Victorian Indigenous Engineering Winter School

2016 Report

We acknowledge the Traditional Owners of the land in which the Victorian Indigenous Engineering Winter School place, the land of the Wurundjeri, and pay respect to their Elders and families.
VIEWS, an initiative arising from the 2015 National Indigenous Engineering Summit, was a collaborative venture between The University of Melbourne, RMIT University, Swinburne University and Monash University. Its aim was to provide Year 11 and 12 Indigenous students with an immersive experience of engineering and the offerings of the four universities.

Under the patronage of Professor Marcia Langton, VIEWS received generous support from each of the four universities, and sponsorship from BP, ARUP and Google. In-kind sponsorship was received from BARPA, Engineers Without Borders, Melbourne Water, Melbourne Star, Metro Trains Melbourne and the National Institute of Circus Arts.

The inaugural Victorian Indigenous Engineering Winter School (VIEWS) was held in Melbourne from 4–9 July 2016. Twenty-one Year 11 and 12 Indigenous students from across Australia participated in a rich experience aimed at expanding their perspective on engineering and inspiring them to consider engineering as a career.

“The generosity of our faculty volunteers and staff as well as that of our sponsors is inspired by the need to reach parity for Indigenous professionals in the fields of engineering so that they too can contribute to making Australia great.”
Professor Marcia Langton, VIEWS Patron

The VIEWS program (see following pages) included:

- **Residence on campus** at Trinity College at the University of Melbourne
- **Real-world experience of engineering** through site visits to BARPA, ARUP, Melbourne Water, Melbourne Star and Metro Trains Melbourne that provided insights into the global challenges that engineering can address
- **An opportunity to explore different university campuses**, engineering options available and the pathways to studying engineering

- **Hands-on workshops** to develop the problem solving and design skills used every day by engineers
- **Connection with Indigenous Support Units and meeting Indigenous Elders**
- **The chance to speak with** Indigenous students and Indigenous engineers

The student feedback was very positive, with students valuing the rich experience VIEWS provided.

“My experience at VIEWS was amazing! I was overwhelmed with information and the fact that I was supported hugely throughout the whole visit.”
VIEWS participant
The 2016 VIEWS Experience

Supporters

The Steering Committee of Victorian Indigenous Engineering Winter School would like to express our gratitude to our Industry sponsors. Without the generous support of our Industry sponsors, and the sponsorship and collaborative engagement of the four universities, the VIEWS program would have not been possible.

Indigenous students from around Australia came together for an exciting and inspirational week to explore the engineering courses offered at four of Australia’s best universities, learn about different pathways into engineering, hear first-hand, inspirational stories from Indigenous engineers and engineering students, and experience the day-to-day work of ‘real’ engineers.

Thank to our Principal Sponsor BP and sponsors ARUP and Google.

Thank you to The University of Melbourne, Monash University, RMIT university and Swinburne University for your sponsorship and support.

Principal Sponsor

Thank you to all our in kind sponsors for you enthusiastic support.

We will keep sponsors updated of the ongoing success of VIEWS participants, who will continue to be supported through the VIEWS alumni network.
The 2016 VIEWS Experience

Supporters

Patron: Professor Marcia Langton

Steering Committee:

Chair: Brendon McNiven, Principal Engineer, ARUP

Melbourne University:
Professor Justin Zobel
Ms. Hope Perkins
Ms. Michelle Bellino
Dr. Juliana Kaya Prpic
Ms. Nicole Major, Murrup Barak

Monash University:
Associate Professor Victoria Haritos
Dr. Annette Bos
Mr. Jason Brailey, Yulendj Indigenous Engagement Unit

RMIT University:
Dr. Matthew Currell
Ms. Stacey Campton, Ngarara Willim Centre
Mr. Kevin Moore, Ngarara Willim Centre

Swinburne University:
Dr. Liew Mann

Engineers:
Ross Peek, Indigenous Engineer Melbourne School of Engineering Alumni

Indigenous Business:
Simon Walter, BARPA

Sponsors:
BP, Principal Sponsor
ARUP
Google

In-kind sponsors:
Barpa
Engineers Without Borders
Melbourne Metro
Melbourne Star
Melbourne Water
National Institute of Circus Arts Australia

Keynote speaker:
Grant Maher, Inaugural Chairperson of the Engineers Australia
Indigenous Engineering Group

Indigenous Elders:
Aunty Diane Kerr, Wurundjeri Elder
Uncle Ian Hunter, Wurundjeri Elder
The 2016 VIEWS Experience

Participants

The 21 Indigenous students (12 male, 9 female) who attended VIEWS attended various schools from around Australia (Figure 1).

Figure 1: Australia-wide participation in VIEWS

Western Australia 57%
- Albany Senior High School
- Balga Senior High School (Perth)
- Belmont City College (Perth)
- Broome Senior High School
- Carnarvon Community College
- Hedland Senior High School
- Karratha Senior High School
- Mater Dei College (Perth)
- Mount Lawley Senior High School (Perth)
- Wanneroo Secondary College

Northern Territory 5%
- Centralian Senior College (Alice Springs)

Queensland 10%
- Chinchilla State High School
- Ipswich Grammar School
- Kilcoy State High School

New South Wales 5%
- Chinchilla
- Ipswich
- Kilcoy

South Australia 14%
- Port Augusta Secondary School
- St Paul’s College (Adelaide)
- Salisbury East High School (Adelaide)

Victoria 9%
- McGuire College (Shepparton)
- Yiramalay/Wesley Studio School (Melbourne)
The 2016 VIEWS Experience

Program

The Indigenous students who participated in the Victorian Indigenous Engineering Winter School were given a first-hand experience of various aspects of engineering. The program extended for five days and offered Year 11 and 12 Indigenous students an opportunity to expand their perspective on engineering.

The philosophy underpinning the program was to engage the students in the four particular areas outlined below.

1. Explore four universities

The success of the VIEWS arose from its being a collaboration between four universities who were mutually concerned to expose the participants to the full range of opportunities available.

Each day was hosted by a different university and included a range of presentations and engaging activities as summarised in Table 2.

Visits to each campus enabled students to explore the facilities and the various courses on offer and to discover which university might best meet their particular needs and aspirations.

“One of the highlights for me was seeing what the different universities offered Indigenous students.”

VIEWS participant

Students enjoyed meeting the staff from the Indigenous Engagement Units who welcomed them and described the services and support they offered. They also enjoyed hearing stories from two prominent Wurundjeri Elders, Aunty Diane Kerr and Uncle Ian Hunter.

In their feedback about the VIEWS, students particularly valued the opportunity to meet and talk with other Indigenous students studying engineering. In this regard, the informal Yarning Circle discussions held every evening at Trinity College were very successful, with students being able to share concerns about coming to university and find common ground about Indigenous culture.

2. Meet Indigenous engineers

VIEWS was designed to offer students the opportunity to meet Indigenous people who had successfully undertaken university study and become engineers.

Mr. Grant Maher who completed a double degree in Structural Engineering and Commerce at the University of Sydney and is the Inaugural Chairman for the newly created Indigenous Engineers Group (IEG) within Engineers Australia was the keynote speaker at the Celebration Dinner. He inspired students with his story of being an engineer and shared his belief of the huge range of opportunities a career in engineering provides.

Mr. Ross Peek qualified as an engineer from the University of Melbourne. As an Indigenous Australian who has taken the pathway, Ross served as a mentor to students through the VIEWS program, providing advice on how to overcome some of the hurdles they may experience in their studies.
3. Discover pathways into engineering

In addition to exploring the various pathways offered by the four universities, participants were also able to discover other possible pathways into engineering, as exemplified by Barpa, which is a partnership between the Federation of Victorian Traditional Owners Corporations and Cockram Construction.

Students experienced the sort of work that Barpa undertakes and heard about the company’s Indigenous traineeships that are an alternative pathway to engineering construction work.

“A highlight for me was having a chat to the BP execs about what they do on a daily basis.”

VIEWS participant

4. Experience the work of engineers

An important element of the program was the industry visits, which exposed students to the variety and diversity of an engineer’s daily work. The sites visited included:

- **Barpa Construction**, where students were exposed to some of the issues and complexities of translating architectural plans into real on-the-ground structures.
- **ARUP**, the global engineering consultancy, who provided an opportunity to hear stories of engineers at work and to partake in a design challenge based redesigning the new Melbourne Market. This project also exposed students to the Indigenous Heritage issues that can arise in urban renewal projects.
- **Melbourne Star Observation Wheel**, where students heard about the remedial engineering involved in reconstructing the Melbourne Star. They also enjoyed taking the Wheel to experience its panoramic view of Melbourne in the evening.
- **Melbourne Metro Underground Loop**, which provided students with insights into rail and tunnel engineering, such as the management of rising ground water and the more general problem of working in potentially hazardous operational and geotechnical environments.
- **Melbourne Water** in collaboration with the **Monash Sustainability Institute**, who provided students with an experience of sustainability engineering in a restoration project at Dights Falls. Given the cultural significance of Dights Falls to both the Wurundjeri people and European settlers, this project highlighted the importance of consultation with Indigenous communities.
- **Engineers Without Borders (EWB)** who shared their experience of human centred design and working with developing communities during the day hosted by Swinburne University. EWB also facilitated an engineering design challenge.
### Table 2: Summary of the VIEWS program

<table>
<thead>
<tr>
<th>Monday July 4</th>
<th>Tuesday July 5</th>
<th>Wednesday July 6</th>
<th>Thursday July 7</th>
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<td>Barpa &amp; ARUP</td>
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<td>Prof. Andrew Ooi Illustrations of Engineering</td>
<td>Indigenous students Why I chose Engineering</td>
<td>Alison Stoakley, EWB Human-centred Design</td>
<td>Alex Kerr, Barpa Pathways to construction engineering</td>
<td>Prof. George Simon Engineering for the future</td>
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<td>What branches of engineering would suit me?</td>
<td>Site visits to Melbourne Metro Rail engineering and the Advanced Manufacturing Precinct</td>
<td>Exploring the design spiral Site visit to Advanced Manufacturing and Design Centre</td>
<td>Site visits to Barpa project construction site and ARUP</td>
<td>CAVE 2 – virtual reality system 3D printing Motorsport Large wind tunnel</td>
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<td>Aerodynamics – Aeroplane wings – Boomerangs – Small wind-tunnel</td>
<td>Will your bridge bear the weight?</td>
<td>Meeting the needs of students in designing study spaces</td>
<td>Urban renewal engineering – Redesigning the new Melbourne Market with ARUP engineers</td>
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<td>Lunch &amp; visit: Murrup Barak Melbourne Formal welcome with Aboriginal Elder – Aunty Diane Kerr</td>
<td>Lunch &amp; visit: Ngarara Willim Centre Stories with Aboriginal Elder Uncle Ian Hunter Social: Strike bowling &amp; karaoke</td>
<td>National Institute of Circus Arts Australia Engineering in motion</td>
<td>Site visit to Melbourne Star Observation Wheel</td>
<td>Lunch &amp; visit: Yulendj Indigenous Engagement Unit Celebration Dinner at the Melbourne Cricket Ground Keynote speaker: Grant Maher</td>
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<td>Garren Cox Ornar Elsayed Remedial engineering behind the Melbourne Star</td>
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