

# VICTORIAN INDIGENOUS ENGINEERING WINTER SCHOOL

4 JULY – 8 JULY 2022

## **REPORT**



We acknowledge the Traditional Owners of the land in which the Victorian Indigenous Engineering Winter School took place, the land of the Wurundjeri, and pay respect to their Elders and families.











# Victorian Indigenous Engineering Winter School (VIEWS)

VIEWS, an initiative arising from the 2015 National Indigenous Engineering Summit, is a collaborative venture between the University of Melbourne, RMIT University, Swinburne University and Monash University. Its aim is to provide year 10, 11 and 12 Indigenous students with an immersive experience of engineering and the offerings of the four universities.



Dr Misty Jenkins

VIEWS welcomes Dr Misty Jenkins as the program patron. Misty is a woman of Gunditjmara descent who is known for her scientific research into lymphocytes, which can protect against cancer. She is currently a laboratory head at the Walter and Eliza Hall Institute for Medical Research, where she is researching brain cancer and immunotherapy. Misty was the first Indigenous Australian to attend the Universities of Oxford and Cambridge as a postdoctoral research fellow. She is recognised for her advocacy for gender equity, Aboriginal Health and Education. She was proudly born and raised in Ballarat in Victoria.



## **Supporters**

The VIEWS Steering Committee would like to express its gratitude to the programs sponsors. Without the continued and generous support of our Industry sponsors, and the sponsorship and collaborative engagement of the four universities, the life-changing VIEWS program would have not been possible.

#### **Sponsors**

Gold sponsor:

Philanthropic sponsor:





Bronze sponsors:









### **University Partnerships**













The William Cooper Institute



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



## **Supporters**

Patron:	Dr Misty Jenkins
Steering Committee: Chair: University of Melbourne:	Mr Brendon McNiven Professor Elaine Wong Ms Michelle Bellino Dr Juliana Kaya Prpic Ms Rula Paterson, Murrup Barak
Monash University:	Professor Murray Rudman Ms Andrea Walker
RMIT University:	Associate Professor Kate Fox Mr Jordan Carter, Ngarara Willim Centre
Swinburne University:	Dr Scott Rayburg Ms Lydia Bisett, Moondani Toombadool Centre
Sponsors:	Gold Sponsor: Google Bronze Sponsors: ARUP, Nuffield, Beca and SYPAQ Philanthropic Supporter: Boeing
Indigenous Engineer	Ross Peek, Principal, Infrastructure, Rail Strategy
Indigenous Elders:	Aunty N'arweet Carolyn Briggs, Boon Wurrung Senior Elder
Indigenous Mentors:	Ethan Savage Stephanie Walker

VIEWS has engaged with Indigenous-owned and majority Indigenous-owned businesses and service providers in establishing the cultural safety in the program. This includes the formal Welcome to Country, program content, resources, catering and program materials.



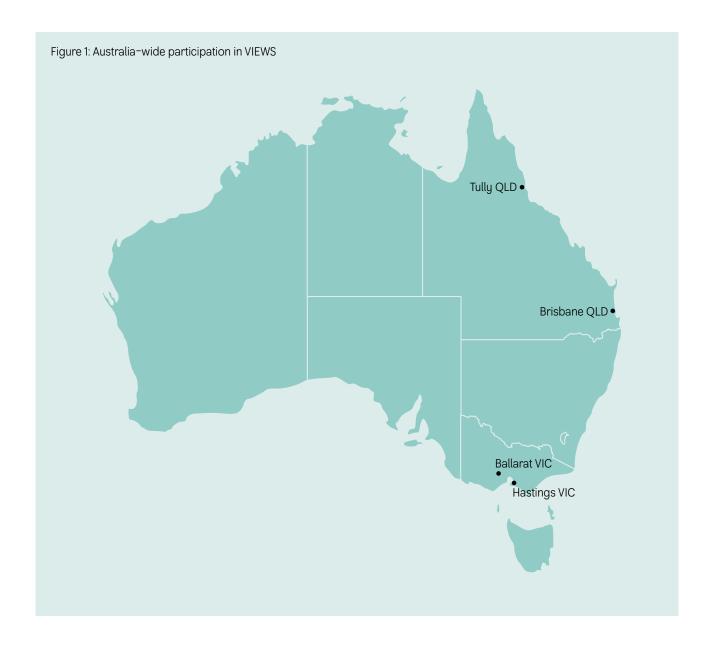
Chloe Jones Artist Dungala Creations Indigenous painting workshop



Bunji Catering North Melbourne, Victoria

## **Participants**

The VIEWS 2022 participants attended virtually from across Australia, representing schools illustrated in Figure 1.





## **Program**

Due to the COVID19 pandemic, the VIEWS program was delivered virtually for 2022. Students were provided with kits to participate in online workshops. Students who didn't have access to technology were provided with hardware and connectivity access to enable participation in the online program.

The philosophy underpinning the program is to engage students in five key areas:

## 1. Explore four universities

An opportunity to explore different university campuses, engineering options and study pathways.

## 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.

## 3. Discover pathways into engineering

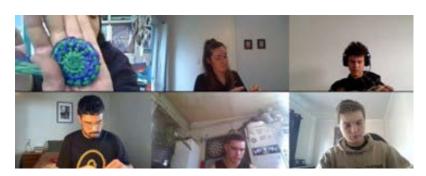
In addition to exploring the various pathways offered by the four universities, participants were also able to discover other possible pathways into engineering and real world applications of Engineering.

## 4. Experience the work of engineers

An important element of the program was meeting industry, which exposed students to the variety and diversity of an engineer's daily work.

#### 5. Cultural activities

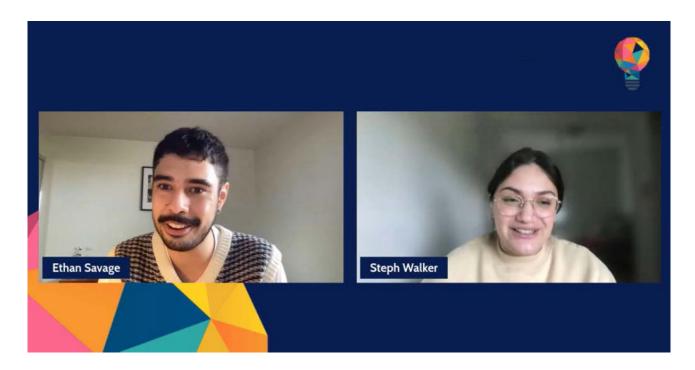
An important element of the program is to provide a connection to Indigenous culture.











#### **Mentors**

#### **Ethan Savage**

Student, Master of Arts and Cultural Management, University of Melbourne

My name is Ethan Savage, and I am a proud Kaantju, Girramay, and Badu Island person from Far North Queensland. I am currently studying a Master of Arts and Cultural Management at the University of Melbourne, hoping to work with mob within the music industry. I graduated from a Bachelor of Arts in Political Science and Anthropology in 2019, and shortly began full time work in social media regulatory policy. I have been fortunate to be a part of the VIEWS program in the past and other similar programs so I am really excited to be working with the team again, as well as meeting everyone involved this year. VIEWS is a fantastic program, where you learn a lot while having some fun. I hope you enjoy this year's program, and are able to take something away whether that be a new interest or an insight into the really dynamic world of engineering.

#### **Stephanie Walker**

Student, Bachelor of Science, University of Melbourne

My name is Stephanie Walker, and I am a proud Yorta Yorta, Kuku-Yalanji, Girramay woman from Victoria. I am currently studying a Bachelor of Science at the University of Melbourne, majoring in Geography. My studies have led me down a pathway that aims to learn about and understand ways in which human behaviour impacts the environment. Throughout my work with the university I have had the opportunity to be apart of different outreach programs, that aim to engage young Indigenous people in STEM. This year, I am excited to be apart of the VIEWS program again. I hope the 'Caring for Country' workshop encourages participants to recognise how important Indigenous knowledge isin the STEM industry, and how vital Indigenous perspectives on land management are for helping solve the world's environmental problems.

"VIEWS 2022 was a fantastic program that adapted to the significant challenges of the pandemic, delivering students a well-rounded insight into the world of engineering. Further, as a mentor it was empowering to have students engaged even on a virtual platform."

VIEWS 2022 Mentor



#### **PROGRAM TIMETABLE**

#### **MONDAY 4 JULY - RMIT**

#### 10:30am AEST | Students Technical Briefing

JT. Production Management

#### 10:50am AEST | Acknowledgement of Country & Official Welcome

Djirri Djirri Dance Group, Michelle Bellino, Ethan Savage & Steph Walker

#### 11:00am AEST | RMIT Team Introduction & Ice Breaker Activity

Kate Fox, Jordan Carter, Lewis Brown, William Sullivan, Peter Stasinopoulos & Caley Manzie

#### 11:45am AEST | Lunch Break

#### 12:15pm AEST | Practical Activity - Building an Electric Car

Kate Fox

#### 1:30pm AEST | Pathways Into & Through an Engineering Career

Jordan Carter, Client Hansen, Lewis Brown, Caley Manzie, Kiara Davis & William Sullivan

#### 2:00pm AEST | Indigenous Aquaculture (Budj Bim) & Fish Trap Designs

William Sullivan, Peter Stasinopoulos & Caley Manzie

#### 2:40pm AEST | Yarning Circles

Ethan Savage & Steph Walker - Student Mentors

3:00pm AEST | Day 1 Concludes

#### **TUESDAY 5 JULY - THE UNIVERSITY OF MELBOURNE**

#### 11:00am AEST | Acknowledgement of Country & Murrup Barak Virtual Visit

Ellen Tunumafono

#### 11:30am AEST | Practical Activity - Electronics Prototyping using Arduinos

Jon-Paul Karnilowicz & Alexandros Willliams

#### 12:30pm AEST | Lunch Break

#### 1:30pm AEST | Practical Activity - VIEWS Olympics

Elaine Wong, Renata Borovica-Gajic, Filip Surla (Qinetiq), James Mao (Google)

#### 2:40pm AEST | Yarning Circles

Ethan Savage & Steph Walker - Student Mentors

3:00pm AEST | Day 2 Concludes



#### **PROGRAM TIMETABLE**

#### **WEDNESDAY 6 JULY - MONASH UNIVERSITY**

#### 11:00am AEST | Acknowledgement of Country & Introduction

Murray Rudman, Allira Jones, Monash High Powered Rocketry Team

#### 11:20am AEST | Practical Activity - Rocket Assembly

Murray Rudman, Allira Jones, Monash High Powered Rocketry Team

#### 12:00pm AEST | Indigenous Painting Workshop

Chloe Jones (Artist)

#### 12:30pm AEST | Lunch Break

#### 1:00pm AEST | Practical Activity - Rocket Launch

Monash High Powered Rocketry Team

#### 2:40pm AEST | Yarning Circles

Ethan Savage & Steph Walker - Student Mentors

3:00pm AEST | Day 3 Concludes

#### THURSDAY 7 JULY - SWINBURNE UNIVERSITY OF TECHNOLOGY

#### 11:00am AEST | Acknowledgement of Country & Swinburne Welcome

Scott Rayburg, Lydia Bissett, Melissa Neave, Yemurraki Egan

#### 11:25am AEST | Ecological Footprint Introduction

Scott Rayburg, Lydia Bissett, Melissa Neave, Yemurraki Egan

#### 11:45am AEST | Practical Activity - Turing Tumble Challenge

Scott Rayburg, Lydia Bissett, Melissa Neave, Yemurraki Egan

#### 12:00pm AEST | Lunch Break

#### 12:30pm AEST | Practical Activity - Turing Tumble Challenge

Scott Rayburg, Lydia Bissett, Melissa Neave, Yemurraki Egan

#### 1:15pm AEST | Practical Activity - Weaving Experience

Rachael Maxwell

#### 12:30pm AEST | Practical Activity - Turing Tumble Online Stimulator

Scott Rayburg, Lydia Bissett, Melissa Neave, Yemurraki Egan

#### 2:40pm AEST | Yarning Circles

Ethan Savage & Steph Walker - Student Mentors

3:00pm AEST | Day 4 Concludes

#### FRIDAY 8 JULY - INDUSTRY DAY & CELEBRATION LUNCH

#### 11:00am AEST | Acknowledgement of Country & ARUP Workshop

Shirin Cormaty, Sian Harrick

1:00pm AEST | Program Break

1:30pm AEST | VIEWS 2022 Celebration Lunch

#### 2:30pm AEST | Meet & Greet

VIEWS Mentors, Sponsors & Industry

### DAY 1 - RMIT University



**Clint Hansen** 

Indigenous Pre-Doctoral Research Fellow, Chemical & Environmental Engineering, RMIT University

Clint Hansen is currently the Indigenous Pre-Doctoral Research Fellow, Chemical & Environmental Engineering at RMIT University. He has over 8 years experience as a qualified Fitter Machinist working on the likes of 888 Red Bull racing through to elite top fuel Drag engines. Clint has well developed project management skills and well developed technical skills in research and materials testing and demonstrated experience in project management. He is also currently undertaking a clean water solution project for remote communities in Western Australia.



**Kiara Davis**Chiropractor and RMIT University alumni

I have completed a Bachelor of Health Science and Bachelor of Applied Science (Chiropractic) in 2021. I am now in my first year out of University working as a Chiropractor. I work across two clinics in Melbourne (Northcote Chiropractic in Northcote and Evolving Chiropractic in Mount Evelyn). I pursued a career in the health industry as I love being able to use up-to-date evidence-based treatment to help people reach their health goals and lead happy healthy lives. Although I treat people from all ages and stages of life, I have completed postgraduate training in paediatric dynamic development and pregnancy. Over the next few years I intend on completing my clinical Pilates certification and to eventually open my own practice.



**Jordan Carter** 

Ngarara Willim Indigenous Outreach Coordinator, RMIT University

I have completed studying a Bachelor of chemical engineering at Monash University. I am passionate about Project management and I am currently employed at RMIT University. I am an experienced Project Manager with a demonstrated history of working in the oil & energy industry. My goals are to develop my technical skills in the field of project management and construction. Skilled in Problem Analysis, Analytical Skills, HAZOP Study, Organizational Leadership, and Interpersonal Skills. Strong program and project management professional focussed on design and commissioning.



**Kate Fox** 

Associate Professor (Biomedical Engineering) & Associate Dean HDR, RMIT University

Kate Fox is an Associate Professor in the School of Electrical and Biomedical Engineering. Her research is focused on developing diamond as an orthopaedic biomaterial. Kate is a biomedical engineer with significant experience and expertise in hydroxyapatite coatings and implant design for orthopaedic applications. She has experience in hybrid material design, surface science characterisation techniques and implants. Prior to joining RMIT, she was part of the Bionic Eye Project working to develop a high acuity diamond electrode capable of electrically stimulating retinal tissue.



**Lewis Brown** 

Reconciliation Adviser, STEM, RMIT University

Lewis Brown is a proud Yorta Yorta, Dja Dja Wurrung and Gunditjmara man who holds the position of Reconciliation Advisor of STEM College at RMIT. In his role, Lewis supports the college of STEM in becoming a more culturally competent space through running events, training staff and providing First Nations input on day to day operations. In addition to his role at RMIT, Lewis work closely with my traditional owner group, Dja Dja Wurrung, to conduct cultural fires, cultural tours and deliver cultural awareness training.



**Peter Stasinopoulos** 

Senior Lecturer, RMIT University

Peter is a member of the RMIT Intelligent Transport Systems research group and a research fellow of The Natural Edge Project. Peters interests include Systems optimisation, Resource productivity, System dynamics, Life cycle assessment, Design for sustainability, Systems engineering and Intelligent transport systems.



### DAY 1 - RMIT University



William Sullivan

## STEM Engagement Coordinator, RMIT University

Will Sullivan works as the STEM Engagement Coordinator at RMIT University, providing workshops and STEM experiences for Victorian High Schools. He has a background in the chemistry of food having a completed a PhD that researched how different starches form crystals in breadmaking. In his spare time Will likes playing with new sourdough recipes and training for long distance runs.



#### **Caley Manzie**

Cultural Heritage Spatial Undergraduate, Jacobs Student Leader, Ngarara Willim and RMIT University alumni

Caley Manzie has completed a Bachelor of Science (Geospatial Science) (Honours) and worked within the industry for the past 5 years at Jacobs whilst studying. Has worked with multiple teams across Jacobs such as the Spatial, Waterways and Catchment, Sales, Ecology, and Cultural Heritage teams. Currently, Caley is part of the Cultural Heritage team, working with Aboriginal Parties to protect and document Aboriginal sites and features. Caley's goal is to work directly with Aboriginal and Torres Strait Islander Peoples and build a career within a company that targets sustainability and environmental change for future generations. Caley has always been interested with the concept of sustainable energy such as wind, hydro, and solar.



### DAY 2 - University of Melbourne



#### Renata Borovica-Gajic

Lecturer in Data Analysis, School of Computing and Information Systems, University of Melbourne

Renata Borovica-Gajic holds a position of Lecturer in Data Analytics in the School of Computing and Information Systems at The University of Melbourne. Dr Borovica-Gajic received her PhD degree in Computer Science from Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland in 2016. During her studies she worked in the Data-Intensive Applications and Systems Laboratory (DIAS), supervised by Prof. Anastasia Ailamaki. Prior to joining EPFL, she worked in industry for 5 years as a senior member of the database team of a power engineering company. Renata's research focuses on solving data management problems, when storing, accessing and processing massive data sets, enabling faster, more predictable, and cheaper data analysis as a result. She builds self-driving database systems that are able to automatically adjust data retrieval and query processing strategies to fit the properties of data, hardware and usage patterns. She is also interested in the topics of scientific data management, big data exploration, query optimisation, physical database design, and hardware-software co-design.



**Elaine Wong**Associate Dean and Profess

Associate Dean and Professor, University of Melbourne

Elaine Wong received her PhD (2002) degree in Electrical Engineering from the University of Melbourne, Australia. She is currently an Associate Dean and Professor with the Melbourne School of Engineering. Her current research interests include low-latency communication networks and prescriptive analytics to facilitate human-to-machine applications over the Tactile Internet. She has co-authored 4 book chapters, 75 refereed international journals, 152 refereed international conferences (40 invited international conference publications) and 5 patents. Elaine has previously served as Associate Editor of the IEEE/OSA Journal of Optical Communications and Networking, IEEE/ OSA Journal of Lightwave Technology, and OSA Journal of Optical Networking. She currently serves on the ECOC Technical Program Committee and the OFC Technical Program Committee.



Filip Surla

Mechanical Engineer, Qinetiq

Filip completed a Bachelor of Mechanical Engineering with honours at Monash University in 2020. During his time at university he was extensively involved in the Monash Motorsport FSAE team, culminating in heading the team in a chief electric engineer role in 2017. Before finishing his studies Filip worked full time for the university to design and commission a range of student makerspaces including the Monash Makerspace on the Clayton campus. In 2020 he began a full time role as an engineer with QinetiQ to develop and deliver the service in the Telstra Creator Space for the University of Melbourne. He works with the team to help enable a new generation of engineering students to learn and apply hands-on skills to their university projects.



**Alexandros Williams** 

Student Guide, Telstra Creator Space, University of Melbourne

Alex is a student guide in Telstra Creator Space and a current Electrical Engineering Student. He is passionate about the prototyping phase, and has worked on several devices focusing on human input and interaction. He has expertise across electronics, 3d printing and woodworking.



### DAY 2 - University of Melbourne



Michelle Bellino

Manager, Student Experience, University of Melbourne

Michelle Bellino is Manager, Student Experience at the Faculty of Engineering and Information Technology of the University of Melbourne. Michelle has been committed to over 15 years leading the student experience and experiential learning opportunities for the University of Melbourne. Michelle has been delivering the Victorian Indigenous Engineering Winter School program since 2016 and is passionate in providing students insights into what it's like to study and work in engineering and information technology.



**Murrup Barak** 

Ellen Tunumafono

Murrup Barak, Melbourne Institute for Indigenous Development takes its name from the Woiwurrung language. 'Murrup Barak' means the Spirit of Barak. The name was chosen to honour the memory of the visionary Aboriginal leader William Barak. The name reflects our respect for Indigenous cultures and knowledge and our vision for an Institute that makes an enduring contribution to Indigenous Australia through the transformative impact of education and employment in the context of Australia's leading University in teaching, learning, research and employability.



Jon-Paul Karnilowicz

Electronics Technician, University of Melbourne

I'm the lead electronics technician in the Telstra Creator Space at Melbourne University, with solid analytical skills and a pro-active attitude, I'm passionate about bringing creative ideas to life with innovative technical solutions. Prior to working at Melbourne University I've had 18 years' hands-on experience in the automotive design and engineering industry, working on a variety of projects such as electronics prototyping, building data acquisition systems for preproduction vehicle and component testing, maintenance and repair of large scale CNC machines, and designing electronic control systems for international award winning concept vehicles.



**James Mao** 

Cloud Consultant, Google

James Mao works at Google as a Cloud Consultant based in Melbourne, Australia. He has a strong interest in engineering and information technology and spends most of his time building and supporting others with technological solutions. In recent years, he has focused on designing digital infrastructure, security and data solutions that can reach a massive scale, leveraging on the fundamental engineering principles. James stays updated with the latest developments in engineering including electric vehicles and autonomous driving. He is also learning to become a private pilot.



**Kushagr Mittal** 

Student Guide, Telstra Creator Space, University of Melbourne

Kush is a current Master of Mechatronics Engineering student and the University of Melbourne. Interested in human-machine interfaces, robotics, automation and the intersection of control systems and automation with humans. Experience in electronic prototyping, system design, as well as fabrication techniques including CAD modelling, SPICE simulation for electronics and 3D Printing. Having been a tutor and lecturer in the past focused on STEM and equality outreach to high school students, Kush is excited to be a part of the VIEWS program to help engage young Indigenous people in STEM.



## DAY 3 - Monash University



**Allira Jones** 

Indigenous Student Recruitment Coordinator with the William Cooper Institute

My name is Allira Jones and I am a proud Yorta Yorta woman from the Nicholls. Atkinson and Charles bloodlines. I was born and raised on country, across the Shepparton and Mooroopna region. I am a La Trobe University and Monash University alumna, having completed a Bachelor of Psychological Science and a Graduate Diploma of Psychology Advanced. I am passionate about education and creating a safe space for our mob in the higher education sector. This has led me to my current role as the Indigenous Student Recruitment Coordinator with the William Cooper Institute, promoting the educational opportunities available at Monash University.



**Murray Rudman** 

Director, Indigenous Engagement, Faculty of Engineering, Monash University

Murray Rudman is the Director of Indigenous Engagement for the Faculty of Engineering at Monash University and a professor in the Department of Mechanical and Aerospace Engineering. Murray's research focuses on understanding the motion of liquids and gasses and how this can be applied to improve the design and operation of industrial processes. He originally trained as a Mathematician, but Engineering called and he hasn't looked back.



**Chloe Jones** 

Artist

I am a proud Yorta Yorta woman born and raised on Yorta Yorta Country around the Mooroopna and Shepparton region. I come from a background of leaders and a rich family history with direct relations to indigenous leader's uncle Douglas Nichols and Nora Charles (grandmother). I'm a creative and business owner. I've always had a passion for art and design and using my creative abilities. When I graduated from year 12 VCE in 2018 I then pursued further studies in Business which led to the launch of my own business 'Dungala Creations'. This platform gives me the freedom to do what I love and express my passion for my culture with other creatives and my communities. I hope to inspire others and educate the wider communities about Indigenous Art and the significant importance it has in my culture.



#### **High Powered Rocketry Team**

High Powered Rocketry Team Lead

Monash HPR (High Powered Rocketry) is a student team dedicated to the design, analysis and construction of high-powered rockets. Formed in conjunction with the Australian Youth Aerospace Association's announcement of the inaugural Australian Universities Rocket Competition (AURC), Monash HPR designs and constructs high-powered rockets to compete in the 10,000 and 30,000ft categories. This year we have the opportunity to compete virtually\* in the international rocketry competition, the Spaceport America Cup, where we will be entering our 10,000 ft rocket.



## DAY 4 - Swinburne University



**Lydia Bissett**Indigenous Student Recruitment
Officer, Swinburne University

Lydia is a proud trawlwulwuy woman from Tasmania. She has lived and worked on Wurundjeri land in Victoria for nine years. Lydia is the Indigenous Student Recruitment Officer in the Moondani Toombadool Centre at Swinburne. She has worked at Swinburne for the past four years and is also a student, studying a Bachelor of Psychological Sciences.



Melissa Eaves
Senior Lecturer, RMIT University

Dr Melissa (Mel) Neave is an environmental geographer with experience in natural resource management and a particular interest in water resources. She teaches in the undergraduate and postgraduate Environment and Planning program at RMIT.



**Scott Rayburg** 

Senior Lecturer, Civil and Construction Engineering, Swinburne University

Dr Scott Rayburg is a fluvial geomorphologist and hydrologist with expertise in catchment management, environmental flows, hydrologic and hydraulic modelling, GIS, remote sensing and data analysis. Scott predominantly works in semi-arid environments and on rivers, lakes and wetlands. Scott's research focuses on diversity and complexity in physical systems and on applying multidisciplinary approaches (including physical, biological and social aspects) to solving scientific and natural resource management problems.



### DAY 5 - Industry & Celebration Presentation



#### **Misty Jenkins**

Laboratory Head, Walter and Eliza Hall Institute for Medical Research

Misty is a woman of Gunditimara descent who is known for her scientific research into lymphocytes, which can protect against cancer. She is currently a laboratory head at the Walter and Eliza Hall Institute for Medical Research, where she is researching brain cancer and immunotherapy. Misty was the first Indigenous Australian to attend the Universities of Oxford and Cambridge as a postdoctoral research fellow. She is recognised for her advocacy for gender equity, Aboriginal Health and Education. She was proudly born and raised in Ballarat in Victoria.



#### **Ross Peek**

Principal, Infrastructure, Rail Strategy
- Decarbonisation

Ross is a senior Indigenous (Yawuru) professional with 14+ years' experience in the resource, transport and education sectors.

Ross grew up in Dandenong North, Victoria and lived at Ormond College while completing his Bachelor of Engineering (B.Eng) at the University of Melbourne. Ross also holds a Master of Business Administration (MBA) from the Melbourne Business School.

Ross has extensive experience in managing complex, high-value strategic improvement initiatives and is currently working on decarbonising a fleet of 220+ diesel locomotives.

Ross particularly enjoys helping other Indigenous Australians of all ages navigate education and business challenges.

## **ARUP**

Arup is an independent firm of designers, planners, engineers, architects, consultants and technical specialists, working across every aspect of today's built environment. Arup's founding commitment to do socially useful work continues to shape our commercial work today and forms the beating heart of our investment in community engagement.

The program aims to solve problems at the intersection of equality, education and employment and the provision of basic infrastructure that provides the essentials for life such as water, sanitation, energy, food security and shelter. We gear our community engagement towards supporting the most marginalised and disadvantaged people and to play an important part in our firm-wide contribution to the global Sustainable Development Goals (SDGs).

During this workshop, you will hear from: Sian Harrick, Engineer (Environment & Resources)

Shirin Cormaty, Engineer (Buildings)

