



DRAINAGE MAINTENANCE AND MANAGEMENT PLAN

Knowsley Lane Knowsley Business Park Liverpool

Reference

5570-JPG-XX-XX-RP-D-0601-S2-P02

Date

May 2022

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DOCUMENT HISTORY

Rev	Date	Revision Details	Status	Author(s)	Approved
P01	12.04.2022	First Issue	Information	AJB	BT
P02	27.05.2022	Second Issue	Information	BT	MDP



1.0 INTRODUCTION

The surface water drainage systems proposed as part of the works is shown on JPG drawing 5570-JPG-ZZ-ZZ-DR-D-1401. Pipe sizes and gradients are designed to be self-cleansing albeit regular maintenance and inspections are required to ensure the long-term efficiency of the systems.

All works should be undertaken by suitably qualified personnel and waste should be treated and removed by an appropriately registered company.

All drainage within the site boundary will remain private, a Maintenance Contractor, or individual building tenants, will be responsible for the maintenance and management of the drainage system.

2.0 SEWERS

The main objective of maintenance document is to establish procedures to ensure the sewer systems functions appropriately in the long term within an environment of fiscal control.

Maintenance includes:

- Local repair or local replacement of damaged pipes or other structures in order to maintain the functioning of the sewer.
- Cleaning and removal of sediments, obstructions etc. to restore hydraulic capacity.
- Jetting/vacuum of sewers to be undertaken as often as necessary to remove silts and/or ordinary debris.
- In the event that any extraordinary issues are encountered during an inspection, further information may be required such as a CCTV survey report.
- Maintenance to be undertaken on a six monthly schedule.

To avoid damaging the pipe, PSI pressures need to be verified before jetting of plastic twin wall sewers. Cleaning of drainage systems may require the temporary sealing of the system and careful collection of the effluent for disposal off site.

3.0 FLOW CONTROL CHAMBER

Regular inspections of all flow control chambers should be carried out to ensure that debris that may obstruct the inlet to the flow control is not present. The frequency of inspection will depend on the location of the unit, it is recommended initial inspections should be on a three-month basis for the first year of operation followed by a six monthly basis thereafter. The penstock should be checked and lubricated as necessary to ensure it will be operational should an emergency drain down be necessary.



In the event that the inlet to the control unit becomes blocked, the pivoting bypass door may be operated by pulling the wire rope attached upwards to drain down the chamber and provide access for maintenance.

As a secondary measure, a bypass pipe has been incorporated and fitted with a penstock over its inlet. The penstock is to be in the closed position and can be opened in the event of a failure within the flow control device. The lifting key for the penstock is to be fixed to the biscuit of the manhole within the chamber.

The location is shown on drawing number 5570-JPG-ZZ-ZZ-DR-D-1401.

4.0 DRAINAGE CHANNELS

The slot drain channels should be inspected regularly to ensure that the system continues to operate effectively and is free from damage and blockage by debris or solid objects.

The system should be cleaned at least once a year and incorporated into a planned maintenance schedule. The frequency of inspection and maintenance depends on the local environment and conditions.

Channel units can be cleaned through the use of a high-pressure hose. This can be fed into the system through access units.

The throat section of channel units should be kept clear at all times to ensure uninterrupted flow of surface runoff into the drainage channel. Any debris should be removed.

The seating areas for covers and grates should be cleaned before they are replaced. The covers and grates should be locked into position to prevent these being removed, stolen or dislodged by traffic. Locking bolts should be replaced and sufficiently tightened, taking care that the bolt heads do not stand above the top surface of the cover or grate. If grates/ covers are allowed to move within their frame, this may cause damage to the frame or seating.

5.0 ROAD GULLIES

Road gullies should be inspected regularly to ensure that the system continues to operate effectively and is free from damage and blockage by debris or solid objects.

The gullies should be cleaned at least once a year and incorporated into a planned maintenance schedule. The frequency of inspection and maintenance depends on the local environment and conditions.

The gully grating should be kept clear at all times to ensure uninterrupted flow of surface runoff into the gully. Any debris should be removed.



The seating areas for the grate should be cleaned before they are replaced. The covers and grates should be locked into position to prevent these being removed, stolen or dislodged by traffic.

6.0 SUDS BASIN

SUDS basins will require ongoing regular maintenance to ensure continuing operation to design performance standards. CIRIA's SUDS manual C753 Table 22.1 recommends the following maintenance regime for detention basins:

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Remove litter and debris	Monthly, or as required
	Cut Grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut Grass – Meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly
	Inspect banksides, structures pipeworks etc for evidence of physical damage.	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlets and forebay	Annually(or as required)
	Manage wetland plants in outlet pool – where provided	Annually
	Reseed areas of poor vegetation growth,	As required
Occasional maintenance	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
	Repair erosion or other damage by re-seeding or turfing	As required
Remedial actions	Realignment of rip-rap	As required
	Repair / rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

7.0 MANHOLES/ACCESS CHAMBERS

All manhole covers should be lifted, and the manholes visually inspected for silt, debris and signs of blockages within the drainage system. Check manhole covers and frames for damage and ensure correctly bolted together. This should be undertaken on a six monthly basis.



Should any debris or blockages be detected, the manholes should be cleaned along with associated pipe runs which should be high pressure jetted and CCTV surveyed to verify/identify that no further remedial works are required.

8.0 OIL SEPARATORS

Oil separators to be installed as part of the storm water drainage system. The location is shown on drawing 5570-JPG-ZZ-ZZ-DR-D-1401.

In order to prevent pollution, the separators need to be regularly maintained. This should be carried out on a six-monthly basis by suitably qualified personnel.

Maintenance should be as follows:

- Assess the depth of accumulated oil and silt.
- Check the condition of any coalescing device and replace as necessary.
- Service any electrical equipment i.e. alarms or management systems.
- Physically inspect the integrity of the separator and any mechanical parts.

The separator should be emptied when oil/silt levels have significantly built up. All retained waste, including silt must be removed and the separator refilled with clean water. In the event of a spillage, the separator should be emptied. Emptying should be undertaken by a registered waste removal company, experienced in separator emptying.

Every five years, the separator should be emptied and given a general inspection to test its integrity and performance, after which the separator must be refilled with clean water.

A detailed log should be kept up when the separator has been inspected, maintained, emptied and serviced, along with records of any specific events relating to the system such as cleaning, spillages. Failure to carry out the maintenance may result in pollution of the environment.



9.0 ATTENUATION TANK OPERATION AND MAINTENANCE REQUIREMENTS

Regular inspection and maintenance are important for the effective operation of the attenuation tank. CIRIA's SUDS manual C753 Table 21.3 recommends the following maintenance regime:

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, outlets, 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 tank for sediment build-up and remove if necessary.	Every 5 years or as required.

Maintenance specific to the site should include regular inspection and maintenance of the silt sump manhole as identified in Section 3.0. In addition, the following activities should be undertaken in relation to the perforated distribution pipe that passes through the tank:

- Cleaning and removal of sediments, obstructions etc. to restore hydraulic capacity.
- Jetting/vacuum to be undertaken as often as necessary to remove silts and/or ordinary debris.
- In the event that any extraordinary issues are encountered during an inspection, further information may be required such as a CCTV survey report.

10.0 HEALTH AND SAFETY

Employers shall, so far as is reasonably practical, provide and maintain systems of work that are safe and without risks to health. The systems of work shall cover all aspects of the works including above-ground operations (for example manhole location and traffic control), access to the sewer system and all operations in the confined space of the sewer system.

11.0 RECORD HISTORY

The site manager shall be responsible for recording and updating details of prior maintenance and operations, which can be made available for future reference.



The site manager shall also be responsible for scheduling future maintenance in accordance with the necessary requirements of each component, create a fixed timetable of routine checks and ensure that the maintenance is undertaken appropriately.

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