

Department of Environment Parks and Water Security

Botanic Gardens Water Use and Associated Issues

Bryan Harty/George Brown Darwin Botanic Gardens





History

1

Origins

- Established 1886
- Experimental crop trials for new settlement
- Maurice Holtze – the first Curator
- Originally located near Fannie Bay Gaol

Changing Use

- Management changed from SA to Commonwealth to Darwin City Council to NTG .
- Boundaries reduced
- Experimental cropping to visitor attraction
- Growing importance as event venue and tourist attraction





Water in the Gardens

2

Water Requirements

- 4 shade houses
- 20 hectares Gardens and Turf
- Fountain Pond and retention pond
- Waterfall and ponds
- Lily ponds x 3
- Playground water course

Water Requirements

- 1x commercial kitchen and 1 food preparation kitchen
- 40 toilets or urinals
- 2 staff kitchens
- 6 drinking fountains
- 1x mobile water tank and 2x spray tanks
- 2 x high pressurise water spray units.

Water Usage

80ML water per annum

Legacy Irrigation Techniques

- Stream flow diversion
- Wells and Tanks -pumps, hoses and sprinklers, movable rigid pipes
- Dam creation and reticulation
- Inground pipework – galvanised iron pipes with standpipes and hose cocks
- PVC and pipes and quick coupling valves with movable sprinklers

Current Irrigation Systems

- Potable supply 225mm mainline at Geranium St and 100mm main at Salonika St
- Separate irrigation and potable systems plus backflow prevention
- Automated valve operation via programmable controllers, 240V or 12 V
- Smart controllers monitored and programmed remotely
- 25 Controllers
- 250 Stations



Water Saving Strategies

3

Infrastructure

- Majority of in-ground mainline and sub-main valves raised above ground and metered
- Progressive replacement of old mains and sub-mains
- Separation of Potable and Irrigation water supplies
- Replacement of legacy irrigation systems and techniques
- Automated irrigation systems then to Smart Irrigation Controllers

Water Conservation Strategies

- Mulching Garden Beds
- Monitoring water consumption via Power Water data logger
- Monitoring flows through sub main controllers
- Night Scheduling Irrigation application
- Watering reduction to meet function/event requirements
- Monitoring and modifying schedules to meet plant requirements



Issues and Challenges

4

Infrastructure

- Leakages in remnant water reticulation systems
- Difficulties in identifying location of system leaks
- Changes in water retention capacity of water bodies- concrete lined artificial ponds
- Damage to irrigation system emitters /valves/sprinklers due to above ground activity

Environment

- Canopy changes due to cyclones, tree and limb failure creating increased water requirements
- Increasing temperature
- Encroaching brackish water infiltration
- Root encroachment into water bodies and reticulation
- Restrictions due to buried asbestos containing material
- Variations in soil type across the Gardens and within irrigation zones



Opportunities – Way Forward

5

- Focus on works program to address infrastructure with significant water loss
- Replace and upgrade irrigation systems and controllers
- Work with others to assess irrigation efficiency opportunities
- Improve monitoring and recording of water use within the irrigation system



“In the brown expanse of the Dry Season there were two great wonders ; small patches of green grass , watered laboriously by hand by locals from buckets drawn from wells.

One was in the grounds of Government House and verboten to all but a privileged few.

The other was for all, in the Botanic Gardens.”

The Honourable Austin Asche AC QC

Former Administrator of the Northern Territory and

Patron of the Friends Of the Darwin Botanic Gardens

6