WATER CYCLE MANAGEMENT

Background

Community standards require that stormwater be conveyed through urban areas in a manner that emphasises the cost-effective achievement of safety and amenity. This requirement leads to a development standard where drainage is managed on a catchment or release area wide basis in a system of major/minor drainage, detention facilities and rainwater tanks. This system also requires a well managed water quality management by providing a range of management alternatives/systems that include infiltration devices, bio-retention systems, vegetative filter strips, constructed wetlands and gross pollutant traps.

The development of urban subdivisions areas generally leads to a significant change in the stormwater run-off characteristics of drainage catchments. This change partially results from an increase in the ratio of run-off volumes to rainwater volumes due to a reduction in pervious areas to absorb rainfall into the ground. It is also influenced by the reduction in catchment response times, where the impact of major/minor drainage systems more efficiently convey concentrated run-off to the catchment outlets. The re-development proposal for the existing Minto estate increases pervious areas but has little impact upon catchment response times.

This agreement to fund infrastructure works, is warranted from the developments direct Nexus to a combination of the characteristics of land development that:

- Increases stormwater run-off volumes and flow rates so that a system of major/minor drainage and/or stormwater detention basins is required to offset these impacts downstream; and
- Increases population levels in the vicinity of older drainage systems so that improvements, particularly large pipes and controlled overland flow systems are required to minimise existing inundation and hazard issues.
- Although the pollution concentration and loading discharges from the proposed development will be similar to the existing water cycle pollution loads, pollutants are to be reduced to satisfy statutory requirements and industry best practice levels.

Within the MURP development this agreement will form the basis for funding of all the costs associated with the local, public and upgraded water cycle management requirements.

The water quality impacts of a development upon a catchment vary depending on its existing land use. The similarity between the existing estate and the future development proposal means that pollutant concentrations will not alter significantly.

Nexus

An overall Water Cycle Management strategy has been established for the MURP and is detailed in the Background Report to the DCP. The strategy and the MURP DCP support the objectives of Smart-Growth, in that:

- Management of drainage and the provision of drainage facilities contribute positively to the area.
- Water quality and pollution management is to be of a high standard.
- Quality of the natural environment is to be enhanced.

The water cycle management strategy utilises detention basins, wetlands, natural channels, bio-retention devices, gross pollution traps and other facilities to ensure that the quantity of outflow from the precinct after its development is no worse than in the pre-developed situation. The stormwater quality discharging from the site is improved to better than existing scenarios due to the requirement to decrease pollutants below the developed scenario. The reserves and associated drainage facilities will provide flood mitigation and water quality improvement as well as public open space amenity. This agreement has allocated the costs for management of the water cycle and for open space areas across both sets of facilities as equitably as possible. All land users are beneficiaries of the system and gain from the enhanced amenity of the area.

In order to achieve an economical local drainage system that is in line with Smart-Growth principles, it is required to drain stormwater run-off through Benham Oval Redfern Park, Scarborough Park and the existing Rose Park. This latter area owned and managed by Campbelltown City Council has recently been reinstated as a natural ecosystem. It is proposed to install two offline Gross Pollutant Traps within Rose Park, these works are being proposed downstream of the MURP development area for ease of maintenance post development and the opportunity to treat run-off from Townson Avenue prior to discharge into the downstream system.

The areas of land designated as parks and ovals shall be dedicated as reserves to the Council. The Council will be responsible for the maintenance and functioning of the drainage system within the reserves. The re-development will be introduced in line with the DCP.

Facilities

The Water Cycle Management infrastructure includes the following:

- Detention basins
- Water quality treatment zones including wetlands and rain gardens
- Drainage channels
- Bio-retention swales
- Gross pollutant traps
- Permanent ponds

Costing

The following table provides estimated costs for each facility based on the estimates of civil works. A detailed description of the water cycle management facilities and maintenance cost assumptions is provided in the Water Cycle Management Report located in the Background Papers to the DCP