School of Civil and Environmental Engineering

ESTUARINE ENGINEERING AND MANAGEMENT

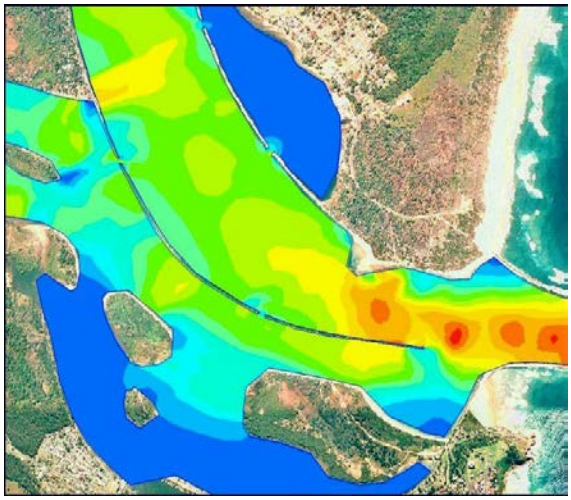
SPECIALISTS IN ESTUARINE ENGINEERING AND MANAGEMENT

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

WRL has a long track record of successful estuary projects. The organization structure, in-house tools and experience at WRL allows us to tackle a variety of problems including short-term projects where an immediate decision is required, and long-term research outcomes. WRL staff have received various awards for our best practice research in estuarine engineering, restoration and management (often referred to as eco-engineering).

Our unique advantage includes:

- 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

The estuaries that we recreate, work and enjoy are very different from the estuaries of pre-European settlement. Over the past 150+ years, these estuaries and their catchments have undergone major change from their previous natural state to being drained, cleared, farmed, filled, constrained and contaminated. In urban areas, the surrounding catchments have developed into residential and commercial lands and runoff from these land use changes has resulted in poor quality soil and surface waters.

Estuarine science and engineering requires an understanding of many different disciplines. At the University of New South Wales' Water Research Laboratory (WRL), a large team of scientists and engineers focuses on how water moves (hydrodynamics) and the related water quality processes.

This knowledge can be applied to a range of estuarine issues including:

- Environmental flows in estuaries
- Restoration and rehabilitation of coastal wetlands
- Water sharing plans
- Pollutant and wastewater disposal
- Estuarine classification
- Water quality cycles including algal blooms
- Catchment impacts such as nutrients and acid sulfate soil runoff
- Qualitative effects of upgraded infrastructure
- Dredging impacts
- Channel re-orientation and navigation
- Sedimentation and erosion (including bank erosion)
- Event and disaster planning
- Acid sulfate soil management
- Connected waters assessments
- Hydrologic, hydrodynamic and hydraulic modelling

WRL staff have researched every major estuary in NSW and sites throughout Australia. For each study we offer full research solutions from data gathering to analysis, to reporting and community engagement.

More information contact: Dr William Glamore (w.glamore@unsw.edu.au)

OUR EXPERTS

Dr William Glamore is an expert in estuarine management, dynamics and restoration. For the past 20 years Will has undertaken research and applied projects on estuaries throughout Australia and overseas. Will has received many awards and appointments in the field of estuary management, developed wetland and riverbank assessment techniques, detailed the impact of climate change and led the development of on-ground methods.

Grantley Smith is the manager of WRL and a Principal Engineer specializing in flood hydraulics and hydrodynamics of estuaries. Grantley has extensive experience in assessing the risk of flooding as well as emergency planning. Grantley has over 20 years' experience working in estuaries and floodplain environments.

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 Convener of the Australian Climate Change Adaptation Research Network for Settlements and Infrastructure (ACCARNSI).

Brett Miller is a Principal Engineer with expertise in estuarine engineering and management, specializing in hydraulics and environmental flows. He is experienced in the inspection, design and testing of estuarine structures, particularly estuarine outfalls and the discharge of wastewater. Brett has pioneered new approaches to data analysis and desalination outfalls.

Duncan Rayner is an expert in estuarine processes and hazards, wetland restoration, vulnerability assessments, climate change adaptation, physical and numerical modelling, field data collection and estuarine monitoring. His specific expertise is in the application of 2D and 3D numerical models for assessing large scale tidal restoration projects.

Jamie Ruprecht is an awarded expert in the practical application of estuarine process models, with extensive experience with the best currently available numerical and analytical models. Jamie has undertaken detailed studies across NSW.

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