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SuDS Maintenance Schedule

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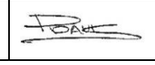
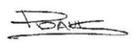
Date:	30/06/2023	Signature:		Signature:		Signature:	

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Introduction

SuDS are different from conventional drainage and require different maintenance regimes. This manual details the following:

- Maintenance requirements (a maintenance plan) and a maintenance record
- Explanation of the consequences of not carrying out the maintenance that is specified
- Identification of areas where certain activities are prohibited (for example stockpiling materials on pervious surfaces)
- An action plan for dealing with accidental spillages

Two

Responsibilities

Who is responsible for the maintenance of SuDS

During the construction phase of any development, the responsibility for the maintenance of SuDS lies with the developer.

Post construction, it is the owner of the development who is responsible for ensuring the SuDS features are maintained.

Three

Areas where activities are prohibited

Heavy loads shall not be permitted in areas where cellular storage crates are located.

Materials shall not be stockpiled over permeable paving unless a suitable temporary membrane is provided to ensure materials do not block voids in the paving construction.

Four

Accidental Spillages

Health and safety consideration are a priority and addressing accidental spillages should only be attempted if the nature of the spillage is known and its potential hazardous properties understood. The source of the spillage should be stopped, and excess surface spillage removed by suction tank or absorption matts. Silt traps and sumps should be emptied by suction tanker. Areas of affected permeable paving should have the surface and laying course removed. The surfacing blocks should be cleaned and re-laid on new bedding material. Heavy pollution of the sub-base will require removal and replacement of the sub-base.

Five

Health and Safety

To comply with the Construction (Design and Management) Regulations (CDM) 2015, designers must assess all foreseeable risks during construction and maintenance and the design must minimise them by the following (in order of preference):

1. Avoid.
2. Reduce.
3. Identify and mitigate residual risks.

CDM 2015 requires designers to ensure that all maintenance risks have been identified, eliminated, reduced and/or controlled where appropriate. This information will be required as part of the health and safety file.

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Operation and Maintenance Activity Schedule

There are likely to be three categories of maintenance activities:

1. Regular maintenance (including inspections and monitoring).
2. Occasional maintenance.
3. Remedial maintenance.

Regular maintenance consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.

Occasional maintenance comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the regular tasks (eg sediment removal or filter replacement). Table 2 summarises the likely maintenance activities required for each SuDS component and guidance on specific maintenance activities is given in the following sections.

Remedial maintenance describes the intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design, construction and regular maintenance activities. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and so timings are difficult to predict. Remedial maintenance can comprise activities such as:

- inlet/outlet repairs
- erosion repairs
- reinstatement or realignment of edgings, barriers, rip-rap or other erosion control
- infiltration surface rehabilitation
- replacement of blocked filter fabrics
- construction stage sediment removal (although this activity should have been undertaken before the start of the maintenance contract)
- system rehabilitation immediately following a pollution event.

It is important to note that these remedial activities will not be required for all systems, but for the purpose of estimating whole life maintenance costs, a contingency sum of 15-20% should be added to the annual regular and occasional maintenance costs to cover the risk of these activities being required.

Operation and Maintenance Activity	Pond/wetland	Detention basin	Infiltration basin	Silt traps and catchpits	Soakaway	Infiltration/Filter trench	Filter trench	Modular storage	Pervious pavement	Swale/bioretention/green roofs	Filter strip	Sand filter	Pre-treatment systems	Perforated ring soakaways	Bio retention areas	Rain gardens	Oil interceptors	Pump Station
Regular Maintenance																		
Inspection	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Litter/debris removal	■	■	■	□	□	■	■	□	■	■	■	■	■	■	■	■	□	□
Grass cutting	■	■	■	□	□	■	■	□	□	■	■	□	□		■		□	□
Weed/invasive plant control	□	□	□			□	□		□	□	□	□	□		□	■		
Shrub management	□	□	□						□	□	□		□		□	■		
Shoreline vegetation management	■	□											□					
Aquatic vegetation managment	■	□											□					
Occasional Maintenance																		
Sediment management (*)	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■
Vegetation/plant replacement	□	□	□							□	□		□		□	□		
Vacumn sweeping and brushing									■									
Remdial Maintenance																		
Structure rehabilitation/repair	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Infiltration surface reconditioning			□		□	□	□		□	□	□	□		□	□	□		

■ Will be required

□ May be required

* Sediment should be collected and managed in pre-treatment systems, upstream of the main device.

The maintenance regime of a site also needs to consider the response to extreme pollution events. A response action plan should be developed and communicated to all those involved in the operation of a site, so that if a spillage occurs it can be prevented from causing pollution to receiving waters.

Geocellular/Modular Systems

Regular inspection and maintenance is required to ensure the effective long-term operation of below ground modular storage systems. Maintenance responsibility for systems should be placed with a responsible organization. Maintenance requirements for modular systems are described in the table below. Maintenance plans and schedules should be developed during the design phase. Specific maintenance needs of the system should be monitored, and maintenance schedules adjusted to suit requirements.

Maintenance Schedule	Required Actions	Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Where rainfall infiltrates into blocks from above, check surface of filter for blockage by silt, algae or other matter. Remove and replace surface infiltration medium as necessary.	Monthly (and after large storms)
	Remove sediment from pre-treatment structures	Annually, or as required
Remedial actions	Repair/rehabilitation of inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually and after large storms

Silt Traps and Catchpits

Regular inspection and maintenance is required to ensure the effective long-term operation of below ground silt traps and catchpits systems. Maintenance responsibility for systems should be placed with a responsible organization. Maintenance requirements are described in the table below. Maintenance plans and schedules should be developed during the design phase. Specific maintenance needs of the system should be monitored, and maintenance schedules adjusted to suit requirements.

Maintenance Schedule	Required Actions	Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Inspection of silt traps and catchpits to assess silt accumulation	Monthly (and after large storms)
	Removal of accumulated silt from silt trap and catchpit sumps	Annually, or as required
Remedial actions	Repair/rehabilitation of inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, and overflows to ensure that they are in good condition and operating as designed	Annually and after large storms

Permeable Paving

Regular inspection and maintenance is important for the effective operation of pervious pavements. Maintenance responsibility for a pervious pavement and its surrounding area should be placed with an appropriate responsible organisation. The facility should be inspected regularly, preferably during and after heavy rainfall to check effective operation and to identify any areas of ponding.

Pervious surfaces need to be regularly cleaned of silt and other sediments to preserve their infiltration capability. Experience in the UK is limited, but advice issued with permeable precast concrete paving has suggested a minimum of three surface sweepings per year. Manufacturers' recommendations should always be followed.

A brush and suction cleaner, which can be a lorry-mounted device or a smaller precinct sweeper, should be used and the sweeping regime should be as follows:

- End of winter (April) – to collect winter debris.
- Mid-summer (July/August) – to collect dust, flower and grass-type deposits.
- After autumn leaf fall (November).

Care should be taken in adjusting vacuuming equipment to avoid removal of jointing material. Any lost material should be replaced.

Operation and maintenance requirements for permeable paving are described below.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Brushing and vacuuming.	Three times/year at end of winter, mid-summer, after autumn leaf fall, or as required based on site-specific observations of clogging or manufacturers' recommendations.
Occasional maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weed.	As required.
Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm 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.	As required.
	Rehabilitation of surface and upper sub-structure.	As required (if infiltration performance is reduced as a result of significant clogging).
Monitoring	Initial inspection.	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth. If required take remedial action.	3-monthly, 48 h after large storms.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.
	Monitor inspection chambers.	Annually.

Green Roofs

Intensive green roofs will require regular maintenance. Lawns will require mowing weekly or fortnightly, plant beds may require weeding on a weekly or fortnightly basis during the growing season, and wildflower meadows may require annual mowing with the cuttings removed. Extensive green roofs should normally only require bi-annual or annual visits to remove litter, check fire breaks and drains and, in some cases, remove unwanted colonising plants. The most maintenance is generally required in the first three years, and usually this should be made the responsibility of the green roof provider.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth.	Six monthly/ Annually or as required.
	During establishment (ie one year), replace dead plants as required.	Monthly (but usually responsibility of manufacturer)
	Post establishment, replace dead plants as required.	Annually (in autumn)
	Remove fallen leaves and debris form deciduous plant foliage.	Six monthly or as required.
	Remove nuisance and invasive vegetation, including weeds.	Six monthly or as required.
	Mow grasses (if appropriate) as required. Clippings must be removed and not allowed to accumulate.	Six monthly or as required.
Occasional maintenance	-	-
Remedial Actions	If erosion channels are evident, these should be stabilised with additional soil substrate similar to the original material. Sources of erosion damage must be identified and controlled.	As required.
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate.	As required.
Monitoring	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes, and roof structure for proper operation, integrity if waterproofing and structural stability.	Annually/after severe storms.
	Inspect soils substrate for evidence of erosion channels and identify any sediment sources.	Annually/after severe storms.
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system.	Annually/after severe storms.
	Inspect underside of roof for evidence of leakage	Annually/after severe storms.

Pumping Stations

Pumping stations are to be maintained in accordance with the pump supplier/maintenance company requirements and in accordance with British Standards (BS EN 12056-4) i.e. inspections every quarter.

Gullies / Linear channels

Inspection and removal of debris from silt trap once a year; preferably after leaf fall in the autumn.

Drainage pipes, manholes and silt traps

Inspect manholes & silt traps for build-up of silt and general debris once a year; preferably after leaf fall in the autumn. If silt/debris is building up, then clean with jetting lorry / gully sucker and inspect pipe – repeat cleaning if required. If the pipes to be jetted are plastic then a high flow, low pressure setting should be used so that the pipes are not damaged.

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