



Naturalising Sydney's Creeks

G Kirby, Mr Dan Cunningham¹, Mr Phil Birtles¹, Mr Richard McManus², Mr Dom Blackham³

¹Sydney Water, Parramatta, Australia, ²Alluvium, Perth, Australia, ³Alluvium, Sydney, Australia

Sydney's natural creeks began to be lined with concrete, brick or stone in the 1800's to assist urban development of the city. Efficient drainage reduced flood risk and liberated land for construction.

Throughout the 20th century (and still to this day), hardening of natural streams has continued, facilitating Sydney's ongoing urban expansion. The hard engineering of waterways caused the loss of habitats and created barren, sterile landscapes, often fenced from the public.

Over the last 30 years, community and stakeholder attitudes towards urban waterways have changed significantly. There is a greater appreciation of the social and environmental values waterways can provide to the local community. City planners now understand natural waterways have important benefits and functions for the broader urban fabric of the city. They create sense of place as well as historical and social connections and at the same time provide a range of biophysical benefits to the population. Together, this has driven investment in waterway naturalisation programs.

As some of Sydney's original stormwater channels reach the end of their functional life, renewal of assets presents an opportunity to restore creeks back to a more natural form. The first examples of channel naturalisation undertaken by Sydney Water have been very well received by the community with vastly improved aesthetics and social amenity. These projects removed concrete and laid back the steep channel banks to a more gentle slope stabilised with sandstone and native plants. However, with a typical cost of over \$15,000 per lineal metre of channel it is imperative that naturalisation projects maximise a range of benefits, including:

- creating high quality, accessible public open space,
- improving the visual amenity as the appearance of the creek becomes more natural,
- improving active transport connections for residents, and
- providing potential urban cooling benefits and environmental improvements.

In late 2017, Sydney Water, Alluvium and AECOM investigated opportunities to better enable the naturalisation of stormwater channels. Preliminary mapping showed over 400km of Sydney's creeks have been converted to stormwater channels. Opportunities to naturalise these channels are limited by both funding and site constraints. A set of criteria has been developed to help identify and prioritize naturalisation opportunities. The criteria considers constraints such as underground services, flood impacts and availability of adjacent open space as well as opportunities such as improving habitat connectivity, linking public access and realising strategic open space upgrades.

This work resulted in recommendations which aim to better enable stormwater and waterway managers to enhance sustainability and liveability through naturalising or daylighting man made drainage systems. This work

comes at a time where Sydney is facing unprecedented growth and where waterway corridors provide the only realistic opportunities to improve the liveability of established suburbs with limited public open space.