Stormwater Harvesting Storage Management to Achieve Sustainable Landscapes at Royal Botanic Gardens Victoria, Melbourne Gardens

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The Melbourne Gardens of RBG Victoria, established in 1846, are a picturesque, world-class landscape, with over 38 hectares of managed land. There are over 50,000 individual plants, representing a diverse 8,000 taxa in the living collections from a variety of habitats and geographical locations around the world. Annual visitation is around 1.6 million.

The benefits that the gardens provide are largely dependent on the maintenance of a healthy landscape.

Melbourne Gardens has a major stormwater harvesting storage, the Ornamental Lake, and smaller storages, including the Volcano. The management of the lake storage is a key part of the management of the entire site.

The lake performs a range of roles, including providing amenity, habitat for biodiversity, water treatment and as a reservoir for irrigation. It is a complex water system.

In addition to the management of levels and volumes, water quality is a key consideration.

Planning for a future of increased evaporative demand, lower rainfall and higher temperatures are being incorporated in the site water management.

A number of water related strategies have been adopted in recent years to achieve sustainability of this unique landscape. Important lessons have been learnt in recent years.

Potable water replacement, through irrigation, amounted to 44.3 ML in 2016-2017. This this included irrigation techniques to maximise effective use of available water through applying significant volumes as part of a soil water banking strategy.

Nutrient levels in the Lake water column have continued to be reduced to more acceptable levels. There have not been any recent noteworthy occurrences of blue-green algae in the Lake.

However there have been significant challenges including; a. Outbreak in 2016-2017, of Azolla rubra (native, floating water fern). This has led to major labour resource implications for the organisation and b. Incursions of pollutants, thought to be vegetable oil, from one of the stormwater catchments (Domain Rd).

The management of the lake storage requires continuous monitoring of the water body and the soil environment, soil moisture, in particular. Rapid response to changing conditions and demands is a key element in the successful management of the storage.