**OPERATIONS AND MAINTENANCE OF SUDS**

**Job No. 20131**

**Boleyn Road, Birmingham REV A**

Regular inspections and maintenance are important for the effective operation of all SUDs features.

Before the site is handed over by the contractor, all SUDs features should be inspected, cleared of any clogging and litter, tested and any failures rectified.

Listed below are the SUDs features used for this project, together with the maintenance requirements.

**Attenuation storage tanks**

Regular inspections and maintenance are required to ensure the effective long-term operation of the below ground attenuation system.

The table below provides guidance on the type of operation and maintenance requirement.

|  |  |  |
| --- | --- | --- |
| **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 or 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 |
| 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  |

**Drainage Channels**

Like any drainage system, channel drains can get clogged up by dirt and debris over time which can lead to them becoming ineffective and not performing as efficiently as they should.

Remove the grating protecting the channel drain. You might need a screwdriver to do this depending on the type of drain you have.

Once you begin to lift the grate, you will need to be careful not to snap it, so ease the grate at various points along the length, if possible, rather than pulling solely from one end.

Clean by removing any debris such as dirt and soil by hand.

Flush out the channel to disperse the smaller remaining patches of debris.

If your channel drain is plastic, be careful not to apply too much pressure to the drain system to minimise breakage risk.

Once you have cleaned your drain, you will need to reposition the grate and apply some pressure to snap the top fitting into place.

**Land Drains**

The table below provides guidance on the type of operation and maintenance requirements for Land Drains.

|  |  |  |
| --- | --- | --- |
| **Maintenance Schedule**  | **Required Action** | **Typical Frequency**  |
| Regular maintenance | Remove litter and debris | Monthly (or as required) |
| Cut the grass – to retain grass height within specified design range | Monthly (during growing season), or as required |
| Manage other vegetation and remove nuisance plants | Monthly (at start, then as required) |
| Inspect land drain surface to identify evidence of erosion, poor vegetation growth, compaction, ponding, sedimentation and contamination (eg oils) | 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 land drain area |
| Remedial actions | Repair erosion or other damage by re-turfing or reseeding | As required |
| Relevel uneven surfaces and reinstate design levels  | As required |
| Scarify and spike topsoil layer to improve infiltration and performance, break up silt deposits and prevent compaction of the soil surface | As required |

**Silt Traps**

The table below provides guidance on the type of operation and maintenance requirements for Silt Traps.

|  |  |  |
| --- | --- | --- |
| **Maintenance Schedule**  | **Required Action** | **Typical Frequency**  |
| Monitoring | Inspect silt traps and note the rate of sediment accumulation.  | Monthly in the first year, then annually |

**Swales**

Regular inspection and maintenance is required to ensure the effective long term operation of swales.

The table below provides guidance on the type of operations and maintenance requirements.

|  |  |  |
| --- | --- | --- |
| Maintenance Schedule  | Required Action  | Typical frequency |
| **Regular Maintenance** | Removal litter and debris | Monthly (or as required) |
| Cut and grass – to retain grass height within specified design range. | Monthly (during growing season |
| Manage other vegetation and remove nuisance plants | Monthly at start, then as required. |
| Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years) | Monthly (at start, then as required |
| Inspection inlets, outlets and overflows for blockages and clear if required. | Monthly  |
| Inspection infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours | Monthly, or when required |
| Inspect vegetation coverage  | Monthly for 6 months, quarterly for 2 years, then half yearly |
| Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies | 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% or more of the swale treatment area |
| **Remedial Actions** | Repair erosion or other damage by re-turfing or reseeding | As required  |
| Relevel uneven surfaces and reinstate design levels | As required  |
| Scarif 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  |
| Remove and dispose of oils and petrol residues using safe standard practices | As required  |

**Rainwater Gardens**

Rainwater Gardens system will require regular maintenance to ensure continuing operation to the design performance standard.

The treatment performance of the system is dependent on maintenance and robust management plan.

Adequate access is to be provided for all inspection and maintenance.

General maintenance can be often undertaken as part of the routine landscape maintenance.

The table below provides guidance on the type of operation and maintenance requirements for Rainwater Gardens.

|  |  |  |
| --- | --- | --- |
| **Maintenance Schedule** | **Required action** | **Typical Frequency** |
| Regular Inspections | Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary. | Quarterly |
| Check operation of underdrains by inspection of flows after rain. | Annually |
| Assess plants for disease infection, poor growth, invasive species etc and replace as necessary. | Quarterly |
| Inspect inlets and outlets for blockage. | Quarterly |
| Regular Maintenance | Remove litter and surface debris and weeds | Quarterly (or more frequently for tidiness or aesthetic reasons) |
| Replace any plants to maintain planting density | As required |
| Remove sediment, litter and debris build-up from around inlets of from forebays. | Quarterly to biannually |
| Occasional maintenance | Infill any holes or scour in the filter medium, improve erosion protection if required | As required |
| Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch | As required |
| Remedial actions | Remove and replace filter medium and vegetation above | As required but likely to be > 20 years |

**Additional Notes**

Attenuation tanks are situated to the rear of the development, unlimited access should be available for maintenance staff, plant and material.

Silt chambers to the rear can be maintained and access is available to the rear via the access road.

The O&M manual should have identified which property has the silt chambers to the rear.

All attenuation tanks should have a minimum of two access chambers for inspection and maintenance.

**Details of specialist/management companies are as follows:**

Flow control chamber/Oversized pipes – To be maintained by Severn Trent Water Limited

Road Gullies/Swale – To be maintained by Birmingham City Council Highways Department.

Private Drainage, attenuation, rainwater garden will be managed by a private management company.