

Hydrology and Flood Hydraulics



A fundamental and rigorous understanding of how water behaves is central to managing catchments, floodplains, drainage networks, rivers and estuaries. Such understanding requires skills and knowledge to address the volumes and rates at which water discharges from a catchment (i.e. the hydrology), and also a commensurate capacity to understand how these waters move through and across the drainage system or floodplain (i.e. the hydraulics).

We have an extensive team of specialist engineers who work full-time on hydrologic and hydraulic studies, ranging from small urban catchments to major floodplains conveying flows in excess of tens of thousands of cubic metres per second

We offer the following specialist hydrologic and flood hydraulic management skills

- Flood frequency analysis for peak and low flows
- Rainfall-runoff modeling including calibration, for design flood estimation
- 1D and 2D floodplain modelling using both proprietary and in house software (Tuflow)
- Extreme flood estimation, including Probable Maximum Floods
- Dambreak analysis
- Real time flood forecasting and warning
- Open channel hydraulics including unsteady flow and two dimensional modelling and bridge hydraulics
- Urban stormwater pipe network and retardation basin design and analysis.

Floodplain Management

The management of floodwaters is crucial. A major flood can be devastating for communities and industry, while a minor flood can be beneficial to the natural environment and agricultural industries.

We have unrivalled knowledge and experience in the field of floodplain management and can develop Total Flood Management Plans – satisfying the demands of the community and the needs of the environment.

We offer the following specialist floodplain management skills

- Practical floodplain management plan formulation
- Hydrologic (catchment rainfall/runoff) modelling
- 1D and 2D hydraulic flood modelling, including calibration, validation and design application/impact analysis
- Community consultation and surveys
- Floodplain mapping
- Flood forecasting and warning systems
- Flood risk assessment
- Flood damage cost benefit analysis for management options

Decisions which have to be made when managing floodplains are complex. They must consider the needs of the community and the environment. Such decisions may have major implications.

