

Summary of Linkage Projects Proposals for Funding to Commence in 2007

New South Wales

The University of New South Wales

LP0775462 Prof MA Adams; Dr B Singh; Dr CV Barton; Dr AL Cowie

Approved Project Title **Quantifying tree and soil respiration and their responses to global change**

2007 : \$ 50,236

2008 : \$ 50,236

2009 : \$ 50,236

Primary RFCD 2707 ECOLOGY AND EVOLUTION

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

NSW Department of Primary Industry

Australian Greenhouse Office

Administering Organisation The University of New South Wales

Project Summary

The Australian Greenhouse Office, as well as independent analysis, recognizes that belowground processes must be better quantified if Australia's contributions to atmospheric concentrations of greenhouse gases (GG) are to be firmly based. A major issue is the lack of dedicated research focused on soil and plant root emissions of GG and, in particular, a lack of testing of methodologies suited to Australian soils and conditions. This project will address these concerns. We will also be addressing the clear need for further training of PhD qualified researchers in the field of climate change.

LP0775164 Dr TJ Barber; Prof E Leonardi

Approved Project Title **Experimental and numerical study of sprinklers for improved fire safety**

2007 : \$ 25,118

2008 : \$ 25,118

2009 : \$ 25,118

Primary RFCD 3102 BUILDING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Arup Fire, Ove Arup & Partners

New South Wales Fire Brigade

Administering Organisation The University of New South Wales

Project Summary

Fire sprinklers are a common method for extinguishing fires. Current lack of detailed knowledge about sprinklers can lead to conservative design and excessive cost, often limiting the installation of these proven life-saving devices. This project sees the involvement of Arup Pty Ltd and the NSW Fire Brigade in examining the behaviour of sprinklers using a custom-designed test-rig, laser based measurement and a numerical model. This will result in improved confidence in sprinkler specification and installation and the project will have use and significance beyond Australia. Successful implementation promises reductions in the loss of life and property as well as financial savings.

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LP0774950 A/Prof GF Barrett; Prof JR Piggott; Prof AD Woodland; Prof RG Gregory

Approved Project Title **An Integrated Approach to the Timing of Retirement: Life Cycle, Labour Force Heterogeneity, Financial Status and Public Support**

2007 : \$ 170,000

2008 : \$ 174,455

2009 : \$ 191,290

2010 : \$ 105,554

Primary RFCD 3402 APPLIED ECONOMICS

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

Department of Families, Community Services and Indigenous Affairs

Administering Organisation The University of New South Wales

Project Summary

This project will generate new knowledge on household decision making over retirement timing. National benefits will be generated through improved institutional design and policy formulation, which in turn will promote a labour market conducive to increased mature-age participation. The project involves collaboration across several institutions and will contribute to the development of research expertise through the training of PhDs and research assistants, creating a critical threshold of integrated research into ageing. This will facilitate a world-class presence in this important domain, thus contributing directly to the National Research Priority of Ageing Well, Ageing Productively.

LP0775050 A/Prof J Bennett; Ms B Huangfu; Dr D McNeill; Prof X Ruan; Ms FM Fenner

Approved Project Title **Measuring Asian Art's Contribution to Contemporary Culture in Australia**

2007 : \$ 72,025

2008 : \$ 74,403

2009 : \$ 85,938

Primary RFCD 4199 OTHER ARTS

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Casula Powerhouse Arts Centre

Zendai Museum of Modern Art

Asia Australia Arts Centre

Administering Organisation The University of New South Wales

Project Summary

This project substantially develops the research base of two of Australia's leading community-based arts organisations, advancing the theory and practice of multicultural arts programming. In partnership with a major contemporary art gallery in China, it demonstrates how Asian and Australian art can engender community, regional and international dialogue, offering insight into the transformation of local environments. It addresses existing limitations in multicultural arts programming, positing a model of best practice based on dialogue rather than minority representation. It offers unique doctoral level training in Asian and multicultural arts curatorship and significantly advances the discipline base of visual culture in Australia

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LP0775514 A/Prof J Braithwaite; A/Prof RA Iedema; A/Prof JI Westbrook; A/Prof AR Foxwell; Dr RA Boyce; Prof TM Devinney; A/Prof MM Budge

Approved Project Title **An action research project to strengthen inter-professional learning and practice across the ACT health system**

2007 : \$ 206,000

2008 : \$ 226,000

2009 : \$ 249,000

2010 : \$ 263,000

Primary RFCD 3701 SOCIOLOGY

Collaborating/Partner Organisation(s)

ACT Health

Administering Organisation The University of New South Wales

Project Summary

There are 14 beneficial reasons why this project is vital to the fabric of our nation. These include: the economic benefits of a more efficient health-care system; the social benefits of more responsive and resilient workplaces; the research benefits of better knowledge about how professionals can work together effectively; the consumer benefits of improved patient care; health sector benefits in assisting health reforms to be more effective; and education sector benefits in understanding how professionals from different disciplines can learn together more collaboratively. The benefits are transferable to other industries and professional groups, as well as to Australia's international partners.

LP0775594 Prof B Cass; Dr DJ Brennan; Prof IB Katz; Ms CM Thomson; Dr DA Mitchell

Approved Project Title **Young Carers: Social policy impacts of the caring responsibilities of children and young adults**

2007 : \$ 125,000

2008 : \$ 80,000

2009 : \$ 84,000

Primary RFCD 3702 SOCIAL WORK

Collaborating/Partner Organisation(s)

Carers NSW

NSW Department of Ageing, Disability and Home Care

Health Administration Corporation (HAC)

Children Youth and Women's Health Service

Carers Association of SA (Carers SA)

Department of Education and Children's Services

NSW Commission for Children and Young People

Department of Further Education, Employment, Science and Technology South Australia

Department for Families and Communities South Australia

Social Inclusion Unit, Dept of the Premier and Cabinet

Administering Organisation The University of New South Wales

Project Summary

This project is a unique collaboration between university researchers, eight government agencies in NSW and South Australia and two Carers Associations, using innovative methods to inform policy development. The project will focus on the costs to young carers (their education, training, employment, social activities, health and wellbeing); benefits of the care relationship to families and to government through savings on formal services; and the social policy frameworks. It will provide a comprehensive audit of policies and services for young carers and care recipients, and identify gaps for future policy development.

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LP0775532 Prof EW Coiera; A/Prof JI Westbrook; A/Prof WR Wobcke; Dr F Magrabi

Approved Project Title **Agent-based methods for communication system design in complex organisations**

2007 : \$ 140,000

2008 : \$ 160,000

2009 : \$ 127,266

Primary RFCD 2801 INFORMATION SYSTEMS

APA(I) Award(s): 2

APDI Dr F Magrabi

Collaborating/Partner Organisation(s)

Prince of Wales Hospital

Administering Organisation The University of New South Wales

Project Summary

There is a direct opportunity to directly improve the efficiency, effectiveness, and safety of health work as a result of improved communication tools arising from this project. The current evidence that poor communication systems and practices significantly impair clinical work, and are related to avoidable clinical error and patient death, suggest compelling national benefits. Health represents 10% of GDP, and communication technologies have yet to be significantly exploited here. There are substantial commercial opportunities nationally, for successful new communication services that service health care. Internationally the markets may be even larger, as healthcare is a larger proportion of GDP in nations such as the US.

LP0774828 A/Prof AG Dempster; A/Prof CA Scott

Approved Project Title **A Positioning System for Mobile Phones**

2007 : \$ 26,618

2008 : \$ 26,618

2009 : \$ 26,618

Primary RFCD 2910 GEOMATIC ENGINEERING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Seeker Wireless

Administering Organisation The University of New South Wales

Project Summary

This project aims to produce a positioning system that integrates a mobile phone-based technique developed in Australia, known as Seekerzone, with GPS. The combination of Seekerzone and GPS delivers a system capable of reporting whether children or valuables are in a safe location. As security becomes an increasing priority, this system can operate indoors or outdoors, and provides many solutions. Seekerzone has already attracted international interest, and coupled with GPS, its applications and export opportunities will multiply. The target product will provide effective and convenient security, while its development will provide important research training in Australia's drastically under-resourced spatial industry.

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LP0775216 A/Prof JJ Gooding; Dr S Iyengar

Approved Project Title **Solving the problem of detecting small molecules in complex samples: A Label-Free Electrochemical Immuno-biosensor for drugs and pesticides**

2007 : \$ 100,000

2008 : \$ 124,000

2009 : \$ 112,000

Primary RFCD 2504 ANALYTICAL CHEMISTRY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Agamatrix inc.

Administering Organisation The University of New South Wales

Project Summary

Biosensors are portable analytical devices which can be used by the general public without specialist training. The proposed research will develop a biosensor for the detection of small molecules such as pesticides, poisons and drugs; a class of analytes where there is currently no viable biosensor technology. The simple to use device will benefit the Australian community by providing technology which will allow rapid and inexpensive monitoring of water as well as biomedical diagnosis. The research will also benefit Australia via providing the training of scientists to establish the new generation of Australia's bionanotechnology industry.

LP0775181 A/Prof M Kavallaris; Dr TM LaVallee

Approved Project Title **Targeted development of dual action antitumour and antiangiogenic agents using differential and functional proteomics**

2007 : \$ 77,525

2008 : \$ 77,525

2009 : \$ 77,525

Primary RFCD 3205 PHARMACOLOGY AND PHARMACEUTICAL SCIENCES

Collaborating/Partner Organisation(s)

EntreMed Inc.

Administering Organisation The University of New South Wales

Project Summary

There is an enormous need to develop more effective and less toxic therapeutic approaches to reduce the social and economic burden of cancer. The recent identification of small molecules that can act by both destroying cancer cells and the blood vessels that carry nutrients to them has provided a unique opportunity to define the pathways involved in the action of these agents in order to develop more potent drug analogues. Development of these molecules will involve a collaborative and multidisciplinary link with our industry partner and the use of frontier technologies that may lead to improved health and economic outcomes for Australia.

LP0775059 Prof N Khalili; Dr C Song; Mr PL Tamsett; Mr PS Ravindra

Approved Project Title **An integrated approach to modelling granular materials in a pavement system**

2007 : \$ 96,020

2008 : \$ 89,177

2009 : \$ 90,871

Primary RFCD 2908 CIVIL ENGINEERING

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

Roads and Traffic Authority

Administering Organisation The University of New South Wales

Project Summary

The Australian transportation system consists of some 900,000 km of paved roads valued in excess of 300 billion dollars. Hundreds of millions of dollars are spent each year on maintenance. About 90% of these paved roads are constructed with granular base and sub-base materials. This project will develop an accurate constitutive model for granular materials and a numerical method that are essential in predicting the life-long performance of pavements. The project will lead to improved pavement design procedures, which, together with the research training offered through the conduct of the work, will result in cost-effective and highly reliable pavement designs.

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LP0774833 Prof RT Kingsford; Dr SW Laffan; Dr D Ramp; Dr JA Merson; Dr RA Bradstock; Dr R Mulley; Dr TD Auld; Dr RS Chapple

Approved Project Title **Managing Ecosystem Change in the Greater Blue Mountains World Heritage Area**

2007 : \$ 150,000

2008 : \$ 150,000

2009 : \$ 150,000

Primary RFCD 2707 ECOLOGY AND EVOLUTION

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

NSW DEC, National Parks and Wildlife Service

Blue Mountains City Council

NSW Department of Primary Industries

NSW DEC, Policy and Science Division

Hawkesbury Nepean Catchment Management Authority

Administering Organisation The University of New South Wales

Project Summary

Protected areas are the primary mechanism for conserving Australia's unique biodiversity. Of added significance are areas of biodiversity recognised as World Heritage Areas, such as the GBMWA. Climate, pest species and altered fire regimes potentially diminish their ecological values but some of these anthropogenic threats can be managed. Effective management depends on spatially-explicit understanding that allows priorities to be set and management objectives identified and tested. This research will develop a model for determining management priorities for large protected areas, meeting State, National and International obligations. Significant conservation benefits will accrue along with social, economic and human well-being benefits.

LP0775610 Prof E Leonardi; Dr TJ Barber; Dr V Timchenko; Dr R Islam

Approved Project Title **The use of numerical and experimental techniques to develop energy efficient open refrigerated display cabinets**

2007 : \$ 25,118

2008 : \$ 25,118

2009 : \$ 25,118

Primary RFCD 2905 MECHANICAL AND INDUSTRIAL ENGINEERING

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Austral Refrigeration Pty Ltd

Administering Organisation The University of New South Wales

Project Summary

This project will provide knowledge for Australian industry to develop new energy efficient refrigerated display cabinets, putting Australia in the forefront of commercial refrigeration display cabinet technologies. This will have a significant impact on sustainability of our environment and will assist Australia to meet present and future international climate obligations by contributing to the reduction of greenhouse emissions. The Government has already introduced new MEPS levels, and are planning to increase these to more stringent levels in 2007. The development of the techniques proposed in this application will be essential for manufacturers if they are to economically meet these MEPS level requirements.

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LP0774951 Dr Y Li; Prof MD Willcox; Dr PJ Cozzi; Prof P Russell; Dr BJ Walsh; Dr Z Zhao
Approved Project Title Identification of novel biomarkers in tears for prostate cancer diagnosis and prognosis

2007 : \$ 25,118

2008 : \$ 25,118

2009 : \$ 25,118

Primary RFCD 2701 BIOCHEMISTRY AND CELL BIOLOGY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Minimic Pty Ltd

Institute for Eye Research

Administering Organisation The University of New South Wales

Project Summary

The purpose of this study is to identify novel biomarkers in the tears of patients with CaP. The use of the several techniques will increase the chance of success and enable us to find more diagnostic markers. If successful, the identified proteins may be used to diagnose and determine the stage of cancer. This will help guide clinicians in choosing the best treatment methods for an individual patient. The markers may also be used to monitor the disease progress and the effects of treatment. The results from this study may improve the prognosis of CaP patients.

LP0775006 Prof PR Munroe; A/Prof AG Crosky; Dr SD Joseph

Approved Project Title Chicken Litter Char for Soil Health and Carbon Sequestration

2007 : \$ 35,000

2008 : \$ 35,000

2009 : \$ 35,000

Primary RFCD 3001 SOIL AND WATER SCIENCES

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Biomass Energy Services and Technology Pty. Limited

Administering Organisation The University of New South Wales

Project Summary

The project has considerable national benefit from a range of perspectives. The recycling of waste residues from farming to the rejuvenation the carbon in soil, through the application of chars, will promote sustainable land use and increase agricultural productivity. Further, an improved understanding of the mechanisms by which chars sequester carbon and nitrogen compounds will assist in the adaptation of Australian agriculture to the impact of climate change. Pyrolysis technology, in char generation, has the potential for primary producers to turn waste products into something of value, which may provide their businesses with an additional income stream.

LP0775466 Prof V Sahajwalla

Approved Project Title Recycling waste plastics in electric arc furnace steelmaking: Fundamental understanding of plastics/slag interactions and slag foaming

2007 : \$ 150,118

2008 : \$ 140,118

2009 : \$ 170,118

2010 : \$ 100,000

Primary RFCD 2913 METALLURGY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Onesteel

Administering Organisation The University of New South Wales

Project Summary

This project will deliver the fundamental science that will enable companies to produce steel using waste plastics. Novel waste recycling process will improve the efficiency of EAF steelmaking, lowering costs and energy consumption, thereby enhancing the international competitiveness of Australian steelmaking industry. At the same time, our advances will allow EAFs to consume substantial amounts of plastic waste, including plastics that are currently unsuitable for recycling. The technology will lower greenhouse gas emissions and will reduce the reliance of EAFs on metallurgical coke. This will have a significant impact on the environment.

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LP0775000 A/Prof IM Suthers; Prof NR Loneragan; Mr MD Taylor; Dr C Gray

Approved Project Title **Stocking of fish and prawns at ecologically determined densities into Australian estuaries**

2007 : \$ 132,148

2008 : \$ 132,148

2009 : \$ 132,148

Primary RFCD 2707 ECOLOGY AND EVOLUTION

APA(I) Award(s): 1

APDI Mr MD Taylor

Collaborating/Partner Organisation(s)

NSW Department of Primary Industries - Fisheries

Administering Organisation The University of New South Wales

Project Summary

Increasing numbers of people like to go fishing, and to catch a fish, which translates into tourism income and aquaculture business. Restocking is a fisheries management option when the natural supply or survival of larvae is limited. This study will determine for the first time the ecologically appropriate abundance of small mulloway and prawns that an estuary can sustain. We will assess the extra effort needed to release larvae into particular key habitats, and develop new technologies to identify our larvae from the wild. Our findings will be relevant to restocking of Australia's inland rivers, which at present has little ecological basis.

LP0774938 A/Prof HA Swarbrick

Approved Project Title **The future of corneal refractive reshaping: can we control myopia or is the risk of corneal compromise too great?**

2007 : \$ 97,908

2008 : \$ 129,309

2009 : \$ 134,190

Primary RFCD 3209 OPTOMETRY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

Boston Products Group of Bausch & Lomb

BE Enterprises Pty Ltd

Capricornia Contact Lens Pty Ltd

Administering Organisation The University of New South Wales

Project Summary

Refinement of corneal reshaping lens designs, optimised for visual outcomes through manipulation of aberrations, will significantly benefit local contact lens manufacturing and export by expanding the existing market base. This research will also strategically position Australian lens manufacturing to capitalise on the market for myopia-control contact lenses, particularly in the Asian region. Significant intellectual property will be generated for Australia in terms of enhanced understanding of the role of manipulation of corneal shape in modulating progressive myopia. Outcomes from this project will enhance the international reputation of the UNSW research group, keeping Australian science at the forefront of this area of research.

Summary of Linkage Projects Proposals for Funding to Commence in 2007

LP0775195 Dr KD Walsh; Dr EL Welch; Prof T Smith
Approved Project Title **The Role of Corporate Governance Mechanisms in Maximising the Performance of Listed Australian Corporations**
2007 : \$ 60,000
2008 : \$ 59,996
2009 : \$ 52,057
Primary RFCD 3503 BANKING, FINANCE AND INVESTMENT

Collaborating/Partner Organisation(s)

Barclays Global Investors

Administering Organisation The University of New South Wales

Project Summary

The recent spate of corporate collapses and scandals highlights the need for an ongoing commitment to the development, implementation and maintenance of strong systems of governance within Australian corporations. This commitment necessitates an understanding of which suite of governance mechanisms are most effective in positively impacting upon corporate performance rather than just the performance impact of a particular mechanism in isolation. To date, research facilitating such an understanding is all but non-existent. However, our study will yield this much-needed evidence and, therefore, provide the foundations for ongoing corporate governance reform on the part of regulators and practitioners alike.

LP0774843 A/Prof AM Williamson; Dr RW Brander; Dr J Hatfield; Dr S Sherker; Dr A Hayen
Approved Project Title **Science of the Surf (SOS): The Development and Evaluation of a National Campaign to Reduce the Risk of Coastal Drowning**
2007 : \$ 71,799
2008 : \$ 66,474
2009 : \$ 65,320
Primary RFCD 3212 PUBLIC HEALTH AND HEALTH SERVICES

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

NSW Health

Surf Life Saving Australia

NSW Department of Tourism, Sport and Recreation

Administering Organisation The University of New South Wales

Project Summary

Australian beaches attract approximately 80 million domestic and international tourists a year and are an integral part of the Australian lifestyle. Each year, 58 people die and 563 people are hospitalised as a result of coastal drowning in Australia; many more are rescued by surf lifesavers. Many incidents occur when swimmers are caught in rip currents. Raising awareness about common surf hazards, such as rip currents, aims to minimise the risk of drowning. This research will promote and maintain good health and well being for Australians by delivering an effective drowning prevention intervention. In doing so, reducing drowning risk would save up to \$187 million each year in health care costs.

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LP0775415 Dr RY Yang; Mr CT Jayasundara; Mr DC Curry

Approved Project Title **Fundamental investigation of particle-fluid flow in the IsaMill grinding process**

2007 : \$ 77,030

2008 : \$ 77,030

2009 : \$ 77,030

Primary RFCD 2907 RESOURCES ENGINEERING

APDI Mr CT Jayasundara

Collaborating/Partner Organisation(s)

Xstrata Technology

Administering Organisation The University of New South Wales

Project Summary

The Australian mining and minerals processing industries generated exports of about \$56 billion in 2004/5, representing approximately 44 per cent of Australia's total exports. Grinding is a basic operation that liberates valuable minerals from the host rock. However, conventional grinding technologies are very inefficient. The newly developed IsaMill technique greatly improves the power efficiency of the grinding process. This project aims to understand the flow of particles and fluids within IsaMill through combined experimental and numerical studies, leading to improved grinding performance and lower energy consumption. Such work will provide a significant economic benefit not only to Xstrata but also to the Australian mineral processing industry.

LP0775033 Prof DJ Young; Dr SL Chan; Dr RY Chen; Dr DW Yuen

Approved Project Title **Understanding and minimising oxidation during hot rolling and metal coating of steel strip**

2007 : \$ 70,000

2008 : \$ 50,000

2009 : \$ 30,000

Primary RFCD 2913 METALLURGY

APA(I) Award(s): 1

Collaborating/Partner Organisation(s)

BlueScope Steel Limited - Western Port Works

Administering Organisation The University of New South Wales

Project Summary

Steel production is one of the few manufacturing industries in which Australia is internationally competitive. Annual steel exports generate about two billion dollars in national income. Substantial value is added to raw steel by hot rolling it into sheet and coating with zincalume and paint. The market for these products is intensely competitive, and continued success is critically dependent on productivity and quality. This project will assist BlueScope Steel in understanding and controlling millscale development on hot rolled products, and avoiding scale defects in zincalume coating.

LP0775286 Prof AB Yu; Dr A Vince

Approved Project Title **Particle scale modelling of dense medium cyclones in coal preparation**

2007 : \$ 150,000

2008 : \$ 150,000

2009 : \$ 155,000

Primary RFCD 2907 RESOURCES ENGINEERING

APA(I) Award(s): 2

Collaborating/Partner Organisation(s)

Australian Coal Research Ltd

Administering Organisation The University of New South Wales

Project Summary

Australia is the world's biggest coal exporter, and black coal is Australia's largest export, worth around \$A13.5 billion annually. Dense medium cyclones process the vast majority of tonnes fed to Australian coal preparation plants, and hence play a critical economic role in coal production. This project aims at providing substantial design and operational improvements through the application of a novel combined continuum and discrete modelling method. Specifically, the improvements targeted relate to better process and product control, a decrease in unit energy consumption and improvements in productivity, which, together with the research training offered, will further enhance Australia's leading position in global coal industry.

