

bushfire&natural
HAZARDSCRC

A YEAR IN REVIEW

**ANNUAL REPORT
2014-2015**



Australian Government
Department of Industry,
Innovation and Science

Business
Cooperative Research
Centres Programme

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A YEAR IN REVIEW



In June CRC researchers spent four days deep in Arnhem Land in the Northern Territory discussing the community resilience studies underway in the communities of Ngukurr and Gunbalanya.



A YEAR IN REVIEW

A RESEARCH PROGRAM FOR BUSHFIRE AND NATURAL HAZARDS

The Bushfire and Natural Hazards Cooperative Research Centre is conducting research to build a disaster-resilient Australia.

The centre draws together all of Australia and New Zealand's fire and emergency service authorities, land management agencies and non-government organisations with the leading experts across a range of scientific fields to explore the causes, consequences and mitigation of natural disasters.

The CRC coordinates a national research effort in hazards, including bushfires, flood, storm, cyclone, earthquake and tsunami.

From July 2013, \$47 million over eight years in Australian Government funds under the Cooperative Research Centres Program have been matched by support from state and territory government organisations, research institutions and NGOs.

Research partners include universities, the Bureau of Meteorology and Geoscience Australia, and several international research organisations.

The research program has developed under the direction of end-users, in conjunction with the researchers. The research has three major themes covering 12 clusters of projects, most of which span the priorities of those working in a multi-hazard environment.

ACHIEVEMENTS AND ACTIVITY 2014-15

Over the year, the ongoing development of the research agenda involved extensive engagement with end-users and researchers.

Building upon the foundation work that was completed in the first year of the CRC, the focus during this reporting period was on ensuring the research projects were appropriately resourced to achieve their milestones with a clear understanding of how the research would be ultimately used. This involved a series of events between the CRC partners and research groups, including two national Research Advisory Forums, hosted by partner agencies, and a major conference in Wellington, New Zealand, held jointly with the Australasian Fire and Emergency Service Authorities Council (AFAC).

Highlights included:

- The CRC made a submission to the Productivity Commission's Inquiry into Natural Disaster Funding Arrangements and was invited to participate in the public hearings.
- Internationally, the CRC was prominent in a number of areas including being invited to take on the role of the United Nations Integrated Research on Disaster Risk National Committee and then to participate at the Third World Conference on Disaster Risk Reduction in Sendai, Japan.
- Formal alliances were made with the US Forest Service and the University of Coimbra, Portugal. A keynote address on the work of the CRC was delivered at the 7th International Conference on Forest Fire Research in Portugal.
- High profile visitors to Australia sought out the CRC, including from the Saudi Wildlife Authority and Civil Defence Authority; and from the National Consortium for the Study of Terrorism and Responses to Terrorism in the United States.



A YEAR IN REVIEW



STRATEGIC PLANNING

The CRC has a strategic plan that aligns with elements of the industry's strategic directions document, which was ratified by the Australian and New Zealand Emergency Management Committee and the Ministerial Council for Law, Crime and Community Safety, which operates under the auspices of the Council of Australian Governments (COAG).

The Board continues to monitor the alignment between the industry's strategic needs and the research and adoption plans of the CRC.

In October, a First Year Review was conducted by the CRC Program, which confirmed the CRC had completed all its establishment goals and was on-track to delivering its research program.

The strategic plan is online at www.bnhcrc.com.au/about

This plan has a focus on five strategic areas: Partnership; Capability and Capacity; Research; Outputs; and Governance and Management. The first of these is directly linked to end-users by developing partnerships of mutual benefit to end-users, researchers and the community. The second is about developing capability and capacity within the end-users for the nation to better manage the impacts of natural hazards.

During the year the CRC has been building relationships with the local government and insurance sectors. These are both key sectors for influencing community behaviours and effecting community safety. It is anticipated that during 2015-16 these engagements will see new partners in the CRC. Some of these groups are already involved in the CRC's projects in an informal way.

- The education program, which includes postgraduate scholarship support plus an associate student support program, continued to expand and, with 57 students, has more than doubled its target in the Commonwealth Agreement of providing support to 28 students during the reporting period.
- Communications priorities centred on continuing to develop a comprehensive website with an associated social media strategy, and to providing the support for researchers, students and end-users to better communicate the CRC science to a range of audiences.



A YEAR IN REVIEW



A YEAR IN REVIEW



AWARDS AND COMMENDATIONS

CRC researchers were recognised for their work:

- Associate Professor Kevin Tolhurst (University of Melbourne), pictured top left, was recognised for his achievements in the 2015 Queen's Birthday Honours list. Dr Tolhurst received a Member (AM) of the Order of Australia award, recognising him for his significant service to science through land and bushfire management, and to the community through providing expert advice at fire emergencies.
- Dr Katharine Haynes (Risk Frontiers, Macquarie University), pictured top right, was selected as the Australian nomination for the prestigious APEC Science Prize for Innovation, Research and Education Award for 2015, beating a strong field of applicants. Dr Haynes is pictured here on the left accepting her award from Assistant Minister for Science Karen Andrews MP.
- Dr Kirrilly Thompson (CQUniversity), pictured bottom left, was selected as one of five young Australians to be recognised for her research, beating almost 250 other applicants in the process. The ABC Radio National and the University of New South Wales joint project 'Top 5 Under 40' aimed to find and honour five of Australia's best and brightest young scientific minds.
- PhD student Billy Haworth (University of Sydney), pictured bottom right, was awarded a prestigious scholarship by the International Association of Wildland Fire.



A YEAR IN REVIEW



GOVERNANCE



Dr Richard Thornton, CEO (left) with the Governing Board, from left, Naomi Stephens, Professor Alistar Robertson, Lee Johnson, Dr Laurie Hammond (Chair), Kathy Gramp, Stuart Ellis, David Place and Tony Sheehan. (Absent: Craig Lapsley).

The Bushfire and Natural Hazards CRC is an incorporated not-for-profit public company limited by guarantee. The company, Bushfire and Natural Hazards CRC Ltd, was registered in May 2013 and began formal CRC operations on 1 July 2013.

The CRC is managed through a central office co-located with AFAC in Melbourne.

BOARD MEETINGS

DATE	CITY
July 2014	Brisbane
September 2014	Wellington
December 2014	Melbourne
February 2015	Sydney
May 2015	Canberra

GOVERNING BOARD MEMBERS

NAME	ROLE	KEY SKILLS	INDEPENDENT/ORGANISATION	APPOINTMENTS/RESIGNATIONS	ATTENDANCE
Dr Laurie Hammond	Chairman	Governance and strategy	Independent	Appointed August 2013	5 out of 5
Mr Stuart Ellis	Director	Industry-based skills	AFAC	Appointed June 2013	4 out of 5
Ms Kathy Gramp	Director	Finance and governance	Independent	Appointed December 2013	5 out of 5
Commissioner Lee Johnson	Director	Industry-based skills	Queensland Fire and Emergency Services	Appointed December 2013	5 out of 5
Commissioner Craig Lapsley	Director	Industry-based skills	Emergency Management Victoria	Appointed December 2013	3 out of 5
Mr David Place	Director	Industry-based skills	South Australian Fire and Emergency Services Commission	Resigned May 2015	5 out of 5
Professor Alistar Robertson	Director	Research	Independent	Appointed December 2013	4 out of 5
Mr Tony Sheehan	Director	Industry-based skills	Attorney-General's Department	Appointed April 2013	4 out of 5
Ms Naomi Stephens	Director	Industry-based skills	Office of Environment and Heritage, NSW	Appointed December 2013	5 out of 5



GOVERNANCE

The Governing Board met five times throughout the year, with each meeting held in a different capital city. Each meeting was held in conjunction with an informal stakeholder partner event so that the Board members could meet end-users, researchers and students. The Board is chaired by an independent Director, Dr Laurie Hammond. The Chief Executive Officer is Dr Richard Thornton.

The Participants lists had two changes in 2014-15:

- Victoria's Department of Environment and Primary Industries changed its name to the Department of Environment, Land, Water and Planning.
- Flinders University became a new participant, representing the Torrens Resilience Institute.

Arrangements are currently well underway for two additional organisations to be formalised as partners – the State Emergency Management Committee in Western Australia, and the Inspector-General for Emergency Management in Victoria.

In October, a First Year Review was conducted by the CRC Program, which confirmed the CRC had completed all its establishment goals and was on-track to delivering its research program.

COMMITTEE MEMBERS

The Board has two committees that meet at least twice a year:

- **Audit Risk and Compliance Committee** – oversees corporate governance, audit responsibilities, finance, compliance and risk management. Members - Kathy Gramp (chair), David Place, Naomi Stephens.
- **Research and Utilisation Committee** – ensures research conducted meets the strategic aims of the Bushfire and Natural Hazards CRC and

the needs of end-users and is responsible for providing strategic advice on the overall development of the CRC's postgraduate program and new educational initiatives. The committee also advises on the strategy for research adoption. Members - Alistar Robertson (chair), Stuart Ellis, Lee Johnson, Damien Killalea, Ray Canterford, Alan Goodwin, Liz Sonenberg.

FINANCIAL MANAGEMENT

The CRC is in a sound financial position and is well placed to continue delivering the activities associated with the national research program.

Key points for the year

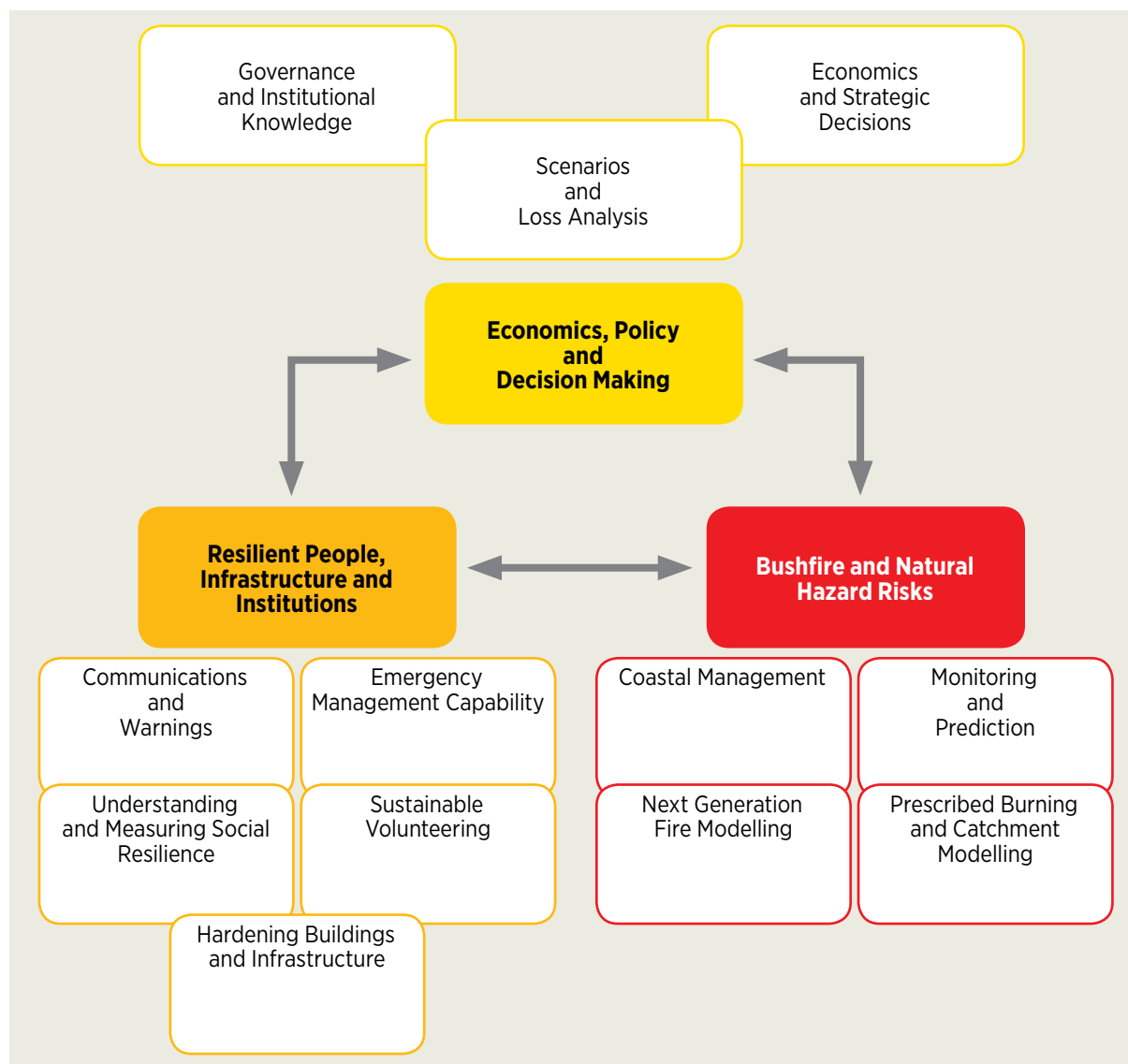
- The audited comprehensive income for the financial year ending 30 June 2015 was \$1.152 million, compared with \$4.164 million in 2013/14.
- The company audit was conducted by Deloitte Touche Tohmatsu in July and no adverse issues were identified. The auditors have provided an unqualified audit report. The Audit Risk and Compliance Committee met regularly during the course of the year and actively managed the CRC's audit and compliance program.
- 2014/15 saw a significant increase in turnover from 2013/14 as the research program and corresponding revenue continued on from normal operations, which were established over 2013/14. Consequently, the CRC has shown an increase in revenue of 36% and increase in expenditure of 133% from 2013/14.



STAFF

NAME	POSITION/ROLE
Dr Richard Thornton	CEO
Dr Michael Rumsewicz	Research Manager
David Bruce	Communications Manager
Leanne Beattie	Executive Assistant
Trevor Essex	Business Manager
Desiree Beekharry	Projects Officer
Lyndsey Wright	Contract Research and Education Manager
Vaia Smirneos	Communications Officer (Events)
Nathan Maddock	Communications Officer
Matthew Hayne	Research Utilisation Manager
Loriana Bethune	Research Utilisation Officer
Kate Eagles	Finance Officer

RESEARCH



The research program (the full program is online www.bnhcrc.com.au/research) broadly takes in the policy objectives of the COAG-endorsed National Strategy for Disaster Resilience and is structured around three themes:

- **Economics, policy and decision-making.**
- **Resilient people, infrastructure and institutions.**
- **Bushfire and natural hazard risks.**

The primary activity of the reporting period has been the consolidation of the research program, including:

- The conduct of active research and data gathering across all projects and postgraduate work.
- Confirming governance and review processes at the program and project level.
- Broadening of the bushfire risk research program with the addition of four new projects and completing contracting arrangements with the research organisations to deliver those projects.
- Bringing all end-user and research organisations together at Research Advisory Forums held in Melbourne and Sydney to ensure ongoing, personal interaction at the project level between researchers and end-user representatives that comprise our integrated project teams.
- The introduction of End-User Huddles – cross-project gatherings with end-users.
- Running our first Bushfire and Natural Hazards CRC – AFAC Conference in Wellington in September.

ACHIEVEMENTS

Research activity in the consolidation phase had two major areas of focus:

- The ongoing reinforcement of collaborative work between researchers and end-user representatives in integrated



RESEARCH

project teams. The integrated project teams include a minimum of two, and in some cases as many as 15, end-user representatives to provide advice on context, direction and how to maximise the benefits to the end-user partner organisations. Integrated project teams are successfully established for all projects and meet regularly, either in person or via teleconference.

- Completing the early research milestones for projects, including recruitment, literature reviews and data collection. There have been no significant technical or scientific issues arising during the consolidation phase of the research program.

All 2013-14 Commonwealth Output Milestones have been completed. For the 2014-15 Commonwealth Output Milestones, a total of 53 have been completed and two are in progress and expected to be completed by the end of 2015. No Commonwealth Output Milestones are expected to be incomplete at end of 2015.

The first research outputs of the CRC have begun to appear in peer-reviewed journals and a number of project team members presented invited keynote speeches at international conferences. All reports are on the CRC website.

Consequently, the CRC remains on target to achieve its research outputs.

END-USER INVOLVEMENT

As of 1 July 2014, 35 projects had commenced. Integrated project teams of researchers and end-users had been established to ensure the projects continue to be informed by, and remain focused on, the needs of the partner organisations. Ongoing and active engagement between researchers and end-users is considered crucial to the success of each project. An additional three bushfire risk research projects commenced during



the reporting period, with a fourth scheduled to commence in the second half of 2015.

In September 2014 the first Bushfire and Natural Hazards CRC – AFAC Conference was held in Wellington, New Zealand. The Research Forum of the Conference, organised by the BNHCRC, was sold out, attracting almost 400 registrants from academia and emergency services agencies across Australia, New Zealand and broader internationally, including many project end-user representatives.

In December 2014, a Research Advisory Forum (RAF) was held in Melbourne, and in April 2015 another RAF was held in Sydney. These two-day events provided the opportunity for CRC partners, project leaders and end-users to gain a complete overview of all of the research activities

within the CRC, and through workshop activities continue the process of reviewing project progress that shape the future direction of each project. Around 120 people attended each RAF, with roughly half being researchers and half end-user representatives.

This year the CRC introduced End-User Huddles – a series of cross-project gatherings with end-users in capital cities where ideas and issues were discussed in detail.

In addition to the RAFs and Huddles, many of the integrated project teams held workshops and regular teleconferences and made use of opportunities to meet formally at conferences and other events to maintain ongoing project communication.

RESEARCH



Examples of end-user and researcher collaboration in the reporting period include:

SOUTHERN AND NORTHERN AUSTRALIA FIRE MANAGERS FORUMS

These were convened by the CRC in Hobart (left), with the Tasmania Fire Service, and in Broome with the Department of Fire and Emergency Services.

These forums include participation from AFAC, the Bureau of Meteorology, many universities and all fire and land management agencies across the region. The Bushfire Seasonal Outlooks were formulated and released in conjunction with these forums. These Outlooks are used by fire and emergency service agencies to work with relevant state and federal governments to prepare for the bushfire season.

TASMANIA RESEARCH BRIEFING

Tasmanian partners received a research briefing in August 2014. More than 130 Tasmanian fire, police and emergency managers joined land managers and government staff for the briefing by a range of CRC researchers.

EXTERNAL LINKS

During the year the CRC continued to build on formal and informal research collaborations both nationally and internationally.

UNISDR

The CRC was appointed the national coordinator for a United Nations backed committee that promotes and supports disaster risk reduction research programs and activities around the world.

This Integrated Research on Disaster Risk National Committee for Australia is sponsored by the United Nations International Strategy for Disaster Reduction, the International Council for Science and the International Social Science Council. It was formed to address the major global challenges



RESEARCH



Assistant Secretary of the Attorney-General's Department, Samantha Chard, was one of the speakers for the International Day for Disaster Reduction Forum at the Australian National University.

of natural and human-induced environmental hazards.

Through this arrangement there are many opportunities for the CRC to align some of its projects with the international disaster risk reduction strategy. Under this arrangement during 2014-15:

- The CRC was part of the Australian delegation, led by the Attorney-General's Department, to Sendai, Japan, in March for the United Nations Third World Conference on Disaster Risk

Reduction. Researchers in the Child-Centred Disaster Risk Reduction project participated in the conference, along with several agency end-users, and the CRC was promoted at the Australian Government's public exhibition booth.

- CRC science was highlighted by the United Nations in a publication detailing case studies on using science for disaster risk reduction. The document includes 10 case studies on best practice, with work by the CRC's Dr Briony Towers featured.

- The International Day for Disaster Reduction was observed on Monday 13 October, with the CRC holding a public forum in Canberra in 2014 (pictured above) to raise awareness. The forum featured a panel of speakers who explored Australia's contribution to natural disaster risk reduction at home and in our region. All talks were filmed, with replays of all the talks and an overview available on the CRC's website.



CEO Dr Richard Thornton announces an MOU with the US Forest Service's Tom Harbour.

US FOREST SERVICE AND PORTUGAL

The CRC became a formal partner of the United States Forest Service (USFS) in a Memorandum of Understanding that will see a continued flow of research and information between the two organisations.

The CEO of the CRC, Dr Richard Thornton, and the Director of Fire and Aviation Management at USFS, Tom Harbour, signed the agreement at the annual conference in Wellington, shortly after Mr Harbour delivered a keynote presentation on the conference theme Learning from Adversity. The USFS was also a partner with the Bushfire CRC through an MOU.

In November, Dr Thornton delivered a keynote address at the 7th International Conference on Forest Fire Research in Coimbra, Portugal. On behalf of the CRC, he also signed a Memorandum of Understanding with the University of Coimbra, to cover potential PhD exchanges and knowledge sharing.

STAFF CONNECTIONS

The CEO is a Board member on the International Association of Wildland Fire and Chair of the Editorial Advisory Committee for the *International Journal of Wildland Fire*. He is a member of the National Flood Risk Advisory Group, a sub-group of COAG's Australian and New Zealand Emergency Management Committee, which reports to the Law, Crime and Community Safety Ministerial Council. He is also a member of the Forest Fire Management Group, a committee of Australian and New Zealand land management agencies reporting to the Forest Products Committee of COAG; a member of the Victoria University Industry Advisory Board for the Centre for Environmental Safety and Risk Engineering (CESARE); a member of the CRC Association Board; and a member of the National Judging Panel for the Disaster Resilient Australia Awards.



RESEARCH



CEO Dr Richard Thornton with the Australian Ambassador to Portugal, Her Excellency Anne Plunket, and the University of Coimbra's Professor Domingos Viegas.

The Research Manager this year joined the International Advisory Board of the University of Melbourne Centre for Disaster Management and Public Safety, and is a member of the Assessment Group for the New Zealand Natural Hazards Research Platform. The Communications Manager is on the Editorial Advisory Committee for *Wildfire*, the magazine of the International Association of Wildland Fire.

HIGH IMPACT HAZARDS

Following large fires in New South Wales, South Australia and Western Australia, the CRC was engaged by the state fire agencies to conduct community surveys to understand the level of preparedness for such events, and to consider the characteristics of fuels and fire behaviour of fires. Similar work was undertaken at the request of Queensland partners after Severe Tropical Cyclone Marcia in Rockhampton. The outputs from these studies are now being considered by the partners and the learnings will be shared across the sector.

NATIONAL FIRE DANGER

The CRC has continued to take a leading role in the development of the science behind a new national Fire Danger Rating System. The CRC is providing project management under contract to the Federal Attorney-General's Department for this national project.

CONSULTANCIES

The CRC entered into a number of consultancies, mainly with its existing end-user partners. The Victorian Department of Environment, Land, Water and Planning further extended its contract research program that began with the Bushfire CRC, across several projects on fire behavior and fuels, planned burning, bushfire smoke dispersal and remote sensing. This work complements the work of the CRC under the Commonwealth Agreement.

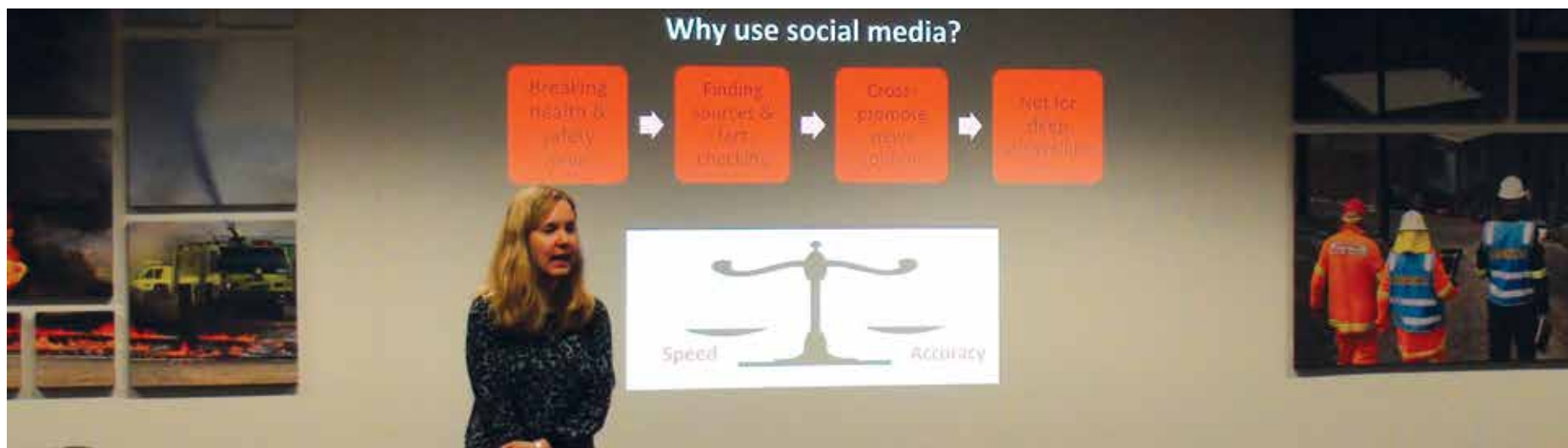
RESEARCH



A delegation from the Saudi Wildlife Authority and the Saudi Civil Defence Authority visited in June.



RESEARCH



SAUDI EXCHANGE

In June, a six-member delegation (pictured left) from the Saudi Wildlife Authority and the Saudi Civil Defence Authority was keen to hear about the research program of the CRC, and the work of partners, the National Aerial Firefighting Centre (NAFC) and AFAC.

CRISIS COMMUNICATION

Visiting US communications researcher Dr Brooke Liu (above), from the National Consortium for the Study of Terrorism and Responses to Terrorism, delivered a seminar and established research links with the CRC in June. She presented research on how effective risk and crisis communication can prepare the public to respond to and recover from disasters. Dr Liu is an Associate Professor of Communication at the University of Maryland in Washington DC. She directs the Risk Communication and Resilience Program at START, a US Department of Homeland Security Center of Excellence that focuses on the causes and consequences of terrorism and other hazards.

UTILISATION AND COMMERCIALISATION

The CRC is on target to achieve its utilisation outcomes.

There were 10 utilisation milestones for the reporting period, of which nine have been completed, and one is expected to be completed prior to the end of 2015.

INTELLECTUAL PROPERTY MANAGEMENT

The CRC's principles for the treatment of Intellectual Property (IP) are consistent with the National Principles of IP Management for Publicly Funded Research.

All IP created by personnel attached to the CRC on projects funded by the CRC is Centre IP (that is, it is owned by the CRC). This IP

is made freely available to all members of the CRC in line with the conditions of the Participant's Agreement.

Given the early stage of the CRC, there were no key items of IP held by the CRC during the reporting period.

The primary market for any IP developed is our partner organisations.

The secondary markets for CRC IP is suppliers to Australian and international fire and emergency services agencies such as those that support the delivery of emergency services, those that provide services to the community, and those that provide advice and products to the community.

EDUCATION



The postgraduate student program supports and extends the broader research activities of the CRC.

Scholarships provide funds for up to three-and-a-half years in addition to industry expertise and mentoring, conference travel support, research promotion and professional development opportunities.

An associate student program is open to students conducting research in relevant areas but not already directly involved with the CRC. This research is likely to be of significant interest to

CRC stakeholders, including research partners and end-users.

With 57 PhD students in the education program, the CRC has more than doubled its target of providing support to 28 PhD students by the end of the reporting period.

There was one outstanding education milestone (3.4.5) at the end of this reporting period – the requirement for two students in the coastal management area. This had been addressed by the time of publication of this report. All other student milestones have been completed.

POSTGRADUATE SCHOLARSHIPS

During this period the CRC consolidated and extended its postgraduate student activities.

The **Postgraduate Scholarship Program** provides access to:

- Full scholarships and partial scholarships of up to \$28,000 per annum for three-and-a-half years.
- Top up scholarships of \$10,000 per annum over three-and-a-half years.
- Access to industry expertise and support.
- Access to professional development, including communications and presentation skills.
- Industry placements of up to four weeks a year for each student with partner organisations.
- Funded attendance at the Bushfire and Natural Hazards CRC-AFAC annual conference.
- Invitations to present at or attend research or industry events organised by the CRC or partners.

ASSOCIATE STUDENTS

The **Associate Student Program** is open to students conducting research in relevant areas but not already directly involved with the CRC. This research is likely to be of significant interest to CRC stakeholders (including research partners and end-users). The benefits of being an Associate Student include:

- Career prospects in the emergency sector enhanced through a range of networking and professional development opportunities.
- Eligibility to apply for travel support for presentations at conferences aligned with the goals of the CRC, including the annual conference and other research and sector-wide events.
- Invitations to present at or attend research or industry events organised by the CRC or partners.
- A biography and research outline published on the CRC's website.



EDUCATION



At the end of this reporting period:

- 33 students were part of the Scholarship Program.
- 24 students were part of the Associate Student Program.

Eligibility for a scholarship requires written support from end-user organisations, indicating support for the aims of the student's project and a willingness to provide advice, formally or informally, during the candidature of the student.



Students, such as Douglas Brown (University of Sydney), are given the opportunity to attend and present at CRC conferences and other events over the year.

ENGAGEMENT WITH INDUSTRY



The 2014 Annual Conference in Wellington, New Zealand, attracted 81 trade exhibitors and 1129 participants.



ENGAGEMENT WITH INDUSTRY



The CRC has extensive engagement activities with small-to-medium enterprises (SME) as well as large corporations beyond our partners.

The overall strategic plan for the CRC, as well as the specific strategies for Research Utilisation and for Communications, includes SME engagement as a prime objective.

Industry engagement highlights include:

- The CRC participated in its first annual conference with AFAC in Wellington, New Zealand, in September 2014. A feature of the conference was the trade expo with 81 exhibitors from the broader industry, the majority of which were SMEs active in both

New Zealand and Australia. The conference also attracted significant corporate sponsorship, including a long-term principal sponsor relationship with global vehicle manufacturer Scania and sponsorship of the Knowledge Lounge by international fire protection equipment maker Dräger.

ENGAGEMENT WITH INDUSTRY



- The CRC participates and supports a calendar of engagement events that includes several emergency management and operations conferences, regional volunteer events and industry-specific conferences and activities. All these events involve significant participation from local and regional SMEs.
- The Fire Protection Association of Australia (FPAA), which represents more than 6000 SMEs, is a contributing member of the CRC and actively promotes CRC research to its members.
- *Fire Australia* is a quarterly journal published jointly by the CRC, AFAC and FPAA and is distributed to 6000 members of the broad fire and emergency services sector.
- AFAC and FPAA are the leading SME partners in the CRC.
- *Hazard Note*, the CRC's research briefing papers, are publically available online and are distributed through an extensive email database that includes SMEs, small rural fire brigades and SES units, and to regional councils, and are shared on social media.



COMMUNICATING THE RESEARCH



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The communications priorities for the reporting period were:

- Building a comprehensive website with access to publications and other research activities.
- Building a social media presence to reach a wide range of audiences.
- Providing training to researchers and postgraduate students to be better communicators and presenters.
- Building a public and industry profile through appearances in targeted events, publications and in the general media.
- Creating and distributing branded publications and products for the CRC.

WEBSITE

The website has been developed around the principles of partners, people and programs.

The site is designed to be the central repository of all CRC public documents and statements, with easy access to the outputs of the research program and the profiles of researchers. It has links to all partners, related research organisations and the legacy website of the Bushfire CRC, which in itself is a large scientific resource for partners and the public.

Development is ongoing, with improvements made to the site on a regular basis.

During the 12-month reporting period the CRC's website had 35,391 unique site visits, for 143,175 page views.

Peak traffic periods were the release of the Southern Seasonal Bushfire Outlook 2014-15 on 2 September 2014 and the updated Southern Seasonal Bushfire Outlook 2014-15 on 20 November 2014. Peaks in traffic can also be seen when each edition of *Hazard News* or *Hazard Note* are released, as these contain information directing users to the website for full details.

The most popular pages outside of the homepage were the Southern Seasonal Bushfire Outlook 2014-15, the research pages, publications page and About Us.



MEDIA AND PUBLICATIONS

The CRC has a unique position from a media perspective, as it is well placed to provide expert comment on natural hazards. The CRC continues to build upon its media reputation as a provider of trustworthy science across bushfires and natural hazards. Peak periods of media interest include our annual conference and the traditionally busy



summer period of bushfires, cyclones and other hazards. The Communications Team is constantly on the lookout for media opportunities and the chance to promote the work the CRC is doing and the benefits gained by our partners through the use of CRC science.

Summer 2014-15 saw major bushfires in Western Australia, South Australia and Victoria, while major

COMMUNICATING THE RESEARCH





COMMUNICATING THE RESEARCH

cyclones impacted the north, with Queensland, Western Australia and the Northern Territory all experiencing landfall of cyclones rated category three or above. The CRC was called for expert comment by various media organisations, with key pieces appearing in the *Sydney Morning Herald*, *The Age*, *The Australian*, *The Canberra Times*, *The West Australian*, *The Australian Financial Review* and *The Weekly Times*, as well as on television on ABC, ABC24, Seven, Nine and SBS. Key radio outlets that featured the CRC include numerous ABC programs across the country, ABC 891 Adelaide and 5AA Adelaide.

Coverage was also achieved through the release of findings from commissioned research projects (studies undertaken for a fee from outside the Commonwealth program) with our partners the South Australia Country Fire Service and Western Australian Department of Fire and Emergency Services. After major bushfires both partners requested the CRC undertake community safety research to inform their community engagement policies and practices. Coverage was achieved in *The Adelaide Advertiser*, *The West Australian* and Western Australia's *Sunday Times*.

A multi-hazard research briefing was held in Hobart in August 2014 for our Tasmanian partners, with coverage appearing on ABC News, Seven and Nine in Tasmania, promoting the breadth of the research program and the benefits for Tasmania.

Numerous television and radio interviews have focused on the science emerging from various projects. All are listed on the CRC website. Media coverage was generated through the efforts of the Communications Team and in conjunction with university and research partners in newspapers, TV and radio.

The Conversation website has carried numerous pieces by CRC researchers on their science, as well as by CEO Dr Richard Thornton.

Airing in November 2014 on SBS TV was the documentary *Inside the Inferno*. The CRC provided information to the producers, and CRC researchers were featured. The documentary first aired in the United States earlier in the year.

In conjunction with the Australian Science Media Centre, an online briefing was held in February 2015 for journalists on the past, present and future natural disaster threats, featuring Dr Thornton and CRC researchers Dr Michael Eburn (Australian National University) and Lucinda Coates (Macquarie University). This generated coverage in several media outlets, including on the Nine Network and in *The Mercury*.

Industry and trade media are key media partners, with the CRC contributing regular articles on the latest research findings and developments in *The Australian Journal of Emergency Management*, *Asia Pacific Fire* (UK based), *Wildfire* (US based), the New South Wales Rural Fire Service's *Bush Fire Bulletin*, Queensland Fire and Rescue Service's *Rural Fire Bulletin*, and the Victorian Country Fire Authority's *Brigade*. Articles have also appeared in *Vitality* (the publication of Volunteering SA & NT), and research cited in numerous publications by the Climate Council.

Fire Australia, a quarterly magazine with a circulation of 6000, is produced by the CRC jointly with the FPAA and AFAC.

HAZARD NEWS AND HAZARD NOTES

Subscribers to the monthly newsletters, *Hazard News*, and the plain language research updates, *Hazard Note*, grew steadily during the 12 months, from 663 to 895, an increase of 35%. The average open rate during this period was 47%, with 17% clicking on a link within the email. To put this into perspective, the average open rate for not-for-profit organisations is 23%, while the click rate is just 2%. The CRC is far exceeding these averages.



COMMUNICATING THE RESEARCH

SOCIAL MEDIA

The CRC regularly engages on social media, and sees these channels as key communications tools. An active engagement strategy throughout the year has seen both the popularity and interactivity of the CRC's channels increase over the 12-month period. Collaborating closely with our partners, both research organisations and emergency services, has seen the reach of CRC posts on social media extend considerably.

The CRC uses Facebook, Twitter, YouTube, LinkedIn and SoundCloud. The annual conference in September is a key time for engagement, and generates the most activity and interest.

YOUTUBE

The CRC's YouTube channel continues to grow, with new videos added from important CRC events, such as our annual conference and the International Day for Disaster Reduction, as well as project updates for end-users. Ten new videos were added to the channel during the 12-month period, bringing the total number to 16. These videos are embedded on the CRC website, partner websites (including the United Nations) and shared via other CRC social media platforms.

During the reporting period, a total of 907 views were recorded, with an estimated 2494 minutes watched. The most popular videos were from our International Day for Disaster Risk Reduction

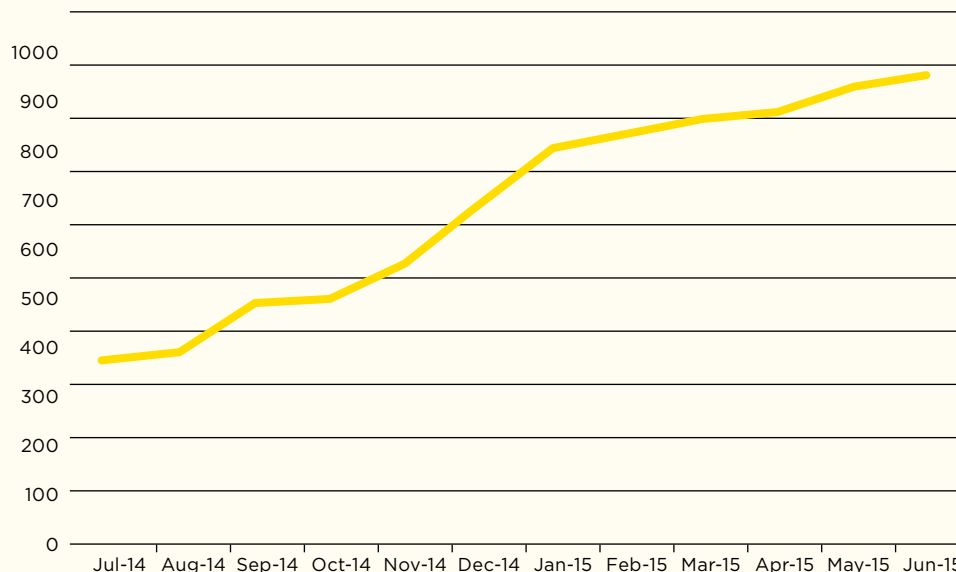
event and a keynote from our annual conference by project leader Professor David Johnson (Massey University) on understanding behavioural responses to earthquake.

FACEBOOK

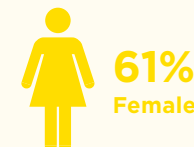
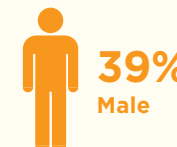
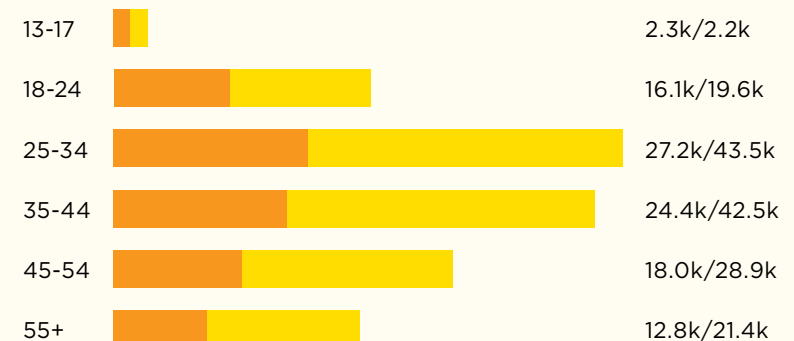
Beginning the 12-month reporting period with 332 likes, by June 30 2015 Facebook likes had grown to 885, an increase of 553, or 267%. The increase in likes can be attributed to the regular and strategic posting of informative content, including links to new research, blogs from CRC people, photographs and video.

CRC Facebook posts received 489,570 impressions, and had 266,332 unique users. Of these impressions, 15% were organic, 83% viral and 2% paid. The average reach per post was 489 people.

BUSHFIRE AND NATURAL HAZARDS CRC FACEBOOK LIKES 2014-2015, AUDIENCE DISTRIBUTION AND POTENTIAL REACH



AGE AND GENDER





COMMUNICATING THE RESEARCH



TWITTER

During 2014-15 the CRC grew its followers on Twitter from 229 to 767, an increase of 235%. Like Facebook, this increase represents an increase in engagement through regular and strategic posting of informative content such as links to new research, blogs from CRC people, photographs and video.

1022 tweets were posted, an average of 2.8 tweets per day, with 35,312 impressions across the 12-month period. CRC tweets were retweeted 589 times, with 62 favourites. The average reach of each tweet was 34.6 people. The CRC was mentioned on Twitter 581 times.

At major events, such as the annual conference, a unique hashtag was created and prominently promoted, including from the podium (pictured left).

LINKEDIN

The CRC has a large LinkedIn presence, with 1159 followers. Given this large base, an increased focus has been given to utilising LinkedIn to spread CRC messages and engage with stakeholders on our research. There are plans to significantly grow this engagement. During the reporting period, CRC posts were viewed 214 times.

SOUNDCLOUD

The CRC commenced using SoundCloud for the 2014 annual conference. Audio from speaker presentations was hosted on SoundCloud, with a widget enabling this audio to be displayed neatly on the CRC website as another handy set of resources from the conference.

In addition, CEO Dr Richard Thornton explained the CRC's 2014 Southern Seasonal Bushfire Outlook, released at the conference in Wellington. As the conference was overseas, this recording was sent to media outlets in Australia to assist with reporting of the story.

During the reporting period, CRC audio was listened to 348 times.



COMMUNICATING THE RESEARCH



The opening of the Research Forum at AFAC14 in Wellington, New Zealand.



COMMUNICATING THE RESEARCH



EVENTS

The CRC made a strategic effort to promote the research program in as many targeted forums as possible.

In addition to the high-profile annual conference, this reporting period saw a lot of activity around raising the profile of the centre, at conferences across a range of audiences including local government, public affairs, community safety and risk managers.

The CRC and AFAC co-hosted the large and annual conference in Wellington in September 2014, along with the New Zealand Fire Service.

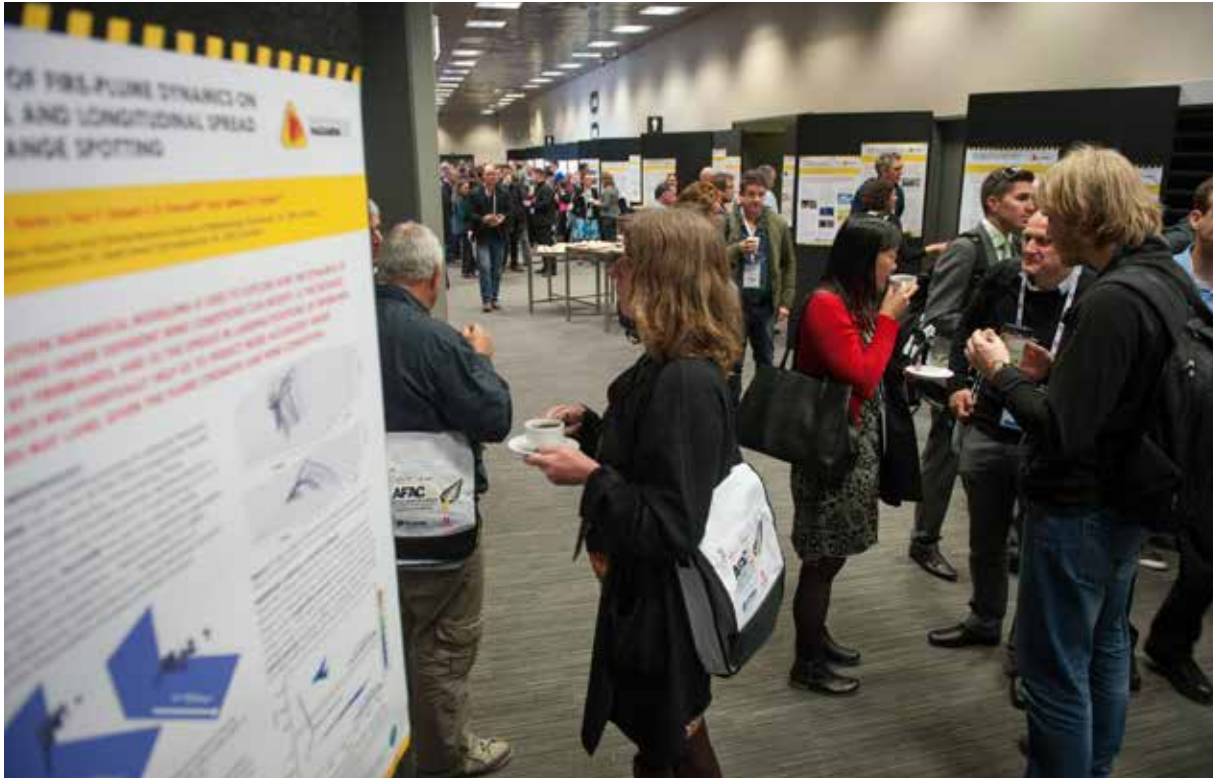
The CRC was prominent throughout the Wellington conference and in particular at the Research Forum, which was a sold-out first day session with nearly 400 participants. CRC researchers featured heavily on the program. The full conference attracted more than 1129 people and the CRC handed out many branded promotional items and corporate brochures.

Other highlights include:

Mercury Rising: Several hundred people around Australia tuned in to the livestream to see a panel of CRC experts discuss the science of bushfires in September. The CRC teamed with the SA Country Fire Service and the SA Department of Environment, Water and Natural Resources for this RiAus event. As well as the live stream, a live audience of emergency management practitioners and the general public watched from the studio (pictured left) at the Science Exchange in Adelaide.

Tasmanian partners received a research briefing in August 2014. More than 130 Tasmanian fire, police and emergency managers joined land managers and government staff for the event, opened by the Tasmanian Minister for Police and Emergency Management, the Honourable Rene Hidding, with Tasmania Fire Service Chief Officer Mike Brown speaking of the value TFS has gained from its partnership with the Bushfire CRC, and how this will be expanded under the CRC.

COMMUNICATING THE RESEARCH



Delegates view the research poster display at the annual conference in Wellington.

The **Southern and Northern Australia Fire Managers forums** were convened by the CRC in Hobart and Broome to discuss relevant fire issues. This included issues on fire weather, vegetation growth, and resource capabilities leading into the bushfire seasons. The Bushfire Seasonal Outlooks were formulated and released in conjunction with these forums. These Outlooks are used by fire and emergency service agencies and governments to prepare for the bushfire season.

Partner conference support

- Emergency Management Conference, Melbourne, July 2014.
- North Australia Fire Managers Forum, Broome, July 2014.
- Southern Australia Fire Managers Forum, Hobart, August 2014.
- 7th Australasian Natural Hazards Management Conference, Wellington, October 2014.

- South East Queensland Fire and Biodiversity Forum, Brisbane, November 2014.
- World Conference on Disaster Risk Reduction, Sendai, Japan, March 2015.
- Australia and New Zealand Disaster and Emergency Management Conference, Gold Coast, May 2015.
- Leadership Forum NSW Rural Fire Service, Dubbo, May 2015.
- NSW Rural Fire Service Association Conference, Mudgee, June 2015.

Also

- Many rural fire and emergency service regional conferences in NSW, Queensland, South Australia, Western Australia, Tasmania and Victoria.
- Preparation for the 6th International Wildland Fire Conference in Korea, October 2015.
- Preparation for the International Fire Behaviour and Fuels 2016, Melbourne and Portland – presented by the International Association of Wildland Fire in association with the CRC.

The chief benefit of getting out and talking about the research was the direct connection made with interested people; some knew a lot about the CRC and others knew very little. The intention was to leave everyone with a good basic understanding of the CRC and to encourage them to get involved, be engaged, and follow our progress.

Evidence of the success of this has been in the increased end-user participation at the project level, and the increase in followers on social media and subscribers to our publications.

The CRC branding was progressively rolled out across communications, publications, and products and on the website over the year.



COMMUNICATING THE RESEARCH



Fire managers from northern Australia met in Broome to discuss preparations for the fire season.

PARTICIPANTS



PARTICIPANT NAME	PARTICIPANT TYPE	ORGANISATION TYPE
Attorney-General's Department	Essential	Australian Government
Bureau of Meteorology	Essential	Australian Government
Geoscience Australia	Essential	Australian Government
ACT Emergency Services Agency	Essential	State Government
ACT Territory and Municipal Services	Essential	State Government
Fire and Rescue NSW	Essential	State Government
Office of Environment and Heritage, NSW	Essential	State Government
NSW Rural Fire Service	Essential	State Government
NSW State Emergency Service	Essential	State Government
NT Fire and Rescue Service	Essential	State Government
Queensland Fire and Emergency Services	Essential	State Government
SA Fire and Emergency Service Commission	Essential	State Government
Tasmania Fire Service	Essential	State Government
Country Fire Authority, VIC	Essential	State Government
Metropolitan Fire and Emergency Services Board	Essential	State Government
Department of Environment, Land, Water and Planning, VIC	Essential	State Government
Emergency Management Victoria	Essential	State Government
Victorian State Emergency Service	Essential	State Government
Department of Fire and Emergency Services, WA	Essential	State Government
Department of Parks and Wildlife, WA	Essential	State Government
New Zealand Fire Service Commission	Essential	International
Australian National University	Essential	University
Central Queensland University	Essential	University
Charles Darwin University	Essential	University
Deakin University	Essential	University
James Cook University	Essential	University



PARTICIPANTS

PARTICIPANT NAME	PARTICIPANT TYPE	ORGANISATION TYPE
Macquarie University	Essential	University
Monash University	Essential	University
Queensland University of Technology	Essential	University
RMIT University	Essential	University
University of Adelaide	Essential	University
University of Melbourne	Essential	University
University of New England	Essential	University
University of Southern Queensland	Essential	University
University of Sydney	Essential	University
University of Tasmania	Essential	University
University of Western Australia	Essential	University
Western Sydney University	Essential	University
University of Wollongong	Essential	University
Victoria University	Essential	University
AFAC	Other	Industry
Australian Red Cross	Other	Industry
Fire Protection Association of Australia	Other	Industry
RSPCA QLD	Other	Industry
University of Canberra	Other	University
Volunteering Queensland	Other	Industry
Flinders University	Other	University



STUDENTS

SCHOLARSHIP HOLDERS

NAME	UNIVERSITY	PHD COMMENCEMENT	ANTICIPATED COMPLETION DATE	PROJECT NAME	THEME ALIGNMENT
Alexander Holmes	Monash	Oct-10	Mar-17	Investigating the effects of soil moisture, temperature and precipitation extremes on fire risk and intensity in Australia	Bushfire and Natural Hazards Risks
Yang Chen	Monash	Aug-13	Feb-17	Modelling forest fuel hazard change over time using LiDAR technology	
Rachel Quill (Nee Griffiths)	UNSW (ADFA)	Jan-14	Jul-17	Spatial-statistical characterisation of wind fields over complex terrain for bushfire modelling applications	
Ashley Wright	Monash	Apr-14	Oct-17	Improving flood forecasting skill using remote sensing data	
Houzhi Wang	Adelaide	Sep-14	Sep-17	Initiation of biomass smouldering combustion	
Grigoris Goldberg	Charles Darwin	Dec-14	May-18	Remote sensing of savanna tree structure and biomass	
Rahul Wadhwani	Victoria	Jan-15	Jun-18	Refinement of the submodels of pyrolysis and firebrand transport and undertaking experiments to validate those for a physics-based bushfire prediction model	
Bryan Hally	RMIT	Feb-15	Aug-18	Deriving innovative metrics for the measurement of wildfire hazard using LiDAR	
Heather Simpson	Wollongong	Feb-15	Dec-18	Productivity and effectiveness of suppression resources and tactics on campaign fires	
Narsimha Garlapati	ANU	Feb-15	Aug-18	Mapping forest fuel load and structure from airborne LiDAR data	
Zeinab Yazdanfar	Monash	Mar-15	Sep-18	Assimilation of ASMR-2 soil moisture and vegetation data into Australian land surface models for natural hazard monitoring and prediction	
Katherine Van Wezel	Charles Darwin	Mar-15	Aug-18	Towards culturally appropriate fire management in the Waanyi and Garawa lands: impediments, opportunities and key challenges	



STUDENTS

NAME	UNIVERSITY	PHD COMMENCEMENT	ANTICIPATED COMPLETION DATE	PROJECT NAME	THEME ALIGNMENT
Mercy Ndalila	Tasmania	Jul-15	Jul-18	Pyrogeography of Tasmania - understanding how vegetation type and bushfire history influence fuel types and smoke emissions	Economics, Policy and Decision Making
Veronique Florec	Western Australia	Jul-11	Sep-15	Economic analysis of prescribed burning for wildfire management in the south west of Western Australia	
Emma Phillips	Macquarie	Feb-14	Oct-17	Network disruptions during long-duration natural hazards	
Graeme Riddell	Adelaide	Feb-14	Oct-17	Robustness and uncertainty in optimal decision making for disaster mitigation planning	
Sue Hunt	ANU	Feb-14	Aug-17	Getting it right: are our arrangements for implementing the National Strategy for Disaster Resilience fit-for-purpose?	
Charles Newland	Adelaide	Mar-14	Oct-17	Improved calibration of spatially distributed models to simulate disaster risk	
Graham Dwyer	Melbourne	Mar-14	Dec-15	Understand and learning from bushfire public inquiries: a case study of Victoria	
Caroline Wenger	ANU	Jun-14	Dec-17	Flood management in a changing climate: integrating effective approaches	
Roozbeh Hasanzadeh Nafari	Melbourne	Jul-14	Feb-18	Flood damage assessment in urban areas	
Ryan Hoult	Melbourne	Mar-13	Nov-16	Seismic assessment and design philosophy of reinforced concrete walls in Australia	Resilient People, Infrastructure and Institutions
Billy Haworth	Sydney	Aug-13	Feb-17	Volunteered geographic information, bushfire preparation and community engagement	
Bill Calcutt	Wollongong	Feb-14	Jul-17	Increasing volunteer retention in emergency service organisations by reducing the dissonance between volunteer expectations and experiences	
Melanie Baker-Jones	QUT	Feb-14	Aug-17	Web 2.0 in disaster and emergency: a risk assessment of tortious liability	

STUDENTS



James Cook University researchers assess the impacts of cyclones and other high wind events.



STUDENTS

NAME	UNIVERSITY	PHD COMMENCEMENT	ANTICIPATED COMPLETION DATE	PROJECT NAME	THEME ALIGNMENT
Rachel Westcott	Western Sydney	Mar-14	Oct-17	Assessing the impact and benefits among responders and recipient communities of structured animal emergency management in emergencies and natural disasters	
Heather Bancroft	Melbourne	Jun-14	Dec-17	Mental health and wellbeing in firefighters	
Fiona Jennings	RMIT	Aug-14	Jan-18	Community-led recovery in the context of emergencies and disaster: a case study of community resilience in the 2013 Tasmania bushfire	
Stephen Sutton	Charles Darwin	Jan-15	Jun-18	Cultural drivers of disaster response behaviour and their cross-cultural applicability	
Korah Parackal	James Cook	Mar-15	Aug-18	An analytical technique for determining the redistribution of structural load effects with increasing wind loads	
Avianto Amri	Macquarie	Jun-15	Jun-18	A cross cultural investigation of child-centred disaster risk reduction and climate change adaptation in Indonesia and Australia	
Miles Crawford	Massey	Jun-15	Nov-18	How risk informs emergency management: a study of the interface between risk modelling for tsunami inundation and emergency management measures	
Mayeda Rashid	CQUniversity	Jul-15	Dec-18	Child-centred disaster risk reduction: achievements, challenges and scope	

COMPLETED STUDENTS

Brianna Larsen	Deakin	Jan-12	Mar-15	Simulated self-paced suppression work in different thermal conditions	
Grace Vincent	Deakin	Feb-12	Feb-15	Fighting fire and fatigue: sleep, shiftwork and physical performance	
Steve Curnin	Tasmania	Jan-12	Jan-15	Spanning boundaries to support effective multi-agency coordination in emergency management	

STUDENTS

ASSOCIATE STUDENTS

NAME	UNIVERSITY	PHD COMMENCEMENT	ANTICIPATED COMPLETION DATE	PROJECT NAME	THEME ALIGNMENT
Douglas Brown	Sydney	Mar-10	Oct-17	Bushfire Risk Perception: a study of the perceived vulnerability of domestic architecture in Australian bushfire prone areas	Bushfire and natural hazards risks
Vaibhav Gupta	RMIT	Jul-11	Feb-15	Remote sensing of fire severity in Australian dry sclerophyll forest	
Tetsuya Okada	Macquarie	Oct-12	Apr-16	Post disaster recovery following recent natural hazard events and risk reduction measures in Australia and Japan	
Philip Stewart	Queensland	Apr-13	May-16	Changing Fire Regimes in the Great Sandy Region of South Eastern Queensland	
Tom Fitzgerald	Sydney	Aug-13	Dec-16	What is the acceptable risk in the coastal zone: perspectives on coastal hazards and decision making	
Gabriela Raducan	RMIT	Mar-14	Mar-17	Impact of bushfire on water quality	
James Ricketts	Victoria	Mar-14	Mar-17	Understanding the nature of abrupt regional shifts in a changing climate	
Grant Pearce	Canterbury	Mar-14	Dec-17	NZ fire climate severity: relationships between climate circulation, seasonal fire danger and fire occurrence	
Sean Morling	RMIT	Jul-14	Dec-17	Using GIS to predict and mitigate erosion and sediment transfer following a bushfire	
Joji Abraham	Federation	Jan-15	Jun-18	Fire and heavy metals: when wild and controlled fires transform unrehabilitated mining waste	
Wasim Chaivaranont	NSW	Mar-14	Dec-17	Estimating wildfire fuel load from remotely sensed data	Economics, Policy and Decision Making



STUDENTS

NAME	UNIVERSITY	PHD COMMENCEMENT	ANTICIPATED COMPLETION DATE	PROJECT NAME	THEME ALIGNMENT
Cathy Cao	Western Australia	Apr-11	Oct-17	Effective communication of household bushfire risk through web-based geovisualisation: considerations in content, representation and design	Resilient People, Infrastructure and Institutions
George Carayannopoulos	Sydney	Jul-11	Jul-16	Whole of government and crisis management: understanding coordination in a time of crisis	
Alex Wolkow	Deakin	Jan-12	Jan-15	The interactions of physical firefighting work, sleep restriction and stress response	
Darryl Dixon	Charles Sturt	Jul-12	Jul-15	Emergency service exposure to asbestos	
Oludolapo Taiwo Fakuade	Canterbury	Oct-12	Apr-14	Integrated disaster preparedness and response as a process for enhancing resilience	
Megan O'Donnell	ANU	Jan-13	Jun-16	Project effects of prenatal bushfire stress on life history traits in humans	
Nicholai Popov	Wollongong	Feb-13	Nov-17	The impact of leadership development on organisational citizenship behaviour and social capital: an intervention using self-determination theory	
Bambang Setiawan	Adelaide	Jul-13	Feb-17	Quantifying the seismic and site amplification characteristics of Adelaide's regolith	
Ken Strahan	RMIT	Aug-13	Aug-17	Household decision making in bushfire self-evacuation	
Alan Green	Wollongong	Feb-14	Feb-17	Effective methods for improving the bushfire resilience of buildings	
Stephen Glassey	Canterbury	Jul-14	Withdrawn	Managing animals in disasters	
Gemma Gray	Melbourne	Jul-15	Mar-17	Spontaneous volunteers in the emergency management sector: case study - the Queensland mud army and the Christchurch student army	
Kamarah Pooley	QUT	May-15	Dec-18	Preventing youth misuse of fire in New South Wales: an empirical evaluation	

PUBLICATIONS

BOOKS – AUTHORISED RESEARCH (UNWEIGHTED):

1. Edwards A, Meyer M, Murphy B, Russell-Smith J. 2015. *Carbon Accounting and Savanna Fire Management*, CSIRO Publishing, Melbourne.

BOOK CHAPTERS:

ARTICLES IN SCHOLARLY REFEREED JOURNALS:

1. Amaratunga D, Hayat E. 2014. The Impact of the Local Political and Socio-Economic Condition to the Capacity of the Local Governments in the Maintenance of Post-Disaster Road Infrastructure Reconstruction Assets, 4th International Conference on Building Resilience, 8-11 September 2014, Salford Quays, United Kingdom, *Economics and Finance Procedia*, © 2014 Published by Elsevier B.V
2. Alisic E, Johnson VA, Johnston DM, Ronan KR, Towers B. 2015. Disaster preparedness for children and families: A critical review. *Current Psychiatry Reports*, 17, 58-66. DOI 10.1007/s11920-015-0589-6.
3. Becker JS, Johnston DM, Paton D, Ronan KR. 2014. Societal influences on earthquake information meaning-making and household preparedness. *International Journal of Mass Emergencies and Disasters*, 32(2), 317-352.
4. Burke S, Kelly B, LeBlanc J, Ronan KR. 2015. Community health and disaster recovery. In E. Mpofu (Ed.), *Community-oriented health services: Practices across the disciplines* (pp. 243-269), Springer: New York.
5. Burns P, Eustace G, McCarthy M, Taylor M, Thompson K, Smith B. 2015. The challenges of managing animals and their owners in disasters: The perspectives of Australian Response Organisations and Stakeholders. *Australian Journal of Emergency Management*, 30:2, 31-37. <https://ajem.infoservices.com.au/items/AJEM-30-02>
6. Bruce E, Haworth B. A review of volunteered geographic information for disaster management. *Geography Compass* 2015, 9(5): 237-250. DOI: 10.1111/gec3.12213
7. Calafat FM, Dangendorf S, Haigh ID, Pattiaratchi CB, Price RM, Rohling EJ, Wahl T. 2014. Timescales for detecting a significant acceleration in sea level rise. *Nature Communications*, 5(3635), doi: 10.1038/ncomms4635.
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9. Crompton RP, George S, Haigh ID, MacPherson LR, Mason MS, Pattiaratchi CB, Wijeratne EMS. 2014. Estimating present day extreme water level exceedance probabilities around the coastline of Australia: tropical cyclone-induced storm surges. *Climate Dynamics*, 42(1-2), 139-157.
10. Eburn M, Dovers S. Learning Lessons from Disasters: Alternatives to Royal Commissions and Other Quasi-Judicial Inquiries. *Australian Journal of Public Administration*, 1-14 (2015). doi:10.1111/1467-8500.12115
11. Eburn M, Dovers S. Risk Management from a Legal and Governance Perspective. *Journal of Integrated Disaster Risk Management*, 4, 61-72 (2014).
12. Eburn M, McLennan BJ. Exposing hidden-value trade-offs: sharing wildfire management responsibility between government and citizens. *International Journal of Wildland Fire*, 24, 162-169 (2015).
13. Edwards A, Meyer M, Russell-Smith J. 2015. Contemporary fire regime risks to key ecological assets and processes in north Australian savannas. *International Journal of Wildland Fire*, DOI: <http://dx.doi.org/10.1071/WF1419>
14. Gad EF, Kafle B, Lam NTK, Lumantarna E, Wilson JL. 2015. Overturning of precast RC columns in conditions of moderate ground shaking. *Earthquakes and Structures*, Vol. 8, no. 1, p. 1-18.
15. Gad E, Lam NTK, Sivanerupam S, Wilson J. 2014. Drift performance of point fixed glass façade systems. *Advances in Structural Engineering*, Vol. 17, no. 10, pp. 1481-1495.
16. Gad E, Lam NTK, Wibowo A, Wilson JL. 2014. Drift capacity of lightly reinforced concrete columns. *Australian Journal of Structural Engineering*, Vol. 15, no. 2, pp. 131-150.
17. Gad E, Lam NTK, Wibowo A, Wilson JL. 2014. Drift performance of lightly reinforced concrete columns. *Engineering Structures*, Vol. 59, pp. 522-535.
18. Guerschman JP, Huete A, Leuning R, Van Dijk A, Yebra M. 2015. Global vegetation gross primary production estimation using satellite-derived light use efficiency and canopy conductance. *Remote Sensing of Environment*, 163, 206-216.
19. Gupta V, Holden L, Jones S, Wallace L, Reinke K. 2015. Assessing Metrics for Estimating Fire Induced Change in the Forest Understorey Structure using Terrestrial Laser Scanning. *Remote Sensing*, 7, pp. 8180-8201.
20. Gurley KR, Masters FJ, Smith DJ. 2014. An Historical Perspective on the Wind Resistance of Clay and Concrete Roofing Tiles, *RCI Interface* Vol. 32, No. 10
21. Handmer J, McLennan B, Whittaker J. 2015. A review of informal volunteerism in emergencies and disasters: definition, opportunities, challenges. *International Journal of Disaster Risk Reduction*, 13: 358-368.
22. Johnson VA, Johnston DM, Peace R, Ronan KR. 2014. Evaluations of disaster education programs for children: A methodological review. *International Journal of Disaster Risk Reduction*, 9, 107-123.
23. Johnson VA, Johnston DM, Peace R, Ronan KR. 2014. Implementing disaster preparedness education in New Zealand primary schools. *Disaster Prevention and Management*, 23(4), 370-380.
24. Johnson VA, Ronan KR. 2014. Classroom responses of school teachers following the 2011 Christchurch earthquake. *Natural Hazards*: 72 (2), 1075-1092.
25. Johnson VA, Johnston DM, Peace R, Ronan KR. 2014. Evaluating children's learning of adaptive response capacities from ShakeOut, an earthquake and tsunami drill in two Washington State school districts. *Journal of Homeland Security*, DOI 10.1515/jhsem-2014-0012.



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26. Johnston DM, Ronan KR, Standring S. 2014. Children's understanding of natural hazards in Christchurch: reflecting on a 2003 study. *Australian Journal of Emergency Management*: <http://www.em.gov.au/Publications/Australianjournalofemergencymanagement/Currentissue/Pages/AJEM29ONE/Historicalreflection.aspx>.
27. Lam NTK, Lumantarna E, Tsang HH, Wilson JL. 2015. Local intraplate earthquake considerations for Singapore, *The IES Journal Part A: Civil and Structural Engineering*, pp. 1-9.
28. Neale T and Weir JK. 2015. Navigating scientific uncertainty in wildfire and flood risk mitigation: a qualitative review. *International Journal of Disaster Risk Reduction*, 13: 255-265.
29. Pattiaratchi CB and Wijeratne EMS. 2014. Observations of meteorological tsunamis along the south-west Australian coast. *Natural Hazards*, DOI 10.1007/s11069-014-1263-8.
30. Ronan, KR. 2015. Progress made with school curricula, education material and relevant training in disaster risk reduction and recovery concepts and practices. Special section on Australian contributions to the UNISDR World Conference and the next cycle of the Hyogo Framework for Action. *Australian Journal of Emergency Management*, 30(1), 8-9.
31. Ronan KR. 2014. Solving wicked problems linked to disasters, risk and uncertainty: Children are truly our future. *Australian Journal of Emergency Management*: <http://www.em.gov.au/Publications/Australianjournalofemergencymanagement/Currentissue/Pages/AJEM29ONE/OPINIONSolvingwickedproblems.aspx>.
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33. Ronan KR, Webb M. 2014. Interactive hazards education program in a low SES community: A quasi-experimental pilot study. *Risk Analysis*: DOI: 10.1111/risa.12217.
34. Setunge S, Withanaarachchi J. 2014. Decision making on transport network planning and the impact on community, economy and the environment. 4th International Conference on Building Resilience, 8-11 September 2014, *Procedia Economics and Finance*, 18, 882-891
35. Taylor M, Thompson K, Smith B. 2015. Risk perception, preparedness and response of livestock producers to bushfires: A South Australian case study. *Australian Journal of Emergency Management*, 30:2, 38-42. <https://ajem.infoservices.com.au/items/AJEM-30-02>
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5. Argent N, Glavac S, Marshall G, McGregor J, McNeill J, Morley P, Parsons M, Reeve I, Stayner R, Thoms M. 2015. The Australian Natural Disaster Resilience Index, Developing an Index of Resilience for Australian communities. 5th Annual Building Resilience Conference, Newcastle.
6. Baker-Jones M, Christensen S, Dootson P, Duncan W, Greer DA, Mehta A, Stickley A, Tippet V. 2015. Effective communication during disasters: What effects community decision-making & action? World Congress on Disaster and Emergency Medicine, 21-24 April 2015, Cape Town, South Africa.
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8. Baker-Jones M, Christensen S, Dootson P, Duncan W, Greer DA, Mehta A, Tippet V, Stickley A. 2015. Effective emergency messaging during natural disasters - an application of message compliance theories. World Congress on Disaster and Emergency Medicine, Cape Town, South Africa, 21-24 April 2015.
9. Bally J, Dharssi I, Kepert J, Vinodkumar, Yeo C. 2014. Mitigating the effects of severe fires, floods and heatwaves through the improvements of land dryness measures and forecasts. Australasian Fire and Emergency Service Authorities Council Conference, Wellington, New Zealand.
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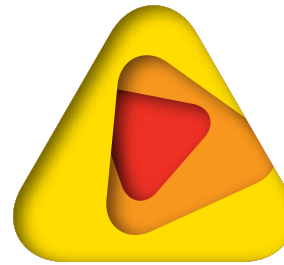


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