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Senator James Paterson
Chair, Senate Finance and Public Administration Legislation Committee
PO Box 6100, Parliament House
Canberra ACT 2600
Email: fpa.sen@aph.gov.au

Dear Senator Paterson

Go8 Submission on the Emergency Response Fund Bill 2019 and the Emergency Response Fund (Consequential Amendments) Bill 2019

The Group of Eight (Go8) welcomes the opportunity to make a submission to the Committee on behalf of its members who may also make individual submissions.

The Emergency Response Fund Bill 2019 and the Emergency Response Fund (Consequential Amendments) Bill 2019 seek to abolish the Education Investment Fund (EIF). It should be noted by this Committee that this is now **the third attempt** by the Government to abolish this critical research and education infrastructure fund to support other policy priority areas.

In each of these cases the Go8 has been supportive of funding to establish and/or boost funding to the Asset Recycling Fund and the NDIS. We are also fully committed to the establishment of the Emergency Response fund, which will assist those affected by natural disasters. However, this must not come at the expense of university research and education infrastructure.

The irony of course is that in each of these cases, it is our universities who conduct research to support those affected by, in this case natural disasters.

It is always basic, good Budget management, that such important public policy be funded, in a carefully advance-planned way, as befits the programs it is designed to provide. Clearly it has not been - and a proposal to use funds earmarked for higher education infrastructure – and critically for research infrastructure - is short-sighted and damaging. The Government is taking the quick and short-term route by attempting to close EIF down a third time and divert monies from the very fund that supports the nation's research capability.

The EIF has been deliberately positioned by successive governments to assist research and education, which is at the heart of our economic future and, while the Emergency Response Fund is an important endeavour, using EIF monies to establish it is not appropriate.

Yours sincerely

VICKI THOMSON
CHIEF EXECUTIVE



Recommendations

1. That the Committee recommend that the *Emergency Response Fund Bill 2019 and the Emergency Response Fund (Consequential Amendments) Bill 2019* be amended to **exclude the abolition** of the EIF and to include provision for a different measure to support the intent of the Emergency Response Fund.
2. That the Committee note the significant contribution the EIF has made to Australian research and discovery, to changing the lives of Australians including through driving novel and ground-breaking solutions and enabling economic recovery and growth.
3. That the Committee notes that the significant contribution the Go8 makes to the Australian economy estimated at \$66.4 billion a year, especially through the impact of its R&D, would not be possible were it not for key research infrastructure set up or funded by EIF.
4. That the Committee find that the intent of the *Emergency Response Fund Bill 2019 and the Emergency Response Fund (Consequential Amendments) Bill 2019* to close the EIF is counterproductive and contrary to a fiscally responsible approach to funding higher education infrastructure especially long-term research infrastructure.

Key points

1. The Go8 considers the idea of an Emergency Response Fund, if effectively implemented, to be a reasonable priority for the nation, especially in view of Australia's and the region's susceptibility to natural disasters of several types.
2. However, Governments have choices in how to fund such landmark schemes. The Go8 contends that the Government can exercise its option **not to use** the remaining EIF funds for this purpose, in view of the detrimental impact the loss of the EIF will have on the nation's research and education capability. The certainty of that impact must be weighed up when seeking to use EIF, conversely, to support a fund that can only be drawn on as an additional response measure if the Government deems it necessary.
3. EIF as a perpetual fund to support higher education infrastructure is a preferred mechanism to less predictable, finite and stop-start funding sources. It offers a more assured framework for investing in infrastructure needs on a semi-permanent, continually revitalised basis.
4. The Go8's concerns relate chiefly to the proposed loss of EIF monies as a future funding source for renewal of vital, enabling research infrastructure¹ but also pertain to its usefulness in supporting significant infrastructure projects for higher education and vocational education and training.
5. While the Government's latest investments in research infrastructure are welcome, they do not provide a clear avenue to fund urgent, unforeseen but necessary, and even major research infrastructure needs arising from the Government's other decisions. For example, the Medical Research Future Fund, while injecting significant money into medical and health research, **does not have a mechanism to support anticipated related infrastructure needs**, even under the Government's response to the Research Infrastructure Roadmap.

¹ Such infrastructure comprises tools, equipment, instrumentation, services, assets and facilities that facilitate ground-breaking research that otherwise could not occur, would not be possible or would be significantly delayed.



6. The Government's intentions are in direct opposition to independent advice it commissioned. That advice, from the Review of Research Infrastructure, places the EIF – and its leveraging power to attract co-investment – at the centrepiece of a long-term, sustainable and well-premised funding solution for national research infrastructure.
7. Arguments are for the utility and benefits to the nation of the EIF in funding research and education infrastructure. The EIF has enabled research that has saved lives, enhanced lifestyles and ensured the survival of key economic sectors by modernising and making them more productive. It has created jobs and its benefits have flowed through local economies.
8. Our international competitiveness and reputation in higher education provision and as a research nation will be placed at risk. Benefits to industry, innovation, and other functions and priorities of government will be compromised.

Further detail

A remnant concern for universities

At the Go8 alone, the economic impact of our research is estimated to be almost \$25 billion annually. Much of this research depends on cutting edge, advanced and nationally available research infrastructure facilities.

The Go8 has therefore welcomed the Government's investments in research infrastructure in recent years and acknowledges the Government's commitment to ensuring investments are tailored, appropriate and commensurate within identified areas of priority, including those noted in the 2016 Research Infrastructure Roadmap.

The Go8 is also pleased to note a commitment by Government to engage in future road mapping processes as a valuable mechanism for determining key needs through consultation with experts and users, including industry and business. This is an important, proven way of ensuring that infrastructure investments are as soundly validated as they can be in advance of or to give effect to budgetary decisions. A level of rigour is applied that is not often matched in establishing other funding decisions.

However, the roadmaps are intended to be implemented holistically but have often not been adhered to in totality when Governments respond. A specific concern raised by the Go8 in the last road mapping process was how the increased research infrastructure needs, expected as a result of additional medical and health research investments through the Medical Research Future Fund (MRFF), would be met.

- This remains a continued concern despite the Government's agreement to the 2016 Roadmap's Recommendation that the needs of the MRFF and complementary initiatives be addressed.
- There is a strong danger that the potential benefits of the MRFF may be significantly reduced if related research infrastructure can not be acquired or provided.

The benefit of a perpetual fund

The 2015 Review of Research Infrastructure observed that Australian Government investment in national research infrastructure is critical and recommended that the Government establish a long-term funding program for this purpose. The Review's expert panel recommended that the basis for this fund, the Australian National Research



Infrastructure Fund (ANRIF), be the remaining monies in the EIF, then at \$3.7 billion, to which an additional \$2.9 billion generated in earnings and co-investment from various sources would be added.

The level of suggested earnings and co-investment is important. The Government's investments through EIF and NCRIS in national research infrastructure facilities have continually demonstrated a high level of return in terms of the cash and in-kind co-contributions that have and can be made by the sector and its partners.

- Not only will \$4 billion be lost to the sector from the EIF, but so will the buying power it has to attract co-investment from sources outside the Australian Government to boost its investments.
- As a quantification, noting that NCRIS facilities have partly been supported by EIF funding, between \$0.88 and \$1.06 was attracted for every \$1 the Australian Government invested into NCRIS over time².

However, the greatest possible advantage of EIF is that as a perpetual fund it would offer certainty for infrastructure facilities, especially research ones, including the jobs of people employed³, and ensuring that investments are not compromised or wasted through discontinuation of essential capability.

- While national research infrastructure, including NCRIS, now has a certain level of certainty through the Government's 12-year investment, the sector cannot easily forget or dismiss intermittent, lengthy periods of complete uncertainty that resulted in loss of critical talent from the facilities as people were let go or needed to find more ongoing employment.
- Two significant capabilities, National High-Performance Computing and the Australian Animal Health Laboratory, were identified by the 2016 Roadmap as requiring urgent consideration for renewal, a situation which would not have occurred if EIF had been activated to provide the significant funding for infrastructure build and upgrades to the facilities.
- As the Review of National Research Infrastructure noted,
'The problem with NCRIS was not the process but that it was a terminating programme. The latter prevented optimal whole-of-life planning and resulted in uncertainty and caution.'

'Retaining staff is not just about financial incentives. Certainty of employment is as important, or maybe more so (...)uncertain funding, severely restricts the ability of National Research Infrastructure operators to offer internationally competitive, long term contracts (..) also makes it difficult to manage a workforce'

Relevance of EIF investments to natural disaster response and wider economy

EIF investments into national research infrastructure facilities have enabled capability to be built to achieve the following:

- weather scenario predictions that enable planning for major weather events such as storms, flooding and bushfires, and assist farmers in maximising their yields and managing risks, could not occur (National Computational Infrastructure)

² This refers to an Australian Government commissioned survey, by ORIMA in 2014 of NCRIS which estimated at the time \$1.06 co-investment, and a census completed in 2018 showing NCRIS attracts co-investment estimated to be *at least* \$0.88 for every dollar invested by the Australian Government.

³ For example NCRIS was estimated to fund over 2000 jobs by the NRI census the Australian Government released in 2018.



- key terrestrial measures including of soil, landscape and ecosystem aspects that assist (among other functions) in agricultural decision making (Terrestrial Ecosystem Research Network)
- development of new and improved crops, healthier food, more sustainable agricultural practices and improved maintenance and regeneration of biodiversity in the face of declining arable land and the challenges of climate variation (Australian Plant Phenomics Facility).

Additionally, the EIF has enabled research that has or has the strong potential to have a **direct impact on industries and their contribution to the economy**. A few examples are provided below:

- research into factors affecting cows becoming pregnant and their ability to successfully wean calves;
- research into new solar and plasma energy solutions;
- predicting flows of liquid through rock to aid mining outcomes – a development that resulted in a spin-off company, Lithicon, by the Australian National University and the University of NSW, that was so successful it eventually sold for record \$76 million;
- the use of imaging infrastructure to get a better view inside oil and gas pipelines, to inform solutions to the formation of hydrates that result in blockages, loss of production and safety issues; and
- the development of new more sustainable crop lines;
- research into the causes of autism spectrum disorder;
- more precise insulin dosage predictions;
- a national childhood diabetes database;
- antibiotic development;
- the use of crops to develop pharmaceuticals;
- the identification of a gene whose discovery will help treat the lethal disease sepsis;
- ground-breaking x-ray imaging to detect real-time changes in the lung;
- development of new wrist orthopaedic implants to speed healing of wrist injuries;
- better understanding of whether war veterans with Traumatic Brain Injury or Post Traumatic Stress Disorder are at increased risk of Alzheimer's Disease later in life;
- further research into: obesity; diabetes; cardiovascular conditions; infectious diseases such as flu viruses; preventative health; gastric and ovarian cancer; cystic fibrosis; mental health; neural diseases and brain disorders; immunological and blood diseases; population health; and endocrine disorders;
- regional health education including through the Joint Health Education Facility at Port Macquarie, a collaboration between the UNSW, the University of Newcastle and North Coast TAFE.

As expected, the EIF has generated jobs, initially for those involved in the construction of new facilities but extending well into the implementation and use of these facilities.

While figures are not available for the whole of the EIF, the impact of research infrastructure on the job market for a comparable program, the National Collaborative Research Infrastructure Strategy (NCRIS), is well-known.

Indeed, the **EIF supported at least 80 per cent of the National Collaborative Research Infrastructure Strategy (NCRIS) network (22 facilities)** at critical junctures when lapse of funding would have resulted in closure of facilities, discontinuation of key research, and adverse effects on thousands of researchers, technical staff and others.

In 2018, the Department of Education commissioned National Research Infrastructure (NRI) census report showed that **over 2000 jobs were supported by NCRIS facilities, 79 per cent of which were technical staff**. There were over



2 million users of NCRIS facilities. Between 2015-16 and 2016-17 nearly a 10 per cent increase in commercialisation outputs were seen in NCRIS facilities, including clinical trials supported, patents and proof of concepts⁴.

Australia will be internationally compromised

It is partly due to the EIF and notably through NCRIS – which the EIF has also enabled – that Australia has gained a reputation as a research heavyweight, attractive to overseas talent and prominent researchers, with proven capability in building and implement world class research facilities.

Our contribution as a country to global discovery and advances will be hampered not only by the potential loss of Australia's own research infrastructure, but also through the loss of our ability to subscribe as researchers to international research infrastructure and more significantly by endangering our strong record as international research collaborators.

A prominent example is Australia's successful bid to co-host with South Africa the Square Kilometre Array (SKA), which will be the largest, most capable radio telescope ever built – expected to significantly expand human understanding of the universe and in so doing to drive technological advancements – such as the management of exponential amounts of data – worldwide. The EIF provided \$80 million to establish Australia's second petascale capability high performance computer and related facilities housed at the Pawsey Centre in Perth.

Several EIF funded national research facilities are part of worldwide networks or facilitate international research. Examples include:

- The Pawsey Centre and Australia's other petascale high performance computer, the National Computational Infrastructure in Canberra
- The Integrated Marine Observing System (IMOS) and the Terrestrial Ecosystem Research Network
- EMBL Australia (as a partner laboratory of the European Molecular Biology Facility – EMBL)
- Australia's participation in the international Giant Magellan Telescope including the construction and development of key instrumentation at Mount Stromlo
- The Australian National Fabrication Facility, critical to many global research advances, including in defence, medical delivery, and manufacturing.

The loss of the EIF and the certainty it could provide endangers not only our long-term research capability and activity, but the resulting benefits. Research infrastructure of the quality funded by the EIF has contributed strongly to the Go8: being consistently the highest ranked Australian universities in international rankings; providing half the research graduates in Australia; and educating over 100,000 students from international countries. One in three international students that choose to come to Australia study at a Go8 university, while the excellence of our research contributes to the higher education sector's overall attractiveness as an international education provider, contributing to the \$23.5 billion international education industry.

The importance of research infrastructure to international education is recognised by the Government – for example the Department of Industry, Innovation and Science notes the importance of access to and training at national

⁴ <https://www.education.gov.au/national-research-infrastructure-census-nri-census>



research infrastructure facilities in attracting international students and supporting Australia as an education destination⁵.

No ongoing or dedicated fund exists to support teaching and learning infrastructure

The 2015 Report of the Higher Education Infrastructure Working Group (HEIWG) recommended that the Government ‘develop a long-term plan to provide adequate funding for transformative institutional research infrastructure and teaching facilities, with co-investment and collaboration as prerequisites.’

It found that the decision to abolish the EIF, made in the 2014 Budget, left universities with minimal Commonwealth Government capital funding programmes for infrastructure. In terms of non-research infrastructure, this issue has yet to be redressed.

The HEIWG found that as an indication of the issue in 2013, 33 responding universities had an estimated total deferred maintenance of \$1.87 billion, as an estimate of the expenditure over and above on-going preventative and corrective maintenance that would be required merely to restore buildings and spaces to their original condition. Meanwhile, deferred liabilities other than deferred maintenance totalled \$2.2 billion.

In 2017, the asset value of buildings alone across 39 higher education providers in Australia was estimated at \$29.975 billion while construction in progress was valued at \$2.4 billion⁶.

ATTACHMENTS

A. SOME KEY FACTS ABOUT THE EIF

B. KEY OUTCOMES – GO8-LED EDUCATION INVESTMENT FUND (EIF) INVESTMENTS

⁵ Department of Industry, Innovation and Science 2016, Submission to 2016 National Research Infrastructure Roadmap Capability Issues Paper

⁶ Department of Education 2019, Finance 2017, Financial Reports of Higher Education Providers



ATTACHMENT A

SOME KEY FACTS ABOUT THE EIF

Key fact 1

Around half the \$4.207 billion investment from the EIF has funded research infrastructure.

Key fact 2

Nearly a quarter of the EIF investment has served **national** research infrastructure.

Key fact 3

The EIF has supported at least 22 National Collaborative Research Infrastructure Strategy (NCRIS) facilities.

Key fact 4

EIF investments in research infrastructure make up around a third of major government investments⁷ in research infrastructure (2006-2016).

Key fact 5

Go8 EIF projects facilitate research and education ranging over and sometimes entailing collaborations involving the following:

- health (obesity, diabetes, cardiovascular, infectious diseases such as flu viruses, preventative health, gastric and ovarian cancer, antibiotic development, cystic fibrosis, mental health, neural diseases, brain disorders and other research, immunological and blood diseases, population health, endocrine disorders, regional health education)
- materials science
- chemistry, biology and physics
- veterinary and agriculture, food and wine
- environmental including urban, terrestrial and marine
- food and wine
- mining
- geoscience
- nanoscience
- advanced engineering
- quantum science and computing
- climate and weather science
- energy – including plasma fusion and solar energy
- astronomy
- genomics
- Antarctic
- Humanities – including language

⁷ These include investments through the Research Infrastructure Block Grants, the Australian Research Council's Linkage, Infrastructure, Equipment and Facilities, and the National Collaborative Research Infrastructure Strategy (NCRIS)

Attachment B

KEY OUTCOMES – GO8-LED EDUCATION INVESTMENT FUND (EIF) INVESTMENTS

\$1.273 billion has been allocated to or through Go8 institutions in relation to 30 infrastructure projects, from a total of \$4.207 billion disbursed from EIF.

1. EIF ROUND ONE / HIGHER EDUCATION ENDOWMENT FUND

A TOTAL of \$580 million was allocated for 11 successful projects announced in December 2008¹, assessed and approved pursuant to the Higher Education Endowment Fund (HEEF). These were selected from 55 eligible applications received through the 2009 funding round of the HEEF.

*Go8 institutions attracted a total of **\$425.9 million** (73 per cent of funding) across six of the 11 projects.*

	University of Sydney	Centre for Obesity, Diabetes and Cardiovascular Disease	\$95 million Student, Global health research focus
Health and medical	<p>The \$385 million Centre for Obesity, Diabetes and Cardiovascular Disease (Charles Perkins Centre Research and Education Hub) brings together researchers, clinicians and students from the University of Sydney's six faculties and three schools to find solutions to obesity, diabetes, cardiovascular disease and related conditions, enabling them to maximise research potential and creating Australia's single largest clinical trials capacity. The centre looks for integrated solutions across disciplines and at their junctions – over 1,000 clinicians, nutritionists and health scientists work with philosophers, marketers, agriculturalists, architects, economists and many others.</p> <p><u>Key outcomes (examples):</u></p> <ul style="list-style-type: none"> • Research on the typical Australian's dietary behaviours and added-sugar consumption showed a decline in consumption of sugary beverages but that intake of confectionary rose significantly over the last 30 years. • Research found that sitting is not linked to incident diabetes. • Research is leading to a breakthrough in insulin dosage, with the potential to make it easier for people with type 1 diabetes to adjust their insulin levels after a fatty meal. • Creation of a game-based app to prevent heart attacks among people who have suffered a cardiac arrest. • A longstanding partnership with PwC - starting with the 2015 'Weighing the Cost of Obesity' study, through the Collective for Action on Obesity (now counting over 300 members) - contributed expert advice to the Commonwealth-funded National Obesity Summit in 2018 as part of the process to develop the National Obesity Strategy. • The Centre also partners with Qantas to collaborate on research and education programs to reshape the long-haul travel experience. • Researchers, clinicians and educators utilised the state-of-the-art facilities and technology to treat 10,000 patients, educate 20,000 students and host 350 events in 2018. 		

¹ <https://ministers.employment.gov.au/gillard/580-million-fast-tracked-australian-universities>

	University of Melbourne	Peter Doherty Institute for Infection and Immunity	\$90 million
Health and medical	<p>A partnership between the University of Melbourne and the Royal Melbourne Hospital, the Doherty Institute has more than 700 staff who work on infection and immunity through a broad spectrum of activities. This includes discovery research; diagnosis, surveillance and investigation of infectious disease outbreaks; and the development of ways to prevent, treat and eliminate infectious diseases.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> • ‘Killer’ T cells revealed as best protection against novel influenza strain • Drug resistant <i>Klebsiella pneumoniae</i>(KP) decoded • Global movement of seasonal influenza viruses uncovered 		
	University of Adelaide	Institute for Photonics and Advanced Sensing	\$28.8 million
Supports Health and medical	<p>The Institute for Photonics and Advanced Sensing (IPAS) fosters excellence in research in materials science, chemistry, biology and physics and develops disruptive new tools for measurement. IPAS was created to bring together experimental physicists, chemists, material scientists, biologists, experimentally driven theoretical scientists and medical researchers to create new sensing and measurement technologies. IPAS is built on a strong ongoing partnership with DSTO and their support of numerous research projects and positions, and targets five key market areas: Defence and national security; Environmental monitoring; Preventative health; Food and wine; Mining.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> • IPAS works closely with Adelaide Enterprise and Research Contracts and Partnerships, the commercialisation arms of the University of Adelaide, and has patented a number of technologies including: <ul style="list-style-type: none"> ○ Microstructured fibres and nanowires ○ A sensor and a method for characterising a dielectric material (VESPR) ○ Gastric cancer biomarkers ○ Q-switched laser ○ A new class of antibiotic ○ Waveguide chip laser ○ Whispering gallery mode sensor ○ Autoantibody biomarker candidates for early ovarian cancer ○ Optical fibre radiation sensor ○ Device and method for sensing a chromatic property of foodstuff (browning sensor) • New orthopedic implant designs that allow wrist fracture plate systems to be more securely attached and for faster healing to occur are being taken to market by the South Australian company Austofix following collaboration with IPAS and the Australian National Fabrication Facility’s Optofab advanced manufacturing team, both located at the University of Adelaide. The VRP 2.0 plate system is expected to be suitable for treating 90 per cent of all wrist fractures and was expected to be available by the end of 2016. 		

	University of Queensland	World-class veterinary science facilities	\$47.2 million Student focus
Supports agriculture	<p>This project enabled UQ to build three state-of-the-art new buildings – the Veterinary Science building, the UQ Veterinary Hospital and the Veterinary Teaching and Research Facility on UQ’s Gatton campus – as well as completely renovate an existing building to house modern pre-clinical teaching laboratories. It provides state-of-the-art teaching facilities for the School’s veterinary science students and a vitality and economic boost to the Lockyer Valley. The arrival of the School at Gatton was forecast as an opportunity for greater industry collaboration, particularly with dairy and beef cattle, swine production and equine operations.</p> <p><u>Key outcomes (examples):</u></p> <ul style="list-style-type: none"> • Collaboration with Meat & Livestock Australia (MLA) is resulting in research aimed at reducing foetal and calf loss in beef cattle breeding herds across northern Australia. It builds on the findings from the \$2.47 million MLA-funded CashCow project recently completed by researchers from the School of Veterinary Science, the Queensland and Northern Territory governments, Outcross Performance Pty Ltd, Ausvet, and cattle veterinarians and commercial beef cattle producers. The main thrust was to identify major factors affecting the likelihood of cows becoming pregnant, and why some pregnant cows successfully weaned their calves while others failed to do so. • Research is also examining the causes for the increase of human cases not associated with livestock of Q fever, an infectious disease transmitted to humans from goats, sheep, cattle and other animals. 		
	Monash University	New Horizons Centre, Clayton Centre	\$89.9 million Student focus
Supports Health and medical	<p>The New Horizons Research Centre co-locates and integrates around 500 staff from Monash University and CSIRO. The New Horizons Research Centre provides platforms for global research and teaching collaboration through state-of-the-art information technology and research equipment that facilitates greater linkages with business and the community. The New Horizons Centre is home to the Monash Institute of Medical Engineering (MIME) and the Monash Immersive Visualisation Platform: CAVE2.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> • Examples include • * Ground breaking x-ray imaging to examine in real-time changes in the lungs in response to treatment for cystic fibrosis • * 3D printing of complex jet engine components cutting down significantly on time needed to manufacture from 6-24 months to 1-2 weeks • * Building crystalline material into 3D structures that can help with water filtration, with potential for commercial portable filtration devices for remote locations, aviation and other purposes. 		

	University of NSW	Energy Technologies Building	\$75 million Student focus
Supports Energy research	<p>The Tyree Energy Technologies Building supports UNSW's world-leading work in photovoltaics as well as research into carbon capture and storage, reservoir characterisation, nanomaterials and policy and market analysis.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> The Tyree Energy Technologies Building was completed on 11 January 2012. The building received a 6 Star Green Star Design rating, awarded by the Green Building Council of Australia, making it the fourth 6 Star education facility in Australia and a first for UNSW. The accreditation represents world leadership in environmentally sustainable building practices. The facility incorporates administrative spaces, teaching and learning spaces, collaborative engineering workshop laboratories, engineering display spaces, a cafe, and research areas including laboratories. The rooftop incorporates photovoltaic cells for the testing of research and development work as well as contributing to the energy input requirements of the facility. It is home to the Australian Energy Research Institute (AERI), the School of Photovoltaic and Renewable Energy and the School of Petroleum Engineering, providing a space where research, education and industry can collaborate in the development and implementation of sustainable energy technologies. 		

2. EIF ROUND TWO

A TOTAL of \$934.2 million was allocated for 31 of 32 projects deemed to satisfy the evaluation criteria, announced in the 2009-10 Budget, from a total of 154 projects. Go8 institutions directly attracted **\$221.8 million** (23.4 per cent) of this across five projects. Two Go8 universities participated in a further \$19.5 million project for the Sydney Institute of Marine Science.

	University of Melbourne	Centre for Neural Engineering	\$17.5 million
Health and medical	<p>The Centre for Neural Engineering (CfNE) is an interdisciplinary centre, established to undertake research in neuroscience and neural diseases. The CfNE draws together leading neuroscientists, neurologists, psychiatrists, cell biologists, geneticists, electrophysicists, chemists, physicists and engineers from the University of Melbourne and partner institutions.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> Capabilities in bionics, computational biology, computational neurobiology, integrative biological psychiatry, sensors and imaging, and stem cells and disease models help researchers undertake a range of research including on neurons, genomics, brain function, psychiatric disorders, and brain disease. A recent example is the use of state of the art neurobiological and neural engineering techniques to help identify the underlying causes of autism spectrum disorder (ASD), with an emphasis on the contribution of inflammation and the glutamate signalling system within the brain. 		
	University of Queensland	Advanced Engineering Building	\$50 million Student focus
	<p>The Advanced Engineering Building (AEB) enhances The University of Queensland's (UQ) ability to deliver practical active-learning styles for engineering students, and maximise global research opportunities enabling UQ to respond to major shifts in the world economy and global marketplace for innovative engineering solutions.</p> <p><u>Key outcomes:</u></p> <p>The AEB houses the state-of-the-art GHD Auditorium – a 500 seat lecture theatre – as well as active learning laboratories and student spaces, and contemporary research facilities to support global engineering research centres.</p>		
	University of Melbourne	Transformed Graduate Learning Spaces	\$16.3 million Student focus
	<p>The grant supported the \$33.2 million transformation of traditional teaching and learning facilities into Melbourne Model professional graduate learning spaces, providing high-quality teaching environments to assist the development of a strong cohort experience in eight of the new Graduate Schools.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> Construction was completed for Arts, Design, and Engineering in 2010, with construction for Education, Law, Science, and Environments due for completion in 2011. 		

	University of NSW	Gateway @ College of Fine Arts	\$48 million Student focus
	<p>The project aimed to build teaching capacity with new flexible, digitally-equipped facilities, along with a new installation gallery facing Oxford Street.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> Gateway@ College of Fine Arts (COFA), completed in 2013, is a multi-million dollar upgrade of the COFA campus through the creation of new galleries and art spaces. It re-oriented the campus to Oxford Street to create an arts and cultural precinct where the public can attend exhibitions, lectures and short courses. 		
	Australian National University	Stage Two of the Chemical Sciences Hub	\$90 million Student focus
	<p>The funds provided for the construction of chemistry buildings C1 and C2 and a teaching laboratory at the ANU.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> Advanced teaching and learning capacity for students. 		

This round also funded the Sydney Institute of Marine Science, which includes Go8 partners.

	Sydney Institute of Marine Science (Go8 partners University of Sydney; UNSW)	Sydney Institute for Marine Science (SIMS)	\$19.5 million Student focus
	<p>The grant enables SIMS to establish the first protected marine aquarium and associated research laboratories in southern Australia, along with pumps, research vessels, mobile radar equipment and sophisticated communications equipment. SIMS is a partnership between University of NSW, University of Sydney, University of Technology Sydney and Macquarie University.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> The infrastructure contributes to the capacity of SIMS and its researchers to conduct multidisciplinary marine research across five core research themes – Urbanisation, Biodiversity, Climate Change, Ocean Resources and Marine Management. SIMS also facilitates the research of PhD students and post doctoral fellows, and through undergraduate and postgraduate teaching at the Institute, as well as the SIMS Master of Marine Science and Management and SIMS Doctoral Fellowships 		

3. EIF ROUND THREE AND SUSTAINABILITY ROUND

A TOTAL of \$550 million was allocated for 19 of 22 projects from 192 applications announced from May to July 2010. Go8 institutions directly attracted **\$166.4 million** (30.25 per cent) of this across **five projects**.

	University of Melbourne	Australian Geophysical Observing System	\$23 million
NCRIS facility	<p>The Australian Geophysical Observing System (AGOS), which builds on the NCRIS Auscope, creates specific capability for enhanced data acquisition and simulation capabilities for the geophysics of the shallow crust of the Australian continent. It delivers a new geophysical observing capability designed to characterise and monitor the physical state and behavior of the accessible crust. AGOS makes available new seismometers, borehole strain meters, GPS stations, and a host of other scientific instruments to provide new capability exploring new realms of the continent; from the ocean fringe to the deepest levels of the crust accessible by drilling. In addition to University of Melbourne, AGOS partners include ANU, University of Adelaide, University of Queensland, Curtin University, Macquarie University, and Geoscience Australia.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> The integrated infrastructure facilitated maximum scientific return from the massive geo-engineering projects that are now being considered, such as deep geothermal drilling; in effect building the platform for treating these as mega geophysical science experiments. AGOS enables collection of new baseline data including surface geospatial and subsurface imaging and monitoring data, thereby providing for better long-term management of crustal services, particularly in Australia's energy-rich sedimentary basins. 		
	University of Queensland	National Imaging Facility	\$40.2 million
NCRIS facility Supports Health and medical	<p>The grant enabled the expansion of the National Imaging Facility established in 2007 under NCRIS with a \$7.25 million grant to provide state-of-the-art imaging capability of animals, plants, and materials. Specifically, the funding allowed a major enhancement of imaging capabilities at NIF's UQ node with the construction of a new 5-story facility, the Centre for Advanced Imaging (CAI), that houses a cyclotron, radiochemistry and ultra-high field human MRI instrumentation. Radiotracer development and in-house production supports world-class molecular imaging research programs utilising the PET-CT and MR-PET facilities.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> NIF provides users with access to 12 new 'flagship' instruments, improved bio-informatics capability and existing instruments and capabilities across 10 nodes in NSW, Queensland, South Australia, Victoria and WA. The facility will aid medical research and the development of pharmaceuticals. Brain imaging, imaging of white matter and nanomedicine are only three of the areas of research facilitated by the Centre for Advanced Imaging at UQ. 		

	University of Western Australia	Indian Ocean Marine Research Centre	\$34 million Student focus
	<p>The Indian Ocean Marine Research Centre, a purpose built facility at UWA's Crawley campus (\$62 million), brings together four leading research organisations working in and around the Indian Ocean: UWA's Oceans Institute; Department of Fisheries WA; CSIRO and the Australian Institute of Marine Science. The development includes an upgrade to the Department of Fisheries WA Watermans Bay Marine Centre (\$11 million).</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> The Centre undertakes research in climate change, the sustainable use of marine resources, conserving marine biodiversity, coastal zone management, and security and safety. New multi-disciplinary research teams are being developed by the collaborating partners to create a graduate training environment to significantly advance the profile and capabilities of marine science in Australia. 		
	Monash University	Green Chemicals Futures	\$29.1 million Student focus
	<p>The Green Chemicals Futures (GCF) building, opened in March 2015, provides opportunities for collaboration and innovation in Australian research and manufacturing. It is a key piece of infrastructure at Monash's Clayton Chemicals and Plastics Manufacturing Innovation Network, which aims to act as a catalyst for new opportunities in global investment, innovation, productivity, job creation and economic growth.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> The GCF supports academic and industrial research within the chemicals and plastics sector in Australia and provides world-class research to expand Australia's 'green workforce'. houses over 100 chemists and engineers and allows the growth of basic science research to targeted industry-driven research. It has 17 specialist sectors, training programmes for industry practitioners and laboratory spaces available for over 1000 students and 100 industry partners. The Chemicals and Plastics Manufacturing Innovation Network and Training Program (C&P GRIP) has 17 partner driven PhD projects where in addition to multidisciplinary capabilities, the projects offer the PhD research an internship within the industry partner's company. C&P GRIP is led by Monash University and Chemistry Australia and involves 20 industry members including multinationals and SMEs. 		

	University of Sydney	The University of Sydney Nano Institute (formerly the Australian Institute for Nanoscale Science and Technology (AINST))	\$40 million
Partners with <i>Microscopy Australia & the Australian National Fabrication Facility</i>	<p>The grant enabled the University of Sydney to establish the new Australian Institute for Nanoscale Science and Technology, now called the University of Sydney Nano Institute, located in a major research precinct at the University spanning medical and physical science and hosting a range of nationally accessible research infrastructure. The grant was used for a new building and new laboratories purpose built to enable breakthrough science in nanoscale technology.</p> <p><u>Key outcomes (examples):</u></p> <ul style="list-style-type: none"> • As part of University of Sydney's multi-year quantum computing partnership with Microsoft in July 2017, the Sydney Nanoscience Hub houses Microsoft's Station Q, which aims to bring quantum computing out of the laboratory and into the real world. • Among other research, the Nanoscience Hub – opened in April 2016 – collaborates with the Royal Australian Air Force, which has led to the establishment of the Jericho Smart Sensing Laboratory, where researchers will develop world-leading nanoscale sensors that can assess the physical, chemical, biological, acoustic and electromagnetic environment. • The facility has also supported the foundation of one of the most successful start-up companies in the emerging global quantum economy, Q-Ctrl. This high-tech start-up employs 25 people in Australia, has plans to double that number in the next few years and recently raised \$22 million from a global syndicate of investors. 		

4. SUPER SCIENCE

Of the 22 projects totalling \$901 million under Super Science² funded by EIF to support a range of national research infrastructure projects, 11 were collaborations led by Go8 universities totalling **\$295.6 million**. An additional allocation of up to **\$88.4 million** was announced from EIF on 20 July 2009 for the Giant Magellan Telescope project.

Total Go8 was **\$384.03 million**.

	University of Queensland	Terrestrial Ecosystem Research Network	\$25.63 million (original \$35 million minus \$9.37 million)
<i>NCRIS facility</i>	<p>The Terrestrial Ecosystem Research Network (TERN) connects ecosystem scientists and enables them to collect, contribute, store, share and integrate data across disciplines. Collectively, this increases the capacity of the Australian ecosystem science community to advance science and contribute to effective management and sustainable use of Australia's ecosystems.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> TERN expands observation and monitoring programs into unrepresented ecosystems, and builds digital infrastructure to store and publish this information in a form that can be searched and accessed freely under licenses that acknowledge the data providers and build collaborative research. Twelve TERN Facilities, each which works in one or more ecosystem science domains, currently have over 1100 monitoring sites around Australia, a figure which is expected to grow to over 10,000. 		
	University of Melbourne, University of NSW, Australian National University (with Griffith University)	Built environment	\$20 million
<i>NCRIS facility</i>	<p>The Super Science Built Environment project culminated in the Australian Urban Research Infrastructure Network (AURIN), a national collaboration delivering eResearch infrastructure to enable better understanding of the current state of Australia's cities and towns. AURIN is delivering access to diverse data from multiple sources, and is facilitating data integration and data interrogation using open source e-research tools.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> Built environment and urban researchers, designers and planners are provided with electronic infrastructure that helps them access a distributed network of aggregated datasets and information services essential to understand patterns of urban development, and to inform and provide direction to urban growth for a sustainable future. This will assist improved design and management of Australian cities, by linking the physical and social aspects of the built environment. 		

² Details largely taken from Department of Education and Training NCRIS website and factsheets.

	Australian National University	Climate High Performance Computing	\$50 million
NCRIS facility – Supports Health and Medical	<p>The grant enabled a critical infrastructure upgrade of the National Computational Initiative (NCI) tier one supercomputer, with the installation of Raijin – the centre’s petascale computing infrastructure.</p> <p><u>Key outcomes (examples):</u></p> <ul style="list-style-type: none"> • The Raijin system provides a peak performance of approximately 1.37 petaflops. • Researchers from the Bureau of Meteorology (BoM) are using NCI’s high performance computing facilities and expertise to research and develop the Australian Community Climate and Earth System Simulator model used in daily weather forecasts all over the country. Improvements in computing power make it possible to simulate the atmosphere, water and land much more reliably and accurately than ever before, dependent on improvement of the model’s code at NCI. • Researchers from ANU have discovered the oldest known star in the universe, with a little help from NCI. The star was discovered using the ANU SkyMapper telescope, and using Raijin to sort through a terabyte of raw images from the telescope. • NCI supports the Australian digital rock start-up company, Lithicon, sold for \$76 million to a US multi-national in 2014. The technology, which is at the forefront of the efficient recovery of oil and gas resources worldwide, is a fusion of a new generation of micro-CT scanner, and advanced analysis and simulations, using ANU/UNSW IP based on composite material theory, that require supercomputer performance. 		
	Australian National University	Upgrade of National Plasma Fusion Facility	\$10 million
NCRIS facility Supports Energy research	<p>The Australian Plasma Fusion Research Facility (APFRF) is a uniquely versatile plasma research facility. It consists of the H-1 heliac magnetic confinement device and the smaller MAGPIE prototype device (MAGnetised Plasma Interaction Experiment), for investigating the interaction of plasma with materials, especially those potentially suitable for fusion reactors.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> • The facility will have ramifications for sustainable power generation and aims to ensure that Australia is intellectually and technologically equipped to benefit from a future fusion power industry. The APFRF enables researchers to perform research into the basic properties of magnetically-confined, high-temperature plasma as part of an international program, whose ultimate aim is ecologically sustainable power generation by the controlled fusion of hydrogen isotopes. 		
	University of NSW	Groundwater Infrastructure	\$15 million

<p><i>NCRIS facility</i> Supports Resources research</p>	<p>The Groundwater project has enabled the establishment of six long-term groundwater monitoring sites with multiple bores and installations at each site to allow Australian groundwater resources to be evaluated.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none">• The infrastructure enables exploration of groundwater flow including in aquifers, and the observation of how groundwater systems interact with rivers, vegetation and climate. A groundwater database collates and distributes the data from the groundwater monitoring equipment.
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	Australian National University	Australian Phenomics Network	\$15 million
NCRIS facility Health and Medical	<p>The APN provides Australian and international researchers with mouse models for the study of a range of diseases. The APN has reduced the cost to researchers of accessing mouse models of disease, and provides specialised equipment and expertise to undertake characterisation of these models to further scientific research.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> By using mouse models, researchers aim to develop new insight into a variety of important human and animal diseases, including cancer, diabetes and immunological and blood disorders, and discover new prevention and treatment strategies for these. <p>Recently, the team at The Australian Phenomics Facility – a node of the APN – employed a large-scale forward genetics discovery platform to screen thousands of genes and successfully find the gene, Gasdermin-D, that triggers the inflammatory condition that leads to sepsis. Sepsis is a severe, whole-body infection that kills an estimated one million people in the United States each year. It occurs as a complication to an existing infection, and if not treated quickly, it can lead to septic shock and multiple organ failure, with death rates as high as 50 per cent. The discovery will enable further developments in how to understand and treat sepsis and other diseases.</p>		
	University of Adelaide	Australian Plant Phenomics Facility	\$10 million
NCRIS facility Supports agriculture	<p>The APPF measures the phenotype (physical attributes) of plants leading to the development of new and improved crops, healthier food, more sustainable agricultural practices, improved maintenance and regeneration of biodiversity and the use of crops to develop pharmaceuticals. The project is a world-leading plant research facility, consisting of three separate facilities: a high throughput plant phenotyping facility, a deep phenotyping and field phenotyping facility, and a model plant phenotyping and high resolution glasshouse analysis facility.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> Among its aims, the APPF addresses the impacts of climate change on crops in controlled environments and in the field. It provides access for Australian plant researchers and breeders to a world leading facility that provides a pipeline for the development of new plant lines from single plant pot-based studies to specialised field investigations. 		

	University of UWA	Population Health Research Network	\$10 million
<i>NCRIS facility Health and Medical</i>	<p>The Population Health Research Network (PHRN) created originally with a \$20 million NCRIS grant provides researchers with the ability to link de-identified population health data from a diverse and rich range of health data sets, across sectors and jurisdictions. This supports nationally and internationally significant population-level research that will improve health and wellbeing and enhance the effectiveness and efficiency of health services.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> The infrastructure allows researchers to carry out nationally and internationally significant population-level research, to improve health and wellbeing and to enhance the effectiveness and efficiency of health services. This includes research into health determinants, organisation and delivery of health services, health status and health outcomes in the population and non-health fields that impact upon health and vice versa. PHRN also enhances collaboration across health systems, public and private health services and agencies that run health systems and provide mainstream health information. 		
	University of Queensland	Research Data Storage Infrastructure	\$50 million
<i>NCRIS facility – Supports Health and Medical</i>	<p>The project built the foundational national data storage infrastructure for research initially with a network of six primary and two additional nodes that include facility for easy access, analysis and re-use of research data. The project grew to support 50 organisations or collaborations, including 37 universities, CSIRO, Bureau of Meteorology, other Commonwealth and state agencies, other NCRIS facilities, and Ergon Energy. The facility (refunded under NCRIS) is now called Research Data Services (RDS).</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> The project allows researchers and institutions to more effectively preserve, manage, share and use much larger amounts of research data. It supports a national data environment at a scale that will enable new questions to be asked on topics and at scales not previously possible. The storage capacity provided to the research sector through this investment is expected to grow to 100 Petabytes. This is the equivalent of over 901,232.64 kilometres of books in shelves, stretching 23 times around the world. RDS currently supports the following data collections: 31 LifeSciences, 40 Earth Systems, 90 Medical and Health, 4 Astronomy, 49 Cultures and Community, 51 Terrestrial Systems, 54 Marine Science, 46 Geoscience, 1 Geophysics and 22 Imaging Characterisation Facilities 		

	University of Melbourne	Collaboration Infrastructure	\$47 million
<i>NCRIS facility - Supports Health and Medical</i>	<p>The funding provides \$47 million for the National eResearch Collaboration Tools and Research facility, which enhances the impact of Australian research by providing an online infrastructure that enables researchers to more easily collaborate and share ideas and research outcomes with colleagues and industry in Australia and around the world.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> • The facility includes 14 Virtual Laboratories – covering a range of research areas from the humanities to climate change, astronomy, genomics, marine research and geophysics – and the NeCTAR Cloud which provides users to store, access and run data remotely, rapidly and autonomously and collaborate with each other from their desktop. • An example is the Endocrine Genomics Virtual Laboratory (endoVL). It allows endocrinologists to access large enough cohorts of endocrine disease cases to conduct studies with real statistical power on endocrine disorders that are rare enough to present challenges for researchers to gather sufficient patient data through clinical trials. For example, more than 8000 adrenal tumour cases are registered on endoVL, with cases being contributed by 78 centres internationally. EndoVL has also helped the Australasia Diabetes Data Network to develop a national database of childhood diabetes including existing and onset cases, aggregating data from the five major children's hospitals in Australia. A key advantage of the endoVL is the search and analysis function which enables researchers to query and learn from the data in real time, in ways they had not envisaged. 		
	Australian National University / University of Melbourne	National Ion Accelerators	\$10 million
<i>NCRIS facility</i>	<p>The grant upgrades the ANU's Heavy Ion Accelerator (HIA) facility which comprises of the 14UD pelletron accelerator and a superconducting 'booster' linear accelerator (LINAC), as well as University of Melbourne's ion accelerator. HIA supports Australia's only experimental nuclear physics program, a major accelerator mass spectrometry program and facilities for ion-beam modification and analysis of materials.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> • The infrastructure provides researchers with infrastructure, with ensuing applications ranging from capabilities from creating and characterising new and innovative materials, resource/energy exploration and waste management, research in environmental, biological and life sciences and investigating climate change, to archaeological and heritage studies, and critical investigations into nuclear science, including fundamental quantum science. 		

	Monash University	Australian Research Data Commons	\$48 million
NCRIS facility – Supports Health and Medical	<p>The funding provides \$48 million to support the Australian National Data Service, whose purpose is to make Australia’s research data assets more valuable for researchers, research institutions and the nation.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> • ANDS’ flagship service, the Research Data Australia discovery portal enables users to find, access and reuse data for research from Australian research organisations, government agencies and cultural institutions. For example, scientific data from the Antarctic and Southern Ocean is expensive and difficult to collect. 2300 records from the Australian Antarctic Data Centre, established in 1996 as the primary facility to ensure data is adequately managed for long-term reuse as required under the 1959 Antarctic Treaty, are syndicated into Research Data Australia. • ANDS provides advice on all aspects of research data management across all disciplines and has so far worked with more than 50 Australian research institutions to improve their data management capabilities. For example, ANDS has partnered with the CRC for Mental Health on a project to increase the discoverability and reusability of two virtual biobanks: The Australian Parkinson’s Disease Registry and the Treatment-resistant Schizophrenia Cohort. 		
	Australian National University	Giant Magellan Telescope	\$88.4 million
	<p>The funding provides \$65 million for the \$1 billion optical telescope being built in Chile’s Atacama Desert, which will provide 30 times better resolution than current land-based telescopes, and \$23.4 million to upgrade Australian infrastructure, including the ANU’s Mount Stromlo Observatory. Astronomy Australia Limited (AAL) partners with the ANU on the project.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> • The GMT began construction in 2015 and is expected to come online in 2020. Australia is also building substantial parts of the facility, including two of the four first-generation instruments. ANU is designing part of the adaptive optics system that corrects the blurring of the atmosphere, allowing the GMT to take images 10 times sharper than the Hubble Space Telescope. 		

5. EIF CLEAN ENERGY INITIATIVE (RESEARCH COMPONENT)

A TOTAL of \$300 million was committed from EIF to support the Clean Energy Initiative's Solar Flagships Program (\$200 million) and Carbon Capture and Storage Flagships Program (\$100 million). Of this \$140.9 million³ was awarded for research infrastructure, with one Go8 institution (UQ) attracting **\$40.7 million**.

	University of Queensland	Research infrastructure to support the AGL Energy Photovoltaic Solar Flagship	\$40.7 million
Supports Energy research	<p>The grant was awarded to UQ to build research infrastructure in NSW and Queensland to support the AGL Energy Photovoltaic Solar Flagship. UQ was set to partner with UNSW on the research infrastructure program.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> The 3.275 megawatt Solar Research Facility at UQ's Gatton campus, comprising more than 37,000 thin-film photovoltaic panels, and estimated to produce enough clean energy to power more than 450 average Queensland homes and displace the equivalent of 5600 tonnes of carbon dioxide annually, was opened on 27 March 2015. UNSW aimed to develop new energy modelling techniques to assist in the design and integration of solar power stations into the electricity grid. 		

6. EIF REGIONAL PRIORITY ROUND

A TOTAL of \$312.6 million was allocated for 11 projects under the EIF Regional Priorities Round. One Go8 institution attracted **\$20 million** (6.4 per cent) from this round.

	University of NSW	Joint Health Education Facility at Port Macquarie	\$20 million Student focus
Health and Medical	<p>The facility, owned and operated by UNSW, brings together the teaching of three organisations: UNSW, the University of Newcastle and North Coast TAFE.</p> <p><u>Key outcomes:</u></p> <ul style="list-style-type: none"> Completed in January 2015, the new facility will be the first campus in regional Australia where undergraduates can complete their full six-year medical degree. It will provide tertiary education to hundreds of students on the mid-north coast, where current participation rates are well below State and National averages, and will help improve the participation rates in medical studies of students from low socio-economic or regional backgrounds. The development includes specialised teaching facilities, tutorial and teaching spaces, computer laboratories, lecture theatres, office space and study rooms. The facility will encourage interaction between a range of medical fields. 		

³ Of the remainder, \$51.6 million went to the CO2CRC to build research infrastructure to support the CarbonNet CCS Flagship in Victoria and other CCS projects such as the Collie-South West Hub CCS Flagship project, and \$48.4 million to CSIRO to build the National Geosequestration Laboratory in support of the Collie-South West Hub CCS Flagship in Western Australia (<https://www.education.gov.au/eif-support-clean-energy-research-infrastructure>). \$200,000 was also approved for research infrastructure components of Solar Dawn, involving UQ, but the project did not proceed (<http://solardawn.com.au/>)