



Constraints and opportunities for management of urban waterways to achieve multiple benefits

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There is a strong push for rapid intensification of urbanisation across NSW, driven by the State government. For example, in the Georges River catchment the population is earmarked for more than a 20% increase in population by 2031. Without an abrupt change in the way that we manage urban landscapes, increased urbanisation will cause increased stormwater runoff, which is known to severely alter stream ecology and will limit the potential uses, social and biological, of receiving waterways at regional scales. Concreted channels are a ubiquitous and obvious example of the traditional management of urban streams for the sole purpose of being conduits for efficient drainage of stormwater to avoid risk of flooding. They are explicitly designed to severely alter flow regimes, with no consideration given to maintaining ecological values such as water quality or habitat, or social values such as aesthetics. Predictably, surveys of concreted channels in urban areas of the Georges River catchment of southern Sydney showed that their water quality and macroinvertebrate communities were distinctly different from those of non-engineered streams flowing through forests. Surprisingly, and somewhat concerning, was the severe degradation of non-engineered urban streams, which were more likely being managed with a view to maintaining multiple values, but that had water quality and macroinvertebrate communities more similar to those in concrete channels than in forested streams. This study highlighted that despite the improved habitat structure surrounding the stream created by rehabilitation efforts, there was no discernible increase in the quality of the water, the ecological communities, or the hydrology of the system. Catchment-scale management is required to address hydrology and water quality issues in order for ecosystems to perform the range of functions that occur in forested streams. But, given limited resources, local councils are often tasked with achieving the best outcome from reach-scale management actions.

Following from the results of our research, which highlighted the severe degradation of both engineered and non-engineered urban stream, the objectives of this study were to compare and evaluate the strategies and priorities in council policy and procedural documentation and the implemented actions by councils regarding the management of waterways. We aimed to determine whether the need for catchment-scale action was acknowledged in the documentation and whether this was then reflected in actions, which are often grant-funded and opportunistic. Across eight local councils, documentation regarding waterway management was reviewed and compared to information obtained from the staff of each council through individual face-to-face interviews and self-completed quantitative questionnaires. The results of the study will give insight as to how councils make decisions for land and natural resource management and will produce recommendations for the member councils and Georges Riverkeeper to implement catchment wide to achieve best practice river management. It is thought that the management policies include broad statements regarding integrated water management but that actions are ultimately driven by limited budgets and availability of grant funding. Ultimately this study can provide realistic

outcomes for different types of resources to achieve multiple benefits in urbanised streams. It is known that integrated catchment-scale management is needed to improve hydrology and water quality in waterways, which might not be able to be achieved with limited resources. Opportunistic reach-scale management can achieve other benefits to increase the value of urban streams, improving the liveability of the area.