

## **Development and Implementation of Agricultural and Rural Best Management Practices and a Decision Support System to assist in the Water Quality Improvement Plans in the Swan-Canning Estuary.**

The Australian Government's Coastal Catchments Initiative (CCI) seeks to achieve targeted reductions in pollution to key coastal water quality hotspots. Under the CCI a Water Quality Improvement Plan (WQIP) is being prepared for the Swan-Canning Estuary to address nutrient pollution from the catchment.

The Department of Agriculture and Food is managing two projects that will contribute to development and implementation of the Swan-Canning WQIP. Both projects are designed to gather information on how nutrients are currently used and managed and what is happening in the catchment in relation to nutrient management practices.

The first project seeks to reduce excessive loads of nutrients to the receiving waters through identification, evaluation and implementation of agricultural and rural management practices. This project builds on progress to-date with a similar project in the Peel-Harvey catchment. It specifically deals with the necessary steps of identifying the utility of specific management practices for nutrient attenuation, developing and promoting those practices in the context of farm and catchment 'treatment trains' and estimating the extent of management practice implementation to protect receiving waters. Through scientific investigations this project will provide the basis for the "reasonable assurance" elements of the proposed WQIP for the Swan-Canning (focusing on the Ellen Brook sub-catchment).

The second project is to design a computer based decision support tool to develop and implement catchment planning and management that can facilitate the protection of the Swan –Canning receiving waters. This is based on a similar tool prepared for the Peel-Harvey Water Quality Improvement Plan (WQIP). As new information on relevant social and economic issues in the catchment become available and as other predictive models are reviewed, the department will regularly update the decision-support tool to reflect this to ensure the relevance and accuracy for decision-making and planning purposes. The decision-support tool, calibrated for application in the catchments, will play a critical role in the development and adaptive implementation of the WQIP by assessing land use change and management interventions on pollutant load generation and by providing a tool for priority setting and investment planning to achieve agreed WQIP load targets.

For further information about these projects that will contribute to the Swan-Canning Estuary WQIP contact the Department of Agriculture and Food in Waroona.



**Department of Agriculture and Food**  
Government of Western Australia



**Department of Water**  
Government of Western Australia



**Australian Government**

## **Predictive Modelling to support development and implementation of the Swan-Canning and Geographe Bay Water Quality Improvement Plans.**

An Australia-wide program known as the Coastal Catchment Initiative has been developed, to improve water quality, targeted at coastal catchments, known to be nutrient hotspots. In Western Australia, two coastal catchments (Swan-Canning and Geographe Bay catchments) were chosen to address nutrient management issues and to provide information for a Water Quality Improvement Plan (WQIP) for the catchment.

### **Coastal Catchments Initiative**

The Australian Government's Coastal Catchments Initiative seeks to significantly reduce pollutant discharge to key coastal water quality 'hotspots' across Australia. This will be achieved through Water Quality Improvement Plans (WQIPs) prepared in accordance with the Framework for Marine and Estuarine Water Quality Protection. Development of the Water Quality Improvement Plans for the Swan and Canning Estuarine and Vasse-Geographe Bay systems is supported by a number of sub projects:

- Development of a predictive model for the catchment and estuarine systems;
- Analysis of agricultural best management practices and development of a decision support tool; and
- A Framework for implementing Water Sensitive Urban Design (WSUD) on the Swan Coastal Plain (WSUD Framework).

### **Predictive model**

The aims of the project are three-fold:

- Model water quality and hydrology of the receiving waters and catchments for the Swan-Canning and Vasse-Geographe catchments.
- Develop and implement Water Quality Monitoring Programs for catchments and receiving water bodies to improve the calibration of the predictive model and to track attainment/maintenance of the WQIP objectives
- Deliver outputs of the predictive model in a user-friendly decision support system developed by the Department of Agriculture and Food.

The tools developed will then provide modeling support to the Water Quality Improvement Plan developed for the Swan Canning and Vasse-Geographe catchments.

The developed tool aims to answer to the question: *What to put where on the catchment to meet a specific set of nutrient targets under a specific climate scenario?* This model is then coupled with an economical model that will estimate the cost of the different remediation strategies.

For further information about this project contact the Department of Water, Water Resource Management Division, Aquatic Sciences Branch in Perth.



## **A Framework for implementing WSUD on the Swan Coastal Plain, with particular regard for the Swan-Canning and Vasse Geographe catchments**

A project is currently under way to develop a framework for water sensitive urban design (WSUD) on the Swan Coastal Plain. This project is part of the Coastal Catchments Initiative for the Swan-Canning and Vasse-Geographe catchments.

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### ***WSUD Framework***

The aim of the WSUD framework project is to prevent and reduce pollution of coasts and catchments through WSUD principles and practices in residential, commercial and industrial settings.

WSUD was developed in Western Australia in the 1980s for urban planning and design. It provides a framework for minimising the impact of urbanisation on the natural water cycle. It addresses water quality, water quantity and water conservation, together with broader social and environmental objectives which are expressed as design objectives and criteria. A key focus of the WSUD framework is the integration of WSUD into the planning process to achieve better water management outcomes in urban development settings.

There are three key elements of the WSUD project and each of the partnership agencies is responsible for the oversight of one element:

- Development of a framework to better integrate land use and water planning – Department of Planning and Infrastructure;
- Development of modelling and assessment tools for the management of water quality and quantity from urban development – Department of Water; and
- Capacity building for Government and industry in water sensitive urban design - Western Australian Local Government Association.

This is an important opportunity to establish a consistent approach to the integration of land and water planning across the Swan Coastal Plain and deliver some tools for achievement of WSUD outcomes.

For further information regarding this project, please contact either the Department for Planning and Infrastructure, Department of Water or the Western Australian Local Government Association.