



**PHASES 3E AND 3F BOORLEY GARDENS
LAND NORTH WEST OF WINCHESTER ROAD, BOORLEY GREEN, HAMPSHIRE
APPLICATION NO. X/19/84943**

DRAINAGE MAINTENANCE MANAGEMENT PLAN

Introduction

1. This Drainage Maintenance Management Plan has been prepared on behalf of Miller Homes and Bellway Homes in connection with the residential development on Phases 3E and 3F of Boorley Gardens in Hampshire. It has been produced in order to discharge Condition 11 of the planning permission granted by Eastleigh Borough Council in March 2021 under Application X/19/84943.
2. Condition 11 states that *“No development shall take place in any phase as shown on phasing plan P1388.PH.01 rev D (or an alternative phasing plan as otherwise agreed by the LPA), until a surface water drainage scheme for that phase, based on sustainable drainage principles and an assessment of the hydrological and hydro-geological context of the development, has been submitted to and approved in writing by the LPA. The drainage strategy should demonstrate the surface water run-off generated up to and including the 1:100 year event critical storm (plus 30% climate change allowance) will not exceed the run-off from the undeveloped site following the corresponding rainfall event. The scheme shall subsequently be implemented in accordance with the approved details before the development is completed.”*
3. Condition 11 continues to state that “Those details shall include: ...
 - ***A management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its life to maintain operational water quality.”***
4. This Drainage Maintenance Management Plan describes the proposed surface water drainage scheme, and provides details of how the scheme shall be maintained and managed after completion, in accordance with Condition 11.

The Surface Water Drainage Scheme

5. The proposed surface water drainage scheme for all of the proposed development incorporates a standard piped surface water drainage system, discharging to SuDS components comprising of swales and detention basins, which in turn control the rate of discharge and safeguard water quality, prior to discharge into the Moorgreen Stream. The overall strategy for the site means that the proposals do not increase flood risk downstream and maintain water quality.
6. The surface water drainage scheme for Phases 3E & 3F is shown on Drawing Number M380/114 Revision F, reproduced at **Appendix A**. The drawing shows the main drainage, including Detention Basin D.
7. The surface water system from Basin D is connected to Basin C via the pipe run North West of Basin D.

8. The connection from Basin C to the Moorgreen Stream is shown on Drawing Number M434/56 Revision F, as shown at **Appendix B**. This indicates a piped connection ending at the outfall swale into the Moorgreen Stream; the connection serves Phases 2 and 3D to 3H.
9. The drainage scheme incorporates SuDS components to manage water quantity and maintain water quality in accordance with best practice guidance including The SuDS Manual 2015 (Ciria C753).

Maintenance Strategy

10. Paragraph 81 in the Flood Risk and Coastal Change Planning Practice (Reference ID: 7-081-20150323) to the National Planning Policy Framework states that in considering a development that includes a sustainable drainage system the local planning authority will want to be satisfied that there are clear arrangements in place for ongoing maintenance.
11. In terms of the general maintenance strategy for the proposed drainage measures on the development site, the main surface and foul water drainage systems are to be adopted by Icosa Water, in its role as sewerage undertaker, under a Section 104 Agreement of the Water Industry Act 1991. Icosa Water would therefore be responsible for the future maintenance of the adopted drainage systems.
12. Roads and footways, including highway drainage and gullies, to be adopted under Section 38 of the Highways Act 1980, would be maintained by Hampshire County Council in its role as local highway authority.
13. Private roads and footways, including road drainage and gullies, will be the responsibility of a Management Company.
14. All existing retained ditches within the development will remain the responsibility of the Lead Local Flood Authority (LLFA – Hampshire County Council).
15. The existing retained Moorgreen Stream (a main river) will remain the responsibility of the Environment Agency (EA).
16. Individual householders would be responsible for the drainage systems within their curtilages and/or within shared areas.
17. Under the Design and Construction Guidance, issued by Water UK in October 2019, which is to be read in conjunction with the Sewerage Sector Guidance published by the sewerage undertakers pursuant to the '*Code for adoption agreements for water and sewerage companies operating wholly or mainly in England*' (the Code), SuDS components may be adoptable by the sewerage company. Icosa Water in this case agree with the interpretation that SuDS can be considered sewers, and are therefore adopting the SuDS components.
18. The SuDS components, comprising detention basins and swales, would therefore be maintained by a Sewerage Undertaker. A 12 month functioning period would apply where the developer would be responsible for the maintenance of the SuDS components before handover to the Sewerage Undertaker.

Operation and Maintenance Requirements

19. Guidance on the operation and maintenance of Sustainable Drainage Systems (SuDS) is provided in The SuDS Manual 2015 (Ciria C753). It is intended that the detention basins and swale are maintained generally in accordance with this guidance.
20. There are three categories of maintenance: regular, occasional, and remedial. In addition, remedial inspections should be undertaken as soon as possible as a result of notification of a defect by a third

party, e.g. police or public. The purpose of remedial inspections is to identify obvious deficiencies which represent, or might lead to, a danger to the public and, therefore, require immediate or urgent attention.

21. Maintenance inspections must be undertaken by personnel with the minimum health, experience and, where appropriate, qualification requirements for the particular inspection type. The results of the inspections shall be recorded on Maintenance Inspection Checklists and the records saved for future reference.
22. Regular maintenance consists of basic tasks including litter and debris removal, and includes inspections and monitoring to identify potential system failures such as blockages, silt and sediment build-up, eroded or damaged areas, and condition of inlets and outlets.
23. Occasional maintenance comprises tasks that are likely to be required periodically and includes sediment removal and reseeding areas of poor vegetation growth
24. Remedial Maintenance comprises intermittent tasks to rectify faults and includes inlet/outlet repairs, erosion repairs, and removal of oils/petrol.
25. The required actions in the event of a blockage are part of regular maintenance. For the detention basins and swales, the required action is to inspect all road gullies, inlets, outlet headwalls, chambers, control chambers, and outfall headwalls, for blockages and clear if required, which is to be done on a monthly basis.
26. Guidance on the type of operation and maintenance requirements that may be appropriate for the detention basins, including required actions and typical frequency, are shown in **Table A** below, and the corresponding guidance for the swale is shown in **Table B** below. The list of activities, which is based on The SuDS Manual 2015 (CIRIA C753), is not exhaustive and some actions may not be required.
27. The Sewerage Undertaker would be responsible for implementing the Maintenance Management Plan for the detention basins, swales and piped systems, including carrying out remedial inspections.
28. The Management Company would be responsible for implementing the Maintenance Management Plan for the existing ditches, including carrying out remedial inspections.
29. A SuDS Maintenance Inspection Checklist is contained in **Appendix C**. This Checklist enables maintenance inspections to be recorded for review and remediation by the Sewerage Undertaker and the records saved for future reference.

Table A: Operation and maintenance requirements for detention basins

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – 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)
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect any lifebuoys, banks, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly (for first year), then annually or as required
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually (as set out in Chapter 23)
Occasional Maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required
Remedial Actions	Repair erosion or other damage by reseedling or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

Source: The SuDS Manual 2015 (CIRIA C753)

Table B: Operation and maintenance requirements for swales

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly, or as required
	Cut grass – to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	Monthly, or when required
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Half yearly
Occasional Maintenance	Remove sediment from outlets when required	Every 5 years, or as required
Remedial Actions	Repair erosion or other damage by re-turfing or reseeding	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt depositions and prevent compaction of the soil surface	As required
	Remove build-up of sediment or upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

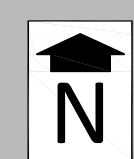
Source: The SuDS Manual 2015 (CIRIA C753)

Summary

30. This Drainage Maintenance Management Plan describes the proposed surface water drainage scheme, and sets out details of how the scheme shall be maintained and managed after completion, including confirmation of adoption and maintenance of all drainage proposals, and the maintenance strategy, frequency of inspections and required actions in the event of a blockage.
31. The main surface water drainage system would be adopted by Icosa Water, in its role as sewerage undertaker, under a Section 104 Agreement of the Water Industry Act 1991.
32. Roads and footways, including highway drainage and gullies, to be adopted under Section 38 of the Highways Act 1980, would be maintained by Hampshire County Council in its role as local highway authority.
33. Private roads and footways, including road drainage and gullies, will be the responsibility of a Management Company.
34. All existing retained ditches and culverts within the development will transfer over to and will be the responsibility of the Management Company.
35. Individual householders would be responsible for the drainage systems within their curtilages and/or within shared areas.
36. The SuDS components, comprising detention basins and swales, and the filter drainage systems, would be maintained by the Sewerage Undertaker (Icosa Water).
37. The application of the maintenance schedules set out in Table A and Table B, and use of the SuDS Inspection Maintenance Checklist, would ensure there are clear arrangements in place for ongoing maintenance of the SuDS components and filter drainage systems including recording the results of inspections for future reference.

APPENDICES

Appendix A	Drawing No. M380/114 Revision F
Appendix B	Drawing No. M3434/56 Revision F
Appendix C	SuDS Maintenance Inspection Checklist



For Planning
These drawings are produced for the purposes of supporting a planning application and should not be relied upon for tender, pricing, or construction purposes.

NOTES

- Drawing based on Topographical Survey by Anthony Brookes Surveys Ltd, drawing number A258/7834/1, dated June 2014.
- On-site road layout based on AAP Architecture's Drawing Number: #1388-3000 Revision ZK dated 9 March 2022.
- The works shown on this drawing could affect Statutory Undertaker's apparatus and the Contractor is required to verify the location and depth of all such apparatus prior to commencement of the works and to take any precautions necessary when working in the vicinity of any such apparatus.
- An adoptable highway works to be in accordance with the Hampshire County Council's 'Companion Document for Manual for Streets' and the Specification for Highway Works (S18) November 2009 as amended published by The Stationery Office.
- All trapped gullies to incorporate amphibian escape ramps, as manufactured by The British Herpetological Society or similar, as found at: <https://www.thebhs.org/bte-bhs-amphibian-gully-pot-ladder>
- Subject to detailed design.

ADOPTABLE 'MAIN' DRAINAGE KEY

- F238 Foul Water Sewer & Manhole (S104)
- S140 Surface Water Sewer & Manhole (S104)
- S114 Surface Water Sewer & Manhole (Management Company)
- Rising Main from Phase 2 to Winchester Road Outfall
- Potential Rising Main from Phase 1 Pumping Station
- Proposed Pumping Station to serve Phases 2 & 3 (with 15m offset to habitable buildings)

Rev	Date	Description	Drawn	Check
#	24/10/19	First Issue	BDC	DRB
A	10/03/20	Manhole and pipe numbers added/updated	BO	DRB
B	16/07/21	Drawing updated in accordance with the revised Planning Layout, now at Revision P	JW	DRB
C	13/10/21	Drawing updated in accordance with revised Planning Layout, now at Revision Y	JW	DRB
D	29/11/21	Drawing updated in accordance with revised Planning Layout, now at Revision ZD	HE	DRB
E	11/03/22	Drawing updated in accordance with revised Planning Layout, now at Revision ZK	JM	DRB
F	17/05/23	Note added regarding amphibian escape ramps in gullies, as required by the Ecology Officer.	DRB	CI

Status
FOR PLANNING

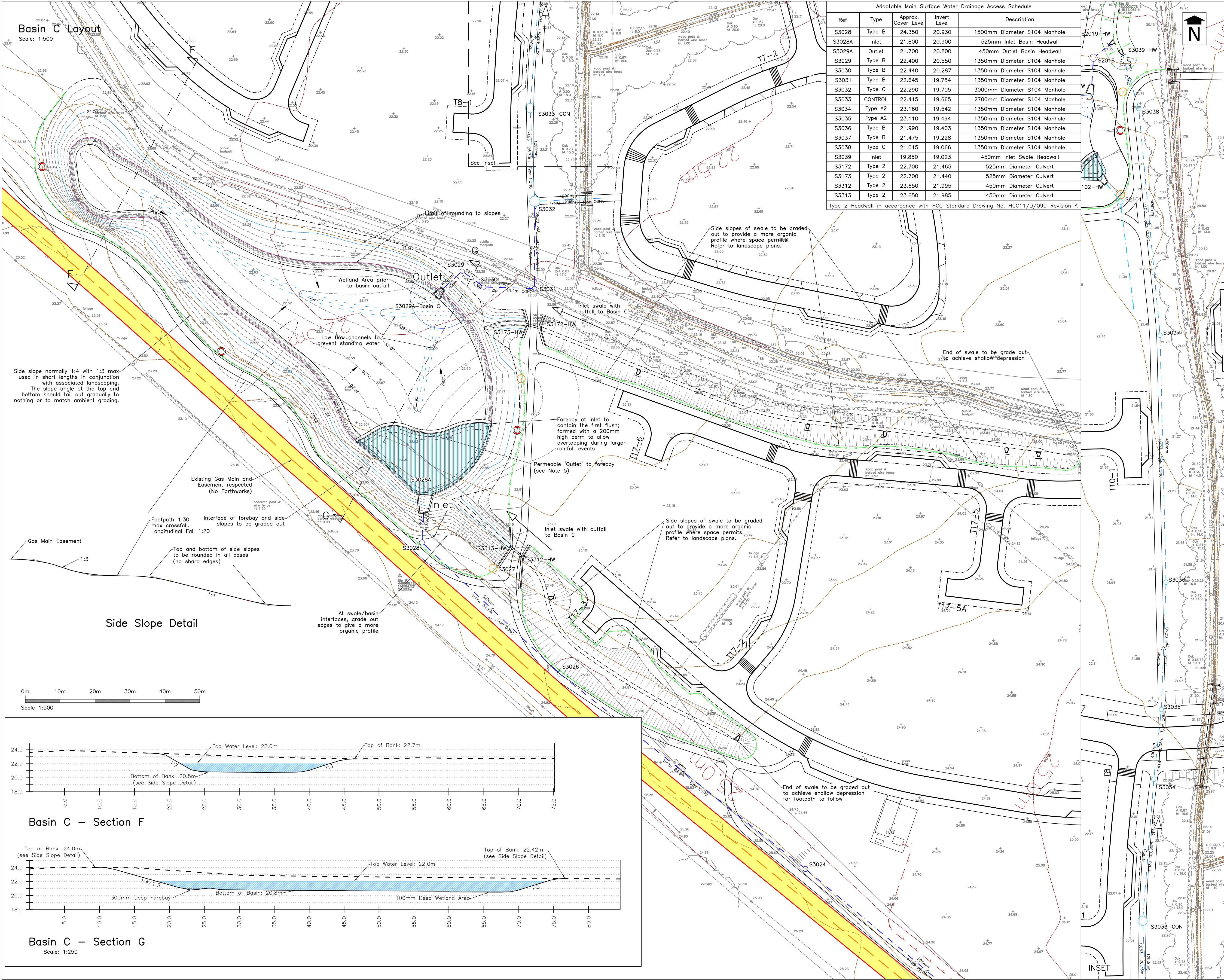
Client
millerhomes

Project
**Boorley Gardens
Winchester Road
Hedge End
Phase 3**

Drawing Title
**Planning Application
Main Drainage
Sheet 1 of 2**

Drawing No. **M380/114** Rev F
Date: October 2019 Scale: 1:500 @ A0
E-Mail: dtrock@pfapl.com

INSET
Scale 1:500



Stratton Park House, Wanborough Road
Swindon, SN3 4HG

Telephone
01793 828000

Website
www.pfapl.com

For Construction
These drawings are produced, together with any related data, to inform the setting out and construction of the works. To be read in conjunction with all working drawings.

NOTES

- To be read in conjunction with Drawing Number M380/2, Indicative Surface Water Drainage Strategy.
- Top Water Level based on 1 in 100 year rainfall event, + 40% allowance for climate change.
- Location/design of Swales, Low Flow Channels and Wetland areas and surface water sewers are indicative, as per Drawing M380/2 Rev F, and subject to detailed design.
- Landscaping of basins, wetlands and swales subject to detailed design.
- Permeable 'Outlets' to forebays to be constructed using gabion baskets filled with 4-20 crushed stone.

KEY

- Wetlands Area
- Forebay Area
- Swale
- S3030 SW Sewer
- Timber Knee Rail
- Warning Sign; to read 'Danger Deep Water - Keep Out'
- Lifebuoy ring; Type as required by Icoca

Rev	Date	Description	Drawn	Check
#	27/08/21	First Issue.	DRB	CI
A	07/10/21	Connection pipe to Moorgreen Stream added for additional information.	DRB	CI
B	03/11/22	Drainage layout updated. Knee rails shown at basins and swales as required by Icoca.	DRB	CI
C	07/12/22	Access schedule added to enable construction of the basin outfall connection.	DRB	CI
D	14/12/22	Size of manholes S3032 and S3033 corrected in the access schedule.	DRB	CI
E	27/01/23	Headwalls S3028A and S3029A reviewed in schedule.	DRB	CI
F	23/02/23	Culverts S3172, S3173, S3312 and S3313 added to schedule.	JM	DRB

Status

FOR CONSTRUCTION

Client

millerrhomes
Bellway

Project

Boorley Gardens
Winchester Road
Hedge End
Phase 2

Drawing Title

Surface Water Detention
Basin C

Drawing No.

M434/56

Rev F

Date: August 2021

Scale: As Shown @ A1

E-Mail: dbrock@pfapl.com

SuDS MAINTENANCE INSPECTION CHECKLIST

General Information	
Site ID	
Site Location and co-ordinates (GIS if appropriate)	
Elements forming the SuDS scheme	
Inspection Frequency	
Type of development	

Inspection Date				
	Details	Y/N	Action required	Date Completed
General Inspection Items				
Is there any evidence of erosion, channelling, ponding (where not desirable) or other poor hydraulic performance?				
Is there any evidence of accidental spillages, oils, poor water quality, odours or nuisance insects?				
Have any health and safety risks been identified to either the public or maintenance operatives?				
Is there any deterioration in the surface of permeable or porous surfaces (e.g. rutting, spreading of blocks or signs of ponding water)?				
Silt/Sediment Accumulation				
Is there any sediment accumulation at inlets (or other defined accumulation zones such as the surface of filter drains or infiltration basins and with proprietary devices)? If yes, state depth (mm) and extent. Is removal required? If yes, state waste disposal requirements and confirm that all waste management requirements have been complied with (consult environmental regulator).				
Is surface clogging visible (potentially problematic where water has to soak into the underlying construction or ground (e.g. under drained swale or infiltration basin)?				
Does permeable or porous surfacing require sweeping to remove silt?				
System Blockages and Litter Build-Up				
Is there evidence of litter accumulation in the system? If yes, is this a blockage risk?				

SuDS MAINTENANCE INSPECTION CHECKLIST

Inspection Date				
	Details	Y/N	Action required	Date Completed
Is there any evidence of any other clogging or blockage of outlets or drainage paths?				
Vegetation				
Is the vegetation condition satisfactory (density, weed growth, coverage etc)? (Check against approved planting regime).				
Does any part of the system require weeding, pruning or mowing? (Check against maintenance frequency stated in approved design)				
Is there any evidence of invasive species becoming established? If yes, state action required.				
Infrastructure				
Are any check dams or weirs in good condition?				
Is there evidence of any accidental damage to the system (e.g. wheel ruts?)				
Is there any evidence of cross connections or other unauthorised inflows?				
Is there any evidence of tampering with the flow controls?				
Are there any other matters that could affect the performance of the system in relation to the design objectives for hydraulic, water quality, biodiversity and visual aspects? (Specify).				
Other Observations				
Information appended (e.g. photos)				
Suitability of Current Maintenance Regime				
Continue as current Increase maintenance Decrease maintenance				
Next Inspection				
Proposed date for next inspection				

Source: The SuDS Manual 2015 (CIRIA C753)