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Mr M Betts,
MGR Homes
The Old Mill,
Kings Mill,
Kings Mill Lane,
South Nutfield,
Surrey RH1 5NB

01/03/2023

Ref: Land at Badger's Brook, London Road, Bolney – Drainage Strategy

Dear Mr Betts,

The following report summarises our findings and recommendations in relation to the surface water and foul water drainage systems to serve the proposed residential development at Badger's Brook, Bolney.

The Local Authority Drainage Engineer will wish to see a Sustainable Drainage Strategy (SUDS) implemented for surface water disposal at the site, based on the following hierarchy:

1. Infiltration/soakaway drainage
2. Discharge to a watercourse at greenfield rates
3. Discharge to a sewer at agreed rates

There is evidence that infiltration rates at the site could be moderate or poor, a small unnamed watercourse flows south along the eastern boundary.

The preliminary designs in this report are therefore based on a conservative estimate of the infiltration rate. If infiltration is not practical then an attenuated discharge to the watercourse will be used so that we are able to be confident that a SUDS compliant solution is possible regardless of ground conditions.

Anticipated Ground Conditions

The British Geological Survey (BGS) indicates the area to be underlain by The Upper Tunbridge Wells Sand. There is no record of superficial deposits but nearby boreholes indicate sand to a depth of 2.3m with clay below.

The level of ground water was recorded in a nearby borehole (ref TQ 22 SE 33) as a strike at 1m depth, with standing water after drilling at 1.65m depth.

The Soilscapes website, which deals with overlying soil conditions, indicates 'Slightly acid loamy and clayey soils with slightly impeded drainage'.

Based on this evidence it is likely that infiltration will be effective, but may be limited by the depth of the groundwater. Infiltration tests to BRE365, and further examination of the groundwater level will be required to confirm this at detailed design.

If Infiltration is found to be ineffective, through poor infiltration rates or shallow groundwater, then discharge to the adjacent watercourse will be adopted using on-site attenuation storage to limit discharge to a rate as close as practicable to the greenfield rate.

Either way it can be demonstrated that a sustainable approach to surface water drainage can be achieved.

Infiltration Rate

For the purposes of preliminary design an infiltration rate of $3x10^{-5}$m/s will be used for surface water design. This is reflective of a moderate rate, and is considered appropriate for predominantly sandy soils.

Surface Water Drainage Strategy

<u>OPTION 1 - Infiltration</u>

The proposals will include an access road with adjacent parking bays. It is proposed to use porous construction for these areas, with 'Infiltration Blankets' below parts of the paving.

Due to the likelihood of shallow groundwater, deeper style soakaways such as geocellular crate structures are unlikely to be suitable, but may be considered if the groundwater level is found to be lower than expected.

Much of the access road passes through tree root protection zones (RPZs) so will need to be constructed using 'No-Dig' methods. These areas will be self draining but will not be suitable for use as an infiltration blanket.

The remaining pavement area outside the RPZs will be constructed as a porous pavement, 450mm deep overall (min required for frost protection), with a void ratio in the 370mm deep granular sub-base of 30%.

Roof water will be collected in conventional gutters and downpipes and will then be directed to the paving sub-base, which will act as the infiltration blankets.

Plot 1 will have it's own infiltration blanket, plots 2 to 5 will use a shared system.

Plot 1:

> The paved area above the infiltration blanket is 97m2 and the roof area is 228m2, giving a total drained area of 325m2.
>
> The result of the infiltration blanket design is appended to this report. The calculation sheet gives a utilisation factor of 0.88 for the 1 in 100 year rainfall event (+40% for future climate change)
>
> The system must also drain quickly enough to be ready for subsequent storm events, with a 'Half Drain' time below 24 hours. The calculations indicate an acceptable half drain time of 0.47 hours.

Plots 2 to 5:

The paved area above the infiltration blanket is 345m2 and the combined roof area is 878m2, giving a total drained area of 1223m2.

The result of the infiltration blanket design is appended to this report. The calculation sheet gives a utilisation factor of 0.95 for the 1 in 100 year rainfall event (+40% for future climate change)

The system must also drain quickly enough to be ready for subsequent storm events, with a 'Half Drain' time below 24 hours. The calculations indicate an acceptable half drain time of 0.48 hours.

For the estimated infiltration rate the systems will be close to the limit of the required design standard (utilisation factor = 1), if the infiltration rate is any lower than the estimated value then infiltration drainage may not be viable.

OPTION 2 – Attenuation

It seems posible that infiltration drainage might not be viable at this site. Fortunately there is an adjacent watercourse following the eastern boundary with a water level approximately 2.0m lower than the lowest site ground level.

Option 2 will still use porous paving, however in this scenario water that does not infiltrate into the subsoil will percolate to a geocellular tank at the lowest point. Roof water will drain directly to the attenuation tank. Discharge will be via a flow control devise to the watercourse, at the greenfield rate (Qbar).

The total area of paving on site is 1070m2 and the total roof area is 1106m2, giving a design impermeable area of 2176m2 (0.22ha).

The greenfield discharge rate for the site is 5.4 l/s/ha (refer to attached printout from Microdrainage Source Control software), giving a greenfield rate (0.22 hectares) of 1.2 l/s.

The attached calculation sheet shows that a storage volume of 155.5m3 is required to accommodate the 100 year (+40%) rainfall event.

A storage volume of 156m3 can be provided within a geocellular crate tank below the paving at the lowest part of the site (4m wide x 24m long x 0.8m deep), along with supplementary storage in the porous paving sub-base above. (refer to attached calculations)

It is proposed to provide a simple orifice flow control device to attenuate flows to 1.2l/s.

Exceedance Flows

In any surface water design scenario it is possible that the peak design storm could be exceeded or the system could fail through damage or blockage. The exceedance flow route indicates how water will behave in this event, and must ensure that it is controlled and dispersed safely, without risk to property or persons.

In this case such flows will be directed safely to the south east corner of the site and directly into the watercourse. The constraints of the site make this the only safe exceedance flow route available.

Foul Water

There is a public foul water sewer, 150mm diameter, running through the site, parallel with the watercourse, approximately 10m from the eastern boundary. (refer to attached sewer records).

It is therefore proposed to connect all of the new houses to this sewer.

Consent to connect will be required from Southern Water under Section 106 of the Water Industry Act.

It will also be necessary to divert the sewer to avoid clashing with the proposed new dwellings.

Conclusion and Recommendations.

Infiltration rates are expected to be moderate at this site, with a potentially shallow water table. We have therefore proposed two drainage options, one based on infiltration and one based on attenuated discharge to a watercourse.

The access road and parking areas will be constructed in permeable paving.

Surface water generated from the roof areas will be directed to the paving sub-base.

Preliminary designs for Option 1 (infiltration) are based on an estimated infiltration rate of $3x10^{-5}$ m/s.

The depth of sub-base for the road has been checked and found to accommodate the 1 in 100 year storm with, an appropriate allowance for future climate change (currently 40%), without surface flooding.

Detailed design should be based on an infiltration rate obtained by testing to BRE365.

Should infiltration rates be too low, or other factors prevent the use of soakaways (contamination, shallow groundwater), then an attenuated discharge to the adjacent watercourse (Option 2) will ensure that a sustainable approach to surface water drainage can be achieved.

In the event of failure by blockage, or an event greater than the design storm, exceedance flows will be directed safely to the watercourse.

Foul drainage from the new dwellings will discharge to an existing public sewer which crosses the site. This sewer will require diverting in order to accommodate the development.

It is therefore concluded that foul water drainage and a sustainable surface water drainage system are practical and can be implemented at this site in line with the Building Regulations SUDS hierarchy and current planning policy.

Calculations and preliminary proposals are appended to this report.

Kind regards

[redacted]

Mark Taylor
Flow Drainage Design

Enc.
Porous Paving Design Calculations
Attenuation System Design Calculations
Qbar Calculation
Borehole Record TQ 22 SE 33
Sewer Record
Preliminary drainage proposals

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Badger's Brook			
		Revision	
Job No:	2325	Page:	C/01
Prepared By:	MT	Date:	05/03/2023

Section: **Plot 1 - Porous Paving/Infiltration Blanket**

ALTERNATIVE SOAKAWAY SIZES			
	trench soakaways		
width of trench *[mm]*:	**450**	**600**	**900**
required trench length *[m]*:	160.59	125.41	88.53
	ring soakaways		
diameter of ring *[mm]*:	1050	1350	1500
required pit diameter *[m]*:	4.37	4.25	4.17

** Based on effective depth and number of pits as in Soakaway Data table*

SUMMARY OF CALCULATIONS		
critical design rainfall duration 't_{crit}' =	30	*min*
required storage volume 'V_{req}' =	9.32	*m^3*
provided storage volume 'V_{prov}' =	10.59	*m^3*
utilisation factor =	**0.88**	***.OK***
required time to discharge 50% 't_{50}' =	0.47	*hours*
utilisation factor =	**0.02**	***.OK***

GENERAL DATA	
site location:	**England and Wales**
soakaway type:	**infilled pit or trench**
impermeable area drained to soakaway 'A' *[m^2]* =	**325**
60 min rainfall depth of 5 year return period 'R' *[mm]* =	**20**
M5-60 to M5-2d rainfall ratio 'r' =	**0.50**
allowance for climate change:	**40%**

SOAKAWAY DATA	
soakaway width 'W' [m] =	**5.30**
soakaway length 'L' [m] =	**18.00**
total depth from ground level 'D_b' *[m]* =	**0.37**
depth to drain invert level 'D_d' *[m]* =	**0.00**
soakaway effective depth 'D_{eff}' *[m]* =	0.37
free volume in infill aggregate *[%]* =	**30**

SOIL INFILTRATION DATA	
allowance for infiltration through soakaway base:	**100%**
available on-site infiltration test results:	○ Yes ◉ No
soil infiltration rate 'f' *[m/s]* =	**3.00E-05**

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION

rainfall duration *[min]*	rainfall factor Z1	**M5-D** rainfalls *[mm]*	**M10-D** Z2	rainfalls *[mm]*	inflow *[m^3]*	**M50-D** Z2	rainfalls *[mm]*	inflow *[m^3]*	**M100-D** Z2	rainfalls *[mm]*	inflow *[m^3]*	outflow from soakaway *[m^3]*	required storage *[m^3]*
5	0.39	7.80	1.21	13.18	4.28	1.61	17.59	5.72	1.86	20.28	6.59	0.94	5.66
10	0.54	10.80	1.22	18.49	6.01	1.66	25.07	8.15	1.92	29.07	9.45	1.87	7.58
15	0.65	13.00	1.23	22.42	7.29	1.68	30.58	9.94	1.96	35.64	11.58	2.81	8.77
30	0.82	16.40	1.24	28.47	9.25	1.71	39.22	12.75	2.00	45.95	14.93	5.62	**9.32**
60	1.00	20.00	1.24	34.72	11.28	1.73	48.44	15.74	2.03	56.84	18.47	11.23	7.24
120	1.19	23.80	1.24	41.32	13.43	1.72	57.39	18.65	2.01	67.13	21.82	22.47	0.00
240	1.38	27.60	1.23	47.51	15.44	1.71	66.06	21.47	1.99	76.86	24.98	44.94	0.00
360	1.51	30.20	1.22	51.56	16.76	1.70	71.83	23.34	1.97	83.22	27.05	67.41	0.00
600	1.68	33.60	1.21	56.88	18.49	1.68	78.95	25.66	1.94	91.31	29.68	112.34	0.00
1440	2.03	40.60	1.19	67.57	21.96	1.64	93.01	30.23	1.89	107.15	34.83	269.62	0.00

** Z2 is growth factor from M5 rainfalls*

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Badger's Brook			
		Revision	
Job No:	2325	Page:	C/01
Prepared By:	MT	Date:	05/03/2023

Section: **Plots 2 to 5 - Porous Paving / Infiltration Blanket**

ALTERNATIVE SOAKAWAY SIZES			
	trench soakaways		
width of trench *[mm]*:	450	600	900
required trench length *[m]*:	604.49	472.20	333.43
	ring soakaways		
diameter of ring *[mm]*:	1050	1350	1500
required pit diameter *[m]*:	8.84	8.78	8.74

** Based on effective depth and number of pits as in Soakaway Data table*

SUMMARY OF CALCULATIONS		
critical design rainfall duration 't_{crit}' =	30	*min*
required storage volume 'V_{req}' =	36.19	m^3
provided storage volume 'V_{prov}' =	38.24	m^3
utilisation factor =	**0.95**	***.OK***
required time to discharge 50% 't_{50}' =	0.48	*hours*
utilisation factor =	**0.02**	***.OK***

GENERAL DATA	
site location:	England and Wales
soakaway type:	infilled pit or trench
impermeable area drained to soakaway 'A' $[m^2]$ =	1223
60 min rainfall depth of 5 year return period 'R' *[mm]* =	20
M5-60 to M5-2d rainfall ratio 'r' =	0.50
allowance for climate change:	40%

SOAKAWAY DATA	
soakaway width 'W' [m] =	5.30
soakaway length 'L' [m] =	65.00
total depth from ground level 'D_b' *[m]* =	0.37
depth to drain invert level 'D_c' *[m]* =	0.00
soakaway effective depth 'D_{eff}' *[m]* =	0.37
free volume in infill aggregate *[%]* =	30

SOIL INFILTRATION DATA	
allowance for infiltration through soakaway base:	100%
available on-site infiltration test results:	○ Yes ◉ No
soil infiltration rate 'f' *[m/s]* =	3.00E-05

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION

rainfall duration *[min]*	rainfall factor Z1	**M5-D** rainfalls *[mm]*	M10-D			M50-D			M100-D			outflow from soakaway $[m^3]$	required storage $[m^3]$
			Z2	rainfalls *[mm]*	inflow $[m^3]$	Z2	rainfalls *[mm]*	inflow $[m^3]$	Z2	rainfalls *[mm]*	inflow $[m^3]$		
5	0.39	7.80	1.21	13.18	16.12	1.61	17.59	21.51	1.86	20.28	24.80	3.33	21.47
10	0.54	10.80	1.22	18.49	22.62	1.66	25.07	30.66	1.92	29.07	35.56	6.67	28.89
15	0.65	13.00	1.23	22.42	27.42	1.68	30.58	37.39	1.96	35.64	43.58	10.00	33.58
30	0.82	16.40	1.24	28.47	34.82	1.71	39.22	47.97	2.00	45.95	56.19	20.01	**36.19**
60	1.00	20.00	1.24	34.72	42.46	1.73	48.44	59.24	2.03	56.84	69.52	40.02	29.50
120	1.19	23.80	1.24	41.32	50.53	1.72	57.39	70.19	2.01	67.13	82.10	80.03	2.07
240	1.38	27.60	1.23	47.51	58.11	1.71	66.06	80.79	1.99	76.86	94.00	160.06	0.00
360	1.51	30.20	1.22	51.56	63.05	1.70	71.83	87.84	1.97	83.22	101.78	240.09	0.00
600	1.68	33.60	1.21	56.88	69.57	1.68	78.95	96.56	1.94	91.31	111.68	400.15	0.00
1440	2.03	40.60	1.19	67.57	82.64	1.64	93.01	113.75	1.89	107.15	131.05	960.36	0.00

** Z2 is growth factor from M5 rainfalls*

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Badger's Brook		Revision	
Job No:	**2134**	Page:	**C/01**
Prepared By:	**MT**	Date:	**05/03/2023**

Section: **Attenuated Discharge to Watercourse**

GENERAL DATA	
site location:	England and Wales
60 min rainfall depth of 5 year return period 'R' *[mm]* =	20
M5-60 to M5-2d rainfall ratio 'r' =	0.50
proposed discharge rate 'v_1' *[litre/s]* =	1.20
proposed discharge rate 'v_2' *[litre/s]* =	0.00
allowance for climate change:	40%

SUMMARY OF CALCULATIONS		
required storage volume for discharge rate 'v_1' =	**155.50**	m^3
required storage volume for discharge rate 'v_2' =		m^3

AREA DATA		impermeability *[%]*	effective area *[m^2]*
impermeable area 'A_1' *[m^2]* =	2176	100.00	2176
landscaping and/or green roof area 'A_2' *[m^2]* =		80.00	0
other partially permeable area 'A_3' *[m^2]* =		20.00	0
AREA DRAINED TO ATTENUATION TANK =			**2176 m^2**

REQUIRED STORAGE VOLUME PER RAINFALL DURATION FOR DISCHARGE RATE v_1

rainfall duration *[min]*	rainfall factor Z1	**M5-D** rainfalls *[mm]*	M10-D Z2	M10-D rainfalls *[mm]*	M10-D inflow *[m^3]*	M20-D Z2	M20-D rainfalls *[mm]*	M20-D inflow *[m^3]*	M100-D Z2	M100-D rainfalls *[mm]*	M100-D inflow *[m^3]*	outflow from attenuation tank *[m^3]*	required storage *[m^3]*
5	0.39	7.80	1.21	13.18	28.68	1.39	15.16	32.98	1.86	20.28	44.13	0.36	43.77
10	0.54	10.80	1.22	18.49	40.24	1.41	21.39	46.55	1.92	29.07	63.26	0.72	62.54
15	0.65	13.00	1.23	22.42	48.79	1.43	25.99	56.55	1.96	35.64	77.54	1.08	76.46
30	0.82	16.40	1.24	28.47	61.95	1.44	33.13	72.08	2.00	45.95	99.98	2.16	97.82
60	1.00	20.00	1.24	34.72	75.55	1.45	40.60	88.35	2.03	56.84	123.68	4.32	119.36
120	1.19	23.80	1.24	41.32	89.91	1.44	48.06	104.58	2.01	67.13	146.08	8.64	137.44
240	1.38	27.60	1.23	47.51	103.39	1.43	55.24	120.20	1.99	76.86	167.25	17.28	149.97
360	1.51	30.20	1.22	51.56	112.19	1.42	60.00	130.57	1.97	83.22	181.10	25.92	155.18
600	1.68	33.60	1.21	56.88	123.77	1.41	66.12	143.88	1.94	91.31	198.70	43.20	**155.50**
1440	2.03	40.60	1.19	67.57	147.04	1.38	78.30	170.39	1.89	107.15	233.17	103.68	129.49

** Z2 is a growth factor from M5 rainfalls*

REQUIRED STORAGE VOLUME PER RAINFALL DURATION FOR DISCHARGE RATE v_2

rainfall duration *[min]*	rainfall factor Z1	**M5-D** rainfalls *[mm]*	M10-D Z2	M10-D rainfalls *[mm]*	M10-D inflow *[m^3]*	M30-D Z2	M30-D rainfalls *[mm]*	M30-D inflow *[m^3]*	M100-D Z2	M100-D rainfalls *[mm]*	M100-D inflow *[m^3]*	outflow from attenuation tank *[m^3]*	required storage *[m^3]*
5	0.39	7.80											
10	0.54	10.80											
15	0.65	13.00											
30	0.82	16.40											
60	1.00	20.00											
120	1.19	23.80											
240	1.38	27.60											
360	1.51	30.20											
600	1.68	33.60											
1440	2.03	40.60											

** Z2 is a growth factor from M5 rainfalls*

Badgers Brook	01/03/2023	

Orifice Discharge

Q=Cd(1/4*3.142*D2)SQRT(2gh)

Cd	0.6	Sharp orifice
D	0.024	m
g	9.81	
h	1	m
Q	0.001202457	m3/s
	1.2	l/s

24mm orifice = 1.2l/s discharge

Storage Volume - Porous Paving

Width	4.0	m
Length	24.0	m
Depth	0.35	m
Void	30	%
Volume =	10.08	m3

Storage Volume - Tank

Width		4	m
Length		24	m
Depth		0.8	m
Number of		2	
Void		95	%
Volume =		145.92	m3
	Total	156.00	m3

Date 05/03/2023 11:36	Designed by Mark
File	Checked by
Micro Drainage	Source Control 2016.1.1

IH 124 Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	50.000	Urban	0.000
SAAR (mm)	832	Region Number	Region 7

Results	**l/s**
QBAR Rural	268.9
QBAR Urban	268.9
Q100 years	857.7
Q1 year	228.5
Q2 years	236.9
Q5 years	344.1
Q10 years	435.5
Q20 years	538.6
Q25 years	577.5
Q30 years	609.3
Q50 years	704.4
Q100 years	857.7
Q200 years	1008.2
Q250 years	1056.6
Q1000 years	1387.3

Qbar 50ha = 270 l/s

Qbar 1ha = 5.4 l/s

Qbar 0.ssha = 1.2 l/s

Qbar for the site is 1.2 l/s

Boring method	Shell and Auger	Location	Embankment Chainage 280m		
Boring equipment	Pilcon Wayfarer 30	National Grid Reference	TQ 26432 23691	Sheet 1 of 1	
Boring diameter (mm)	150 to 4.00m	Contractor	WIMPEY LABORATORIES LIMITED	Date Commenced	21.1.80
Casing diameter (mm)	150 to 3.50m	Contractors Job Reference	S/16465	Ground Level (m) AOD	63.70

Depth (m)	Sample	In situ test	Date & casing depth (m)	Depth to Water (m)	Strata Thickness (m)	Strata Depth (m)	Strata Description	Level (m) AOD	Legend
			21/1						
0.30	D				0.30	0.30	TOPSOIL	63.40	
0.50	U		Nil		0.50	0.80	Soft mottled brown and grey sandy CLAY	62.90	
0.95	D			1.00*					
1.00	W		Nil						
1.15	D	S35							
1.50	BD				1.50		Medium dense to dense orange-brown, locally light grey, silty fine to coarse SAND		
1.65	D	S24	1.50						
2.00	BD								
2.15	D	S18	2.00			2.30		61.40	
			2.50	1.8?					
2.50	U		22/1	1.80					
2.95	D						Hard fissured mottled light grey, light brown, orange and red silty CLAY		
3.00	U		3.00						
3.45	D								
3.50	U		3.50						
3.95	D			-		4.00		59.70	

END OF BOREHOLE

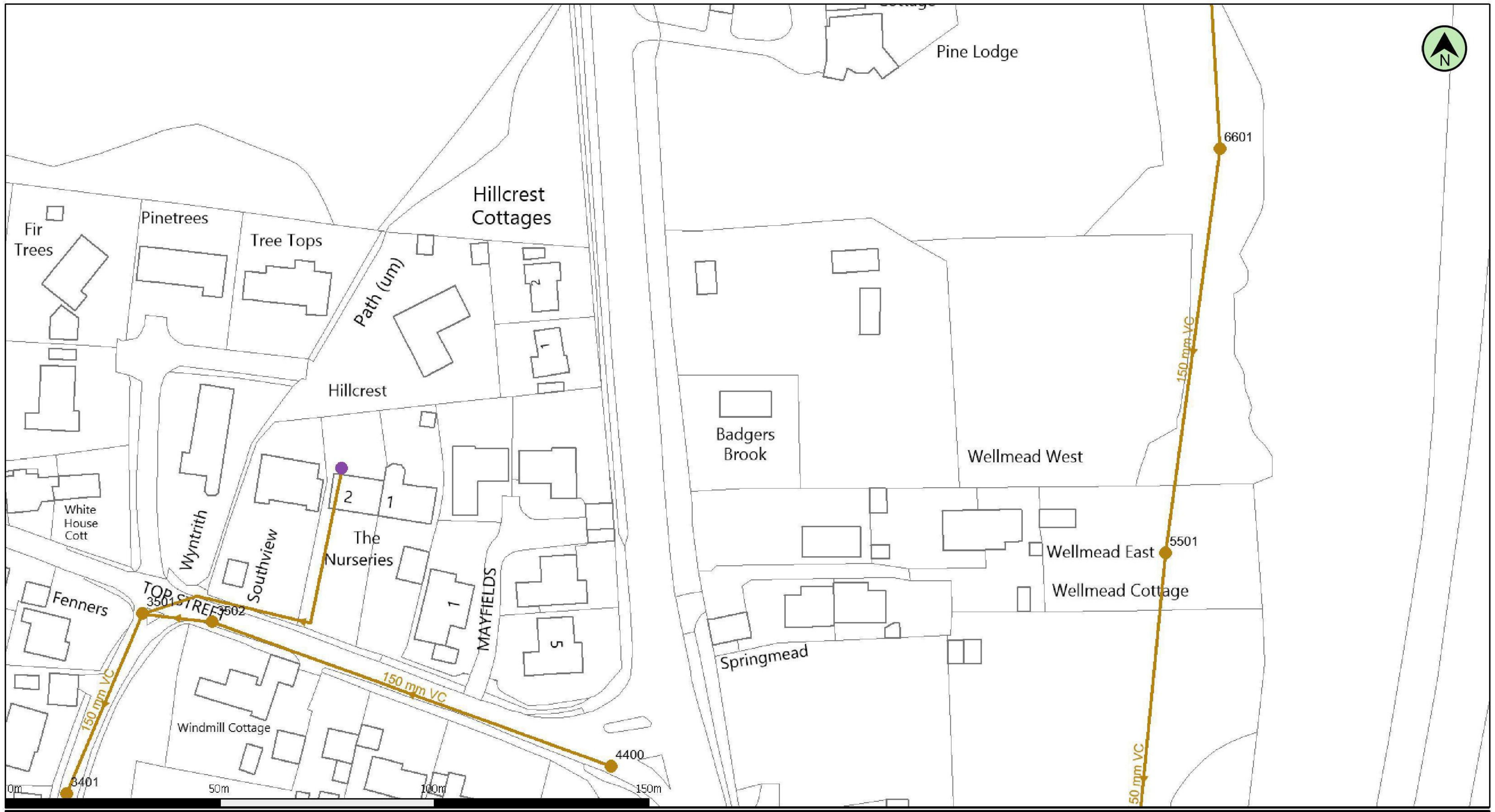
Remarks

Ground-water was encountered at a depth of 1.00m as a seepage which was not sealed off by casing.
Water was added to assist boring below 1.00m depth.
After withdrawing casing water level stood at 1.65m below ground level.

Key to symbols & abbreviations in Preface notes

A23 BOLNEY TO BRIGHTON

Figure 10

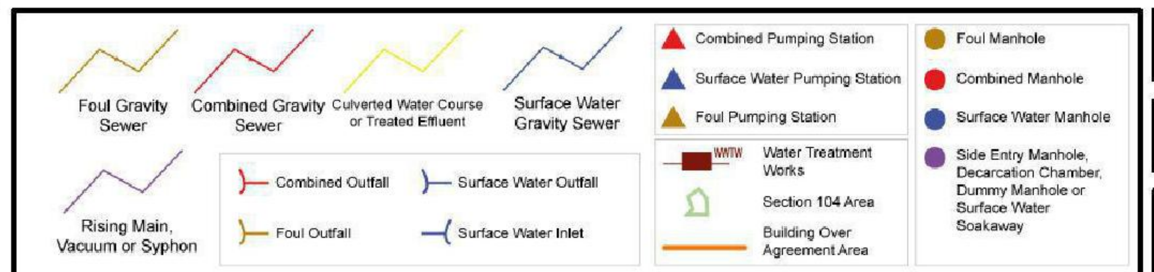


 | Date: 03/03/23 | Scale: 1:1250 | Map Centre: 526497,123571 | Data updated: 27/02/23 | Our Ref: 1101049 - 1 | Wastewater Plan A4

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 2023 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.



mark@flowdrainage.co.uk

Badgers Brook

WATER for LIFE from Southern Water.

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
3401	F	55.24	0.00	-
3501	F	55.68	54.05	-
3502	F	56.16	54.80	-
4400	F	59.12	57.70	-
5501	F	51.98	48.97	-
6601	F	54.68	53.21	-

Manhole Reference	Liquid Type

KEY

- Proposed Surface water sewer
- Proposed Foul water sewer
- Existing Foul water sewer
- Rain water pipe
- Rodding eye
- Access Chamber
- Surface Water Silt Trap
- Surface water distribution tank
- Permeable Paving
- Infiltration Blanket
- Exceedance Flow Path

Surface Water Drainage Strategy:

OPTION 1 - INFILTRATION

Access road - Porous 'No-Dig' construction through TPZs

Plot 1 driveway and plot 2-5 turning area constructed with permeable sub-base infiltration blankets.

Roof water discharging via silt traps to porous sub-base.

Infiltration test to BRE365 required to confirm design.

Rev	Description	Date	Chkd

flow DRAINAGE DESIGN

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Client : MGR Homes

Project : Badger's Brook Bolney

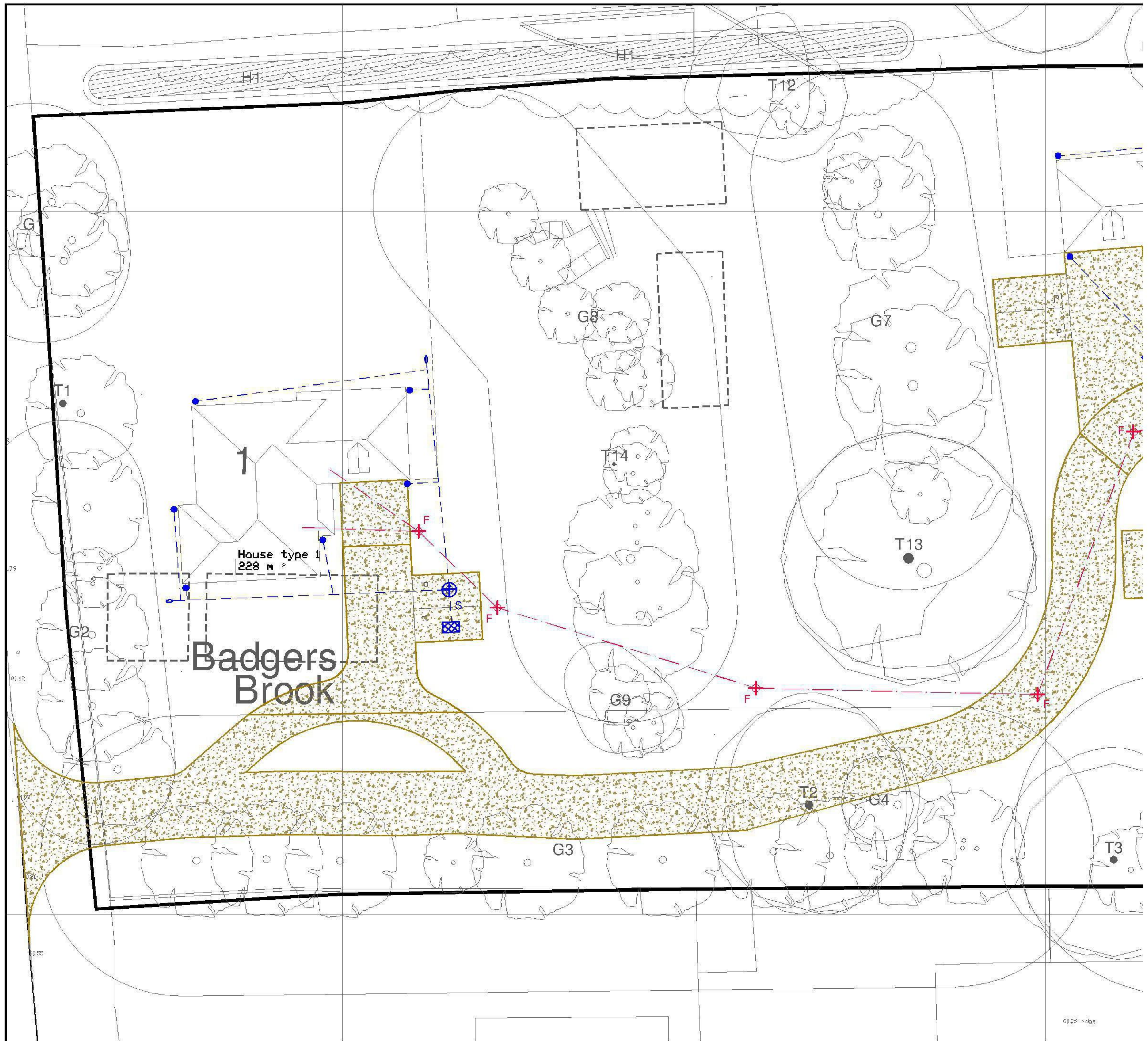
Title : Proposed Surface Water Drainage OPTION 1 - Infiltration

Project Engineer : M. Taylor | Scale : 1:200 @ A1

Project Director : | Date : March 2023

Status : APPROVAL

Drawing No. 2325 / 01 | Rev



Surface Water Drainage Strategy:

OPTION 2 - ATTENUATION

Access road to be constructed with permeable
attenuation tank below lowest part.

Roof water discharging via silt traps to geocellu
additional stoarge in sub base of paving above.

Discharge via flow control chamber to watercou