



## Nutrient Management in the Hawkesbury-Nepean River System

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### Overview

The Hawkesbury-Nepean River is an iconic waterway for Sydney and has been utilised to provide resources as the city has grown. Most of the natural flow in the river is captured in drinking water storages and the waterway has been highly modified through the construction of many weirs and extensive sand and gravel mining of the river bed. Land clearing, agriculture and horticulture across the eastern catchment have increased erosion and introduced nutrient rich runoff to the waterway.

Over the last 50 years, wastewater systems have been provided across much of the developed catchment. Along with urban stormwater, the discharge of treated wastewater has contributed large amounts of nutrients to the river system. Toxic algal blooms were common, particularly during the 1980's and 1990's due to reduced river flows and increasing levels of pollution. Since that time, Sydney Water has invested in advanced nutrient removal technology at its wastewater treatment plants across the catchment and have decommissioned many poor performing plants.

Sydney Water is concerned about the health of the river and the environmental impacts of increasing development. There are limited affordable options to improve the performance of wastewater treatment plants without adopting costly membrane treatment processes. Sydney Water is exploring the opportunity to invest in projects that reduce diffuse nutrient sources such as urban stormwater and agricultural runoff. These catchment-based projects are an efficient and effective way of reducing nutrients and provide local communities with a greener, cooler and more liveable western Sydney.

### Objectives

There is a growing recognition of the value of water in the local and regional environment. The waterways of the Hawkesbury Nepean system offer great environmental, social and economic benefits to the Sydney Region. The objective of this project is to take a catchment-wide approach to the management of nutrient pollution in these waterways. Sydney Water will be seeking opportunities to collaborate on projects that are outside our traditional role as a water utility with the aim to protect the river in an affordable way against a backdrop of significant development.

### Method

A series of parallel workstreams inform the progress and direction of the project. These are;

Environmental Science and Water Quality Modelling – A multiagency team has been established to progress research into the processes that drive river health outcomes and the modelling of various development scenarios on instream water quality and river flows.

Community and Stakeholder Engagement – A program of activities have been undertaken to understand the community's waterway values and their insights on diffuse pollution controls, these will be included in decision making

Economic Modelling – An economic assessment of the nutrient offset framework and the pricing implications of these projects.

#### Results

There has been strong support for Sydney Water taking a more active role in the management of diffuse pollution. Local councils indicated a willingness to partner with Sydney Water to ensure the impact of urban stormwater is reduced. Erosion and sediment control were identified as a concern across the catchment and other states have already seen success in tackling this by piloting nutrient offset projects focused on erosion control through bank stabilisation.

Sydney Water will likely use a suite of strategies to manage nutrient pollution, including optimised wastewater treatment, increased water recycling and diffuse nutrient offset projects across western Sydney.

#### Conclusions

The management of nutrients using a 'whole of catchment' approach is likely to deliver better environmental, social and economic outcomes to the people of Sydney. Sydney Water will continue to deliver world class wastewater services and identify opportunities for more water recycling where it makes sense to do so. Sydney Water is committed to work in partnership with councils or other groups to reduce nutrient pollution from diffuse sources. This will reduce the environmental impacts of development in an efficient and effective way that keeps our customers water bills as low as possible.