



SuDS & Foul Drainage Assessment

The Daisycroft, Henfield, West Sussex, BN5 9LH

Client

Bruckland Developments

Ref: 13909

Date: December 2025

Consulting Engineers

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- C Proposed Drainage Strategy Layout, Catchment Areas Plan and Overland Flow Plan
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Issue	Issue date	Compiled	Checked
Preliminary Issue	18 December 2025	JP	FVV
First Issue	18 December 2025	JP	FVV

1 Introduction

- 1.1 GTA Civils & Transport Ltd. was appointed by its client, Bruckland Developments, to provide a SuDS & Foul Drainage Assessment in support of an outline planning application for a proposed residential development on land at The Daisycroft, Henfield, West Sussex, BN5 9LH.
- 1.2 This report has been prepared for the Client in relation to the proposed development at the above address, and no responsibility is accepted to any third party for all or part of this study in connection with this or any other development.
- 1.3 The objective of this Statement is to support a planning application to Horsham District Council and demonstrate that the foul and surface water drainage networks shall comply with current national and local drainage policies.

2 Existing Site & Proposed Development

- 2.1 The application site, which comprises a rectangular field of area 0.57ha, on the east side of Henfield village. This area is administered by Horsham District Council (HDC). The site lies adjacent to and NW of Henfield Common. This site is accessed from Daisycroft to the northwest corner – refer to the site location maps in Appendix A.
- 2.2 A topographic survey in Appendix B shows the land sloping – very gently - from northeast to southwest, with ground levels generally in the region of +33.3m to +29.5m above Ordnance Datum (AOD).
- 2.3 British Geological Survey (BGS) online maps show bedrock geology of sandstone (Folkestone Formation). There is no drift stratum overlying the majority; there is, however, a narrow band of Head (clay, silt, sand and gravel) along the south boundary.
- 2.4 It is understood that BRE 365 soakage tests were carried out by a previous applicant at this site. The results are in the public domain. A soakage rate of 4.4×10^{-5} m/s was determined and used in a drainage strategy layout. The Applicant shall undertake bespoke on-site BRE365 testing during the next stage – at the relevant features' locations.
- 2.5 Southern Water's sewer records are contained in Appendix B. There are no surface water sewers in this vicinity. The nearest accessible foul sewer's head of run lies in The Daisycroft approximately 50m west of the site's entrance. This flows southwards to Henfield Common North.
- 2.6 Existing drainage: the site, being a green field, has no formal/positive drainage.
- 2.7 This site lies in the River Arun's wider catchment. The nearest, unnamed, watercourse lies to the south, flowing east. From the EA's surface water flood mapping, there appears to be a 'dry valley' that flows southwards into this, which runs close to the site's SW corner. There is no watercourse visible at the SW corner of this site, however, which suggests that the soil's effective soakage characteristics are high enough to preclude such flows occurring.
- 2.8 The proposed development comprises the erection of 9 detached dwelling houses, with associated access road, parking and soft landscaping.

3 Proposed Surface & Foul Water Drainage

3.1 Due to the favourability of the soil to infiltration (refer to section 2.4 above), a surface water drainage strategy based on infiltration techniques is proposed – refer to the drainage strategy layout in Appendix C.

3.2 The drainage strategy layout in Appendix C shows the surface water from the houses' roofs discharging to ground via a cellular soakaway in the SW corner. An allowance of 10% of the roofed areas has been added for 'urban creep' – refer to the catchment areas plan in Appendix C. The permeable paving surface drains the drives and road - kept separate from the roofs' piped drainage.

3.3 Causeway Flow calculations based on FEH22 rainfall data and a CV (volumetric runoff coefficient) values of 1.0 are contained in Appendix F. The Cellular Soakaway's volume is 153.9m³, while the calculated volume (needed) is 152.4m³. The soakaway is sized for the 1 in 100 year + 45% storm event. The half-drain time is less than 24 hours, as per Building Regulations. The infiltration rate used in the drainage calculations is 4.4×10^{-5} m/s (equivalent to 0.1584m/hr), as set out in section 2.4 above.

3.4 Exceedance Flow Routes: the Drainage Strategy Layout in Appendix C shows the route – southeast - that any exceedance flow would follow for storm events above those for which the infiltration systems have been designed.

3.5 Water quality: The treatment provided by the permeable pavings can be demonstrated using the Simple Index Approach described in CIRIA C753 (The SuDS Manual). The corresponding pollution hazard indices and relevant SuDS mitigation indices are outlined in Table 1 below. It is evident that the permeable pavings will provide sufficient treatment for all surface water runoff from the access roads. The roof areas are of very low pollution hazard and therefore allowed to discharge to ground (via the soakaway) directly.

Type of pollutant		TSS	Metals	Hydrocarbons
Pollution hazard indices	Low traffic areas	0.5	0.4	0.4
SuDS mitigation indices	Permeable paving	0.7	0.6	0.7

Table 1 – Runoff Treatment – Simple Index Approach

3.6 Maintenance: The Applicant (developer) shall establish an Estate Management Company which shall take on the responsibility for the ongoing maintenance of the drainage components, i.e. pipes, manholes, permeable paving and soakaway. A planning stage drainage maintenance plan is included in Appendix E. This sets out how the various components will be inspected and maintained – in line

with Industry Standards as per CIRIA's SuDS Manual C753.

- 3.7 There will be a water butt installed in each unit's rear garden space. This will help reduce the demand for water between late spring and early autumn.
- 3.8 Foul effluent shall be route to Southern Water's sewer in The Daisycroft – refer to the proposed Site Drainage Strategy in Appendix C. A pumping station will be needed due to there being an adverse gradient between the SE corner of the site and the public sewer.
- 3.9 Permission to connect to the public shall be sought from Southern Water during the next stage.
- 3.10 **Conclusion:** it is contended that this development's SuDS and foul drainage design is 100% sustainable - and shall comply fully with current local and national drainage policies.

- End of Statement -

Appendix A

Site Location Maps



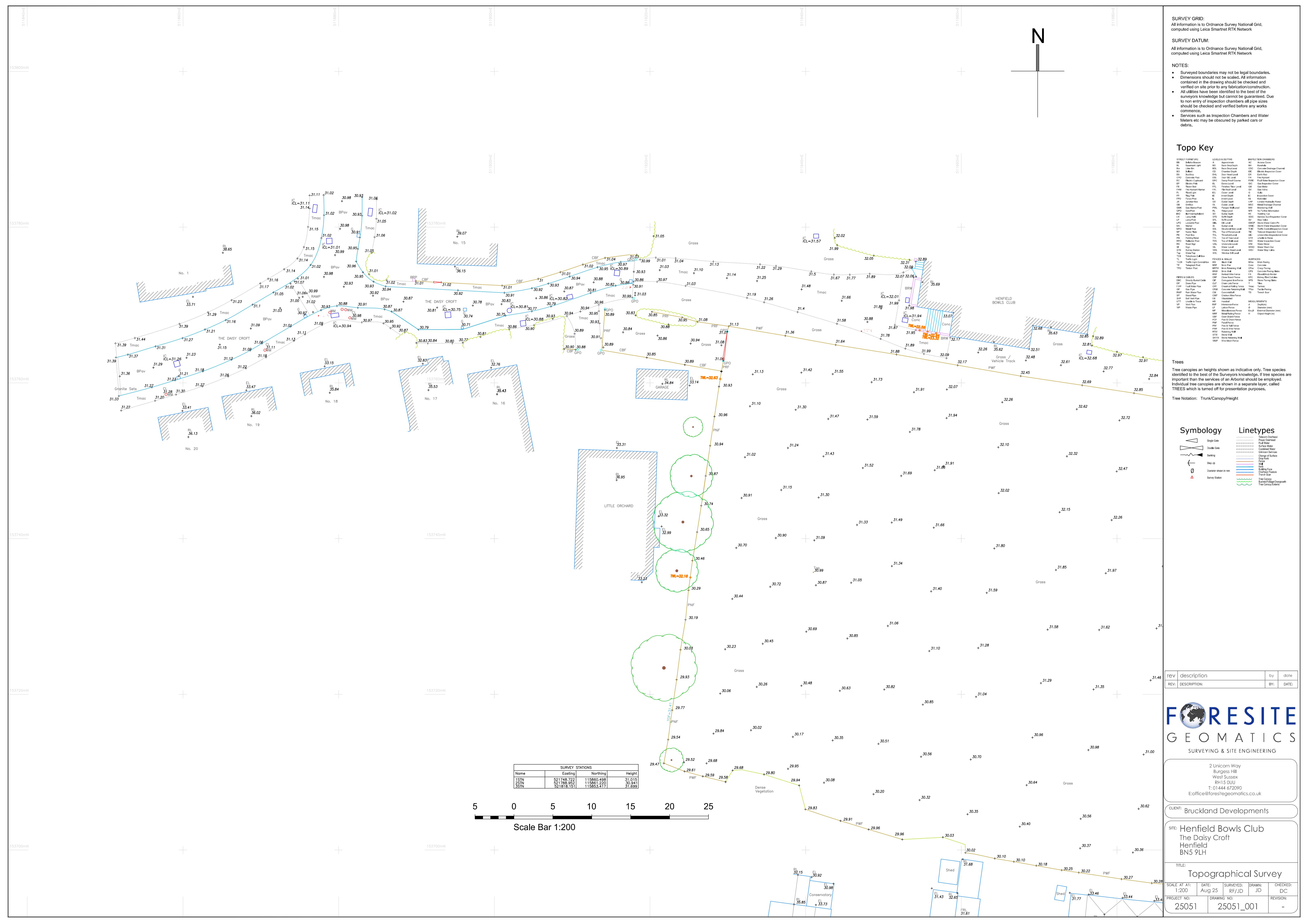


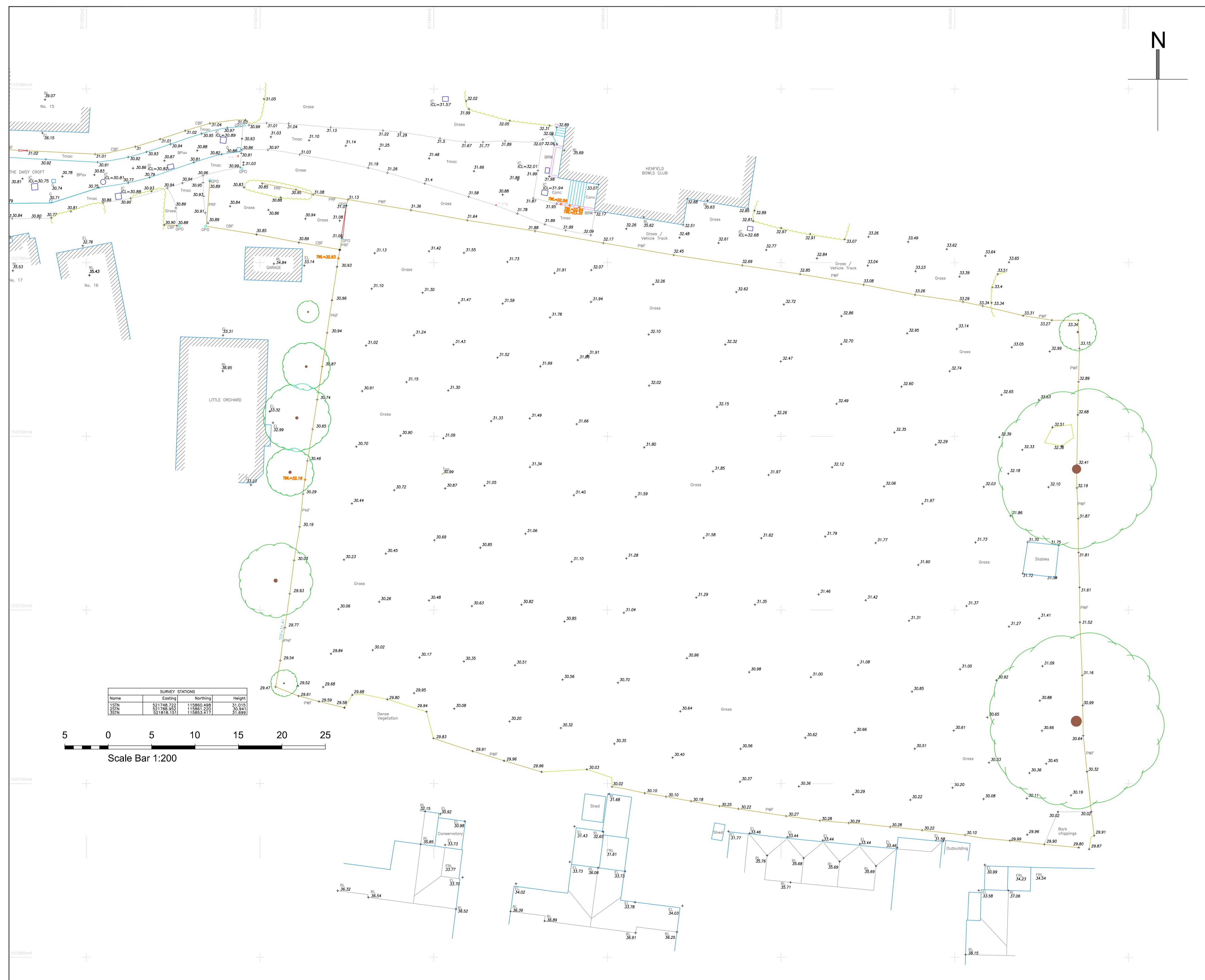
PLANNING APPLICATION DRAWING

REV.	DATE	REVISIONS:	REV.	DATE	REVISIONS:	CLIENT:	BRUCKLAND DEVELOPMENTS	PROJECT:	LAND SOUTH OF THE BOWLING CLUB, THE DAISEY CROFT, HENFIELD, BN5 9RN	+44 (0) 1344 513514 admin@2020architecture.co.uk www.2020architecture.co.uk Old Boundary House, London Road, Sunningdale, Berkshire, SL5 0DJ	
						SCALE:	1:1250 (A3 ORIGINAL)	DRAWING:	SITE LOCATION DRAWING		
						DRAWN:	CdeO	JOB NO:	DRAWING NO:	REVISION:	
© COPYRIGHT EXISTS ON THE DESIGNS AND INFORMATION SHOWN ON THIS DRAWING This drawing may be scaled or cross referenced to the scale bar for planning application purposes only. Do not scale for any other purpose, use figured dimensions only. Subject to site survey and all necessary consents. All dimensions to be checked by user and any discrepancies, errors or omissions to be reported to Twenty20 Architecture Ltd before work commences. This drawing is to be read in conjunction with all other relevant materials.						DATE:	AUG '25	2025 / P0315	LP	C	2020 :Architecture :Technical :Vision

Appendix B

Topographic Survey & Sewer Records





Survey Grid:
Information is to Ordnance Survey National Grid,
Computed using Leica Smartnet RTK Network

SURVEY DATUM:

Surveyed boundaries may not be legal boundaries. Dimensions should not be scaled. All information contained in the drawing should be checked and verified on site prior to any fabrication/construction. All utilities have been identified to the best of the surveyors knowledge but cannot be guaranteed. Due to non entry of inspection chambers all pipe sizes should be checked and verified before any works commence.

Services such as Inspection Chambers and Water Meters etc may be obscured by parked cars or debris.

Topo Key

FREIGHT FURNITURE		LEVELS & DEPTHS		INSPECTION CHAMBERS	
B	Bellsha Beacon	A	Approximate	AC	Access Cover
L	Basement Light	BD	Back DropDepth	BH	Borehole
l	Litter Bin	BDL	Back DropLevel	CDC	Concrete Drainage Channel
O	Ballard	CD	Chamber Depth	EIC	Electric Inspection Cover
S	BusStop	DHL	Door Head Level	ER	Earth Rod
PO	Concrete Post	DSL	Door Sill Level	FH	Fire Hydrant
C	Electric Cupboard	DPC	Damp Proof Course	FWIC	Foul Water Inspection Cover
P	Electric Pole	EL	Eaves Level	GIC	Gas Inspection Cover
B	Flower Bed	FFL	Finished Floor Level	GM	Gas Meter
HM	Fire Hydrant Marker	FRL	Flat Roof Level	GV	Gas Valve
L	Flood Light	ICL	Cover Level	G	Gully
P	Frog Pole	ID	Invert Depth	IC	Inspection Cover
PO	Fence Post	IL	Invert Level	KI	Kerb Intel
3	Junction Box	OD	Outlet Depth	LHP	London Hydraulic Power
B	GritBox	OL	Outlet Level	MDC	Metal Drainage Channel
MK	Gas Marker Post	PWL	Panspat Wall Level	MW	Monitoring Wall
PO	GatePost	RL	Ridge Level	NFI	No Further Information
IO	Illuminating Bollard	SD	Sump Depth	RE	Rodding Eye
H	Lamp Hole	SFD	Softic Depth	SDIC	Service Duct Inspection Cover
P	Lamp Post	SFL	Softic Level	SV	Stop Valve
PO	Lockable Post	SIL	Sil Level	SWCP	Storm Water Catch Pit
K	Marker	SL	Sump Level	SWIC	Storm Water Inspection Cover
PO	Metal Post	SSL	Structural Slab Level	TCIC	Traffic Control Inspection Cover
P	Name Plate	TFL	Top of Fence Level	TIC	Telecom Inspection Cover
B	Post Box	THL	Threshold Level	UIC	Unidentified Inspectional Cover
M	Parking Meter	TTL	Top of Tree Level	UTR	Unable to Raise
P	Reflector Post	TWL	Top of Wall Level	WIC	Water Inspection Cover
S	Road Sign	USL	Underside Level	WM	Water Meter
I	Sign	WL	Water Level	WWO	Water Wash Out
TN	Survey Station	WHL	Window Head Level	WVS	Water Stop Valve
ap	WaterTap	WSL	Window Sill Level		
CB	Telephone Call Box				
L	Traffic Light				
LCB	Traffic Light Control Box				
P	Telegraph Post				
PO	Timber Post				
PIES & CABLES					
BC	Directly Buried Cable	BW	Block Wall	B Pav	Brick Paving
P	Down Pipe	BRP	Brick Pier	Conc	Concrete
WP	Foul Water Pipe	BRTW	Brick Retaining Wall	CPav	Crazy Paving
P	Gas Pipe	BRW	Brick Wall	CPS	Concrete Paving Slabs
WP	Rain Water Pipe	BWF	Barbed Wire Fence	FB	FlowerShrub Border
P	Stand Pipe	CBF	Close Board Fence	KFC	Kidney Flint Cobbles
VP	Soil Vent Pipe	CIF	Corrugated Iron Fence	SPS	Stone Paving Slabs
TT	Unable to Trace	CLF	Chain Link Fence	T	Tiles
P	Vent Pipe	CPF	Chestnut Pelling Fence	Tmac	Tarmac
P/W	Waste Pipe	CRW	Concrete Retaining Wall	TPav	Tactile Paving
WP	Rain Water Pipe	CW	Concreted Wall	TS	Trench Scar
P	Stand Pipe	CWF	Chicken Wire Fence		
VP	Soil Vent Pipe	DI	Dilapidated		
TT	Unable to Trace	HR	Handrail		
P	Vent Pipe	IWF	Interwoven Fence		
P/W	Waste Pipe	LF	Lattice Fence		
MF	Miscellaneous Fence	MF	Miscellaneous Fence		
MRF	Metal Railling Fence	OBF	Open Board Fence		
PCF	Post & Chain Fence	PCF	Post & Chain Fence		
PNF	Panel Fence	PNF	Panel Fence		
PRF	Post & Rail Fence	PRF	Post & Rail Fence		
PWF	Post & Wire Fence	PWF	Post & Wire Fence		
RTW	Retaining Wall	RTW	Retaining Wall		
STW	Stone Wall	STW	Stone Wall		
SRTW	Stone Retaining Wall	SRTW	Stone Retaining Wall		
WMF	Wire Mesh Fence	WMF	Wire Mesh Fence		
MEASUREMENTS					
d			Depth(m)		
Ø			Diameter (mm)		
Ext, Ø			External Diameter (mm)		
H			Object Height (m)		

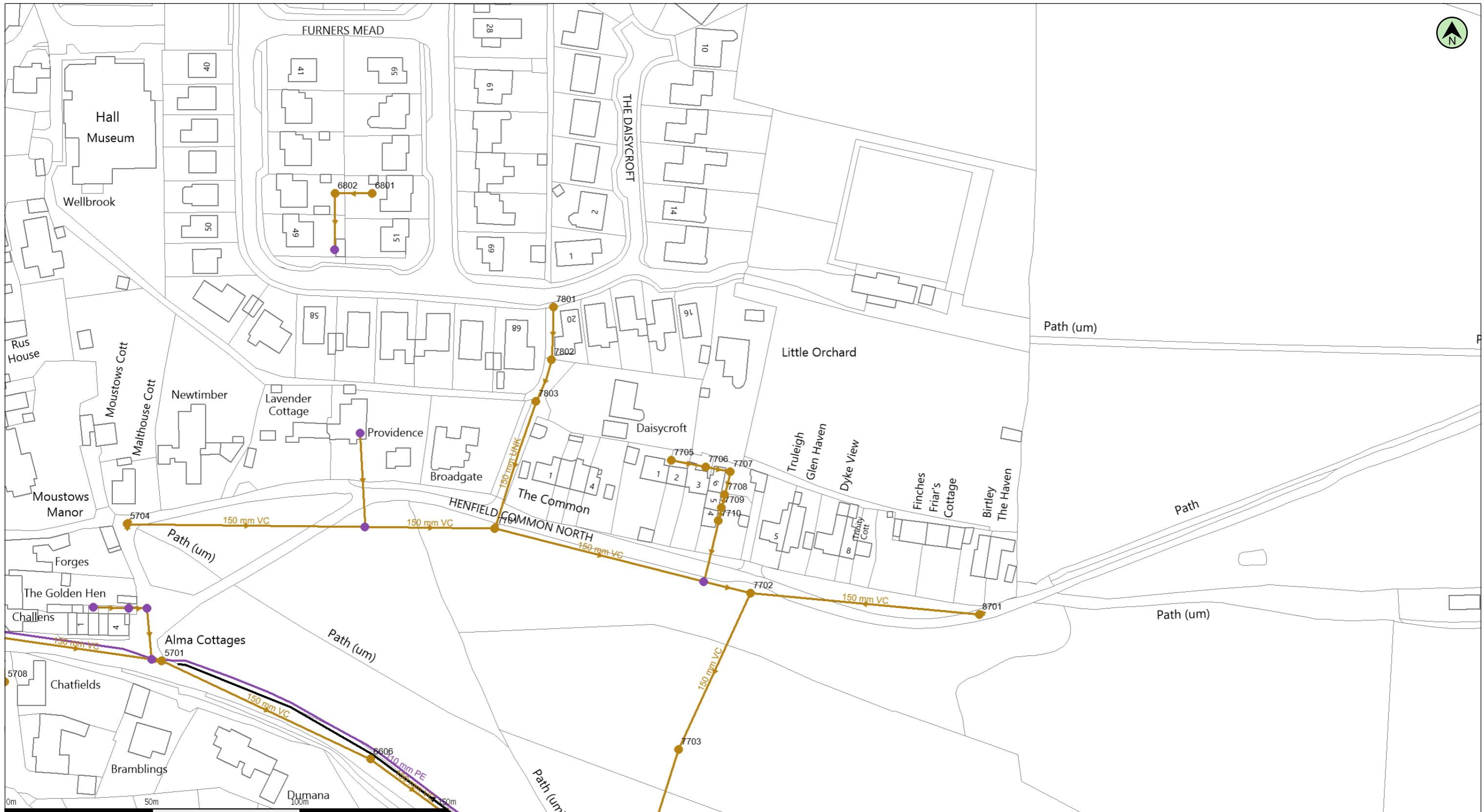
canopies and heights shown as indicative only. Tree species identified to the best of the Surveyors knowledge. If tree species are important than the services of an Arborist should be employed. Individual tree canopies are shown in a separate layer, called EES which is turned off for presentation purposes.

Symbology

description	by	date
DESCRIPTION:	BY:	DATE:

E:office@foresitegeomatics.co.uk

The Daisy Croft
Henfield
BN5 9LH



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Date: 09/09/22

Scale: 1:1250

Map Centre: 521788, 115816

Data updated: 16/08/22

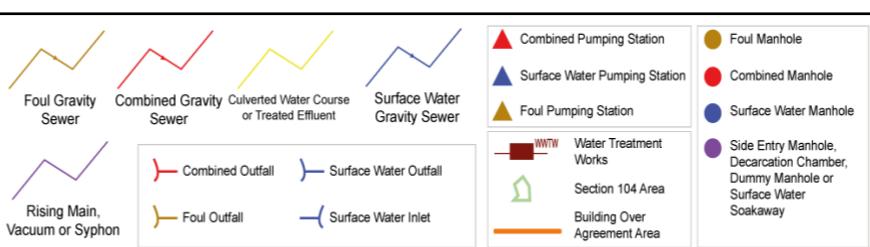
Our Ref: 947813 - 1

Wastewater Plan A3

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2022 Ordnance Survey 100031673. This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

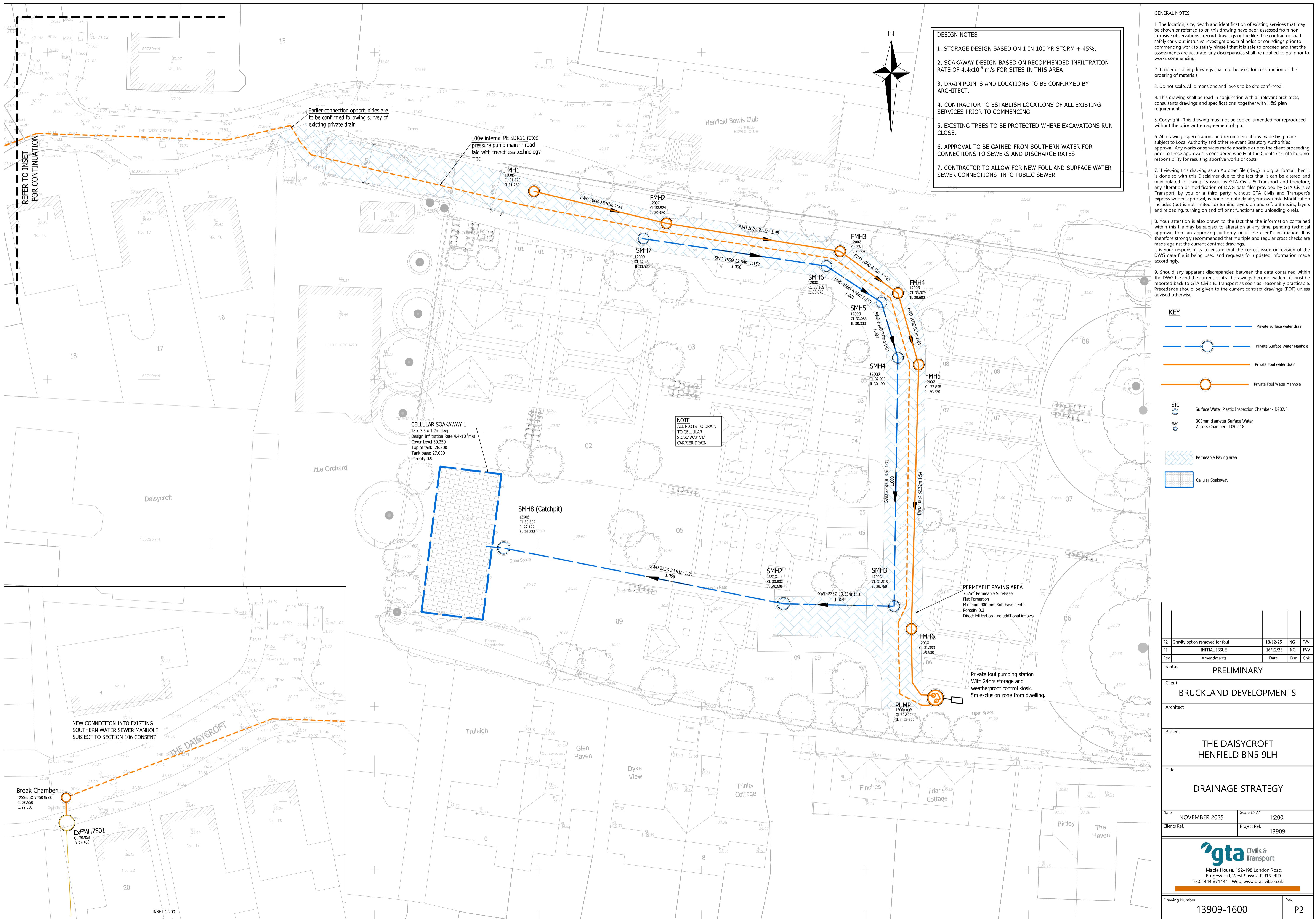


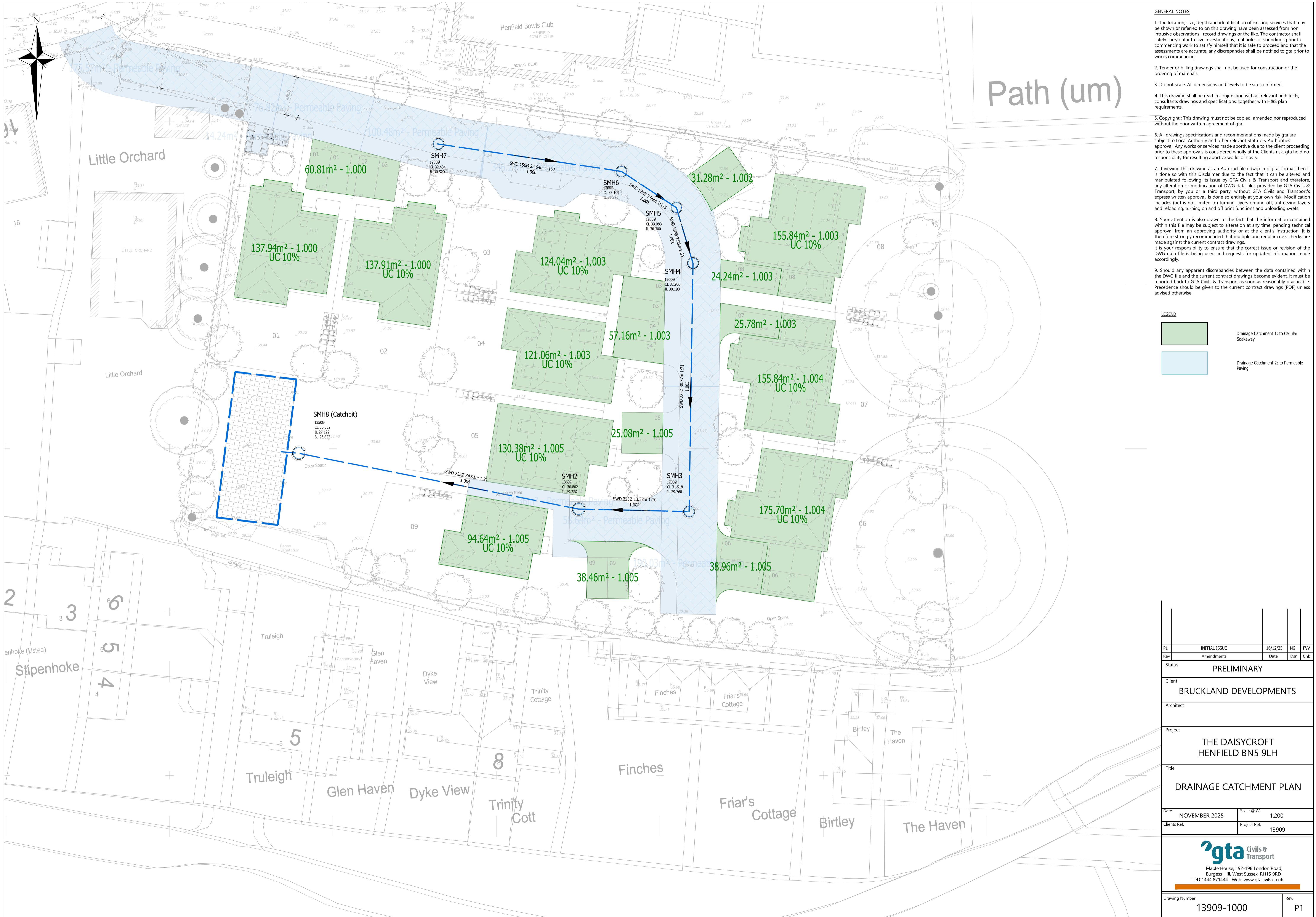
tjenkins@gtacivils.co.uk
11465/JP/TJ



Appendix C

Proposed Drainage Strategy Layout, Catchment Areas Plan and Overland Flow Plan







Appendix D

Drainage Calculation Sheets

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
SMH7	0.038	5.00	32.434	1200	511952.775	153757.236	1.914	30.520
SMH6			33.109	1200	511975.267	153753.869	2.739	30.370
SMH5	0.017	5.00	33.083	1200	511982.001	153749.425	2.783	30.300
SMH4	0.041	5.00	32.900	1200	511984.021	153742.646	2.710	30.190
SMH3	0.036	5.00	31.518	1200	511983.497	153712.266	1.758	29.760
SMH2	0.039	5.00	31.195	1350	511977.845	153712.208	1.975	29.220
SMH8			30.360	1200	511938.043	153719.453	3.040	27.320
Cellular Soakaway 1			28.200	1350	511933.516	153718.866	1.200	27.000

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	SMH7	SMH6	22.742	0.600	30.520	30.370	0.150	151.6	150	5.47	5.0
1.001	SMH6	SMH5	8.068	0.600	30.370	30.300	0.070	115.3	150	5.61	5.0
1.002	SMH5	SMH4	7.074	0.600	30.300	30.190	0.110	64.3	150	5.70	5.0
1.003	SMH4	SMH3	30.385	0.600	30.190	29.760	0.430	70.7	225	6.03	5.0
1.004	SMH3	SMH2	5.583	0.600	29.760	29.220	0.540	10.3	225	6.05	5.0
1.005	SMH2	SMH8	40.456	0.600	29.220	27.320	1.900	21.3	225	6.29	5.0
1.006	SMH8	Cellular Soakaway 1	4.565	0.600	27.320	27.000	0.320	14.3	225	6.31	5.0

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	0.814	14.4	0.7	1.764	2.589	0.038	0.0	23	0.419
1.001	0.935	16.5	0.7	2.589	2.633	0.038	0.0	21	0.458
1.002	1.256	22.2	1.0	2.633	2.560	0.055	0.0	21	0.628
1.003	1.557	61.9	1.7	2.485	1.533	0.096	0.0	26	0.689
1.004	4.092	162.7	2.4	1.533	1.750	0.132	0.0	19	1.487
1.005	2.848	113.2	3.1	1.750	2.815	0.171	0.0	25	1.238
1.006	3.482	138.4	3.1	2.815	0.975	0.171	0.0	23	1.447

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m ³ /ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	45	0	0
30	0	0	0				

Node Cellular Soakaway 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.15840	Safety Factor	5.0	Invert Level (m)	27.000
Side Inf Coefficient (m/hr)	0.15840	Porosity	0.95	Time to half empty (mins)	718

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	135.0	135.0	1.200	135.0	184.4

Results for 2 year 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 summer	SMH7	10	30.596	0.076	7.0	0.0855	0.0000	OK
15 minute summer	SMH6	11	30.443	0.073	6.9	0.0828	0.0000	OK
15 minute summer	SMH5	11	30.377	0.077	9.8	0.0872	0.0000	OK
15 minute summer	SMH4	11	30.277	0.087	17.3	0.0980	0.0000	OK
15 minute summer	SMH3	11	29.821	0.061	23.7	0.0689	0.0000	OK
15 minute summer	SMH2	11	29.300	0.080	30.6	0.1140	0.0000	OK
15 minute summer	SMH8	9	27.420	0.100	30.7	0.1130	0.0000	OK
360 minute summer	Cellular Soakaway 1	280	27.238	0.238	8.8	30.8150	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 summer	SMH7	1.000	SMH6	6.9	0.797	0.481	0.1973
15 minute summer	SMH6	1.001	SMH5	6.9	0.781	0.417	0.0712
15 minute summer	SMH5	1.002	SMH4	9.9	1.003	0.444	0.0695
15 minute summer	SMH4	1.003	SMH3	17.2	1.521	0.278	0.3454
15 minute summer	SMH3	1.004	SMH2	23.7	2.240	0.146	0.0592
15 minute summer	SMH2	1.005	SMH8	30.7	2.222	0.271	0.5916
15 minute summer	SMH8	1.006	Cellular Soakaway 1	31.5	3.078	0.227	0.0511
360 minute summer	Cellular Soakaway 1	Infiltration		1.3			

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node	Flood Vol (m³)	Status
15 minute summer	SMH7	11	30.842	0.322	17.9	0.3645	0.0000	SURCHARGED
15 minute summer	SMH6	11	30.606	0.236	16.6	0.2666	0.0000	SURCHARGED
15 minute summer	SMH5	11	30.511	0.211	23.7	0.2387	0.0000	SURCHARGED
15 minute summer	SMH4	11	30.337	0.147	42.0	0.1663	0.0000	OK
15 minute summer	SMH3	11	29.866	0.106	58.4	0.1196	0.0000	OK
15 minute summer	SMH2	11	29.356	0.136	76.1	0.1952	0.0000	OK
360 minute winter	SMH8	352	27.576	0.256	11.7	0.2892	0.0000	SURCHARGED
360 minute winter	Cellular Soakaway 1	352	27.576	0.576	23.5	74.6494	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 summer	SMH7	1.000	SMH6	16.6	0.943	1.155	0.4004
15 minute summer	SMH6	1.001	SMH5	16.4	0.933	0.994	0.1420
15 minute summer	SMH5	1.002	SMH4	23.5	1.336	1.060	0.1242
15 minute summer	SMH4	1.003	SMH3	42.0	1.830	0.678	0.6960
15 minute summer	SMH3	1.004	SMH2	58.5	2.686	0.359	0.1214
15 minute summer	SMH2	1.005	SMH8	76.1	2.788	0.672	1.1127
360 minute winter	SMH8	1.006	Cellular Soakaway 1	23.5	1.709	0.169	0.1816
360 minute winter	Cellular Soakaway 1	Infiltration		1.4			

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
	S4		5.00	32.900	1200	511984.021	153742.646	2.710	30.190
PP Area 1		0.099	5.00	31.518	1200	511983.427	153712.266	1.758	29.760

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)
1.003	S4	PP Area 1	30.385	0.600	30.190	29.760	0.430	70.7	150	5.42	5.0

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)
1.003	1.197	21.2	0.0	2.560	1.608	0.000	0.0	0	0.000

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m ³ /ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	45	0	0
30	0	0	0				

Node PP Area 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.15840	Porosity	0.30	Width (m)	75.000	Depth (m)	0.300
Side Inf Coefficient (m/hr)	0.15840	Invert Level (m)	31.218	Length (m)	10.000	Inf Depth (m)	
Safety Factor	2.0	Time to half empty (mins)	0	Slope (1:X)	70.0		

Results for 2 year Critical Storm Duration. Lowest mass balance: 92.96%

Node	Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer		S4	21	31.288	1.098	7.0	1.2420	0.0000	SURCHARGED
60 minute summer		PP Area 1	38	31.278	1.518	13.2	4.5358	0.0000	OK

Link	Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
	30 minute summer	S4	1.003	PP Area 1	-7.0	-0.400	-0.332	0.5349
	60 minute summer	PP Area 1	Infiltration		7.0			

Results for 30 year Critical Storm Duration. Lowest mass balance: 97.00%

Node	Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
30 minute summer		S4	21	31.347	1.157	5.0	1.3080	0.0000	SURCHARGED
30 minute summer		PP Area 1	22	31.342	1.582	43.1	13.9426	0.0000	OK
Link									
Link Event		US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	
(Upstream Depth)									
30 minute summer		S4	1.003	PP Area 1	-5.0	-0.374	-0.236	0.5349	
30 minute summer		PP Area 1	Infiltration		14.6				

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 98.37%

Node	Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer		S4	41	31.421	1.231	5.6	1.3919	0.0000	SURCHARGED
60 minute summer		PP Area 1	42	31.420	1.660	59.8	31.1425	0.0000	OK
Link	Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	
	60 minute summer	S4	1.003	PP Area 1	-5.6	-0.363	-0.267	0.5349	
	60 minute summer	PP Area 1	Infiltration		17.0				

Appendix E

Draft Drainage Maintenance Plan

1. Introduction

This Plan sets out the framework for the management of the proposed sustainable drainage systems (SuDS) and foul drainage network. The document will be updated with further information through the next stage of detailed design and coordination. At this stage, what is set out herein is intended to be sufficient to demonstrate the viability of the proposed SuDS and foul drainage maintenance regime for planning purposes.

2. Ownership & Maintenance Responsibilities

This Plan sets out the framework for the management of the proposed sustainable drainage systems (SuDS) and foul drainage network. The document will be updated with further information through the next stage of detailed design and coordination. At this stage, what is set out herein is intended to be sufficient to demonstrate the viability of the proposed SuDS and foul drainage maintenance regime for planning purposes.

The drainage features will be cared for by the Estate Management Company - to be set up by the developer to administer the site-wide infrastructure. This includes:

- Porous Pavings
- PCC Ringed Soakaways
- Cellular Soakaway
- Pipes and Chambers

The following sections show schedules setting out the maintenance requirements for each of the main drainage items used within the scheme. The Estate Management Company will undertake the inspections and maintenance activities in accordance with these schedules.

Additional reference has been made to currently established best practice and guidance documents such as The SuDS Manual (CIRIA C753, 2015) and other resources available at the susdrain website.

This Plan is to be a live document. The frequency of maintenance intervals may need to be increased or decreased based on the observed performance of the drainage systems over time. Changes to this Plan are to be agreed with the drainage authority (LLFA) and recorded and dated in the DMP.

3. Health and Safety

All those responsible for and involved in the maintenance of the site drainage systems should be safety-conscious and comply with the relevant health and safety legislation. This includes:

- The Health and Safety at Work etc Act 1974
- The Management of Health and Safety at Work Regulations 1999
- The Workplace (Health, Safety and Welfare) Regulations 1992

The Estate Management Company is responsible for suitable risk assessment and management to ensure safe working conditions and practices. Measures to protect potential visitors also need to be considered.

Specialist contractors used should work to industry guidelines and be able to demonstrate safe working practices.

Employers have a duty to employees to inform them about the risks of their work environment and to decrease the risk as far as reasonably practicable. Appropriate personal protective equipment (PPE) should be provided and practices/policies implemented based on risk assessments.

Operatives should be trained for working near water. Risks of contaminated water should be considered. Checking for open cuts and using nitrile gloves, waterproof plasters etc is advised.

Entry of pipes, chambers and culverts should be avoided. Work should be carried out from the surface using appropriate equipment. In the event that entry cannot be avoided to perform a critical task, the required safety training, protection measures and precautions must be implemented prior to entry. Lone working should never be attempted.

For further information refer to Section 36 of The SuDS Manual (CIRIA C753).

4. Contamination or Dilution of Spillage

In the event of a spillage, it is the responsibility of the landowner to clear up any spillage before it enters the drainage system. The primary method of dealing with any spillage of hydrocarbons should be using sand to soak up the leak and prevent any hydrocarbons entering the drainage system. Once sand has been contaminated it should not be washed into the drainage system but disposed of by a Licensed Contractor.

Environment Agency – Emergency Contact Number

In the event of a spillage the Environment Agency should be contacted to notify the event and seek advice. The Environment Agency Incident Hotline is 0800 80 70 60 (Freephone 24hrs).

5. Schedule A – Sewers, Manholes, Gullies, Channel Drains

Regular inspection and maintenance are required to ensure the effective long-term operation of private drains, manholes, gullies & channel drains.

Ongoing maintenance responsibility for all sewers is by Southern Water. All other gullies and drainage are private and to be maintained by the Estate Management Company in shared areas and by each homeowner within conveyed land. Operation and maintenance requirements for all sewers, manholes, gullies and channel drains are described in the following table:

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	6 Monthly intervals
	Common yard & car park & other hard standing areas to be swept clear of debris, to prevent possibility of blockages to the receiving drainage systems	Monthly
	Debris removal from gullies & channel drains (where may cause risks to performance)	Monthly intervals, after autumn leaf fall, or as required based on specific observations
	Lift and inspect receiving manholes to check for any blockages	Monthly
Remedial Actions	Repair any damaged gully or channel drain gratings.	As required
	Replace / fix any loose channel drain covers	As required

Where appropriate refer also to specialist drainage manufacturer's information and maintenance requirements.

In all instances, inspection and cleaning should be carried out only by a specialist contractor and in accordance with the guidelines given in 'Safe Working in Sewers and at Sewage Works' published by National Joint Health and Safety Committee for the Water Services.

6. Schedule B – Soakaways

The soakaways' maintenance and monitoring requirements are as follows:

Schedule	Action	Frequency
Regular Maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube/chamber	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required based on inspections)
Occasional Maintenance	Removal of sediment from pre-treatment devices (silt traps)	Six monthly
	Remove tree roots or trees that are close to the soakaway	As required
Remedial Actions	Inspect inlets and inspection points for blockages, clogging, standing water and structural damage	Monthly
	Rehabilitate infiltration or filtration surfaces	As required
Monitoring	Inspect pre-treatment systems / inlets and ground surface for silt accumulation. Establish appropriate silt removal frequencies	Half-yearly

Sediments excavated from upstream pre-treatment devices that receive runoff from residential or standard road and roof areas are generally not toxic or hazardous material and can be safely disposed of by either land application or landfilling. However, consultation should take place with the environmental regulator to confirm appropriate protocols. Sediment testing may be required before sediment excavation to determine its classification and appropriate disposal method.

7. Schedule C – Permeable Pavements

Inspection Frequency and Maintenance Requirements: as per table below.

Schedule	Action	Frequency
Regular Maintenance	Standard road sweeper	Annually after autumn leaf fall
Occasional Maintenance	Weed removal	Annually
Remedial Actions	Remediate adjacent landscaping to original levels Paving repairs including replenishment of lost jointing material Rehabilitation of surface and upper substructure by remedial sweeping	As required As required Every 10 to 15 years or as required if infiltration is reduced by clogging
Monitoring	Initial inspection Inspection for evidence of poor operation and/or weed growth Inspection for silt accumulation to establish sweeping frequencies Monitor inspection chambers	Monthly for first three months Quarterly, 48 hrs after large storms in first six months Annually Annually



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