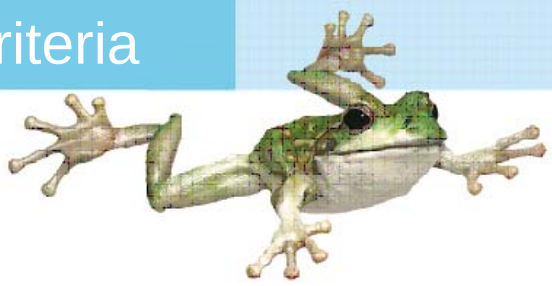
# Water Corporation
# Guidelines for Waterwise Criteria



The Water Corporation recognises the link between urban design, landscape architecture and alternate water supplies in developing new water sensitive properties and developments. To assist with the shift towards waterwise homes and suburbs the Corporation has developed two Waterwise Programs in partnership with the building and development industry; Waterwise Display Villages and Waterwise Land Developments. The Corporation also actively participates in the assessment of the water efficiency categories of major building industry awards to help recognise and promote those builders and developers leading the way in water efficiency.

The range of waterwise advice and information the Corporation promotes to the community is to enable its customers to select the most 'fit for purpose' option/s that best suit their individual needs, lifestyle and budget. The Corporation advocates customer choice and does not promote one option or product above the others. By applying the waterwise options offered below the building industry and homebuyers have the opportunity to play an important role in conserving our State's water supply and to help make WA a more water efficient community.

For further information on Being Waterwise visit: www.watercorporation.com.au

**Waterwise Homes and Gardens Criteria**

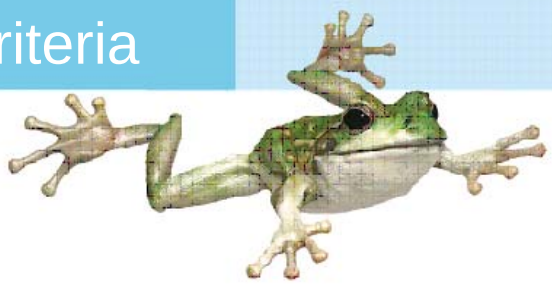
With the implementation of mandatory minimum water efficiency requirements for all new homes, through the Building Codes of Australia (http://www.abcb.gov.au), the benchmark has been set. Therefore the use of fittings and fixtures better than those mandated, the use of water saving technology, alternate water supplies and waterwise garden design have become increasingly important for those wishing to raise the bar in terms of household water efficiency. Properties that showcase water efficiency both inside and outside the home typically have the following water saving features incorporated (see *Attachment 1* for detailed descriptions):

***Inside:***

- Showerheads installed are better than the minimum mandated WELS 3 Star (9 Litres per minute).
- Taps installed are better than the minimum mandated WELS 4 Star (6 Litres per minute).
- Dual flush toilets installed are better than the minimum mandated WELS 4 Star (Average 3.5 Litre flush).
- Water using appliances installed are rated WELS 4 Star or better.

**Outside:**

- Garden design incorporates waterwise or endemic plant species and includes a functional mix of paved areas, garden beds and lawn.
- Only use turf species endorsed by the UWA Turf Industries Research Steering Committee *(Attachment 2)*.
- Improve the soil prior to planting and laying down lawn.
- Garden beds are mulched to a minimum of 5cm with a Smart Approved WaterMarked mulch certified to Australian Standard AS4454.
- The irrigation system has been installed to Irrigation Australia Ltd Standards *(Attachment 3)*.



*Attachment 1*

## Detailed Criteria for Waterwise Homes

## Water Saving Features

### INSIDE

Building Codes of Australia (http://www.abcb.gov.au)

- Showerheads installed should be better than the minimum mandated WELS 3 Star (9 Litres per minute).
- Taps installed should be better than the minimum mandated WELS 4 Star (6 Litres per minute). Consider aerators - reduce flow, reduce splash, improve wetting and spring-loaded controls - prevents running taps.
- Dual flush toilets installed should be better than the minimum mandated WELS 4 Star (Average 3.5 Litre flush).
- Baths are low volume and small surface area.
- Spas are low volume and small surface area.
- Hot water system should be located less than the minimum mandated 20m from points of use and / or a recirculation or heat pump system is installed. Consider grouping of fixtures relative to their need for heated water, consider multiple water heaters as an option, pipe work configuration (i.e. Where to branch off for off-takes) and lagging pipes for insulation.
- Pressure control - consider the installation of a pressure control device to regulate water pressure to a maximum of 35 metres. High pressures contribute to poor water efficiency; pipe leakage, dripping taps, etc.
- If evaporative air conditioners are installed use models with an auto dump triggered by salinity rather than the continuous discharge type. And provide advice to future homebuyers on the appropriate use of an evaporative air conditioner to limit water wastage.
- Water using appliances installed, such as washing machines and dishwashers, should be rated WELS 4 Star or better.

**To determine the star rating of WELS rated products – visit their website (http://www.waterrating.gov.au/) and search by brand name and product.

### OUTSIDE

- Garden design should incorporate waterwise or endemic plant species and includes a functional mix of paved areas, garden beds and lawn. Use the Waterwise Plants for WA database on the Corporation's website to find waterwise plants suitable for regions throughout WA.
- Plants should be grouped according to their water needs (hydrozones) and garden beds should be densely planted where appropriate to maximise irrigation effectiveness, and appearance.

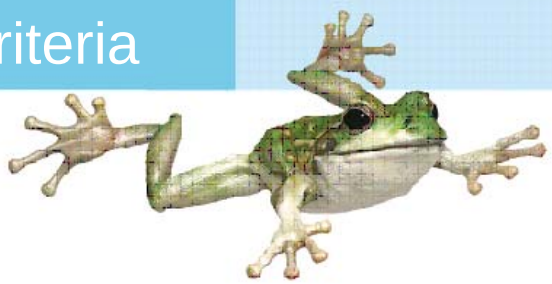
- Only use turf species endorsed by the UWA Turf Industries Research Steering Committee (*Attachment 2*). Lawned areas should be minimised and verges planted with waterwise plants instead of turf.
- Soil in the garden and lawn areas should be improved prior to planting. Improved soils retain more moisture around the root zone longer, soils improved with soil conditioners certified to AS4454 are recommended.
- Mulches dramatically reduce surface evaporation, and break down to improve the moisture holding capabilities of the soil. Garden beds should be mulched to a minimum of 5cm with a Smart Approved WaterMarked mulch certified to Australian Standard AS4454.
- Windbreaks; artificial (fences, walls, pergolas) or natural (mounds, shrubs, trees) should be used to reduce irrigation losses and protect plants from heat and stress as wind is a significant element in evaporation and transpiration.
- The irrigation system should be installed to Irrigation Australia Ltd Standards (*Attachment 3*).

  Garden beds should:
  - Use dripper systems or subsurface irrigation, or if overhead watering is required, use large drop sprinklers. The use of microsprays is not encouraged due to their poor efficiency rating.

  Lawn areas (if not watered by a greywater system) should:
  - Use MP rotator type sprinklers that use coarse drop sprays to minimise evaporation.
  - Have spray patterns and layouts which minimise overspray.
  - Have sprinkler placements which optimise water distribution.
  - Not have different types of sprinklers on the one watering station.

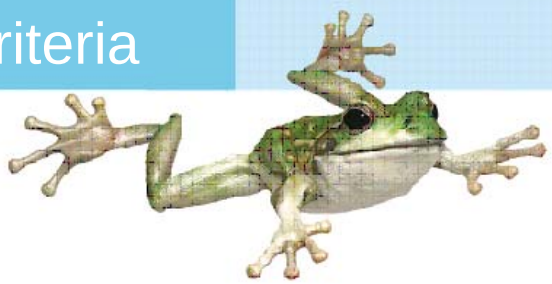
  Irrigation system should be sufficiently sophisticated to allow:
  - Separation of zones.
  - No watering station to service more than one hydrozone.
  - No watering station to service more than one style of sprinkler.
  - Controller to be set to apply the “Standard Drink” (10mm) per watering period, preferably watering in the early morning, and in accordance with the appropriate watering roster for the region, as defined on the Water Corporation’s website: www.watercorporation.com.au
  - Inclusion of a rain sensor or soil moisture sensor that is designed to shut off the automatic system when it rains.

- Alternate non-potable water supply sources should be considered:
  - Rainwater tanks should be plumbed in to the house and utilised to flush toilets and/or for washing machine use.
  - Grey water re-use systems should be plumbed in to the house and utilised to flush toilets and/or water the garden.
  - In areas deemed suitable for a bore by the Department of Water, garden bores should be installed and used to water the garden in accordance with the permanent water efficiency measures.



**OTHER**

- Affordability – demonstrates the ability to save water without compromising the cost of the development, or ongoing maintenance and/or running costs (including energy).
- Waterwise aesthetics;
  - Plants and lawn in good health, none dead.
  - No *large* water features installed, especially in full sun.
  - Pool blanket on the pool, not on the roller.
- Property showcases a range of water efficiency options available for both inside and outside the home.

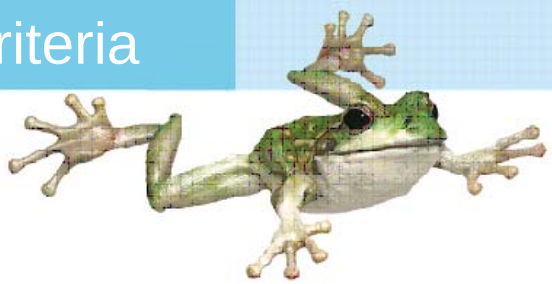


*Attachment 2*

## UWA Turf Water Use Research Project

### Turf Types Demonstrating Water Efficient Characteristics
### *(when tested at UWA Turf Research Site Shenton Park)*

| *Scientific name* | *Common name* | *Cultivar or selection* |
|---|---|---|
| *Cynodon dactylon* | Couch or Bermuda grass | Wintergreen<br>Windsor Green<br>CT-2 |
| *C. dactylon x*<br>*C. transvaalensis* | Couch hybrid or Bermuda grass hybrid | Santa Ana |
| *Paspalum vaginatum* | Saltene or Seashore Paspalum | |
| *Stenotaphrum secundatum* | Buffalo or St. Augustine grass | |
| *Pennisetum clandestinum* | Kikuyu grass | |
| *Zoysia japonica* | Zoysia grass (may be referred to by growers as simply Empire Grass, or Empress Grass) | |



*Attachment 3*

**Water Corporation**

**Irrigation Australia Limited (WA Region)**

## Standards for Domestic Irrigation Installation

### 1. Activities Prior to Commencement

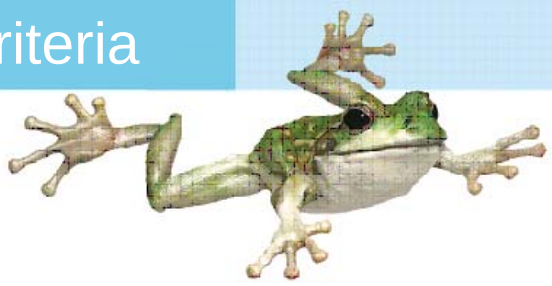
Prior to commencement of a domestic irrigation installation, the Irrigation Contractor shall:

1.1 Conduct a flow test, using a 'Flow and Pressure Testing device' and record the flow/s at the appropriate pressure/s recommended by the manufacturers of the components of the irrigation system.
1.2 Present to the Client a written quotation detailing all works and activities that will be conducted.
1.3 Present the client with a design of the proposed irrigation system.

### 2. System Design and Components

Irrigation system design and product selection shall comply with appropriate Australian Codes and standards and conform to the manufacturer's recommendations for the products used. These include:

2.1 System design to be according to the flow test results in 1.1 (above) with individual station demand (at the manufacturer's recommended operating pressure) no greater than the tested flow. Where station demand is less than the tested flow a pressure regulating device/s must be installed where such is required to ensure operation to manufacturers' recommended operating pressure.
2.2 Pipe will be sized to ensure water velocity does not exceed 1.5 metres per second at design flow.
2.3 Sprinklers shall be spaced at no more than the radius of throw specified by the manufacturer's recommendations.
2.4 Sprinklers shall operate at the manufacturer's recommended operating pressure.
2.5 Mainlines shall be minimum PN9 PVC, PN8 polyethylene or other appropriate material of no lesser pressure rating; pipe under live mains pressure should be minimum PN12 rating or as otherwise specified by Water Corporation regulations.
2.6 Valves under live mains pressure shall be Water Corporation approved 'tested' valves.
2.7 Sprinklers on any station shall be fitted with matched precipitation nozzles.
2.8 Part-Circle Sprinklers shall be used in locations where they will prevent wasteful overspray.
2.9 Where an irrigation controller is installed to operate stations of different water requirements it shall be a minimum three-program controller and must be programmable to comply with Water Corporation and Department of Water guidelines or restrictions.



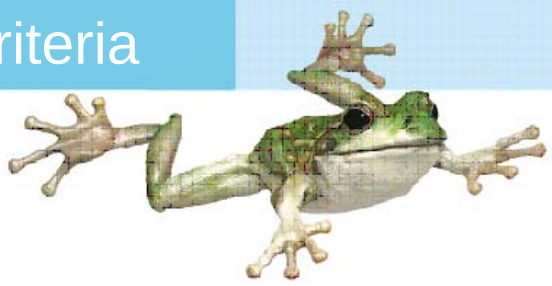
## 3. Installation of the System

The installation of the irrigation system shall be conducted to meet the requirements of applicable statutory regulations, including backflow prevention.

3.1 The Client shall be advised of all installation work that, as a requirement of law, will be completed by a licensed tradesperson.
3.2 Master solenoid valves shall be used when connecting to scheme water supply and when installing more than two station valves.
3.3 Solenoid wires shall be buried under pipework. Where wires do not run with such pipework they should be placed in electrical conduit.
3.4 A colour code for solenoid wires shall be used, black for “Common” wires, red for ‘Master Valve’ control wires and white for ‘spare’ wires. Spare wires shall be taped (or otherwise waterproofed) at their field termination point. Station valves shall be installed with cable colours other than those listed. Wire from each valve to the controller shall be one single colour.
3.5 Solenoid wire connections shall be made only at valve boxes and a minimum 300mm loop of wire left at each valve for ease of service.
3.6 Solenoid wire connections shall be either crimped or soldered and covered with heat shrink material or made with gel-filled or silicone grease type electrical cable connectors made for this purpose.
3.7 All pipework shall be buried other than where expressly stated.
3.8 Mainline and lateral piping shall be buried to the minimum recommended cover of 150 mm.
3.9 Low Density poly pipe shall be secured at all connections by ratchet clamps or other device according to manufacturer’s specifications.
3.10 All valves shall be located in valve boxes designed for this purpose, the lid thereof to be no higher than surrounding material.
3.11 All systems shall have a minimum of 150 mm of pipe either side of valve to enable service removal of valve and replacement without major disruption.
3.12 All irrigation stations should be established to water areas of similar demand (hydrozones).

## 4. Completion and Handover

4.1 At the completion of the work the site is to be left in neat and tidy state.
4.2 The Irrigation Contractor shall perform a system “hand-over”, including a working demonstration of all functions of the irrigation controller. The installer is to install a program (compliant with current Water Corporation and Department of Water regulations and recommendations) and explain same to the client.
4.3 The Client shall be given a recommended watering schedule for peak demand, with recommended seasonal reduction (as a percentage of maximum) detailing all stations (with description of each) plus an estimated P.R. (Precipitation Rate) for each station.
4.4 If the installed controller requires a battery, a battery of the type recommended by the manufacturer is to be supplied and installed by the Irrigation Contractor prior to hand-over.



## 5. Warranty

5.1 The Irrigation Contractor to specify a minimum one-year warranty on all parts and labour.

## 6. General

6.1 Where any variations from these standards have occurred the Irrigation Contractor will provide detail of these, and the requirements for the changes, to the client as well as a clear indication that such changes do not comply with the "Standards for Domestic Irrigation Installation" of Irrigation Australia Ltd (WA Region).

Disclaimer:

The Standards for Domestic Irrigation Installation have been developed by members of Irrigation Australia Ltd's Western Australian region. These Standards have been designed for use in Western Australia and are based on current knowledge and practice at the time of the preparation of this material (October 2002, Revised 2007).

These Standards are issued as a guide only. Their use is of a voluntary nature and the IAL is not liable for any loss, injury, damages, costs or other consequences of any kind that result from their use. All persons conducting or procuring domestic irrigation installation should comply strictly with the manufacturer's recommendations for the use and installation of equipment. The IA reserves the right to modify, add to or delete Standards prescribed herein at any time.



Irrigation Australia Ltd
PO Box 1804
Hornsby Westfield NSW 1635

For more information and advice on waterwise irrigation please contact:

**Irrigation Australia Limited**
PO Box 61, Victoria Park, WA 6979
Tel: (08) 9474 9089
Mob: 0413 331 439
Email: tracy.martin@irrigation.org.au