

**2 VALE ROAD, NORTHFLEET,
GRAVESEND, KENT,
DA11 8BZ**

DRAINAGE OPERATIONS AND MAINTENANCE MANUAL

**FOR
BRT PROPERTIES KENT LTD.**

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1 Introduction

This report has been produced to provide general maintenance guidance procedures for the various components of the foul and surface water drainage systems serving the proposed development at 2 Vale Road, Northfleet, Gravesend, Kent, DA11 8BZ.

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2 Surface Water Drainage

This section of the report will provide general maintenance procedures for the various components comprising the surface water drainage systems, serving the proposed development.

2.1 Permeable Pavements

Permeable surfaces need to be regularly cleared of silt and other debris to ensure their permeability is preserved. Current advice suggests a minimum of three surface sweepings per year. However, manufacturers specific recommendations should always be followed. A brush and suction cleaner, which can be a lorry mounted device or smaller precinct sweeper, should be used and the sweeping regime as follows:

- End of Winter (April) – to collect winter debris
- Mid-summer (July/August) – to collect dust and plant type deposits
- End of Autumn (November) – to collect leaf fall

In addition to surface sweeping and vacuuming the following maintenance regime would also be recommended.

Table 2.1 – Recommended Maintenance Requirements

Maintenance Schedule	Required Works / Actions	Frequency
Regular Maintenance	• Brushing and Vacuuming	Three times a year
Occasional Maintenance	• Removal of Weed Growth	3 Monthly
Ongoing Maintenance	• Inspection for evidence of poor operation or ponding marks • Inspect debris accumulation on surface and adjust sweeping regime if necessary. • Inspection of silt accumulation in chambers and remove as necessary • Inspect silt accumulation in overflow pipework (if any) and remove as necessary	Quarterly Annually Annually Annually

Rehabilitation of the surface laying course should be carried out if evidence of poor performance is observed during quarterly inspections. If it is deemed necessary, the following procedures should be followed:

- Lift block pavers and set aside for reuse removing the jointing material.
- Remove the laying course and geotextile membrane.
- Inspect cores and replace granular fill as required.
- Renew geotextile membrane.
- Renew laying course, block pavers and jointing material in accordance with the manufacturers recommendations and the construction detail below.

2.2 Attenuation Tanks

Regular inspection of geo-cellular storage systems is required to ensure effective long term performance of the system. Maintenance needs of the system should be monitored and schedules adjusted to suit the specific requirements of the development.

The following maintenance regime would be recommended as a minimum but actions and frequencies should be adjusted to suit the specific requirements of this development. However, manufacturer's specific recommendations should always be followed.

Table 2.2 – Recommended Maintenance Requirements

Maintenance Schedule	Required Works/Action	Frequency
Regular Maintenance	Inspect and identify incorrect operation.	Monthly
	Debris removal from catchment area using sweeping and vacuuming.	3 Monthly
	Removal of sediment from pre-treatment components i.e catchpits.	Annually

2.3 General Maintenance

Regular inspection and maintenance of drainage systems is essential to ensure effective long term performance. Maintenance needs of the system should be monitored and schedules adjusted to suit the specific requirements of the development.

The following maintenance regime would be recommended as a minimum but actions and frequencies should be adjusted to suit the specific requirements of this development. However, as previously discussed, component specific regimes and any manufacturer's specific recommendations should always be followed.

Table 2.3 – Recommended Maintenance Requirements

Maintenance Schedule	Required Works/Action	Frequency
Routine Maintenance	- Inspect and identify incorrect operation. - Debris removal from catchment area using sweeping and vacuuming.	Monthly 3 Monthly
	- Removal of sediment from pre-treatment components i.e catchpits / Vortex Separators, etc. - Removal of oils from specific pre-treatment components i.e. Vortex Separators - Removal of “floatables” from specific pre-treatment components i.e. Vortex Separators	6 Monthly

2.4 Pumping Stations

Pumping Stations are bespoke items provided by specialist Contractors and the supply of such includes a Maintenance Contract which ensures that the pumps are regularly inspected and serviced to provide continuity of service. Pumping stations also include alarms and warning telemetry to ensure that Engineers respond in the event of a failure.

3 Foul Water Drainage

This section of the report will provide general maintenance procedures for the various components comprising the foul water drainage systems, serving the proposed development.

3.1 Pumping Stations

Pumping Stations are bespoke items provided by specialist Contractors and the supply of such includes a Maintenance Contract which ensures that the pumps are regularly inspected and serviced to provide continuity of service. Pumping stations also include alarms and warning telemetry to ensure that Engineers respond in the event of a failure. The wet well within the pumping station includes sufficient capacity to store 24 hours of average flow to ensure that in the event of a failure there is little risk of flooding occurring before Engineers resolve the issues. Maintenance contracts also include regular cleaning and desludging of the wet well.

3.2 General Maintenance

Regular inspection and maintenance of drainage systems is essential to ensure effective long term performance. Maintenance needs of the system should be monitored and schedules adjusted to suit the specific requirements of the development.

Table 3.2 – Recommended Maintenance Requirements

Maintenance Schedule	Required Works/Action	Frequency
Routine Maintenance	Inspect and identify incorrect operation.	Annually

Specific maintenance requirements shall be subject to the manufacturers recommendations and any required maintenance agreement.

Appendix 1

Proposed Drainage Layout