

Camden Council

Project Title: Elderslie Water Cycle Management Plan

Project Summary:

The Elderslie Release Area, which totals 169 Hectares, is located at Camden Valley Way, Elderslie. The release area is bordered by the existing residential areas of Elderslie to the west, Camden (Studley Park) Golf Course to the east, The Camden By-Pass to the south and Camden Valley Way to the north. The area has been on the Metropolitan Development Program since 1997. In order to inform the master planning process, J. Wyndham Prince Pty Ltd in close collaboration with Camden Council have prepared a Water Cycle Management Plan (WCMP). The WCMP represents a collation of 'best thinking and best practice' in the field of urban water management and represents a major step forward in the evolution of urban water management in Western Sydney

Project Objectives

In producing the WCMP for the Elderslie Infill development, Council and partners sought to design an urban development that reflected the new direction established by the Camden 2025 Strategic Plan. The Camden 2025 Strategic Plan adopted in May 2000 espouses a vision of a sustainable Camden and demands quality outcomes for the Camden community. The WCMP conforms with all statutory requirements and represents industry best practice for stormwater management in this catchment. The overall water cycle management objectives for the release area were identified as:

Environmental – Provision of appropriately designed, functional water quality facilities, salinity management, retention of existing trees, habitat revegetation and ecosystem enhancement; limitation of downstream discharge peaks and velocities; soft bioengineering treatments to reflect natural stream functions; ecologically sustainable; adopt principles of total catchment management and water sensitive urban design; conform with statutory water quality requirements; maintenance of environmental flows and inundation patterns in creeks and wetlands.

Urban Amenity – Provision of a stormwater management strategy that identifies and controls limits of flood affectation; provision of aesthetic design forms that enhance urban amenity and address proposed adjacent land uses (residential, recreational and transport); views into and out of drainage corridors (security, public safety, amenity); water quality (visual amenity and public health).

Engineering Considerations – Effective management and control of peak discharges, discharge velocities, and flood levels to pre-development and ecologically sustainable levels; industry best practice technical analysis of catchment hydrology and system hydraulic performance, soft sustainable bioengineering treatments.

Economics –

provision of a cost effective, functional trunk drainage system that optimises performance, keeps maintenance costs and requirements to an acceptable level, keeps land take to a minimum, provides maximum value for expenditure of public monies and focuses on ecological sustainability.

Project Outcomes:

Organisational

Critical Reflection – A subtle yet considerable outcome of the project was the development of an organisational capacity to reflect critically on stormwater policy and practice and honestly evaluate the effectiveness of Council in meeting their water management obligations.

Innovation – A key outcome achieved through the project was the development of a greater willingness within the organisation to innovate, to look beyond the familiar to what is ‘on the horizon’ in respect of stormwater management.

Leadership – Linked to innovation and a positive outcome of the project was a willingness to take a leadership role. Whereas at the commencement of the project there would always be a cry of ‘show me where this has been done and is working’ to an acceptance that considering the emergence of WSUD and our level of involvement in greenfield development that it is Camden’s time to lead.

Interdisciplinary Approach- The Elderslie WCMP demonstrated the benefits that can be achieved through the application of an interdisciplinary approach. The project was driven by the outcomes division which is an interdisciplinary team of planning, ecology, engineering, community services professionals. The project was supported by a cross divisional team with representation from all the branches and divisions within Council through which initiatives developed could be tested for organisational feasibility. In particular the consideration of ecological and social issues ‘up-front’ in the stormwater design process considerably influenced the nature of the outcome.

Environmental

The Strategic Plan, Camden 2025 demands a high level of environmental performance of any new development. The platypus bio-indicator is a poignant reminder of the vision established for the waterways of Camden.

Riparian Areas - The Elderslie WCMP demonstrates a radical departure from the norm in the treatment of creeks within subdivisions. In Elderslie the Herbert and Oxley Rivulets are to be restored and managed as functioning streams in an urban context. A riparian buffer of 20 meters from the top of each bank is conserved and the flow regime is designed to ensure the sustainability of the restored aquatic ecosystems.

Rainwater Tanks - The Elderslie DCP requires that all dwellings harvest rainwater and re-use that rainwater for toilet flushing and gardens and in some cases laundry. In addition to the obvious resource efficiency outcome the rainwater tanks also mitigate the effect of urbanisation on the flow regime of the creeks. By reducing the peak flows the aquatic ecosystems within the creeks are better conserved.

Bio-retention - Elderslie has moved away from the traditional stormwater practice of a large water body at the lowest point in the development performing the water quality control function. Following the principle of control closer to the source the WCMP employs bio retention units based upon the Lynbrook example through out the development.

The bio retention units are designed to work in conjunction with a traditional kerb and guttering approach preferred by residents. The bio-retention units have been designed to be positioned within the centre of boulevard roads or on the border of the riparian reserve treating stormwater before it enters the streams.

Sub-surface wetlands - There has been considerable concern within Council regarding the ongoing management obligations that the proliferation of water quality control ponds presents. Issues as broad as public safety and feral fish all contributed to a requirement to change current practice. This change of thinking is reflected in the Elderslie WCMP in the design of sub-surface wetlands. These systems provide a better water quality outcome and reduce the management burden to Council.

Technical

The primary technical outcome of the project has been the detailed design of the WSUD elements including, bio-retention units, pits and sub-surface wetlands that are integral to the functioning of the system. Please find attached the detailed design specifications that has resulted from this project.

Transferable

Camden hopes that many elements of the Elderslie project will be of benefit to other Councils particularly those in Western Sydney who are striving to create sustainable greenfield developments. Of most significance will be the detailed WSUD design at this scale and the encouragement that that will give those urban fringe councils that are facing the dilemma of the pressure to urbanise more land and the need to minimise impact on the Hawkesbury-Nepean Catchment.

Hopefully the detailed design of the bio- retention units and sub-surface wetlands will inform the WSUD technical standards process currently under way. The Rainwater tank component of the Elderslie DCP may be of interest to councils considering this approach.

Difficulties Encountered

Inertia – The primary difficulty encountered in the development of the Elderslie WCMP was the barrier of inertia. Despite considerable evidence that traditional stormwater management practices were not meeting the required standards. There was a reluctance to attempt anything new.

Project Home Builders – There was a major battle to convince project homebuilders that a rainwater tank would not necessarily compromise the package that they were marketing. The Western Sydney trend of increasingly large homes and decreasingly small blocks makes private open space a critical issue and the requirement to accommodate a rainwater tank becomes contentious. The innovative design of tanks goes some way to countering this but there needs to be a willingness for home designers to incorporate tanks into their designs

Maintenance Concerns – There still exist major concerns about the maintenance requirements of WSUD systems. Questions as to how often the media in bio-retention units requires replacement persist. Another issue is how to protect the media during construction periods. These concerns are a major barrier and difficult to answer until there are more systems to evaluate.

Absence of existing design standards – A major difficulty was the absence of any technical standards for the range of new WSUD elements. Without agreed technical standards these systems have had to be designed from the ground up. The new standards in the process of development will go a long way to addressing this barrier.

Salinity – The ever present threat of salinity was a difficulty. The risk of the system exacerbating the latent salinity threat was real and required the isolating of the entire system from groundwater through the use of geo-textile.

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