

DRAFT

**OPERATION AND
MAINTENANCE MANUAL
FOR WATER QUALITY
DEVICES**

53A Warriewood
Road,
WARRIEWOOD

Prepared for PVD No.21 PTY LTD

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1.0 MAINTENANCE OBJECTIVES

The water quality devices constructed and occurring naturally within an urban environment suffer from a number of constraints placed upon them by disturbance within the contributing catchment. Consequently these structures in an urban environment cannot be expected to perform efficiently as a natural system without regular maintenance. So, the maintenance is required to increase functionality of each design elements, increase aesthetic amenity and reduce public health and safety risks.

The purposes of this maintenance manual are as follows:

- To set out the procedures of maintenance operations and checklists whereby it can be maintained to a standard that ensures it remains operational in accordance with its original design objectives.
- To provide a systematic monitoring and review procedures for the water quality devices, so that they will remain functionally effective as its original design throughout the design life of the structure.

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2.0 MAINTENANCE OPERATIONS AND CHECKLIST

2.1 MAINTENANCE OPERATIONS

The overall summary of the maintenance operations related to the water quality devices associated with 53A Warriewood Road, Warriewood are summarised in **Table 2.1 (below)**.

Table 2.1: Summary and Condensed Description of Operations

Facility	Inspection	Operation
All pit and pipe inlets and outlets for clear of litter and debris and erosion damage of the structures	Quarterly and immediately following major rainfall events	Mechanical removal and disposal as necessary. Remove any blockages to pits, grates, inlet and outlet pipes and water level control structures and inspect for scour and erosion damage.
Rocla CDS Pollutant Trap (Primary Treatment)	Monthly and immediately following major rainfall events	Mechanical removal and disposal of pollutants as per manufactures specifications (refer to Appendix A)
Bio-retention basin (Basin floor)	Quarterly and immediately following major rainfall events	Manual and mechanical (only if necessary) removal and disposal as necessary. Remove any sediment collections and inspect for scour and erosion damage. Inspect on the quantity and quality of planting.
Bio-retention basin (Subsoil drainage)	Annually	Inspection and flushing (if required) of the bio-retention basin sub soil drainage lines

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3.0 MONITORING AND OPERATION

Monitoring forms a critical component of maintenance; generating frequent records which allow maintenance objectives and performance targets to be adequately gauged. Monitoring will only be useful if all data obtained is recorded accurately and maintained in a reliable database. Field data should be recorded on the appropriate checklists and site maps.

3.1 SCHEDULING OF MAINTENANCE

3.1.1 Inlet and Outlet Structures

Inflows to the basin are protected by Rocla CDS GPT unit which capture gross pollutants and heavy sediment loadings from the system and maintenance procedures are in accordance with Rocla Guidelines. The inlet, outlet pipe structures, including pits needed to be cleaned out every three months (quarter annual). All design structures and riprap aprons are to be inspected and desilting shall be carried out with a small excavator or manual shovel and barrow. As a guide the inlet and outlet structures should be desilted annually.

Inspection procedure is recommended to follow each storm event to check that structures are not restricted by blockages caused from debris/rubbish or damage. The accumulation of sediment is to be recorded whenever inspection or cleaning operations are carried out. Details of any actions are also to be recorded.

3.1.2 Rocla CDS Gross Pollutant Trap (GPT)

The Rocla CDS units are designed at the pipe inlet structures to basins as per C&R Engineering Drawings. It is to be cleaned and maintained monthly or when it is 100% full (level reaches the top of the sump). Additionally, Rocla recommends that non-scheduled inspections be carried out after heavy weather or prolonged periods of rain.

As per Rocla operational manual provided in Appendix A, it is to be mechanically cleaned by using suction and/or grab. During the inspection, any damage within the structure also needs to be checked for its performance.

3.1.3 Basin Debris / Litter/ Sediments

Quarterly inspection should be made to check Basin filter media as well as the surrounding areas including structures, pits and weirs for litter or debris. Maintenance should be scheduled accordingly for debris and litter removal; and removed by manual means which should be carried out quarterly as a minimum and is recommended to be carried out following wet periods. This is to avoid the accumulation of sediment limiting storage. Additional inspections shall be carried out during prolonged wet periods and schedule debris and litter removal to maintain functionality of basin. Record details of litter/debris and action taken.

3.1.4 Basin Erosion

Quarterly inspection should be made to check the filter media and note if any undermining or gully erosion is present around the edges of riprap or formalised drainage paths, spillways or inlet structures. Any scour is to be filled with suitable soil material and stabilise with ground cover, matting, mulch or other materials as deemed necessary. Record details and schedule maintenance accordingly.

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3.1.5 Basin Subsoil Drainage

Annual inspection should be made to check the subsoil drainage is clear of any obstructions and performing appropriately. Flushing of the sub soil lines is to be undertaken to remove any sedimentation. Record details and schedule maintenance and/or repairs accordingly.

3.1.6 Signage

Biannual inspection should be made to check signs have not been vandalised. Replace or repair as required.

3.1.7 Other

Any other observations or concerns regarding the functioning of the basin system are to be recorded and detailed as maintenance staff deem necessary.

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4.0 ANNUAL REVIEW

4.1 PHOTOGRAPHS

Monitoring should incorporate photography to record changes at the site over time. Best times for photographs are December/January, and repeat photos should be taken at the same time each year for the same location.

4.2 ANNUAL REVIEW OF PROCEDURES

The monitoring and maintenance program should be reviewed each year to determine if the maintenance objectives are being fulfilled and to ensure that maintenance staff is finding the maintenance program adequate for performing maintenance tasks.

The yearly review should include an assessment of the maintenance database to determine the effectiveness of inspections, reporting mechanisms and scheduled maintenance tasks which are effective.

Information on the database should be assessed to determine whether any noticeable changes are evident in vegetation, bird usage of the basin, and operational efficiency of any structures. This will further provide indications as to whether sufficient information is being recorded for management purposes.

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5.0 APPENDICIES

Appendix A Rocla CDS Operation and Maintenance Manual