

Gold Shovel Award Nomination for Professor Mark Milke

August 2020

Qualifications and Memberships

- Bachelor of Science (Harvey Mudd College)
- Master of Science (University of Wisconsin)
- Doctor of Philosophy (Carnegie Mellon University)
- American Geophysical Union (AGU) (Professional Organisation): Member
- Association of Environmental Engineering and Science Professors (AEESP) (Professional Organisation): Member
- International Solid Waste Association (ISWA) (Professional Organisation): Member
- New Zealand Hydrological Society (NZHS) (Professional Organisation): Member
- New Zealand Risk Management Society (Professional Organisation): Member
- Waste Management Institute of New Zealand (WasteMINZ) (Professional Organisation): Member
- Water New Zealand - The New Zealand Water & Wastes Association (Professional Organisation): Member

Professional Interests

Prof Mark Milke has been a lecturer at UC Dept of Civil and Natural Resources Engineering since 1992, and his research spans a wide range of topics in solid waste management, civil engineering systems, and engineering education.

He has worked with Management Scientists on research leading to the book *Smart Markets for Water Resources: A Manual for Implementation*. The book shows how an auction system can set prices that reflect variable environmental impacts, and so protect the environment in an economically efficient way. Mark is working with Te Runanga o Ngai Tahu on a trial in the Ngai Tuahuriri catchment.

Early in 2010, Mark started research on management of solid waste after disasters. His PhD student became a world leader on the topic and was seconded to the Canterbury effort in 2011-2012. Mark continues with research into illegal dumping.

Mark has moved increasingly into civil engineering systems because complex problems require systems tools and systems thinking. He is Co-Editor-in-Chief for the international research journal *Civil Engineering and Environmental Systems*, and has edited a number of special issues including one on resilience.

Mark considers that research is needed to improve how engineering learning is updated. He considers there is little point in new research into climate change when it takes 20 years for practice to change because of weak lifelong learning. Mark wishes to lead research into changing education for professionals to allow for more rapid change in practice in these fields--

- Solid waste (rubbish) management
- Environmental engineering
- Systems, decision, and risk analysis
- Groundwater
- Engineering education

Mark has actively encouraged students to adopt a professional attitude during project work, when preparing both a sole author preliminary report, and then working in groups of about five, preparing a final group report. A key feature of his projects, has been involvement of practising engineers as mentors for student projects which brings students into contact with experienced engineers.

Mark has devoted considerable effort to raising the standard of written communications by students. He has been the editor of '*Communications Portfolio Guide*', which is published by the Department of Civil and Natural Resources Engineering at University of Canterbury.

Mark has been a NZ Chartered Professional Engineer since 2007. He has been involved in an important external role as the environmental engineering member of the Peer Review Panel for the operation of the Kate Valley Landfill in North Canterbury, along with Dr Trevor Matuschka of Engineering Geology Ltd, as geotechnical engineering reviewer. The Peer Review Panel (PRP) was established in 2004 by Transwaste Canty Ltd, and prepares an Annual Report which is submitted to Environment Canterbury and is a public report.

Also, Mark has had ongoing involvement in Water NZ as chair of the judging panel for the Best Paper at the annual conference (Ron Hicks Award), as well as presenting a number of papers at the Annual Conferences.

In summary, we consider that Mark Milke has 'gone the extra distance' in inspiring students in their introduction to an engineering career. In addition, he has maintained valuable external roles in NZ and worldwide, in the development of environmental engineering practice.

Nominated by Humphrey Archer

Seconded by Mike Bourke

28 August 2020