New Teaching Block
West Durrington Campus
Northbrook College
Goring-by-Sea
Worthing

Drainage System Maintenance Requirements

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1 INTRODUCTION

Marbas have been appointed to provide this Drainage System Maintenance Requrements report for a new teaching block at West Durrington Campus, Northbrook College, Goring-by-Sea, Worthing.

The purpose of this document is to set out the inspection and maintenance requirements for long term management of the developments surface water drainage strategy. This work is to be undertaken by a private maintenance company pr the school site team.

The foul drainage system has been designed such that foul water flows from the buildings drain to an adopted foul water sewer system within the Highway.

A portion of surface water run-off from the proposed building roof and hard paved surfaces will drain to an attenuation tank designed to cater for the 1:100 +45% storm return period. There are also some areas of tanked permeable paving system which will be designed for the 1:100+45% storm return period.

It is proposed to restrict run-off rates to a design flow rate of 2.0 l/s, which is a practicable minimum rate. This flow rate is to be used for the 1:1 up to the 1:100+45% storm return periods prior to discharging to the surface water sewer system within the Highway.

The implication of not meeting the requirements set out within this document is the potential for flooding the building and open areas on the site.

2 COMPONENTS OF THE SYSTEM

2.1 SITE LOCATION AND SURROUNDING AREA

The site is located off Littlehampton Road to the north of Goring-by-Sea, Worthing, West Sussex at UK Grid Reference TQ 10604 03793 or What3Words ///foam.vision.audit.

The following components form part of the drainage system and need to be maintained as indicated within this document.

- Pipes, foul and surface water system. Clay or Plastic
- Inspection chambers and manholes
- Flow Control Manholes
- Channel drains & road gullies
- Attenuation Tank
- Permeable Paving
- Proprietary water quality systems.

3 MAINTENANCE SCHEDULES

The below sets out the requirements for maintenance of the on-site drainage system.

The maintenance requirements are based on durations and the occurrence of severe storms. However, should water be found ponding on any hard surface around channel drains, road gullies, or foul drains become blocked then this visual identifier will trigger the requirements for investigation and maintenance.

If issues are found to be the cause of failure or lack of maintenance on parts of the drainage system that do not fall under the responsibility of the maintenance company, the maintenance company is to notify the third party who has responsibility.

A severe storm is defined as any aspect of weather that poses risk to life, property or requires the intervention of authorities. Severe weather warnings will be issued by the Met Office.

The appointed maintenance company is to keep a log of all maintenance and remedial works carried out at the site. This log is to be passed on should the maintenance contract be given to another organisation.

3.1 PIPES, FOUL AND SURFACE WATER SYSTEM. CLAY OR PLASTIC

To be checked annually by CCTV survey and debris removed by high pressure jetting. A list of defects should be compiled with high, medium and low risk of failure. High risk defects should be fixed immediately, medium risk should be fixed within 6 months and low risk to be monitored annually.

3.2 INSPECTION CHAMBERS AND MANHOLES

To be checked annually and after a severe storm by visual survey and debris removed. A list of defects should be complied and with high, medium and low risk of failure. High risk defects should be fixed immediately, medium risk should be fixed within 6 months and low risk to be monitored annually.

3.3 FLOW CONTROL MANHOLES

To be checked annually and after a severe storm by visual survey and debris removed. A list of defects should be complied and with high, medium and low risk of failure. High risk defects should be fixed immediately, medium risk should be fixed within 6 months and low risk to be monitored annually.

3.4 CHANNEL DRAINS AND ROAD GULLIES

To be checked quarterly and debris removed.

3.5 ATTENUATION TANK

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate 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
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

3.6 PERMEABLE PAVING

The permeable paving system needs to be maintained in accordance with Ciria C753 The SuDS Manual Table 20.15.

TABLE 20.15 Operation and maintenance requirements for pervious pavements		
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 sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphospate 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 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, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to 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	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

The manufacturer has the following specific requirements for their product that fall outside of the recommendations of The SuDS Manual.

To ensure the performance of the Priora permeable paving, Marshalls recommend that there is a maintenance regime undertaken.

The maintenance of the pavement is to ensure the infiltration of the paving is not compromised. The following guidelines are offered as an initial regime, but maybe either increased or decreased depending on paving's local environment and any external contributing factors.

- *A visual inspection of the paving should be carried out on a regular basis, ensuring that the joints are kept fully filled. This will confirm the effectiveness of the agitation maintenance due to variations between sites and allow any refinement of the regular agitation activity if necessary.*
- *The paving should be agitated (e.g. brushed, vacuumed, etc.) at least twice a year. This is to ensure no vegetation of any sort is allowed to grow and develop in the joints. Ideally, this activity should be carried out in the spring and autumn seasons.*
- *The paving should be inspected after any heavy precipitation to ensure no displacement of any organic matter onto the surface of the pavement.*
- *For winter maintenance, the controlled use of de-icing products may be used without causing significant detrimental effects towards the permeable pavements performance. When used carefully, the use of these chlorides will not result in an increase in the chloride levels in the local ground.*
- *Where non-infiltration systems have been employed, the inspection of the outfalls should be undertaken initially on a twice-yearly basis.*
- *Weed growth – when sedimentation occurs in areas of permeable paving then there is the potential for weed growth, this will typically occur where there are overhanging trees or soft landscaping slopes down on to the paving or in areas which do not receive over run from vehicles particularly frequently.*
- *Weeds can be removed from the surface through the application of weed killers containing Glyphosate. Glyphosate based weed killers are the most common for general-purpose use, they are most effective on grasses and perennial weeds with non-woody stems. Weeds should be sprayed when they are actively growing so that the Glyphosate will go down to the root and kill the weed completely. Glyphosate will be neutralized upon contact with the ground, which makes it safe to plant in the area soon after treatment. It is available ready mixed or as a concentrate. With the ready mix you will paying a lot for the water that it is diluted with, but if you only have a small plot or if you don't have a safe chemical storage cupboard, then ready mix is the best option.*
- *Glyphosate based weed killers include: Roundup, Tumbleweed and B&Q complete.*
- *Depending on the amount of usage and the environment the permeable pavement has received and been exposed to, the laying course material may require either cleaning after a 25 to 30 year period. This would be evident if the infiltration rate of the paving became prolonged, allowing ponding to develop. Should this occur, the uplifting and cleaning (or replacing) of the laying course maybe considered. The laying course material, jointing and Priora blocks may be reused, minimising costs.*

Stock piling of any material is prohibited on the permeable paving surface.