

# **FACULTY OF SOCIETY & DESIGN**

# Centre for Comparative Construction Research Annual Report 2022

Name: Professor Steve Rowlinson – Centre Director

Date: 31 March 2023



#### INTRODUCTION

The CCCR is kickstarting a new era. The incubators have served their purpose and there is a strong, developing, focus on research as a key element in colleagues' contribution to Bond as an institution and to their own teaching practice. Hence, a new manifesto has been issued (see Appendix 1) that aims to drive research and collaboration within FSD and Bond as a whole and, most importantly, strengthen collaboration with industry. The CCCR has previously promoted a research culture and this is now bearing fruit with virtually all 25 members publishing in 2022 and the majority taking part actively in FSD funded research, other funded research and seeking external funding in the coming triennium. For example, CCCR is currently reaching out to and engaging with MATES (MATES - Industry Based Suicide Prevention - MATES) and the Lighthouse Club (Lighthouse Club Australia) in order to promote graduate research in this field with the intention of leveraging industry and ARC funding.

#### **FORWARD FOCUS**

FSD is turning its attention to research conducted by colleagues that is focused, of use to industry and academia, and soundly based in both theory and practice. The fledgling CCCR Research Seminar and FSD Professorial Lecture series are already attracting attention both within the faculty, the University and industry. With the advent of the Olympics in Brisbane, the opportunity to become involved in first-hand, industry-based, deep research is manifesting itself. Indeed, the Brisbane Centre provides an ideal platform to leverage the skills and knowledge of FSD academics.

Hence, our short-term goal is to raise the profile of the active researchers within FSD, and to support them both financially and work wise through the faculty, the University and by leveraging our industrial contacts. Goals need to be set in order to achieve this, and that is the underlying agenda item that CCCR will address during this academic year. We wish to focus and narrow down our areas of interest and research in order to be relevant for the developments taking place around the 2023 Olympics.

CCCR already has members with expertise in this area, notably in Alan Patching with his Project Management role in the Sydney Olympics, who has led research and publication in this area, and through our athletes at Bond. CCCR's mission is to constantly build bridges with industry, commerce and government with particular emphasis in Olympic involvement.

The mantra for CCCR for the next two years will be enabling colleagues' research efforts. Enabling will also, of course, include disseminating and developing and becoming inclusive in drawing industry partners into the way of thinking and researching that befits a modern university. In order to underpin this progress an Advisory Board is to be set up in order to underpin this changing focus. Members of CCCR are being encouraged to apply for ARC funding and Skitmore, Rowlinson and Miller are currently preparing an application for the upcoming round in 2023

It will be clear from the increasing mass of academic output that has been produced over the past 12 months by members of CCCR that the move to a deeper research focus is now underway. There is a strong collegiality as colleagues work with one another in research teams. A diverse, but fundamentally and academically, important set of research themes are being explored and exploited (see Appendix B). FSD is quickly becoming well-known as a research active community that addresses topics that are industry and society relevant with appropriate academic rigour. CCCR is striving to attain the same level of performance in research as Bond has

done for years in terms of teaching.

The recent Professorial Lecture series has done a great deal to put the faculty onto the map locally and, unsurprisingly, internationally. This worthwhile endeavour provides like-minded research colleagues a more visible platform to display their own research through CCCR and the FSD website. CCCR now boasts six active PhD researchers being supervised by teams drawn from CCCR membership and is actively recruiting more highly educated candidates, from our own graduates where possible.

#### **APPENDIX A**

#### **CCCR MANIFESTO**

Centre for Comparative Construction Research: Review and Manifesto

## TIME FOR CHANGE

The character and future direction of CCCR is under review. The role of incubators and comprehensive centre membership has served its purpose in developing interest in research and raising the profile of CCCR. It is now time to move on and we are laying out a blueprint for a change to further facilitate research and nurture scholarship.

The first task will be to move from incubators to projects as a focus for the Centre's activities. The Centre has achieved its goal of stimulating research and several individuals and groups have set off on their own direction of research interests and have recruited research postgraduate students. This is to be encouraged, with organic growth within the disciplines encouraged by the Faculty in order to further stimulate inter- and multidisciplinary research.

To this end, it is proposed that the Centre hold regular work in progress meetings, lunches, and seminars. These should be open to all interested faculty and students at all levels. The aim of this initiative is to disseminate research that might stimulate colleagues to start their own projects or join existing projects. Hence, CCCR membership will be based on active projects rather than specific areas of research. This approach is intended to be both inclusive and diverse in nature but also support active collegiality and active research projects rather than on-going research interests.

In order to ensure sound governance an Advisory Board is to be set up. This board will be drawn from important individuals from outside of the University who have a strong interest in both promoting the University and particularly promoting research that involves industry and the professions.

The Centre will work to represent the research interests of individuals and groups to industry and to the university. The role of the Centre is not to provide funds but to develop, and help to develop projects, foster industry contacts, and assist in developing research proposals in a co-production approach to enhance prospects of funding to those individuals and groups who are/wish to be research active.

#### STRUCTURE AND AIMS

The Centre's core role is to develop a vibrant research community in an atmosphere of sharing of research and ideas. The Centre should provide a forum to support those who wish to pursue their own research and to facilitate, as far as possible, that process.

One of the Centre's aims is to support and advise the faculty in order to develop an enabling research climate focused on individual and collaborative research projects with clearly defined publication and grant support outcomes.

The Centre will support cross disciplinary research based on existing projects. For instance, using LiDAR based digital twins in practice to assist in redesign of rooms, homes and facilities from an occupational therapy perspective. Such practical applications of existing research are an opportunity to bring in external funds and partnerships within Bond and from outside.

The Centre will have the following key attributes. It will:

- Focus on Research Projects
- Develop a forum for research groups or clusters that have similar and intersecting fields of interest and research
- Facilitate cross disciplinary research within FSD, which is a multidisciplinary Faculty, and with other Faculties
- Communicate with Faculty and University management to advise on required resources for research in terms of time, funding, and library resources, publication resources (such as APC support), facilitation of external research contacts and collaborations
- Facilitate a research career path for existing staff at all grades, by opening centre membership to participants in relevant active research projects
- Consider renaming the Centre to reflect this change in role and direction
- Ensure PhD students aligned to Built Environment projects have access to a supportive and effective research environment.

### **APPENDIX B**

# **RESEARCH OUTPUTS**

#### **JOURNAL ARTICLES**

- 1. **A Memari**, H Panjehfouladgaran, A Abdul Rahim, R Ahmad <u>The impact of lean production on operational performance: A case study</u> Asia-Pacific Journal of Business Administration
- 2. Egbelakin, T., **Ogunmakinde, O.E.**, Omotayo, T., and Sojobi, A. (2022). Demystifying the Barriers and Motivators for the adoption of Base Isolation Systems in New Zealand. Buildings. 2022; 12(5):522. https://doi.org/10.3390/buildings12050522
- 3. **Ogunmakinde, O.E.**, Egbelakin, T., and Sher, W. (2022). Circular Economy: Construction Industry's approach to achieving Sustainable Development. Resources, Conservation & Recycling. <a href="https://doi.org/10.1016/j.resconrec.2021.106023">https://doi.org/10.1016/j.resconrec.2021.106023</a>
- 4. MH Momade, S Durdyev, N Van Tam, S Shahid, **J Mbachu**, Y Momade <u>Factors influencing adoption of construction technologies in Vietnam's residential construction projects</u> International Journal of Building Pathology and Adaption.
- 5. L Zhao, **J Mbachu**, Z Liu <u>Developing an Integrated BIM+ GIS Web-Based Platform for a Mega</u> Construction Project KSCE Journal of Civil Engineering 26 (4), 1505-1521
- 6. L Zhao, **J Mbachu**, B Wang, Z Liu, H Zhang Installation Quality Inspection for High Formwork Using Terrestrial Laser Scanning Technology Symmetry 14 (2), 377
- 7. L Zhao, **J Mbachu**, B Wang, Z Liu, H Zhang <u>Installation Quality Inspection for High Formwork Using Terrestrial Laser Scanning Technology</u>. Symmetry 2022, 14, 377
- 8. H Li, Y Chen, J Zheng, Y Fang, Y Yang, **M Skitmore**, **R Rusch**, T Jiang <u>The influence of the psychological contract on the safety of performance of construction workers in China Engineering, construction and architectural management</u>
- 9. Y Zhang, X Jiang, C Cui, **M Skitmore** <u>BIM-based approach for the integrated assessment of life cycle carbon emission intensity and life cycle costs</u> <u>Building and Environment 226, 109691</u>
- 10. P Yan, J Liu, X Zhao, **M Skitmore** Risk response incorporating risk preferences in international construction projects Engineering, Construction and Architectural Management 29 (9), 3499-3519
- 11. L Hongyang, F Shuying, **M Skitmore**, N Talebian <u>Willingness-to-pay for energy-saving retrofits of residential buildings and its influencing factors: the case of the Pearl River Delta, China Technological and Economic Development of Economy 28 (6), 1684–1710-1684–1710</u>
- 12. C Cui, X Han, Q Zhou, M Xu, B Xia, **M Skitmore**, <u>Y Liu Impact of passengers' perceptions of social responsibility activities on the efficacy of PPP urban rail transit projects</u> Cities 130, 103987
- 13. D Sukanthan Rajendra, CKH Hon, K Manley, F Lamari, **M Skitmore** Key dimensions of the technical readiness of small construction businesses that determine their intention to use ICTs Journal of Management in Engineering 38 (6), 04022055
- 14. JBH Yap, BL Lim, **M Skitmore** Capitalising knowledge management (KM) for improving project delivery in construction Ain Shams Engineering Journal 13 (6), 101790
- 15. M Arifuzzaman, U Gazder, MS Islam, **M Skitmore** <u>Budget and cost contingency CART models for power</u> <u>plant projects</u> Journal of Civil Engineering and Management 28 (8), 680–695
- 16. JBH Yap, **M Skitmore**, JR Chong, CKH Hon Managerial measures to reduce rework and improve construction safety in a developing country: Malaysian case Journal of Civil Engineering and Management 28 (8), 646–660
- 17. J Zhang, F Dong, P Ballesteros-Pérez, H Li, **M Skitmore** <u>Current and Future Trends of Resource</u> <u>Misallocation in the Construction Industry: A Bibliometric Review with Grounded Theory</u> Buildings 12 (10), 1731

- 18. JBH Yap, **M Skitmore**, CGY Lam, WP Lee, YL Lew <u>Advanced technologies for enhanced construction</u> <u>safety management: investigating Malaysian perspectives</u> International Journal of Construction Management, 1-10
- 19. B Xiong, K Ye, **M Skitmore**, W Jiang, B Qin Chinese perceptions of corporate social responsibility: an analysis of annual reports in the housing sector (Chinese perceptions of corporate social responsibility) International Journal of Construction Management 22 (13), 2586-2597
- 20. Z Wang, Y Pang, M Gan, **M Skitmore**, F Li <u>Escalator accident mechanism analysis and injury prediction</u> <u>approaches in heavy capacity metro rail transit stations</u> Safety science 154, 105850
- 21. H Li, T Jiang, P Mao, J Zheng, Y Fang, **M Skitmore**, D Wu <u>Stakeholder Perceptions of Sustainable</u> <u>Infrastructure Project Delivery: A Comparative Analysis between Guangdong, Hong Kong, and Macao</u> Journal of Environmental and Public Health 2022
- 22. M Moorhead, L Armitage, M Skitmore Risk management processes used in determining project feasibility in the property development process early stages by Australia/New Zealand property developers Journal of property investment & Finance 40 (6), 628-642
- 23. MA Azman, Z Abdul-Samad, BL Lee, **M Skitmore**, D Rajendra How technological, environmental and managerial performance contribute to the productivity change of Malaysian construction firms

  Engineering, Construction and Architectural Management
- 24. Y Liu, Z Cheng, AJY Chen, Y Geng, K Zhang, N Zhu, **M Skitmore**, B Cai <u>Big disparities in CH4 emission</u> patterns from landfills between the United States and China and their behind driving forces Fundamental Research
- 25. N Zainon, **M Skitmore**, FA Mohd-Rahim <u>Critical success factors in implementing flexible IT infrastructure in the Malaysian construction industry</u> International Journal of Construction Management 22 (11), 2166-2177
- 26. N Dissanayake, B Xia, **M Skitmore**, B Trigunarsyah, V Menadue <u>Ranked generic criteria for EPC contractor selection</u> Engineering, Construction and Architectural Management
- 27. R Nanang, C Susilawati, **M Skitmore** <u>Toward a public sector asset optimization strategy: the case of Indonesia</u> Construction Innovation
- 28. IS Zaqout, MS Islam, LA Hadidi, **M Skitmore** Modeling bidding decisions and bid markup size for construction projects: A fuzzy approach Engineering Applications of Artificial Intelligence 113, 104982
- 29. X Jiang, S Wang, Y Liu, B Xia, **M Skitmore**, M Nepal, AN Ghanbaripour <u>A method for the ontology-based risk management of PPP construction projects</u> Construction Innovation
- 30. S Ismail, CKH Hon, P Crowther, **M Skitmore**, F Lamari <u>The drivers and challenges of adopting the Malaysia industrialised building system for sustainable infrastructure development Construction Innovation</u>
- 31. JBH Yap, **M Skitmore**, YW Lim, SC Loo, J Gray <u>Assessing the expected current and future competencies of quantity surveyors in the Malaysian built environment Engineering</u>, Construction and Architectural Management 29 (6), 2415-2436
- 32. **Talebian, N.**, Gilbert, B. P., **Miller, D**. & Karampour, H., <u>Biaxial bending design of solid steel storage</u> rack uprights in global buckling Sep 2022, In: <u>Journal of Constructional Steel Research</u>. 196, 107395
- 33. Y Li, Y Ning, **S Rowlinson** Social Control in Outsourced Architectural and Engineering Design Consulting Projects: Behavioral Consequences and Motivational Mechanism Journal of Construction Engineering and Management 149 (4), 04023004
- 34. M Mohajeri, A Ardeshir, H Malekitabar, **S Rowlinson** Structural model of internal factors influencing the safety behavior of construction workers Journal of construction engineering and management 147 (11), 04021156
- 35. S Yin, Y Wu, Y Shen, **S Rowlinson** <u>Development of a Classification Framework for Construction</u> <u>Personnel's Safety Behavior Based on Machine Learning</u> <u>Buildings</u> 13 (1), 43
- 36. J Zhang, Y Shen, **S Rowlinson** Impact of Safety Climate on Construction Workers' Safety Behavior:

  Mediating Effect of Self-efficacy Advances in Engineering Technology Research 1 (1), 19-19

- 37. Rahmati, M., Latorre, B., Moret-Fernández, D., Lassabatere, L., **Talebian, N.**, **Miller, D.**, Morbidelli, R., Iovino, M., Bagarello, V., Neyshabouri, M.R. and Zhao, Y., 2022. On infiltration and infiltration characteristic times. *Water Resources Research*, *58*(5), p.e2021WR031600.
- 38. **Miller, D.**, Ho, N.M. and **Talebian, N.**, 2022, October. Monitoring of in-place strength in concrete structures using maturity method—An overview. In *Structures* (Vol. 44, pp. 1081-1104). Elsevier.
- 39. **Talebian, N.**, Gilbert, B.P., Miller, D. and Karampour, H., 2022. Biaxial bending design of solid steel storage rack uprights in global buckling. *Journal of Constructional Steel Research*, 196, p.107395.
- 40. **Memari, A.**, Panjehfouladgaran, H.R., Abdul Rahim, A.R. and Ahmad, R., 2022. The impact of lean production on operational performance: a case study. *Asia-Pacific Journal of Business Administration*.
- 41. Mumbi, A.W. and **Watanabe, T.**, 2022. Cost estimations of water pollution for the adoption of suitable water treatment technology. *Sustainability*, *14*(2), p.649.
- 42. Tam, N.V., **Watanabe, T.** and Hai, N.L., 2022. Importance of Autonomous Motivation in Construction Labor Productivity Improvement in Vietnam: A Self-Determination Theory Perspective. *Buildings*, *12*(6), p.763.
- 43. Tam, N.V., **Watanabe, T.** and Hai, N.L., 2022. Measuring Work Autonomy and Its Role in Enhancing Labour Productivity: The Case of the Vietnamese Construction Industry. *Buildings*, *12*(9), p.1477.
- 44. H. Ninomiya, **T. Watanabe** Evaluation Method for Work Motivation of Construction Engineers Using Organismic Integration Theory Journal of Japan Society of Civil Engineers, Ser. F4 Construction Management
- 45. H. Ninomiya, Y. Goto, **T. Watanabe** Analytical Study of Work Motivation Structure in Construction Engineers Using Evaluation Grid Method Journal of Japan Society of Civil Engineers, F4, Construction Management
- 46. AW Mumbi, **T Watanabe** Cost estimations of water pollution for the adoption of suitable water treatment technology Sustainability 14 (2), 649
- 47. **Ghanbaripour, A.N.**, Golmoradi, M., Langston, C., **Skulmoski, G.** and Arqoub, M.A., 2022. The effect of project manager's management style on project delivery success in construction projects. *International Journal of Construction Management*, 22(15), pp.2941-2950.
- 48. **B Bajracharya**, I Khanjanasthiti <u>A Placemaking Framework for the Social Sustainability of Master-Planned Communities: A Case Study from Australia</u> Sustainable Development: Asia 2022 rune.une.edu.au
- 49. **Lester, D., Skulmoski, G. J.**, Fisher, D. P., Mehrotra, V., Lim, I., **Lang, A.** & Keogh, J. W. L. <u>Drivers and barriers to the utilisation of gamification and game-based learning in universities: A systematic review of educators' perspectives</u> 2023, British Journal of Educational Technology 1-23
- 50. G Li, X Li, H Li, M Skitmore, V Menadue <u>Temporal dynamic assessment of household energy</u> consumption and carbon emissions in China: From the perspective of occupants Sustainable Production 2023 Elsevier
- 51. **M Skitmore**, B Trigunarsyah, **V Menadue** Ranked generic criteria for EPC contractor selection Engineering 2022 emerald.com
- 52. Ottmann, D.A., 2022. <u>Biotic Materials</u> Ecological Building Materials for Deserts and Drylands (pp. 59-93). Cham: Springer International Publishing.
- 53. BL Lee, **M Skitmore**, D Rajendra <u>How technological</u>, <u>environmental and managerial performance</u> <u>contribute to the productivity change of Malaysian construction firms</u> Engineering 2022 emerald.com
- 54. RY Sunindijo, W Zhang, P Yousefian, **RN Camozzi** <u>Retention over Attraction: A Review of Women's Experiences in the Australian Construction Industry; Challenges and Solutions</u> Buildings, 2023 mdpi.com
- 55. W Shehata, C Langston, **M Sarvimäki**, **R Novak Camozzi** The adaptive reuse potential of underused heritage gaols in Australia: a case study of Richmond Gaol, Tasmania Journal of Cultural Heritage Management and Sustainable Development, Vol. 12 No. 4, pp. 345-366 Journal of Cultural

#### **BOOK CHAPTERS**

- 1. **Ogunmakinde, O.E.**, Sher, W., Egbelakin, T. (2022). Construction Waste Management in Nigeria Using the 3R Principle of the Circular Economy. In: Ren, J., Zhang, L. (eds) Circular Economy and Waste Valorisation. Industrial Ecology and Environmental Management, vol 2. Springer, Cham. <a href="https://doi.org/10.1007/978-3-031-04725-1">https://doi.org/10.1007/978-3-031-04725-1</a> 8
- 2. Egbelakin, T., **Ogunmakinde, O.E.**, and Carrasco, S. (2022). Incentives for Retrofitting Heritage Buildings in New Zealand. In A. Nuno Martins Sr., Jose Manuel Mendes, Gonzalo Lizarralde, Temitope Kikelomo Egbelakin, Liliane Hobeica & Adib Hobeica (Eds.), Investing in Disaster Risk Reduction for Resilience. Elsevier. https://doi.org/10.1016/B978-0-12-818639-8.00012-0
- 3. **S Rowlinson** Construction project procurement: A critical review Describing Construction, 112-137, Edward Elgar
- 4. **Patching, A.**, 2022. The Problem, the Questions It Raises, and the Path to Much-Needed Answers. In *Attitudes to Psychological Stress Among Construction Professionals* (pp. 1-54). Cham: Springer International Publishing.
- 5. **Patching, A.**, 2022. Coming to Grips with and Getting to Understand the Problem. In *Attitudes to Psychological Stress Among Construction Professionals* (pp. 55-123). Cham: Springer International Publishing.
- 6. **Patching, A.**, 2022. Where to from Here for Construction Project Managers? In *Attitudes to Psychological Stress Among Construction Professionals* (pp. 245-287). Cham: Springer International Publishing.
- 7. **Patching, A.**, 2022. The Problem, the Questions It Raises, and the Path to Much-Needed Answers. In *Attitudes to Psychological Stress Among Construction Professionals* (pp. 1-54). Cham: Springer International Publishing.

#### PEER-REVIEWED CONFERENCE PROCEEDINGS

**Ogunmakinde, O.E.**, Egbelakin, T., and Henderson, R. (2022). Assessing Emergency Animal Safe Sites for Evacuation. In: proceedings of CIB World Building Congress - Building Our Future: Informing practice to enhance the lives of current and future generations, 27 – 30 June 2022, RMIT, Melbourne, Australia. IOP Conf. Ser.: Earth Environ. Sci. 1101 022044, https://doi.org/10.1088/1755-1315/1101/2/022044

**Ogunmakinde, O.E.**, Sher, W., and Egbelakin, T. (2022). Circular Economy in Africa's Built Environment: A Conceptual Bibliometric Analysis. In: proceedings of CIB World Building Congress - Building Our Future: Informing practice to enhance the lives of current and future generations, 27 – 30 June 2022, RMIT, Melbourne, Australia. IOP Conf. Ser.: Earth Environ. Sci. 1101 062016, https://doi.org/10.1088/1755-1315/1101/6/062016

DG Melagoda, **S Rowlinson** <u>Heat Stress Management in the Construction Industry: A Socio-technical Systems</u> <u>Perspective</u> Proceedings of the 21st Congress of the International Ergonomics Association

The institutional framework of construction safety management: A case study of Sri Lanka DG Melagoda, **S Rowlinson**IOP Conference Series: Earth and Environmental Science 1101 (4), 042038

Tam, N.V., **Watanabe, T.** and Hai, N.L., 2022. Factors Constraining Work Motivation in Construction Projects: A Case Study in Vietnam. In *Creative Construction e-Conference 2022* (pp. 164-168). Budapest University of Technology and Economics.

## Best paper at conference:

**Ghanbaripour, A.**, Tumpa, R.J., Sunindijo, R.Y., Zhang, W., Yousefian, P., Camozzi, R.N., Hon, C.K., Talebian, N., Liu, T. and Hemmati, M., 2022. Retention over Attraction: A Review of Factors Affecting Women's Experiences in the Australian Construction Industry. In *The 45th Australasian Universities Building Education Association (AUBEA): Global Challenges in a Disrupted World: Smart, Sustainable and Resilient Approaches in the Built Environment*.

#### **FSD FUNDING**

#### 2022

Team Leader Amir Ghanbaripour - *Retention over Attraction – the Effectiveness of Government, Industry and Organisational Initiatives to Retain Women in the Australian Construction Industry.*Awarded \$4000

Team Leader Stephen Rowlinson - *The game of Life is hard to Play: Mental Health and Suicide in the Construction Industry.* Awarded \$4000.

#### 2023

Team Leader Lynne Armitage **Built heritage management (BHM) systems: Australia and Germany compared** Awarded \$5000.

Team Leader Bhishna Bajracharya **Building megaprojects in Southeast Queensland: An analysis from the planning, property, and project management perspectives.** Awarded \$5000.

Team Leader Amir Ghanbaripour Retention over Attraction (RoA) - the Effectiveness of Government, Industry, and Organisational Initiatives to Retain Women in the Australian Construction Industry. Awarded \$5000.

Team Leader Jasper Mbachu **Property-boosting digital transformation in the Australian construction industry.** Awarded \$5000

Team Leader Ashkan Memari Exploring the Impact of Key Risk Indicators on the Adoption of Sustainable Procurement Practices in the Australian Construction Industry. Awarded \$4836.

Team Leader Olabode Ogunmakinde **Beyond Recycling: Innovative Approaches to Achieving Zero Waste in Australian Universities through Circular Economy Principles.** Awarded \$5000.

The faculty has also supported the CCCR with internal research funds of \$30,000 for a fee waiver scholarship (Leon ZHU Zicheng). Also \$34,000 in grant support has been distributed to six project teams in early 2023.

# **Infrastructure Development**

Development of The Materials Testing Laboratory has been completed in 2023.

#### **EXTERNAL FUNDING**

- Svantesson, D., **Birt, J.**, Georgiades, E., & Tan, D. (Awarded, 2023). Meta XR Programs & Research Fund in association with the National University of Singapore Centre for Technology, Robotics, Artificial Intelligence & the Law. AUD \$ 21,550 (Cat C), Joint Chief-Investigator.
- Sander, E. J., **Birt, J.**, Baumann, O., Vanstone, B. & Marshall Day Acoustic Consultants. (Awarded, 2019). Australian Government Innovation Connections. AUD \$ 58,679 (Cat B), Associate Investigator.
- Sander, E. J., **Birt, J.**, Baumann, O., & Marshall Day Acoustic Consultants. (Awarded, 2019). \$21,500 (Cat D), Industry Funding. Joint Chief-Investigator.

- Birt, J., & Spatial Media. (Awarded, 2017). \$60,800 (Cat C), Advanced Queensland Knowledge Transfer Partnership. Chief-Investigator.
- Birt, J., & Rescue Swag. (Awarded, 2017). AUD \$100,000.00 (Cat B), Advanced Queensland Ignite Innovation. Chief-Investigator.

## **APPENDIX C**

# **Active Membership of CCCR:**

- Bhishna Bajracharya
- James Birt
- Adrian Carter
- **Ruidong Chang**
- Ranka Camozzi
- Amir Ghanbaripour
- Alexander Lang
- Daniel O'Hare
- Jasper Mbachu
- Ashkan Memari
- Vanessa Menadue
- Dane Miller
- Matthew Moorhead
- Bode Ogunmakinde
- Daniel O'Hare
- Daniela Ottmann
- Alan Patching
- Darmicka Rajendra
- Stephen Rowlinson
- Rosemarie Rusch
- Marja Sarvimaki
- Martin Skitmore
- Greg Skulmoski
- Nima Talebian
- Ranka Novak Camozzi
- Ahmed Moustafa
- Lynne Armitage
- Zicheng Zhu
- Jianhao Quan
- Xingdong Jiang
- Tsunemi Watanabe