relief, to provide time to write, develop grant applications, plan or undertake professional development (duration determined in negotiation with your Head of School and Research Partner);
- Research development expenses (NB – this is not a research project fund);
- Mentorship - receipt of a research Fellowship will be contingent on mentorship arrangements (internal or external);
- It can be portable to existing research projects;
- 3 months to 1 year duration, part or full time, (determined in negotiation with your Head of School and Research Partner);

Assessment:

- Clear description of high quality completed or near completed research for dissemination;
- Clearly defined research dissemination strategy (of research, including relationship to existing research projects or programmes);
- Strong Grant Application Plan, appropriately industry engaged or partnered;
- Mentorship arrangements in place (defined broadly, may include culturally appropriate forms of guidance and support related to proposed project);
- Realistic outcomes identified;
- Participation in Unitec research events;
- Addressed any issues of sustainability - if applicable.

Please contact your [Research Partner](#) if you have any questions. For both Fellowships a signed Project Plan with milestones will be required.

Te Komiti Rangahau o Unitec | Unitec Research Committee Self-Assessment

Purpose: NZQA requires the Committees of Unitec's Academic Board to provide evidence of self-assessment.

Te Komiti Rangahau o Unitec Self-Assessment Provocations

- Can we improve the way the committee is run?
- Is time well managed?
- Are issues under discussion well-handled and resolved?
- Are the agenda and minutes well handled?
- Are the perspectives of committee members respected and heard?
- Are actions completed and accounted for?
- Were there matters raised and dealt with in the meeting that were particularly helpful or unhelpful?
- Does the committee oversee and ensure compliance within its mandate?
- Does the committee show foresight and proactively engage in continuous improvement?
- Does the committee review and improve the relevant policies, guidelines and regulations?