



Robelle Domain

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The multi-award winning Robelle Domain Parkland within Springfield Central has a world-class recreational space that is home to thousands of visitors per day. The highlight of the parklands is the Orion swimming lagoon located on the site of a former tributary arm of Mountain Creek.

In order to enable and support this community recreation facility, Cardno developed and designed a stormwater drainage system combining the elements of stormwater detention, quality management and major flood event conveyance – all integrated within an award winning landscape architectural design.

The stormwater treatment network delivers the following outcomes:

- Stormwater attenuation for incoming flows;
- Conveyance of major stormwater flows up to a Q100 event with overland flow paths to cater for up to Q500 events ensuring immunity to the CBD area;
- The outflows from this lake are controlled by a weir structure allowing flows to discharge into the receiving waterway without causing excessive scour and turbulence. The receiving waterway has been embellished to become a key feature;
- The surrounding town centre and residential precincts are master planned utilising a holistic approach to stormwater quality management, employing a range of techniques located outside the parklands providing the opportunity for the open space outcome;
- The most prevalent pollutant in the water in this area is suspended sediment. Water bodies have been designed to accommodate the anticipated sediment load through over-excavation and maintenance provisions to manage the impact for the asset owners;
- The drainage system is integrated into the form of the parkland including safety features, screens and grates, safety ledges, and environmental design to control public access.

Robelle Domain received the following awards:

- Queensland Parks and Open Space Landscape Architecture Award, AILA2016
- Award for Leisure Facilities in Development Category, Parks and Leisure Australia 2016

The masterplan for Robelle Domain included highly embellished urban parklands, significant water features, recreation lagoons and water play areas to provide a major attraction for the region.

The challenge in achieving this ambition was the significant overland and groundwater flows through the subject site, requiring diversion to accommodate the proposed vision. To ensure this major stormwater infrastructure project serviced the needs of the significant catchment, a holistic review of the stormwater system was completed

including detention, stormwater quality, flood immunity and integration of assets within the proposed landscape design.

Cardno completed a review over the parkland masterplan to identify immunity zones and available corridors for stormwater assets. This strategy placed treatment and attenuation zones upstream of the parkland area to maximise amenity. Inflows to the system were defined based upon ultimate catchment conditions, and the volume of attenuation possible within each area. The piped and overland stormwater system was designed to provide Q100 bypass of Robelle Domain, Q20 immunity to upstream sporting fields, Q500 overland conveyance and Q500 immunity to the surrounding CBD area.

Collaborating with stakeholders, Cardno delivered significant cost savings by concealing the pipeline within the landscape design and specify flush jointed pipes with an upgraded pipe jointing method.

The stormwater design allows for reclaiming of over five hectares of land and provides a masterplanned solution for upstream catchments. The primary inbound catchment has an ultimate flow of 56.3m³/s, attenuated to 19.5m³/s prior to entry into the pipe network. Attenuation is achieved across a series of detention structures designed to both avoid referable dam status and cascade failure implications.

Stormwater assets have been concealed and protected by being submerged, hidden beneath walkways, integrated into pathway areas and screened from the public, comprising safety and sustainability techniques including storage for interim phase sedimentation, safety benches within all water bodies and emergency egress locations.

Cardno is very proud of its involvement in the stormwater infrastructure that underpins Robelle Domain parklands. Cardno has been a leader within the consultant team from the early planning stages, providing a holistic framework for stormwater management and an increased value open space outcome for the local community.