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Sustainable Drainage Systems Maintenance Plan

for

East Street, Shoreham-by-Sea, Sussex

E9226

STEPHEN WILSON PARTNERSHIP LTD

DOCUMENT CONTROL SHEET

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FOR AND ON BEHALF OF STEPHEN WILSON PARTNERSHIP

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1 INTRODUCTION

1.1 Introduction

1.1.1 This statement details the drainage strategy and maintenance requirements for the proposed surface and foul water systems at the development above. A copy of this statement should be provided to the party responsible for maintaining the drainage system and should also be included within the Maintenance Manuals for the development.

1.1.2 The maintenance detailed in this document must be undertaken throughout the lifetime of the development. Failure to undertake this maintenance may result in the drainage system not operating as designed, increasing the risk of flooding.

1.1.3 The drawing detailing the strategy of the drainage system are referenced in the latest version of E9226-SWP-XX-XX-DP-C-1101.

1.2 Terms of Reference

1.2.1 Sustainable Drainage Systems (SuDS) are a sequence of water management practices and facilities designed to drain surface water in a manner that will provide a more sustainable approach than what has been the conventional practice. SuDS are designed to mimic natural drainage flows and typically manage rainfall close to where it falls. Benefits include the effective management of runoff from hard standing surfaces, such as pavements and driveways, by reducing the volume, frequency, and flow rate of surface water runoff during extreme storm events. They provide protection and/or enhancement of water quality (reducing pollution from runoff), are sympathetic to the environment and the needs of the local community and provide an attractive habitat for wildlife in urban locations.

1.2.2 The purpose of this management plan is to demonstrate how SuDS, which have been implemented at this particular residential development, will be maintained in compliance with various requirements and best practice guidance, including but not limited to, the National Planning Policy Framework (NPPF) and SuDS Manual (CIRIA, 2015).

1.2.3 The maintenance plan aims to:

- Summarise the surface and foul water drainage strategy
- Summarise the various SuDS features used within the site;
- Establish who is responsible for the maintenance of the drainage including the SuDS components;
- Set out how to maintain the incorporated components following construction;
- Ensure that all those involved in the maintenance and operation of the SuDS understand their functionality and maintenance requirements in terms of supporting long-term performance.

Maintenance inspections should be recorded in Appendix 1.0 of this report to ensure that the document stays up to date.

2 DRAINAGE STRATEGY

2.1 Surface Water Drainage Strategy

2.1.1 It is proposed to install a attenuation tanks and sealed treepits by a traditional pipe system where surface water is temporarily stored before discharged into the combined public sewer.

2.1.2 Calculations have shown that the proposed drainage strategy would retain all storms up to and including the peak 100-year storm event with a 45% allowance for increased rainfall intensity as a direct result of climate change.

2.1.3 Surface water will discharge to the combined public sewer at a maximum of 1.0l/s controlled by a hydrobrake.

2.2 Foul Water Drainage Strategy

2.2.1 It is proposed to install new positive drainage to serve the development. This will discharge to the combined public sewer in East Street via an existing connection.

2.2.2 Connection to the sewer will be subject to a S106 connection agreement with Southern Water.

3 MAINTENANCE REQUIREMENTS

3.1 General

3.1.1 Only trained personnel will be permitted to undertake maintenance of SuDS features and drainage where responsibility lies with Private Management Companies. This work must be carried out in accordance with the Confined Space Regulations. To facilitate this maintenance, manholes, inspection chambers and other apparatus are located, where they are reasonably accessible.

3.2 Maintenance Responsibility

3.2.1 All private drainage within the site boundary will be the responsibility of a private management company.

3.2.2 The details of the private management company are to be confirmed.

3.3 Maintenance Requirements

3.3.1 Whilst the drainage system has been designed to operate with as little maintenance as possible, there are key operations that must regularly be undertaken to ensure that it remains in optimal condition, most of which are general housekeeping tasks that should be undertaken for any drainage system, but with additional attention to the catchpits and downstream defenders upstream of the soakaways. These operations are summarised below together with recommended frequencies:

3.3.2 Periodic desilting of catchpits, downstream defender, gully sumps, channel drains and threshold drains. These should be emptied at least as follows (but with an annual inspection and additional cleansing if required): On completion of drainage works, Year 1, Year 3, then every 5 years. The desilting of these items is required to allow the underground geo-cellular soakaways to operate as per the design, and do not become blocked.

3.3.3 Periodic jetting or rodding of pipework as required to clear blockages.

3.3.4 Gratings on any gullies and threshold drains to be kept clear of debris.

3.3.5 The drainage components beneath external areas (under landscaping, hard surfacing, and car parking) will be easily accessible for maintenance purposes.

3.3.6 Ease of access for maintenance and inspection is essential; the manhole lids will be kept as lightweight as practicable. Frequent street sweeping in the catchment areas of catchpits and downstream defenders will increase the time interval in which the system has to be cleaned out.

3.3.7 The proposed catchpits are essentially sump manholes where the outlet pipe is set at a level above the inlet pipe, allowing some removal of sediments, floating debris, oil and grease from surface water. The sump in the catchpits will be cleaned out using a conventional sump vacuum cleaner. In most situations, the units should be cleaned out at least annually.

3.3.8 The following maintenance regime would be recommended as a minimum, but actions and frequencies should be adjusted to suit the specific requirements of this development. However, the previous discussed, component specific regimes and any manufacturer's specific recommendations should always be followed.

Maintenance Schedule	Required Works/Action	Frequency
Routine Maintenance	Inspect and identify incorrect operation. Debris removal from catchment area using sweeping and vacuuming. Removal of sediment from pre-treatment components i.e catchpits, downstream defenders.	Monthly 3 Monthly Annually

Table 3.1 - Recommended Maintenance Requirements

3.4 Pipe Network

3.4.1 All pipe work will be visually inspected at least once a month for the first three months after installation and then a minimum of once year.

3.4.2 Flushing of the system can be achieved using a jetting system with a 150 bar pump pressure (ie. approximately 80 bar at the nozzle) at a discharge flow of 300 l/min. The jet nozzle should be introduced to the system via the Inspection manhole and the integral inspection / maintenance tunnel.

Any silt & debris should be flushed to the inspection or catchpit manhole and removed in accordance with the Management Company policy for waste management.

Below Ground Pipe Network 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
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Remove sediment from pre-treatment inlet structures and inspection chambers.	Annually or as required
	Maintain vegetation to designed limits within the vicinity of below ground drainage pipes and tanks to avoid damage to system.	Annually, or as required
Remedial actions	Repair physical damage if necessary	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually and after large storms

3.5 Geo-cellular Attenuation Tank

3.5.1 Inspection at inlets and outlets is recommended after every major storm and at regular intervals according to the specific maintenance plan for the site, silt traps and catchpits should be routinely inspected and cleaned out to minimise debris reaching the tank. It is important to prevent construction debris from entering the drainage system.

3.5.2 Refer to manufacturer's specific requirements.

3.5.3 The schedule below provides guidance on the type of operational and maintenance requirements that may be appropriate, the list of actions is exhaustive, and some actions may not always be required.

Geo-cellular Attenuation Tank 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 catchments surface (where it may cause risk to performance)	Monthly
	Remove sediment from pre-treatment structure 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 sediments build-up and remove if necessary	Every 5 years or as required

3.6 Treepit

3.6.1 Treepits are pits with engineered soils that are designed for optimal tree growth. They are effective in reducing runoff rate and volumes, whilst delivering water quality, amenity, and biodiversity.

Treepit Maintenance schedule	Required action	Typical frequency
Regular inspections	Inspect infiltration surfaces for silting and ponding, record dewatering time of the facility and assess standing water levels in underdrain to determine of 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 or from forebays	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in 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

3.7 Accidental Spillages

3.7.1 It is not envisaged that any materials are to be stored onsite once the development is completed, which could cause major spills and potential pollution issues within the drainage system. If this situation alters in the future a specialist will be required to be contacted to confirm if any upgrades to the existing system are required.

3.7.2 Minor spillages of fuels and oils from motor vehicles will be dealt with by the permeable paving and deep trapped gullies, by biodegrading / collecting the hydrocarbons respectively.

4 DRAINAGE CONSTRUCTION ENVIRONMENTAL MANAGEMENT STRATEGY

4.1 General

4.1.1 The Principal Contractor and any sub-contractors will be required to conduct their activities in accordance with the relevant EA PPG guidance, in order to prevent pollution by potential contaminants. An inventory of potential pollution sources associated with the construction process and details regarding the management of these sources will be documented by the Principal Contractor and updated as construction progresses if new potential pollution sources are identified. Contaminants associated with construction may be:

- Chemical: such as fuels, oils, lubricants, surfactants and other cleaning chemicals, and flocculants; or
- Physical: such as dust and other airborne particulates, silts and sediments.

4.2 Materials Storage

4.2.1 Potential sources and pathways of pollution from residential construction works may include:

- Direct disturbance of the banks and bed of channels during watercourse crossing construction, repair and/or upgrade works;
- Dust, peat disturbance and spoil management on site;
- Pumping of standing water required for de-watering of excavations such as manholes, pipe runs etc, or as required for drainage management purposes;
- Run-off entering watercourses from:
  - Exposed ground, excavations and material stockpiles (aggregate and excavated/overburden peat and soil), tracks and haul routes;
  - Tracks and culverts at watercourse crossings;
- Cement and cement wash where cement grout or concrete is being applied;
- Plant washing and vehicle wheel-wash areas;
- Fuel and chemical storage/refuelling areas;
- Leaking/vandalised plant and equipment; and
- Sewage and wastewater from the temporary construction compound.

4.3 Fuel & Other Chemicals

4.3.1 There is potential for spillages of hydrocarbons and other chemicals that could potentially migrate to surface water or groundwater and adversely affect water quality. Spillages could be associated with delivery vehicles and mechanised construction plant or from any areas where fuels or other materials are temporarily stored on the Site. To reduce the likelihood of contaminants impacting migrating to surface or groundwater, hydrocarbons and other chemicals such as fuels will be located away from sensitive environment receptors such as surface watercourses and will be stored appropriately:

- The storage of potentially polluting materials will be kept to a minimum and, where less hazardous or inert materials are reasonably available, these will be specified;

- Any obvious potential pollutant sources such as mobile plant, materials storage, and temporary waste storage facilities will be located away from watercourses and where practicable, operation of construction plant will observe a buffer distance from watercourses (tbc);

- All fuels, oils and potential contaminants, as well as waste oils, will be stored within the construction compounds in secure, fit for purpose containers within bunded containment as appropriate and in accordance with the latest Government guidance (available at https://www.gov.uk/oil-storage-regulations-and-safety/business). The bunded containment shall have a capacity of 110% of the volume to be stored and will have impervious, secured walls and base. There shall be no fuel storage outside the construction compound;
- All materials stored within the Site will be checked regularly for containment integrity, quantity stored and security of storage;
- Generally, re-fuelling and maintenance of mobile plant and machinery will be carried out at a designated location within the construction compound only, at a dedicated impermeable refuelling pad. The pad will be bunded and equipped with a collection sump. Refuelling will be carried out using an approved mobile fuel bowser with a suitable pump and hose.
- Drip trays will be mandatory beneath all stationary construction vehicles and spill kits, absorbent mats and absorbent sands will be available on Site and will be deployed to contain drips and small spillages and all relevant staff will be trained in their appropriate use. Any spills will be cleaned up as soon as possible with any contaminated sands bagged up and disposed of correctly;
- The wheel-washing facility will also comprise an impermeable bunded area enabling wash water to be collected and stored to prevent runoff of polluted water to down gradient watercourses. This will also ensure that mud and debris from the Site is not transferred to roads outside the site boundary and potentially polluting substances such as fuels, oils and other chemicals are captured. The water will either be treated and tested prior to discharge. The method of disposal of all waste water will be agreed with the EA and or the local authority prior to construction commencing; and
- All vehicles on site will be fitted with oil spill kits. In addition, all vehicles delivering hydrocarbons to site will be fitted with oil spill kits and will ensure that sand trays are placed below any oil of fuel filling activities. Spare oil spill kits will be held in the site office at all times. watercourses and where practicable, operation of construction plant will observe a buffer distance from watercourses (tbc);

4.4 Physical Risks

4.4.1 To limit potential pollution impacts from either hardcore and/or excavated material entering watercourses, or increased sediment levels within surface water runoff, the principle contractor will be required to adhere to the following measures and controls as a minimum:

- Any excavated soil or peat that will be used in the construction of access tracks (e.g. to dress the sides of the tracks once backfilled) are to be temporarily placed on the furthest side away from any identified watercourse or drain;

- The provision of buffer strips around watercourses or drainage channels on sections of track adjacent to watercourse crossings;
- Procedures during excavations and soil handling for both routine working and during any environmental emergencies to control and mitigate both erosion and dust generation; and
- All areas of stockpiled arisings should be inspected by the Principal Contractor at maximum one week intervals and following heavy rainfall or thaw conditions.

4.5 Foul Water

4.5.1 Foul water from the on Site facilities at the construction works compound will be removed from Site by an appropriately licensed contractor.

5 CONTACT DETAILS AND RECORD OF MAINTENANCE

5.1 Contact Details of Individual/Individuals Responsible for This Plan

5.1.1 In the event of concern over any matter related to drainage, please contact:

Name:……

Address:……
……
……
……

Phone:……

Email:……

5.2 Record of Maintenance and Photographic Evidence

5.2.1 Please provide a record of all inspections (including all photographic evidence) in Appendix

APPENDIX 1.0 – RECORD OF MAINTENANCE

RECORD OF MAINTENANCE

GENERAL INFORMATION			
Site ID	East Street, Shoreham		
Site Address/ Location	East Street, Shoreham-by-Sea, Sussex		
Elements forming the SuDS scheme	Attenuation tank, catchpits, french drains, treepits, gullies, hydrobrake	Inspection frequency	As Required
Type of development	Residential	Approved Drawing Ref(s)	E9226-SWP-XX-XX-DP-C-1101

	Inspection date				**Inspection date**			
	Details	**Y/N**	**Action required**	**Date completed**	**Details**	**Y/N**	**Action required**	**Date completed**
GENERAL INSPECTION ITEMS								
Are covers/ fittings correctly secured. If no, state location and problem. Cause								

	Details	Y/N	Action required	Date completed	Details	Y/N	Action required	Date completed
SILT/ SEDIMENT ACCUMULATION								
Is there accumulation at inlets (or other defined accumulation zones such as the gullies, threshold drains, catchpits) If yes, state location, depth (mm) and extent. Is removal required? If yes, state waste disposal requirements and confirm all waste management requirements have been complied with (consult EA or SEPA).								
SYSTEM BLOCKAGES/ LITTER BUILD UP								
Is there evidence of litter accumulation in the system? If yes, is this a blockage risk?								

	Details	Y/N	Action required	Date completed	Details	Y/N	Action required	Date completed
OTHER OBSERVATIONS								
INFORMATION APPENDED (Photos etc.)								