



Our Harbour / Our Life / Our Future

DARWIN HARBOUR WATER SENSITIVE URBAN DESIGN STRATEGY



Water Sensitive Urban Design Strategy for Darwin Harbour



Water Sensitive Urban Design (WSUD) is a new approach to development, that takes an holistic approach to the planning and design of urban development. WSUD aims to minimise impacts on the natural water cycle and protect the health of aquatic ecosystems.

The **Water Sensitive Urban Design Strategy for Darwin Harbour** is a joint project between the Department of Planning and Infrastructure (DPI) and the Department of Natural Resources, Environment and the Arts (NRETA), supported by funding from the Australian Government Coastal Catchments Initiative (CCI). It will provide policy, tools and resources to ensure that urban development in the Darwin region is underpinned by a commitment to sustainable urban water cycle and stormwater management.

Darwin Harbour and its Catchment



27,350 ha of mangrove forest is found in Darwin Harbour, which constitutes approximately 5% of the total mangrove area of the Northern Territory

Darwin Harbour is a unique natural resource, and provides significant community and environmental values. The Harbour is also the ultimate receiving environment for all stormwater and wastewater discharge from Darwin and Palmerston urban areas. Recent research has identified that although the harbour is considered to be in a near pristine condition with good water quality, the impacts of urban stormwater runoff and wastewater discharges are evident.

As new development occurs in the region, there is potential for increasing impacts on the Harbour. Wastewater discharges are resulting in localised degradation within the estuarine tributaries of the Harbour and during the wet season, stormwater runoff from urban areas is resulting in high loads of sediments, nutrients and heavy metals entering local waterways.



Current predictions for 2050 are that the Darwin Harbour region will experience strong population growth with an expected need for an additional 50,000 to 100,000 new dwellings over this period. Given these large development pressures facing the Darwin Region, and the potential impact this will have on the receiving environment within Darwin Harbour, the Northern Territory Government has identified that a strategy is required for managing the impacts of urban development on the Harbour.

With the support of:



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Water Sensitive Urban Design

Water Sensitive Urban Design (WSUD) promotes the integration of the urban water cycle – stormwater, groundwater, potable mains water and wastewater – at the development scale. The principles of WSUD are to:

- protect and enhancement of natural water systems (creeks and rivers etc.);
- treat urban stormwater to meet water quality objectives for reuse and/or discharge to receiving waters;
- match the natural water runoff regime as closely as possible (where appropriate)
- reduce potable water demand through water efficient fittings and appliances, rainwater harvesting and wastewater reuse;
- minimise wastewater generation and treatment of wastewater to a standard suitable for effluent reuse opportunities and;
- integrate stormwater management into the landscape, creating multiple use corridors that maximise the visual and recreational amenity of urban development.

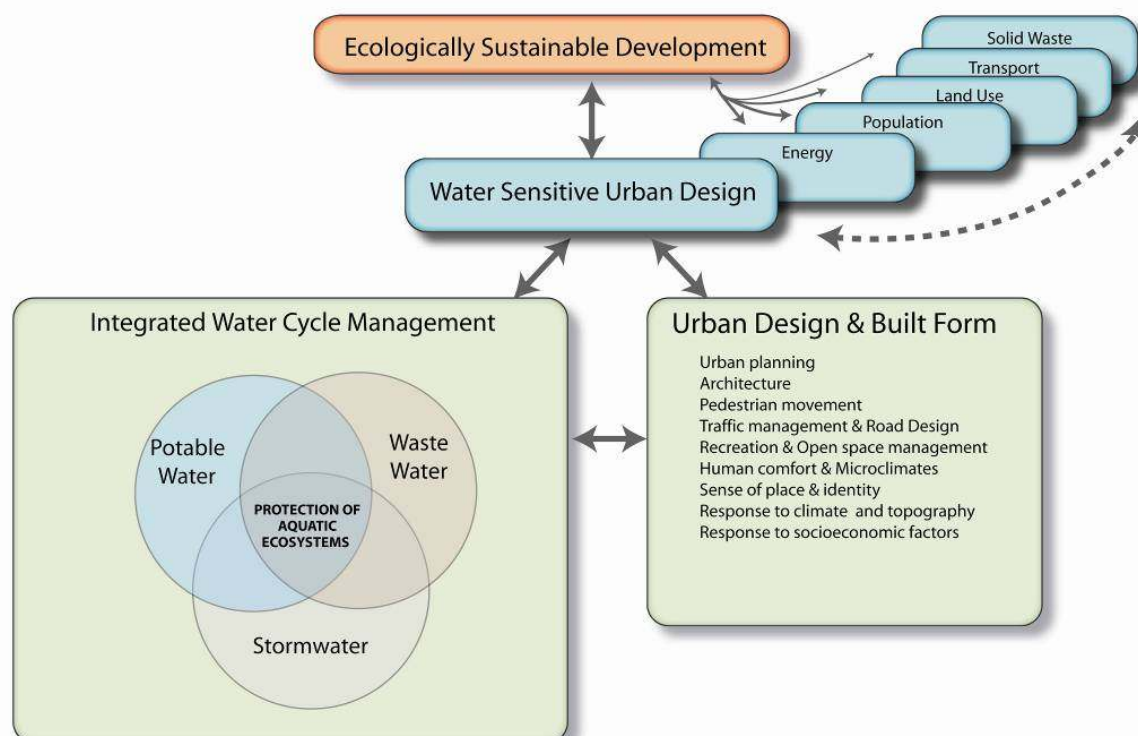
WSUD is a nationally recognised term, and seeks to

integrate the urban water cycle into the planning and design of the built form of an urban development. WSUD can be implemented through the built form through individual allotments, streets, suburbs and even master planned communities or precincts.

Elements of WSUD

WSUD gives emphasis to on-site collection, treatment and utilisation of stormwater flows as part of an integrated ‘treatment train’ that may be applied in addition to, or in lieu of, conventional stormwater and that can supplement water supply measures. The principles can be applied to all development types from the subdivision through to the allotment level. WSUD elements include:

- Reuse of rainwater, stormwater or treated effluent for toilet flushing, washing machines, garden watering, car washing or industrial purposes
- Specially designed landscaping and other treatment systems for conveying and treating stormwater runoff including the use of wetlands, grass swales and bioretention systems
- Protection and restoration of stream and riparian corridors for their environmental, recreational and cultural values





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WSUD Objectives in the Darwin Region

In order to manage the impacts to Darwin Harbour, particularly from new development and re-development areas, the Northern Territory Government has identified that WSUD should be applied to all new development in the Darwin Harbour catchment. Initially, WSUD in Darwin will be required by large subdivisions to refine practices and procedures.

Preliminary WSUD objectives for the Darwin Harbour are summarised below. These objectives are further detailed in the “Design Objectives for Darwin” Discussion Paper and the “Recommendation for the Implementation of WSUD within Existing Legislation and Policy Framework”.

Stormwater Quality

The recommended preliminary load based stormwater quality objectives are:

- 80% reduction in the mean annual load of Total Suspended Solids (TSS)
- 60% reduction in the mean annual load of Total Phosphorus (TP)
- 45% reduction in the mean annual load of Total Nitrogen (TN)
- 90% reduction in the mean annual load of Gross Pollutants

These should apply to new developments in the Darwin Region, until the performance of vegetated stormwater treatment measures in the region is better defined.

Potable Water Conservation

No mandatory potable water conservation objective has been specified, however a 20% water conservation target

is considered technically feasible and is suggested as an interim target.

Key activities to reduce potable water demand to meet this target would focus on:

- Reducing the garden irrigation demand for potable water by adopting low water use landscapes in public parks and encouraging low water use gardens on private allotments.
- Reducing the indoor demand for potable water through encouraging the adoption of dual flush toilets and other water efficient fixtures and appliances
- Encouraging the adoption of rainwater tanks
- Maximising the use of treated wastewater and groundwater for non-potable end uses, in particular landscape irrigation which constitutes 65% of residential water demand.

In support of the above initiatives, Territory Government and Power and Water are currently working with the SaveWater Alliance to establish a water conservation program.

Waterway Stability

A waterway stability objective aims to protect creeks and rivers from erosion associated with increased flows from urban areas. A waterway stability objective may be adopted in the future. Further technical investigation is to be undertaken to refine and test the practicality and achievability of the objective.



Enquiries

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