



## Can Flood Models Inform Waterway Stability?

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### **Biography:**

*Civil engineer specialising in hydrology, hydraulics, water quality, flood management and stormwater infrastructure. After 10 years in a global, multi-disciplinary consultancy, Laurence and I established Allan & Dennis Pty Ltd in 2017, to provide enhanced service and value whilst maintaining high level technical expertise and capability.*

### **Abstract:**

Waterway stability is rarely proactively considered, rather reactively after a scour event has occurred. This approach can potentially lead to poor development planning and risk to life and property in previously unidentified vulnerable areas.

At a minimum development codes require a Flood Impact Assessment (FIA) to be conducted to ensure no adverse impacts to external properties and safe conveyance of floodwaters through a site.

Some codes also require the FIA to include an assessment of frequent flows or peak velocity impacts as a proxy for scour potential. This is generally thought to simplify assessments due to the limited understanding of bed shear stress outside of hydro-morphologic specialists.

Advancements in commonly adopted 2D flood modelling packages used for FIAs have enabled the direct output of bed shear stress. Therefore, can flood practitioners adopt bed shear stress analysis for a more accurate assessment of waterway stability? Furthermore, is the need of full hydro-morphologic modelling negated?

This paper is aimed at practitioners, providing some advice, guidance and examples to conduct bed shear analysis as part of a FIA. Furthermore, it is intended to assist assessment officers to effectively review these analysis to deliver informed decisions.

It is encouraged that over time relevant guidelines and development codes of assessment authorities and organisations can be updated accordingly to consider waterway stability through flood models.