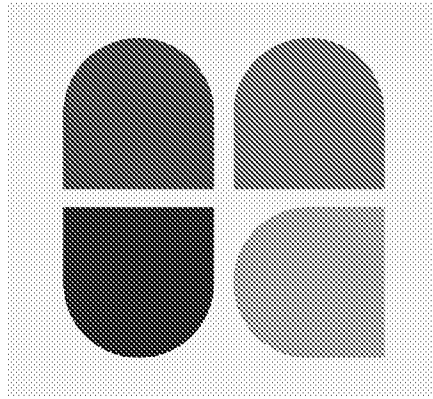




BRIGHT PLAN CIVILS

LAND AT LIDSEY ROAD, WOODGATE, WEST SUSSEX

RESIDENTIAL DEVELOPMENT

Drainage Maintenance Statement

Prepared on Behalf of

Thakeham

D1990/MS1.1

March 2022

DOCUMENT CONTROL

Project: Land at Lidsey Road, Woodgate, West Sussex
Residential Development

Document: Drainage Maintenance

Client: Thakeham

Reference: D1990/MS1.1

Document Checking:

Author: MJA

Date: 31/03/2022

Checked by: LDF

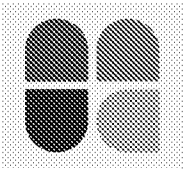
Date: 31/03/2022

Approved by: LDF

Date: 31/03/2022

Status:

Issue	Date	Status	Issued By
1.0	31/03/2022	Initial Issue	MJA
1.1	25/04/2022	Geocellular added	MJA



BRIGHT PLAN CIVILS

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D1990-SK01	Geotechnical Testing Plan
D1990-SK02	Impermeable Areas Plan
D1990-SK03	Exceedance Flow Plan
D1990-13.1	Technical Layouts
D1990-15.3, 15.4	Storage Basin Details
D1990-15.1,15-2	Drainage Details

1 INTRODUCTION

1.1 Background

- 1.1.1 Bright Plan Civils (BPC) is instructed by Thakeham to prepare a drainage maintenance strategy for a residential development in relation to the Land at Lidsey Road, Woodgate, West Sussex.
- 1.1.2 This drainage strategy has been prepared to support an application to discharge conditions relating to planning consent approved in outline by Arun District Council for a residential development.
- 1.1.3 The purpose of this document is to set out the basis of the development's drainage maintenance requirements as well ensuring that those who will be responsible for maintenance tasks and activities have a detailed programme for both inspection and maintenance. This is to ensure that the surface water and foul water drainage networks can operate effectively, and as designed. This document will assist in ensuring that the surface water drainage network is continually maintained for the lifetime of the development to help prevent an increased risk of flooding both on and off-site in accordance with the National Planning Policy Framework (NPPF).
- 1.1.4 The tasks detailed herewith are specific to the components applicable to the development and represent the minimum maintenance and inspection requirements. Additional tasks or varied maintenance frequencies may be deemed appropriate. The specific maintenance needs of the drainage infrastructure implemented on site should be monitored and maintenance schedules adjusted as necessary.
- 1.1.5 Those responsible for maintenance should adhere to current Health and Safety Legislation enforced at the time of the work(s) being undertaken.
- 1.1.6 This report has been prepared for the benefit of Thakeham.

2 PROPOSED DRAINAGE STRATEGY

2.1 Surface Water

- 2.1.1 A detailed drainage design for surface water run off was prepared by Bright Plan Civils for the development.
- 2.1.2 The below ground surface water drainage system at the site comprises a traditional piped system with permeable paving and a dry pond. This is shown on drawing **D1990/13.1 Technical Layout**. There are 2 surface water drainage "networks".
- 2.1.3 Network '1' serving the majority of the site will collect run-off and convey it to a dry attenuation basin. The basin will discharge to an ordinary watercourse adjacent the Lidsey Road at a restricted rate using a flow control device.
- 2.1.4 Network '2' serving the remainder of the site directly adjacent Lidsey Road. This network conveys flows to an ordinary watercourse adjacent to Lidsey Road. The discharge to Lidsey Road will be restricted by a flow control device and storage is provided by a cellular storage tank and permeable paving
- 2.1.5 In brief, the proposed surface water drainage system will include traditional drainage serving each of the dwellings, connected to private drainage located beneath the proposed roads. Some parking areas will be drained using permeable paving (tanked).

2.2 Foul Water Drainage

- 2.2.1 A detailed drainage design was prepared by Bright Plan Civils for the development.
- 2.2.2 This is shown on drawing **D1990/13.1 Technical Layout**. This shows that the proposed foul sewer network discharges to an existing public sewer within the eastern portion of the site.

3 MANAGEMENT AND MAINTENANCE

3.1 Responsibility for Maintenance

- 3.1.1 The proposed drainage system will not be offered for adoption therefore the responsibility for the ongoing maintenance of drainage network will fall to the end user(s).
- 3.1.2 Infrastructure which is 'shared' (i.e. serving more than a single plot and/or falling outside of any individual plot's curtilage) will be the responsibility of the Management Company.

3.2 General Maintenance

- 3.2.1 Maintenance plays an important part in the long-term performance of a surface water drainage system and will be required to ensure that it remains fully operational.
- 3.2.2 The drainage system has been designed to minimise maintenance requirements; however, a number of key tasks will need to be undertaken so that the system remains effective. These operations are summarised in the table below, along with the required frequency of works.

Drainage System feature	Proposed maintenance / remedial works	Required frequency of works
Permeable Paving	Surface sweeping to reduce silt and debris accumulation.	Every 8 to 12 weeks
	Removal / management of weed growth	At least once a year
	Silt removal from permeable surfaces, possibly involving raking out of joints, redressing, removal and remedial works.	As required / to be specified by manufacturer
Inlet, Outfall and Existing Watercourses	Inspection, vegetation clearance and additional clearing/cleansing of potential outfall blockages	At least once a year
	Desilting	Year 1, Year 3, then every 5 years
Diffuser units & catch pits, gully sumps and drains	Inspection and additional cleansing as required.	Annual
	Desilting	Year 1, Year 3, then every 5 years
Pipework	Jetting to clear blockages	As required

- 3.2.3 The responsibility of any drainage infrastructure supporting a single dwelling/plot will be the sole responsibility of the owner/occupier of the associated dwelling.
- 3.2.4 The ordinary watercourse adjacent to the site will be maintained by **Southern Housing Group Limited** in line with their legal obligations under the Land Drainage Act (1991/2010)' as shown within the redline boundary of the site'.
- 3.2.5 Additional maintenance activities beyond this will be the responsibility of the management company, to be appointed by the developer upon completion of the development. It is understood funding and maintenance will be provided by the **Southern Housing Group Limited** who are the housing association developing the site.

3.3 Permeable Paving / Diffuser Units

- 3.3.1 The areas of permeable paving are designed to allow surface water run-off to percolate through the joints in the block paving and into the sub-base below. This sub-base provides a volume of storage. The permeable paving will be tanked.
- 3.3.2 Diffuser units are used to discharge surface water run-off from roof areas into the sub-base, as well as forming links between areas of permeable paving. These diffuser units are small heavy-duty cellular units which allow more efficient discharge of surface water into the sub-base base of the permeable paved areas.
- 3.3.3 The areas of permeable paving will require the following maintenance:
- Periodic surface sweeping to reduce silt and debris accumulation. The permeable surfaces should be swept at least every 8 to 12 weeks with additional sweeps in the autumn to clear fallen leaves
 - Removal / management of weed growth, as required. Typically, once or twice a year for regularly used areas
 - Periodic silt removal from permeable surfaces as described by the manufacturer. If any areas are showing signs of ponding, they shall be dealt with by raking out the joints and redressing. The entire surface shall be monitored and when there are signs of excessive siltation resulting in poor drainage over the whole area, the blocks shall be taken up and the bedding layer shall be replaced. Redressing of joints on the block paving as required.
 - Performance of permeable paving areas shall be reviewed 3 months after installation and within 48 hours of a significant storm event.
 - Flow Control Chambers/Devices
 - A flow control chamber (such as a HydroBrake or Crown Vortex Flow Control) or device is self-activating, relying on upstream hydraulic head to generate an air-filled vortex within the centre of the casing. Once the vortex is initiated water drains down through a small opening in the back of the device at the designed restricted flow rate.
 - The flow control device includes a bypass valve for use should it become blocked. A valve is situated in the front of the unit which is operated from the surface by a release cable situated just under the chamber cover. The valve also proved access of rodding of the downstream pipework.

- The flow control chamber will require the following maintenance:
- The sump within the flow control chamber should be monitored for build-up of silts and should be emptied as a minimum on the same regime as specified for catchpits previously within this document.
- The drain down door located on the centre of the unit will require inspection and opening annually, to ensure it is operating as intended.

3.4 Dry Basin

3.4.1 The inlets and outlets to the dry pond should be checked regularly for blockages to ensure free flowing conditions into and through the structure. Excessive silt, detritus and vegetation building should be removed and disposed of.

3.4.2 It is recommended that regular maintenance is undertaken in accordance with the following schedule:

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass in and around structure	Monthly (during growing season) or as required
	Manage other vegetation and remove nuisance plants	Monthly at start and then as required
	Inspect inlets and outlets for blockages and clear as required	Monthly
	Inspect banks for damage and repair as required	Monthly
	Inspect inlets and structure surface for silt accumulation. Establish silt removal frequency	Monthly for first year then annually or as required
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlet	Annually or as required
Occasional Maintenance	Reseed areas of poor growth	As required
	Trim overhanging trees and remove cuttings	Every 2 years
Remedial Actions	Repair erosion or other damage by reseedling or returfing	As required
	Repair inlets and outlets	As required

	Relevel uneven surfaces and reinstate design levels	As required
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3.5 Geocellular Storage

3.5.1 The inlets and outlets to the geocellular storage should be checked regularly for blockages to ensure free flowing conditions into and through the structure. Excessive silt, detritus and vegetation building should be removed and disposed of.

3.5.2 It is recommended that regular maintenance is undertaken in accordance with the following schedule:

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect inlets and outlets for blockages and clear as required	Monthly
	Remove debris from the catchment surface (where it may cause risks to performance)	
	Remove sediment from pre-treatment structures	Annually or as required
Remedial Actions	Repair / rehabilitate inlets, outlets, overflows and vents	As required
	Inspect / check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually or as required
	Relevel uneven surfaces and reinstate design levels	As required
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

3.6 Remedial/Repair Actions

- 3.6.1 Significant storm events may cause considerable damage to SuDS and their associated components. As such, it may be necessary to inspect and carry out essential recovery works to return the feature to full working order.
- 3.6.2 Resetting of uneven blocks by lifting block area, removing bedding material and relaying to match original design are all actions which may need to be undertaken.

3.7 Accidental Spillages

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

3.8 Construction Phasing

- 3.8.1 It is recommended that the construction of the dry attenuation basin, the flow control and outfall connection are completed prior to the commencement of construction of the buildings and hardstanding areas. This will ensure that flows are controlled and treated during construction. The proposed drainage systems will need a complete maintenance check upon completion of the development and any required remedial tasks undertaken.
- 3.8.2 By constructing these drainage components first, runoff from the construction site and the hardstanding areas will travel overland into the storage. This will ensure that run-off from the site receives the level of treatment required by the SuDS manual.

3.9 Future Alterations to the Development

- 3.9.1 Any future alterations to the permeable paving should be confirmed by a specialist. Where possible any future services are to avoid being located through areas of permeable paving. If new services are required to run through areas of permeable paving, services should be installed below the permeable paving level with the permeable system reinstalled above.

DRAWINGS