Marston & Grundy LLP
Consulting Engineers

Drainage Maintenance Strategy

for the new

Anchors Away Retail Development, Greenbrow Road, Wythenshawe

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for

Seva Patidar Ltd

Marston & Grundy LLP
Consulting Engineers

Quality Management

Job No	12860		
Project	New retail development		
Location	Anchors Away, Greenbrow Road, Wythenshawe		
Title	Drainage Maintenance Strategy		
Document Ref	-	**Issue / Revision**	01
Date	28/9/22		
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Revision History

Rev	Date	Issue / Purpose/ Comment	Prepared	Checked
01	28/9/22	Final Construction Issue	DAG	RAJ

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Maintenance Strategy

General

This document has been prepared to provide a maintenance methodology to the surface water drainage elements proposed for this development. If any discrepancies from manufactures guidance are encountered, the proprietary system guidance should be adopted.

The surface water strategy is composed of permeable paving to the central area of the car park, with perforated pipework and new 1200mm dia catchpit with orifice plate flow control to limit the flow to 5l/2. connected to the existing pipe network, manholes & inspection chambers. Refer to drawings 12860/100 rev P3 for the as constructed drainage layout.

Any man-entry into the system and silt removal should be carried out by trained personnel with adequate personal protective equipment. Approved safety procedures must be followed in accordance with the Health and Safety Act.

This drainage system's maintenance will be the responsibility of the project developer or by an appointed maintenance company and as such an appropriated maintenance regime should be implemented.

Drainage Design Philosophy

The proposed surface water drainage system detailed on Marston & Grundy drainage drawings 12860/100 has been designed to drain by gravity and discharge at a restricted Greenfield rate of 5.0l/s and discharge into the existing combined sewer on Greenbrow Road.

The site levels and storm water attenuation system, comprising of ground cellular storage tanks, has been designed to accommodate all storm events up to and including 1 in 100 year plus 20% climate change event. The extreme 100 year + 30% climate change would be accommodated on the low lying car park surface.

The proposed foul water drainage system detailed on Marston & Grundy drainage drawings has been designed to drain by gravity and discharge into the existing 100mm diameter Combined Water Sewer on Greenbrow Road

The drainage system for the new development has been designed adequately with suitable gradients, catchpits and access points to reduce the requirement for maintenance other than periodic inspections, unless a blockage occurs. On completion of the main drainage installation during the development works a full CCTV drainage survey will be completed to confirm that the as built drainage installation is fully operational and in good working order.

Health, Safety and Welfare

All those responsible for maintenance should take appropriate health, safety and welfare precautions for all activities including lone working, if relevant, and risk assessments should always be undertaken. The site's infrastructure Health and Safety File should be consulted before carrying out any works either inside or outside of the development's boundary and information regarding the location of existing utilities passed on to operatives.

The requirements of the Health and Safety at Work Act 1974 and The Construction (Design and Management) Regulations 2015 should be adhered to and any residual risks identified in the Health and Safety File should be managed and information passed on to maintenance operatives through task specific risk assessments.

Operation and Maintenance

There are three types of maintenance activities associated with surface water drainage systems. The SuDS Manual, CIRIA C753, defines these as:

> Regular Maintenance – '*basic tasks undertaken on a frequent and predictable schedule' including vegetation management, litter and debris removal, and inspections*.'
>
> Occasional Maintenance – *'tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example.'*
>
> Remedial Maintenance – *'intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.*'

Specific maintenance needs should be monitored and maintenance schedules adjusted to suit the location and condition of the drainage feature in question.

Operation and Maintenance Activity	SuDS Component					
	Piped Network / Inspection Chambers	**Attenuation Basins**	**Swale / Ditch**	**Permeable Paving**	**Geocellular Infiltration / Attenuation Tanks**	**Proprietary Treatment Systems**
Regular Maintenance						
Inspection	■			■		
Litter And Debris Removal	■			■	□	□
Grass Cutting					□	
Weed And Invasive Plant Control		□				
Shrub Management (Including Pruning)		□	□			
Shoreline Vegetation Management		□				
Aquatic Vegetation Management		□				
Occasional Maintenance						
Sediment Management[1]	■			■		
Vegetation Replacement		□	□			
Vacuum Sweeping And Brushing				■		
Remedial Maintenance						
Structure Rehabilitation / Repair	□	□	□	□	□	
Infiltration Surface Reconditioning				□	□	

■ Will be required □ May be required

■ [1] Sediment should be collected and managed in pre-treatment systems, upstream of the main device.

Extract From The Suds Manual Table 32.1: Typical Key Suds Components Operation And Maintenance Activities.

Piped Network / Inspection Chambers / Catchpits

Piped network components require regular inspection and maintenance to ensure that the individual components continue to operate as designed, both in terms of hydraulic capacity and potential pollutant removal. All the gullies, inspection chambers and catchpits will therefore be inspected and cleaned regularly.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Inspect and identify any features that are not operating correctly. If required take remedial action	Monthly for three months, then six monthly
	Debris removal from catchment surface / gratings (where may cause risks to performance)	Monthly (and after large storms)
	Remove sediment from trapped sumps, manholes and catchpits.	Annually or as required
Remedial Maintenance	Repair / rehabilitation of gratings, inlets and outlets	As required
Monitoring	Inspect / check all gratings, trapped sumps, manholes and catchpits to ensure that they are in good condition and operating as designed	Annually and after large storm events
Structure Rehabilitation / Repair	Regular Maintenance and Monitoring to identify if repair and / or replacement of features or pipework is required.	As required

Operation And Maintenance Of Piped Network / Inspection Chambers

Soakaway / Attenuation Tanks

Geocellular tanks are modular storage systems made with plastic units. These units can be assembled in different shapes to achieved the required volume and usually on multiple layers.

Generally, the units have 95% of voids content and are used to create an efficient below ground structure to store surface water.

Table 2 sets out the recommended maintenance actions and frequency, refer to manufacture's guidance notes.

Maintenance Schedule	Required action	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 the surface of filter for blockages by sediment, algae or other matter; remove and replace surface infiltration medium as required.	Annually.
	Remove sediments 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 of the tank for sediment build-up and remove if necessary.	Every 5 years or as required.

Operation & Maintenance Requirements For Attenuation Storage Tanks

Oil Separators

These are manufactured products to provide treatment to the surface water by removing specific pollutants.

Table 3 sets out the recommended maintenance actions and frequency, refer to manufacture's guidance notes.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation.	Monthly for 3 months, then annually.
	Change the filter media.	As recommended by the manufacturer.
	Remove sediment, oil grease, and floatables.	As necessary – indicated by system inspections or immediately following significant spill.
Remedial Actions	Replace malfunctioning parts or structures.	As required.
Monitoring	Inspect for evidence of poor operation.	Six monthly.
	Inspect filter media and establish appropriate replacement frequencies.	Six monthly
	Inspect sediment accumulation rates and establish removal frequencies.	Monthly during the first half-year of operation, then every six months.

Operation & Maintenance Requirements For Oil Separators

Proprietary Surface Water Treatment Systems
These are manufactured products to provide a treatment to the surface water by removing specific pollutants.

Table 8 sets out the recommended maintenance actions and frequency. Manufacture guidance/recommendations should always be used when available.

Maintenance schedule	Required action	Frequency
Regular Maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation.	Monthly for 3 months, then annually.
	Change the filter media.	As recommended by manufacturer.
	Remove sediment, oil grease and floatables.	As necessary – indicated by system inspections or immediately following significant spill.
Remedial Actions	Replace malfunctioning parts or structures.	As required.
Monitoring	Inspect for evidence of poor operation.	Biannually
	Inspect filter media and establish appropriate replacement frequencies.	Biannually
	Inspect sediment accumulation rates and establish removal frequencies.	Monthly during first half year of operation, then every six months.

Operation & Maintenance Requirements For Proprietary Surface Water Treatment Systems