



University of
South Australia

Natural and Built
Environments
Research Centre

2016 Annual
Research
Report



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OUR MISSION

NBERC will provide research training and specialist, interdisciplinary research and consulting outcomes that strongly support sustainable natural environments, advanced development of built environments and improved wellbeing of communities.

OUR VISION

NBERC will be internationally recognised for its leading edge research into sustaining and enhancing our natural environments and for the development of progressive built environments that support the wellbeing of communities.

Director's report



The Natural and Built Environments Research Centre (NBERC) was established in early 2016 with the aim of developing a vibrant research culture, providing high level support and a progressive research environment for staff and students of the School of Natural and Built Environments. This is the first NBERC annual report that outlines the research portfolio of the School of Natural and Built Environments (NBE), the management structure and operations of NBERC, research achievements and academic outputs in 2016. In preparing this report, a key purpose was to bring together into one document a record of the major research activities and achievements, demonstrating the high level efforts, work and successes of our staff and students. Formation of NBERC was a continuation and expansion of the School's previous research centre, Centre for Water Management and Reuse, that had a focussed research portfolio relating to the water theme. The new centre now caters for all discipline areas of NBE and has four research strands being 1) Natural and Built Environments Education, 2) Environmental Stewardship, 3) Smart and Healthy Communities and 4) Water and Natural Resources. These strands are research focussed areas designed to support our academic and research staff and postgraduate students from all of the school's teaching and research disciplines. Importantly, these research strands are designed to provide research support and partnerships with state, national and international industries, government agencies and others. NBERC also has two commercially focussed testing groups: SMAG - Specialised Testing and Research Unit and the Australian Flow Management Group (AFMG) that provide commercial testing and research services on (a) geotechnical, structures and concrete technologies and (b) on

stormwater quality and management, WSUD, irrigation, water metering, technology development and testing, respectively.

In 2016, NBERC had a focus on development of its operations including (i) formation of the four research strands and implementation of strand activities, (ii) a Management Committee and its terms of reference (TOR), (iii) work to establish an Advisory Committee (& TOR), (iv) the official launch of the centre, (v) the renaming of the Australian Hydraulics and Irrigation Testing Facility to the AFMG with registration and (vi) organisation of the NBERC Colloquium. Further activities within NBERC included research related workshops (Sustainable Practice in Geotechnical Engineering & Raising Your Research Profile) and a centre seminar series.

Throughout 2016, strand activities included the organisation of seminars and holding workshops, monthly member meetings and applications for research funding. Support and enthusiasm within the research strands has been high, and I take this opportunity to strongly encourage this to continue in the years ahead. Further details of individual strand and commercial facility activities are provided by NBERC leaders' reports.

I would like to take this opportunity to express my sincere gratitude for the work and support provided by professional, technical and academic staff in forwarding the development of NBERC in 2016, and extend my best wishes to the leadership, membership, and supporting staff in progressing NBERC in 2017.

**Prof. John van Leeuwen, Director,
Natural and Built Environments
Research Centre (NBERC)**

Head of School report



In early 2015 the School of Natural and Built Environments leadership team proposed the development of a school-wide research centre that would incorporate all previous research concentrations and centres from the School. The aim was to provide a single entity to drive collaborative, interdisciplinary research and industry testing and consulting services for all academics and higher degree by research (HDR) students in the School. Following extensive consultation and workshops in 2015, the Natural and Built Environments Research Centre, or NBERC, was formed and has been operational since early 2016.

The component parts of NBERC, namely the four strands and two commercial arms, the leadership and governance structure, and the range of activities and achievements undertaken in 2016 are summarised in this report. As Head of School I'm delighted with the progress we have already made towards achieving the outcomes the leadership group first envisioned for the centre. While the School was always active and successful in research, I believe that NBERC is enabling more staff and students to be part of this activity and success, and to become excited about the possibilities ahead. Each of the strands has enthusiastic participation in meetings and seminars, there are many plans underway for collaborative research leading to grant applications and publications, staff are mentoring and learning from each other and collaborations with other Schools and Institutes are on the rise. Our commercial entities, AFMG and SMAG, are continuing to grow and are finding some synergies among their clients and projects, which are in turn leading to other research possibilities for NBERC members.

I'd particularly like to thank some key people who have been responsible for getting us to where we are now and those who will continue to lead NBERC in the future. Prof. Chris Saint, formerly Director of the Centre for Water Management and Re-use, did an excellent job to lead the consultation and development process to establish NBERC through 2015 until his appointment as Dean Research for ITEE Division in early 2016. Prof. John Van Leeuwen then took over as Director of NBERC and Associate Head of Research in the school and has done a wonderful job of establishing the centre and getting it fully operational. As John moves towards retirement he has begun a seamless transition to Prof. Peter Teasdale who will take on the Director/Associate Head role from the beginning of May, 2017. Thanks also to the 2016 strand leaders – Prof. Abbas Elmualim, Assoc Prof. Topa Petit, Dr Mizanur Rahman and Prof. Paul Sutton/ Dr Paul Corcoran – for their enthusiasm, hard work and leading by example. And thanks to our administrative team for all of their efforts in getting NBERC up and running, particularly Mr Neill Sanderson and Ms Elizabeth Stevens.

Our plans for 2017 are already well advanced, the Industry Advisory Group has been established and had its first meeting, the NBERC Strategic Plan is being developed and will be ready mid-year, workshops, seminars and meetings are being held or planned and our research activity continues to grow.

The future of NBERC certainly looks exciting for 2017 and beyond.

**Prof. Julie Mills, Head of School,
School of Natural and Built
Environments**

Natural and Built Environments Education

The Education Strand has had a slightly slow start within NBERC as it has had three Strand Leaders in the space of less than 12 months due to resignation and secondment of staff. Strand Leaders in 2016 were Prof. Paul Sutton and then Dr Paul Corcoran. The current strand Leader is Prof. Julie Mills while Dr Corcoran is seconded to UniSA Online.

Strand members were active in teaching and learning research, publications, grant applications and award applications with the following key successes:

- 2016 UniSA Citation for Outstanding Contributions to Digital Learning was awarded to the Environmental and Geospatial Sciences Program Team of Dr Tom Raimondo, Dr Justin Payne, A/Prof. Delene Weber, A/Prof. David Bruce, and Ms Morgan Schebella - School of Natural and Built Environments: For transforming field-based teaching of Environmental and Geospatial Science and the attainment of critical field skills through immersive digital visualisations.
- 2016 UniSA Teaching and Learning Grant winners:
 - o Team work, social constructivism and the virtual site. Project Leader: Dr

Sean Pickersgill (AAD), other team members: Dr Rameez Rameezdeen (NBE), Dr Jeremy Coggins (NBE). The project will address the relationship between the employment of a gamified, immersive, virtual learning environment with an assessment rubric and Learning Management System across a number of courses in Art, Architecture and Design, and Building and Construction Management. The project will develop a proof-of-concept immersive digital environment that allows multiple students to simultaneously participate in a virtual visit to a building construction site.

- o Program roadmap: A visual, interactive and self-regulating digital representation of the student learning journey. Project Leader: Dr Paul Corcoran (NBE), Other team members: Ms Liz Smith (NBE), Ms Deb Moulton (NBE), Dr James Ward (NBE), Dr Diana Quinn (TIU), Dr Tim Rogers (TIU). The project will provide a platform for students to engage in regulating their own progression and development through the undergraduate Civil Engineering

program within the School of Natural and Built Environments (NBE). The web based platform will be a motivating resource for current and future students as they will be easily able to locate information about their studies, the constructive alignment of the program and the integral relationship the program has with industry and alumni.

The Education Strand ran a very interesting and well attended breakout session at the NBE Research Colloquium with five presentations that generated strong audience participation and lively discussion.

In 2017 the strand membership has been expanded with the addition of some keen HDR students and recently appointed Teaching Academic staff. The focus for 2017 will be on successful group applications for University and National/ATN teaching and learning grants and awards, as well as ongoing mentoring and development of education research and publications within the strand.

**Prof. Julie Mills, Strand Leader,
Natural and Built Environments
Education**



Environmental Stewardship

The Environmental Stewardship strand opened successfully and joyfully in 2016. The strand now has 33 participants, which makes meetings challenging!

The initial gathering in June 2016 was fundamental to the definition of the strand. All participants agreed that the ultimate goal of the application of our research was nature protection and recognised that humans depend on a healthy planet. We selected strategies that were developed over the next few months, including web site presence, benefits of membership, meeting frequency, and preferred mode of communication.

Michaela Heinson (Natural Resources, Adelaide and Mt Lofty Ranges) presented the inaugural seminar of the ES strand in August 2016. The seminar was presented for researchers of various disciplines.

The second meeting of the strand's enthusiastic participants developed a virtual group business card for the NBERC web site, so that external organisations can view the strand's capacity at a glance. Participants' introductions showed that we knew of each others research and we enjoyed learning more about the researchers themselves. Much emphasis needs to be placed on forging an inclusive

research culture based on humanity and joy. Comfort with colleagues and flowing communication will facilitate research more than any other formal mechanism.

One strategy to build a research culture in part driven by a successful seminar series has been to include the ES strand in Breaking EGS (Environmental and Geospatial Science). The series is designed to engage undergraduate students and allow them to meet others in different years, as well as staff. It takes place four times per year, presents announcements, two short seminars including one by an undergraduate or Honours student and one by a more "advanced" researcher, and is followed by chat over pizza. The first Breaking EGS of 2017 included the ES strand and was a great success.

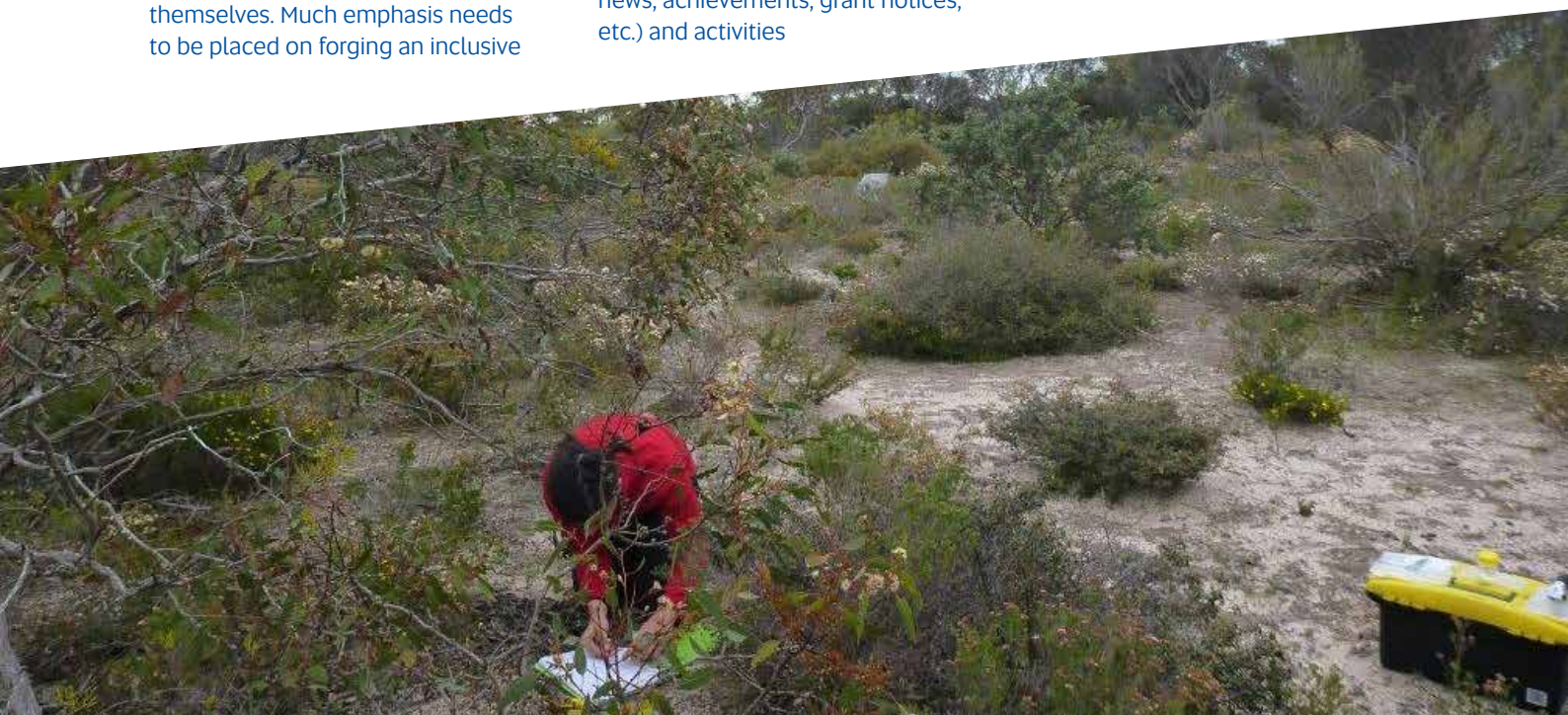
Our next strand meeting allowed us to review our goals and strategies, and to meet new participants, including research students. The focus remains on building a strong and vibrant research culture, including undergraduate students, projecting our image externally, and determining how the strand may best benefit its members. Regular updates (research news, achievements, grant notices, etc.) and activities

(gatherings, workshops) keep members informed and engaged in our research culture. Research opportunities are rarely limiting, but funding and time often are to do the most motivating and productive research: that in which people are most interested. Improving conviviality, communication, and various administrative mechanisms (e.g. grant announcements) should increase our efficiency in research. Our strand can build a strong regional presence in Australia and overseas.

Assoc. Prof. Sophie (Topa) Petit

Strand Leader, Environmental Stewardship

B. Amato examines floral nectar production in a native vegetation fragment surrounded by agricultural land on the Yorke Peninsula to evaluate the energetic support of pollinators over time.



Smart and Healthy Communities

In 2016, the SHC strand engaged in various internal and external activities to energise our concerted effort towards collaborative, high impact and partnered research with governments, industry and communities. The internal activities are seen as pivotal in advancing our collaborative research culture. Highlights for our external engagement activities included the South Australian Construction and Built Environment Forum (SACBE), engagement with the UN Habitat in a workshop and project "Action Planning for Cities Supported by the City Prosperity Index" and a national workshop on integrated transport and land use. There were some challenges in 2016 in terms of time and resources as well as working across the four strands of NBERC. In 2017 it is our ambition to further strengthen personal and professional research relationships and to further advance our collaborative research culture. Various strategies are in place to advance our research capabilities on integrated infrastructure; VR/BIM; big data/cloud and IoT; age-friendly buildings/smart assisted homes; behavioural change and marketing;

social inequality and distribution of wealth and health; cyber-physical models; and the shared economy. We are keen to work collaboratively with colleagues in the School of Engineering, the Barbara Hardy Institute, the School of Information Technology and Mathematical Sciences, the Future Industries Institute and other Research Institutes and Schools within the University of South Australia (UniSA), nationally and globally; engagement with the Dean of Enterprise; and indeed advancing the culture of collaboration – work better together.

SACBE 2016

This event was held in the Bradley Forum at UniSA on Thursday 6th October 2016, with special guest, Mr Andy Keough CSC, CEO Defence SA. Mr Keough provided an insight into his role and details of the future Defence and Construction programs of expenditure in SA.

United Nations Human Settlements Programme (UN-Habitat) Workshop

Dr Jorge Ochoa was invited by UN-Habitat to deliver the international training workshop for City Prosperity Index.

Ambitions for 2017

- Success – high impact research;
- Engagement with the Dean of Enterprise;
- Advance the culture of collaboration – work better together.

**Prof. Abbas Elmualim, Strand Leader,
Smart and Healthy Communities**



Water and Natural Resources

The Water and Natural Resources (WNR) strand commenced operations with a membership of 24 academic staff, including Early Career Researchers (ECR), Professors and adjunct staff. It was determined that the aim of the strand was to develop an active multi-dimensional research culture based around water and natural resources.

The first strand meeting was held on 24 May 2016 and focused on introducing and sharing research ideas, involving ECRs in "proof of concept" research work, mentoring and multi-disciplinary research that engages with industry and local/state government. The strand also offered support to review proposals for the Research Themes Investment Scheme (RTIS) and NBERC seed funding. The second strand meeting occurred on 26 August 2016 and it carried over items from the first meeting's agenda and discussed other funding opportunities for members (e.g. Australian Research Council (ARC) and the Goyder Institute for Water Research).

On 18 November 2016 the School of Natural and Built Environments held its annual Colloquium and strand members presented at this

event. WNR strand members actively participated in NBERC presentations and collaborative seminars throughout 2016. A collaborative seminar on sustainable practice in geotechnical engineering between UniSA and the University of Wollongong was organised on the 27 October 2016. It was opened by Prof. John van Leeuwen and involved five presentations on multi-disciplinary research followed by open discussion which generated strong audience participation.

Strand members were also very successful in winning grants, including internal grants (NBERC, ECR awards, RTIS, Partnership Enabling Grant Scheme (PEGS) funding), industry/state government grants (e.g. Concrete Masonry Association of Australia (CMAA), Goyder Institute) and national grants (ARC). In 2016, objectives for the strand included achieving high attendances at NBERC seminars and presentations, PhD students being involved in the strand, and development of research projects between NBERC members across Mawson Lakes and City East campuses.

In 2017 WNR strand membership was extended to include HDR students, which increased total membership in the stand to 46. Going forward, the strand will organise meetings to discuss and support high impact research and consider funding opportunities from both internal and external sources. As such, RTIS and PEGS funding opportunities were discussed during the first strand meeting held in 2017 with particular focus being paid to the quality of successful applications in 2016, funding distribution and highlighting success stories for strand members. Finally, the strand wishes to increase collaboration via multi-dimensional research across the strands in NBERC and achieve continued success in securing external funding, mentoring its ECR members and being actively involved in NBERC presentations.

**Dr Mizanur Rahman, Strand Leader,
Water and Natural Resources**



Australian Flow Management Group

The Australian Flow Management Group (AFMG) continued to provide and expand its specialised commercial services (testing and advice) in the areas of flow measurement, irrigation technology and other fields of engineering hydraulics. It also continued to play an important role in research and educational activities within UniSA with a focus on hydraulics, hydrology and stormwater management.

The AFMG has 3 primary functions: commercial business, research and education.

The core services provided by AFMG are:

- 1 Commercial
 - o Contract testing and consultancies.
 - o Product and technology evaluation.
- 2 Research
 - o Applied research for industry based organisations and other funding bodies focussed on applied solutions
 - o Investigative research into our suite of commercial test methods
- 3 Education
 - o Post- and undergraduate education/research participation and programs.
 - o Short courses for industry or government clients.

AFMG activities focus on the following objectives:

- Creating and maintaining a commercial operation that supports continual improvement and growth.
- Achieving a strong, productive, high quality research portfolio that is recognised both nationally and internationally.
- Assisting and participating in educational activities that support the AFMG portfolio and increase its reputation.

- Supporting the strategic priorities of NBERC and the greater university strategy, encompassed in Crossing the Horizon 2020.

OUR ACHIEVEMENTS IN 2016

General

Official name change to Australian Flow Management Group. This included registering a domain name, ensuring we have a presence on Google Map services and an opening ceremony with key university and commercial stakeholders.

Projects

The number of overall projects that the AFMG commenced in 2016 grew to 92. The greatest proportion of projects were commercial followed by internal work which accounts for improved activities or other routine works such as internal calibration of equipment.

Commercial

The commercial operations of the AFMG remained a significant portion of AFMG works in 2016.

Approximately 80% of the activities in the facility are associated with the NATA accreditation. In addition, the facility participated in a NATA technical assessment which has contributed to the improvement of the laboratory quality management system.

Client Base

Our annual engagement with clients increased based on comparison with previous years. We have also been liaising with water service providers to secure key clients for ongoing work.

These include:

- SA Water, a key client who provides urban water meters for batch testing and end-of-use accuracy testing.
- Non-urban service providers such as Goulburn Murray Water.
- Northern Territory Power and Water.
- Krohne and Bermad, who supply water meters.

Long term testing service contracts were secured with both SA Water and NT Power and Water.

OUR CHALLENGES AND OPPORTUNITIES FOR 2017

Some of the challenges and opportunities for 2017 are:

- To increase the AFMG's support for student research projects.
- Attain certification for the facility's key reference equipment to satisfy Regulation 13 of the Measurement Act. This will enable the facility to provide services to clients who require specialised testing to meet regulations under the Australian Government National Measurement Act and allow for growth in our commercial testing services.
- Support in restructuring of laboratory technical support services across the Division of ITEE.
- Further develop work with key clients, such as SA Water and NT Power and Water, on research projects where opportunities exist.
- Explore new opportunities to attract projects that apply our specialised equipment and infrastructure.

Mr David Pezzaniti
Facility Manager AFMG



SMAG – Specialised Testing & Research Unit

The SMAG –Specialised Testing and Research Unit was originally founded in 1980 and has operated in some form ever since. SMAG provides specialised testing and industrial research services for industry, government agencies and individuals, utilising facilities and equipment that are not widely available elsewhere. Work is carried out by a team of highly experienced technical staff with input from academic staff where needed. Examples of testing completed in 2016 include:

- Roof sheeting point load tests
- Valve box load capacity tests
- Sprayed concrete round determinate panel, core box and cylinder tests
- Insulator load capacity tests
- Nail pull-out tests
- Anchor screw pull-out tests
- Concrete and mortar tests

Clients in 2016 included:

- SA Water
- Revolution Roofing
- Electranet
- HR Products

- Steel Building System
- Pybar Mining Services
- Stockbrands
- Bianco Precast
- Department of Planning Transport and Infrastructure
- Terramin Australia

A key focus in 2016 was the achievement of NATA (National Association of Testing Authorities, Australia) accreditation for some of our regular tests and to ensure that the systems in place for all tests will be capable of future accreditation if deemed necessary. Accreditation was achieved for all tests we submitted for assessment, namely:

- Curing compression specimens and grout and mortar cubes in the laboratory; preparation and conditioning cores (wet and dry conditioning) AS 1012.8.1, 8.3, 14
- Compressive Strength – cylinders, cores AS 1012.9, 14
- Mass per unit volume of hardened concrete AS 1012.1 Measurement method

- Load tests on metal and composite access covers and grates in the range 0.4 to 1800 kN AS 3996 Clause 4.2.1 Appendix C
- Flexural Toughness of Fibre Reinforced Concrete (Using Centrally Loaded Round Panel) ASTM C 1550

Our work development and invoicing for 2017 are exceeding targets that were set on 2016 figures.

Prof. Julie Mills, SMAG – Specialised Testing & Research Unit



2016 NBE Research Education Portfolio Leaders' (REPLs) Report

Higher Degree by Research (HDR) student demographics, achievements and highlights.

HDR students

During 2016 there were 133 HDR students enrolled in NBE and 23 graduated (listed below).

Shirina Afroze
Samuel Aleer
Saad Alsharrah
John Awad
Mary Ayre
Youngpil Chun
Vimal Kumar Ganesh Kumar
Mahdi Gholoum
Michael Heath
Mohammad Reza Hosseini
Ivan Iankov
Asif Iqbal
Susan Irvine
Alaa Ismail Ahmed
Diana Mohamad
Sherif Mostafa
Mohamad Murshed
Ramkrishna Nirola
Md. Moinul Hosain Oliver
Vahid Poorjafarijavazm
Md. Mamunur Rashid
Dona Udawatta
Yiming Zhang

Achievements and Highlights

HDR student participation and successes in the NBERC 2016 Research Colloquium:

1. 1st Year HDR Presentations: Farid Khayyer (1st) and Ruchini Jayasinghe (2nd)
2. 2nd, 3rd & 4th Year HDR Presentations: Adam Sutton (1st) and Georgia Pollard (2nd)
3. Best Poster: Hanaa Hegab
4. Certificates of Appreciation for valuable contribution to the 2016 NBE Research Colloquium were awarded to Eugene Moore and Norman Goh.

NBE 3 minute thesis

The following HDR NBE students participated in the School of Natural and Built Environments 3MT School heat: Bhabananda Biswas, Farzana Kastury, Sanchita Mandal, James Plummer, James Prater, Mina Rouhollahi and Ruhaida Rusmin. The winner of the School 3MT heat was HDR student, Ms Farzana Kastury, who went on to be placed second in the Division 3MT heat and consequently progressed onto the University heat.

Other Achievements

PhD graduate Rina Aleman was awarded the Best Student Paper, Australian Journal of Botany in 2016; and PhD student, Morgan Schebella was part of the Environmental and Geospatial Sciences Program Team awarded the 2016 Citation for Outstanding Contributions to Digital Learning.

REPL Action Plans for 2017

- Facilitate the timely conversion of HDRs from 'provisional' to 'current enrolment' status, by undertaking an auditing process of all NBE HDRs and supporting those with outstanding Confirmation of Candidature status (beyond 6 months).
- Prepare and support HDR students for the ITEE Division Research Day, 3MT Competition and NBE Research Colloquium.

Honours and Awards

The following honours and awards were bestowed upon staff and students during 2016



Adjunct Prof. John Argue

Adjunct Prof. John Argue was awarded the Honorary Fellow of Institution of Engineers, Australia - HonFIEAust. This award is bestowed upon a limited number of engineers recognised by Engineers Australia for their contribution to the Engineering Profession over a long period of time. The award is limited to a maximum of 200 Honorary Fellows at any given time.

In 2016, Adjunct Prof. Argue also received a Hall of Fame award from Stormwater Australia in recognition and appreciation for his outstanding contribution to Stormwater Management in Australia.

Adjunct Prof. Pat James

Following a year of working with the Nature Foundation of South Australia, Adjunct Prof. Pat James was conferred with the title of Honorary Research Associate with the Foundation at their AGM in October 2016.

Prof. John van Leeuwen

During 2016 Prof. John van Leeuwen was appointed to the ARC College of Experts for 2017.

Prof. Christopher Saint

Prof. Christopher Saint was appointed to the Management Board of The Goyder Institute for Water Research and The Governing Board of the Dublin City University Water Research institute in 2016.

Dr Tom Raimondo

Dr Tom Raimondo was awarded the 2016 Walter Howchin Medal by the Geological Society of Australia (SA Division). The medal is awarded to a researcher in the early stage of their career, who is distinguished by their significant published research work within the Earth Sciences in South Australia, or from a South Australian base.

Dr Raimondo was also the recipient of a 2016 Young Tall Poppy Science Award from the Australian Institute of Policy and Science.

Furthermore, Dr Raimondo was awarded the D.I. Groves Medal for best paper in the 2015 volume of the Australian Journal of Earth Sciences. The award was presented at a ceremony during the Australian Earth Sciences Convention in Adelaide.

Bianca Amato

PhD student Bianca Amato received an NRM Research and Innovation Network Scholarship in 2016 to support her research on pollination in agricultural landscapes.

School of Natural and Built Environments' Higher Degree by Research Students

(* Indicates Higher Degree by Research Students who graduated in 2016)

Shirina Afroze*

Status: Doctor of Philosophy
Primary Supervisor: Dr Andrew Allan
Thesis Title: Cumulative effect assessment for sustainable road transport system planning: a study on Dhaka City of Bangladesh

Rosmina Binti Ahmad Bustami

Status: Doctor of Philosophy
Primary Supervisor: Dr James Ward
Thesis Title: Developing resilient living walls for South Australia

Farjana Akhter

Status: Doctor of Philosophy
Primary Supervisor: Dr Guna Hewa Alankarage
Thesis Title: Scenario analysis and water availability assessment in the Murray-Darling basin of Australia applying SWAT

Mohammadmahdi Alikhani

Status: Doctor of Philosophy
Primary Supervisor: Prof. Paul Sutton
Thesis Title: Scenario modelling of changes in the global value of ecosystem services

Scott Allen

Status: Masters by Research
Primary Supervisor: Assoc. Prof. David Bruce
Thesis Title: Redefining the boundaries of cadastral surveying training and education in South Australia and is the current training and education system meeting the requirements of licensed surveyors

Abdullah Abdulmohsen M Alrajhi

Status: Doctor of Philosophy
Primary Supervisor: Prof. Simon Beecham
Thesis Title: Partial root-zone drying irrigation for sustainable production and environmental protection using recycled wastewater

Saad Alsharrah*

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. David Bruce
Thesis Title: Mapping perennial arid vegetation using high-spatial resolution satellite imagery: a case study in Morocco

Bianca Amato

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Topa Petit
Thesis Title: The role of native pollinators and vegetation as drivers of agricultural productivity in the context of resource scarcity

Hong Ki An

Status: Doctor of Philosophy
Primary Supervisor: Dr Wen Yue
Thesis Title: Determining the optimum detector locations at metering roundabouts using the queuing length estimation models

Briony Ankor

Status: Doctor of Philosophy
Primary Supervisor: Dr Sharolyn Anderson
Thesis Title: An evaluation of the use of remote sensing in the development and monitoring of environmental policies in Australia

John Awad*

Status: Doctor of Philosophy
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: Impacts of catchment properties on the nature of dissolved organic matter from discrete catchments that supply water for domestic consumption

Mary Ayre*

Status: Doctor of Philosophy
Primary Supervisor: Prof. Julie Mills
Thesis Title: A harder hat to wear? Women in professional engineering.

Jennifer Ayres

Status: Doctor of Philosophy
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: Creating artificial floating Island of grass to remediate eutrophic water

Marie Beekharry

Status: Professional Doctorate
Primary Supervisor: Dr Tony Ma
Thesis Title: Applying agile project management methodology to natural disaster projects

Tom Benn

Status: Doctor of Philosophy
Primary Supervisor: Prof. Julie Mills
Thesis Title: The effect of high limestone mineral addition and cement kiln dust on chloride penetration of concrete

Hugh Alexander Burger

Status: Doctor of Philosophy
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: Determination of the reasons for the presence of blue-green algae and their control in papermill wastewaters

Jeet Chand

Status: Doctor of Philosophy
Primary Supervisor: Dr Guna Hewa Alankarage
Thesis Title: Optimization of irrigation scheduling on water use efficiency, nutrient uptake and carbon retention in the soil-water-plant environment

Youngpil Chun*

Status: Doctor of Philosophy
Primary Supervisor: Prof. Linda Zou
Thesis Title: Fouling behaviour and characteristics of forward osmosis processes

Ilda Clos

Status: Doctor of Philosophy
Primary Supervisor: Dr Michael Short
Thesis Title: Further investigation and improvement on qualitative performance of permeable pavement and associated technologies in relation to stormwater runoff and associated pollution reduction

David Cockburn

Status: Masters by Research
Primary Supervisor: Prof. Julie Mills
Thesis Title: Investigation into the use of Port Pirie lead/zinc slag as a supplementary cementitious material in concrete

Robert Cyprian

Status: Masters by Research
Primary Supervisor: Dr Rameez Rameezdeen
Thesis Title: Alleviating complex hostile stakeholder interference influenced by unfavourable governance practices in project management in developing countries. An exploratory case field study

Mark Daker

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. David Bruce
Thesis Title: Public open space policy, supply, and population health: a case study of metropolitan Adelaide

Jianghui Dong

Status: Doctor of Philosophy
Primary Supervisor: Dr Xing Ma
Thesis Title: Skin buckling behaviour in steel and concrete composite members using contact buckling theory

Merinda Edwards

Status: Doctor of Philosophy
Primary Supervisor: Dr Alpana Sivam
Thesis Title: An examination of the response of South Australia's coastal communities to rising sea levels, who's taking charge?

Mark Ellis

Status: Doctor of Philosophy
Primary Supervisor: Dr Xing Ma
Thesis Title: Durability of crumbed rubber concrete

Darren Fong

Status: Doctor of Philosophy
Primary Supervisor: Prof. Abbas Elmualim
Thesis Title: Improving the utilisation of building information modelling in a university facilities management setting

Anne Fordham

Status: Doctor of Philosophy
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: Corporate social responsibility of mining companies in rural communities in South Australia and beyond

Andrew Fox

Status: Professional Doctorate
Primary Supervisor: Assoc. Prof. Nicholas Chileshe
Thesis Title: The standard for systemic risk in project management

Alexandra Gaut

Status: Masters by Research
Primary Supervisor: Assoc. Prof. Delene Weber
Thesis Title: Improving wellbeing by developing a connection to nature

Mahdi Ghafourian Boluri Mashhad

Status: Doctor of Philosophy
Primary Supervisor: Dr Sharolyn Anderson
Thesis Title: Application of active and passive remote sensing for land-use change analysis

Mahdi Gholoum*

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. David Bruce
Thesis Title: Mapping coral reef density using high spatial resolution satellite imagery: a case study in the State of Kuwait

Chin How Goh

Status: Doctor of Philosophy
Primary Supervisor: Prof. Christopher Saint
Thesis Title: Emissions and carbon sequestration potential of biosolids from Bolivar Wastewater Treatment Plant reused in South Australian agricultural operations

Abid Hasan

Status: Doctor of Philosophy
Primary Supervisor: Prof. Abbas Elmualim
Thesis Title: The implications of the use of mobile information and communication technologies for construction productivity

Noor Ismah Hashim

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Nicholas Chileshe
Thesis Title: An investigation into multiple projects environments within the Australian construction industry

Michael Heath*

Status: Masters by Research
Primary Supervisor: Assoc. Prof. Topa Petit
Thesis Title: Direct seeding for the restoration of vascular plants and re-establishment of macro-invertebrates on vacant arid agricultural land, Port Wakefield, South Australia

Syamsul Hidayat

Status: Doctor of Philosophy
Primary Supervisor: Dr Guna Hewa Alankarage
Thesis Title: Investigation of optimisation techniques for multiobjectives operation of stormwater harvesting schemes

Cameron Hopkins

Status: Doctor of Philosophy
Primary Supervisor: Dr Don Cameron
Thesis Title: Sustainable in-situ cold recycling of local roads

Reena Hora

Status: Doctor of Philosophy
Primary Supervisor: Dr Mizanur Rahman
Thesis Title: Development of microbial induced calcite precipitation, MICP technique to bio-cement of sandy soil for sustainable geotechnical practice

Mohammad Reza Hosseini*

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Nicholas Chileshe
Thesis Title: An investigation into virtuality in Hybrid Construction Project Teams (HCPTs)

Mohammad Abul Hossen

Status: Doctor of Philosophy
Primary Supervisor: Dr Guna Hewa Alankarage
Thesis Title: The Teesta water dispute between India and Bangladesh: A proposal for benefit sharing regime through effective water diplomacy

Sabir Hussain

Status: Doctor of Philosophy
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: Optimization of dissolved organic matter removal from surface waters by novel treatment methods for the supply of drinking water

Ivan Iankov*

Status: Doctor of Philosophy
Primary Supervisor: Prof. Michael Taylor
Thesis Title: Developing greenhouse gas emission rates for traffic on Australian roads

Asif Iqbal*

Status: Doctor of Philosophy
Primary Supervisor: Dr Andrew Allan
Thesis Title: Modelling eco-efficiency for vehicular emissions: a study on Dhaka city of Bangladesh

Susan Irvine*

Status: Doctor of Philosophy
Primary Supervisor: Dr Andrew Allan
Thesis Title: The challenge of integrating affordable housing in transit-oriented development

Alaa Ismail Ahmed*

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Ian Clark
Thesis Title: Hydrogeology of the Oratunga area, Central Flinders Ranges, South Australia

Nina James

Status: Doctor of Philosophy
Primary Supervisor: Dr Sandra Taylor
Thesis Title: Environmental identity in citizen science

Jacqueline Jepson

Status: Doctor of Philosophy
Primary Supervisor: Dr Konstantinos Kirytopoulos
Thesis Title: How project risk management practice compares with theory

Timothy Johnson

Status: Doctor of Philosophy
Primary Supervisor: Dr Don Cameron
Thesis Title: Trees, stormwater, soil and civil infrastructure: synergies towards sustainable urban design

Farid Khayer

Status: Doctor of Philosophy
Primary Supervisor: Dr Mizanur Rahman
Thesis Title: Modelling the liquefaction behaviour of sand with fines and the effect of bio-cementation

Veerdhawal Kulkarni

Status: Doctor of Philosophy
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: Elucidation of the causes of chemical and biological mediated chloramine decay and potential control mechanisms in water distribution systems

Wing Yiu Lai

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Nicholas Chileshe
Thesis Title: Construction managers and quality management in Hong Kong building projects

Nicholas Langsford

Status: Doctor of Philosophy
Primary Supervisor: Dr Tom Raimondo
Thesis Title: Technostratigraphic evolution of the lower Cambrian Hawker Group, west central Flinders Ranges, South Australia

Danda Li

Status: Doctor of Philosophy
Primary Supervisor: Prof. Julie Mills
Thesis Title: Mechanical properties of crumb rubber concrete (CRC) and its structural application

Joel Liffner

Status: Doctor of Philosophy
Primary Supervisor: Dr Guna Hewa Alankarage
Thesis Title: Linking catchment hypsometry to catchment hydrology and climate variability

Chenghao Lu

Status: Doctor of Philosophy
Primary Supervisor: Dr Xing Ma
Thesis Title: Wind-induced dynamic response of reinforced steel lattice transmission towers and line systems

Jennifer Macdonald

Status: Doctor of Philosophy
Primary Supervisor: Prof. Julie Mills
Thesis Title: CODE BIM: Collaborative design education utilising Building Information Modelling

Genine Meredith

Status: Masters by Research
Primary Supervisor: Assoc. Prof. David Bruce
Thesis Title: Assessing the geospatial literacy of senior secondary geography and earth and environmental students

Diana Mohamad*

Status: Doctor of Philosophy
Primary Supervisor: Dr Matthew Rofe
Thesis Title: E-education: telecommuting potential in a higher education institute in Malaysia

Safa Molan

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Delene Weber
Thesis Title: A study of the application of Immersive Virtual Environments (IVF's) in bushfire preparedness education

Eugene Moore

Status: Doctor of Philosophy
Primary Supervisor: Dr James Ward
Thesis Title: Development of a low-tech, low-cost alternative to aquaponics, integrating agriculture and aquaculture

Mojtaba Moosavi

Status: Doctor of Philosophy
Primary Supervisor: Dr Rameez Rameezdeen
Thesis Title: The critical success factors of implementing design for reverse logistics in the South Australian residential construction industry

Damian Mortimer

Status: Masters by Research
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: Elucidation of the relationship between calcium and fluoride in groundwaters in the Anangu Pitjantjatjara Yankunytjatjara Lands with a view to developing an appropriate treatment method

Mona Mosallanejad

Status: Doctor of Philosophy
Primary Supervisor: Dr Sekhar Somenahalli
Thesis Title: Estimation of the origin-destination matrix for multimodal public transport using smart card data

Sherif Mostafa*

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Nicholas Chileshe
Thesis Title: Application of lean, agile and simulation concepts to improve the uptake of off-site manufacturing and prefabrication building systems in Australian construction

Mohamad Murshed*

Status: Doctor of Philosophy
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: Optimization and modelling of drinking water treatment processes for waters of the River Murray, South Australia

Krishnan Mysore

Status: Doctor of Philosophy
Primary Supervisor: Prof. Abbas Elmualim
Thesis Title: Influence of people, organisation and environment on multi-stakeholder engagement adversities in globally distributed ICT Projects: A vendor's perspective

Munshi Nawaz

Status: Doctor of Philosophy
Primary Supervisor: Dr Sekhar Somenahalli
Thesis Title: Transit oriented development (TOD): opportunities of a bus based developments (BTOD) as a mechanism for achieving low carbon communities

Hoang Nguyen

Status: Doctor of Philosophy
Primary Supervisor: Dr Mizanur Rahman
Thesis Title: Critical state behaviour of granular materials and associated micro-mechanics: A DEM study

Tan Hai Dang Nguyen

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Nicholas Chileshe
Thesis Title: Stakeholder management strategies for construction projects in Vietnam

Sylvia Odusanya

Status: Doctor of Philosophy
Primary Supervisor: Prof. Abbas Elmualim
Thesis Title: Investigating project performance measurements based on the complexity level of IT-enabled projects

Omerebere Ogbughalu

Status: Doctor of Philosophy
Primary Supervisor: Dr Michael Short
Thesis Title: Microbial reactions in passivation mechanisms for pyrite oxidation control in acid mine drainage

Md. Moinul Hosain Oliver*

Status: Doctor of Philosophy
Primary Supervisor: Dr Guna Hewa Alankarage
Thesis Title: Dynamics of emitter clogging in relation to subsurface thermal variation

Andrea Parks

Status: Doctor of Philosophy
Primary Supervisor: Prof. Julie Mills
Thesis Title: Supporting prospective students: recruitment for student success

Thi Y Duyen Pham

Status: Doctor of Philosophy
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: Development and modelling of advanced coagulation and oxidation process

Jenny Firmin Pisimi

Status: Doctor of Philosophy
Primary Supervisor: Dr Jorge Ochoa Paniagua
Thesis Title: Influence of culture and stakeholder management of current Corporate Social Responsibility practice and its implications on socio-economic developments: Papua New Guinea oil & gas industry

Arnold Platts

Status: Doctor of Philosophy
Primary Supervisor: Dr Don Cameron
Thesis Title: An enhanced heat transfer system for ground heat exchange in unsaturated soils

James Plummer

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. David Bruce
Thesis Title: The impact of urbanisation on bird biodiversity

Georgia Pollard

Status: Doctor of Philosophy
Primary Supervisor: Dr James Ward
Thesis Title: Different kinds of worth: comparing the food production capabilities and social value of community and home food gardens

Alicia Pollett

Status: Doctor of Philosophy
Primary Supervisor: Dr Tom Raimondo
Thesis Title: Heat flow and crustal heat production in Central and Southern Australia

Vahid Poorjafarijavazm*

Status: Doctor of Philosophy
Primary Supervisor: Dr Wen Yue
Thesis Title: Transit timetable synchronisation using metaheuristic algorithms

James Prater

Status: Doctor of Philosophy
Primary Supervisor: Dr Konstantinos Kirytopoulos
Thesis Title: An investigation of the theory of optimism bias and its impact on realistic Information Technology project scheduling

Md Rahman

Status: Doctor of Philosophy
Primary Supervisor: Dr Wen Yue
Thesis Title: Oversaturated traffic signal: stochastic optimization with upstream gating and queue balancing

Md. Mamunur Rashid*

Status: Doctor of Philosophy
Primary Supervisor: Prof. Simon Beecham
Thesis Title: Statistical downscaling of GCM outputs to rainfall

Ratnayake Ratnayake

Status: Doctor of Philosophy
Primary Supervisor: Dr Guna Hewa Alankarage
Thesis Title: Initial soil moisture effects on flash flood forecasting in the urbanised catchments in South Australian semi-arid climate

Lily Reid

Status: Doctor of Philosophy
Primary Supervisor: Dr Justin Payne
Thesis Title: The Ediacara biota of South Australia: assemblage distributions through space and time

Harsha Sapdhare

Status: Doctor of Philosophy
Primary Supervisor: Prof. Simon Beecham
Thesis Title: Economic analysis of street-scale green infrastructure

Morgan Schebella

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Delene Weber
Thesis Title: The psychological benefits associated with modifiable attributes of natural environments

Melodie Selby

Status: Doctor of Philosophy
Primary Supervisor: Prof. Julie Mills
Thesis Title: Women in engineering careers: Why they left and why they stayed

Niranjani Semananda

Status: Doctor of Philosophy
Primary Supervisor: Dr James Ward
Thesis Title: Assessment of the efficiency and effectiveness of wicking bed irrigation systems for urban agriculture

Ruchini Senarath Jayasinghe Arachchila

Status: Doctor of Philosophy
Primary Supervisor: Dr Rameez Rameezdeen
Thesis Title: Risks in reverse logistics: a building information modelling enabled risk management model

Lina Shi

Status: Doctor of Philosophy
Primary Supervisor: Dr Jun Li
Thesis Title: Understanding of scale formation and inhibition in the Bayer Process

Alexander Sims

Status: Doctor of Philosophy
Primary Supervisor: Prof. Michael Taylor
Thesis Title: Activity modelling for risk assessment and emergency management applications focusing on peri urban regions

Callum Sleep

Status: Masters by Research
Primary Supervisor: Dr Sekhar Somenahalli
Thesis Title: The potential for a transport mode shift to improve the sustainability of travel in the suburbs of South Eastern Australia

Branko Stazic

Status: Doctor of Philosophy
Primary Supervisor: Prof. Michael Taylor
Thesis Title: Linking macro level strategic transport forecasting models and traffic microsimulation models to enhance transportation analysis process

Kelly Tadiar

Status: Doctor of Philosophy
Primary Supervisor: Prof. Simon Beecham
Thesis Title: An examination into the mechanisms and behaviours associated with sediment accumulation in permeable pavements

Dona Udawatta*

Status: Doctor of Philosophy
Primary Supervisor: Prof. Abbas Elmualim
Thesis Title: Enhancing the performance of waste management practices through a cultural shift in Australian construction project teams

Riaz Uddin

Status: Doctor of Philosophy
Primary Supervisor: Dr Wen Yue
Thesis Title: Road safety assessment. A Case study of Peshawar (Pakistan)

Shivanita Umapathi

Status: Doctor of Philosophy
Primary Supervisor: Prof. Simon Beecham
Thesis Title: Water management and water consumption characteristics of 3 water sources through real time monitoring at a new development representative of future residential living

Michael Van Alphen

Status: Doctor of Philosophy
Primary Supervisor: Prof. John Cann
Thesis Title: Variation in asbestos mineral composition

Stacey Vorwerk

Status: Doctor of Philosophy
Primary Supervisor: Dr Don Cameron
Thesis Title: Modelling ground and moisture movement in a vegetated expansive clay suburb

Monita Yessy Wambrauw

Status: Doctor of Philosophy
Primary Supervisor: Dr Wen Yue
Thesis Title: Investigation route choice behaviour of commuters using bridge linking isolated islands in Indonesia

Emma Wannell

Status: Doctor of Philosophy
Primary Supervisor: Dr Kathryn Davidson
Thesis Title: Ideology, rhetoric and the development of public ecological consciousness.

David Williamson

Status: Masters by Research
Primary Supervisor: Prof. John Van Leeuwen
Thesis Title: An improved understanding of the extent and capacity of the Dilwyn Formation confined aquifer and an assessment of the Sherbrook Formation, south-east of South Australia

Anthony Wood

Status: Professional Doctorate
Primary Supervisor: Assoc. Prof. Nicholas Chileshe
Thesis Title: The project management office: factors that drive effective deployment in Australia

Wenjin Xue

Status: Masters by Research
Primary Supervisor: Assoc. Prof. Mary Drikas
Thesis Title: Measurement of biodegradable component on NOM in source water and treated water for drinking purpose

Meena Yadav

Status: Doctor of Philosophy
Primary Supervisor: Dr Rupak Aryal
Thesis Title: Detection of emerging chemical contaminants in wastewater: assessing the effectiveness of treatment technologies and current analytical capabilities

Yiming Zhang*

Status: Doctor of Philosophy
Primary Supervisor: Prof. Linda Zou
Thesis Title: Novel ion exchange membranes: preparation, characterization and application for desalination

Yan Zhou

Status: Doctor of Philosophy
Primary Supervisor: Dr Gujie Qian
Thesis Title: Mechanistic understanding of conditions required to establish and control geochemical passivation of pyrite

Future Industries Institute and School of Natural and Built Environments' HDR Students

Samuel Aler*

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Albert Juhasz
Thesis Title: Metagenomics: screening of organisms and functional profiles associated with polycyclic aromatic hydrocarbon bioremediation in contaminated soils

Bhabananda Biswas

Status: Doctor of Philosophy
Primary Supervisor: Prof. Ravi Naidu
Thesis Title: Microbial degradation of environmental contaminants in clay and modified clay minerals-modulated systems

Stephen Blundell

Status: Doctor of Philosophy
Primary Supervisor: Dr Gary Owens
Thesis Title: Enhanced degradation of persistent organic pollutants by nanoscale zero-valent iron

James Chan

Status: Doctor of Philosophy
Primary Supervisor: Prof. Emily Hilder
Thesis Title: Lab in a syringe

Gulliver Conroy

Status: Doctor of Philosophy
Primary Supervisor: Prof. Enzo Lombi
Thesis Title: The professional shaping of nanotechnology knowledge: a boundary perspective of communication for environmental risk governance

Maria Faustorilla

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Zuliang Chen
Thesis Title: Accurate Measurement of Total Petroleum Hydrocarbon in Soils and Sediments

Ricardo Jose Ferreira Neto

Status: Doctor of Philosophy
Primary Supervisor: Prof. Emily Hilder
Thesis Title: Micro-sampling of whole blood and plasma-like fraction collection using porous polymer monolith technology

Vimal Kumar Ganesh Kumar*

Status: Doctor of Philosophy
Primary Supervisor: Prof. Megh Mallavarapu
Thesis Title: A cost effective method for remediating wastewater using algae coupled with simultaneous production of biofuels

Hanaa Hegab

Status: Doctor of Philosophy
Primary Supervisor: Dr Milena Ginic Markovic
Thesis Title: Novel approaches toward surface modification and fabrication of functionalized graphene Oxide-based thin film nanocomposite membranes for water purification applications

Farzana Kastury

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Albert Juhasz
Thesis Title: Bioaccessibility of potentially harmful elements in airborne particular matter and dust using simulated body fluids

Muhammad Khan

Status: Doctor of Philosophy
Primary Supervisor: Prof. Megh Mallavarapu
Thesis Title: Residual toxicity of weathered hydrocarbons in soils

Anzhela Malysheva

Status: Doctor of Philosophy
Primary Supervisor: Prof. Enzo Lombi
Thesis Title: Interdisciplinary approach to nanotoxicology: analytical studies into complex behaviour of nanoparticles during toxicity tests

Sanchita Mandal

Status: Doctor of Philosophy
Primary Supervisor: Prof. Enzo Lombi
Thesis Title: Differential effect of biochar on ammonia volatilisation between inorganic and organic nitrogen sources

Keith McAuliffe

Status: Doctor of Philosophy
Primary Supervisor: Prof. Nanthi Bolan
Thesis Title: An evaluation of critical elements for optimising performance of major multi-use sports playing surfaces

Ramkrishna Nirola*

Status: Doctor of Philosophy
Primary Supervisor: Prof. Megh Mallavarapu
Thesis Title: Revegetation and ecotoxicological assessment of abandoned copper mine for improved remediation utilizing native plant species

Cameron Ollson

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Albert Juhasz
Thesis Title: The influence of co-contaminants on the bioavailability and bioaccessibility of arsenic, cadmium and lead

Thea Read

Status: Doctor of Philosophy
Primary Supervisor: Prof. Enzo Lombi
Thesis Title: Efficiency and risk assessment of zinc oxide nanoparticle fertilisers

Ruhaida Rusmin

Status: Doctor of Philosophy
Primary Supervisor: Prof. Ravi Naidu
Thesis Title: Modification of pylygorskite for remediation of lead contaminated water

Gurwinder Singh

Status: Doctor of Philosophy
Primary Supervisor: Prof. Ajayan Vinu
Thesis Title: Mobility and bioavailability of arsenic and cadmium in biochar amended paddy soils

Mandeep Singh

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Jock Churchman
Thesis Title: Role of clay minerals in carbon stabilisation in soils

Adam Sutton

Status: Doctor of Philosophy
Primary Supervisor: Prof. Emily Hilder
Thesis Title: Understanding nanoparticle interactions with capillary electrophoresis

Sara Thomas

Status: Doctor of Philosophy
Primary Supervisor: Prof. Emily Hilder
Thesis Title: Novel mesoporous material for sample preparation

Neeraj Verma

Status: Doctor of Philosophy
Primary Supervisor: Prof. Emily Hilder
Thesis Title: In vivo sampling strategies - development of a robust equilibrium approach

Xiayuan Wu

Status: Doctor of Philosophy
Primary Supervisor: Assoc. Prof. Erica Donner
Thesis Title: Investigating the factors controlling the abundance and diversity of antibiotic resistance genes in wastewater

Qing Xiao

Status: Masters by Research
Primary Supervisor: Dr Gary Owens
Thesis Title: Heavy metal accumulation and bioaccessibility in traditional Chinese medicines

NBERC Project Summary 2016

NBERC Researchers were successful in securing the following funding in 2016:

Title: SA Water Desktop Feasibility Assessment of Using Bitrex and Vilex to Detect Cross Connection
Category: CAT2
Funded by: SA Water
Principal Investigator: Prof. Christopher Saint

Title: Lab Study Extension – SA Water – A Water Desktop Feasibility Assessment of Using Bitrex and Vilex to Detect Cross Connection
Category: CAT2
Funded by: SA Water
Principal Investigator: Prof. John Van Leeuwen

Title: Free Library on Water & Environmental Data
Category: CAT5
Funded by: SA Water
Principal Investigator: Prof. Christopher Saint

Title: Greening Suburban Travel
Category: CAT4
Funded by: CRC for Low Carbon Living Ltd
Principal Investigator: Dr Sekhar Somenahalli

Title: Fortescue Metals Group Ltd Rudall-Paterson Exploration Project
Category: CAT3
Funded by: Fortescue Metals Group Ltd
Principal Investigator: Dr Justin Payne

Title: Cement Lining Research Program
Category: CAT2
Funded by: SA Water
Principal Investigator: Mr Tom Benn

Title: DesignPave - Computer Software for Design and Analysis of Concrete Segmental Pavement
Category: CAT3
Funded by: Concrete Masonry Association of Australia
Principal Investigator: Dr Mizanur Rahman

Title: Erosion & flood flow investigation of Dry Creek at Pooraka & Mawson Lakes
Category: CAT2
Funded by: City of Salisbury
Principal Investigator: Mr David Pezzaniti

Title: Unique pollination system of an important rainforest tree involving obligate manipulation by bats
Category: CAT1
Funded by: Australia & Pacific Science Foundation Pty Ltd
Principal Investigator: Assoc. Prof. Topa Petit

Title: ARC Discovery – Just add water: a recipe for the deformation of continental interiors
Category: CAT1
Funded by: Australian Research Council – Discovery Project
Principal Investigator: Dr Thomas Raimondo

Title: Urban Best Practice Expert System
Category: CAT3
Funded by: UN-Habitat
Principal Investigator: Dr Jorge Ochoa Paniagua

Title: Reinforced crumbed rubber concrete for residential construction
Category: CAT1 and CAT3
Funded by: Australian Research Council – Linkage Project and Tyre Stewardship Australia Ltd
Principal Investigator: Prof. Julie Mills

Title: Investigation of Northern Water Supply Systems in Fractured Rock Aquifers - SA Water
Category: CAT2
Funded by: SA Water
Principal Investigator: Assoc. Prof. Ian Clark

Title: Performance improvement of BiobiN In-vessel composting system
Category: CAT2 and CAT3
Funded by: Department of Industry, Innovation, Science, Research and Tertiary Education, Peats Soil & Garden Supplies Pty Ltd and Northern Business Research Partnerships.
Funding: \$105,000
Principal Investigators: Prof. Christopher Saint and Dr Naser Khan

Title: Source to Spectrum: Finding deposits beyond the Fe oxide-Cu-Au envelope
Category: CAT1 and CAT2
Funded by: Australian Research Council – Linkage Project, Department of State Development (Formerly DFEEST), Fortescue Metals Group Ltd, Investigator Resources Ltd and Minotaur Exploration Ltd
Principal Investigator: Dr Justin Payne

The Discovery Circle initiative attracted funding of \$248,909 in 2016 for citizen science projects, including:

- Cat Tracker Australia
- BioBlitz events
- Great Koala Count II
- The Impact of Urbanisation on Bird Biodiversity
- Quantifying Urban Agriculture in Adelaide
- Goanna Watch

Title: Research into the long term performance of 4 soil materials used for City of Mitcham Kerb infiltration Pits
Category: CAT2
Funded by: City of Mitcham
Principal Investigator: Dr Baden Myers

Title: Jobson Rd – Industrial wastewater irrigation trial
Category: CAT2
Funded by: City of Salisbury
Principal Investigator: Dr James Ward

Title: Data-driven water quality treatment management decision support system
Category: CAT1
Funded by: Australian Research Council – Linkage Project
Principal Investigator: Prof. John Van Leeuwen

Disclaimer

This list is not exhaustive, as projects of a confidential nature have not been included.

These projects were awarded in calendar year 2016.

NBERC Workshops and Seminar Series Presentations in 2016

In 2016 the following Workshops and Seminar Series Presentations were delivered:

4 April 2016 – NBERC Seminar – *Point cloud data and forest inventory*

Dr Jon Osborn from University of Tasmania was a special guest speaker presenting Point cloud data and forest inventory.

6 May 2016 – NBERC Seminar – *Seasonal variation in the nature of DOM in a river and drinking water reservoir of a closed catchment in South Australia*

NBE HDR student, Mr John Awad presented his seminar discussing dissolved organic matter (DOM) in surface waters used for drinking purposes and how different catchments change things.

15 June 2016 – *Transforming the PhD: Implementation presentation by Prof. Pat Buckley*

Prof. Pat Buckley spoke about identifying three distinct elements in a transformed PhD and plans to have all HDR students undertake at least 2 elements of the transformed PhD by 2018.

5 August 2016 – *Estimating Illicit Drug use in Adelaide through WasteWater and effectiveness of treatment technologies*

HDR Student, Ms Meena Yadav's, presentation highlighted common illicit drugs consumed by the Adelaide population based on wastewater analysis.

5 August 2016 – *Linking research, policy development and management for invasive plants and animals*

Michaela Heinson, from Natural Resources Adelaide and Mt Lofty Ranges, presented at the Environmental Stewardship strand's first meeting. Michaela discussed linking research and its applications including risk assessments.

2 September 2016 – NBERC Seminar – *Developing your Research Profile*

Prof. Julie Mills presented a Workshop discussing strategies such as planning and understanding the research profile to help progress research careers.

16 September 2016 – *How to write successful grant applications: Tales of the unexpected*

Prof. Christopher Saint and Mr Mark Saunders presented a Workshop based on ideas to consider when preparing grant applications and how to be successful.

30 September 2016 – NBERC Seminar – *Research Data Management*

Dr Angelica Healey, Manager of Research and Data Management presented on different aspects of data management and why it's critical to research projects and helps provide increased visibility which in turn helps with grant applications.

14 October 2016 – NBERC Seminar – *Urban water entitlements and green offsets to stimulate investment in water sensitive urban design*

Prof. Peter Dillion, was invited to present on behalf of the Water and Natural Resources strand. Prof. Dillion discussed urban water management that could lead to a more sustainable Adelaide.

28 October 2016 – NBERC Seminar – *Collaborative Research Practice Blue Paper*

Prof. Kerry London provided an overview on the Division of EASS key research strengths and initiated conversation on potential intersections with NBERC.

11 November 2016 – NBERC Seminar – *Simulation of biological decay of disinfectant Chloramine in water distribution systems*

Presented by Prof. John van Leeuwen and HDR student Veer Kulkarni, on developing a strategy to control microbial mediated monochloramine decay in drinking water distribution systems. The discussion also highlighted insights from experiments conducted.

News and Events in NBERC in 2016

The following News and Events occurred in NBERC in 2016:

23 June 2016 – 3 Minute Thesis School Heat

Seven students participated in the School's 3MT heat. Four students progressed onto the Division heat held on 21 July 2016.

1 July 2016 – NBE & FII Meet and Greet session

NBERC, NBE and FII staff presented short introductions and snapshots of their work at a meet and greet session. Everyone enjoyed drinks and nibbles after and had the chance to network further.

5 August 2016 – Environmental Stewardship Strand start up meeting

All strand members were invited to attend the Environmental Stewardship start up meeting to discuss plans going forward. Great representation from both staff and HDR students attending.

20 October 2016 – Colloquium workshop

Dr Judy Ford invited all presenters attending the NBE Research Colloquium to come and present their talk at the Colloquium workshop. Those attending provided feedback on content, effectiveness of slides and delivery, to ensure they were prepared on the day.

28 October 2016 – Visitors from Shanghai Hydrology Bureau report

Senior representatives from the Shanghai Hydrology Bureau met for discussions on water environment protection and monitoring, water quality analyses, monitoring systems, storm water and ground water storage and management.

31 October 2016 – A collaborative mini-seminar on sustainable practice on geotechnical engineering

Director of NBERC – Prof. John van Leeuwen – opened the seminar, Dr Rajibul Karim chaired the session. Six speakers presented different aspects of sustainable choices including,

Improved mechanics, recycled tyre, Construction and Demolition materials and bio-cementation to exchange knowledge for geotechnical solutions.

18 November 2016 – 2016 NBE Research Colloquium

Approximately 210 NBE HDR students, NBE Staff and NBE Advisory Board members registered to attend the NBE Research Colloquium. Various research presentations were held throughout the day showcasing research conducted through the School of NBE and FII.

22 November 2016 – Official Launch of NBERC

Approximately 100 industry, state and local government representatives and staff from the School of Natural and Built Environments attended the official opening of NBERC. Launch attendees enjoyed speeches and tours of the two commercial testing and research facilities – AFMG and SMAG.

Prof.s Julie Mills and John van Leeuwen at the official launch of NBERC on Tuesday 22 November 2016



Visitors to NBERC in 2016

The following guests spent time visiting NBERC during 2016.

Paria Shojaei

Home Country: Iran
Home Institution: Isfahan University of Technology
Purpose of Visit: Student Project: Effects of urban land use/cover on urban microclimate such as temperature, relative humidity in Isfahan city
Host: Dr. Hamideh Nouri / Dr. Baden Myers
Type of Visitor: Student

Franziska Finster

Home Country: Germany
Home Institution: University of Stuttgart
Purpose of Visit: Student Project: Urban air particulate and its influence in precipitation; A case study in Sydney Australia
Host: Dr. Rupak Aryal
Type of Visitor: Student

Lucia Mandon

Home Country: France
Home Institution: University Claude Bernard and Ecole Normale Supérieure
Purpose of Visit: Student Project: An astrobiological assessment of icy impact crater environments on Mars and moons of Jupiter and Saturn.
Host: Assoc. Prof. Graziella Caprarelli/ Dr. Eriita Jones
Type of Visitor: Student

Max Zimmermann

Home Country: Germany
Home Institution: Technische Hochschule Nürnberg (University of Applied Sciences Nuremberg)
Purpose of Visit: Student project: Wastewater treatment for the pulp and paper industry
Host: Prof. John Van Leeuwen
Type of Visitor: Student

Marie Moulinier

Home Country: France
Home Institution: L'École Nationale du Génie de l'Eau et de l'Environnement de Strasbourg
Purpose of Visit: Student Project: Chloramine decay elucidation of degradation mechanisms
Host: Prof. John Van Leeuwen
Type of Visitor: Student

Ines Manjal

Home Country: France
Home Institution: Polytech Montpellier, Université de Montpellier
Purpose of Visit: Student project: Development of a rainfall runoff and water quality model for a small urban catchment in Mitcham, South Australia
Host: Dr. Baden Myers
Type of Visitor: Student

Richard Slivzas

Home Country: Netherlands/ Australia
Home Institution: University of Twente, Faculty of Geo-Information Science and Earth Observation (ITC)
Purpose of Visit: Project: Urbanization Science
Host: Prof. Paul Sutton
Type of Visitor: Academic

Prof. Jörg Krampe

Home Country: Austria
Home Institution: Vienna University of Technology, Institute for Water Quality, Resource and Waste Management
Purpose of Visit: Project: Energy benchmarking for efficient, low carbon water recycling operations
Host: Dr. Michael Short
Type of Visitor: Academic

Prof. MD Jakariya

Home Country: Bangladesh
Home Institution: Department of Environmental Science and Management, North South University
Purpose of Visit: Project: Performance Improvement of BioBin in-vessel composting system
Host: Dr. Naser Khan / Prof. John Van Leeuwen / Prof. Christopher Saint
Type of Visitor: Academic

Sanderson Alberto Medeiros Leitao

Home Country: Portugal
Home Institution: Presidency of the Republic. Civil Cabinet, Brasilia of, Brazil
Purpose of Visit: Project: Water sanitation and the control of microbial disease: Developing an Australian-Brazilian Initiative (Brazil)
Host: Prof. Christopher Saint
Type of Visitor: Academic

Publications

Staff and students of the School of Natural and Built Environments published 14 book chapters, 162 journal papers and 35 conference papers in 2016.

Book chapters are detailed below, while details of published papers are available at the following link:

www.unisa.edu.au/IT-Engineering-and-the-Environment/Natural-and-Built-Environments/Our-research/Publications/

BOOK CHAPTERS

Chowdhury, S, Khan, NUA, Kim, G-H, Harris, J, Longhurst, P & Bolan, N 2016, 'Zeolite for nutrient stripping from farm effluents', *Environmental materials and waste: resource recovery and pollution prevention*, Academic Press, UK, pp. 569-589.

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