# CLIMATE CHANGE ADAPTATION OF URBAN WATER MANAGEMENT SYSTEMS IN THE WET/DRY TROPICS

The objective of this thesis was to identify climate change adaptation strategies that have been implemented in the urban water resource management sector globally that could be incorporated into the Greenfield Weddell development located 40kms south of Darwin in the wet/dry tropics region of Australia. Particular attention was placed on assessing the functionality of Water Sensitive Urban Design (WSUD) as a climate change adaptation measure.

### *The Weddell Development*

The Weddell development is located 40km south of Darwin and is expected to have up to 10,500 residents by 2021. This increasing population coupled with the projected climate change impacts predicted for the region will increase demand for potable water, reduce water security

ment system such as the large wastewater discharges during the wet season.

Average daily temperatures are consistently above 25 degrees. Daily evaporation varies between 5.5 and 8mm/day and is highest from September to October. Average daily evaporation exceeds average daily rainfall for the majority of the year in the Darwin region. This has implications on water demand patterns and results in water storages having to be large in size in order to accommodate the large evaporation losses characteristic of the area.

Water use in Darwin is seasonally variable with wet season demands approximately 600L/capita/day rising to as high as 1400 L/capita/day in the dry season The average water use in Darwin city incorporating residential, government and commercial use is 960 L/capita/day. The wet/dry tropics region of Australia is characterised by a distinct seasonality in rainfall patterns that includes an extended dry period that occurs from April/May

*Outcomes and Recommendations*

This study has found that WSUD elements could function as effective adaptation measures in the wet/ dry tropics. Incorporating major decentralised stormwater storages into urban developments for example would decrease demand on potable supply and in so doing increase resilience to climate change in the