Wellington Institute of Technology

Te Whare Wānanga o te Awakairangi

Innovation and Research Strategy
2010 – 2015

Innovation and Research Strategy

Research and innovation are core competencies of WelTec and as such they underpin all the work of the institution. WelTec is now in a further development phase of its research and innovation capacities. As an outward-looking institution, WelTec fosters enquiry and scholarship, develops new knowledge and new ways of doing things, develops links with its community, and shares its' knowledge and capabilities with the industries and professions it serves.

Research and innovation undertaken within the tertiary education environment – including that undertaken by the metropolitan Institutes of Technology and Polytechnics (Metros) and universities – represents a continuum that covers:

- *discovery or blue sky research* – addressing questions where the outcome is not known;
- developmental, problem-based or *applied research* – activities aimed at answering questions or problems where the fundamentals are understood, and an application is developed because of its foreseen utility;
- *creative work* and design – undertaken on a systematic basis to enhance knowledge, culture and society and to use this knowledge to devise new applications;
- *evidence-based professional practice* – addressing knowledge and practice issues within a profession that lead to innovations in practice;
- *technology transfer* – applying the results of research to a practical purpose, sharing technical information by means of education and training, or using a technical concept, e.g. a hardware or software product, to solve a problem in an industry that is entirely different from the one the technology was developed for; and
- i*nnovation* – designing new ways of doing something or "new stuff that is made useful". It may refer to incremental and emergent or radical and revolutionary changes in thinking, products, processes, or organizations.

Wellington Institute of Technology has a focus on supporting high quality research and innovation that has a bias towards solving problems that are relevant and applicable to the firms, industries, enterprises and professions we work with. It includes both staff and student research related to the programmes we deliver (particularly our degrees) and the innovation and technology transfer activities we engage in to support enhanced productivity of local firms. Much of this activity is related to the trades and technology disciplines we cover (regardless of whether at

degree level or not) although some also relates to other activities used to lift firms productivity including researching ways to enhance staff language, literacy and numeracy, management capacity, environmental responsiveness and leadership.

WelTec's problem-based approach is unique in that we engage directly with small and medium sized enterprises (SMEs) in a way that is:

- **Willing to work** directly with firms and enterprises no matter how small
- **Responsive** to their needs rather than being driven by institutional priorities or programmes of research
- **Flexible,** working directly on the issues and problems firms and enterprises encounter and supporting seamless approaches that transfer knowledge and integrate the workplace with the expertise of staff and students of an institution with the firm's own
- **Collaborative** in building critical mass and depth of expertise nationally between ITPs, within a region with other experts and internationally with other providers.
- **Cost effective** in building community and enterprise culture, productivity and sustainability.

The transfer of new knowledge and technology to our communities of interest is an increasingly visible hallmark of WelTec research and along with the use of measures of impact that can be readily used to determine quality.

WelTec's research emphasis over the next triennium is on gaining recognition and funding from our research activities through the PBRF and the winning of research grants. We will continue to encourage collaborative and interdisciplinary approaches that will assist in the concentration of skills, and material and financial resources necessary to further develop the WelTec's recognition as a high performing ITP amongst its Metro peers.

WelTec has committed to entering the PBRF in 2012 and ensuring the institution is well positioned for this is core to this research plan. The definitions of research set by NZQA and the PBRF are contained in Appendix 1.

Expectations of staff

WelTec expects all its salaried academic staff to engage in scholarship activities to remain at the forefront of their industry and to share their knowledge gained through research and scholarship activities with their peers, students and industry contacts.

All salaried staff teaching on degrees are expected to have a qualification at least one level above that which they teach and to engage in research that generates new knowledge and/or understandings within their discipline area. Course coordinators and/or programme leaders of degree programmes are expected to hold or be studying towards a postgraduate qualification and to provide academic supervision of work of staff who do not hold postgraduate qualifications.

Where staff need to gain a higher qualification to meet this requirement for teaching on degrees, they will be able to use their professional development and discretionary leave and some or all of their research time allocation, where this is approved by their manager. Funding may also be available to support enrolment in higher degrees but this too will be at the discretion of the staff member's manager.

All other staff at WelTec are encouraged to engage in activities that build our capacity to be a high performing and innovative educational institution, developing new ways to deliver education and support students to succeed. Much of our research will be focused on evaluating the effectiveness of our teaching and learning innovations in supporting student achievement.

Staff with an interest in research are encouraged to work with the manager to build time allowances into their individual work plan, in agreement with their manager.

In 2009, WelTec set clear expectations for its academic staff with the introduction of a points system to measure research activity. All academic staff members are expected to generate a minimum of 1 weighted point of research output per annum, while for those staff with specific research accountabilities are expected to produce a minimum of an additional 5 weighted points for every 0.2 FTE allocated to research activities.

The approved schedule of research weighted output points is contained in Appendix 2.

Responsibility for managing research

Overall responsibility for developing WelTec's research culture sits with the Director of Strategy and Performance. The Director will work with staff across the institution to ensure the infrastructure is in place to provide a supportive research environment.

Each Executive Dean is responsible for developing a Research and Innovation Plan for their Faculty, for ensuring that research activities are adequately supported and has final accountability for achieving the research outputs and the summed weighted points (based on numbers of staff and numbers of staff with research time allocations) agreed in their research plan.

Executive Deans will be supported in developing and implementing their agreed research plan and will be assisted in this by their Heads of School and Research Coordinators. WelTec's research policy requires each degree discipline to be supported by a 0.25 Research Coordinator who is responsible for working with staff to foster research competency to develop their capability to undertake high quality research.

Outside the Faculties, responsibility for agreeing research plans and managing staff expectation sin relation to research sits with the Senior Manager of the area. Time allocation for research in these work areas will be allowed at the discretion of the manager and will be negotiated in the staff members Performance Plan.

Managers and Research Coordinators are also responsible for ensuring research polices are complied with.

Support for innovation and research

Ensuring WelTec provides a supportive environment to undertake research is the responsibility of the Director of Strategy and Performance. The Director will:
- coordinate the development of WelTec's overall research strategy and plan
- ensure a policy environment is in place that supports ethical and valid research

- ensure that education and training opportunities are available to staff to build their ability to research and disseminate research
- prepare WelTec to enter the PBRF by developing the necessary systems and processes
- oversee the building of the research infrastructure including library support, and records systems
- work with HR to ensure recruitment practices and working conditions support achievement of a high performing research culture.

WelTec will continue to operate Human Ethics and Animal Ethics committees to ensure that research and teaching activities are ethical and as safe as possible for participants.

WelTec will continue to operation and internal Innovation and Research Grants fund to fund research and innovation activities and the dissemination of the findings of these. The effectiveness of this fund in supporting internal research will be reviewed from time to time. At the same time, WelTec will seek to increase the amount of funding it gains from external research grants.

WelTec will continue to develop the Centre of Smart Product as an interface for technology transfer with industry. Over the next five years the Centre will build on its current networks with industry to enhance WelTec's capability:
- to commercialise its intellectual property
- to support the productivity development of local firms and enterprises; and
- to support the development of emerging industries.

Innovation and Research Goals

The Innovation and Research Strategy has four goals. These are that by 2015 WelTec will:
1. Generate a minimum of $1m per annum from research, innovation and technology development and transfer activities undertaken for or in partnership with the firms, enterprises, industries and professions we work with.
2. Achieve a minimum of $360,000 from PBRF funding based on review of staff Evidence Portfolios and external research funding.
3. Be a lead partner in a minimum of two Centres for Technology Development and Transfer that work at the leading edge of New Zealand's innovation sector.
4. Be recognised by our peers as a leader in developing effective and innovative education and training solutions.

Objectives

In achieving these goals over the next triennium, WelTec will:
a) Increase external funding gained from research activities including form the sale of IP, consultancies, design, prototyping and technology transfer activities and contract research by $200,000 per annum.
b) Continue to develop our two existing Centres of Technology Development and Transfer so they are self sustaining and work to build the Metro Innovating NZ as a sustainable entity.
c) Build staff capacity for research and work with a minimum of 20 high performing researchers to enable them to submit evidence portfolios in the 2012 PBRF round.

d) Undertake research projects aimed at building WelTec teaching and learning capacity and new knowledge and practice in tertiary education and training.

Anticipated performance

Measures	Means of measurement	2009	2010	2011	2012	2013	2014	2015
Number of quality assured research outputs	Research report against research plan targets	64	70	80	85	90	95	100
Number of non-quality assured research outputs		86	100	200	250	300	350	400
Number of weighted research points achieved		N/A	350	360	370	380	390	400
Income gained from research activities **$ (000)** • PBRF income • External research income		N/A 373	N/A 400	N/A 450	360 500	360 600	360 700	360 1,000
Number of research/innovation and technology transfer projects completed for industry/community		47	50	55	60	65	70	75

Wellington Institute of Technology

Te Whare Wānanga o te Awakairangi

Draft Innovation and Research Plan
2010 – 2012

Introduction

This plan describes the activities to be undertaken over the next triennium, 2010 to 2012, to meet the goals and objectives of WelTec's Innovation and Research Strategy 2010 to 2015.

Objective 1

Increase external funding gained from research activities including form the sale of IP, consultancies, design, prototyping and technology transfer activities and contract research by $200,000 per annum.

Activities 2010 to 2012 and targets

Activities	Responsibility	Means of measurement	Targets and planned activities			
			2009	2010	2011	2012
Facilitate a programme of research and innovation to assist industry, local firms and enterprises to meet their development needs via: • Contract research	Centre of Smart Product/ Executive Deans	Annual Research Report	3	Undertake a minimum of 5 research contracts	Undertake a minimum of 5 research contracts	Undertake a minimum of 5 research contracts

Activities	Responsibility	Means of measurement	Targets and planned activities			
			2009	2010	2011	2012
• Prototyping projects			7	Undertake a minimum of 10 prototyping projects	Undertake a minimum of 15 prototyping projects	Undertake a minimum of 15 prototyping projects
• R&D projects			7	Undertake a minimum of 10 R&D projects including student projects	Undertake a minimum of 15 R&D projects including student projects	Undertake a minimum of 15 R&D projects including student projects
• Design and development projects			15	Undertake a minimum of 15 design and development projects including projects for industry and student projects	Undertake a minimum of 15 design and development projects including projects for industry and student projects	Undertake a minimum of 20 design and development projects including projects for industry and student projects
• Technology transfer projects			14	Undertake a minimum of 15 technology transfer projects and further develop two technology transfer centres to support industry achievement	Undertake a minimum of 20 technology transfer projects and further develop two technology transfer centres to support industry achievement	Undertake a minimum of 25 technology transfer projects and further develop two technology transfer centres to support industry achievement
• "Industry in residence" programme			2	Maintain an industry in residence programme with a minimum of 2 industry partners	Maintain an industry in residence programme with a minimum of 2 industry partners	Maintain an industry in residence programme with a minimum of 2 industry partners
• National consultancies			16	Complete a minimum of 15 national consultancies	Complete a minimum of 15 national consultancies	Complete a minimum of 15 national consultancies

Activities	Responsibility	Means of measurement	Targets and planned activities			
			2009	2010	2011	2012
• International consultancies			4	Complete a minimum of 2 international consultancies	Complete a minimum of 2 international consultancies	Complete a minimum of 2 international consultancies
Produce commercialisable outputs	Commercial Manager	Annual Research Report	8	5	10	15
Increase income from research and innovation activities	Business development Manager	Annual Research Report	373,000	400,000	450,000	500,000

Objective 2

Continue to develop our two existing Centres of Technology Development and Transfer so they are self sustaining and work to build the Metro Innovating NZ as a sustainable entity.

Activities and targets

Activities	Responsibility	Means of measurement	Targets and planned activities			
			2009	2010	2011	2012
Develop Centre of High Temperature Superconductor Business Development • Establish governance and management structures • Complete a minimum of two projects per annum that contribute to development of the HTSC industry	Manager Centre of Smart Product	Quarterly Report	Achieved 1	Maintained 2	Maintained 2	Maintained 2
Work with Metros to develop Innovating New Zealand project • Build relationships with INZ and regional industry to identify and meet business development opportunities	CEO/Centre Smart Product	Quarterly Report	Under development	INZ established	Operating as a link to Centre fro Smart Products	Operating as a link to Centre fro Smart Products
Build the Centre of Smart Product to be a regional hub for technology development and transfer activity	Centre Smart Product	Quarterly Report	N/A	Established	Operational	Operational

Objective 3

Build staff capacity for research and work with a minimum of 20 high performing researchers to enable them to submit evidence portfolios in the 2012 PBRF round.

Activities 2010 to 2012 and targets

Activities	Responsibility	Means of measurement	Targets and planned activities			
			2009	2010	2011	2012
Prepare WelTec to enter the PBRF • Staff capability • HR policies support PBRF • Raise staff perceptions and understanding of PBRF	Director Strategy and Performance	Annual research report	N/A	Identify staff for PBRF	Support development of EP	Submit EPs, RO and other evidence for PBRF evaluation
				Support staff to gather/publish research outputs	Support staff to gather/publish research outputs	
				Work with Metros to maximise PBRF opportunities	Work with Metros to maximise PBRF opportunities	
				Ensure research active staff meet PBRF employment conditions	Ensure EPs are produced and peer reviewed	
				Amend employment conditions to employ research active staff	All targeted staff on appropriate employment conditions	
				Hold a minimum of 4 workshops aimed at raising staff understanding of PBRF	Hold a minimum of 4 workshops aimed at raising staff understanding of PBRF	
Research outputs Published works	Executive Deans supported by Research Coordinators	Annual research report	25	30	35	35
Conference presentations			38	40	45	45
Guest lectures			7	10	10	10
Exhibitions and creative works			15	20	20	20
Designs and products			42	45	45	45
Consultancy			29	25	25	25
Scholarship activities contributing to the discipline area			N/A	Benchmark	$\geq$2010	$\geq$2011

Activities	Responsibility	Means of measurement	Targets and planned activities			
			2009	2010	2011	2012
Peer esteem Research supervision and marking	Executive Deans supported by Research Coordinators	Annual research report	19	20	20	20
Represent NZ in international competition			2	2	2	2
Represent WelTec in National competitions			26	28	30	30
Contribution to the tertiary education environment[1]			22	25	25	25
Representation on national professional bodies/ standards setting bodies			18	20	20	20
Capacity and capability development Review research policies and infrastructure required to support research	Director Strategy and Performance	Quarterly report	Ethics policy revised	Revise all policies	Maintain	Maintain
Maintain and use a fund for the internal funding of innovation and research projects	CEO	Annual report	$49 K spent	$100K spent	$100K spent	$100K spent
Provide mentoring and support for emerging researchers	Director Strategy and Performance	Quarterly report	2 sessions held	20 sessions held	25 sessions held 1	30 sessions held
Implement programme of research seminars and workshops			1 seminar held	12 seminars held	12 seminars held	12 seminars held
Implement a research repository and recording system			Investigate	Implement	Maintain	Maintain

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[1] Editorial board membership, conference organising committees, reviewing research proposals

Activities	Responsibility	Means of measurement	Targets and planned activities			
			2009	2010	2011	2012
Use research coordinators to support Executive Deans and T3 managers to build research culture	Executive Deans	Annual report	Appointed	Working with staff	Working with staff	Working with staff

Objective 4

Undertake research projects aimed at building WelTec teaching and learning capacity and new knowledge and practice in tertiary education and training.

Activities 2010 to 2012 and targets

Activities	Responsibility	Means of measurement	Targets and planned activities			
			2009	2010	2011	2012
Complete a minimum of one externally recognised major research project per annum aimed at building new knowledge and practice in tertiary education and training	Executive Deans supported by Research Coordinators	Annual research report	3	3	3	3
Complete a minimum of ten minor research project s per annum aimed at continuous improvement in tertiary education and training			12	10	12	12

Appendix 1 – Definition of research

WelTec has adopted a broad definition of research that reflects both the NZQA and PBRF definitions of research. Research is an intellectually controlled investigation, which leads to advances in knowledge through the discovery and codification of new information or the development of further understanding about existing information, and practice.

It is a creative, cumulative and independent activity conducted by people with knowledge of the theories, methods and information of the principal field of inquiry and its cognate areas(s). Research typically involves either investigation of an experimental or critical nature, or artistic endeavour of the type exemplified by musical composition.

The results of research must be open to scrutiny and formal evaluation by others in the field of enquiry and this may be achieved through publication in peer-reviewed books and serials, or through public presentation.

Research may be found in the following contexts, although they are not mutually exclusive:
   a. basic or fundamental research: experimental or theoretical work undertaken primarily to acquire new knowledge without any particular application or use in view
   b. strategic research: work which is intended to generate new knowledge in an area which has not yet advanced sufficiently to enable specific applications to be identified
   c. applied research: work which develops or tests existing knowledge and is primarily directed towards either specific practical objectives or towards the evaluation of policies or practices. Work which involves the routine application of established techniques on routine problems is unlikely to constitute research
   d. scholarship: work which is intended to expand the boundaries of knowledge and understanding within and across disciplines by the analysis, synthesis and interpretation of ideas and information, making use of a rigorous methodology
   e. creative work: the invention and generation of ideas, hypotheses, images, performances or artefacts, including design, in any field of knowledge, leading to development of new knowledge, understanding or expertise.

Activities which may be equivalent to research if they meet one or more of the definitions
(a-c) outlined on the previous page include:
   f. consultancy, which involves the deployment of existing knowledge and the application of analytical and investigative skills to the resolution of problems presented by a client, usually in an industrial, commercial or professional context
   g. professional practice, some of which overlaps with consultancy when conducted at an advanced level. In certain subject areas and professions the theorisation and effectiveness of professional practice are advanced by academic staff who practise and participate in it.

Activity mainly concerned with keeping abreast of new developments in subjects is not considered as 'research'.

Appendix 2 – WelTec Research Weightings

1   Research outputs

Activity	Base	Research focus	Quality Assured	International
Author of book/textbook	2		+6	+4
Author of chapter of a book	1		+2	+1
PBRF ranked journal paper	2		+2	+2
Conference paper in published proceedings.	1.5		+2	+2
Conference presentation (verbal presentation or participation on a discussion panel)	1			+1
Reviewed book in recognised journal	1			+1
Report for external body	1			+1
Consultancy (+report)	0.5			+0.5
Patent/Software product (+report)	4			
Degree awarded	PhD 6 Masters 3 PG Dipl 1			
Exhibition Curation (including catalogue with ISBN registration)	1	+2	+2	+2
Dissemination of Creative Works (eg. exhibition, on-line circulation, performance, print publication)	1	+2 (eg. major solo show as the outcome of a single body of work)	+2[3]	+2
Film festival screening	2		+2 (A-list)	+2
Composition performance	2		+2	+2

2   Peer esteem

Activity	Base	International
Research related award	2	+2
Invited to give keynote address/visit/produce a commissioned work	2	+3
Appointment to professional body	2	+1
Invitation to write Editorial/ Editorial written	1	+1
Published review commending work	1	+1

3   Contribution to the research environment

Activity	Base	International
Membership of research collaboration	2	+1
Formal supervision of colleague's research	1	
Membership of faculty research committee	1	
Director of research centre	2	
Generation of externally funded research	<$50,000 1 $50,000->$99,999 2 >$100,000 3	
Supervision/examination of undergraduate research	1	
Supervision of/examination of student research (Masters/PhD)	2	
Organizing conference/exhibition/ competition	1	+1
External reviewing and/or thesis assessment	1	+1
Editorial board membership	2	+1
Judging competition(s)	0.5	+1

4.   Scholarship and professional practice outputs

Activity	Base	International
Magazine/trade journal article	1	+1
Non-PBRF ranked journal article	1.5	+1
Technical presentation to colleagues	0.5	
Return to industry leave (one week or more) (+ report)	0.5	
Sabbatical Leave (+report)	0.5	
Winning competition (S)(mentored student or self) (+report)	0.5	+1
Judging competition(s) (+report)	0.5	+1
Professional/technical practice work (+ report)	0.5	
Advisory/Standards board membership	1	
Advanced study towards recognised qualification	1 (+1 if it is a research based degree)	

Notes:

The points: The base value of the activity will be supplemented by additional points if it has a research focus, is held at a major venue, is quality assured, or if it is in the international arena.

For example:

- If you present a research paper at a New Zealand conference you will achieve one point, but if it is an international conference you will achieve an additional point. If your paper is published in the conference proceedings you will achieve an additional 1.5 points and if it is refereed you will achieve another 2 points. This will give you a total of 5.5 points.

- If you have an article published in a New Zealand trade magazine you will achieve one point but if it is a magazine that is published outside New Zealand you will achieve an additional point. This will give you a total of two points.

Quality assured: this means that your work has been peer reviewed or refereed. For creative works this would involve a competitive proposal submission, assessed by a curatorial panel.

Reports: these need to be approximately four pages, submitted to your research co-ordinator. Academic and professional practice reports need to be approximately two pages.