



## **Developing a Stormwater Runoff Amelioration Method for Greenfield Servicing - Case Studies in South Creek.**

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There is a substantial increase in urbanisation planned in the South Creek catchment over the next few decades. As such, Sydney Water requires information to inform the water servicing strategy. It will also enable protection and improvement of waterway health and associated ecosystem services to future communities.

Excess stormwater runoff and potential discharges of treated effluent from planned urbanisation will impact the physical condition and ecological health of receiving waterways. Impacts include higher discharge rates and volumes, leading to erosion and morphologic changes such as channel deepening; widening and loss of instream features such as bars and mobile substrates and sedimentation of receiving waters. This coupled with potential increases in pollutant loads will negatively impact the water quality, ecological and ecosystem health of the creeks, and may include loss of species and communities. Additionally, this may reduce the amenity and social values provided by the creeks which are increasingly being recognised as key landscape features for the West.

Sydney Water has been investigating methods of protecting ecosystem health in South Creek and now has an initial approach that connects iconic species/communities with modelled spatially-based flow-related metrics and riparian conditions. Broadly speaking, our approach is to identify and describe the ecological and geomorphic values of the case study creeks, then explicitly link the degrading characteristics to these values. The intention is that this will be undertaken for Blaxland and Lowes Creeks. In doing so we will specify hydrologic metrics that can be used to control development such that the influence of changed hydrology from urbanising and urbanised areas can be minimised. To extrapolate this approach to other creeks in the South Creek and Sydney Water region we are developing a **STormwater Runoff Amelioration Methodology (STReAM)**.

The method is underpinned by the key questions:

- 1. What is the potential ecological outcome that is likely to generate benefit for future communities (what was there, what is there and what is the future potential?)?
- 2. What are the waterway/riparian conditions required to meet such outcomes (i.e. what are the waterway objectives)?
- 3. What is the current flow regime in the selected tributaries (case study sites)?

- 4. What is the impact of modelled change to flow conditions in the future based on a business as usual urbanisation and any in-catchment waste water treatment?
- 5. How can the ideal waterway outcomes be met?