

The Official Journal of the Irrigation Association of Australia

IRRIGATION

A U S T R A L I A

IN THIS ISSUE

- Micro irrigation feature
- Meet your new national board directors
- Industry news



Irrigation technology: urban

From rail yards to inner city oasis

Anne Currey, Irrigation Australia

In 2000 the vacant railway yards at Roma St in Brisbane underwent a huge facelift that resulted in the development of 16 hectares of public gardens, walkways and high rise residential accommodation. The Roma Street Parkland now contains the world's largest subtropical garden in a city centre and provides a welcome respite from the inner city rush and bustle for residents and visitors alike.

Irrigating the site is a big task, which has been made more challenging as a result of the introduction of water restrictions in Brisbane. Steven Farrell and his irrigation assistant, Jeffrey Duff, are in charge of managing the irrigation systems to ensure they retain the garden's amenity value.

When the gardens were first established, they were irrigated with potable water. But with the introduction of level 3 restrictions in 2005, a new source of water had to be found. Fortunately, a lake, which captured runoff, had been constructed as a central feature of the gardens. This was identified as a source of water that could sustain the more sensitive plants, including those in 'Fern Gully', an area planted with rainforest plants that provide visitors with an impression of the environment of a north Queensland rainforest.

Irrigation system

Water for irrigation used to be supplied from the mains supply. Since this is no longer possible because of the restrictions, a system has been developed with water captured, treated and recycled on site. Now no potable water is used for irrigation at the Parkland. The lake now serves not only as an important contributor to the aesthetics of the gardens, but is also the key for water storage. If the lake becomes depleted, recycled water from Caboolture treatment plant can be trucked in. The aim is to use every drop of water as efficiently as possible, and Steve says that water use has dropped from an average of 360 kL/day to 120 kL/day although parts of the Parkland have had to be sacrificed to Mother Nature.

A number of initiatives have been

implemented. Steve has been trialling ways of reducing evaporation from the lake storage. An automatic dispenser of a polymer which spreads a thin film over the water surface has been installed. A small quantity of powder is emptied into the lake each day. Trials overseas and Victoria have shown that evaporation can be reduced by up to 30% and Steve is optimistic that he can achieve similar savings. The pump intakes in the lake have been lowered to ensure that as much of the lake's storage capacity as possible can be used.

The gardens are divided into watering zones based on plant water use. As well, the most water sensitive plants have been identified and irrigation is planned to water only those plants that require it to remain alive.

The modern irrigation control system which comprises nineteen external satellites, 450 Century Plus Solenoid Valves with Omni Reg -Pressure regulation device, and over 4000 sprays and emitters, is controlled through a Toro/Motorola IRRInet radio system which enables precise control over where and how long watering takes place.

The main sprinklers used in the park are Hunter PGP rotors, Toro 570 pop up sprays and Toro 300 stream rotors. The system is also controlled via a radio linked weather station located within the park environs. The station provides for true automatic adjustment of irrigation by measuring rainfall, solar radiation, temperature, and wind direction and speed. Moisture sensors are also provide a more precise watering regime.

Three pump stations

The Toro IRRInet system also helps control three pump stations. The park contains a number of water features including waterfalls and cascading creeks, some of which are designed to look like the rain forest streams of tropical north Queensland. All water drains back into the central lake and is recirculated by the three pump stations.

The pump stations contain some features not normally found in irrigation pump sheds. Because the park uses recycled water which cascades through the waterways and over the waterfalls there is a high chance of the public

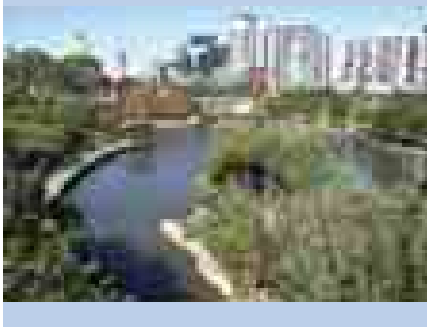


Fern Gully has been developed so visitors can experience what a north QLD tropical rainforest feels and looks like, even down to simulating rainforest mist using microfne brass emitters with water pressurised at 900 psi.

ABOUT THE GARDENS

- The former Roma Street Rail Yards were redeveloped into the Roma Street Parkland Development and opened in April 2001 at a cost of \$72 million.
- It is the world’s largest subtropical garden in a city centre.
- The parkland is open every day of the year, for 24 hours, except for the Spectacle Garden, which is open from dawn till dusk.
- More than 100,000 shrubs, 1200 mature trees, 1800 unique specimens and 350 palms are grown in the gardens, including endangered as well as common species.
- Around 10,000 people visit the parkland every week.

In a short time Roma Street Rail Yards (left) were transformed from a building site into this inner city garden oasis.



coming into contact with the water. Children play in the creeks and the public stroll through the mists of Fern Gully. This means that a very high standard of disinfection is necessary.

The disinfection process for the misting system in Fern Gully involves physical filtration and UV disinfection. Toro deep bed vertical media filters have been installed with a large flow capacity to ensure that the water passes through the “extended length” media system as slowly as possible to ensure maximum filtration. Following this physical filtration the water is UV disinfected. The water features in the Parkland also use media filters and the water is disinfected through ozone treatment. The water is tested on a regular basis to ensure it meets the highest standards.

So that trucks containing recycled water don’t have to come into the gardens a system has been designed where the water can be dumped on the road above the gardens. It is captured in a drain which empties through a gross pollutant trap into the water system



An automated system allows irrigation to be controlled from the office of irrigation manager, Steve Farrell. Here Steve (seated) shows Kerry Scanlan from Toro one of the watering zones.

under the large rock in the Fern Gully stream. This stream empties into the lake in the centre of the parklands.

Issues for the future

Steve has worked hard with the Parklands’ curator Bob Dobbs to reduce water use at the gardens while at the same time keeping the area attractive and maintaining its amenity value for residents and visitors. However, he is the first to acknowledge that this is a holding operation and that, because the option of using potable water again is unrealistic, another source has to be found.

Like many managers of public open space around Australia, he is now going through the options. According to Steve,

the most likely options appear to be:

- Getting access to more recycled water. However, as with many other urban areas, competition is so strong for recycled water now that it is unlikely that a source will be found at least in the near future.
- Sewer mining. The option of installing an on-site treatment plant that can access the local sewerage network is being examined. This option is being used successfully at another site in Brisbane.
- Desalination using water sourced from the Brisbane River.

Both sewer mining and desalination are expensive in terms of energy and capital costs and would be considered as a last resort.



The pump stations have been set up to filter and treat recycled water used on site. The waterfall has its own water supply that is filtered through a Toro 4 Tank Media system then Ozonised and returned to the top of the waterfall.