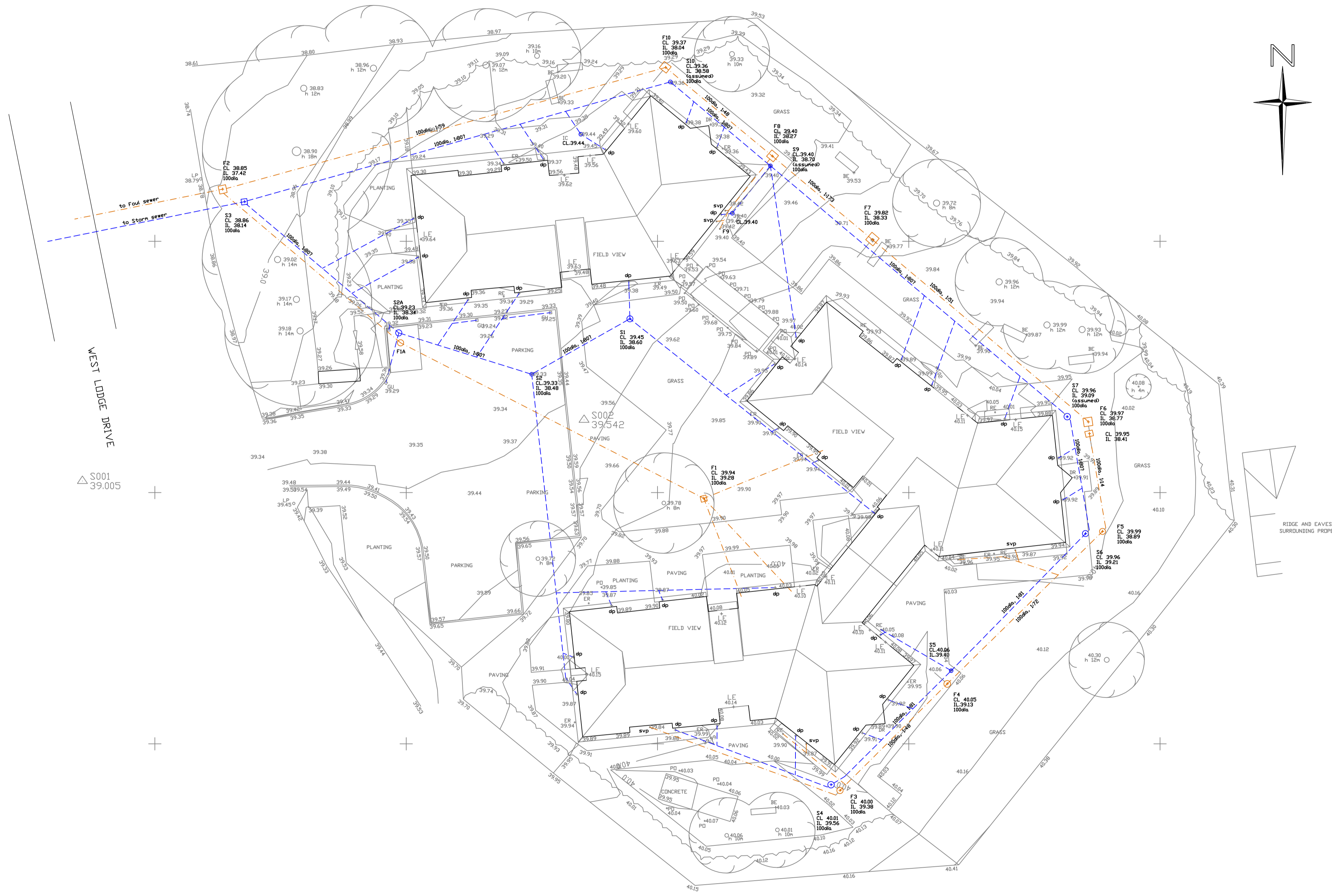
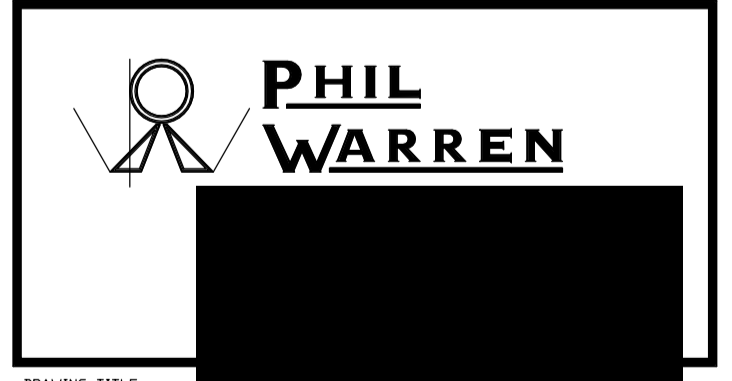


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 6. The level datum GPS derived at S001.
 7. All dimensions are in metres or millimetres unless otherwise stated.

216860N
385660E
216840N
216820N
216800N
216780N
216760N
385660E
385680E
385700E
385720E
385740E
385760E
385780E
216860N
216840N
216820N
216800N
216780N
216760N
385660E
385680E
385700E
385720E
385740E
385760E
385780E



NO.	REVISION	DATE



DRAWING TITLE
EXISTING DRAINAGE LAYOUT

SITE ADDRESS
**FIELD VIEW, WEST LODGE DRIVE
CONEY HILL, GLOUCESTER, GL4 4XU**

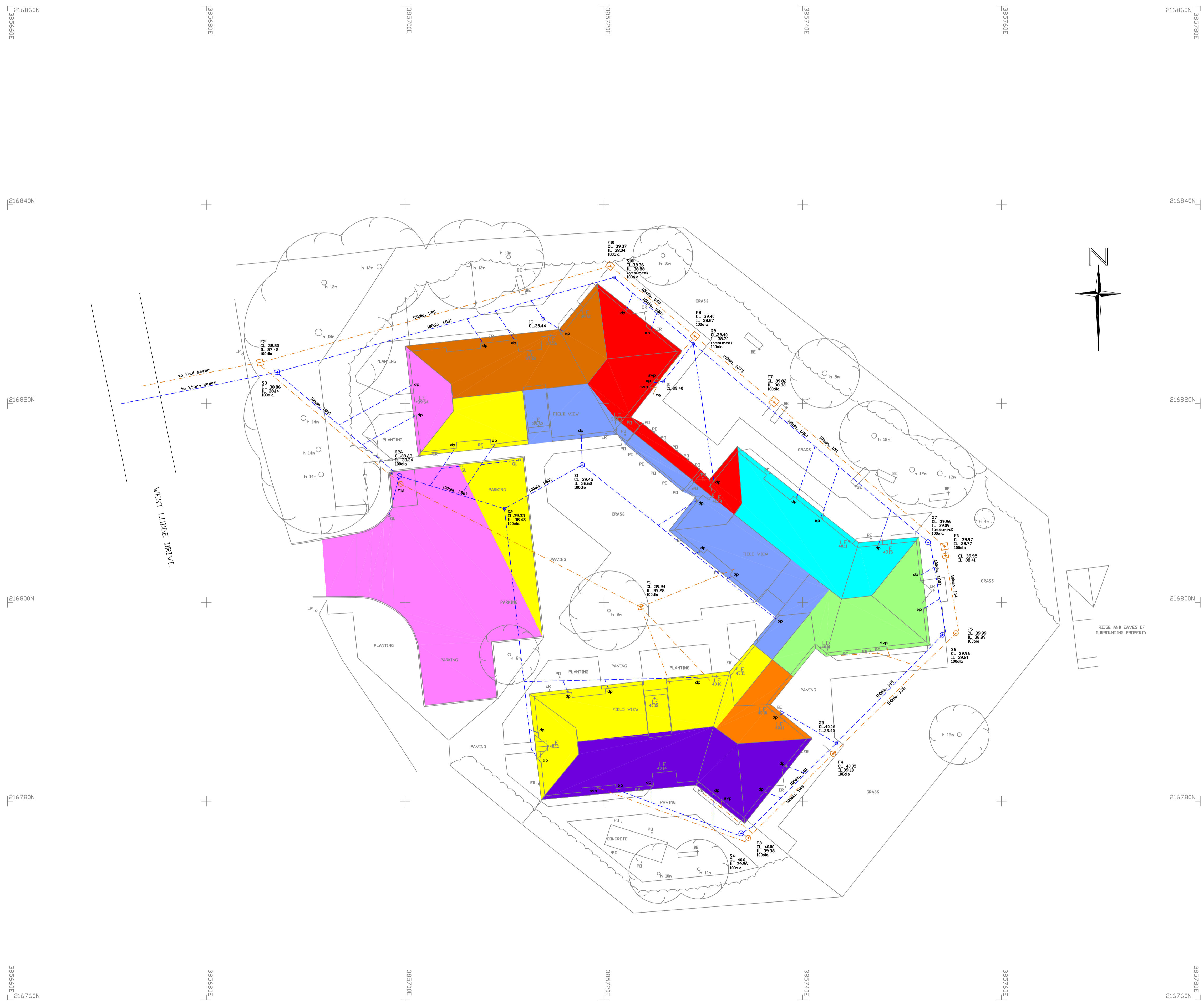
CLIENT
HOLMLEIGH CARE

SCALES	DRAWN BY	DATE
1:200 at A1	PW	10/01/23

PROJECT NO.	DRAWING NO.	REV.
22-11-02	01	



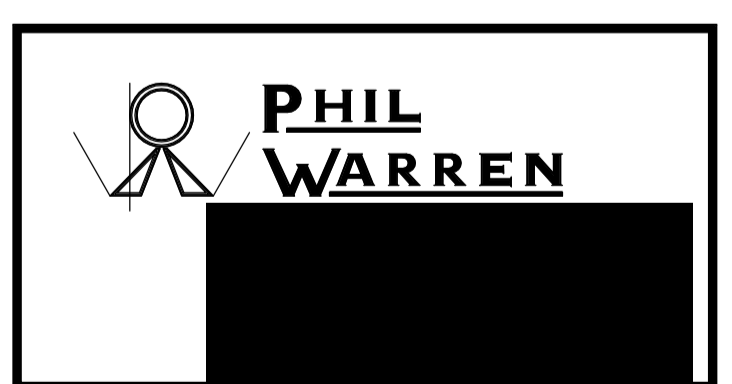
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IMPERMEABLE AREAS

160m ²	S1
240m ²	S2
310m ²	S2A
190m ²	S4
40m ²	S5
90m ²	S6
100m ²	S7
90m ²	S9
110m ²	S10
1330m ²	TOTAL

NO	REVISION	DATE



DRAWING TITLE
EXISTING IMPERMEABLE AREAS PLAN

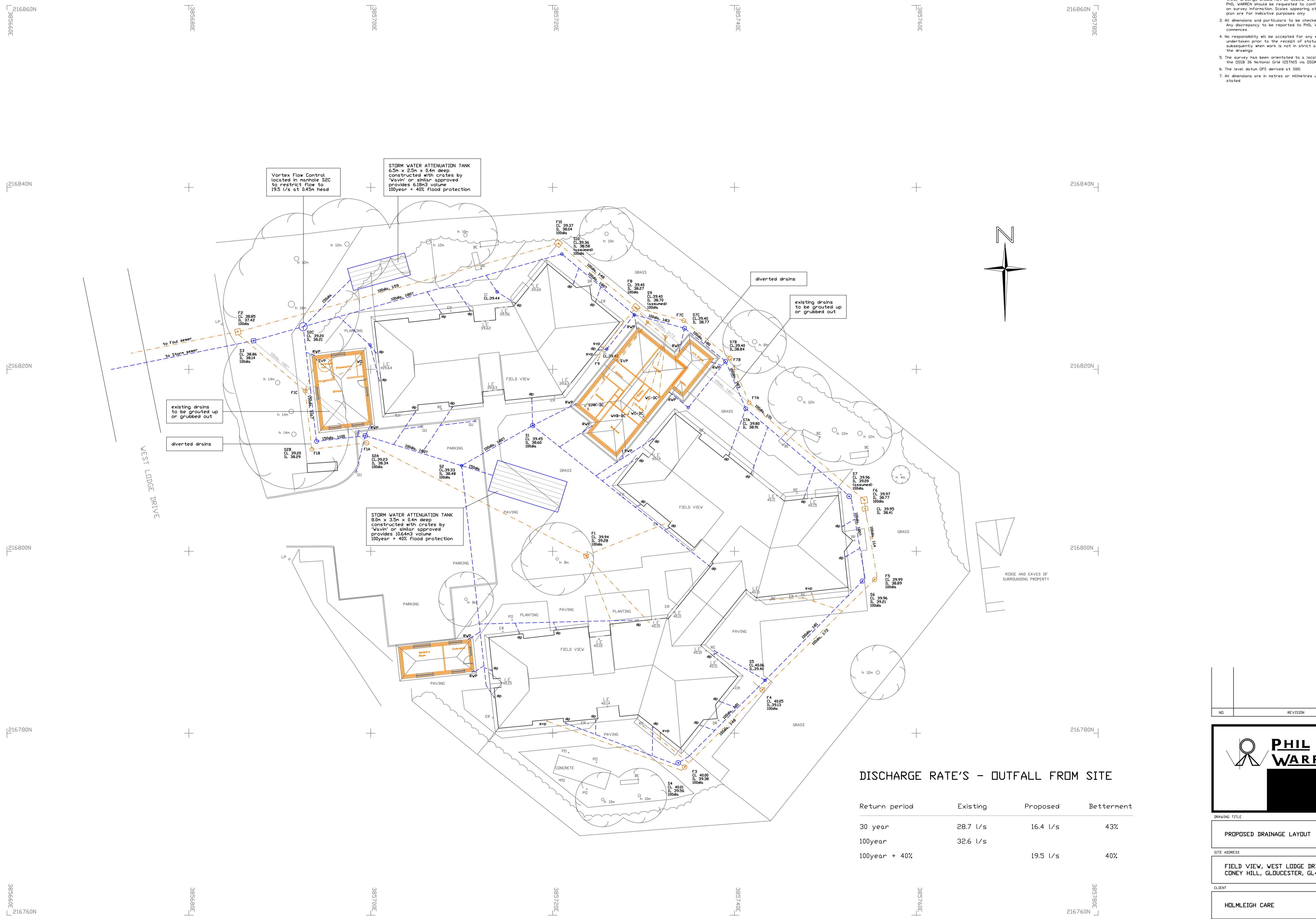
SITE ADDRESS
**FIELD VIEW, WEST LODGE DRIVE
CONEY HILL, GLOUCESTER, GL4 4XU**

CLIENT
HOLMLEIGH CARE

SCALES DRAWN BY DATE
1:200 at A1 PW 10/01/23

PROJECT NO DRAWING NO REV
22-11-02 02

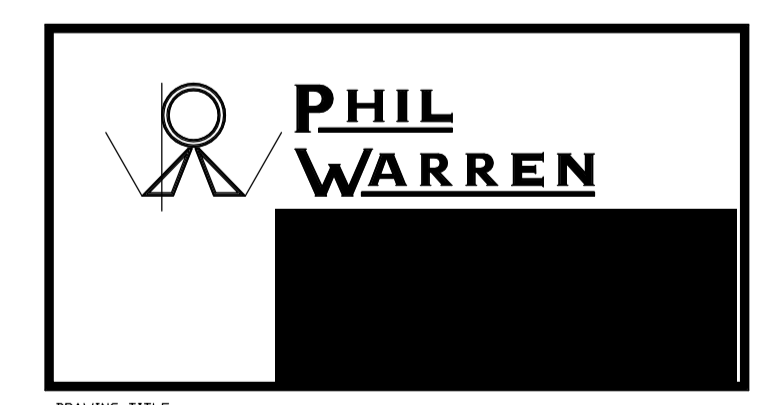
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 6. The level datum GPS derived at S001.
 7. All dimensions are in metres or millimetres unless otherwise stated.



DISCHARGE RATE'S - OUTFALL FROM SITE

Return period	Existing	Proposed	Betterment
30 year	28.7 l/s	16.4 l/s	43%
100year	32.6 l/s		
100year + 40%		19.5 l/s	40%

NO	REVISION	DATE



DRAWING TITLE
PROPOSED DRAINAGE LAYOUT

SITE ADDRESS
**FIELD VIEW, WEST LODGE DRIVE
 CONEY HILL, GLOUCESTER, GL4 4XU**

CLIENT
HOLMLEIGH CARE

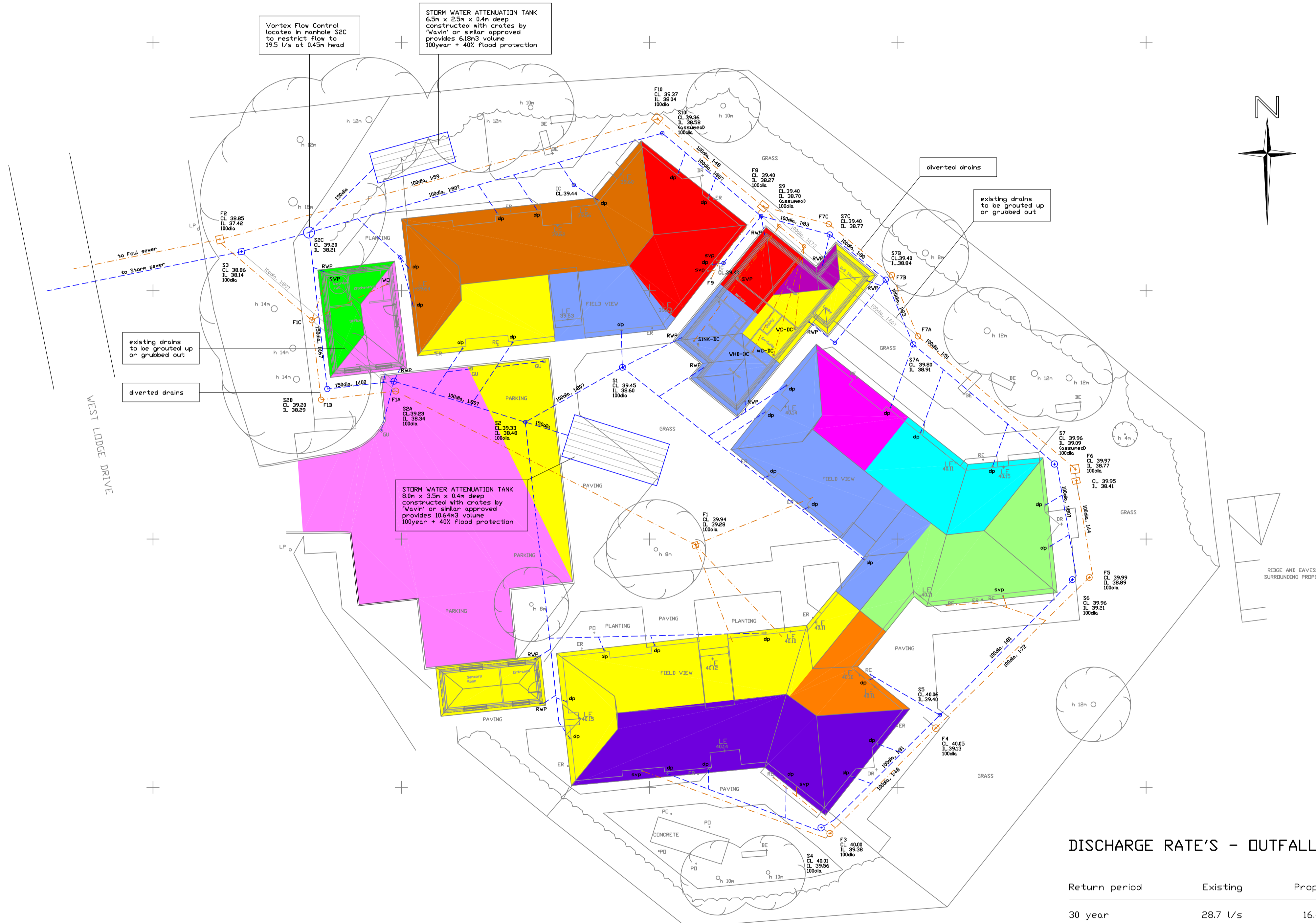
SCALES DRAWN BY DATE
 1:200 at A1 PW 10/01/23

PROJECT NO DRAWING NO REV
 22-11-02 03

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 6. The level datum GPS derived at S001.
 7. All dimensions are in metres or millimetres unless otherwise stated.

IMPERMEABLE AREAS

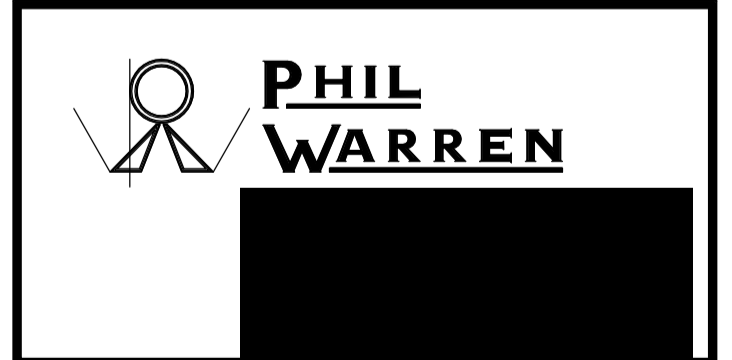
210m ²	S1
260m ²	S2
330m ²	S2A
30m ²	S2B
190m ²	S4
40m ²	S5
90m ²	S6
70m ²	S7
30m ²	S7A
40m ²	S7B
10m ²	S7C
80m ²	S9
140m ²	S10
1520m ²	TOTAL



DISCHARGE RATE'S - OUTFALL FROM SITE

Return period	Existing	Proposed	Betterment
30 year	28.7 l/s	16.4 l/s	43%
100year	32.6 l/s		
100year + 40%		19.5 l/s	40%

NO	REVISION	DATE



DRAWING TITLE
PROPOSED IMPERMEABLE AREAS PLAN

SITE ADDRESS
**FIELD VIEW, WEST LODGE DRIVE
CONEY HILL, GLOUCESTER, GL4 4XU**

CLIENT
HOLMLEIGH CARE

SCALES DRAWN BY DATE
1:200 at A1 PW 10/01/23

PROJECT NO DRAWING NO REV
22-11-02 04

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)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	0.450
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

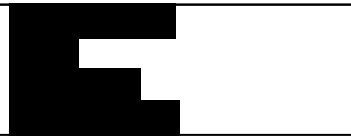
Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
S1	0.016	4.00	39.450	450	0.850
S2	0.024	4.00	39.330	450	0.850
S2A	0.031	4.00	39.230	450	0.890
S3			38.860	450	0.720
S4	0.019	4.00	40.010	450	0.450
S5	0.004	4.00	40.050	450	0.650
S6	0.009	4.00	39.960	450	0.750
S7	0.010	4.00	39.960	450	0.870
S9	0.009	4.00	39.400	450	0.700
S10	0.011	4.00	39.360	450	0.780
exs			38.800	1200	0.900

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	S1	S2	8.980	0.600	38.600	38.480	0.120	74.8	100	4.17	50.0
1.001	S2	S2A	11.080	0.600	38.480	38.340	0.140	79.1	100	4.38	50.0
1.002	S2A	S3	16.110	0.600	38.340	38.140	0.200	80.6	150	4.62	50.0
2.000	S4	S5	13.180	0.600	39.560	39.400	0.160	82.4	100	4.26	50.0
2.001	S5	S6	15.280	0.600	39.400	39.210	0.190	80.4	100	4.56	50.0
2.002	S6	S7	9.420	0.600	39.210	39.090	0.120	78.5	100	4.74	50.0
2.003	S7	S9	30.940	0.600	39.090	38.700	0.390	79.3	100	5.33	50.0
2.004	S9	S10	10.400	0.600	38.700	38.580	0.120	86.7	150	5.49	50.0
2.005	S10	S3	35.190	0.600	38.580	38.140	0.440	80.0	150	6.01	50.0
1.003	S3	exs	16.000	0.600	38.140	37.900	0.240	66.7	150	6.23	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	0.890	7.0	2.2	0.750	0.750	0.016	0.0	38	0.782
1.001	0.866	6.8	5.4	0.750	0.790	0.040	0.0	68	0.961
1.002	1.121	19.8	9.6	0.740	0.570	0.071	0.0	74	1.112
2.000	0.848	6.7	2.6	0.350	0.550	0.019	0.0	43	0.796
2.001	0.859	6.7	3.1	0.550	0.650	0.023	0.0	48	0.844
2.002	0.869	6.8	4.3	0.650	0.770	0.032	0.0	58	0.922
2.003	0.865	6.8	5.7	0.770	0.600	0.042	0.0	70	0.967
2.004	1.080	19.1	6.9	0.550	0.630	0.051	0.0	62	0.995
2.005	1.125	19.9	8.4	0.630	0.570	0.062	0.0	68	1.080
1.003	1.233	21.8	18.0	0.570	0.750	0.133	0.0	104	1.374









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	8.980	74.8	100	Circular	39.450	38.600	0.750	39.330	38.480	0.750
1.001	11.080	79.1	100	Circular	39.330	38.480	0.750	39.230	38.340	0.790
1.002	16.110	80.6	150	Circular	39.230	38.340	0.740	38.860	38.140	0.570
2.000	13.180	82.4	100	Circular	40.010	39.560	0.350	40.050	39.400	0.550
2.001	15.280	80.4	100	Circular	40.050	39.400	0.550	39.960	39.210	0.650
2.002	9.420	78.5	100	Circular	39.960	39.210	0.650	39.960	39.090	0.770
2.003	30.940	79.3	100	Circular	39.960	39.090	0.770	39.400	38.700	0.600
2.004	10.400	86.7	150	Circular	39.400	38.700	0.550	39.360	38.580	0.630
2.005	35.190	80.0	150	Circular	39.360	38.580	0.630	38.860	38.140	0.570
1.003	16.000	66.7	150	Circular	38.860	38.140	0.570	38.800	37.900	0.750

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	450	Manhole	Private	S2	450	Manhole	Private
1.001	S2	450	Manhole	Private	S2A	450	Manhole	Private
1.002	S2A	450	Manhole	Private	S3	450	Manhole	Private
2.000	S4	450	Manhole	Private	S5	450	Manhole	Private
2.001	S5	450	Manhole	Private	S6	450	Manhole	Private
2.002	S6	450	Manhole	Private	S7	450	Manhole	Private
2.003	S7	450	Manhole	Private	S9	450	Manhole	Private
2.004	S9	450	Manhole	Private	S10	450	Manhole	Private
2.005	S10	450	Manhole	Private	S3	450	Manhole	Private
1.003	S3	450	Manhole	Private	exs	1200	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	39.450	0.850	450				
				0	1.000	38.600	100
S2	39.330	0.850	450				
				0	1.001	38.480	100
S2A	39.230	0.890	450				
				1	1.001	38.340	100
				0	1.002	38.340	150
S3	38.860	0.720	450				
				1	2.005	38.140	150
				2	1.002	38.140	150
				0	1.003	38.140	150
S4	40.010	0.450	450				
				0	2.000	39.560	100
S5	40.050	0.650	450				
				1	2.000	39.400	100
				0	2.001	39.400	100

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S6	39.960	0.750	450	1	2.001	39.210	100
				0	2.002	39.210	100
S7	39.960	0.870	450	1	2.002	39.090	100
				0	2.003	39.090	100
S9	39.400	0.700	450	1	2.003	38.700	100
				0	2.004	38.700	150
S10	39.360	0.780	450	1	2.004	38.580	150
				0	2.005	38.580	150
exs	38.800	0.900	1200	1	1.003	37.900	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	17.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m ³ /ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

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 %)
30	0	0	0
100	0	0	0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 15 minute summer	226.195	64.005	30 year 240 minute summer	35.759	9.450
30 year 15 minute winter	158.733	64.005	30 year 240 minute winter	23.758	9.450
30 year 30 minute summer	147.452	41.724	30 year 360 minute summer	26.939	6.932
30 year 30 minute winter	103.475	41.724	30 year 360 minute winter	17.511	6.932
30 year 60 minute summer	98.615	26.061	30 year 480 minute summer	20.981	5.545
30 year 60 minute winter	65.517	26.061	30 year 480 minute winter	13.940	5.545
30 year 120 minute summer	59.946	15.842	30 year 600 minute summer	17.039	4.661
30 year 120 minute winter	39.827	15.842	30 year 600 minute winter	11.642	4.661
30 year 180 minute summer	45.598	11.734	30 year 720 minute summer	15.093	4.045
30 year 180 minute winter	29.640	11.734	30 year 720 minute winter	10.143	4.045

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 960 minute summer	12.278	3.233	100 year 240 minute summer	46.975	12.414
30 year 960 minute winter	8.133	3.233	100 year 240 minute winter	31.209	12.414
30 year 1440 minute summer	8.788	2.355	100 year 360 minute summer	35.264	9.075
30 year 1440 minute winter	5.906	2.355	100 year 360 minute winter	22.923	9.075
100 year 15 minute summer	291.766	82.560	100 year 480 minute summer	27.350	7.228
100 year 15 minute winter	204.748	82.560	100 year 480 minute winter	18.171	7.228
100 year 30 minute summer	191.982	54.324	100 year 600 minute summer	22.137	6.055
100 year 30 minute winter	134.724	54.324	100 year 600 minute winter	15.126	6.055
100 year 60 minute summer	129.253	34.158	100 year 720 minute summer	19.562	5.243
100 year 60 minute winter	85.873	34.158	100 year 720 minute winter	13.147	5.243
100 year 120 minute summer	78.836	20.834	100 year 960 minute summer	15.851	4.174
100 year 120 minute winter	52.377	20.834	100 year 960 minute winter	10.500	4.174
100 year 180 minute summer	59.966	15.431	100 year 1440 minute summer	11.278	3.023
100 year 180 minute winter	38.980	15.431	100 year 1440 minute winter	7.579	3.023



Results for 30 year Critical Storm Duration. Lowest mass balance: 99.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	S1	12	39.019	0.419	4.9	0.2245	0.0000	SURCHARGED
15 minute winter	S2	12	38.978	0.498	10.2	0.3603	0.0000	SURCHARGED
15 minute winter	S2A	11	38.700	0.360	17.4	0.3080	0.0000	SURCHARGED
15 minute winter	S3	12	38.536	0.396	29.2	0.0630	0.0000	SURCHARGED
15 minute winter	S4	12	39.730	0.170	5.9	0.1705	0.0000	FLOOD RISK
15 minute winter	S5	12	39.664	0.264	7.0	0.0744	0.0000	SURCHARGED
15 minute winter	S6	12	39.549	0.339	7.6	0.1351	0.0000	SURCHARGED
15 minute winter	S7	12	39.410	0.320	9.4	0.1247	0.0000	SURCHARGED
15 minute winter	S9	11	38.788	0.088	10.9	0.0368	0.0000	OK
15 minute winter	S10	12	38.702	0.122	14.2	0.0537	0.0000	OK
15 minute summer	exs	12	38.042	0.142	28.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	S1	1.000	S2	3.8	0.523	0.548	0.0703	
15 minute winter	S2	1.001	S2A	8.9	1.135	1.307	0.0867	
15 minute winter	S2A	1.002	S3	16.3	0.976	0.825	0.2836	
15 minute winter	S3	1.003	exs	28.7	1.629	1.316	0.2788	18.0
15 minute winter	S4	2.000	S5	5.8	0.844	0.867	0.1031	
15 minute winter	S5	2.001	S6	5.2	0.793	0.774	0.1196	
15 minute winter	S6	2.002	S7	6.6	0.839	0.962	0.0737	
15 minute winter	S7	2.003	S9	8.5	1.092	1.248	0.2343	
15 minute winter	S9	2.004	S10	11.0	0.987	0.574	0.1315	
15 minute winter	S10	2.005	S3	13.2	0.880	0.665	0.5794	



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	S1	12	39.385	0.785	6.4	0.4208	0.0000	FLOOD RISK
15 minute winter	S2	12	39.327	0.847	12.4	0.6136	0.0000	FLOOD RISK
15 minute winter	S2A	11	38.914	0.574	21.5	0.4910	0.0000	SURCHARGED
15 minute winter	S3	12	38.680	0.540	32.8	0.0858	0.0000	FLOOD RISK
15 minute winter	S4	12	40.001	0.441	7.5	0.4425	0.0000	FLOOD RISK
15 minute winter	S5	13	39.922	0.522	7.4	0.1472	0.0000	FLOOD RISK
15 minute winter	S6	13	39.804	0.594	8.4	0.2368	0.0000	FLOOD RISK
15 minute winter	S7	13	39.661	0.571	10.4	0.2221	0.0000	FLOOD RISK
15 minute winter	S9	12	38.958	0.258	12.2	0.1072	0.0000	SURCHARGED
15 minute winter	S10	12	38.908	0.328	15.8	0.1447	0.0000	SURCHARGED
15 minute summer	exs	10	38.042	0.142	31.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	S1	1.000	S2	4.6	0.590	0.660	0.0703	
15 minute winter	S2	1.001	S2A	10.6	1.361	1.566	0.0867	
15 minute winter	S2A	1.002	S3	20.0	1.137	1.011	0.2836	
15 minute winter	S3	1.003	exs	32.6	1.850	1.494	0.2788	23.2
15 minute winter	S4	2.000	S5	6.0	0.850	0.894	0.1031	
15 minute winter	S5	2.001	S6	5.2	0.779	0.775	0.1196	
15 minute winter	S6	2.002	S7	6.8	0.866	0.993	0.0737	
15 minute winter	S7	2.003	S9	9.0	1.151	1.326	0.2421	
15 minute winter	S9	2.004	S10	11.5	1.003	0.600	0.1831	
15 minute winter	S10	2.005	S3	14.3	0.988	0.721	0.6195	



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)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	0.450
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
S1	0.021	4.00	39.450	450	0.850
S2	0.026	4.00	39.330	450	0.850
S2A	0.033	4.00	39.230	450	0.890
S2B			39.200	450	0.914
S2C	0.003	4.00	39.200	450	0.990
S3			38.860	450	0.720
S4	0.019	4.00	40.010	450	0.450
S5	0.004	4.00	40.050	450	0.650
S6	0.009	4.00	39.960	450	0.750
S7	0.007	4.00	39.960	450	0.870
S7A	0.003	4.00	39.800	450	0.890
S7B	0.004	4.00	39.400	450	0.560
S7C	0.001	4.00	39.400	450	0.630
S9	0.008	4.00	39.400	450	0.700
S10	0.014	4.00	39.360	450	0.780
exs			38.800	1200	0.900

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	S1	S2	8.980	0.600	38.600	38.480	0.120	74.8	100	4.17	50.0
1.001	S2	S2A	11.080	0.600	38.480	38.340	0.140	79.1	100	4.38	50.0
1.002	S2A	S2B	5.400	0.600	38.340	38.286	0.054	100.0	150	4.47	50.0
1.003	S2B	S2C	12.700	0.600	38.286	38.210	0.076	167.1	150	4.74	50.0
2.000	S4	S5	13.180	0.600	39.560	39.400	0.160	82.4	100	4.26	50.0
2.001	S5	S6	15.280	0.600	39.400	39.210	0.190	80.4	100	4.56	50.0
2.002	S6	S7	9.420	0.600	39.210	39.090	0.120	78.5	100	4.74	50.0
2.003	S7	S7A	14.900	0.600	39.090	38.910	0.180	82.8	100	5.03	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	0.890	7.0	2.8	0.750	0.750	0.021	0.0	44	0.842
1.001	0.866	6.8	6.4	0.750	0.790	0.047	0.0	77	0.983
1.002	1.005	17.8	10.8	0.740	0.764	0.080	0.0	85	1.053
1.003	0.774	13.7	10.8	0.764	0.840	0.080	0.0	101	0.858
2.000	0.848	6.7	2.6	0.350	0.550	0.019	0.0	43	0.796
2.001	0.859	6.7	3.1	0.550	0.650	0.023	0.0	48	0.844
2.002	0.869	6.8	4.3	0.650	0.770	0.032	0.0	58	0.922
2.003	0.846	6.6	5.3	0.770	0.790	0.039	0.0	68	0.939



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)
2.004	S7A	S7B	5.600	0.600	38.910	38.840	0.070	80.0	100	5.14	50.0
2.005	S7B	S7C	5.800	0.600	38.840	38.770	0.070	82.9	100	5.25	50.0
2.006	S7C	S9	5.700	0.600	38.770	38.700	0.070	81.4	100	5.36	50.0
2.007	S9	S10	10.400	0.600	38.700	38.580	0.120	86.7	150	5.52	50.0
2.008	S10	S2C	29.590	0.600	38.580	38.210	0.370	80.0	150	5.96	50.0
1.004	S2C	S3	5.600	0.600	38.210	38.140	0.070	80.0	225	6.03	50.0
1.005	S3	exs	16.000	0.600	38.140	37.900	0.240	66.7	225	6.19	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)
2.004	0.861	6.8	5.7	0.790	0.460	0.042	0.0	71	0.965
2.005	0.846	6.6	6.2	0.460	0.530	0.046	0.0	77	0.961
2.006	0.853	6.7	6.4	0.530	0.600	0.047	0.0	78	0.970
2.007	1.080	19.1	7.5	0.550	0.630	0.055	0.0	65	1.016
2.008	1.125	19.9	9.4	0.630	0.840	0.069	0.0	72	1.108
1.004	1.463	58.2	20.6	0.765	0.495	0.152	0.0	93	1.343
1.005	1.604	63.8	20.6	0.495	0.675	0.152	0.0	87	1.432

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	8.980	74.8	100	Circular	39.450	38.600	0.750	39.330	38.480	0.750
1.001	11.080	79.1	100	Circular	39.330	38.480	0.750	39.230	38.340	0.790
1.002	5.400	100.0	150	Circular	39.230	38.340	0.740	39.200	38.286	0.764
1.003	12.700	167.1	150	Circular	39.200	38.286	0.764	39.200	38.210	0.840
2.000	13.180	82.4	100	Circular	40.010	39.560	0.350	40.050	39.400	0.550
2.001	15.280	80.4	100	Circular	40.050	39.400	0.550	39.960	39.210	0.650
2.002	9.420	78.5	100	Circular	39.960	39.210	0.650	39.960	39.090	0.770
2.003	14.900	82.8	100	Circular	39.960	39.090	0.770	39.800	38.910	0.790
2.004	5.600	80.0	100	Circular	39.800	38.910	0.790	39.400	38.840	0.460
2.005	5.800	82.9	100	Circular	39.400	38.840	0.460	39.400	38.770	0.530
2.006	5.700	81.4	100	Circular	39.400	38.770	0.530	39.400	38.700	0.600
2.007	10.400	86.7	150	Circular	39.400	38.700	0.550	39.360	38.580	0.630
2.008	29.590	80.0	150	Circular	39.360	38.580	0.630	39.200	38.210	0.840











Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	450	Manhole	Private	S2	450	Manhole	Private
1.001	S2	450	Manhole	Private	S2A	450	Manhole	Private
1.002	S2A	450	Manhole	Private	S2B	450	Manhole	Private
1.003	S2B	450	Manhole	Private	S2C	450	Manhole	Private
2.000	S4	450	Manhole	Private	S5	450	Manhole	Private
2.001	S5	450	Manhole	Private	S6	450	Manhole	Private
2.002	S6	450	Manhole	Private	S7	450	Manhole	Private
2.003	S7	450	Manhole	Private	S7A	450	Manhole	Private
2.004	S7A	450	Manhole	Private	S7B	450	Manhole	Private
2.005	S7B	450	Manhole	Private	S7C	450	Manhole	Private
2.006	S7C	450	Manhole	Private	S9	450	Manhole	Private
2.007	S9	450	Manhole	Private	S10	450	Manhole	Private
2.008	S10	450	Manhole	Private	S2C	450	Manhole	Private

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)
1.004	5.600	80.0	225	Circular	39.200	38.210	0.765	38.860	38.140	0.495
1.005	16.000	66.7	225	Circular	38.860	38.140	0.495	38.800	37.900	0.675

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.004	S2C	450	Manhole	Private	S3	450	Manhole	Private
1.005	S3	450	Manhole	Private	exs	1200	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	39.450	0.850	450				
				0	1.000	38.600	100
S2	39.330	0.850	450				
				0	1.001	38.480	100
S2A	39.230	0.890	450				
				0	1.002	38.340	100
S2B	39.200	0.914	450				
				0	1.002	38.286	150
S2C	39.200	0.990	450				
				1	2.008	38.210	150
				2	1.003	38.210	150
				0	1.004	38.210	225
S3	38.860	0.720	450				
				1	1.004	38.140	225
				0	1.005	38.140	225
S4	40.010	0.450	450				
				0	2.000	39.560	100
S5	40.050	0.650	450				
				1	2.000	39.400	100
				0	2.001	39.400	100
S6	39.960	0.750	450				
				1	2.001	39.210	100
				0	2.002	39.210	100
S7	39.960	0.870	450				
				1	2.002	39.090	100
				0	2.003	39.090	100



Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S7A	39.800	0.890	450	1	2.003	38.910	100
				0	2.004	38.910	100
S7B	39.400	0.560	450	1	2.004	38.840	100
				0	2.005	38.840	100
S7C	39.400	0.630	450	1	2.005	38.770	100
				0	2.006	38.770	100
S9	39.400	0.700	450	1	2.006	38.700	100
				0	2.007	38.700	150
S10	39.360	0.780	450	1	2.007	38.580	150
				0	2.008	38.580	150
exs	38.800	0.900	1200	1	1.005	37.900	225

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	17.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m ³ /ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

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 %)
30	0	0	0
100	40	0	0

Node S2C Online Head/Flow Control

Flap Valve x | Replaces Downstream Link ✓ | Invert Level (m) 38.210

Head (m)
0.450
Flow (l/s)
19.500

Node S2C Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	38.250
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	30

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	15.0	0.0	0.400	15.0	0.0	0.401	0.0	0.0

Node S2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	38.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	25

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	25.0	0.0	0.400	25.0	0.0	0.401	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 15 minute summer	226.195	64.005	100 year +40% CC 15 minute summer	408.473	115.584
30 year 15 minute winter	158.733	64.005	100 year +40% CC 15 minute winter	286.647	115.584
30 year 30 minute summer	147.452	41.724	100 year +40% CC 30 minute summer	268.775	76.054
30 year 30 minute winter	103.475	41.724	100 year +40% CC 30 minute winter	188.614	76.054
30 year 60 minute summer	98.615	26.061	100 year +40% CC 60 minute summer	180.954	47.821
30 year 60 minute winter	65.517	26.061	100 year +40% CC 60 minute winter	120.222	47.821
30 year 120 minute summer	59.946	15.842	100 year +40% CC 120 minute summer	110.370	29.168
30 year 120 minute winter	39.827	15.842	100 year +40% CC 120 minute winter	73.327	29.168
30 year 180 minute summer	45.598	11.734	100 year +40% CC 180 minute summer	83.953	21.604
30 year 180 minute winter	29.640	11.734	100 year +40% CC 180 minute winter	54.572	21.604
30 year 240 minute summer	35.759	9.450	100 year +40% CC 240 minute summer	65.765	17.380
30 year 240 minute winter	23.758	9.450	100 year +40% CC 240 minute winter	43.693	17.380
30 year 360 minute summer	26.939	6.932	100 year +40% CC 360 minute summer	49.370	12.705
30 year 360 minute winter	17.511	6.932	100 year +40% CC 360 minute winter	32.092	12.705
30 year 480 minute summer	20.981	5.545	100 year +40% CC 480 minute summer	38.291	10.119
30 year 480 minute winter	13.940	5.545	100 year +40% CC 480 minute winter	25.439	10.119
30 year 600 minute summer	17.039	4.661	100 year +40% CC 600 minute summer	30.992	8.477
30 year 600 minute winter	11.642	4.661	100 year +40% CC 600 minute winter	21.176	8.477
30 year 720 minute summer	15.093	4.045	100 year +40% CC 720 minute summer	27.387	7.340
30 year 720 minute winter	10.143	4.045	100 year +40% CC 720 minute winter	18.406	7.340
30 year 960 minute summer	12.278	3.233	100 year +40% CC 960 minute summer	22.191	5.844
30 year 960 minute winter	8.133	3.233	100 year +40% CC 960 minute winter	14.700	5.844
30 year 1440 minute summer	8.788	2.355	100 year +40% CC 1440 minute summer	15.789	4.232
30 year 1440 minute winter	5.906	2.355	100 year +40% CC 1440 minute winter	10.611	4.232



Results for 30 year Critical Storm Duration. Lowest mass balance: 99.04%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	S1	11	38.694	0.094	6.5	0.0613	0.0000	OK
30 minute winter	S2	24	38.664	0.184	10.9	4.2514	0.0000	SURCHARGED
30 minute winter	S2A	22	38.629	0.289	11.2	0.2603	0.0000	SURCHARGED
30 minute winter	S2B	23	38.618	0.332	10.0	0.0528	0.0000	SURCHARGED
30 minute winter	S2C	23	38.599	0.389	21.5	5.3306	0.0000	SURCHARGED
30 minute winter	S3	23	38.222	0.082	16.4	0.0130	0.0000	OK
15 minute winter	S4	12	39.744	0.184	5.9	0.1845	0.0000	FLOOD RISK
15 minute winter	S5	12	39.681	0.281	7.0	0.0794	0.0000	SURCHARGED
15 minute winter	S6	12	39.577	0.367	7.6	0.1466	0.0000	SURCHARGED
15 minute winter	S7	12	39.456	0.366	8.3	0.1170	0.0000	SURCHARGED
15 minute winter	S7A	13	39.202	0.292	8.0	0.0660	0.0000	SURCHARGED
15 minute winter	S7B	13	39.078	0.238	8.5	0.0720	0.0000	SURCHARGED
15 minute winter	S7C	13	38.931	0.161	8.5	0.0307	0.0000	SURCHARGED
15 minute winter	S9	11	38.785	0.085	10.2	0.0329	0.0000	OK
30 minute winter	S10	22	38.689	0.109	12.3	0.0564	0.0000	OK
30 minute winter	exs	23	37.977	0.077	16.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	S1	1.000	S2	6.4	0.944	0.912	0.0694	
30 minute winter	S2	1.001	S2A	5.9	0.788	0.874	0.0867	
30 minute winter	S2A	1.002	S2B	10.0	0.805	0.566	0.0951	
30 minute winter	S2B	1.003	S2C	9.3	0.615	0.683	0.2236	
30 minute winter	S2C	Head/Flow	S3	16.4				
30 minute winter	S3	1.005	exs	16.4	1.307	0.256	0.2002	26.6
15 minute winter	S4	2.000	S5	5.8	0.844	0.869	0.1031	
15 minute winter	S5	2.001	S6	5.2	0.793	0.773	0.1196	
15 minute winter	S6	2.002	S7	6.4	0.822	0.939	0.0737	
15 minute winter	S7	2.003	S7A	7.3	0.931	1.097	0.1166	
15 minute winter	S7A	2.004	S7B	7.7	0.987	1.142	0.0438	
15 minute winter	S7B	2.005	S7C	8.3	1.063	1.252	0.0454	
15 minute winter	S7C	2.006	S9	8.5	1.101	1.262	0.0425	
15 minute winter	S9	2.007	S10	10.2	0.973	0.534	0.1224	
30 minute winter	S10	2.008	S2C	11.9	0.765	0.600	0.4632	



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.04%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
30 minute winter	S1	24	39.326	0.726	8.9	0.4741	0.0000	FLOOD RISK
30 minute winter	S2	24	39.304	0.824	21.0	10.6601	0.0000	FLOOD RISK
30 minute winter	S2A	24	39.167	0.827	13.9	0.7453	0.0000	FLOOD RISK
30 minute winter	S2B	25	39.141	0.855	11.6	0.1360	0.0000	FLOOD RISK
30 minute winter	S2C	25	39.092	0.882	26.8	6.2090	0.0000	FLOOD RISK
30 minute winter	S3	18	38.231	0.091	19.5	0.0145	0.0000	OK
15 minute winter	S4	10	40.010	0.450	10.6	0.4514	1.3407	FLOOD
15 minute winter	S5	11	40.004	0.604	8.5	0.1704	0.0000	FLOOD RISK
15 minute winter	S6	12	39.960	0.750	10.0	0.2993	0.0550	FLOOD
15 minute winter	S7	12	39.851	0.761	11.0	0.2435	0.0000	FLOOD RISK
15 minute winter	S7A	13	39.551	0.641	10.2	0.1449	0.0000	FLOOD RISK
30 minute winter	S7B	21	39.400	0.560	9.7	0.1691	0.5005	FLOOD
30 minute winter	S7C	25	39.307	0.537	8.9	0.1025	0.0000	FLOOD RISK
30 minute winter	S9	25	39.212	0.512	11.1	0.1985	0.0000	FLOOD RISK
30 minute winter	S10	25	39.186	0.606	16.2	0.3137	0.0000	FLOOD RISK
15 minute summer	exs	12	37.985	0.085	19.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
30 minute winter	S1	1.000	S2	7.9	1.013	1.133	0.0703	
30 minute winter	S2	1.001	S2A	7.2	0.921	1.060	0.0867	
30 minute winter	S2A	1.002	S2B	11.6	0.791	0.655	0.0951	
30 minute winter	S2B	1.003	S2C	10.9	0.627	0.797	0.2236	
30 minute winter	S2C	Head/Flow	S3	19.5				
30 minute winter	S3	1.005	exs	19.5	1.367	0.306	0.2296	47.0
15 minute winter	S4	2.000	S5	6.3	0.871	0.949	0.1031	
15 minute winter	S5	2.001	S6	5.5	0.766	0.821	0.1196	
15 minute winter	S6	2.002	S7	7.1	0.912	1.045	0.0737	
15 minute winter	S7	2.003	S7A	8.6	1.103	1.299	0.1166	
15 minute winter	S7A	2.004	S7B	8.5	1.091	1.263	0.0438	
30 minute winter	S7B	2.005	S7C	8.5	1.088	1.281	0.0454	
30 minute winter	S7C	2.006	S9	8.5	1.086	1.269	0.0446	
30 minute winter	S9	2.007	S10	11.0	0.911	0.578	0.1831	
30 minute winter	S10	2.008	S2C	14.6	0.832	0.736	0.5209	

**PROPOSED NEW BUILDINGS @ FIELD VIEW, WEST LODGE DRIVE,
CONEY HILL, GLOUCESTER, GL4 4XU**

SURFACE WATER DRAINAGE

MAINTENANCE SCHEDULE

Regular maintenance

Typical frequency

- | | |
|--|-------------------------------------|
| 1. Inspect and identify any areas that are not operating correctly, If required take remedial action | Monthly for 3 months, then annually |
| 2. Remove debris from the catchment surface (where it may cause risks to performance) | Monthly |

Remedial Actions

- | | |
|---|-------------|
| 1. Repair any damaged manhole & gully covers and pipework | As required |
|---|-------------|

Monitoring

- | | |
|---|-------------------------------|
| 1. Inspect all inlets, outlets, overflows and vents to attenuation Tanks, to ensure that they are in good condition and operating as designed | Annually |
| 2. Survey inside of attenuation tank for sediment build-up and remove if necessary | Every 5 years or as required. |

Key Plan:

1. Some layers are frozen.
2. The survey has been orientated to a local grid based on the OSGB 36 National Grid (OSTN15 via OSGM15). The level datum GPS derived at S001.
3. Station Co-Ordinates

Station	Easting	Northing	Level
S001	385674.235	216800.920	39.005
S002	385714.156	216805.782	39.542
4. Wall heights have been surveyed as string information.
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Survey Key:

The following are a list of codes used to identify various street furniture and surfaces for Monument Surveys. Service covers have an outline to define the size/orientation.

General Abbreviations	
AB	Air Brick
AV	Air Valve
BB	Belisha Beacon
BE	Bench
BH	Bore Hole
BI	Bin
BO	Bollard
BS	Bus Stop Sign
BT	British Telecom
BX	Junc Box etc.
CA	Camera
CB	Crash Barrier
CE	Ceiling
CU	Culvert (Invert)
DP	Down Pipes
DPC	Damp Proof Course
DR	Drains
EA	Eave Heights
EC	Electricity Cover
EP	Electricity Pole
ER	Earth Road
SVP	Soil/Vent Pipe
SY	Stay
TAP	Water Tap
FP	Flag Pole
GA	Gas Valve
GB	Gauge Board
GP	Gate Post
GU	Gully
IC	Inspection Cover
INV	Invert Level
KI	Kerb Inlet
LBX	Traffic Loop Box
LE	Spot Level (Threshold)
LP	Lamp Post
MH	Manhole
MK	Marker Post
MO	Mooring
MS	Mile Stone
GBM	Bench Mark
PB	Post Box
PI	Existing Pin
PO	Post
PM	Parking Meter
PS	Private Sign
PU	Petrol Pump
RD	Ridge Heights
RE	Rodding Eye
RP	Reflector Post
RS	Road Sign
SD	Steps Down
SO	Soffit Level
SP	Sign Post
ST	Stop Tap
SU	Steps Up
SV	Stop Valve
FH	Fire Hydrant
FL	Flood Light
TB	Telephone Call Box
TH	Water Trough
TK	Storage Tank
TM	Telephone Mast
TP	Telegraph Pole
TL	Traffic Light
TV	Cable TV Cover
VP	Vent Pipe
WL	Water Level
WM	Water Meter
WO	Wash Out

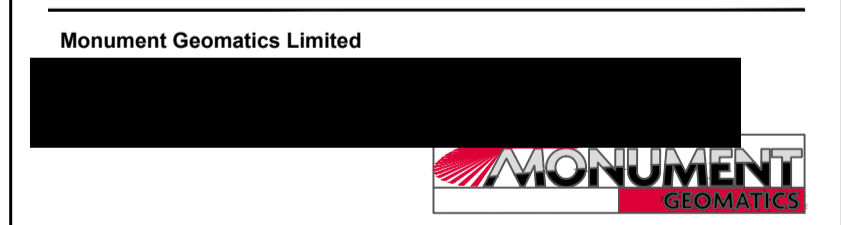
Surface Abbreviations	Fence Abbreviations
BP	Block Paving
BR	Bricks
CB	Cobbles
CO	Concrete
GR	Grass
SL	Slabs
TA	Tarmac
TC	Tactile Paving
BWF	Barb Wire
CBF	Close Board
CLF	Chain Link
PAF	Palisade (Security)
PCF	Post & Chain
PRF	Post & Rail
PIF	Post & Wire
WPF	Wooden Panel

Trees (Diameter of Boles / Canopy / Species)
 Approx. Tree Height

Tree Stumps
 S1 to S5 - 0.1 dia. to 0.5 dia.

Pipes (Invert Level)
 P1 to P5 - 0.1 dia. to 0.5 dia.

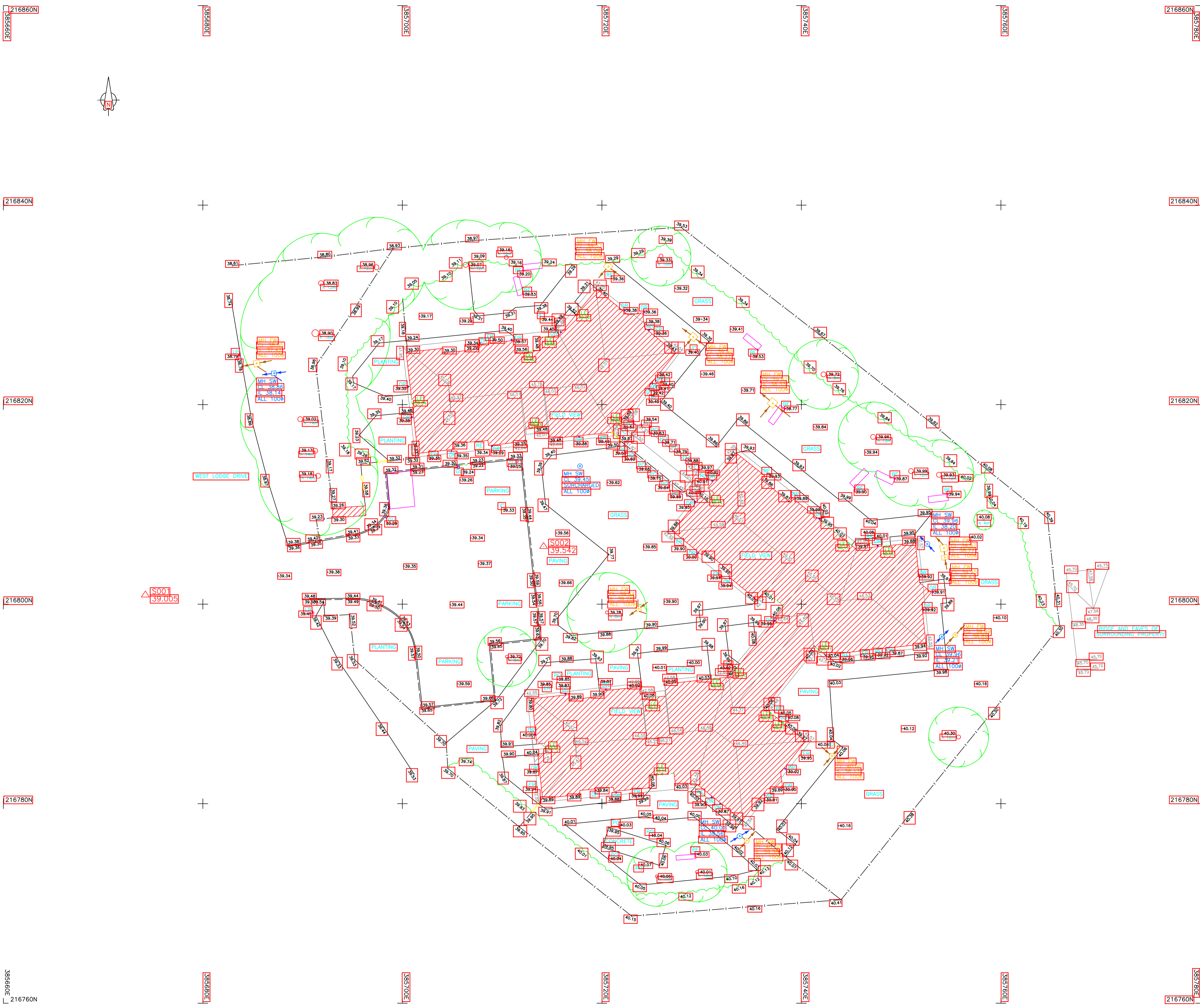
Client



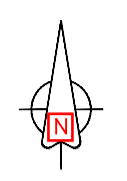
Project
**FIELD VIEW
 CONEY HILL**

Drawing
**EXISTING LAYOUT
 3D ANNOTATED
 TOPOGRAPHICAL SURVEY**

Drawn by: RM	Date: JAN 23
Checked by: CJ	Date: JAN 23
Approved by: MONUMENT GEOMATICS	Date: JAN 23
Drawing No. MG2607_S1	Revision
Drawing Scale: 1:200 @ A1	
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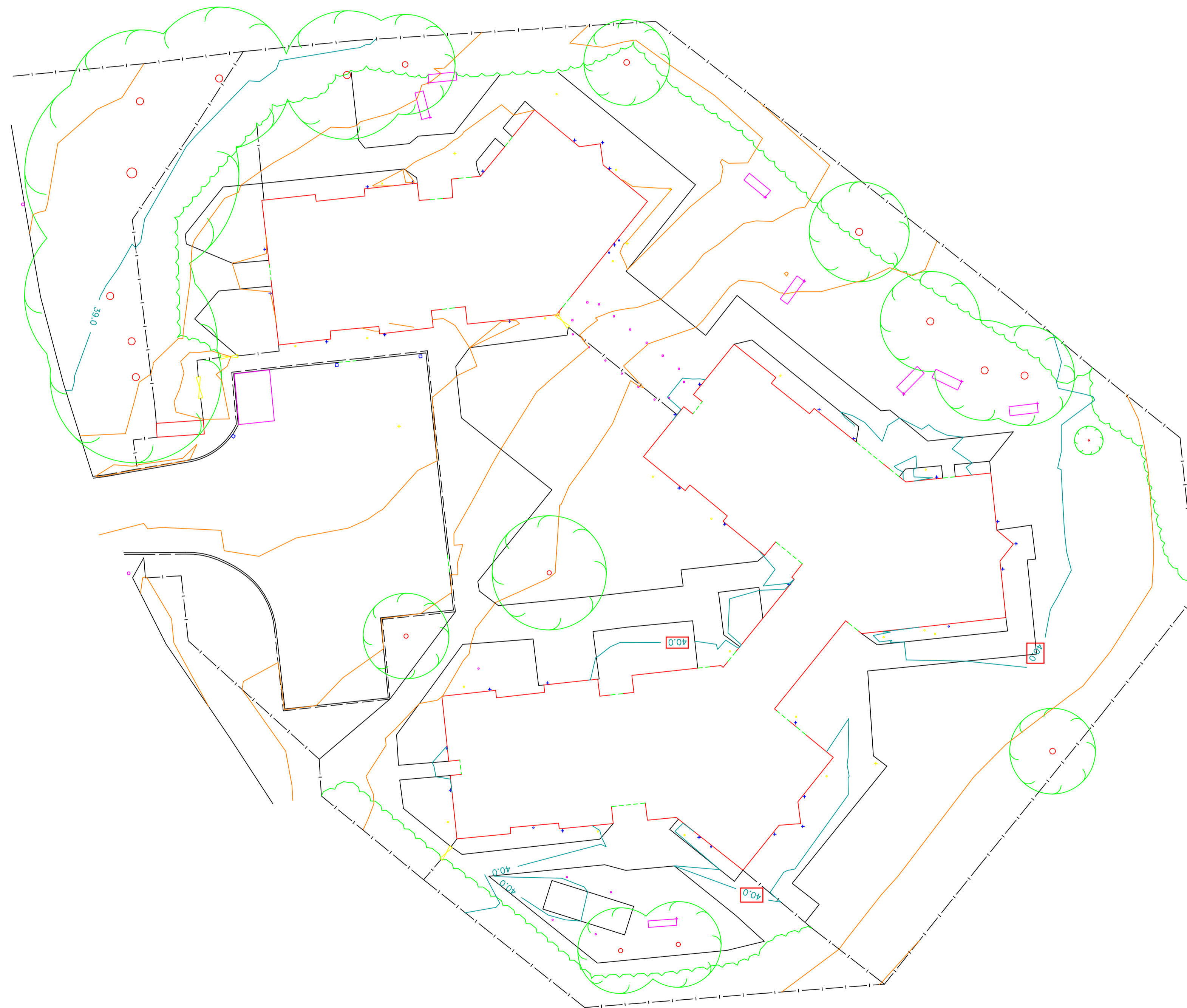
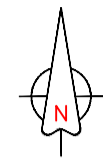


216860N
385690E
216840N
216820N
216800N
216780N
216760N



S001
39.005

385700E
385720E
385740E
385760E
385780E
385700E
385720E
385740E
385760E
385780E



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Client

Monument Geomatics Limited



Project

**FIELD VIEW
CONEY HILL**

Drawing

**EXISTING LAYOUT
TOPOGRAPHICAL SURVEY
WITH CONTOURS**

Drawn by: RM	Date: JAN 23
Checked by: CJ	Date: JAN 23
Approved by: MONUMENT GEOMATICS	Date: JAN 23

Drawing No.	Revision
MG2607_S2	

Drawing Scale: 1:200 @ A1

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