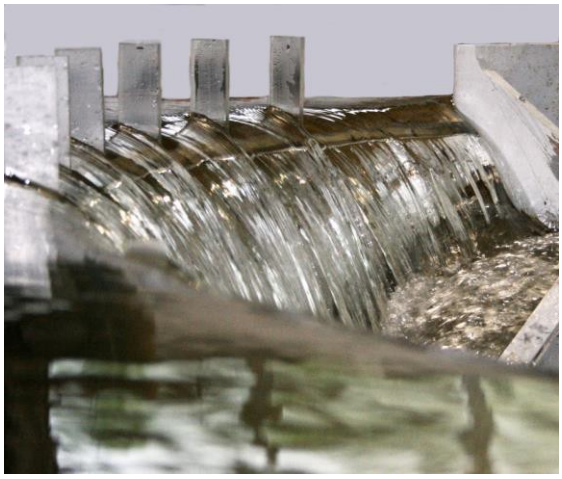
School of Civil and Environmental Engineering

CIVIL ENGINEERING HYDRAULICS

SPECIALISTS IN CIVIL ENGINEERING HYDRAULICS

The Water Research Laboratory (WRL) is the leader in research, investigation and application of civil engineering hydraulics.

Whether it is the performance assessment and optimisation of large infrastructure or pure hydraulics research for tomorrow's designs, WRL has the skills, experience and facilities to solve the most complex of problems.



THE TOOLS OF OUR TRADE

Our laboratory has large, state-of-the-art resources that include:

- A team of highly experienced professional staff comprising academics, engineers, scientists, trades and support staff.
- Sophisticated hydraulic laboratories with leading edge velocity, depth, tracer, pressure, force, aeration and sediment measurements.
- Physical and numerical modelling of turbulent flows including energy loss, fluid-structure interactions, air-water flows, non-stationary and transitional flows.
- An in-house workshop for the construction of complex hydraulic models.
- Numerical modelling techniques including commercial and in-house computational fluid dynamics.

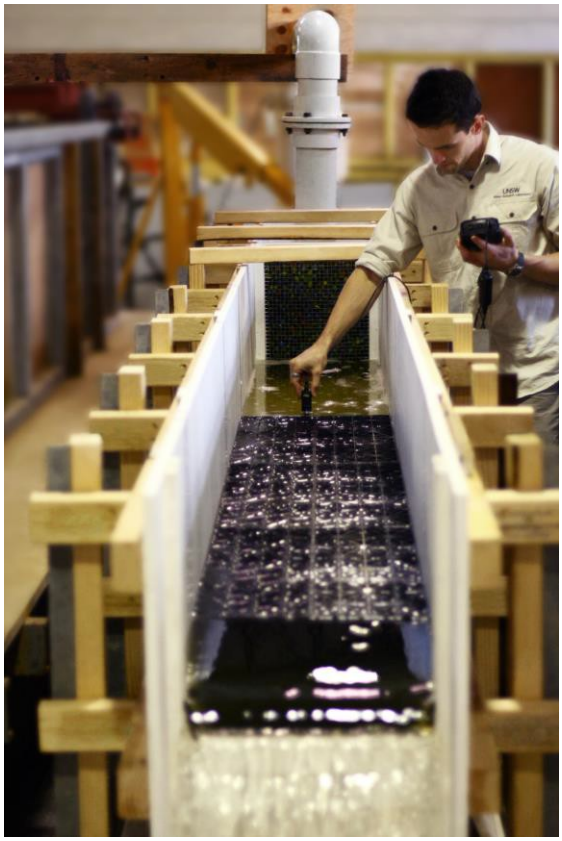
WHAT WE DO

Design optimisation and performance assessment of hydraulic structures such as:

- stormwater systems
- dam outlet works
- energy dissipaters
- ocean outfalls
- spillways
- levees
- fish passages
- flow control structures and
- hydraulic jumps.

Hydraulics in industrial applications such as:

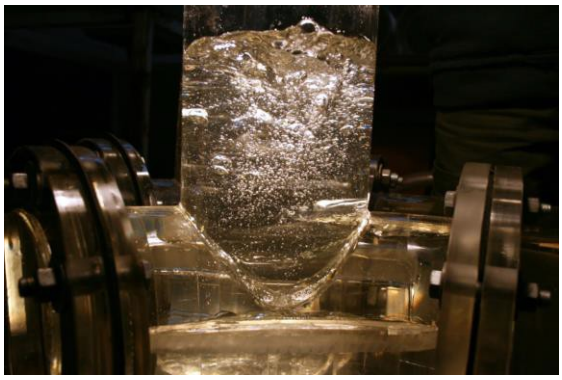
- pump stations
- turbines
- destratification
- hydro and thermal power stations
- water treatment plants and
- wastewater treatment plants.



More information contact: Brett Miller (B.Miller@wrl.unsw.edu.au)

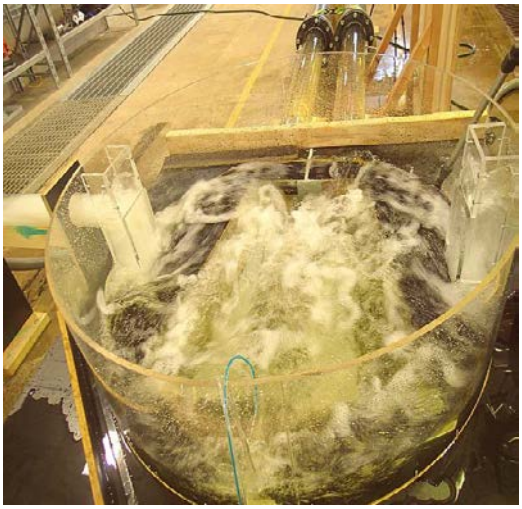
OUR PARTNERS

WRL academics and project engineers collaborate extensively with university researchers both internationally and within Australia. In addition to this, extensive collaboration with government and industry is also a hallmark of WRL. The WRL Team comprises of industry experts, providing innovative solutions to specific problems.



KEYSTONE PROJECTS

- Hydraulic and dispersion design and testing of the Sydney Desalination Plant outfall.
- De-aeration and drop structure for the Adelaide Desalination Plant.
- Pure research into energy dissipation and flow aeration in spillways.
- Green Square major stormwater trunk drainage including physical modelling of specific structures.
- Penrith Lakes physical modelling.
- Suma Park dam spillway optimization.



OUR EXPERTS

Brett Miller - Principal Engineer - Hydraulics and Modelling. Brett specializes in civil engineering hydraulics, in particular ocean outfalls, and hydraulic structures. He is an expert in both complex numerical modelling and physical model testing including dam spillways, outfall diffusers, pump intakes and drop structures.

Stefan Felder is a Lecturer in Hydraulic Engineering and Applied Fluid Mechanics. Stefan is an expert in physical modelling of turbulent free-surface flows including multiphase flows and flow-structure interactions. His current research interests include transitional open-channel flows, bed roughness effects on flow performance and design optimisation of hydraulic structures.

Grantley Smith is the manager of WRL and a Principal Engineer specialising in flood hydraulics. Grantley has over 25 years' experience assessing the hydraulics of flooding including overland flow and flow through structures. He is currently leading ground breaking research into people and vehicle stability in flooding flows.