Civil and Environmental Engineering
School Profile 2015
The School is not just a witness or a provider to industry, it is a force that helps shape the industry. We are constantly reviewing our courses and building our research teams with this expansive focus.

— Head of School, Professor Stephen Foster

The UNSW School of Civil & Environmental Engineering is ranked number 1 in Australia, and number 14 in the world (QS World University Rankings 2015).

We are the largest School in the UNSW Faculty of Engineering, itself the pre-eminent centre for engineering studies and research in Australia.

From our foundation in 1949, the School has pursued excellence and innovation in education and research. Our academic staff are recognised world leaders in their fields of expertise, while our alumni are to be found as innovators and decision makers in industry, government and the community.

### SCHOOL STATISTICS 2015

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Staff</td>
<td>48</td>
</tr>
<tr>
<td>Professional &amp; Technical Staff (School)</td>
<td>27</td>
</tr>
<tr>
<td>Research Centre Research Staff</td>
<td>75</td>
</tr>
<tr>
<td>Postgraduate Research Students</td>
<td>229</td>
</tr>
<tr>
<td>Postgraduate Coursework Students</td>
<td>613</td>
</tr>
<tr>
<td>Undergraduates</td>
<td>1809</td>
</tr>
<tr>
<td>Doctoral Graduates (2014)</td>
<td>40</td>
</tr>
<tr>
<td>Postgraduate Coursework Graduates (2014)</td>
<td>265</td>
</tr>
<tr>
<td>BE Graduates (2014)</td>
<td>340</td>
</tr>
<tr>
<td>Research Publications Refereed (2014)</td>
<td>502</td>
</tr>
<tr>
<td>Generated Teaching and Research Income (2014)</td>
<td>$54.5 M</td>
</tr>
<tr>
<td>Grant Funding (2014)</td>
<td>$11.85 M</td>
</tr>
<tr>
<td>Total Funding</td>
<td>$66.35 M</td>
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The School is at the forefront of innovative, original and applied research across the breadth of civil and environmental engineering. We have won millions of dollars in Australian Research Council grants to pursue our investigations into issues of national and global importance.

We continue to forge new links with industry and community partners to ensure a continuing real-world focus for both our teaching and our research.

The importance we place on the movement of our research to practice cannot be overstated. It is fundamental to who we are, and what the School is about.

**REAL WORLD RESEARCH**

The School continues its decade-long successful run with Australia Research Council grants; in 2014 winning $4.2M in a total of 10 ARC grants: 7 Discovery, 1 Linkage, 1 LIEF and 1 Early Career Researcher. Aims of the Discovery projects include:

- To investigate the capacity of high-strength steel (HSS) flexural members, and to craft innovative overarching design guidance for them.
- To deliver the best available solution for storm coastal erosion prediction.
- To address some of the limitations of dynamic transport network modelling in the planning process particularly related to traffic uncertainty, driver adaptivity and information-provision.
- Experimental and computational studies into physico-chemical factors influencing the quality of our natural water resources.
- To explore the post-ultimate behaviour of steel fibre reinforced concrete (SFRC) moment hinges, and determine moment-rotation relations for adoption by engineers and Standards bodies.
- To model initiation, rate of progression and consequences of seepage-induced internal erosion through soils which make up critical water retaining infrastructure such as dams.
- To develop an invaluable and innovative numerical tool for the effective safety assessment of engineering structures.

**WORLD CLASS FACILITIES**

The School provides an exceptional environment for higher research, with top class facilities. Our investment in major research infrastructure and equipment enables our staff and students to work at the cutting edge of national and international research.

Our laboratories include the Randwick Heavy Structural Laboratory at UNSW King St campus, Geotechnical Engineering, Materials, Construction Modelling, and Water Quality Laboratories at Kensington campus, as well as the unique large-scale facilities of our Water Research Laboratory at Manly Vale.
The School has been a leading provider of engineering education for over sixty years. We actively promote a culture of teaching excellence. Our School Teaching Initiative Grants Scheme, and new grants for teaching equipment provide innovative academics with resources that enhance their teaching and the student experience. Teaching facilities, equipment and technology resourced by these grants are state of the art, creating a vibrant learning environment.

UNDERGRADUATE PROGRAMS

The School offers five separate undergraduate engineering degree programs (all four years) and several combined degrees. Over a third of our students now undertake combined degrees.

Minimum ATAR in 2015 was 91.1

- BE in Civil Engineering Honours
- BE in Environmental Engineering Honours
- BE in Civil Engineering with Architecture Honours
- BE in Surveying Honours
- BE in Geospatial Engineering Honours

We also offer the opportunity of many dual degree programs, ranging from five to six and a half ‘years’ full time study.

- BE / Bachelor of Arts
- BE / Bachelor of Commerce
- BE / Bachelor of Law
- BE / Bachelor of Science
- BE / BE Civil Engineering / Environmental Engineering
- BE / BE Civil Engineering / Mining Engineering

POSTGRADUATE COURSEWORK

The School continues to provide industry professionals with essential specialist knowledge, backed by cutting edge research, to improve their performance and advance their careers.

Our Master of Engineering Science (MEngSc) educates students to the top level required nationally in nine specialisations:

- Civil Engineering
- Environmental Engineering
- Geospatial Engineering
- Geotechnical Engineering and Engineering Geology
- Project Management
- Structural Engineering
- Transport Engineering
- Water Engineering - Catchment to Coast
- Water, Wastewater and Waste Engineering

Master of Engineering — 2 years:

- Civil Engineering
- Environmental Engineering
The School has strong active links with industry and is very committed to continuing and developing these ties. Each year our research centres work with over 100 industry and government organisations on specific industry related projects. Our Industry Advisory Committee (IAC) represents a broad cross section of relevant industry sectors at a senior and influential level, while our Industry Partners Program is another way in which relationships are maintained and nurtured.

With Industry Advisory Committee (IAC) and Industry Partner (IP) support we actively raise the profile of the profession in a variety of outreach activities which include:

- a highly sought after Year 10 work experience week where students from around NSW visit engineering work sites and offices;
- a Primary School Maths Prize – presented by our staff and alumni to encourage young students to stay on course for a rewarding engineering career;
- active support for raising the participation rates of women in our programs

OUR INDUSTRY SUPPORTERS:

With over ten thousand alumni, our graduates are to be found serving and succeeding everywhere in industry, government and the wider community. We connect with them through newsletters and the occasional email, and support alumni reunions. If you’d like to keep in touch please register at http://www.engineering.unsw.edu.au/civil-engineering/alumni-registration

AAM
Advisian
AECOM
ARUP
Aurecon
Brookfield
MULTIPLEX
CIMIC
Laing O'Rourke
Jacobs
JK Geotechnics
Royal HaskoningDHV
Taylor Thomson & Whitting
our research groups

ACCARNSI
Australian Climate Change Adaptation Research Network for Settlements & Infrastructure
Our Vision: To facilitate the coordination of the Australian research community in the field of Climate Change Adaptation for Settlement and Infrastructure – supporting multi-disciplinary research, building research capacity, and promoting open exchange of information and resources.

CIES
Centre for Infrastructure Engineering & Safety
As an internationally recognised centre, focused on high-level research in structural engineering, geotechnical engineering, engineering materials and computational mechanics, CIES provides outcomes that improve the design, construction and maintenance of economic, effective, safe and sustainable civil engineering infrastructure.
http://www.cies.unsw.edu.au/

CI
Construction Innovation and Research Initiative
Construction is the world’s largest industry and its efficiency and sustainability is of obvious importance. The School is actively engaged in industrial research on major construction projects in the region. We undertake basic and applied research in two broad areas - the design and management of large scale field processes and improved technology for construction activities.
http://www.engineering.unsw.edu.au/civil-engineering/construction-innovation-and-research-initiative-ciri

CWI
Connected Waters Initiative
An integrated understanding of groundwater is essential for the future of the Australian environment, our urban and rural communities, and for agricultural and mining activity. The Connected Waters Initiative Research Centre aims to help fill critical gaps in our knowledge through research, teaching and public education.
http://www.connectedwaters.unsw.edu.au/

rCITI
Research Centre for Integrated Transport Innovation
Our aim is to be a world leading organisation in integrated interdisciplinary transport research and development. Our five core research pillars are Planning, ITS Communications, Infrastructure, Energy/Fuel and Computational Sustainability.
http://www.rciti.unsw.edu.au/

SAGE
Surveying and Geospatial Engineering Research
The Surveying and Geospatial Engineering (SAGE) Research group has been conducting world class research in the subdisciplines of geodesy, photogrammetry, positioning measurement and remote sensing since the 1960s. The group includes one of the world’s top satellite and wireless positioning research groups, and one of Australia’s premier Earth observation research teams.

SEI
Sustainable Engineering Research
The aim of the Sustainable Engineering Research Initiative is to explore, research, define, assess and resolve issues of sustainability in engineering problems, in particular the implications and implementation of sustainability concepts and practices for civil infrastructure – buildings, roads and transport, water supply, waste disposal – in the areas of planning, design, construction, operation and maintenance.
http://www.engineering.unsw.edu.au/civil-engineering/sustainable-engineering-initiative-sei

WRC
Water Research Centre
Australia’s water management needs innovative and integrated solutions in terms of environmental, energy and social considerations. WRC conducts pure and applied research in surface and groundwater hydrology, public health and water treatment, and civil and environmental hydraulics. We also undertake commercial activity in collaboration with industry.
http://www.wrc.unsw.edu.au

Front cover is of members of our student organization CEVSOC, Alex Warren, BE Civil/BE Environmental, Mary Hadjiangeli, BE Civil; and George Chard, BE Civil/BCom.