



IRANZ Connections.

Funding New Zealand's research capability

Recognition of the need for security of funding for research capability that is important to New Zealand's economic, environmental and social welfare is one of the key aspects of the current science sector changes.

This is being delivered through direct funding to CRIs to deliver their core purpose. It is proposed that core purpose funding should form a significant proportion of the CRIs' total Vote RS&T funding, as this will allow them to operate more strategically.

CRIs certainly provide key science and research capability for New Zealand, but key capability also exists outside the CRIs, in independent and industry research organisations, and universities.

There are a number of areas where the community and industry have provided funds to develop and maintain research capability outside the CRIs.

This capability has driven innovation and met needs in various sectors. This is particularly true of research to support New Zealand's infrastructure and built environment. Coal research is another example: for New Zealand's largest mineral resource, the key research capability lies within CRL Energy.

In aquatic and aquaculture research, Cawthron Institute and universities including Waikato, Auckland and Otago have important national capability alongside several CRIs.

Key research capability elsewhere in the science sector needs to be recognised when the level of direct long term funding for CRIs is negotiated. If this is not done, there is a high risk of marginalising other research organisations, to the detriment of the country.

Gillian Wratt CHAIR, IRANZ

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Cars and greenhouse gases

Light vehicles contribute 93% of the total kilometres travelled by the vehicle fleet in New Zealand, and 81% of the vehicle greenhouse gas emissions. Transport Engineering Research New Zealand (TERNZ) has completed research for the New Zealand Transport Authority to identify opportunities for

reducing the emissions from light vehicles.

Approaches include downsizing the vehicle, changing the fuel or engine to a lower-emissions alternative, or change

the vehicle type to a lower emissions category. However, the latter option is usually associated with a significant change in functional capability. Dr John de Pont explains "in changing from a large car to a small car, the driver sacrifices some performance and space, but retains weather protection, the ability to carry passengers and luggage, and access to all roads. All of these functions are compromised when changing, for example, from a small car to a moped."

www.ternz.co.nz



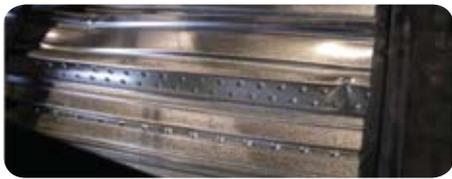
IRANZ welcomes Aqualinc

IRANZ welcomed Aqualinc Research Limited into its membership in June. Aqualinc's core purpose is to equip New Zealand for world-class water management through scientific and policy research, technology development and deployment, and water management advisory services.

Aqualinc's research contribution to sustainable use of water is focused on groundwater (the quantity and quality of water stored and flowing beneath the land-surface), irrigation, and strategic water management. Aqualinc is the leading independent provider of irrigation expertise across the policy-to-practice spectrum of the New Zealand water sector.

www.aqualinc.co.nz





NZ steel floor deck products achieve international standards

The New Zealand Heavy Engineering Research Association (HERA) successfully completed a comprehensive research and development programme with Tata Steel International in June 2010. This work has introduced three new cold-formed steel floor deck products to their range for steel-concrete composite construction. These products exploit the unique properties of New Zealand made light gauge high strength steel, and will be available to both the domestic and international construction markets.

Unlike the earlier development programmes that were conducted in Europe, Tata Steel International awarded the work to HERA due to Dr Stephen Hicks' experience in product development and certification activities. To gain access to overseas markets such as the European Union and the European Free Trade Area, the testing and evaluation of the design properties was conducted according to international harmonized standards.

Dr Hicks used the novel approach of finite element models in the structural reliability analyses of the products, which accurately captured the different buckling modes for these complex cross-sections at maximum load. Dr Hicks explains that "this meant HERA could accurately account for the effect of small manufacturing deviations on the structural performance. This permitted the design properties to be maximised whilst still maintaining the required levels of safety." Dr Hicks says "the benefits of this approach are clearly demonstrated through a 19% saving in steel weight compared to similar products with identical structural capabilities. This provides significant cost savings to the client."

www.hera.org.nz

How research can change an industry

The built environment underpins where most New Zealanders live, work and play. It is also a significant industry, accounting for approximately 5% of New Zealand's GDP.

In late 2009, BRANZ presented four scenarios to the building and construction sector with the aim of understanding and anticipating developments that will influence the built environment between now and 2025. The scenarios were based on scientific interpretation of the drivers of change in the built environment, coupled with key stakeholder views of the future.

This research challenged the industry to consider its own future. In early 2010, senior industry figures from companies that will be directly affected by agreed industry strategies came together. With the mandate to speak for the industry, the Construction Strategy Group is agreeing to a strategy to drive greater engagement of industry leaders with Government in the key issues that will shape the future of the building industry. This includes higher productivity, skills and other issues, all requiring research to a greater or lesser degree. The group will communicate this strategy both to the industry itself and to Government. With such shared vision, it is hoped that support for a 'research platform' focussed on the built environment under the new Government funding structures may be possible. The construction industry has changed, to be able to articulate its direction for itself.

www.branz.co.nz



CRL Energy ownership

Coal Association of New Zealand was pleased to buy back the Genesis Energy 50 per cent shareholding in CRL Energy and it is now the sole owner. The Association sees its ownership of CRL Energy as an important commitment both to the coal industry and to a sustainable energy future for New Zealand. Coal is one of New Zealand's major energy resources with several centuries of reserves. On a per capita basis, our reserves are second only to Australia.



www.crl.co.nz

Uncovering urban traffic safety myths

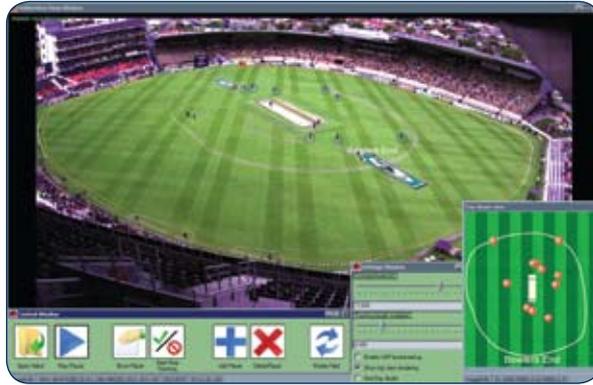
Opus has been undertaking research relating to the 'safe system approach to road safety'. Ian Wells, Opus' Principal Science Advisor says "the research we are doing shows there are quite a few misplaced beliefs. Media often highlights crashes involving older drivers, portraying this age group as an unacceptable risk to other road users when in fact their risk is no different than other age groups. In other safety work, there is a significant under reporting of pedestrian injury rates which means there is decreased consideration of pedestrians in the development of traffic safety policy and measures."

www.opus.co.nz

Smart technology delivers birdseye view for cricket

Keeping up with the play in cricket just got easier with Lincoln Ventures Limited's (LVL) latest innovation, FielderView™.

FielderView™ incorporates image and measurement capabilities in a new analysis tool designed specifically for tracking cricket players across the entire cricket field.



Four years in the making, FielderView's development provides an enhanced player performance analysis tool to satisfy both the demands from higher performing athletes and increased pressure from television audiences who want to see 'more of the game'.

LVL has used its advanced image analysis platform to develop the video-based technology that tracks players live and in real-time. It calculates fielder positions and sends them to a graphics rendering system that delivers a bird's eye view of the cricket field for display on a live television, internet or cellular applications.

Video-based technology that tracks players live and in real-time.

LVL has extensive experience in developing intelligent sensors based on imaging technologies. These sensors can be used to measure, track, count, analyse and assess changes in objects, products and environments to provide valuable decision-making information. The technology is designed to operate with a range of cameras and instrumentation, allowing for specialised application software to be developed rapidly.

www.lvl.co.nz

BRANZ begins House Condition Survey

This year's House Condition Survey will build on previous surveys conducted in 2005, 1999 and 1994. The survey will be expanded to include rental properties in addition to owner-occupied houses in Auckland, Wellington and Christchurch. Previous surveys revealed similar average conditions in the three regions. It noted that many homeowners were overly optimistic when it comes to the state of their homes. The widespread misperception seems to be driven by the less visible nature of many common building defects, and possibly the rapid growth in building values during recent years.

www.branz.co.nz

CRL Energy explores the potential of Coal Seam Gas

With New Zealand's coal reserves and decreasing natural gas supplies, Coal Seam Gas (CSG) has the potential to make a significant contribution to New Zealand's energy supply. It is becoming an increasingly viable supplement to many countries' natural gas supplies. CSG provides 15% of the USA's gas supply and close to 90% in Queensland.

CSG has the advantage of producing less greenhouse gas emissions than any other thermal energy, typically comprising 95% methane and less than 2% carbon dioxide compared with up to 50% carbon dioxide found in natural gas. CSG also could contribute electricity to the national grid

from multiple points around New Zealand, potentially avoiding expensive transmission upgrades.

CSG is produced when coal forms in the ground. This gas accumulates on the surface of the coal, and stays there due to the high underground pressure within the coal seam. CRL Energy's Geology Group Manager Dr James Pope explains "[that] by pumping water out of the coal seam, the pressure is lowered releasing the gas. It can then be channelled to the surface for electricity generation or heating."

CRL Energy's geologists have been involved in CSG progress in New Zealand from the start. In a TechNZ project 8 years ago, CRL Energy with

L&M Energy developed equipment and techniques for the exploration and mining of CSG. Currently CRL Energy is involved in CSG drilling programmes and commercial trials in New Zealand, Vietnam and Indonesia. Dr Pope says that "while it is only early days for CSG development in New Zealand, there is a great opportunity for CSG to contribute to New Zealand's energy complement."



www.crl.co.nz

Water allocation and river health

Cawthron Institute freshwater researchers have recently developed national predictions for the effects of consented water allocations on river flows.

The Department of Conservation-funded project has resulted in a new spatial layer that can be used to predict the pressure that current water allocations place on river flows. Consented water allocations include surface water takes for irrigation, hydroelectricity generation, industrial and domestic water supplies. The effect on river flows depends on the size of the river, annual rainfall and when the water is removed. The spatial predictions take all this into account and predict the proportion of mean annual low flow allocated. This type of information can be used to address important resource management questions, such as 'How much water is left? Is there sufficient water for further allocations, or to sustain river health and river processes?' At a national scale, the information will contribute to identifying which rivers are at greatest risk or have the greatest conservation potential as part of the Department of Conservation's Waterbodies of National Importance initiative.

Project leader, Dr Joanne Clapcott, says "ongoing research at Cawthron will focus on determining the relative importance of water allocation in influencing river health, compared to other catchment development pressures such as vegetation clearance, nutrient loading and urban development. Ultimately, the research goal is to understand the effects of multiple stressors, cumulative effects and determine potential resource thresholds for sustainable river management."

www.cawthron.org.nz

Be prepared to recover quickly

Opus has been studying ways in which social and economic recovery can be improved after a major earthquake.

Given that many businesses in New Zealand are small to medium enterprises, Dr Felicity Powell of Opus says "we developed a theoretical understanding of how these businesses react to natural hazards". The theoretical model predicted that adequate preparation and initial response are critical to reducing the length of the recovery.

On 20 December 2007, an earthquake of magnitude 6.8 on the Richter scale struck Gisborne causing considerable damage to the central business district. For the Opus research team, this earthquake meant that they were able to test the model.

They found many businesses were inadequately prepared for the earthquake. "Many decisions that could have reduced the earthquake's impact and eased recovery were not taken by managers," Dr Powell explains. Examples include having insufficient



building insurance, and postponing building strengthening so premises were not resilient to earthquake damage. Others had not taken insurance cover for loss of earnings which meant that the costs of the building being closed for repairs were substantial.

The study found strong alignment between inadequate preparation and longer recoveries. Dr Powell says "while there is a lot more to do, this research has provided a much stronger basis for planning and recovery efforts in New Zealand."

www.opus.co.nz

Cycling to school

Recent research for the New Zealand Transport Authority undertaken by Transport Engineering Research New Zealand (TERNZ) identifies the barriers for students cycling to school. TERNZ recommended a number of initiatives including the development of school cycle networks. Networks should be supported by cycle training, effective bike storage and the continued implementation of slow zones around schools. Senior Transport Researcher, Dr Hamish Mackie says "Cycling to school could play a key role in combating obesity, climate change and traffic congestion as well as restoring 'social capital' within New Zealand communities."

www.ternz.co.nz

Who we are:

IRANZ is an association of independent research organisations. Its members undertake scientific research, development or technology transfer.

Members include Aqualinc Research Ltd, BRANZ, Cawthron Institute, CRL Energy Ltd, Heavy Engineering Research Association (HERA), Leather & Shoe Research Association (LASRA), Lincoln Ventures Ltd, Opus Central Laboratories and Transport Engineering Research NZ Ltd (TERNZ).

Contact:

Kate Kilkenny Executive Adviser **t:** 04 973 3757 **m:** 021 0277 9317 **e:** information@iranz.org.nz **w:** www.iranz.org.nz

