Consulting Civil Engineers

Foul and Surface Water Drainage Strategy Report

Wildfowlers, Shore Road, Bosham, Chichester PO18 8QL

For

Mr & Mrs Bradley

Rev - **P**

Reference **C2104**

Date **17th June 2022**

Revision	Date of Issue	Comments	Prepared By	Checked By
P	17.06.2022	Initial Issue	LH	CS

Richard Cobden House, Lion Street, Chichester, West Sussex, PO19 1LW
Tel: 01243 933253 E: mail@cgscivils.co.uk W: www.cgscivils.co.uk

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1 Introduction

1.1.1 CGS Civils Ltd have been appointed by Mr & Mrs Bradley to undertake a drainage strategy report for a proposed development at Wildfowlers, Shore Road in Bosham, Chichester.

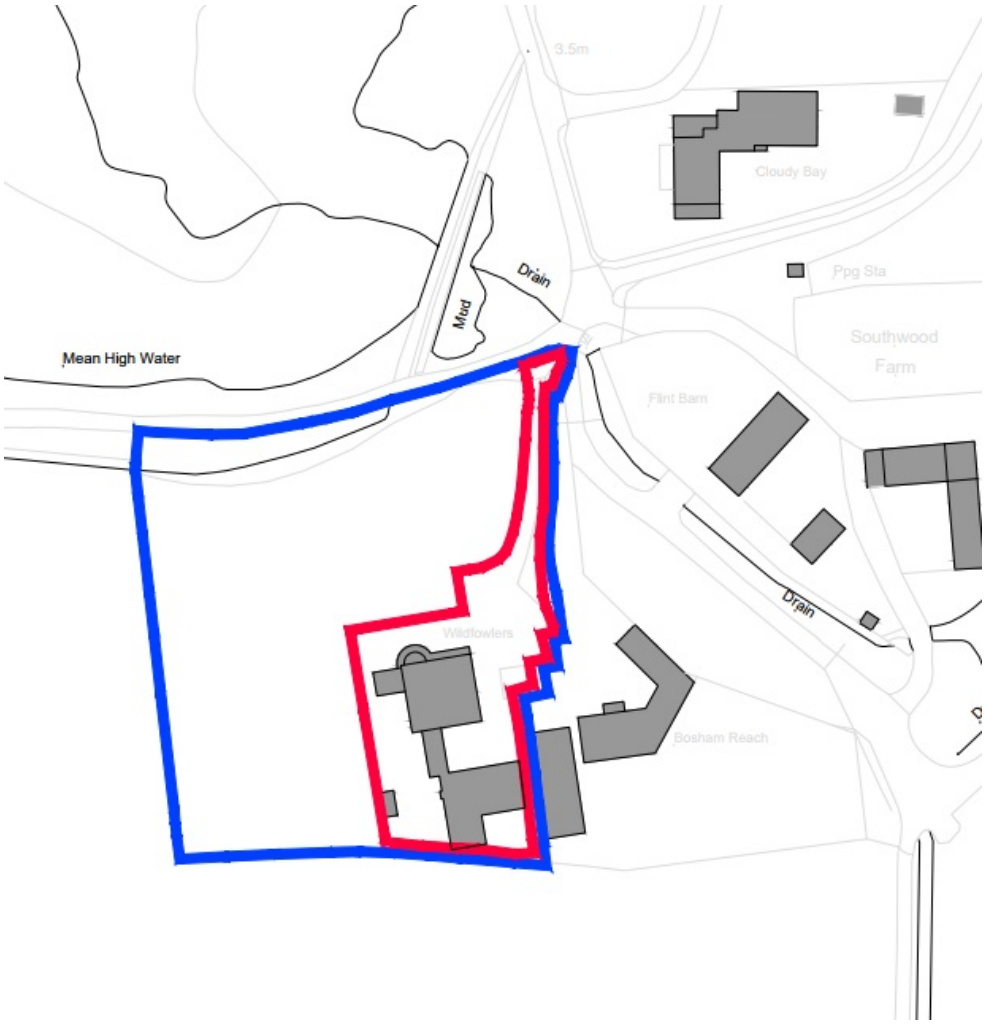
1.1.2 The purpose of this drainage strategy is to demonstrate how the development area can be satisfactorily drained without increasing flood risk onsite and elsewhere.

1.1.3 The existing site consists of a single domestic dwelling with an external hot tub and greenhouse. The proposed development will consist of the demolition of the existing dwelling and greenhouse and the development of a new dwelling house with the development of an external pool.

1.1.4 The proposed development is located as OS Grid Reference SU 80576 03216 and has the post code PO18 8QL.

1.1.5 The proposed site plan can be found in **Appendix A.**

Fig 1. Site Location



2 Site Geology

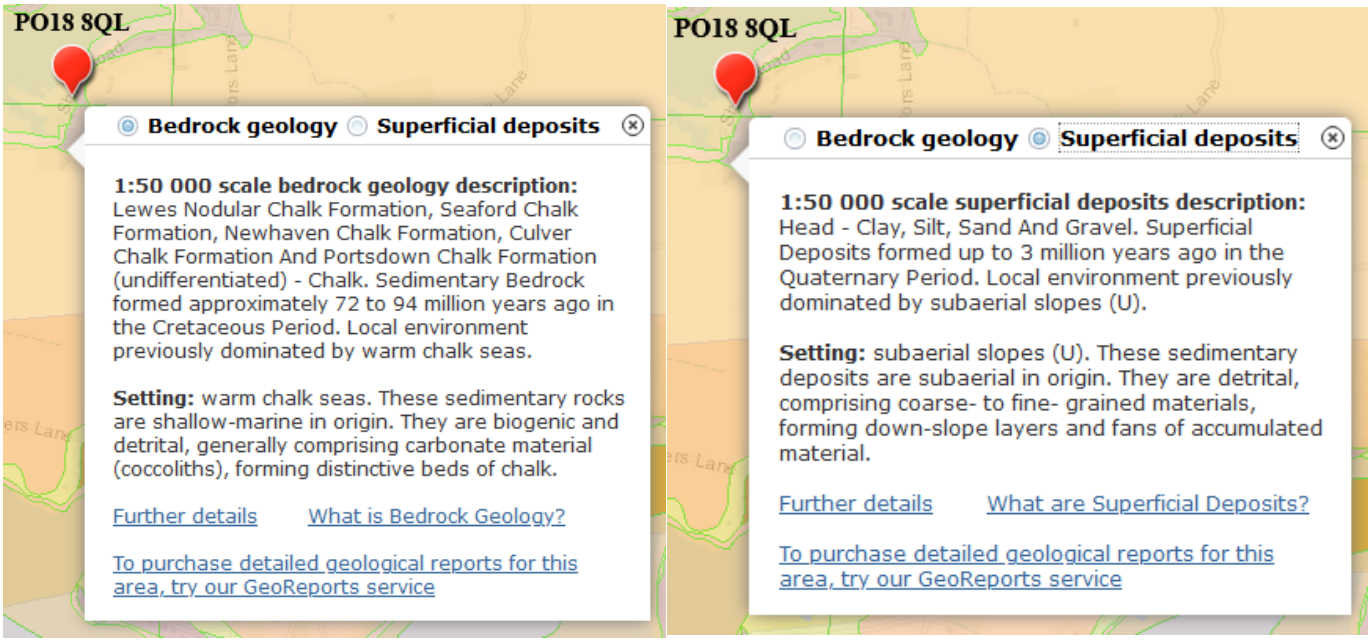
2.1 British Geological Survey information

2.1.1 The British Geological Survey confirms the bedrock geology to be made up of multiple chalk formations. The BGS website confirms the superficial deposits on site to be made up of Head Formation, which is comprised of Clay, Silt, Sand and Gravel.

2.1.2 The British Geological survey also holds records of historical boreholes near the site which give some insight into the ground geology.

- Borehole SU80SW84 (Located approx. 663m East of the site) – Clay, Silt, Sand and Chalk

Fig 2. British Geological Survey



3 Existing Drainage

3.1.1 It is not currently known how the existing site discharges surface water runoff. However, it is believed that surface water discharges ground via infiltration.

4 Proposed Drainage Strategy

4.1 SuDS Hierarchy

4.1.1 All options for the destination of run-off generated on site have been assessed in line with the SuDS hierarchy as set out in Building Regulations Part H document and DEFRA's Draft National Standards for SuDS.

Discharge Destination	
Discharge to Ground	Yes – Restricted to an assumed infiltration rate of $1x10^{-5}$m/s
Discharge to Watercourse	N/A
Discharge to Surface Water Sewer	N/A
Discharge to Other Sewer	N/A

4.2 Surface Water Drainage

4.2.1 Based upon the information gathered from the British Geology Survey website, it is proposed that all surface water runoff is to be discharged to ground via infiltration at an assumed rate of $1x10^{-5}$m/s. All roof areas are to be collected into a positive drainage network before being discharged to ground through the use of a geocellular soakaway and all hard paved areas are to be freely drained to ground via porous construction. All infiltration features on site have been designed to cater for the 1 in 100-year +40% storm. An infiltration test to BRE 365 is required to be undertaken to confirm the infiltration rate of the soil on site.

4.2.2 Hydraulic calculations have been carried out which can be found at Appendix C.

4.3 Foul water drainage

4.3.1 The foul water will discharge into a new private foul water treatment plant, all treatment effluent runoff will be discharged into ground via percolation through the use of a drainage field. This is subject to a percolation test to BS 6297.

5 Maintenance

5.1 Introduction

5.1.1 During construction, the Contractor will be responsible for maintaining the drainage and SuDS (Sustainable Drainage Systems). Upon handover, the occupier will take on the responsibility of these duties as laid out in this report.

5.1.2 The maintenance schedule for the proposed development will be split down into two separate categories; SuDS features and regular private drainage.

5.2 SuDS at Wildfowlers, Shore Road in Bosham

5.2.1 As listed above, in section 5.1.2, the SuDS features used on site will be **Soakaway and Permeable Paving**

5.2.2 The SuDS features have been designed for easy maintenance and comprise:

- Regular Day-to-Day care – litter collection, regular gardening to control vegetation growth and checking inlets where water enters the SuDS features
- Occasional tasks – checking the SuDS features and removing any silt that builds up in the SuDS feature
- Remedial work – repairing damage where necessary

5.3 SuDS Drainage Maintenance Specification

5.3.1 **Soakaway**

In order to maintain the functioning of the attenuation tanks, the following maintenance requirements should be adhered to:

Table 21.3 Operation and maintenance requirements for attenuation storage tanks

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 catchment surface (where it may cause risks to performance)	Monthly
	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
	Remove sediment from per-treatment structures 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 sediment build-up and remove if necessary	Every 5 years or as required

5.3.2 **Permeable Paving**

In order to maintain the functioning of the permeable paving, the following maintenance requirements should be adhered to:

Table 21.3 Operation and maintenance requirements for permeable paving

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required take remedial action	Three-monthly, 48h after large storms in first six months
	Inspect silt accumulation rate and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

5.4 General Drainage Maintenance Specification

5.4.1 Inlet Structures and Inspection Chambers

- Inlet structures such as rainwater downpipes, road gullies and channel drains should be free from obstruction at all times to all free flow through the SuDS
- Inspection Chambers and Rodding Eyes are used on bends or where pipes come together. They allow access and cleaning to the system if necessary.

Inlet Structures and Inspection Chambers	
Regular Maintenance	**Frequency**
Inlet Structures **Inspect rainwater downpipes, channel drains and road gullies, removing obstructions and silt as necessary. Check that there is no physical damage.** **Strim vegetation 1m min surround to structures and keep area free from silt and debris**	Monthly
Inspections Chambers and below ground control chambers. **Remove cover and inspect, ensuring that the water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt.** **Undertake inspection after leaf fall in Autumn**	Annually
Occasional Maintenance **Check topsoil levels are 20mm above edges of chambers to avoid mower damage.**	As necessary
Remedial Work **Repair physical damage if necessary**	As required

5.4.2 Below ground drainage pipes

- Below ground drainage pipes convey water to the SuDS system. They should always be free from obstruction to allow free flow.

Below Ground Drainage Pipes	
Regular Maintenance	**Frequency**
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 catchment surface (where it 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.	Monthly or as required
Remedial Work **Repair physical damage if necessary**	As required
Monitoring **Inspect all inlets, outlets and vents to ensure that they are in good conditions and operating as designed.**	Annually
Survey inside of pipe runs for sediment build up and remove if necessary.	Every 5 years or as required

6 Summary and Conclusions

6.1.1 CGS Civils has been instructed by Mr and Mrs Bradley to produce a Drainage statement under National Planning Policy Framework (NPPF) to support the Planning Application for the development of a new domestic dwelling with exterior pool.

6.1.2 The Surface Water will discharge to ground via infiltration at an assumed rate of $1x10^{-5}$m/s. All roof areas are to be discharged to ground via infiltration through the use of a geocellular soakaway. The access road and parking area is to be constructed of a gravel surface to allow surface water runoff to freely discharge to ground via infiltration.

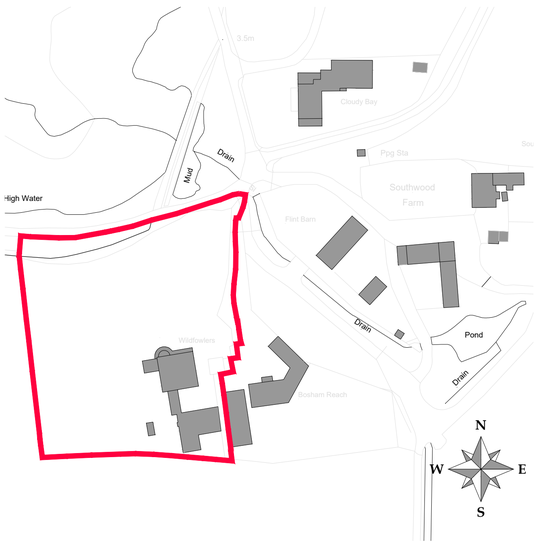
6.1.3 The Foul water will discharge into a new proposed onsite package treatment plant and all treated effluent runoff will be discharged into ground via percolation through the use of a drainage field.

6.1.4 The report has demonstrated that the proposed drainage measures ensure that suitable means of surface water and foul drainage can be achieved for the proposed development.

7 Appendices

7.1 Appendix A – Site Plan

Replacement Dwelling
At
Wildfowlers, Bosham
For
Mr & Mrs Bradley



Location Plan
(Scale 1:1250)

Site Plan
(Scale 1:200)

Fine Town & Country House Commissions Limited
from
Ian Adam-Smith
Chartered Architects

Highbuilding Farm, Vann Road, Fernhurst, Surrey, GU27 3NL
Tel: 01428 644 644
www.ianadam-smith.co.uk

Rev	Date	Details
-	-	-

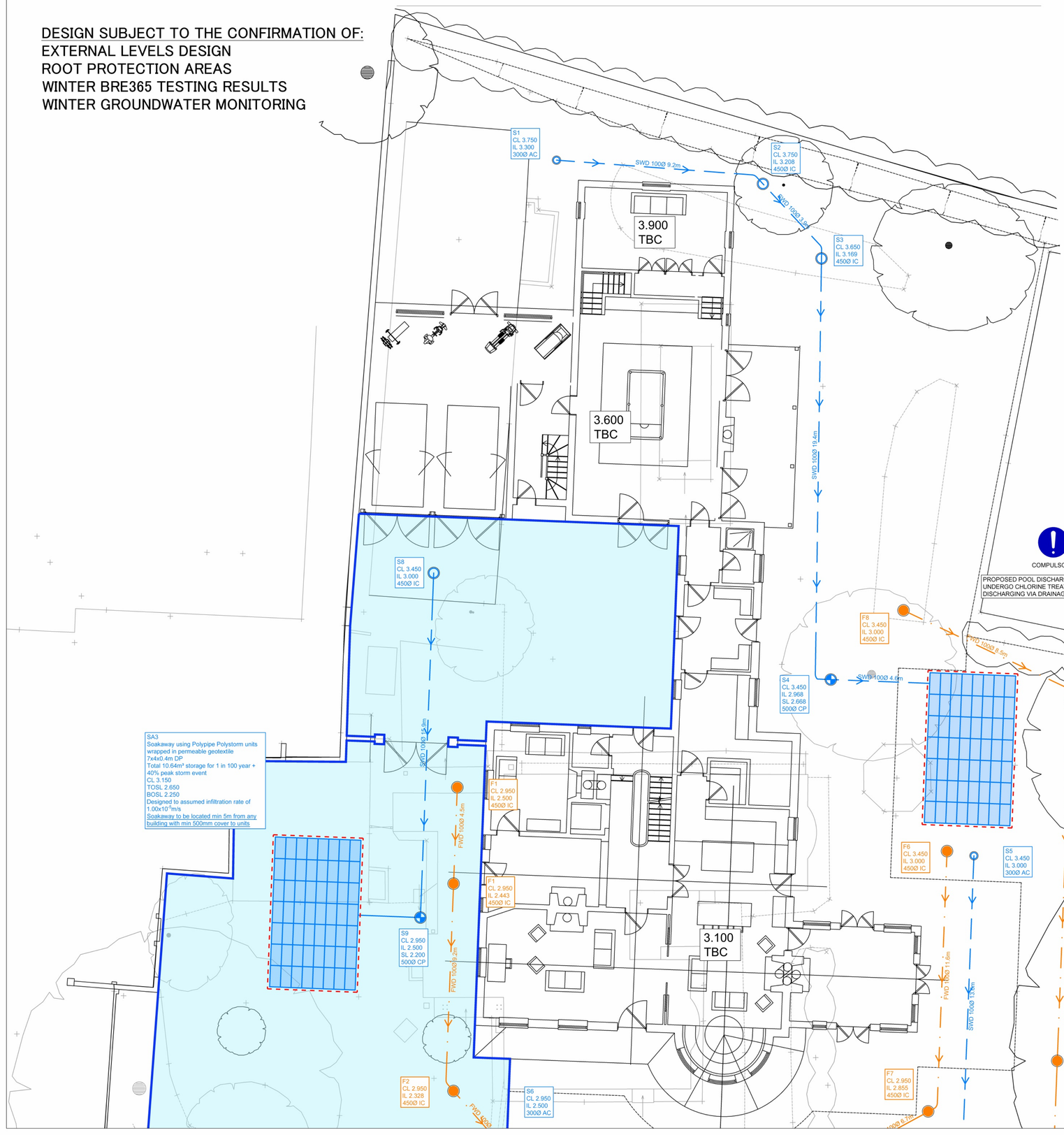
Scale Bar 1:200
0 2000 6000 10000 20000 Millimeters

Proposed Site & Location Plan
Drawing No. AS696/05
Date October 2021
Scale 1:1250/ 1:200

7.2 Appendix B – Drainage Layout

DESIGN SUBJECT TO THE APPROVAL OF:
PLANNING AUTHORITY
BUILDING CONTROL

DESIGN SUBJECT TO THE CONFIRMATION OF:
EXTERNAL LEVELS DESIGN
ROOT PROTECTION AREAS
WINTER BRE365 TESTING RESULTS
WINTER GROUNDWATER MONITORING



DRAINAGE LEGEND (1:100)

PROPOSED FEATURES

- SWD — Storm water sewer/drain
- Storm water access chamber (300Ø)
- Storm water inspection chamber (450Ø)
- Storm water catchpit chamber (450Ø)
- Gravel infiltrating driveway
- FWD — Foul water sewer/drain
- Foul water access chamber (300Ø)
- Foul water inspection chamber (450Ø)
- 00.000 — Finished floor level
- 100Ø 4.5m 1:100 Z BED — PIPE INFO - DIAMETER, LENGTH, GRADIENT, BEDDING TYPE

ABBREVIATIONS

MH	- MANHOLE
IC	- INSPECTION CHAMBER
AC	- ACCESS CHAMBER
CP	- CATCHPIT
BC	- BRAKE CHAMBER
RE	- RODDING EYE
IL	- INVERT LEVEL
SL	- SUMP LEVEL
CL	- COVER LEVEL

STANDARD DRAINAGE NOTES

1. DO NOT SCALE FROM THIS DRAWING, REFER TO FIGURED DIMENSIONS ONLY. THE CONTRACTOR SHOULD CHECK ALL DIMENSIONS ON SITE.
2. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECT AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
4. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT AND/OR ENGINEER IMMEDIATELY, SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO THE COMMENCEMENT OF WORK.
5. BEFORE COMMENCING CONSTRUCTION THE CONTRACTOR MUST CHECK THE INVERT LEVELS OF EXISTING SEWERS TO WHICH CONNECTIONS ARE MADE. IN ADDITION THE CONTRACTOR MUST LOCATE AND DETERMINE INVERT LEVELS OF THE EXISTING SPURS TO WHICH CONNECTIONS ARE PROPOSED. ANY DISCREPANCIES ARE TO BE NOTIFIED TO THE ENGINEER IMMEDIATELY, PRIOR TO CONSTRUCTION.
6. ALL DRAINAGE WORKS SHOULD COMMENCE AT THE PROPOSED DOWNSTREAM CONNECTION POINT. THE WORKS CONTINUING UPSTREAM FOLLOWING CONFIRMATION OF THE TIE-IN INVERT LEVELS TO THE ENGINEER. CONNECTIONS TO MANHOLES OR LARGER SIZED PIPES ETC. SHOULD BE SOFFIT TO SOFFIT UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, IF THIS IS NOT POSSIBLE INFORM THE ENGINEER IMMEDIATELY.
7. COVER LEVELS SHOWN ARE APPROXIMATE. COVERS AND FRAMES SHALL BE SET TO FINISHED GROUND LEVELS AND FALLS.
8. ALL UN-REFERENCED PIPES ARE ASSUMED TO BE 100mm DIA
9. ALL PIPES TO BE ADOPTED, OR CONNECTING TO ADOPTED SEWERS, TO BE VITRIFIED CLAY TO BS EN 295 AND BS65 (SWS ONLY), OR CONCRETE PIPES TO BE EN 1916 AND BS5911:PART 1.
10. ROAD GULLY OUTLET PIPES ARE TO BE 150mm DIA. WITH CONCRETE SURROUND AND FLEXIBLE JOINTS. ALL GULLIES SHALL BE FITTED WITH GRADE D400 GRATINGS AND FRAMES TO BS EN124, UNLESS OTHERWISE STATED.
11. ALL ADOPTABLE SEWERS SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATION LAID DOWN DOWN IN 'SEWERS FOR ADOPTION' 6th EDITION, WITH A VIEW TO ADOPTION UPON COMPLETION OF WORKS.
12. ALL PRIVATE DRAINAGE TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS APPROVED DOCUMENT PART-H, AND TO THE SATISFACTION OF THE BUILDING CONTROL INSPECTOR.
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14. STUB CONNECTIONS TO ADOPTABLE MANHOLES SHALL BE MADE FROM VITRIFIED CLAY AND CONSIST OF TWO ROCKER PIPES LAID AT THE SAME GRADIENT AS THE UP OR DOWNSTREAM PIPE.
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20. MANHOLE AND CHAMBER COVER GRADES:

    - 'A15' IN ALL LANDSCAPED AREAS AND ON FOOTPATHS
    - 'B125' IN ALL DRIVEWAYS
    - 'C250' IN PRIVATE PARKING AREAS
    - 'D400' IN CARRIAGEWAY/ACCESS ROAD

Prefixed to drawing numbers shall signify the following:-

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REV	DATE	DESCRIPTION	BY	CHK	APP
P-	21.06.22	PRELIMINARY ISSUE	LH	CS	CS

cgs civils
Consulting Civil Engineers

CLIENT: MR & MRS BRADLEY
ARCHITECT: IAN ADAM-SMITH ARCHITECTS
JOB TITLE: WILDFOWLERS BOSHAM
DRAWING TITLE: DRAINAGE STRATEGY SHEET 1 OF 2

DRAWN	ENGINEER	CHECKED	APPROVED
LH	C SLADE	CS	CS

DATE	SCALE @ A1
JUNE 2022	1:100

JOB No.	STATUS	DRAWING No.	REV.
C2104	PL	100	PL-

FOR PLANNING ONLY

DESIGN SUBJECT TO THE APPROVAL OF:
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EXTERNAL LEVELS DESIGN
ROOT PROTECTION AREAS
WINTER BRE365 TESTING RESULTS
WINTER GROUNDWATER MONITORING

3.600
TBC

3.100
TBC

SA3
Soakaway using Polypipe Polystorm units wrapped in permeable geotextile
7x4x0.4m DP
Total 10.64m³ storage for 1 in 100 year + 40% peak storm event
CL 3.150
TOSL 2.650
BOSL 2.250
Designed to assumed infiltration rate of $1.00x10^{-4}$m/s
Soakaway to be located min 5m from any building with min 500mm cover to units

SA1
Soakaway using Polypipe Polystorm units wrapped in permeable geotextile
7x4x0.4m DP
Total 10.64m³ storage for 1 in 100 year + 40% peak storm event
CL 3.450
TOSL 2.950
BOSL 2.550
Designed to assumed infiltration rate of $1.00x10^{-4}$m/s
Soakaway to be located min 5m from any building with min 500mm cover to units

SA2
Soakaway using Polypipe Polystorm units wrapped in permeable geotextile
7x4x0.4m DP
Total 10.64m³ storage for 1 in 100 year + 40% peak storm event
CL 2.950
TOSL 2.450
BOSL 2.050
Designed to assumed infiltration rate of $1.00x10^{-4}$m/s
Soakaway to be located min 5m from any building with min 500mm cover to units

COMPULSORY
PROPOSED POOL DISCHARGE TO BE UNDERGO CHLORINE TREATMENT BEFORE DISCHARGING VIA DRAINAGE FIELD

COMPULSORY
SOAKAWAY DESIGNS SUBJECT TO WINTER GROUNDWATER MONITORING AND WINTER INFILTRATION TESTING TO BRE365

STP1
Marsh Ensign Package Sewage Treatment Plant
CL 2.950
Inc IL 2.023
Out IL 1.948

F1 CL 2.950 IL 2.500 450Ø IC
F1 CL 2.950 IL 2.443 450Ø IC
F2 CL 2.950 IL 2.328 450Ø IC
F3 CL 2.950 IL 2.276 450Ø IC
F4 CL 2.950 IL 2.118 450Ø IC
F5 Sample Chamber CL 2.950 IL 1.924 450Ø IC
F5 Distribution Chamber CL 2.800 IL 1.874 450Ø IC
F6 CL 3.450 IL 3.000 450Ø IC
F7 CL 2.950 IL 2.855 450Ø IC
F8 CL 3.450 IL 3.000 450Ø IC
F9 CL 3.450 IL 2.893 450Ø IC
F10 CL 2.950 IL 2.683 450Ø IC
F11 CL 2.950 IL 2.451 450Ø IC

S4 CL 3.450 IL 2.968 SL 2.668 500Ø CP
S5 CL 3.450 IL 3.000 300Ø AC
S6 CL 2.950 IL 2.500 300Ø AC
S7 CL 2.950 IL 2.298 SL 1.998 500Ø CP
S9 CL 2.950 IL 2.500 SL 2.200 500Ø CP

SWD 100Ø 19.4m
SWD 100Ø 4.6m
SWD 100Ø 14.5m
SWD 100Ø 20.2m
SWD 100Ø 15.5m
SWD 100Ø 1.5m
FWD 100Ø 8.5m
FWD 100Ø 4.5m
FWD 100Ø 2.2m
FWD 100Ø 4.1m
FWD 100Ø 12.6m
FWD 100Ø 6.2m
FWD 100Ø 7.6m
FWD 100Ø 11.6m
FWD 100Ø 15.8m
FWD 100Ø 18.5m
FWD 100Ø 11.2m
FWD 100Ø 4m
FWD 100Ø 1.5m

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FOR PLANNING ONLY

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CLIENT: MR & MRS BRADLEY
ARCHITECT: IAN ADAM-SMITH ARCHITECTS
JOB TITLE: WILDFOWLERS BOSHAM
DRAWING TITLE: DRAINAGE STRATEGY SHEET 2 OF 2

DRAWN	ENGINEER	CHECKED	APPROVED
LH	C SLADE	CS	CS

DATE: JUNE 2022
SCALE @ A1: 1:100

JOB No.	STATUS	DRAWING No.	REV.
C2104	PL	101	PL-

7.3 Appendix C – Surface Water Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	0.350
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S4	0.018	5.00	3.450	500	210.395	525.306	0.482
SA1			3.450	100	215.016	525.128	0.560
S7	0.019	5.00	2.950	500	216.576	503.911	0.652
SA2			2.950	100	216.576	501.736	0.689
S9	0.016	5.00	3.150	500	191.243	514.879	0.450
SA3			3.150	100	187.706	514.879	0.510

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S4	SA1	4.624	0.600	2.968	2.890	0.078	59.3	100	5.08	50.0
2.000	S7	SA2	2.175	0.600	2.298	2.261	0.037	58.8	100	5.04	50.0
3.000	S9	SA3	3.537	0.600	2.700	2.640	0.060	59.0	100	5.06	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.002	7.9	2.4	0.382	0.460	0.018	0.0	38	0.880
2.000	1.006	7.9	2.6	0.552	0.589	0.019	0.0	39	0.902
3.000	1.005	7.9	2.2	0.350	0.410	0.016	0.0	36	0.854

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	4.624	59.3	100	Circular	3.450	2.968	0.382	3.450	2.890	0.460
2.000	2.175	58.8	100	Circular	2.950	2.298	0.552	2.950	2.261	0.589
3.000	3.537	59.0	100	Circular	3.150	2.700	0.350	3.150	2.640	0.410

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S4	500	Manhole	Adoptable	SA1	100	Manhole	Adoptable
2.000	S7	500	Manhole	Adoptable	SA2	100	Manhole	Adoptable
3.000	S9	500	Manhole	Adoptable	SA3	100	Manhole	Adoptable

Node SA1 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.03600	Invert Level (m)	2.550	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.03600	Time to half empty (mins)	547	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	4.000	Number Required	1
Porosity	0.95	Pit Length (m)	7.000		

Node SA2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.03600	Invert Level (m)	2.050	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.03600	Time to half empty (mins)	547	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	4.000	Number Required	1
Porosity	0.95	Pit Length (m)	7.000		

Node SA3 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.03600	Invert Level (m)	2.250	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.03600	Time to half empty (mins)	547	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	4.000	Number Required	1
Porosity	0.95	Pit Length (m)	7.000		

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S4	11	3.192	0.224	11.3	0.2108	0.0000	FLOOD RISK
360 minute winter	SA1	352	2.942	0.052	1.5	10.4385	0.0000	OK
360 minute winter	S7	352	2.568	0.270	1.6	0.2104	0.0000	SURCHARGED
360 minute winter	SA2	352	2.568	0.307	1.7	10.6558	0.0000	OK
15 minute winter	S9	10	2.872	0.172	10.1	0.1562	0.0000	FLOOD RISK
360 minute winter	SA3	344	2.584	-0.056	1.4	8.8733	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	S4	1.000	SA1	10.9	1.395	1.387	0.0358
360 minute winter	SA1	Infiltration		0.2			
360 minute winter	S7	2.000	SA2	1.7	0.738	0.220	0.0170
360 minute winter	SA2	Infiltration		0.2			
15 minute winter	S9	3.000	SA3	9.8	1.248	1.237	0.0273
360 minute winter	SA3	Infiltration		0.2			

7.4 Appendix D – Borehole Logs

SU 60 SW 84 8118 0332 **Southwood Farm** **Block D**

84

Surface level +4.2 m
Water not struck
October 1981

Waste 3.5 m
Bedrock 1.5 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
Brickearth	Clay, silty, mottled brown	2.3	2.7
Raised Beach Deposits (younger)	Silt, sandy, with chalk pellets and pebbles	0.8	3.5
Upper Chalk	Chalk, soft, with nodular flints, weathered at top	1.5+	5.0