Sovereign Waters Lake Management Plan

Outcomes and Recommendations

9 May 2013

KBR

Agenda

- Introduction
- Overview of lake function and features
- Maintenance requirements
- Environmental monitoring
- Operating costs and revenue
- Questions and discussion

Introduction

Steps to develop Lake Management Plan:

- Literature review (Sovereign Waters Estate Operations and Maintenance Manual)
- Review condition of lake (including water quality)
- Sedimentation study
- Establish current and desired lake functions
- Maintenance and management requirements for improved or continued functionality
- Lake Management Plan; asset management, maintenance and ten year financial model.

August 2012 community meeting

Overview of lake function and features

Components:

- Several upstream detention ponds – EGW Woods Park (installed by RCC)
- Inlet zone (wetland pond 1)
- Aquatic plant zone (wetland pond 2)
- Tidal inlet and outflow (overflow) weir
- Two discharge outlets
- High flow (overflow) causeway
- Perimeter channel

Flow systems

- Freshwater inflow
- Tidal exchange
- High flow management

Overview of lake function and features

Intended lake uses influence the level of management and maintenance required

Intended lake functions are:

- **secondary contact recreational** water body for vessels such as kayaks and canoes
- **visual and aesthetic amenity** for the surrounding residential areas
- provide a **habitat** for fauna

Minimum lake depth required to support these functions is 1.5 m

Localised sediment removal required around influent water locations by 2035

Lake dredging not required within planning horizon

Maintenance requirements

1. EGW Wood Park upstream ponds

Function:

- Upstream catchment treatment

Maintenance requirements:

- Outside scope of Lake Management Plan *(part of City Wide Total Water Management Plan for RCC)*

Maintenance requirements

2. **Parkland areas** (boardwalk, bike path, northern overflow weir area)

Function:

- Amenity
- Recreation

Maintenance requirements:

- Outside scope of Lake Management Plan *(managed by RCC as public open space)*

Maintenance requirements

3. **Local pollutant controls** (GPTs, trash racks)

Function:

- Maintaining lake water quality

Maintenance requirements:

- Regular inspection (quarterly)
- Cleaning when necessary

Maintenance requirements

4. Wetland areas

Function:

- Aesthetics
- Maintaining lake water quality

Maintenance requirements:

- Survey sediment accumulation (5 yearly)
- Inspection and litter collection (quarterly)
- Weed removal (quarterly)

Maintenance requirements

5. Lake

Function:

- Secondary contact recreation
- Visual amenity
- Habitat

Maintenance requirements:

- Survey sediment accumulation (5 yearly)
- Inspection and litter collection (quarterly)
- Inspection of access ramps (6 monthly)
- Inspection of signage (annually)

Maintenance requirements

6. Tidal exchange system

Function:

- Lake water quality (24 day exchange)

Maintenance requirements:

- Inspection and removal of sediment and debris (quarterly)
- Inspection and removal of marine growth (annually)
- Inspection and maintenance of components (annually)

Maintenance requirements

7. Lake perimeter wall

Function:

- Lake perimeter stability

Maintenance requirements:

- Integrity inspection (5 yearly)
- Building restrictions

Maintenance requirements

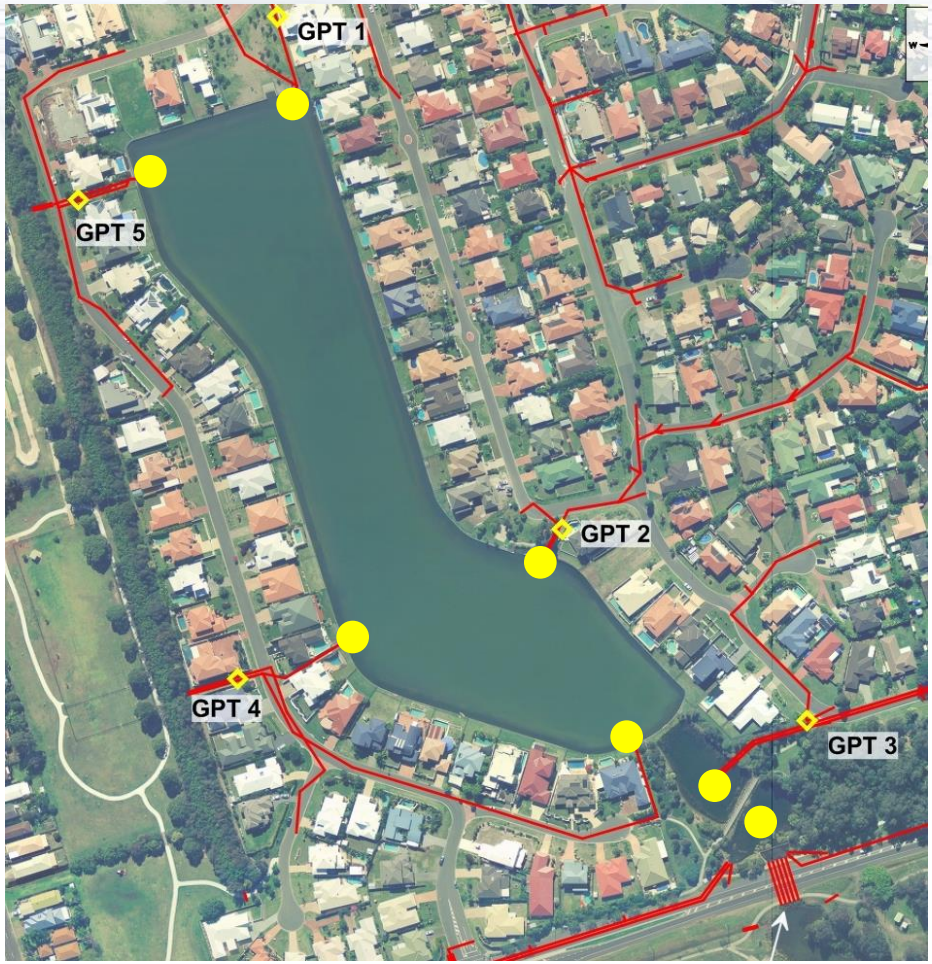
8. Sediment removal and disposal
(wetland, influent water inlets, lake)

Function:

- Maintain lake function

Maintenance requirements:

- Siltation survey (5 yearly)
- Desilting wetlands (5 yearly)
- Desilting around influent water inlets (first time in 2035)



Monitoring requirements

Purpose of monitoring:

- Check that lake depth is suitable for intended functions
- Check that water exchange systems is operating as designed
- Check that lake water quality is suitable for intended functions
- Allows responses to occur if problems are identified

Monitoring program:

- Lake depth
  - Sediment accumulation survey (5 yearly)
- Water exchange system
  - Inspections (quarterly)
- Water quality
  - Routine monitoring (quarterly)
  - Event-based (rainfall) monitoring (up to 3 per year)
- Incident record keeping (fish mortality, algae etc)

Monitoring requirements

If poor water quality is detected:

- Intensive re-sampling and investigation
- Confirmed water quality issue
  - Action 1 – deploy generic warning signage, resident letterbox drop
  - Action 2 – develop a plan to address source of the problem
  - Action 3 (persistently poor water quality) – closure of the lake, until water quality suitable

Operating Costs and Revenue

Operating costs (2013-2023) are **$83,500/yr** comprising:

General maintenance = $14,000/yr

- Litter collection
- Aquatic vegetation control
- Cleaning access ramps
- Signage

Wetland area sediment removal = $20,900/yr

- Surveys (pre- and post- sediment removal)
- Planning and approvals
- Removal of sediment to landfill

Local pollutant control and tidal exchange maintenance costs = $13,700/yr

- Inspections
- Litter and debris removal

Administration = $14,500/yr

- General administration
- Review of maintenance model and siltation rates

Monitoring = $20,400/yr

- Water quality
- Water level monitoring
- Sedimentation surveys

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Operating Costs and Revenue

Current revenue collection is **$71,656/yr** comprising:

- Council contribution (30%) – $15,948/yr
- Interest on accumulated funds - $18,500/yr
- Income from differential rate - $37,211/yr

Revenue deficit = **$11,900/yr**

Accumulated revenue in old special charge reserve (**$502,653**) will be used to offset revenue deficit

Outcomes and Recommendations

Outcomes:

- It was found that the existing management plan was adequate but needed extra focus to ensure current water quality guidelines are met
- The water quality and the functioning of the lake were found to be performing well

Recommendations:

- Implement the proposed maintenance plan to ensure:
  - Adequate water quality monitoring to ensure water quality is maintained
  - Ongoing maintenance of lake components including desilting
  - Continuous review and improvement of process

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Questions or Comments?