EXPRESSION OF INTEREST

BRIEFING PAPER

PROJECT TITLE:

Water Sensitive Urban Design Solutions For Catchments Above Wetlands

PROJECT MANAGEMENT:

Contract Administrator: Hunter Councils Inc

Project Contact Ms Meredith Laing
Director
Lower Hunter & Central Coast Regional
Environmental Management Strategy
Ph 02 4962 0918
Fax 02 4962 0966

Project Management Project Reference Panel

INTRODUCTION:

The Lower Hunter & Central Coast Regional Environmental Management Strategy (LHCCREMS) is an innovative regional initiative currently being implemented by the seven Councils that comprise the Lower Hunter and Central Coast Region – Cessnock, Maitland, Port Stephens, Newcastle, Lake Macquarie, Wyong and Gosford. LHCCREMS was developed to assist, support and resource local government to more efficiently develop and implement environmental management programs.

The Councils of the Lower Hunter and Central Coast have recognised the need to tailor water sensitive urban design to the hydrological requirements of receiving water bodies, particularly wetlands, which are sensitive to hydrological variability. Current WSUD (Water Sensitive Urban Design) planning instruments tend to focus on larger scale water cycle management, and there is a need for a better understanding of, and decision support tools to address, the finer resolution dynamics that are important to wetlands. In particular, determining and maintaining appropriate wetting and drying cycles.

PROJECT CONTEXT:

Development control plans & water sensitive retrofit strategies for areas upstream of natural wetlands need to be tuned to the wetlands' needs. This is important both for the conservation of the wetlands themselves, and for the conservation of aquatic ecosystems downstream, which benefit from their ecological services (eg polishing water quality & providing a hatchery for fish) From the perspective of cost-effective drainage asset management alone, the

functioning of natural wetlands needs to be protected (eg constructing water treatment wetlands whilst allowing the treatment function of natural wetlands to decline does not make financial sense). Existing WSUD planning instruments (eg LHCCREMS Model Planning Provisions) focus on larger scale water cycle management and conservation.

In this Project, guidelines will be be developed to address the management of the location-specific and finer resolution hydrological dynamics that are important to protecting wetlands, expressed in daily flows across ecologically relevant time scales (the determination of which scales are relevant to wetland condition is a question for the project to resolve). Similar scale dynamics in water quality, seed dispersal and consequent weed invasion will also be considered.

The guidelines will include a method for specifying total catchment hydrological performance and selecting from the available suite of WSUD techniques to achieve this performance.

Accordingly, the project seeks to conduct research and produce planning guidelines for use in urban areas above wetlands and small lagoons that take into account a larger set of catchment dynamics than the currently available generic WSUD DCPs. Supporting this, a documented methodology for tailoring or applying these guidelines will be developed to suit particular sites (both greenfields & retrofit). They will be developed with local planners, engineers and ecologists as clients so that the process can be reality tested.

PROJECT OBJECTIVES:

1. Research and access expert advice to ascertain and document current knowledge of the ways stormwater quality and quantity influence wetland dynamics (as they relate to planning & engineering design decisions).
2. Undertake a desktop case study (or "modelling exercise") on Porter's Creek catchment (and possibly a Newcastle location) which involves catchment and wetland modelling (pre, present and post development scaenarios) and develops hypotheses in relation to the water quality needs and the optimum wetting and drying regime for the receiving wetland. (Ongoing monitoring, beyond the life of this project, will be developed at the case study sites.)
3. Review, using modelling software, the performance of alternative mixes of engineering design elements (eg tanks, swales, infiltration devices, constructed wetlands, spreaders) to explore what urban catchment designs are more and less appropriate from the perspective of protecting the wetlands.
4. Develop an ecological assessment and decision support tool (procedural document) for use in stormwater system design that is place sensitive.
5. Document explicitly what degree of correspondence / difference there is between what can be achieved in the design process and what

wetlands 'expect' (kinds of dynamics that prevailed before urban development and to which the wetland is adapted).

6. Develop preliminary design guidelines, and a methodology for tailoring, tuning, adapting the guidelines to provide appropriate WSUD strategy for particular places.
7. Document key uncertainties that need to be addressed to carry forward the research agenda and identify other investigations required to address these uncertainties.

STORMWATER ISSUES BEING ADDRESSED:

Runoff from urbanised catchments has a profound effect on the water quality and ecosystem health of receiving waters such as downstream wetlands. The project will address issues pertaining to the management of urban development impacts on stormwater runoff volumes and quality: The Project recognizes:

1. The need to equip planners and engineers with a methodology that enables them to design urban areas (or set standards for urban areas) that protect ecosystems downstream.

2. The need to trial the methodologies to give confidence to Councils and other stormwater managers designing for greenfields sites and for the retrofit of urban areas.

3. The need to bring into focus the research agenda for water sensitive urban design as it relates to receiving water bodies, in the process of better defining the challenges of managing urban runoff at finer resolutions in space and time.

RESOURCES AVAILABLE TO THE PROJECT:

Access to Council staff with a range of skills and experience in designing and managing urbanised catchments around wetlands, including WSUD techniques.

Mapping, data, records, and a range of information relating to case study sites.

BUDGET:

Approximately $90,000.

TIMEFRAME:

The project needs to be completed by May 2004.

EXPRESSION OF INTEREST PROCESS

1. Submissions to be received no later than Wednesday 27 August 2003.

2. Submissions may be posted, faxed or emailed to arrive by the specified deadline:

   The Director
   LHCCREMS
   PO Box 189
   Hunter Region Mail Centre
   NSW

   Fax 02 49620918
   Email envirodirector@huntercouncils.com.au

3. Expression of Interest submissions need not be long and detailed, however, information on the following is required–

   - Expertise in wetland ecology, wetland hydrology, water quality analysis, catchment modelling and/or related disciplines.

   - Understanding of catchment systems and the impact of water quality and quantity on wetland health and functioning.

   - Understanding of water sensitive urban design technologies.

   - Research skills and experience.

   - Proposed approach to the project, and likely deliverables for the allocated Project budget.