

Abbey School, Reading

Management and Maintenance Plan for Sustainable Urban Drainage Systems (SuDS)

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Purpose

This document has been prepared for the sole benefit, use and information of Abbey School and for the purposes set out in the following pages.

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Document Control

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Preface

Introduction to SuDS

Sustainable urban drainage systems (SuDS) are an environmentally friendly approach to managing rainfall that uses landscape features to deal with surface water runoff.

SuDS aim to provide the following :

- Water quantity - Control the flow, volume and frequency of water leaving a development area.
- Water quality - Prevent pollution by intercepting silt and cleaning runoff from hard surfaces.
- Amenity - Provide attractive surroundings for the community.
- Biodiversity - Create opportunities for wildlife.

Reason for maintenance

Regular maintenance is required to ensure that the surface water drainage system operates efficiently and does not cause flooding to the property or surrounding buildings and land. Such work is part of the day-to-day responsibility of all clients, owners and occupiers. Maintenance is most effective when carried out regularly and on a planned cycle. Good maintenance needs the regular investment of small amounts of time and money, but the cost of preparing and carrying out a planned maintenance programme should be far less than the costs resulting from a series of unplanned major repairs, and will help plan future financial commitments. When carried out on a planned basis, maintenance helps to prevent the types of failure which occur predictably within the life drainage system.

Maintenance falls into four main categories :

- Inspection to assess condition, report any problems and decide whether repair or other work is necessary.
- Specific tasks such as clearing debris from chambers and pipes.
- Minor repairs such as fixing loose covers.
- Maintenance repair which is work carried out to put right defects or damage and work to return the drainage system to a good condition on a long- term basis.

SuDS techniques checklist

SuDS techniques include landscape features and control structures to manage surface water runoff as it flows towards site outfalls. The following techniques may be found on this site :

- Flow control structures are usually vortex devices or small orifices within a control chamber, slots or V-notches in weirs. They are usually near the surface so are accessible and easier to maintain. They may be located in baskets, within chambers with covers or in the open.
- Underground storage tanks (attenuation) to store surface water runoff volume prior to regulated release.
- Manholes and inspection chambers or rodding access located on bends or where pipes come together. They allow cleaning of the system if necessary.
- Permeable surfaces to allow for percolation of rainfall through and into the ground below to mimic natural processes.

SuDS for hardworks

The SuDS are designed to prevent flooding of the site and control the flow of surface water runoff using infiltration where possible and flow controls with associated volume control (attenuation). The following is relevant to the development at Abbey School, Reading :

- Surface water runoff from building roofs will be directed into underground storage tanks located below the parking spaces via a network of downpipes, gullies, pipes and chambers.
- Surface water runoff from external hard surfaces will be directed into the underground storage tanks via a network of gullies, drainage channels, pipes and chambers.
- Runoff held in the underground storage tanks will be released via flow control into a proposed direct connection to the public surface water sewer in Acacia Road.

Refer to Appendix A for associated drawings.

Landscape softworks

A maintenance plan and management document for the landscape softworks has been developed by 'The Landmark Practice' (Landscape Architect).



Management and Maintenance

Managing SuDS generally

SuDS have been designed for easy maintenance to comprise of the following :

- Regular maintenance - litter collection, grass cutting and checking the inlets and outlets where surface water enters or leaves a SuDS feature.
- Occasional tasks - removing any silt that builds up within the SuDS features.
- Remedial work - repairing damage where necessary.

Permeable surfaces

Permeable surfaces includes permeable block paving, porous jointed construction, porous asphalt, gravel or free draining soils. All of these allow rain to percolate through the surface into underlying drainage layers.

The following is to be considered for the management of permeable surfaces :

- Avoid the use of weedkillers and pesticides to prevent chemical pollution.
- Avoid de-icing agents wherever possible to allow bio-remediation of pollutants in permeable surfaces.
- Protect all permeable, porous and infiltration surfaces from silt, sand, compost, mulch and other fine particles.
- Paving and porous asphalt can be cleaned by suction brushing.

Above ground rainwater goods

Rainwater goods are to be inspected twice a year preferably in May and November. Clear debris from gutters and ensure outlets are free running. Inspect for cracks and leaks and repair or replace as necessary.

Hardworks SuDS management

Surface water runoff from the roof surfaces and external hard surfaces as indicated on drawing number 4072-612 attached within Appendix A of this document will be collected on the east side of the building by means of a network of downpipes, gullies, drainage channels, pipes, chambers and catchpits and stored within proprietary attenuation crates constructed using Wavin Aquacell or similar.

ACTIONS

- Check the inlet and the outlet of the catchpits are clear of debris.
- Check gullies and drainage channels are clear of debris and deposited silts.
- Check the attenuation for deposited silts via CCTV survey.

The external hard surfaces consist of impermeable macadam construction and porous jointed construction with areas of hazard paving, block paving and concrete pavers.

ACTION

- Regularly brush all porous jointed construction paving. Remove sweepings. Vacuum. Suction clean when necessary.

The stored surface water will be released into the public sewer network via a pipe network. The flow will be controlled to a rate of 2 l/s by the use of a vortex flow control device within the flow control chamber.

ACTIONS

- Check the inlet of the flow control chamber is clear of debris.
- Check the vortex control device is in full working order and free flowing.

Hardworks SuDS maintenance

The following is a summary of maintenance required for each SuDS feature.

Permeable surfaces

Regular maintenance	Frequency
Brush and remove sweepings from all hard surfaces.	Monthly
Occasional tasks	
Brush, vacuum and wash surface to prevent silt blockage and enhance design life.	Twice yearly - minimum
Remedial work	
Monitor effectiveness of permeable surfaces and when water does not infiltrate immediately advise client of possible need for reinstatement of top layers or specialist cleaning. Recent experience suggests jet washing and suction cleaning will substantially reinstate pavement to 90% efficiency.	As required

Additional advice :

Surfaces should be washed to ensure that the surface texture functions properly. This should be undertaken every 3 to 6 months.

Flow control structures

Regular maintenance	Frequency
Remove chamber covers and check the inlet is clear of debris.	Monthly
Occasional tasks	
Remove chamber covers and check the vortex control device is in full working order and free flowing. Remove any debris and silt deposits from sumps.	Twice yearly - minimum
Remedial work	
Monitor effectiveness of flow control device. Immediately advise client of possible need for reinstatement if device is broken or faulty.	As required

Additional advice :

Vortex flow control devices have no moving parts therefore maintenance requirements are minimal. Manual intervention would be required in the event of a blockage. A vortex valve has an emergency drain-down facility consisting of an integral, pivoting door mounted onto the front face of the unit, which can be

opened manually from ground level using the stainless steel rope provided. Once the door is open a larger aperture is exposed, allowing drain-down.

Underground storage tanks

Regular maintenance	Frequency
None	
Occasional tasks	
CCTV survey and jet wash through to remove any deposited silts.	Annually - minimum
Remedial work	
Advise client of possible need for reinstatement if CCTV survey highlights physical damage.	As required

Additional advice :

CCTV survey after every major storm and at regular intervals according to the specific maintenance plan for the site.

Catchpits should be routinely inspected and cleaned out to minimise debris reaching the underground storage tanks and to ensure there is no silting up of the system.

Below ground drainage network

Regular maintenance	Frequency
Remove chamber covers, drainage channel access, gully gratings and inspect to ensure that water is free flowing and that inlets and outlets are unobstructed. Remove any debris and silt deposits.	Twice yearly - minimum
Occasional tasks	
Where drainage covers are located in softworks ensure that levels of softworks are 20mm above covers to avoid mower damage.	As required
Remedial work	
Repair physical damage	As required

Additional advice :

Below ground drainage pipes, drainage channels, gullies, manholes and inspection chambers should be inspected twice a year preferably in May and November or after an intense storm for blockages. On completion of cleaning operations to the network the drainage pipes should be flushed through with water to ensure that they are free from silt and debris and free flowing.

Contacts

In the event of concern over any matter to do with the SuDS please contact the following :

Hardworks :

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Appendix A - Drawings