LandStudio

Ipsen MSCP, Wrexham
Drainage Maintenance Strategy

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1.0 Introduction

Land Studio have been appointed by Ipsen Biopharm to produce a Drainage Management and Maintenance Plan for submission with a SAB application and for use by the Ipsen maintenance team who will take on the future maintenance of the drainage systems.

This report is intended to give an overview of the operation and maintenance plan for the drainage features associated with the Multi Storey Car Park (MSCP).

The recommended operation and maintenance frequencies are typical only and should be more frequent initially to ensure that there are no unforeseen issues with the system in the first year of service.

The aim of the Management and Maintenance Plan is to ensure the drainage systems installed continues to perform in accordance with the intended design. It is intended that the system operates safely, is environmentally acceptable, economically efficient and provides the client with a functional and easily operated asset.

In preparation of the report and performance of any other services, Land Studio has relied upon publicly available information, information provided by the client and information provided by third parties. Accordingly, the conclusions reached in this report are valid only to the extent that the information provided was accurate and complete. Land Studio cannot accept liability for the accuracy or otherwise of any information derived from third party sources.

1.1 Site Location

The MSCP is located on the existing Ipsen East Site fronting onto Ash Road South at Wrexham Industrial Estate, LL13 9UG. The grid reference for the centre of the site is SJ 37598; 50209.

1.2 Development Proposal

The proposed development is a MSCP and new vehicular access onto Ash Road South.

2.0 Associated Information

This document should be read in conjunction with the following drawings.

- 498-LST-XX-XX-DR-D-0100 Drainage General Arrangement
- 498-LST-XX-XX-DR-D-0200 Drainage Schedule
- 498-LST-XX-XX-DR-D-0400 Drainage Details Sheet 1
- 498-LST-XX-XX-DR-D-0401 Drainage Details Sheet 2
- 498-LST-XX-XX-DR-D-0401 Drainage Details Sheet 3

3.0 Maintenance Responsibility

The funding and on-going maintenance of the drainage network will be private and the responsibility of Ipsen Bipharm maintenance team.

4.0 Surface Water Maintenance and Operation

4.1 Surface Water Design Standards

The following British Standards and design guides have been used for storm water design purposes.

- BS EN 752 Drain and Sewer Systems Outside Buildings
- BS EN 16933-2 Drain and Sewer Systems Outside Buildings – Part 2: Design
- CIRIA C635 The SuDS Manual
- Building Regulations Part H

4.2 Surface Water Design Philosophy

Surface water which falls onto the roofs or hard landscaped areas will be collected and drained into surface water conveyance and attenuation before discharge at a restricted rate into an open land drainage ditch which discharges into an unnamed watercourse on the boundary of the site.

4.3 Surface Water Drainage Maintenance

A strategy for the maintenance of the drainage has been developed, incorporating normal regular maintenance requirements, any potential long-term maintenance work and any monitoring required. Any parties involved with the disposal of any waste materials from the underground drainage system should hold appropriate management licenses to undertake any such activities.

Disposal of any site materials is required to be made in accordance with current legislation and guidance.

4.3.1 Surface Water Manholes, Inspection Chambers and Catchpits

It is proposed that both precast concrete and polypropylene chambers will be used. Access points have been located at the head of any new pipework for rodding purposes.

The appropriate health and safety equipment must be used when accessing manholes and inspection chambers. Confined space certificates must be held by any personnel entering a manhole and the appropriate permits should be obtained prior to access being permitted.

Regular inspections and maintenance are important to identify areas which may have been obstructed/clogged and may not drain correctly thus exposing the development to a greater level of flood risk. Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols.

Table 1 indicates the typical maintenance recommendations required.

Action	Details	Frequency
Monitoring and Inspection /Testing	Check condition of inlets, outlets, vents, overflows, flow controls, covers and chambers	Monthly for the first three months following commission. Six-monthly thereafter or 48 hours after major storm event
	Inspect all manholes and catch-pit sumps for any sediment, trash, debris, and any other pollutants	Monthly for the first three months following commission. Six-monthly thereafter or 48 hours after major storm event
Regular Maintenance	Repair inlets, outlets, vents, overflows, flow controls, covers and chambers	Monthly for the first three months following commission. Six-monthly thereafter or 48 hours after major storm event
	Remove sediment, trash, debris and any other pollutants from manholes and catchpit sumps to ensure correct performance	Monthly for the first three months following commission. Six-monthly thereafter or 48 hours after major storm event
Occasional Maintenance	Replace covers and frames as necessary	As required
	Repair exposed concrete and surfacing as necessary	As required
Remediation	Replace malfunctioning parts or structures	As required

Table 1: Surface Water Manholes and Chambers

4.3.2 Surface Water Pipework

The surface water pipes are intended to be dry except for during rainfall events. New pipework has been designed to be self-cleansing where possible. Access for maintenance is provided through access chambers.

Regular inspections and maintenance are important to identify areas which may have been obstructed or clogged and may not drain correctly thus exposing the development to a greater level of flood risk.

Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols. If continued poor performance, jet the system as required.

A CCTV survey of poorly performing runs should be undertaken as required.

If the above does not improve performance, seek advice for remediation techniques suitable for the type of performance issue and location.

Table 2 indicates the typical maintenance recommendations required.

Action	Details	Frequency
Monitoring and Inspection /Testing	Initial water test to be done prior to CCTV survey	Once, upon completion of development
	Initial inspection should be provided as post construction CCTV survey	Once, upon completion of development
	Inspect for evidence of poor operation via water level in chambers. If required, take remedial action	Monthly for the first three months following commission. Three-monthly thereafter or 48 hours after major storm event
Occasional Maintenance	Check and remove large vegetation growth near pipe runs	Six-monthly
Remediation	Rod through poorly performing runs as initial remediation	As required
	If continued poor performance, jet and CCTV survey poorly performing runs	As required
	Seek advice as to remediation techniques suitable for the type of performance issue and location	As required, if above does not improve performance

Table 2: Surface Water Pipework

4.3.3 Flow Control

A flow control will be required to restrict flow into the unnamed watercourse.

The flow control is intended for flood control and flow restriction therefore their maintenance is essential to ensuring long-term performance as intended. Access for maintenance is provided through the inspection chamber.

Regular inspection and maintenance is important to identify areas which may have been obstructed or clogged and may not drain correctly thus exposing the development to a greater level of flood risk.

Table 4 indicates the maintenance recommendations required if no information is available from the manufacturers.

Action	Details	Frequency
Monitoring and Inspection /Testing	Inspect for evidence of poor operation	Six-monthly
	Inspect inlet for blockages and clogging. Jetting and CCTV survey may be required	Monthly for the first three months following commission; Six-monthly thereafter or 48 hours after major storm event
	Inspect for accumulation of sediment	Monthly for the first three months following commission; Six-monthly thereafter or 48 hours after major storm event
Regular Maintenance	Remove debris and sediment	Monthly or as required
	Clean out of unit as per the manufacturer's recommendations	Annually or as required
Remediation	Repair or replace malfunctioning parts	As required

Table 4: Flow Control

4.3.5 Raingardens

The raingarden or bioretention area are shallow landscaped areas that reduce runoff rates and volumes and treat pollution through the use of engineered soils and vegetation. The proposed Hydroplanter by Green Blue Urban is proposed which is a priority product due to the restrict space available within the landscape as this provides vertical sides, engineered soil mix and planting from a specified list.

Whilst manufactures maintenance requirements will be provided, the minimum maintenance required is indicated in Table 5. The proprietary product information is appended to this document.

Table 5 indicates the maintenance recommendations required if no information is available from the manufacturers.

Action	Details	Frequency
Monitoring and Inspection /Testing	Inspect for evidence of poor operation	Monthly or as required
Regular Maintenance	Remove litter and debris	Monthly or as required
	Clean out of unit as per the manufacturer's recommendations	Annually or as required
	Check operation of underdrains by inspection of flows after rain.	Monthly at start, then annually
	Inspect vegetation and plants for disease infection, poor growth, invasive species etc. and replace as necessary	Quarterly
	Replace any plants to maintain planting density	As required
	Inspect infiltration surfaces for silting and ponding and record to determine if maintenance/remedials neccessary	Quarterly
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Quarterly
Occasional Actions	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
Remediation	Repair or replace malfunctioning parts	As required

Table 5: Raingarden

4.3.6 Geocellular Tanks

Attenuation storage tanks are used to create a below-ground void space for the temporary storage of surface water before controlled release into the below ground drainage system. The storage structure is formed using a geocellular storage systems.

Below ground geocellular attenuation tanks are a proprietary product and as such the manufacturer's recommendations should be followed.

The attenuation tanks are intended to be the surface water storage feature to attenuate the discharge from the roof drainage up to and including the 1 in 100 year plus 40% climate change event.

Regular inspection and maintenance are important to identify areas which may have been obstructed or clogged and may not drain correctly thus exposing the development to a greater level of flood risk.

Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols. The table below provides guidance on the type of operational and maintenance requirements that may be appropriate. The list of actions is not exhaustive, and some actions may not always be required.

Table 6 indicates the maintenance recommendations required if no information is available from the manufacturers.

Action	Details	Frequency
Monitoring and Inspection /Testing	Inspect inlets, outlets, and overflows for blockages and sediment, and clear if required. If faults persist jetting and CCTV survey may be required	Monthly for the first three months following commission; Six-monthly thereafter or 48 hours after major storm event
	Survey inside of tank via the low flow channel for sediment build-up and remove if necessary	Annually or as required
Regular Maintenance	Remove debris from catchment surface	Monthly or as required
	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
	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
Remediation	Repair and/or of inlets, outlet, overflows and vents	As required

Table 6: Geocellular Tanks

3.3.8 Inline Non-Return Valve

Non return valves are proprietary products where used the manufacturer's recommendations should be followed.

The non-return valve is intended to prevent surcharge of the drainage upstream therefore their maintenance is essential to ensuring long-term performance as intended. Access for maintenance is provided through the open pipe ends or manhole chambers.

Regular inspection and maintenance are important to identify areas which may have been obstructed or clogged and may not drain correctly thus exposing the development to a greater level of flood risk.

Table 7 indicates the maintenance recommendations required if no information is available from the manufacturers.

Action	Details	Frequency
Monitoring and Inspection /Testing	Inspect for evidence of poor operation	Six-monthly
	Inspect for blockages and clogging. Jetting and CCTV survey may be required	Monthly for the first three months following commission; Six-monthly thereafter or 48 hours after major storm event
	Inspect for accumulation of sediment	Monthly for the first three months following commission; Six-monthly thereafter or 48 hours after major storm event
Regular Maintenance	Remove debris and sediment	Monthly or as required
	Clean out of unit as per the manufacturer's recommendations	Annually or as required
Remediation	Repair or replace malfunctioning parts	As required

Table 7: Non-Return Valve