WATER RECYCLING WITH CONSTRAINTS OF THE BUILT INFRASTRUCTURE
OVERVIEW OF WATER RECYCLING AT YARRA PARK AND TENNIS CENTER
# SUMMARY

## STORMWATER HARVESTING

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Catchment (ha)</th>
<th>Demands (ML per year)</th>
<th>Estimated Supply (ML per year)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing schemes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Courts</td>
<td>5.80</td>
<td>12.30</td>
<td>12.00</td>
<td></td>
</tr>
<tr>
<td>Melbourne Park</td>
<td>12.50</td>
<td>64.45</td>
<td>40.00</td>
<td>Includes irrigation of Olympic Oval</td>
</tr>
<tr>
<td>AAMI (southern roof)</td>
<td>0.73</td>
<td>18.93</td>
<td>2.50</td>
<td>Includes AAMI surrounds irrigation; excludes toilets</td>
</tr>
<tr>
<td>Total (existing schemes)</td>
<td></td>
<td>95.68</td>
<td>54.50</td>
<td>(57% of demands)</td>
</tr>
<tr>
<td><strong>Proposed schemes (at the planning/design stage)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olympic Oval</td>
<td>2.71</td>
<td>13.70</td>
<td>8.20</td>
<td>Feasibility and design developed &amp; costed; risks assessment completed</td>
</tr>
<tr>
<td>AAMI improved</td>
<td>1.84</td>
<td>18.93</td>
<td>7.70</td>
<td></td>
</tr>
<tr>
<td>Gosch’s Paddock</td>
<td>124.00</td>
<td>50.50</td>
<td>(61.30)</td>
<td>status unknown</td>
</tr>
<tr>
<td><strong>SEWER MINING (Operational scheme)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yarra Park &amp; MCG</td>
<td>35.50</td>
<td>112.00+</td>
<td>140.00 to 180.00</td>
<td></td>
</tr>
<tr>
<td>Richmond FC</td>
<td></td>
<td>21.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Stormwater Harvesting at MOP

BH: 03 9502 4229
Investigations
Looking for solutions - MCG

BH: 03 9502 4229
Looking for solutions - MOP

Mapping catchments and assets
Developing the functionality
Melbourne Park Stormwater Harvesting Scheme:
Delivery System Schematics

FILTRATION

CLEAR WATER STORAGE TANK

1.50 ML Clear Water Storage Tank (Western Concourse)

Q = 20 l/s

Q = 20 l/s

Secondary Filtration

240KL Hisense Arena Balancing Tank

Q = 3 l/s

Q = 7 l/s

END USERS

Hisense Arena & Eastern Courts

Q = 10 l/s

Mains Pressure

The Oval

Q = 12 l/s

Mains Pressure

Rod Laver Arena, Forecourt & Berm

Q = 13 l/s

Mains Pressure

Rod Laver Arena Toilet Flush System

Assumptions:
• Irrigation of facilities/parks will occur over 8 hours
• All balancing tanks will fill over 16 hours

Developing the layout
Tanks Options
Tanks Options

How does it look like now
Stormwater Harvesting Scheme

Major Components
The practicality of water recycling
Project stakeholders

- Assets owner
- Scheme Operator
- Water supplier/distributor to end users
- Customers
- Regulators

It is important to understand the responsibilities and risks (liabilities) associated with each of the listed groups.
Risk management plan is the most appropriate mechanism for legal compliance and liability management of Water Recycling projects.
Operation & Maintenance
“Councils are very sensitive to the risk of grant-funded or gifted assets that become long term financial liabilities due to their maintenance and renewal requirements.”

Municipal Association of Victoria
Submission to the Office of Living Victoria’s Melbourne’s Water Future, September 2013
Assets maintenance

- Proactive planned maintenance
- Reactive unplanned maintenance
- Rectification
- Maintenance of asset records
- Conditions assessments audits
- Renewal

‘failing to plan means planning to fail’
Maintenance options

Maintenance of water recycling systems may be:

– undertaken in-house
– outsourced to a single contractor
– outsourced to separate contractors

Maintenance contract should outline:

– scope of works
– project duration
– performance criteria
– activity specifications
– reporting and audit requirements
Delivery options

- **Design – tender – construction**
  - Typical delivery option
  - Estimated costs versus the Contractor costs
  - Contractor guarantees the delivery but not the performance
  - Hand over protocol (especially for bio filters)
  - Commissioning protocols

- **Design and Construct**
  - Not commonly associated with Stormwater projects but used extensively in waste water treatment
  - Performance guarantee provided by the Contractor
  - Can be expanded to “design, build and operate”
  - Generally more cost effective

Known Issues

- Large percentage of externally funded WR projects have underestimated project delivery costs 50% to 100%
- These discrepancies only transpired at the Construction tender stage (once the funding contracts have been signed)
- The accuracy of estimated O&M costs will be tested in the next few years
Questions