

**AUSTRALIAN
TECHNOLOGY
NETWORK**
OF UNIVERSITIES



RMIT University is a global university of technology and design and one of Australia's original tertiary institutions.

Based in Melbourne, we have a global reputation for excellence in practical education, applied and innovative research, and engagement with the needs of industry.

RMIT is a leader in engineering, accounting and finance, computer science and information systems, communication and media studies, psychology, education, law and economics.





Innovative justice

Preventing family violence through systemic changes

- **Family violence research translates to policy reforms for real-world impacts**
- **Making families safer through early interventions and better-connected social services and justice systems**
- **Enabling perpetrators of family violence to change behaviour and break the cycle**

Considerable reform to the justice system in recent decades has strengthened the response to individuals who perpetrate family violence. This reform, however, has focused predominantly on punitive approaches, while not necessarily keeping perpetrators effectively engaged with interventions, or monitoring the risk that they pose.

Research conducted at RMIT University's Centre for Innovative Justice (CIJ), however, has contributed significantly to a shift in this response – keeping perpetrators visible, enabling better co-ordination across the justice and services sectors and ensuring that perpetrators do not slip between the cracks of different agencies with tragic outcomes.

Led by CIJ's Director of Research, Advocacy and Policy, Elena Campbell, and informed by the systemic failure which resulted in the tragic death of Luke Batty in 2014, the research highlights the need to keep perpetrators on the radar across all services. It identifies specific early interventions that could reduce the risk that perpetrators pose. This included connecting perpetrators with crisis accommodation, drug and alcohol and mental health services, and using Courts to greater effect, such as by bringing perpetrators of family violence back before the same judge.

Campbell's recommendations were adopted by the Royal Commission into Family Violence and her research has informed the *National Outcome Standards for Perpetrator Interventions* and the Victorian Premier's 10 year plan for the elimination of family violence.

Campbell has since worked with many government agencies and Courts to support the implementation of the Royal Commission's recommendations and continues to advise agencies on perpetrator interventions and reforms that address family violence.



Biosolid management

Saving time and money through improved understanding of wastewater risk

- **Multi-disciplinary team translates research into outcomes that benefit the water industry, residents, farmers and the environment**
- **Building the circular economy through targeted university-industry collaboration**
- **Advancing the local water industry and providing global solutions**

For years, biosolids – one of two major end products of treated wastewater – has been used in agriculture as a nutrient amendment that maintains soil fertility, stimulates plant growth and improves farm productivity. However, in the absence of Australia-based evidence on survival times of pathogens present in the biosolids, Victorian regulation required that water utilities stored biosolids for three years prior to reuse to ensure they are safe to use on farmland.

South East Water, which delivers water, sewerage and recycled water services to 1.79 million people in Melbourne, produces around 3,000 dry tonnes of biosolids each year. This figure is projected to triple over the next 30 years, requiring the construction of additional storage facilities. Storage of biosolids is not only expensive, but also impacts the amenity of local residents due to odour.

Now, thanks to research into pathogen survival and treatment conducted by RMIT's Centre for Environment, Sustainability and Remediation in collaboration with industry partners, the Victorian Environmental Protection Authority has, subject to site-specific validation, changed regulation to cut minimum storage times to 12 months rather than three years. The cross disciplinary RMIT team, led by Distinguished Professor Andrew Ball, brought together environmental scientists, social scientists and engineers, as well as industry partners South East Water and ALS Environmental Services with expertise in wastewater processing. Through their collaboration they identified a new technique to isolate and enumerate pathogens in biosolids.

South East Water estimated that the reduced storage requirements have delivered over \$1.5 million in savings in a single year. It has also delivered environmental benefits, including reducing Victoria's greenhouse gas emissions by an estimated 87,000 kg each year.

Professor Ball is now leading the establishment of the Australian Research Council (ARC) Training Centre for the Transformation of Australia's Biosolids Resource at RMIT, bringing together expertise from universities, water management authorities and industry in Australia, the United Kingdom and the United States. The Centre will transform the way biosolids are managed in Australia, provide global leadership in environmentally sustainable practices, and support the development of the circular economy through multiple new smart carbon products converted from otherwise polluting biowaste.



The reduced storage requirements have delivered over \$1.5 million in savings in a single year

Reducing the youth road toll

Peer facilitators making the difference

- **Community grief fuels long-term research partnership and saves young lives**
- **Evidence-based youth education program translates to policy reforms for real-world impacts**
- **Practical experience and valuable facilitation skills equip university students for the future**

A tragic series of fatal crashes involving school students in a semi regional Victorian community in 1999 moved devastated school and community leaders to work with road safety experts to find new approaches to engage young people with safer driving behaviours. The Fit to Drive (F2D) program does not teach driving skills, rather it empowers young drivers and passengers to reflect on their own driving attitudes and behaviours, take responsibility for their actions and identify strategies to use in dangerous road use situations.

Dr Kerry Montero, from RMIT's Social and Global Studies Centre, has a background in youth work, youth health promotion and education. In 2002 she applied her practical and research knowledge to collaboratively, along with co-founder Graham Spencer, design F2D road safety education workshops, which are delivered to over 20,000 Year 11 students annually across 200 Victorian schools. An outcome of Dr Montero's research has been the establishment of the Fit to Drive Foundation, a not-for-profit organisation dedicated to reducing road trauma in young people aged 16-25 through education and influencing public policy.

Following a multiple-fatality young driver crash in 2012 the Victorian Coroner recommended that compulsory and consistent road safety education, and specifically the Fit to Drive program, was essential for all young people. VicRoads and the Transport Accident Commission relaunched the program with support from the MFB/CFA (now Fire Services Victoria), Victoria Police and local councils. Since 2014 a further 120,000 students from 370 schools have participated in the workshops and over 80% of students expressed intention to use the strategies learnt to avoid risky driving situations.

A critical success factor in the workshops is the use of "near peer" facilitators, creating the most conducive learning environment for Year 11s. Over 800 Victorian university undergraduate students have been trained as facilitators since 2002. Additionally, second- and third-year students from RMIT's Youth Work and Youth Studies degree trained as facilitators, gaining course credits and enormously valuable practical experience.

This program has won multiple state and national road safety awards and has been implemented in NSW (as 'Blue Datto - Keeping Safe'), Indonesia, Malaysia and Cambodia.

During the Covid-19 crisis the F2D Foundation has developed virtual programs using university facilitators as hosts. Two programs have been developed, Steer Right for secondary students, and Carpool, aimed at learner drivers and their supervising parents.



CAMS

Driving cost-efficient and effective management of infrastructure assets

- **Local councils collaborate with researchers to revolutionise public asset management**
- **Valuable practical experience equips university students for the future**
- **Local productivity solutions have global export potential**

Australia's infrastructure assets are valued at around \$100 billion. The management of these assets, including public buildings, roads, and bridges, is a costly but essential financial and safety obligation for local councils, government agencies, engineering companies and infrastructure operators. A Central Asset Management System (CAMS) developed by RMIT's School of Engineering in collaboration with 15 local councils delivers a scientific solution that saves costs and provides safer, more resilient infrastructure.

Drawing on her research interest in the lifespan of public buildings, Professor of Civil Engineering, Sujeeva Setunge, initially partnered with six local councils and the Municipal Association of Victoria in an ARC Linkage project aimed at developing a new building asset management system. The partners took a whole-of-lifecycle approach to building management, incorporating social and environmental considerations, deterioration forecasting, best practice management practices and real-world building inspection datasets to develop an asset management model. RMIT's Melbourne city campus was used as a living lab to test the model. Once it was proven, the team worked with a software development company to translate the model into user friendly software that was initially rolled out to four councils.

RMIT student teams gained valuable practical industry experience using CAMS to perform asset inspections for councils, and their findings contributed to further enhancements of CAMS. The result was a tablet app that enabled council building inspectors to collect data more easily and accurately, upload it on location, and dispense with paper records. It optimises decision making for asset managers regarding risk, maintenance and budget forecasting.

CAMS has been adopted by ten Victorian councils, who report an increase in building user satisfaction of 60-90% and a 30-40% reduction in the cost of on-site inspections. Partners now include Melbourne Water and VicRoads. New opportunities are under development to assess the condition of roads, bridges and stormwater infrastructure, as well as an Asian Development Bank-funded project in Sri Lanka.

