School of Civil and Environmental Engineering

COASTAL ENGINEERING AND MANAGEMENT

SPECIALISTS IN COASTAL ENGINEERING AND MANAGEMENT

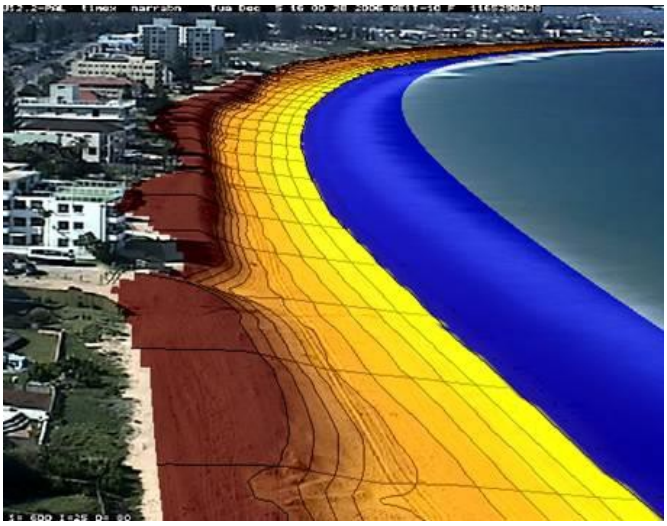
The Water Research Laboratory (WRL) has a highly regarded international reputation in coastal and ocean engineering.

The 'Lab' is considered the birth place of coastal engineering in Australia, comprising a great history of experience and current knowledge. WRL is the largest coastal hydraulics laboratory in Australia.

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, tracer, aeration and sediment measurements.
- Numerical modelling techniques including three dimensional flow and water quality modelling and spectral and phase resolving wave models.
- Advanced field data collection equipment.



WHAT WE DO

No other group in Australia has the unique combination of data collection capabilities and analysis, physical laboratories and numerical modelling techniques that WRL can offer.

We undertake investigations utilising state-of-the-art technologies in both numerical and physical model studies. This includes wave generation and propagation, wave run-up and overtopping, wave forces and the stability of coastal structures, littoral sediment transport, tidal hydrodynamics and entrance stability, coastal and estuarine morphology, beach and shoreline erosion and estuarine sedimentation.

Automated coastal imaging techniques are utilised to assess the full range of coastal engineering and management activities.

Our expertise includes coastal processes, coastal hazard definition and inundation, foreshore revetment design and testing, coastal zone management, dredging and beach nourishment.

We undertake design optimisation of coastal structures, harbours, ports and marinas, and investigate surfing reefs, climate change adaptation, remediation of historic seawalls, innovative and traditional coastal structures, economic assessment, 'real time' coastal monitoring and measurement, impact assessment of near shore coastal structures on beach planform and forensic coastal engineering.

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 Projects Team are industry experts, providing applied solutions to specific problems.

More information Contact: Professor Ian Turner (Ian.Turner@unsw.edu.au)

ACADEMIC EXCELLENCE

Our key academic disciplines include: wave dynamics and structural loadings, beach morphodynamics and sediment transport, coastal structures and shore protection, estuary engineering and management and coastal management.

KEYSTONE PROJECTS

- Coastal Adaptation Needs for Extreme Events and Climate Change, Avarua, Rarotonga, Cook Islands
- Physical Modelling of Geotextile Breakwaters, Abu Dhabi
- Physical Modelling of Bounty Bay Breakwater, Pitcairn Island
- Wharf 3 m Flume Testing, Koniambo, New Caledonia
- Australian Coastal Observation Network: Monitoring and Forecasting Coastal Erosion in a Changing Climate
- Sea Level Rise and Coastal Hazard Assessment for Clarence City Council, Tasmania

OUR EXPERTS

Professor Ian Turner is the Director of WRL. Ian's current research interests include beach groundwater dynamics and sediment transport at the beach face, monitoring of coastal change and impacts of climate variability, coastal erosion control and coastal management, and coastal aquifer hydrogeology.

Associate Professor Ron Cox has extensive research experience in water, coastal and environmental engineering and management, working with industry and government within Australia and overseas. He is the National Convenor of the Australian Climate Change Adaptation Research Network for Settlements and Infrastructure (ACCARNSI).

Ian Coglan is a Senior Project Engineer with expertise in 2-dimensional and quasi 3-dimensional flume physical modelling, numerical modelling of rivers, estuaries and oceans, and analysing large datasets. He has built over 25 physical models for assessing coastal and marine structures. He has completed assessments ranging from studies ranging from small property developments to regional coastal climate change vulnerability.

Ben Modra is a Principal Engineer with expertise in coastal and hydraulic engineering and a leader in physical modelling for these fields. He is experienced in the inspection, design and testing of coastal structures, particularly rubble mound breakwaters. He has pioneered new approaches to tidal and wave data.

Matt Blacka is an expert in coastal processes and hazards, coastal structures, vulnerability assessments, climate change adaptation, physical and numerical modelling, field data collection and coastal monitoring. His specific expertise is in the application of 2D and 3D physical models for assessing rock and precast concrete armoured structures and the measurement of wave loading on rigid marine structures such as caissons, platforms, jetties and wharves.

James Carley is a Principal Engineer and one of Australia's foremost experts in the practical application of coastal process models, with extensive experience with the best currently available numerical and analytical models from around the world. James has undertaken detailed studies of beaches throughout Australia, the South Pacific, South-East Asia and the Middle East.