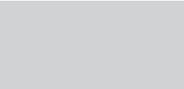




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UNIVERSITY • AUSTRALIA

Centre for eResearch and Digital Innovation
Annual Report 2014



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Foreword

Professor David Battersby, Vice-Chancellor



2014 was a most significant year with the commencement of operation of Federation University Australia created by bringing together the University of Ballarat and the Monash University Gippsland Campus.

During 2014 I also had the pleasure of officially launching the Centre for eResearch and Digital Innovation (CeRDI). CeRDI has its origins as the Centre for eCommerce and Communications. First established in 1998, CeRDI has developed into one of the University's most successful research centres.

The Centre strongly reflects the values of our University. It pursues excellence in all its research and consultancy activities, epitomising the University's aspirations in engagement, productivity and effectiveness in forming partnerships and engaging with the community and region. CeRDI has established long-term collaborative partnerships of mutual benefit with more than 100 organisations in government, industry and academia at the local, national and international levels.

Digital technologies are leading to disruptive innovations and profound changes in society, industry, government and academia. Rather than viewing these as threats, we must embrace the advantages and opportunities they bring.

CeRDI's Director, Dr Helen Thompson has long been an advocate of the benefits that digital technologies provide. This was recognised in 2011 with Helen's selection as one of twenty national broadband champions. CeRDI has also championed Digibiz, which provides training, mentoring and advice to local organisations to maximise the benefits of broadband technologies.

The innovations CeRDI has developed in collaboration with its partners are having significant beneficial impact for these organisations and their industries. For example in the agricultural sector, the online information systems developed by CeRDI are providing agronomists and growers with increased access to research information which will assist to improve crop productivity.

CeRDI's work is also changing practices in the groundwater industry through the provision of multiple datasets from disparate sources within the Visualising Victoria's Groundwater portal through the facility of interoperability.

The Centre fosters eResearch across FedUni. Productive and successful collaborations have been formed with the Faculty of Health (Sport and Recreation Spatial) and with the Horsham campus (Grampians Natural Disaster Research).

The University is proud of CeRDI, its staff and their achievements in research, engagement, knowledge and technology transfer. This Annual Report outlines recent achievements which contribute to the University's overall efforts in capacity and capability building across the region, and nationally.

I look forward to the next chapter of CeRDI's development, its future successes and achievements.

Introduction

Professor Frank Stagnitti,
Deputy Vice-Chancellor,
Research and Innovation



Industry-engaged research is becoming a widely regarded approach for turning Australia's strong track record of generating world-class ideas into practical outcomes that enhance our standard of living, benefit our economy and our communities.

CeRDI has developed highly sophisticated and successful long-term industry-focused research programs achieved using a unique skill set that includes deep engagement with stakeholders, the application of innovative digital technologies, and collaborations with government organisations at all levels. This has been realised under the leadership of Dr Helen Thompson together with the skilled and multidisciplinary CeRDI team.

Since 2012, CeRDI has led eResearch for Federation University Australia building nationally and internationally recognised expertise in data interoperability, knowledge management and spatial research. The Centre's research aligns closely with areas across FedUni, the Regional Universities Network (RUN) and with national science and research priorities, particularly Food, and Soil and Water.

This Annual Report demonstrates the Centre's strong contribution to University-wide research, particularly in the Fields of Research of Physical Geography and Environmental Geosciences, Information Systems and Human Movement and Sports Science. It also highlights the Centre's recent contributions to agricultural knowledge via CeRDI's long-standing collaboration with the Grains Research and Development Corporation (Online Farm Trials, CropPro), its internationally acclaimed contributions to groundwater research (Visualising Victoria's Groundwater), its development and application of spatial information systems (Sport and Recreation Spatial) and the extension of innovations in natural resource management (Corangamite Soil Health Knowledge Base and NRM Planning).

CeRDI is one of the University's most successful and innovative research centres and I am delighted to provide this introduction to CeRDI's Annual Report, the contents of which showcase the Centre's capabilities, breadth of engagement and contributions to industries and communities at the regional and national level.

Introduction

Dr Helen Thompson,
Director, CeRDI



I am pleased to present the 2014 Annual Report for the Centre for eResearch and Digital Innovation and to profile the research outcomes and successes achieved throughout the year.

Significant research innovation and growth was achieved in 2014. Our name change to the Centre for eResearch and Digital Innovation better reflects research strengths and future directions in areas including eResearch, knowledge management, digital innovation and technology transfer.

CeRDI continues to undertake applied research and major consultancies using information and communications technologies (ICT) to develop innovative, world class knowledge management systems and fosters the application of eResearch within industry, government and academia. Fostering partnerships and collaborations with external organisations remains a high priority.

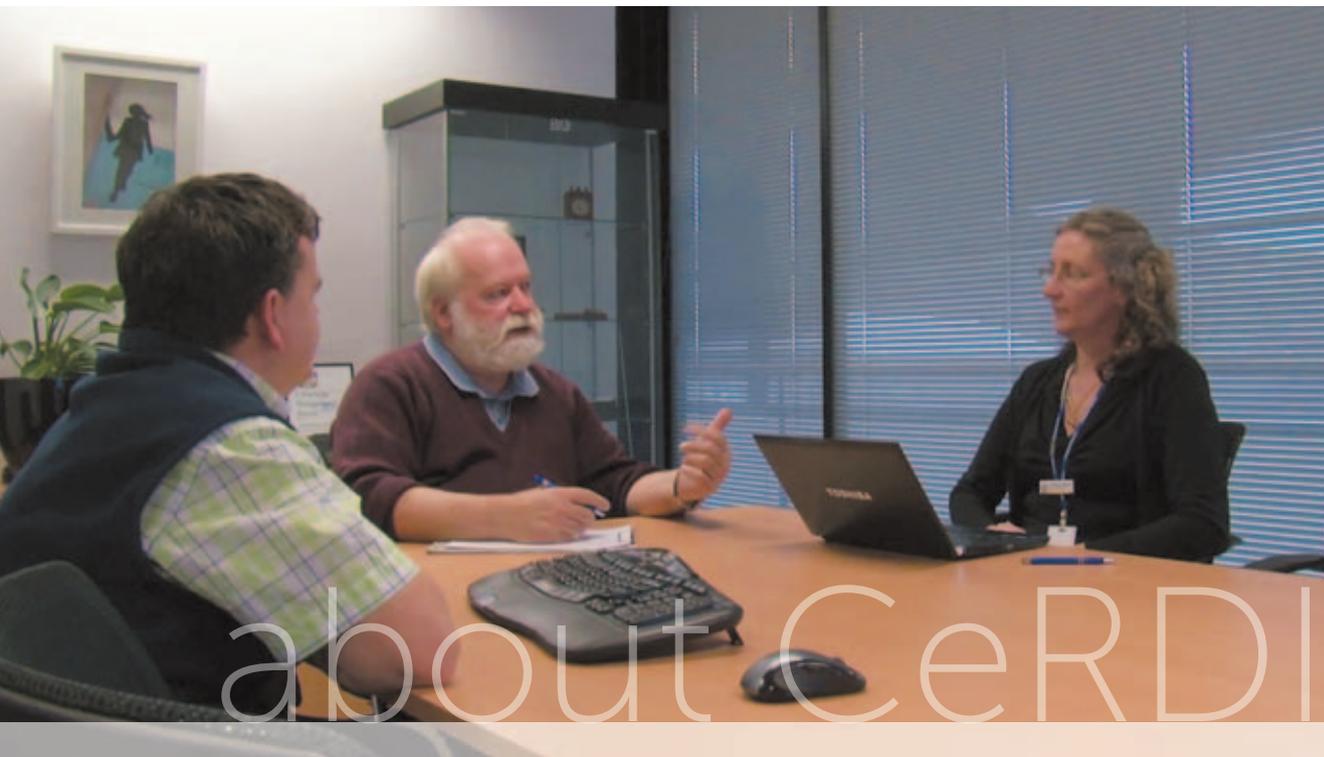
Major projects, including Visualising Victoria's Groundwater and Online Farm Trials, continue to advance the Centre's reputation for excellence in spatial technologies at the local, national and international levels. Recent achievements and the multi-disciplinary nature of CeRDI and its staff are profiled through the case studies presented in the 2014 Annual Report.

The co-creation approach that underpins CeRDI's long-term research program continues to gain momentum through partnerships and engagement. This approach has led to research ideas which attract seed funds and early stage commitment. Showcasing initial research outcomes subsequently attracts broader attention and is leading to more significant future funding across prioritised research areas. This approach has supported continued growth for the Centre in 2014.

Substantial growth in research-trained Centre staff has complemented the established team of highly skilled and committed technical staff. This ensures the Centre can successfully engage and support research across a range of discipline areas including, but not limited to, business, environmental science, geology, geographic information science, history, information technology, law, psychology and sociology.

As CeRDI consolidates its achievements, I look forward to the new opportunities that lie ahead for the Centre and establishing new partnerships and research that will make a difference to our partners and the community.

About CeRDI



Overview

The Centre for eResearch and Digital Innovation (CeRDI; previously known as the Centre for eCommerce and Communications, CeCC) at Federation University Australia (FedUni) was first established in 1998 to facilitate information and communication technology through the development of regional partnerships and initiatives

In 2012, CeRDI was located within the Office of the Deputy Vice Chancellor (Research & Innovation) under the continued directorship of Dr Helen Thompson. Since that time the Centre has broadened its focus and multidisciplinary research achievements with a growing reputation for:

- the application of information and communications technology (ICT) and the development of innovative, world class knowledge management systems;
- significantly advancing the digital literacy and knowledge management capabilities of partner organisations;
- fostering partnerships for the development and implementation of eResearch with industry, government and academia; and
- measuring the impact of eResearch and digital innovation through longitudinal research.

CeRDI is outcomes-focused: committed to building capacity and engagement with partner organisations and to ensuring the uptake of technologies benefits and support research partners, their staff and stakeholders – including the broader community.

CeRDI delivers world-class innovations in technology by anticipating new technology directions and opportunities based on insights from research and partner engagement. These innovations generate beneficial partner outcomes and attract sustained research investment.

In 2014 the most significant advances have been linked to expanding CeRDI's engagement in spatial mapping, knowledge management and data interoperability. Significant efforts have been directed towards building upon the technologies and approaches developed through Visualising Victoria's Groundwater (VVG) with innovation funding from the Victorian Government. New research collaborations have spanned natural resource management, emergency preparedness and recovery, health and wellbeing and history.

CeRDI's research approach is characterised by the following attributes.

- **Partner engagement** – listening skills and the ability to translate information from partners into projects with outcomes that stakeholder's value. CeRDI has a reputation for consistency, reliability, timeliness, credibility, and excellence.
- **Fostering long-term partnerships** – sustaining them beyond the period of initial grant funding (many partnerships continue for more than 10 years) and undertaking practical and applied research that deliver on outcomes.
- **A multidisciplinary team comprised of researchers with specific discipline expertise, technical and support staff** – an essential driver for innovation, knowledge and technology transfer.
- **A diverse portfolio** – stretching across a range of disciplines, with a multiplicity of organisations contributing to overall financial sustainability.
- **Prioritising a high level of co-creation** – through close linkages and engagement with staff from partner organisations: researchers, government, industry and community; this catalyses knowledge mobilisation and ensures beneficial outcomes for partner organisations.
- **Continuous innovation** – in knowledge management, publishing, spatial mapping and participatory geographical information systems.
- **A leader in eResearch and spatial innovation** – adding value to areas of FedUni research strength, aligned with the national eResearch framework and the National Strategic Research Priorities.

The 2014 Annual Report presented herein includes a selection of research case studies demonstrating the scope and breadth of engagement across various industries, from agriculture, natural resources, health and wellbeing, sport and recreation, business and emergency planning.



CeRDI delivers world-class innovations in technology

CeRDI Team



A key priority since 2012 has been to grow the research capacity of the Centre while maintaining skilled technical staff to support continued innovation and to meet the Centre's future research and technology goals and priorities.

At the end of 2014 the CeRDI team of 28 (full-time; part-time; casual) comprised skilled and qualified staff across research (11), technical (8), corporate web (6) and project management and administration (3). Profiles for CeRDI staff are included in this report. Recent staffing appointments ensure there is greater support for senior research and technical members, enabling them to focus and advance their expertise and skills in new developments and build the Centre's research profile. CeRDI's increasingly multidisciplinary research capabilities distinguish it from traditional research centres and better ensure the research undertaken has impact across a broad discipline base.

Research advancement and outputs are summarised in this publication. For the technical team, 2014 included an expanded focus on new spatial technologies across key projects. This required extensive technology platform developments.

Since 2012, CeRDI has provided leadership for the corporate web team. During 2014 completion of the online transition from the University of Ballarat to Federation University Australia was the major focus and area of success.

Project management and research administration staff have contributed to major projects such as DigiBiz, Online Farm Trials (OFT) and other new and ongoing activities in the Centre.

eResearch

CeRDI defines eResearch as a set of activities that harness the power of advanced information and communication technologies (ICTs) for research. Characterised by collaboration and facilitated by fast, high capacity networks, the range of eResearch activities is diverse and multi-disciplinary. Key themes and drivers of eResearch include:

- **data management and sharing;**
- **research collaboration;**
- **high performance computing;** and
- **customised discipline specific technologies to support research practices.**

eResearch methodologies and capabilities have applications across all research disciplines. As an enabler of innovations and new discoveries, eResearch has the potential to boost research effectiveness through increased interaction between researchers, increased access to data and enhanced access to research outputs.

CeRDI's specific expertise in eResearch is characterised by its innovations in knowledge management, spatial mapping, data interoperability and participatory geographic information systems. These have underpinned CeRDI's growth since 2012. For example, for the VVG project CeRDI developed spatial data infrastructure that interoperably federates groundwater data from disparate database sources into a single web portal.

The eResearch methodologies developed by CeRDI are being applied across many discipline areas, for example, in natural resource management (Soil Health and NRM Planning), emergency preparedness and recovery, health and wellbeing (Sport and Recreation Spatial), history and indigenous knowledge sharing.

CeRDI's expertise in eResearch is coupled with a model of research that is characterised by the conceptualisation of discipline-specific investigations within the broader societal context, a dual function of all CeRDI research. The approach adopted by CeRDI researchers includes a social perspective to the impact of eResearch. This allows for insights relating to practice change, decision making, research potential and capacity building that have not previously been adopted consistently within the context of eResearch.



This approach places CeRDI in a unique position within the Australian eResearch environment.

VVG Visualising Victoria's Groundwater

Using new technologies to spatially depict Victoria's groundwater systems

Groundwater is a precious resource that is often misunderstood and has been the subject of myth. Until recently Victorian groundwater data was inaccessible to the community. A CeRDI-led initiative, Visualising Victoria's Groundwater (VVG), has enabled access to groundwater data for the general public.

VVG provides a central site for accessing Victoria's ground water information. VVG consolidates data from over 400,000 bores from four authoritative sources together with Victorian aquifer information with features that include 2D and 3D visualisations, hydrogeological models and historical records and maps.

VVG is the first of its kind in Australia to offer real-time visualisation of a resource normally invisible to the public. Until the project's commencement, information about Victoria's groundwater data was difficult to locate and was stored in various databases with only a fraction of the information available online.

Data are maintained across the different databases by various authorities and organisations. CeRDI has employed its expertise in interoperable technologies and high speed broadband to capture, aggregate and spatially depict Victoria's groundwater systems into one comprehensive and publically accessible web portal. This ease of access and exploration of Victoria's groundwater data means that VVG can now be readily adopted by water users, resource managers, landowners and conservation groups to inform their decisions about managing consumptive water use and environmental water flows.

This unique project has drawn significant interest from local, state, national and international organisations with 15 research institutions government bodies and businesses collaborating on the project (see Project Partners box, right). These partnerships have enabled the project to be supported and to achieve outcomes well beyond the project's original scope.

VVG has received wide acclaim from the technology and science industries culminating in several awards including recipient 2013 Victorian iAwards (Regional category), merit recipient 2013 National iAwards (Regional category), finalist in the 2013 Asia Pacific ICT Alliance (APICTAs; Sustainability and Environmental Technology category), and finalist in the 2013 Australian and New Zealand Internet Awards (ANZIAs; Innovation category).

The success of the VVG project has also led to collaboration with Open Geospatial Consortium on the development and trialling of international standards in the ground water mark-up language GWML2.

Research is now underway to explore long-term impacts of the web portal, including the extent to which it has supported decision making by governments, industry, researchers and the community.

Total investment in VVG has been \$2.23M cash and in kind since 2012 including funding support from the Victorian Government Broadband Enabled Innovation Program.

“The Visualising Victoria’s Groundwater (VVG) portal is setting new standards in user access and functionality. Justifiably, it has won numerous industry best-practice awards. Its rapidly growing use is a result of its ability to federate a diverse range of data, its ease of accessibility and the quality of the data. The frequency of use and repeat visitation rates testify to its value and it is a tribute to the CeRDI team’s efforts.”

MR BRUCE SIMONS, CSIRO.



Project Partners:

- Federation University Australia
- Victorian Government’s Department of Environment and Primary Industries*
- Australian National University (Integrated Catchment Assessment and Management Centre)
- Southern Rural Water
- Victorian Department of State Development, Business and Innovation
- Victorian eResearch Strategic Initiative
- CSIRO
- Goulburn Murray Water
- Thiess Services Pty Ltd
- Queensland University of Technology
- Natural Resources Canada
- Geological Survey of Victoria
- Senversa Pty Ltd
- Cooperative Research Centre for Spatial Information (CRCSI)



Further information about VVG visit www.vvg.org.au

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*Now the Victorian Department of Economic Development, Jobs, Transport and Resources

Knowledge, technology and smarter farming

Supported by the Grains Research & Development Corporation (GRDC), the Online Farm Trials (OFT) project uses the latest technology to improve access to on-farm trial research in the Australian grains industry. The project is being led by a team of senior scientists, researchers and programmers at CeRDI with advice from specialist agricultural experts.

The project has a strong collaborative approach through its engagement with grower groups, research organisations, agricultural experts and grain industry organisations. This ensures the project outcomes are highly relevant, practical and beneficial.

The principle objective of OFT is to help improve the productivity and sustainability of farming enterprises by improving access to trial research information. The OFT project achieves this through two online research applications: the Trial Explorer and the Report Library. The CeRDI team is using innovative, online technologies to enable access to this research. Industry consultants including agronomy experts Cam Nicholson (Nicon Rural Services) and Rob Norton (International Plant Nutrition Institute) are also providing specialist advice and expertise in relation to agronomists and grower information needs. This has been further informed by extensive stakeholder consultation with industry and grower groups across Western Australia, Queensland, New South Wales and Victoria and the subsequent piloting of the online prototype.

Key features of this project include:

- online analytical tools for growers, agronomists and researchers;
- an online digital library of national farm trial research reports and supporting documents;
- direct online access to trial research data in digital form with download capacity;
- links to other sources of relevant trial research information; and
- increased networking and collaboration on cropping issues and farm trial research.

The Online Farm Trials project marks a new era for the grains industry by unlocking data from the on-farm trials research that has previously been largely hidden, accessible only via hard copy or basic electronic documents. With data now available online, there are new ways to access findings and discover information from cropping trials conducted across Australia in all three GRDC regions. This presents opportunities for grain growers, agronomists, farming groups and researchers to improve industry practice in areas such as grains variety, climate, soil, agronomy and growing techniques.

The thorough testing of OFT tools and continued engagement with specialist agricultural experts will ensure that OFT meets the needs of end users, especially as additional data is brought together through collaboration with grower groups and other research organisations.

Initial GRDC investment for this project during 2013 and 2014 is \$500,000. Based on the success of pilot activities, funding has been extended for an additional \$500,000, to June 2015.

“Exemplar activities such as Visualising Victoria’s Groundwater and the GRDC funded Online Farm Trials data base are unquestionably of international standing.”

PROF DAVID LAMB, PRECISION AGRICULTURE RESEARCH GROUP,
UNIVERSITY OF NEW ENGLAND.

Project Partners:

- Grains Research & Development Corporation
- Northern Growers Alliance
- Liebe Group
- Southern Farming Systems
- Birchip Cropping Group
- International Plant Nutrition Institute
- Kondinin Group
- Nicon Rural Services



For more information about Online Farm Trials see www.farmtrials.com.au

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CropPro

Revolutionising crop diagnostics for agronomists

A new agricultural, web-based diagnostic tool – CropPro – has been developed to provide evidence-based information, diagnostic and economic tools to enhance Victoria's wheat and canola crop productivity and profitability. CropPro can assist industry stakeholders to identify and manage cropping constraints for wheat and canola crops.

Primarily aimed at the crop advisory sector, CropPro assists in diagnosing crop problems, supports risk analysis, and provides evidence-based information to manage crop constraints. Features of this online tool include wheat and canola diagnostic tools, economic calculators for managing most constraints, explanatory videos and content, and search functions offering a customised portal for accessing recent, evidence-based information from trusted sources. The Crop Disease Manual has also been included in the online platform using single source publishing containing deep links and searchable content. This is a popular resource for users of the site.

CeRDI has been instrumental in developing the online platform for CropPro, including the knowledge base and the integration of economic calculators, modules and decision support tools. Industry collaboration to inform the development of the CropPro was essential, with project Leader Dr Chris Pittock from the Victorian Department of Environment & Primary Industries* providing ongoing support to the project.

The goal for CeRDI has been to equip the crop advisory sector with cutting-edge technology that enables rapid diagnosis of crop issues and relevant responses. To ensure CropPro provided value to end-users, crop advisors were engaged throughout its development to give industry insight and feedback. The project was launched in late 2014 and project partners are confident that CropPro will provide farmers, grower groups, and agronomists with access to current information allowing them to make decisions about crop constraints based on agronomic observations, thus enhancing and protecting the crops of the Southern Region of Australia.

For early career agronomists CropPro will provide a fast-track to locating useful and trusted tools and information. Universities and TAFEs have also indicated that CropPro will become part of their teaching and learning approach. This will feed the grains advisory sector with new graduates familiar with this ready resource – an embedded ability to check their approach and learn on-the-job.

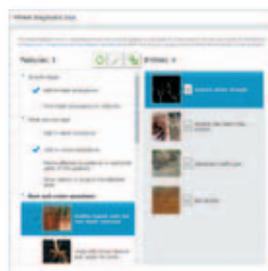
Total investment in CropPro to date with FedUni has been: \$290,000 with \$130,000 from the Victorian Government plus \$160,000 from GRDC to support Diagnostic Agronomy initiatives in the Northern and Southern regions for the period to May 2016.

This investment leveraged the knowledge products and tools generated by the significant GRDC and Victorian Government investment in Diagnostic Agronomy.

*Now the Victorian Department of Economic Development, Jobs, Transport and Resources

“CropPro delivers diagnostic and economic tools for efficient identification and management of constraints to crop productivity.”

DR CHRIS PITTOCK, VICTORIAN DEPARTMENT OF ENVIRONMENT & PRIMARY INDUSTRIES*; GRDC MEDIA RELEASE (AUGUST 2014)



Project Partners:

Victorian Department of Environment & Primary Industries*

Grains Research & Development Corporation



For more information about CropPro visit www.croppro.com.au

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SOIL

Soil Health and NRM Planning

Promoting regional information sharing

The implementation of effective knowledge management strategies is critical for organisations where knowledge and information generation is at their core.

This was the impetus behind the Soil Health Knowledge Base and Natural Resource Management (NRM) Planning Portal developed by CeRDI in collaboration with Corangamite Catchment Management Authority (CCMA).

The aim of the Corangamite Soil Health Knowledge Base was to develop a comprehensive, informative, intuitive-to-use knowledge base of soil health information that would assist the broader community to better understand the values of the soils of the Corangamite region. Detailed soil data and information had been collected in the Corangamite region for nearly 80 years: Past data provide valuable baseline data to analyse the veracity and transferability of soil health information.

Through this project, spatial information systems were adopted to enable users to focus on their geographic region and provide relevant and informative answers to their questions via an intuitive-to-use web-portal.

The technologies adopted in this project have enabled spatial data, information and knowledge to be compiled into a single point-of-access, online planning tool that:

- filters data to particular geographic areas or topics;
- allows the user to add resources, data, observations and knowledge in any form (e.g. images, text, videos);
- allows data download (subject to the data custodian's consent) and printing; and
- spatially locates and draws plans for on-ground works and then develops proposals guided by templates.

The aim of the Corangamite NRM Planning Portal has been to promote the sharing of regional and local knowledge/information relevant to natural resource management to inform the priorities of key stakeholder groups within the Corangamite region.

The pilot stage of the project provided spatial information on natural assets, as well as priorities from both a regional and local perspective, for two landscape zones. It also provided standardised templates to help guide groups and individuals to develop on-ground action plans and allowed users to add quality controlled data for the benefit of all users. The information has been arranged so that it can be filtered to particular geographic areas or themes, and is designed to assist the development of on-ground priorities that promote integrated catchment management.

The Woody Yaloak Landcare Group participated in the pilot and, under the guidance of CeRDI technical staff, digitised and uploaded their on-ground works and areas for future activity as geographic information system (GIS) layers. This process successfully identified where the Landcare group and the CCMA strategic priorities overlapped, thus better targeting complementary priority areas for future NRM activity.



The NRM Planning Portal has established a new approach for collaborative planning by providing a considerable knowledge base of spatial data, information and community NRM findings.

The project is currently being expanded and will include additional Landcare groups in the Corangamite region. This will assist regional and local organisational planning, priority setting and decision making in areas such as NRM investment.

Total investment in these two projects to date has been \$160,000.



“The Corangamite Soil Health Knowledge Base has established a comprehensive, informative, intuitive-to-use knowledge base of soil health information that is assisting the broader community to implement the South West Agricultural Soils Plan across the Corangamite region. The Soil Health Knowledge Base is receiving great interest from NRM, government and community organisations alike.”

MR GARETH SMITH, CEO
CORANGAMITE CATCHMENT
MANAGEMENT AUTHORITY

Project Partners:

Corangamite Catchment Management Authority (CCMA)

CCMA Land Health Program Steering Committee

Woody Yaloak Landcare Group

Surf Coast and Inland Plains Network

Further information about Soil Health and the NRM Planning Portal see the following sites:

www.ccmaknowledgebase.vic.gov.au/soilhealth
www.ccmaknowledgebase.vic.gov.au/nrmpp/

Key Contact

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ADAPTION

Resilience in Farming Agribusiness

Identifying consistent barriers to climate change adaption in the agriculture industry.

Researchers Dr Peter Dahlhaus, Dr Helen Thompson, Kirsten McKenna and Rob Milne at CeRDI have completed a major review on resilience in farming and agribusiness. This review was commissioned by West Wimmera Shire Council with funding from the Victorian Department of Environment & Primary Industries* (DEPI) through the Victorian Adaption and Sustainability Partnerships (VASP).

The project report provides a review of national and international literature on information and practices relating to climate change and how this is received and adopted by farmers and agribusinesses.

The review presents information from 150 sources including international peer-reviewed academic journals, conference papers, published and unpublished reports and websites. The breadth of scholarly research, grey literature, government and industry reports outline the social, economic and environmental impact of climate change on the agriculture industry.

The findings of the review were presented in a report to the project steering committee, comprising representatives from key organisations in the Wimmera including West Wimmera Shire Council and the Wimmera Development Association.

A key message that emerged from this review was that the consistent barrier to adaptation to climate change in agriculture is the inadequacy of information and knowledge transfer. Knowledge exchange between the expert and the practitioner can encourage adaptations that will build resilience in agriculture in the face of the predicted climate change.

The report recommended the establishment of a knowledge exchange portal to improve relevant information availability and encourage adaptations that will build resilience in the current agricultural industries and encourage the generation of new research ideas and projects with other collaborators.

It was acknowledged that the work prepared by CeRDI provides foundational information to enable stronger regional networks to be built that promote climate adaptation information and case studies in the agriculture sector. Furthermore, the regionally-specific research identified through the report offers new directions for engaging with established agricultural networks and for raising awareness of responses to climate change and its impacts on agriculture.

*Now the Victorian Department of Economic Development, Jobs, Transport and Resources



“The regionally specific research identified in this report provides direction in engaging with established agricultural networks raising awareness and responses to climate change and its impacts on agriculture. FedUni is a valuable regional resource and an important partner in these discussions.”

MS JO BOURKE, WIMMERA DEVELOPMENT ASSOCIATION

Project Partners:

- West Wimmera Shire Council
- Victorian Department of Environment & Primary Industries*
- Victorian Adaption and Sustainability Partnerships
- Wimmera Development Association



Further information about this project visit
www.cerdi.edu.au/Wimmera-VASP-LitReview-GapAnalysis

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SPORT DATA

A Sporting Advantage

Spatially enabling sport and recreation data

Sport and Recreation Spatial, a joint initiative developed by CeRDI and the Faculty of Health at FedUni and Victoria University provides a national GIS for presenting spatial data relevant to all levels of the sport and recreation sector.

From the outset, this project has received wide acclaim, having been described by senior sporting industry figures as 'revolutionary' in its presentation of sport and recreation participation data.

Established in 2012, Sport and Recreation Spatial is an online resource enabling systematic dissemination of knowledge for the sport, recreation, health, education and government sectors. This has been achieved through technologies enabling data collection, data integration, statistical analysis and data visualisation via GIS programming and maps.

The success of this project has been facilitated through collaborations with key industry stakeholders including the peak sporting and recreation organisations VicHealth, the Australian Sports Commission, Sport and Recreation Victoria, VicSport and state and national sporting organisations.

Through this initiative, an extensive range of data sets, including data series from national population surveys, Victorian sports organisation data and Victorian facilities data are complemented by the latest spatial GIS technologies. These advances provide the foundation for extensive investigation between facilities, sport and recreation participation and health outcomes. Sport and Recreation Spatial enables greater investigation into the 'value of sport' in terms of participatory health benefits and provides an evidence-base from which to formulate recommendations for the Australian sport and recreation sector.

A program of research has been established to use Sport and Recreation Spatial to harness new knowledge for the sector. Already important understandings about sport and physical activity participation levels, trends and the factors affecting participation in sport and recreation have been generated, with the findings published in peer-reviewed journals.

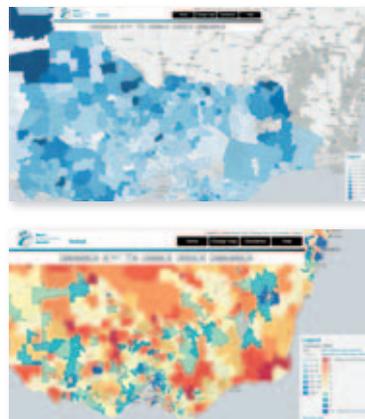
Further funding has also been contributed from the Mitchell Institute for Health and Education Policy. The funds will enable detailed examination of community indicators and benchmark data for sport and recreation in the City of Brimbank.

This research also served as a demonstration project for the GIS capabilities of Sport and Recreation Spatial.

The Sport and Recreation Spatial project was funded from the VicHealth Fellowship secured by Associate Professor Rochelle Eime, a grant from the Australian Sports Commission and support from Federation University Australia and Victoria University. Funding has also been contributed from the Mitchell Institute for Health and Education Policy.

“The new Sports Spatial interface is easy to use. It offers reporting options which present our participation data against factors relevant to our sport now and in the future. It also enables us to create reports for external stakeholders and also assist in our internal decision making.”

MS AMANDA BASU, STRATEGIC PROJECTS
MANAGER, NETBALL VICTORIA



Project Partners:

Victoria University
VicHealth
Australian Sports Commission
Sport and Recreation Victoria
VicSport
Australian Football League Victoria
Basketball Victoria
Bowls Victoria
Cricket Victoria
Hockey Victoria
Netball Victoria
Tennis Victoria
Mitchell Institute for Health and Education Policy



For more information about Sport and Recreation Spatial visit
www.sportandrecreationspatial.com.au

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DIGIBIZ

DigiBiz Switches on the Potential

Supporting businesses and community organisations to harness broadband technologies

Co-ordinated by CeRDI, DigiBiz has provided businesses and not-for-profit organisations in local municipalities with the opportunity to learn more about harnessing the potential opportunities provided by the new broadband technology available in the Central Highlands region.

Launched in July 2012, the Central Highlands Digital Enterprise project (DigiBiz) offers training and provides mentoring and advice to small-to-medium enterprises, not-for-profit organisations and local cultural institutions about the latest broadband technologies. Additional approaches are also adopted to build awareness and participation in the project, including establishing networks across local communities, 'training the trainer', identifying network champions and facilitating forums by prominent Australians and broadband champions.

In the period to December 2014, the DigiBiz program delivered workshops and mentoring activities to over 3,000 participants representing a range of business and community organisations; the training activities were aimed at increasing the digital literacy levels of participants

The DigiBiz project received funding of approximately \$1 million from the Commonwealth Government's Department of Communications, together with funds from Regional Development Australia – Grampians, and significant in-kind contributions from local government partners the City of Ballarat, Golden Plains Shire Council, Hepburn Shire Council and Pyrenees Shire Council.

The learning from the project will continue to be used through extension work in this area. Research examining the impact of the program is currently underway.

Information about the project has been widely disseminated through presentations at national conferences.

“The training and assistance delivered to organisations in your community have helped them to improve their productivity utilising new technologies and find ways to increase business efficiencies.”

MR GARY HIBBERSON, DIRECTOR, PROGRAMME DELIVERY, AUSTRALIAN GOVERNMENT, DEPARTMENT OF COMMUNICATIONS



Project Partners: Commonwealth Government Department of Communications | Regional Development Australia – Grampians
City of Ballarat | Golden Plains Shire Council | Hepburn Shire Council | Pyrenees Shire Council



For more information about DigiBiz visit
www.digibiz.net.au

Key Contact

Dr Helen Thompson, CeRDI Director
h.thompson@federation.edu.au

BACE

Connecting with Melton

Western Business Accelerator and Centre for Excellence

The Western Business Accelerator and Centre for Excellence (Western BACE) is an innovative project to enhance longer term employment and community opportunities for residents living in one of Australia's major growth corridors. Western BACE was funded through the Suburban Jobs Program.

The City of Melton received \$14.6 million from the Suburban Jobs Program, an initiative of the Commonwealth Government Department of Environment, towards the \$21 million establishment costs for the Western BACE, located 19 km west of Melbourne in the City of Melton's developing Toolern Precinct.

The Western BACE has been designed to accommodate an innovative, multifunction centre offering a range of business accelerator activities through:

- construction of an environmentally sustainable building;
- accelerator office and workspaces to support fledgling businesses;
- business support and development through the Centre for Excellence; and
- training and training spaces for tenant businesses, social services, local education providers and growing businesses.

The Western BACE project is being led by Melton City Council together with Lend Lease, the Growth Areas Authority, Victoria University, Kangan Institute, Burbank Homes and FedUni and is an initiative with the longer-term aim of improving economic, educational and community opportunities for Melton and the west-Melbourne growth corridor.

A range of exciting research opportunities exist across the life of this project. Consequently a Western BACE Research Group comprising Federation University Australia, Victoria University and Melton City Council was established in 2013 to undertake research, monitoring and evaluation activities in parallel with the planning, design, construction and operating phases of the Western BACE.

This research provides insights pertaining to business growth, employment and community development. Key findings from the business and wider community will focus on the access and uptake of new technologies, public transport, community and public services, and business engagement.

A commitment for longitudinal research in association with the Western BACE was established during 2014 with an agreement between CeRDI, FedUni and Melton City Council for an industry-based PhD scholarship for research linked with the Western BACE.

Project Partners:

Melton City Council

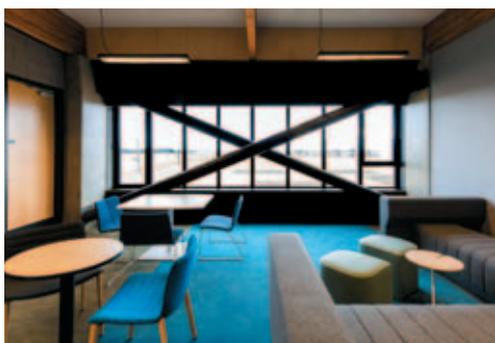
Victoria University

Commonwealth Government Department of Environment

Other elements of the 2014–15 research program include examining the role of Western BACE partners and case-study research to gain insights from new tenants at the Western BACE.

Western BACE is expected to be operational in May 2015.

Melton City has committed \$240,000 to support the Western BACE research.



Key Contact

Alison Ollerenshaw,
CeRDI Research Fellow

a.ollerenshaw@federation.edu.au

GNDR

Grampians Natural Disaster Research

Measuring the economic, environmental and social impacts of landslides and floods

In January 2011, an intense rainfall event in Western Victoria triggered over 200 landslides in the Grampians National Park and caused widespread regional flooding. This event had significant impacts on the environment and communities both in and surrounding the park.

Subsequently, the Northern Grampians Shire Council, together with project partner organisations, approached CeRDI to undertake research to examine the impact of this natural disaster, with specific focus on addressing risk and resilience. The funding for this project was provided by a Natural Disaster Resilience Grant Application with in-kind contributions from partner organisations.

The overall aim of this study was to investigate the social, economic and environmental impacts of the 2011 landslides and floods in and around the Grampians National Park. A specific objective of the research was to identify the impacts of the natural disaster on communities within the region from a range of perspectives including residents, businesses, and from local and regional government and non-government agencies.

The research uncovered a wide range of impacts following the flood and landslides including loss of property, loss of income, an increase in the ability to cope with future disasters, anxiety and stress, community angst towards emergency and recovery workers, loss of roads and walking paths, reduced access to the park and its amenities, loss of trees, riparian vegetation and understory flora and alteration of waterways. However, the study indicated that the community in the Grampians region is quite adaptable and resilient to natural disasters in their region.

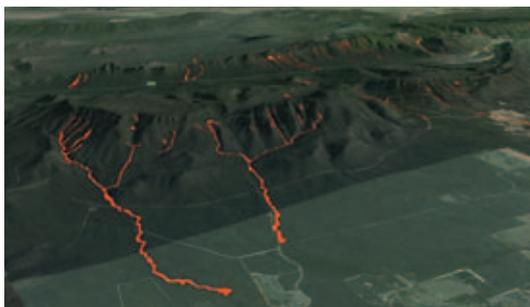
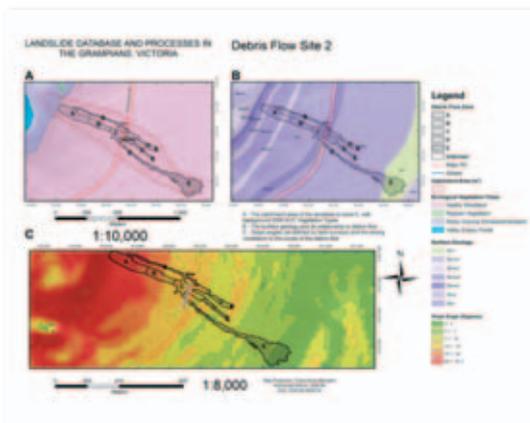
In addition, data for the 2011 landslides in the affected region were spatially mapped and complemented by photographic documentation. Reports and relevant literature about this and other similar events were collated and made publicly available via the Grampians Natural Disaster Research website www.gndr.org.au.

The project was completed in 2014 and publications are now being prepared to document the findings from this research. This project contributes to the evidence base on the impact of landslide events which are of interest both nationally and internationally.

Total research investment was \$60,000.

“Their final report is well-researched, and acts as a valuable historical record of the major event. It also provides useful recommendations which will assist Council and the Grampians communities in building resilience, and capability in responding to similar future events.”

MR JIM NOLAN, DIRECTOR ECONOMIC & COMMUNITY,
NORTHERN GRAMPAINS SHIRE



Project Partners:

Federation University Australia
Northern Grampians Shire Council
Horsham Rural City Council
VicRoads
Parks Victoria
Southern Grampians Shire Council
Country Fire Authority

For more information visit
www.gndr.org.au

Key Contact

Dr Peter Dahlhaus,
CeRDI Senior Research Fellow
p.dahlhaus@federation.edu.au

PLANNING

Regional Planning

Interoperable Spatial Knowledge Base for Integrated Fire Management Planning*

The Barwon South West Interoperable Spatial Knowledge Base is an interoperable spatial information system designed to provide the most current relevant information, including fire risk data, in a manner that supports the community to develop their integrated regional and local fire management plans.

This collaborative and stakeholder-led project commenced in 2012. It utilised existing data plus open data overlaid on asset landscapes, in order to better understand fire risk and consequences across the prevention, preparedness, response and recovery spectrum.

Fire and emergency management planning committees, government departments, utility providers, water authorities, businesses and the broader community require timely access to relevant, current spatial information and linked documents for better informed decision making and integrated plan development.

The funding for the development of this Knowledge Base has been provided by the Victorian Government. In addition, significant in-kind contributions have been made from a range of stakeholder and partner organisations.

The Knowledge Base utilises new technologies and innovative research to explore and expand datasets plus build features such as printable maps, community crowd sourcing capabilities and secure member login. It utilises CeRDI-developed single source publishing technology that provides the capability to develop, implement and continually improve integrated regional and municipal fire and emergency management plans.

The major focus of the Knowledge Base project is interoperability: the use of open standards and interoperable technologies enables the federation of data stored in different database schemas on disparate systems, empowering data managers and the broader community to share their data in the same virtual space whilst maintaining custodianship and data and ownership. The main objective is to allow all stakeholders easy access to the most current data to improve fire risk management decision making. The project has received state-wide interest, which has led to invitations for CeRDI to present at various industry forums including Newtech Colac, 2013, and the Municipal Association of Victoria, Local Government Information and Communications Technology Group, March Forum, 2013.

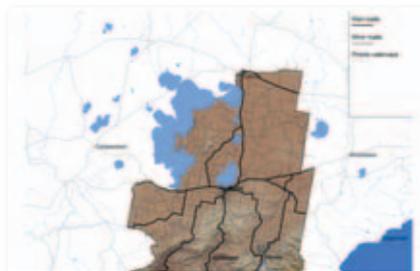
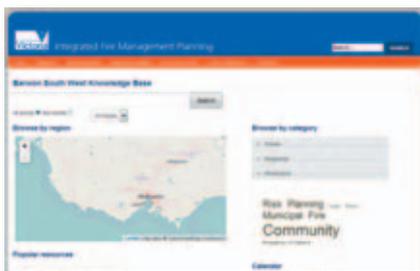
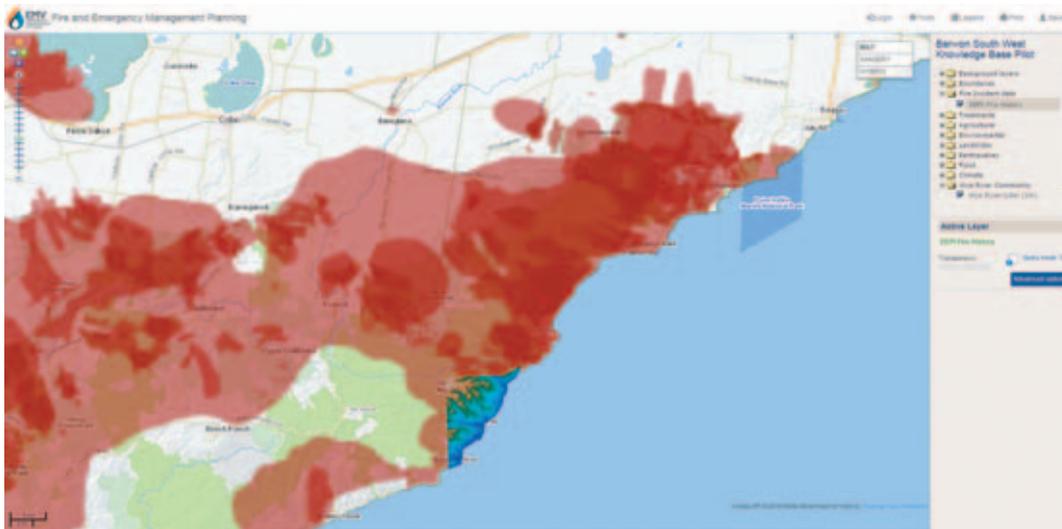
This project highlights CeRDI's innovations and capabilities to use ICT and web based systems to improve and enhance traditional knowledge and communications approaches.

Total research investment was \$316,000.

*Integrated Fire Management Planning (IFMP) is now Emergency Management Victoria (EMV)

“Our vision was to create a robust and stable open source web platform that is intuitive to use and provides current and timely information via the internet. The Knowledgebase platform provides comprehensive information regarding assets at risk from fire, with the capability to develop, improve and expand to support an ‘all hazards, all agencies approach’ across multiple risk environments in the future”

MR STEVE CAMERON, COMMUNITY BASED EMERGENCY MANAGEMENT,
EMERGENCY MANAGEMENT VICTORIA



Project Partners:

Emergency Management Victoria
Barwon South West Regional Strategic
Fire Management Planning Committee
Victorian State Fire Management
Planning Committee

For more information see
<http://emv.cerdi.edu.au/emv.php>

Key Contact

Dr Helen Thompsons, CeRDI Director
h.thompson@federation.edu.au

DEMENTIA

Dementia Pathways Tool

An online tool supporting primary health care professionals with dementia diagnosis, management and referral

Dementia is one of the fastest growing diseases in Australia, with prevalence rates expected to rise steadily over coming years.

At the forefront of dementia care is the primary health care workforce providing essential support across the disease continuum, from early diagnosis to ongoing management. However, this disease is complex and often places significant demand on primary health care workers.

A recent initiative in the Grampians region is addressing some of these challenges through the development of an intuitive online Dementia Pathways Tool, designed to optimise access to information about dementia for primary health care professionals.

The technical and online components of the Dementia Pathways Tool were designed by CeRDI in close collaboration with project partners the Department of Health (Grampians region) and Grampians Medicare Local, with the content informed by Associate Professor Mark Yates, Ballarat Health Services and Deakin University.

As a publically-accessible resource, the Dementia Pathways Tool provides primary health care professionals, including those outside the Grampians region, with access to a web-based repository containing information, tools and resources to guide and enhance current assessment and referral practices for patients with dementia. The website may also be accessed by those individuals who have been diagnosed with dementia and their carers. For primary health care professionals within the Grampians region, information is also provided about local services and resources.

This project has led to the development of a comprehensive online resource of information about dementia, designed for, and with substantial input from primary health care professionals. South East Melbourne Medicare Local is collaborating with CeRDI to prepare a version of the Dementia Pathways Tool for its region.

Research to evaluate the impact of the Dementia Pathways Tool for practitioners in the region commenced in late 2014 with findings to be published in 2015.

“I value CeRDI's commitment to working with stakeholders to explore and create new technologies. CeRDI is an important contributor within the region, aiming to build community organisations capacity to respond to health-related issues.”

MS CAROLYN GARGIULO,
VICTORIAN DEPARTMENT OF HEALTH AND HUMAN SERVICES

Project Partners:

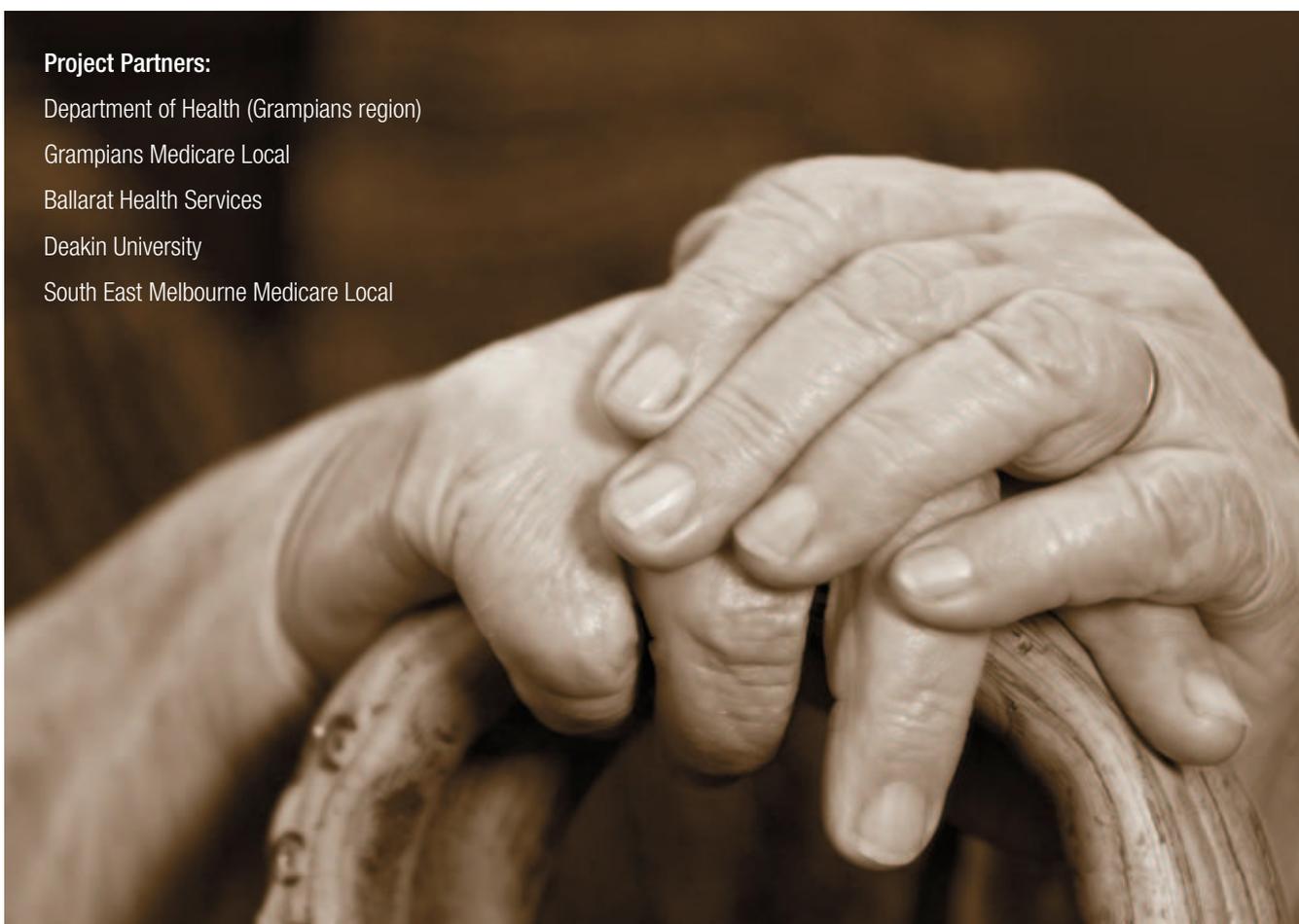
Department of Health (Grampians region)

Grampians Medicare Local

Ballarat Health Services

Deakin University

South East Melbourne Medicare Local



For more information about the Dementia Pathways Tool visit the website at www.dementiopathways.com.au

Key Contact

Alison Ollerenshaw,
CeRDI Research Fellow
a.ollerenshaw@federation.edu.au

Corporate Web Team

Since 2012 CeRDI has been responsible for managing the corporate web function for Federation University Australia with the Corporate Web Team hosted within the broader CeRDI Team.



The Corporate Web Team provides essential support and services across the University. In 2014 the Team was responsible for the transition of the corporate website and many associated online services to FedUni upon its official commencement on 1 January 2014. This involved the successful rebranding of corporate website content from University of Ballarat to Federation University Australia, requiring the implementation of a responsive design, the integration of social media and the rebranding of over 45,000 assets.

The Corporate Web Team provided considerable support for all digital space across the University, liaising with the broad spectrum of services and areas in the university. With a faculty restructure occurring mid-2014, the Corporate Web Team was instrumental in facilitating a new design for faculties to enhance the presentation of information and content restructure and to ensure a consistent user experience. In addition, the team also facilitated the development of new design work for research centres and the post office and switchback galleries. Additional services provided by the Corporate Web Team included the development of improved monitoring and reporting on content quality assurance and the provision of increased and enhanced training resources and sessions for the co-ordinators of distributed content.

Staff Profiles

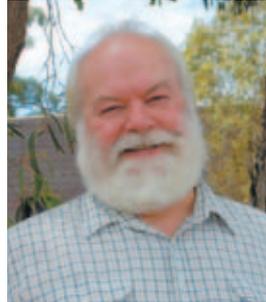
Research



**Dr Helen Thompson,
Centre Director**

Doctorate of Business Administration, Bachelor of Commerce (Accounting) with Distinction

Helen has led Centre activities since 2002 and is responsible for the achievement of all CeRDI organisational objectives in respect of research, project management, partner projects, business development and financial management. Helen has extensive experience in the delivery and management of eResearch and ICT initiatives. She is engaged in research into the use of ICT and is involved in a range of ICT activities which contribute to the economic and social development of regional and rural Victoria. Helen was appointed as one of twenty National Broadband Champions 2011–13. She serves as a Board Member, Djerriwarrh Health Services; member of GovHack Ballarat Working Group; Member of Committee for Ballarat Maximising eHealth Taskforce; Committee Member for the Digital Rural Futures Conference, Victorian eResearch Strategic Initiative, Victorian eHealth Network and VicNode eResearch Directors Forum.



**Dr Peter Dahlhaus,
Senior Research Fellow**

PhD, Master of Applied Science, Bachelor of Applied Science

Peter joined CeRDI in 2012 as an experienced researcher and geologist. He has a comprehensive knowledge of the geology, geomorphology and hydrogeology of south west Victoria where he has been influential in applying his scientific knowledge to influence policy on salinity and soil health management as an author of catchment action plans and strategies, and municipal planning overlays. Peter is well-known as a science communicator by community groups and as an advisor to various catchment management authorities, water authorities and municipalities in the region. Together with colleagues at CeRDI, Peter's current research focuses on spatial data interoperability and visualisation to ensure that natural resource management data, information and knowledge is globally available to researchers, government agencies, municipalities and the public. Peter is the lead researcher for the Visualising Victoria's Groundwater (VVG) project.

Research



Dr Angela Murphy, Research Co-ordinator

PhD, Graduate Diploma Education, Graduate Diploma Criminology, BA (Social Sciences)

Angela joined CeRDI in late 2014 and has extensive research and engagement experience having previously worked across research centres at FedUni, as a private consultant and within the public health and welfare sector. Angela has managed over 40 research projects and consultancies. Her current focus is on developing evidenced based research, which measures eResearch and practice change.



Alison Ollerenshaw, Research Fellow

Master of Applied Science, Graduate Diploma of Applied Science (Professional Psychology), Bachelor of Arts, Diploma Project Management

Alison joined CeRDI in 2012 and now provides support across a range of CeRDI projects including the Grampians Natural Disaster Research project, the Dementia Pathways Tool and the Western BACE project. Alison has collaborated on many regional projects that have a health and community development focus.



Robert Milne, Research Associate (Environmental Science)

Bachelor of Applied Science (Environmental Management)

Rob joined CeRDI in 2012. He has specialist skills in geographic information systems and data management and has extensive project management and stakeholder engagement experience gained during his extensive career with FedUni and as partner in the family farming business.



Jennifer Corbett, Research Officer

Honours (Marketing); Bachelor of Management (Marketing)

Jennifer joined CeRDI in 2009. She provides research support across a range projects including regional ICT studies and projects in the agriculture sector.



Kirsten McKenna (Geology), Research Officer

Bachelor of Science (Geology)

Kirsten joined CeRDI in 2013 after working as a hydrogeologist in Melbourne. Kirsten assists with groundwater and soil related projects, including the Visualising Victoria's Groundwater and the Corangamite Soil Health Knowledge Base project.

Kelsey McDonald, Project Officer

Graduate Diploma Rural Social Welfare; BA (Humanities)

Kelsey is currently undertaking her PhD. She joined CeRDI in 2013 on a part-time basis. Kelsey has contributed to the Grampians Natural Disaster Research and the Western BACE project.



Meghan Taylor, Project Officer – Research Support

Meghan commenced at CeRDI in 2011 and provides research support across various projects, including the GRDC Online Final Reports research. Meghan is currently studying for a Bachelor of Science/Bachelor of Biomedical Science.



Xenon Ellis, Administration Officer – Research Support

Bachelor of Arts (Media and Communication)

Xenon joined CeRDI in 2014 to work in a support role for the Online Farm Trials project. Growing up in a rural environment, Xenon brings an understanding of agricultural life and a drive to promote sustainable farming practices to the Online Farm Trials project.



**Jessica Lockyer,
Administration Officer – Research Support**

Jessica joined CeRDI in 2014. She provides research support across various projects, including the GRDC Online Final Reports research. Jess is currently studying for a Bachelor of Management.

Technical



Andrew Macleod, Manager Technical Projects

Honours Applied Science (Information Technology), Bachelor of Computing

Andrew first started working at CeRDI in 1999. He provides technical leadership for all Centre activities. Andrew has been instrumental in developing the technology innovations, data interoperability and knowledge management approaches demonstrated through CeRDI spatial initiatives.



Paul Feely, Senior Programmer

Honours (Computing), Bachelor of Computing/Bachelor of Commerce

Paul joined CeRDI in 2003. He specialises in PHP and MySQL development and has been the lead programmer on major projects including Sport and Recreation Spatial and Online Farm Trials.



Scott Limmer, Senior Analyst Programmer

Bachelor of Information Technology

After joining CeRDI in 2008, Scott provided assistance with expanding programming and web development activities. Since then he has introduced new multimedia and web2 technology skills to the team and has involvement in key projects including the Corporate Web and Dementia Pathways Tool.



Heath Gillett, Programmer

Bachelor of Computing

Heath joined CeRDI during 2009. He has extensive experience in design, programming, implementation and support of various IT systems. Heath has been a lead developer on key projects including the Barwon South West Knowledge Base and GRDC Online Final Reports project.



Craig Briody, Web Developer

Bachelor of Computing

Craig joined CeRDI in 2002. Craig specialises in the development and implementation of web-based projects as well as having significant experience in the development and delivery of comprehensive client training programs.



Sudeera Abeywickrema, Web Developer

Bachelor of Information Technology

Sudeera joined CeRDI in 2013. Sudeera contributes to the implementation of a range of web-based applications and systems and the integration of emerging technologies to enhance CeRDI outcomes.



Chris Elliott, Digital Marketing Officer

Bachelor of Business (Marketing) with Distinction

Chris commenced work with CeRDI in 2013. He is an experienced digital marketing professional, graphic designer and business development specialist. Chris delivers workshops and mentoring to support the Central Highlands Digital Enterprise (DigiBiz) project.



Drew Collins, Technical Assistant

After completing work experience with CeRDI in 2011, Drew was later employed on a casual basis to provide technical assistance across a range of projects. Drew is currently studying for a Bachelor of Film and Television.

Corporate WebTeam



Raylene Reese

Co-ordinator, Web Development

Raylene is responsible for the ongoing development of the corporate website with a focus on effective site structure and accuracy of content. Raylene co-ordinates the training of web content coordinators and publishers and is also responsible for developing training materials and resources to support this large network.



Paul McKenna

Design Co-ordinator

Paul's role is to co-ordinate the design or 'look and feel' of the corporate website. His role includes adjusting and creating designs for the site. Paul works closely with Public Relations and the Marketing and Communications teams to ensure that designs meet the corporate style and branding requirements.



Hayley Collins

Project Officer

Hayley contributes to planning, development and progressive enhancement of our website (0.5 EFT) and also to the implementation of the Central Highlands Digital Enterprise Program (0.5 EFT). Hayley also facilitates training and provides ongoing support to the Digibiz and web community.



Aaron Maskell

Project Officer

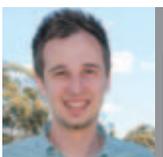
Aaron contributes to the planning, development and technical enhancement of our website and applications. Aaron completed a Bachelor of Information Technology at the University of Ballarat in 2008.



Nathan Wallis

Systems Analyst Programmer

Nathan is responsible for the maintenance on a variety of web applications across the University and makes changes to the corporate website. Nathan completed a Bachelor of Information Technology at the University of Ballarat in 2004, focusing on programming.



Ashley Veal

Analyst Web Developer

Ashley is responsible for ensuring the ongoing development of the University's corporate web presence and for the design, development, extension and evaluation of websites and online environment.

Project and Administration



Gerrie Carr-MacFie, Project Manager

Bachelor of Arts (Regional Development)

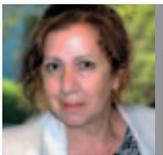
Gerrie is an experienced regional development and community engagement practitioner. She joined CeRDI in 2012 to manage the Central Highlands Digital Enterprise (DigiBiz) project.



Greg McKenzie, Project Manager

Graduate Diploma of Education, Bachelor of Science, Project Management Professional (PMP®) Certified

Greg joined CeRDI in 2013 to provide leadership and end-to-end management of a number of concurrent projects. He also contributes to business development activities within CeRDI.



Kathy Gamble, Administration Support Officer

Graduate Diploma of Education, Diploma of Fine Art

Kathy joined CeRDI in January 2013 after five years working at FedUni's Business Faculty. Kathy assists the CeRDI team with administrative support across various projects and is the personal assistant to the Centre Director.

Postgraduate Students

Maged Almandalawi (PhD P/T)

PhD title: Complex rock slope failures in large scale open cut mine: mechanism and evaluation.

Faculty: Science and Technology
Year commenced: 2012
Supervisors: Dr G. You (PS, FoST), Assoc Prof K. Dowling (AS, FoST),
Dr P. Dahlhaus (AS)

This project investigates slope stability at the Handlebar Hill open cut mine, Mt Isa, Queensland. The research investigates the potential failure mechanisms of the mine pit slopes through kinematic and dynamic analyses, using the pit geology, geometry and rock mechanics.

Mahinda Jayasooriya (PhD P/T)

PhD title: Improving the accuracy of groundwater infiltration estimates in sewer networks

Faculty: Science and Technology
Year commenced: 2012
Supervisors: Dr P. Dahlhaus (PS), Prof P. Gell (AS), Dr A. Barton (CS, GWM Water)

Groundwater infiltration into sewerage systems are an on-going challenge experienced by water utility managers throughout the world. This research aims to provide more accurate estimations of groundwater infiltration in terms of volume and flow rate to assist decision-making in regard to sewer rehabilitation and the effective management of sewer networks. The project focuses on Ballarat's sewer system as a case study.

Adam Marshall (Masters P/T)

PhD title: Precipitation and evaporative aspects of the terrestrial water balance in Central Victoria and their relationship to large-scale climate drivers during the growing season

Faculty: Science and Technology
Year commenced: 2012
Supervisors: Prof P. Gell (PS), Dr P. Dahlhaus (AS)

This Masters by research examines trends and large-scale climate forcing of precipitation and pan evaporation at selected sites in central Victoria, for the period 1972-2013, with particular emphasis on the growing season (March to November). Climate changes in the terrestrial water balance are critical to long-term variability in effective precipitation for agriculture in the region.

Postgraduate Students

Nathan Robinson (PhD)

PhD title: Assessing productive soil-landscapes in Victoria, Australia using digital soil mapping

Industry partner: Department of Economic Development, Jobs,
Transport and Resources

Faculty: Science and Technology

Year commenced: 2012

Supervisors: Dr P. Dahlhaus (PS), R. MacEwan (CS), Dr P. Vamplew (AS)

Spatial soil information is used by society to support questions on agriculture and the environment at global to local scales. This research investigates the spatial soil information needs of biophysical modellers and the stochastic and epistemic uncertainties in the data to understand the limitations of harmonising legacy data in spatial inference models. The findings of the research are implemented in creating digital soil mapping data sets for western Victoria that are more reliable, easy to use and understood by a growing community of users.

Himalaya Singh (PhD)

PhD title: Geographic and epidemiological analysis of sports and recreational injuries of Victoria, Australia

University partner: Australian Centre for Research into Injury in Sport and its Prevention (ACRISP)

Faculty: Health

Year Commenced: 2013

Supervisors: Prof Caroline Finch (ACRISP); Dr Helen Thompson (CeRDI);
Dr Lauren Fortington (ACRISP); Assoc Prof Rochelle Eime
(Faculty of Health FedUni and ISEAL Victoria University)

Sports and leisure injuries have been recognised as a public health issue in Australia with an estimated economic cost of 1.8 billion per annum. This figure is increasing significantly every year. Possible explanations for this could be insufficient information about vulnerable communities or incomplete understanding of sports injury aetiology. In particular, a spatial epidemiological approach is used to identify target communities for injury prevention programs, and to better understand injury aetiology. There are very few studies that have used spatial epidemiological approaches to understand sports injuries. This research intends to apply a spatial approach to sports injury data, which will offer significant benefits for injury surveillance, allocation of resources and development of effective injury prevention programs.

Research Outputs

Publications

Almandalawi M., You G., **Dahlhaus** P., Dowling K. and Sabry M. (2014) Slope stability and rockfall hazard analysis in an open pit zinc mine. *Proceedings, GEOMATE2014 - The 4th International Conference on Geotechnique, Construction Materials and Environment, 19–21 November 2014, University of Southern Queensland, Brisbane, Australia.*

Dahlhaus P.G., **Macleod** A., **McKenna** K. and **Thompson** H. (2014) Creating virtual groundwater research laboratories through interoperable technologies. *Groundwater: Challenges and Strategies. Abstracts, 41st IAH Congress, 15–19 September 2014, Marakech, Morocco.* T7 (On CD).

Dahlhaus P.G., Currell M., Li H. and **McKenna** K. (2014) Groundwater dependence of lakes in southwest Victoria, Australia. *Groundwater: Challenges and Strategies. Abstracts, 41st IAH Congress, 15–19 September 2014, Marakech, Morocco.* T2 (On CD).

Dahlhaus, P., **MacLeod**, A., **McKenna**, K. and **Milne**, R. (2014) On-line information to maximise soil health. *Digital Rural Futures Conference, Regional Futures. Agricultural Futures. Digital Futures. 25th–27th June 2014, University of Southern Queensland, Toowoomba, Queensland. Abstracts*, pp. 80–81.

Eime, RM., Sawyer, N., Harvey, JT., Casey, MM., Westerbeek, H. and Payne, WR. (in press) Integrating Public Health and Sport Management: Sport participation trends 2001–2010. *Sport Management Review.*

Milne, R., **Dahlhaus**, P., Nicholson, C., **Thompson**, H., **Macleod**, A., **Feely**, P., McCue, T., **Gillet**, H. and **Corbett**, J. (2014). On-line Farm Trials: a research repository for Australian grain growers. *Digital Rural Futures Conference, Regional Futures. Agricultural Futures. Digital Futures. 25th–27th June 2014, University of Southern Queensland, Toowoomba, Queensland. Abstracts*, pp. 20–21.

Ollerenshaw, A. (in press) Online pathways for dementia care. *Australian Family Physician.*

Rasih V., Florentine S. and **Dahlhaus** P.G. (2014) Environmental benefits inferred from impact of reforestation of deforested creek bank on soil conditioning: a case study in Victoria, Australia. *Agroforestry Systems*, doi: 10.1007/s10457-014-9771-9.

Shugg, A. and **Dahlhaus**, P. (2014) A model for the origin of carbonated mineral waters of Central Victoria. *Mineral Waters: Genesis, Exploitation, Protection and Valorisation. Abstracts, MinWat2014, International Multidisciplinary Conference on Mineral Waters, 8–11 September 2014, Karlovy Vary (Carlsbad), Czech Republic.* No. 73.

Thompson, H., **Dahlhaus**, P. and **MacLeod**, A. (2014) The hype and the hope: progressing towards big data insights for regional communities. *Digital Rural Futures Conference, Regional Futures. Agricultural Futures. Digital Futures. 25th–27th June 2014, University of Southern Queensland, Toowoomba, Queensland. Abstracts*, p.53.

Forums and Keynote Presentations

Dr Helen **Thompson** (Featured Speaker) Better, fast, more: Strategies for the next generation of broadband. *The 4th Annual National Higher Education Communication Officers' Conference 2014.* 17–18 June 2014, Melbourne.

Dr Helen **Thompson** (Workshop Participant) Australian Internet Governance Forum. 26 August, 2014. Melbourne.

Fong G., Lindsay, J., **Thompson** H., Judd W., Green A., Radoll P. and Paton A. (2014) Internet access and delivery of services to regional and rural communities. Workshop held at *Australian Internet Governance Forum*, 26–27 August 2014, Crown Promenade, Melbourne.

Carr-MacFie, G. (2014) The Uptake of Digital Enterprise Training in Central Highlands Region. *Victorian Agribusiness Conference 2014.*

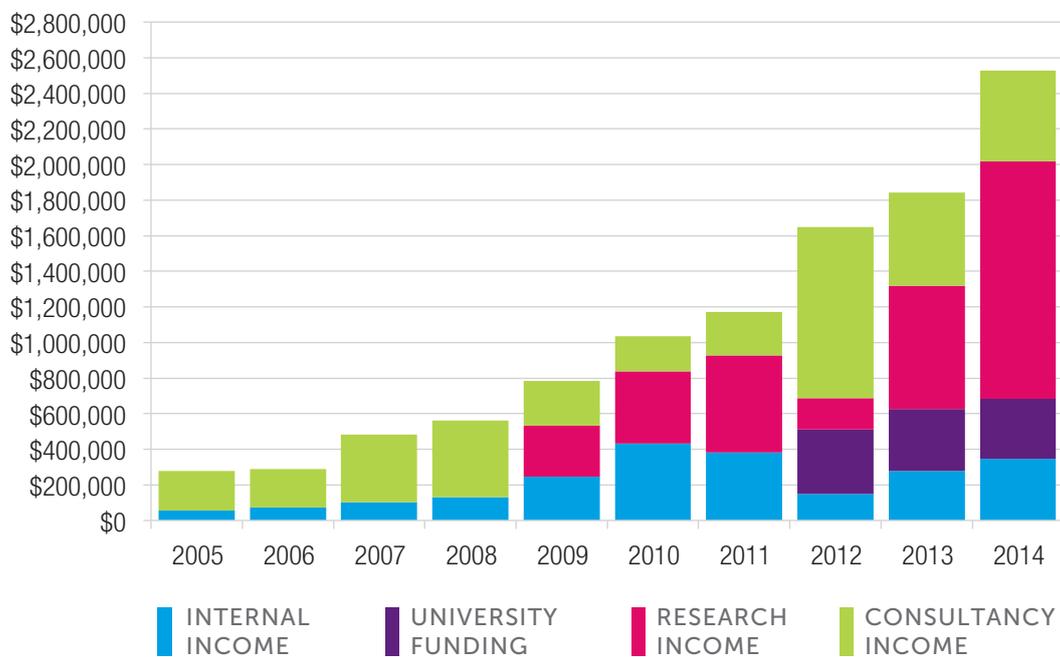
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Research Income

The following chart illustrates CeRDI income from 2005.

The categorisation of income generated by CeRDI since 2013 reflects the repositioning of CeRDI as a research Centre with a significant amount of income meeting the national standards for the classification of research income. Research income in 2014 was \$1.3 million with a total turnover of \$2.5 million.

CeRDI Income: 2005–2014



Research income in 2012 was substantially higher than recorded. The apparent reduction in that 2012 year was due to the income classifications approach which was operating in Research Services during that period.

Partnerships

Government and Non-government Organisations, Businesses and Institutions

CeRDI research partners in 2014 included the following organisations.

Ararat Rural City Council	CSIRO
Australian Football League Victoria	Dairy Innovation Australia Limited
Australian Sports Commission	Deakin University
Australian National University (Integrated Catchment Assessment and Management Centre)	Department of Broadband Communications and the Digital Economy
Australian Tourism Accreditation Program Ltd	Department of Health (Grampians)
Ballarat Health Services	Department of Justice
Ballarat ICT Limited	Emergency Management Victoria
Barrington Strategic	Federation of Community Legal Centres
Barwon South West Regional Strategic Fire Management Planning Committee	Fitzroy Legal Service
Basketball Victoria	Foundation for Rural and Regional Renewal
Bowls Victoria	Geological Survey of Victoria
Bureau of Meteorology	Golden Plains Shire Council
Birchip Cropping Group	Goulburn Murray Water
Cancer Australia	Grains Research and Development Corporation
Central Queensland University	Grampians Integrated Cancer Services
City of Ballarat	Grampians Medicare Local
Colac Otway Shire	Hepburn Shire Council
Commonwealth Government Department of Communications	Hockey Victoria
Community Legal Centres NSW	Horsham Rural City Council
Cooperative Research Centre for Spatial Information	Hume Riverina Community Legal Service
Corangamite Catchment Management Authority	Institute of Sport, Exercise and Active Living
Corangamite CMA Land Health Program Steering Committee	International Plant Nutrition Institute
Country Fire Authority	Interpath Pty Ltd
Cricket Victoria	Kondinin Group
	Legal Services Commission of South Australia
	Liebe Group

Partnerships continued...

Leo Cussen Institute

Livestock Saleyards Association of Victoria

McCallum Disability Services

Melton City Council

Mitchell Institute for Health and Education Policy

Mornington Peninsula Shire Council

MTA Optima

National Association of Community Legal Centres

Natural Resources Canada

Netball Victoria

Nicon Rural Services

Northern Grampians Shire

Northern Growers Alliance

NSW Law and Justice Foundation

Peak Fitness

Pyrenees Hay Processors Cooperative

Pyrenees Shire Council

Regional Universities Network

Queensland University of Technology

Parks Victoria

Pyrenees Shire Council

Regional Development Australia (Grampians)

Rotary District 9780 Conference Committee

RWD Financial Services

Senserva

South Eastern Melbourne Medicare Local

Southern Farming Systems

Southern Grampians Shire Council

Southern Rural Water

Surf Coast & Inland Plains Network

TAFE Directors Australia

Tennis Victoria

Thiess Services Pty Ltd

Tourism Council of Western Australia

UNESCO

University of New England

University of the Sunshine Coast

University of Southern Queensland

Victorian Department of State Development,
Business and Innovation

VicHealth

VicRoads

VicSport

Victoria Law Foundation

Victoria University

Victorian Adaption and Sustainability Partnerships

Victorian Department of Community Development
and Planning

Victorian Department of Environment and Primary
Industries (Now the Victorian Department of
Economic Development, Jobs, Transport and
Resources)

Victorian Department of State Development,
Business and Innovation

Victorian Legal Assistance Forum

West Wimmera Shire Council

Wimmera Development Association

Woody Yaloak Landcare Group

World Heritage Institute of Training and Research for
Asia and the Pacific Region

CeRDI in the media



Grampians takes a regional approach to dementia care

Media Source: Pulse+IT
Media Type: Online
Date: January 2014



Four-fold increase in fixed wireless coverage in 12-months

Media Source: NBNCo media Release
Media Type: Online/Print
Date: July 2014



Visualising Victoria's Groundwater

Media Source: NRM on Farms: Monthly news summary about climate and natural resources in Agriculture
Media Type: Online
Date: July 2014



NBN rural and remote fixed wireless coverage hits 100,000 rural premises

Media Source: Computer World Singapore
Media Type: Online
Date: July 2014



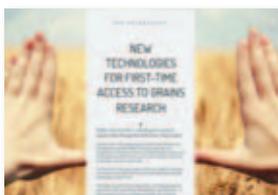
Bush broadband boost

Media Source: Stock and Land
Media Type: Online
Date: July 2014



NBN rural and remote fixed wireless coverage hits 100,000 rural premises

Media Source: ARN
Media Type: Online
Date: July 2014



New technologies for first-time access to grains research

Media Source: Leading Agriculture eMagazine
Media Type: Online
Date: October 2014



Encouraging businesses to put their thinking caps on

Media Source: Progressive Pyrenees
Media Type: Print
Date: November 2014



Contact CeRDI

For further details about CeRDI's diverse portfolio of research please visit our website: www.cerdi.edu.au

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