

Input Needed for Proposed National Masters Degree in Water Engineering

We are looking to develop a new nationwide Masters degree in water and wastewater engineering. We need industry input to develop the degree scope and structure. If you would like to support this initiative, we are looking for members to participate in a team to advance the development plans. If interested, please contact: n.singhal@auckland.ac.nz

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Vision

We are proposing to develop a new Masters degree in collaboration with multiple organisations for water and wastewater engineering where:

- Education/research connections are fostered to support the long-term development of local research needed to put New Zealand at the forefront of engineering advancements
- Māori feel welcome and their viewpoints respected, with an emphasis on improving pathways into the degree
- All graduates are biculturally competent and confident
- Graduates have the proper mix of professional and technical skills to reduce the immediate training demands of employers
- Knowledge and application courses are taught to a mix of degree students and professional development practitioners
- Graduates are able to engage with innovative international best-practice, present at conferences, join international industry-leading working groups, and be considered peers at world-leading water service organisations.
- Students earn credits by working on applied projects designed by organisations through ongoing arrangements
- Most students receive direct (fee payment for employees) or indirect (project employment) financial support from New Zealand employers
- The degree is accredited at a Masters level by Engineering NZ
- 25 graduates are ready for local employment each year

Motivation

The Aotearoa New Zealand water services sector is undergoing rapid changes to improve outcomes for communities and the environment. It faces immense pressure to upskill the technical workforce to deliver on the stringent treatment standards and higher expectations of organisational efficiency. The sector will need an estimated 6,000-9,000 additional skilled

workers over the next 30 years to meet these requirements. While great effort is underway to prepare the previously underdeveloped trades skills needed, there is also a need to improve tertiary education for specialised engineers and continuing professional development (CPD) for those in the workforce to step up to new demands.

The current situation is a dispersed set of efforts in multiple universities, in-house education at employers, overseas new hires with stronger educational development, and one-off professional short courses run by sector associations such as Water New Zealand and Carbon & Energy Professionals. Aotearoa New Zealand lacks critical mass to achieve its goals without coordination between multiple universities, employers, and sector associations.

By demonstrating a long-term commitment to supporting te mana o te wai, Aotearoa New Zealand can create a new culture of technical excellence and innovation where the country is looked to as one of the world leaders in the water sector.

If the engineers with the specialised training could improve the efficiency of the new investment by even 1%, it could create a \$1 billion value, or \$1 million for each graduate in a program of 25 students per year, over the next 40 years. A small investment in a new program could bring vastly greater benefits to the nation.

How do we get there?

We need a development group that engages with Māori early on and infuses indigenous viewpoints and aspirations throughout the development and delivery.

We need to promote cooperation among universities in delivering specialist education.

We need to work alongside others to attract individuals from Māori, Pacific Island, and other currently underrepresented groups into the water sector.

We need to adapt education to more modern methods that include project-based and employer-placement learning, along with a mix of online learning of fundamentals, video tutorials, and hands-on learning from laboratory work, field techniques, and community service projects.

We need employers to make long-term commitments to support placements and projects for students.

We need a durable funding model that ensures continuity and quality.

We need many voices to be involved at many levels to develop the expectations in terms of advanced technical and professional skills.

We need effective governance to ensure the degree maintains updated and proper focus on the right goals.

We need a program that serves as an incubator for potential leaders who see their future as providing service to society.