

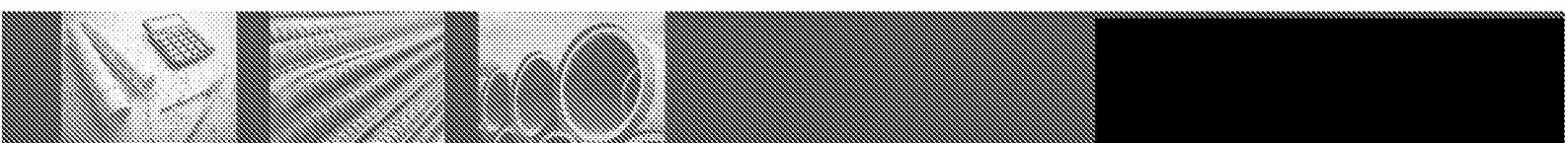
PROPOSED CHANGING FACILITY & SPORTS PITCH
LAND OFF CHARLES PURLEY WAY (A259)
FELPHAM
BOGNOR REGIS
WEST SUSSEX
PO22 8FW

SUDS MANAGEMENT & MAINTENANCE PLAN

BARRATT HOMES

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-	01.02.21	First Issue	S. Smith	C. Pendle

References:

The SUDS manual -- CIRIA C753 (2015) ISBN 9780-86017-760-9

National Planning Policy Framework (NPPF) – Communities and Local Government
Technical Guidance - Flood Risk & Coastal Change (March 2012)



1 Introduction

- 1.1 This document sets out the principles for the long-term management and maintenance of the proposed surface water Sustainable Drainage Systems (SuDS) installed at the residential development.
- 1.2 The purpose of this document is to set out the basis of the development SuDS Maintenance Plan and to ensure that the adopting management company is entrusted with a robust inspection and maintenance programme, ensuring the optimum operation of the surface water drainage network is continually maintained for the lifetime of the development and to prevent the increased risk of flooding both on and off site in accordance with the National Planning Policy Framework (NPPF).
- 1.3 The activities listed in this document are generic to the relative SuDS types and represent the minimum maintenance and inspection requirements, however additional tasks or varied maintenance frequency may be instructed by the maintenance company as required. Specific maintenance needs of the SuDS elements should be monitored and maintenance schedules adjusted to suit requirements.
- 1.4 The installed SuDS system at this development are the initial responsibility of the developer. Following installation and after an initial period (TBC) of operation, all SuDS are to be transferred to an appointed Management Company. An agreement shall be set up by the developer, who shall confirm in writing to the Principle Planning Officer at LLFA when the maintenance agreement is completed and is operative.
- 1.5 The Management Company will then be responsible for maintaining the surface water system including all SuDS in perpetuity. All property owners should be advised that an annual management fee will need to be paid to the management company for this service.
- 1.6 All those responsible for maintenance should follow relevant Health and Safety legislation (Health and Safety at Work Regulations, 1999) for all activities listed within this report including lone working, if relevant) and risk assessments should always be undertaken.
- 1.7 Any contractor employed by the Management Company shall carry out periodic maintenance of all such SuDS in accordance with the schedules listed in this report. Inspection checks shall be carried out by a qualified and competent person, at the minimum intervals listed within the schedules and the appropriate work carried out.
- 1.8 This report is to read in conjunction with the MJA drainage strategy drawing for the location of all SuDS elements present within the development. Reference should also be made to the detailed landscape proposals for the proposed treatment / maintenance regime for all landscape features. The operations contained within this plan shall (where feasible) be in conjunction with routine grounds maintenance operations to the surrounding landscape.



2 SuDS Layout & Design

- 2.1 The storm water drainage strategy for the proposed development is to utilise a range of SuDS features to attenuate all surface water runoff from impermeable areas.
- 2.2 The proposed storm water system may consist of the following SuDS components:
- Attenuation Basins and Swales
 - Storm water pipe work and road gullies
 - Flow control chambers
 - Outfall headwall
- 2.3 There are three categories of maintenance activities referred to in this report:
- **Regular maintenance** (including inspections and monitoring).
Consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.
 - **Occasional maintenance**
Comprises 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**
Comprises 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.
- 2.4 It is also important that measures are taken to protect and ensure continued operation of drainage features during the construction phase. All road gullies will be blocked until the site is complete. Mesh will be placed over the outfalls and swales to prevent construction silts clogging up the drainage system (basins and swale).



3 SUDS Management & Maintenance

3.1 Storm water pipe work and road gullies

- 3.2 The key maintenance requirement for the upstream surface water drainage system includes the removal of sediments and debris from the system as required.
- 3.3 All storm water pipe work should be visually inspected a minimum of monthly for the first three months after installation and then a minimum of once year. As road gullies are the first on the treatment train and susceptible to higher silt loadings, these will need to be inspected a minimum of monthly for the first three months after installation and then a minimum of every four months.
- 3.4 During this inspection identify any gully pots or pipes that require remedial maintenance such removal of sediment, debris, leaves and litter as required. This involves the removal all protective covers and grids and the cleaning out of channels or gully pots by hand or with suitable jetting equipment.
- 3.5 During the inspections the general operation and structural integrity of all components should be recorded and repaired as required.

3.6 Flow Control Chamber

- 3.7 The key maintenance requirement for the flow control chambers will be the inspection of the units for blockages of the vortex flow control unit and silt removal from sump of chamber.
- 3.8 The hydraulic vortex flow control unit has no moving parts and is self-activating, requiring minimal maintenance. After initial installation, it is recommended that the unit be inspected monthly for three months.
- 3.9 Thereafter the manhole chamber and control device should be inspected at least every six months to verify the condition and operation of the unit and check for blockages within the inlet of the chamber and of the flow control device. During these inspections, accumulated silts should be removed and the sump cleaned out using a conventional sump vacuum cleaner. Flow Controls are fitted with a pivoting by-pass door, which allows the manhole chamber to be drained down should blockages occur.



3.28 Outfall Headwalls

- 3.29 Outfall headwalls should be visually inspected a minimum of monthly for the first three months after installation and then a minimum of once a year. Accumulated sediments, debris and any overgrown vegetative material should be removed from the culvert and margins of the outlet headwalls as necessary.
- 3.30 During the inspections the general operation, and structural condition of the headwall and any erosion of banks or scour control features should be identified and rehabilitated as required.

3.31 Existing Watercourse

- 3.32 Note: The Environment Agency are responsible for carrying out inspection and maintenance of main rivers.
- 3.33 However the existing ordinary watercourse should be visually inspected at least twice a year and any physical obstructions such as accumulated sediments at the outfall headwall, large rocks, rubble, fallen trees and branches and other waste materials (litter, grass cuttings etc) removed so that water can flow freely.

3.34 Attenuation Basins and Swales

Key Maintenance Requirements:

- Litter/trash removal
 - Inlet/outlet headwall inspection and cleaning
 - Vegetation management
 - Sediment monitoring and removal when required
- 3.35 Regular inspection and maintenance is important for the effective operation of the attenuation basin. The basin will be subject to a routine monitoring and maintenance schedule as part of the general site management. This will be carried out at intervals detailed below, and shall comprise of the following operations:
Collection and removal of all litter/large debris from the attenuation pond, inlets, outflows, and water margins once a month.
Monthly inspection of the attenuation ponds to check the following, and repair as necessary:
1. Any failure in the operation of the inlet and outlet headwalls unless adopted by others in which case they will be notified of any observed defect.
 2. Any damage or erosion to the perimeter edges and slopes of the attenuation ponds.
- 3.36 The attenuation basin will be sown with two grassland seed mixes to create a simple mosaic of grassland habitat. The floor of the basin will be seeded with a wet meadow mix (WF2), whilst the banks will be seeded with a standard wildflower meadow mix (WF1) as detailed on the landscape proposals drawings.



3.37 Ground preparation

The basin should be constructed of predominantly low fertility subsoil, with only a thin upper layer of topsoil to be left after ground modelling to take up in-perfections in the soil surface. Final surface to be harrowed / fully cultivated to break-up large soil clods.

The basin area should then be continually cultivated of a period of several weeks to remove unwanted surface vegetation and weeds prior to meadow seeding. No herbicide is to be used due to the sensitive location for the basin construction. The ground should be cultivated to form a medium tilth and basin to be seeded at the recommended sowing rate, followed by light rolling (if necessary) throughout the meadow area.

3.38 Landscape Maintenance (Year 1)

In the first year, meadow areas should be managed more intensively to prevent the intrusion of invasive ground flora and allow a diverse sward to develop. The first cut should occur when the grass reaches approximately 100mm, down to 50mm, followed by subsequent cuts every 4-6 weeks down to 50mm throughout the first growing season.

- 3.39 Meadow areas should be monitored to assess the growth of any invasive species and grassland areas should be hand-weeded or spot swiped for any perennial weeds such as docks, nettles and ragwort.

3.40 Landscape Maintenance (Year 2 onwards)

Meadow areas will be maintained with a bi-annual cuts in May / June and after seed has dropped in late September. Meadow grassland should be cut to a height of approximately 100mm. All arising should be allowed to lay in-situ for 24 hours before being removed from site in order to allow any wildlife using the basin to disperse. No fertiliser should be added to the grassland at any time and an annual monitoring visit to the grassland should be conducted to inform management that may be required.

- 3.41 An annual check carried out by a suitably qualified person, to assess the condition and operation of the attenuation basin inlet and outflow, and the accumulation of silt/sediment.
- 3.42 A record of maintenance visits and remedial operations shall be maintained.
- 3.43 The above operations shall (where feasible) be in conjunction with routine grounds maintenance operations to the surrounding landscape.

Basin Operation and Maintenance Requirements

Maintenance schedule	Required action	Frequency
Regular maintenance	Litter, debris and trash removal.	Monthly.
	Grass cutting – for landscaped areas and access routes.	Monthly (during growing season), or as required.
	Grass cutting – 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).
Occasional maintenance	Re-seed areas of poor vegetation growth.	Annually, or as required.
	Prune and trim trees and remove cuttings.	As required.
	Remove sediment from pre-treatment system when 50% full.	As required.
Remedial actions	Repair of erosion or other damage by re-seeding or re-turfing.	As required.
	Realignment of rip-rap.	As required.
	Repair/rehabilitation of inlets, outlets and overflows.	As required.
	Rehabilitate infiltration surface using scarifying and spiking techniques if performance deteriorates.	As required.
	Re-level uneven surfaces and reinstates design levels.	As required.
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly.
	Inspect bank/sides, structures, pipework, etc for evidence of physical damage.	Monthly.
	Inspect inlets and pre-treatment systems for silt accumulation. Establish appropriate silt removal frequencies.	Half yearly.
	Inspect infiltration surfaces for compaction and ponding.	Monthly.

3.44 Desilting of Attenuation Basins

In addition to regular routine items, SuDS maintenance will be carried out which may include de-silting the attenuation ponds, usually on a 10-15 year cycle depending on the on-going silt level checking.

This can be an intrusive operation when carried out within housing areas and prior to any planned desilting or dredging, consultation will be undertaken with both Buckinghamshire County Council and the Environment Agency.

3.45 Before any desilting operations are carried out, residents and members of the public in the general area will be informed and those in the immediate vicinity will be notified in writing well in advance of commencement of works.

3.46 The desilting work will be carried out under the supervision of consulting engineers and to a pre-agreed method statement. Such a method statement should be submitted in writing to the local authority and agreed in advance of the commencement of the works.



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- 3.47 Prior to desilting works commencing, a suitably qualified ecologist shall be appointed to undertake an assessment of the ecological interest within the pond and its margins. In the event that the attenuation ponds develop particular ecological interest, then careful consideration will be given to the timing of this operation.



4 Contact Information

For further information on the management and maintenance of SuDS on the development please contact:

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