Proactively managing waterway geomorphic disturbance with the 'physical form five' principles

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Reactive waterway management is more common than we would like. The negative implications for the ecological condition of waterways, and the cost of ongoing maintenance, are well known, as is the need to move towards proactive and strategic planning for waterway management (Russell et al. 2022). Despite international recognition of the importance of dynamic and complex waterways the last few decades has seen only marginal gains (Wohl et al. 2015). Given climatic conditions and increased disturbance, this imperative is increasing, and we must work toward understanding fluvial geomorphology to work with rivers (Fryirs and Brierley, 2021). To achieve this the Department of Energy, Environment and Climate Action (DEECA) commissioned a collaborative project led by Streamology together with an expert panel of geomorphologists to develop key principles for the management of physical form and function in waterways, named the 'physical form five', as follows:

	Principles
1. Value form and process	1a Recognise physical form and processes in waterways
	1b Rivers move and change: erosion and deposition are natural processes to be encouraged where possible
2. Create corridors	2 Rivers need room and space
3. Think about the system	3a Recognise and manage the whole fluvial system
	3b Address the cause, not the symptom: by thinking big
	3c Protect and restore connections: look upstream, downstream, out to the side and at your feet
4. Understand your waterway	4a Determine what will happen if you do nothing, or do something
	4b Don't repeat the mistakes of the past
5. Vegetate	5 Vegetation is physical form's best friend

We provide examples of how the 'physical form five' can be practically applied. The principles provide a considered framework upon which informed decisions for management, over a range of time and spatial scales, can be made. They should provide a precursor to all waterway 'works' programs so that we can learn from the mistakes of the past, support waterway recovery and ensure that physical form can continue to support myriad values. The challenge is in obtaining an agreed pathway that ensures support and adoption.

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