

Dunsbury Park, Plot 4a, Unit 5, Havant.

Below Ground Drainage Maintenance & Periodic Inspection.

16/11/2020

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MAINTENANCE AND PERIODIC INSPECTION OF DRAINAGE SYSTEMS

1.0 General

The below ground drainage system at Dunsbury Park, Plot 4a comprises entirely separate foul water and surface water systems. The storm water system drains off-site by gravity and discharges to the existing site-wide storm water drainage network. This site wide network has been previously approved and is not under the remit of the plot 4a, Unit 5 tenant's maintenance responsibility.

Both on-plot foul and storm water drainage systems discharge by gravity. The storm water ultimately discharges to the hermitage stream whilst the foul water discharges to the Southern Water foul sewer infrastructure.

The surface water from the development is drained through a series of pipes, inspection chambers, gullies, channels and Sustainable Urban Drainage System (SUDS) structures. These structures are listed later within this document.

All drainage systems should be inspected at regular intervals and, where necessary, be cleaned and repaired to ensure system performance is maintained.

A drainage maintenance drawing is included within this document. This drawing highlights the various SUDS techniques adopted and refers to the relevant clause within this document for their maintenance regime.

This guide includes recommendations on the methods and frequency of inspection and cleaning but local factors may influence this, therefore this manual should be appended to include any revised or additional requirements determined during the life of the development.

2.0 Inspection and Cleaning of the Foul Drainage System

Inspection chambers, gullies and channels should be fully inspected regularly, not less than annually, by removing covers and checking for obstructions, silt and damage.

The following operations should be carried out during the periodic cleaning of a drainage system.

- Covers of inspection chambers and manholes should be removed and the sides, benching and channels cleaned.
- Main and branch drains should be cleaned and afterwards should be flushed with clean water. Any obstructions found should be removed and not flushed into the system.
- Periodically, accumulated deposits in gullies should be removed. The traps should then be plunged and thoroughly flushed out with clean water.
- Covers of inspection chambers and gullies should be replaced, bedded in suitable grease or other sealing material and/or bolted down as appropriate to the type. Missing bolts and broken items should be renewed.

3.0 Methods of Cleaning

The drainage system should be cleaned, as appropriate, using one or more of the following methods:

Rodding

Appropriate cleaning tools and techniques should be chosen to avoid damage to the pipework to be cleaned. A set of rods with appropriate ends is basic useful equipment.

It is important that correctly designed propriety ends are used on the rods. Makeshift devices attached to the ends of rods should be avoided, as they are not effective as the correctly designed article and could become detached and create a blockage which would be difficult to remove. Furthermore, it is possible that such devices could cause damage to the pipeline.

If the rods have brass ferrules, they should be checked to ensure that their fastenings are secure and that there are no protruding shoulders or fastenings, as these can cause damage to drain lines, especially when entering through rodding eyes.

Jetting

High pressure jetting techniques are suitable for use with all currently available pipe materials and should also be considered.

Hydraulic Rams, Compressed Air or other Gases

Equipment is available for use with all sizes of drain likely to be encountered in building drainage and is suitable for use with all currently available pipe materials. The principle of operation is that a shock wave is induced and is transmitted by water to the point of blockage and the technique is effective where the pipe is surcharged or can be filled with water from the blockage to a point where the equipment can be used.

4.0 Inspection and Cleaning of Surface Water Drainage

Gutters, rainwater pipes, outlets and gratings should be inspected and thoroughly cleaned once a year, or more often, if the building is in or near an industrial area, or is near to trees or may be subjected to extremes of temperatures. For a full statement on the cleaning and maintenance of gutters and rainwater pipes refer to the Mechanical services Operating and Maintenance Manual.

Gullies and channels should be inspected and cleaned out regularly. The frequency of inspection and cleaning will need to be based on local experience.

Defects should be remedied as soon as possible after being noted.

Methods of cleaning surface water drains are the same as foul drains, described previously.

The record drawings that will be issued with the building's operating and maintenance manuals, should be kept in a safe place, preferably on the property concerned, so that in the event of drainage problems the drawings can be readily referred to.

Maintenance instructions for sewage or surface water pumps where installed will be in accordance with the manufacturer's instructions. It is often sensible to enter into a maintenance contract with a suitable Company, which would ensure pumping equipment is correctly maintained in addition to an emergency service.

5.0 Petrol Interceptors.

Maintenance Periods

It is important that regular maintenance is carried out, but the time period between maintenance operations will vary considerably from site to site. This is due to the different types and amount of contaminants entering the separator.

It is, therefore, important to examine the separator at regular intervals to determine how much water (light liquid sediment) has accumulated maximum interval 6 months.

Cleaning

- Cone off the area around the separator and remove the manhole lid(s)
- All parts of the separator system should be completely emptied. Using a gully sucker, first remove the floating light liquid from each area where this has accumulated then remove all the settled sediment. This will be found generally in the area of the separator inlet. Finally pump out the remaining water.
- Clean all parts of the separator using a hose and clean water, disposing of contaminated water properly.

6.00 Inspection and Maintenance of the Sustainable Urban Drainage Systems (SUDS).

Surface water from the development is drained through a series of pipes, manholes, gullies, channels and Sustainable Urban Drainage System (SUDS) structures. SUDS systems comprise of various components that are designed to;

- Reduce flooding
- Improve water quality of the run-off
- Create a better environment

The SUDS components used at Dunsbury Park, Plot 4a, unit are listed below and are indicated the plan in Figure 1;

- Porous Surfacing with Gravel Sub-base
- Filter Drains
- Trees
- Filter Trenches
- Filter Strips

The maintenance recommendations on the following pages are general and should be in addition to the manufacturer's recommendations of specialist material such as Porous Mcadam.

Portsmouth City Council will be responsible for the maintenance of the sustainable drainage system for the Dunsbury Park Development.

In the first instance contact: Kevin.Hudson@portsmouthcc.gov.uk

Maintenance & Inspection Locations.

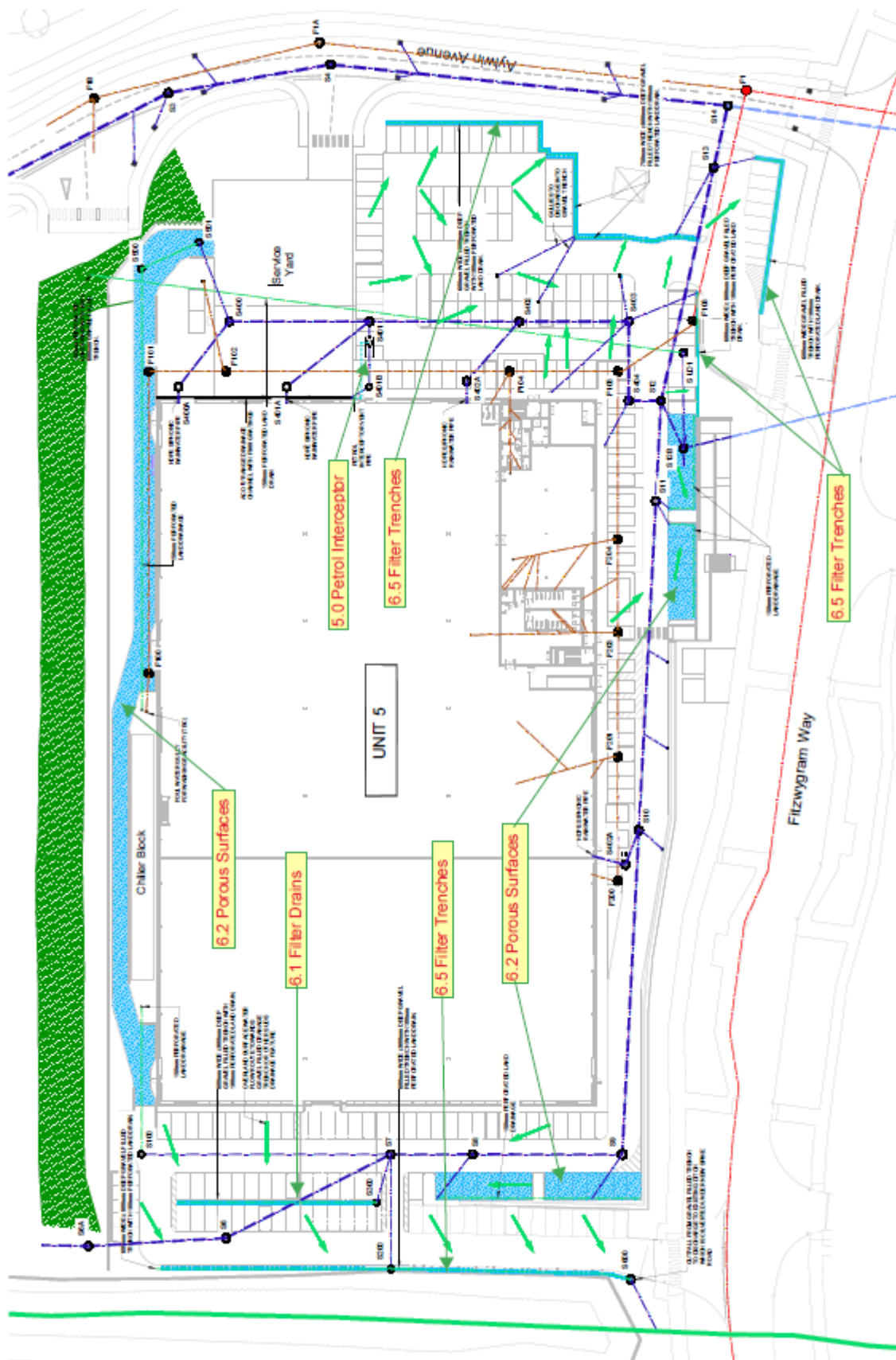


Figure 1

6.10 Operation and maintenance requirements for Filter Drains.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices.	Monthly or as required.
	Inspect filter drain surface, inlet / outlet pipework and control systems for blockages, clogging, standing water and structural damage.	Monthly.
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, establish appropriate silt removal frequencies.	Six monthly.
	Remove sediment from pre-treatment devices.	Six monthly or as required.
Occasional Maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (e.g. NJUG, 2007 or BS 3998:2010).	As required.
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium.	Five yearly or as required.
	Clear perforated pipe of blockages.	As required.

6.20 Operational and Maintenance requirements for Porous Surfaces.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most silt.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weeds or management using Glyphosate applied directly into the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements.
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required.
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	As required.
	Rehabilitation of surface and upper substructure by remedial sweeping.	Every 10 – 15 years or as required (if infiltration performance is reduced due to significant clogging).
Monitoring	Initial Inspection.	Monthly for three months after installation.
	Inspect evidence of poor operation and / or weed growth – if required, take remedial action.	Three monthly, 48 hours after large storms in first 6 months.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.
	Monitor inspection chambers.	Annually.

6.30 Operational and Maintenance requirements for Trees.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove Litter and Debris.	Monthly (or as required).
	Manage vegetation and remove nuisance plants.	Monthly (at start, then as required).
	Inspect any manual watering inlets.	Inspect Monthly.
Occasional Maintenance	Check Tree Health and manage tree appropriately.	Annually.
	Remove silt build-up from inlets and surface and replace mulch as necessary.	Annually, or as required.
	Water.	As required in periods of drought.
Monitoring.	Inspect silt accumulation rates and establish appropriate removal frequencies.	Half yearly.

6.40 Operation and maintenance requirements for Ponds and Wetlands. (Off-Site) Not Tennant Responsibility.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove Litter and Debris.	Monthly.
	Cut Grass – Public Areas..	Monthly during growing season or as required.
	Cut Grass – meadow grass.	Half yearly (spring before nesting season).
	Manage vegetation and remove nuisance plants.	Monthly at start, then as required.
	Inspect banksides, structures, pipework etc. for evidence of physical damage.	Monthly.
	Check penstocks and any other mechanical devices.	Annually
	Inspect water body for signs of poor water quality.	Monthly (May – October).
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies: undertake contamination testing once some build-up has occurred, to inform management and disposal options.	Half yearly.
	Remove 25% of bank vegetation from water's edge to a minimum of 1 metre above water level.	Annually
	Tidy all dead growth before start of growing season.	Annually.
	Remove sediment from inlets, outlets and forebay.	Annually or as required.
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1 metre above pond base; include max 25% of pond surface).	Annually.
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays.	

Operation and maintenance requirements for Ponds and Wetlands.

Continued.....

Maintenance Schedule	Required Action	Typical Frequency
Occasional Maintenance	Remove sediment from main body of big ponds when pond volume is reduced by 20%.	With effective pre- treatment this will only be required rarely. E.g. every 25 – 50 years.
Remedial Actions	Repair erosion or other damage.	As required.
	Replant where necessary.	As required.
	Aerate pond when signs of eutrophication are detected.	As required.
	Realign rip-rap or repair other damage.	As required.
	Repair / Maintain inlets, outlets and overflows.	As required.

6.80 Operation and maintenance requirements for Filter Strips.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove Litter and Debris.	Monthly.
	Cut Grass – to retain grass height within specified design range.	Monthly during growing season or as required.
	Inspect filter strip surface to identify evidence of erosion, poor vegetation growth, compaction, ponding, sedimentation and contamination (e.g. oils).	Monthly at start, then half yearly.
	Manage vegetation and remove nuisance plants.	Monthly at start, then as required.
	Check Flow spreader and filter strip surface for even gradients.	Monthly at start then half yearly.
	Inspect gravel flow spreader upstream of filter strip for clogging. (Where installed).	Monthly at start then half yearly.
	Inspect silt accumulation rates and establish appropriate removal frequencies.	Monthly at start then half yearly.
Occasional Maintenance	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required.	As required or if bare soil is exposed over > 10% of the filter strip area.
Remedial Actions	Repair erosion or other damage by reseedling or re-turfing.	As Required.
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface.	As Required.
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip.	As required.
	Relevel uneven surfaces and reinstate design levels.	As required.

