APPENDIX D

Existing Greenfield Runoff Rate (IH124) Calculations

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	Soil	0.150
Area (ha)	3.300	Urban	0.000
SAAR (mm)	678	Region Number	Region 6

Results l/s

QBAR Rural	1.3
QBAR Urban	1.3
Q1 year	1.1
Q1 year	1.1
Q30 years	2.9
Q100 years	4.1

APPENDIX E

Hydraulic Model Study

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	96.239	0.566	170.0	0.044	1.00	0.0		0.075	→|o|→		Filter Drain	
S1.001	110.563	0.650	170.1	0.000	0.00	0.0		0.075	→|o|→		Filter Drain	
S1.002	16.901	0.041	412.2	0.455	0.00	0.0		0.075	o	600	Pipe/Conduit	
S2.000	91.779	0.229	400.0	0.091	1.00	0.0		0.075	→|o|→		Filter Drain	
S3.000	43.389	0.177	245.0	0.117	1.00	0.0	0.600		o	300	Pipe/Conduit	
S4.000	28.997	0.050	579.9	0.035	1.00	0.0		0.075	→|o|→		Filter Drain	
S4.001	41.751	0.050	835.0	0.131	0.00	0.0		0.075	→|o|→		Filter Drain	
S4.002	41.147	0.050	822.9	0.068	0.00	0.0		0.075	→|o|→		Filter Drain	
S4.003	82.085	0.450	182.4	0.059	0.00	0.0		0.075	→|o|→		Filter Drain	
S4.004	20.113	0.082	245.3	0.026	0.00	0.0	0.600		o	300	Pipe/Conduit	
S3.001	18.811	0.077	245.0	0.065	0.00	0.0	0.600		o	300	Pipe/Conduit	
S3.002	11.317	0.046	245.0	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	46.17	11.80	64.700	0.044	0.0	0.0	0.0	0.15	19.7	5.5
S1.001	31.55	22.29	64.134	0.044	0.0	0.0	0.0	0.18	44.2	5.5
S1.002	30.25	23.81	63.259	0.499	0.0	0.0	0.0	0.19	52.4	40.9
S2.000	43.81	12.95	64.300	0.091	0.0	0.0	0.0	0.13	34.5	10.8
S3.000	50.00	1.72	63.375	0.117	0.0	0.0	0.0	1.00	70.7	15.8
S4.000	50.00	8.35	64.850	0.035	0.0	0.0	0.0	0.07	5.6	4.7
S4.001	33.26	20.49	64.800	0.166	0.0	0.0	0.0	0.06	5.5«	15.0
S4.002	26.11	29.85	64.750	0.234	0.0	0.0	0.0	0.07	10.6«	16.6
S4.003	26.02	30.00	64.700	0.293	0.0	0.0	0.0	0.18	32.3	20.7
S4.004	26.02	30.00	63.550	0.319	0.0	0.0	0.0	1.00	70.6	22.5
S3.001	26.02	30.00	63.198	0.502	0.0	0.0	0.0	1.00	70.7	35.3
S3.002	26.02	30.00	63.121	0.502	0.0	0.0	0.0	1.00	70.7	35.3

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S5.000	42.323	0.249	170.0	0.141	1.00	0.0	0.600		o	300	Pipe/Conduit	
S6.000	58.563	0.344	170.0	0.068	1.00	0.0	0.600		o	225	Pipe/Conduit	
S6.001	30.300	0.178	170.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S6.002	5.739	0.034	170.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
S5.001	10.697	0.044	245.0	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S3.003	3.949	0.012	325.0	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S3.004	30.692	0.077	400.0	0.112	0.00	0.0		0.075	→[↓]		Cellular Storage	
S7.000	20.193	0.202	100.0	0.032	1.00	0.0	0.600		o	150	Pipe/Conduit	
S7.001	42.652	0.427	100.0	0.023	0.00	0.0	0.600		o	150	Pipe/Conduit	
S8.000	19.493	0.195	100.0	0.044	1.00	0.0	0.600		o	150	Pipe/Conduit	
S7.002	61.316	0.250	245.0	0.078	0.00	0.0	0.600		o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S5.000	50.00	1.59	63.400	0.141	0.0	0.0	0.0	1.20	85.0	19.1
S6.000	50.00	1.98	63.325	0.068	0.0	0.0	0.0	1.00	39.8	9.1
S6.001	50.00	2.48	62.981	0.068	0.0	0.0	0.0	1.00	39.8	9.1
S6.002	50.00	2.58	62.802	0.068	0.0	0.0	0.0	1.00	39.8	9.1
S5.001	50.00	2.76	62.694	0.208	0.0	0.0	0.0	1.00	70.7	28.2
S3.003	26.02	30.00	62.650	0.710	0.0	0.0	0.0	0.87	61.3	50.0
S3.004	26.02	30.00	62.511	0.822	0.0	0.0	0.0	0.53	19778.8	57.9
S7.000	50.00	1.33	63.350	0.032	0.0	0.0	0.0	1.00	17.8	4.3
S7.001	50.00	2.04	63.148	0.055	0.0	0.0	0.0	1.00	17.8	7.4
S8.000	50.00	1.32	63.550	0.044	0.0	0.0	0.0	1.00	17.8	5.9
S7.002	50.00	3.06	62.572	0.177	0.0	0.0	0.0	1.00	70.7	24.0

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S7.003	22.127	0.090	245.0	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S3.005	6.848	0.017	400.0	0.000	0.00	0.0	0.600		o	375	Pipe/Conduit	
S1.003	6.207	0.062	100.1	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S7.003	50.00	3.43	62.321	0.177	0.0	0.0	0.0	1.00	70.7	24.0
S3.005	26.02	30.00	62.156	0.999	0.0	0.0	0.0	0.90	99.4	70.4
S1.003	26.02	30.00	61.914	1.589	0.0	0.0	0.0	2.43	688.2	112.0

Online Controls for Storm

Pump Manhole: S26, DS/PN: S1.003, Volume (m³): 48.6

Invert Level (m) 62.139

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	3.5000	1.800	3.5000	3.400	3.5000	5.000	3.5000
0.400	3.5000	2.000	3.5000	3.600	3.5000	5.200	3.5000
0.600	3.5000	2.200	3.5000	3.800	3.5000	5.400	3.5000
0.800	3.5000	2.400	3.5000	4.000	3.5000	5.600	3.5000
1.000	3.5000	2.600	3.5000	4.200	3.5000	5.800	3.5000
1.200	3.5000	2.800	3.5000	4.400	3.5000	6.000	3.5000
1.400	3.5000	3.000	3.5000	4.600	3.5000		
1.600	3.5000	3.200	3.5000	4.800	3.5000		

Storage Structures for Storm

Filter Drain Pipe: S1.000

Manning's N	0.075	Trench Length (m)	96.2
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	170.0
Invert Level (m)	64.700	Cap Volume Depth (m)	0.000
Trench Width (m)	0.7	Cap Infiltration Depth (m)	0.000

Filter Drain Pipe: S1.001

Manning's N	0.075	Trench Length (m)	110.6
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	170.1
Invert Level (m)	64.134	Cap Volume Depth (m)	0.000
Trench Width (m)	0.7	Cap Infiltration Depth (m)	0.000

Filter Drain Manhole: S3, DS/PN: S1.002

Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.150
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	412.2
Invert Level (m)	63.259	Cap Volume Depth (m)	0.000
Trench Width (m)	1.0	Cap Infiltration Depth (m)	0.000
Trench Length (m)	16.9		

Filter Drain Pipe: S2.000

Manning's N	0.075	Trench Length (m)	91.8
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.375
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	400.0
Invert Level (m)	64.300	Cap Volume Depth (m)	0.000
Trench Width (m)	0.8	Cap Infiltration Depth (m)	0.000

Porous Car Park Manhole: S6, DS/PN: S4.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	20.0
Membrane Percolation (mm/hr)	1000	Length (m)	16.0
Max Percolation (l/s)	88.9	Slope (1:X)	400.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	64.850	Cap Volume Depth (m)	0.320

Filter Drain Pipe: S4.000

Manning's N	0.075	Trench Length (m)	29.0
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.150
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m)	0.050
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	579.9
Invert Level (m)	64.850	Cap Volume Depth (m)	0.000
Trench Width (m)	0.7	Cap Infiltration Depth (m)	0.000

Complex Manhole: S7, DS/PN: S4.001

Porous Car Park

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	25.0
Membrane Percolation (mm/hr)	1000	Length (m)	16.0
Max Percolation (l/s)	111.1	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	64.850	Cap Volume Depth (m)	0.320

Porous Car Park

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	37.5
Membrane Percolation (mm/hr)	1000	Length (m)	19.5
Max Percolation (l/s)	203.1	Slope (1:X)	400.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	64.850	Cap Volume Depth (m)	0.320

Filter Drain Pipe: S4.001

Manning's N	0.075	Porosity	0.30
Infiltration Coefficient Base (m/hr)	0.00000	Invert Level (m)	64.800
Infiltration Coefficient Side (m/hr)	0.00000	Trench Width (m)	0.7
Safety Factor	2.0	Trench Length (m)	41.8

Filter Drain Pipe: S4.001

Pipe Diameter (m)	0.150	Slope (1:X)	835.0
Pipe Depth above Invert (m)	0.050	Cap Volume Depth (m)	0.000
Number of Pipes	1	Cap Infiltration Depth (m)	0.000

Filter Drain Pipe: S4.002

Manning's N	0.075	Trench Length (m)	41.1
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.300
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	822.9
Invert Level (m)	64.750	Cap Volume Depth (m)	0.000
Trench Width (m)	0.7	Cap Infiltration Depth (m)	0.000

Porous Car Park Manhole: S9, DS/PN: S4.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	37.5
Membrane Percolation (mm/hr)	1000	Length (m)	5.0
Max Percolation (l/s)	52.1	Slope (1:X)	200.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	64.300	Cap Volume Depth (m)	0.320

Filter Drain Pipe: S4.003

Manning's N	0.075	Trench Length (m)	82.1
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.375
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m)	0.050
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	182.4
Invert Level (m)	64.700	Cap Volume Depth (m)	0.000
Trench Width (m)	0.7	Cap Infiltration Depth (m)	0.000

Cellular Storage Pipe: S3.004

Manning's N	0.075	Infiltration Coefficient Side (m/hr)	0.00000
Invert Level (m)	62.511	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	750.0	0.0	1.601	0.0	0.0
1.600	750.0	0.0			

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 12 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.405
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	20.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	30, 100
Climate Change (%)	0, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	S1	15 Summer	30	+0%	100/15 Summer	30/15 Summer			65.200
S1.001	S2	15 Winter	30	+0%					64.341
S1.002	S3	15 Winter	30	+0%	30/15 Summer				64.155
S2.000	S4	15 Summer	30	+0%	100/15 Summer	100/15 Summer			65.100
S3.000	S5	15 Summer	30	+0%	100/15 Summer				63.632
S4.000	S6	360 Winter	30	+0%					64.966
S4.001	S7	240 Winter	30	+0%					64.962
S4.002	S8	15 Winter	30	+0%	100/15 Summer	100/15 Summer			65.147
S4.003	S9	60 Winter	30	+0%					64.913

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.000	0.000	0.52		4	10.3	FLOOD	3
S1.001	S2	-0.859	0.000	0.20		9	8.7	OK	
S1.002	S3	0.296	0.000	3.24		7	152.1	SURCHARGED	
S2.000	S4	0.000	0.000	0.40		4	13.7	FLOOD RISK	3
S3.000	S5	-0.043	0.000	0.78			51.4	OK	
S4.000	S6	-0.234	0.000	0.08		320	0.4	FLOOD RISK	
S4.001	S7	-0.238	0.000	0.38			2.1	FLOOD RISK	
S4.002	S8	-0.053	0.000	1.34		12	14.1	FLOOD RISK	6
S4.003	S9	-0.287	0.000	0.30			9.5	FLOOD RISK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S4.004	S10	120 Winter	30	+0%	100/15 Summer				63.634
S3.001	S11	15 Winter	30	+0%	30/15 Summer				63.547
S3.002	S12	15 Summer	30	+0%	30/15 Summer				63.464
S5.000	S13	15 Summer	30	+0%	100/15 Summer				63.642
S6.000	S14	15 Summer	30	+0%	100/15 Summer				63.527
S6.001	S15	15 Summer	30	+0%	30/15 Summer				63.381
S6.002	S16	15 Winter	30	+0%	30/15 Summer				63.326
S5.001	S17	15 Winter	30	+0%	30/15 Summer				63.281
S3.003	S18	960 Winter	30	+0%	30/15 Summer				63.224
S3.004	S19	960 Winter	30	+0%	100/1440 Winter				63.223
S7.000	S20	15 Summer	30	+0%	30/15 Summer				63.525
S7.001	S21	15 Summer	30	+0%	30/15 Summer				63.417
S8.000	S22	15 Summer	30	+0%	30/15 Summer				63.870
S7.002	S23	960 Winter	30	+0%	30/60 Winter				63.223
S7.003	S24	960 Winter	30	+0%	30/15 Summer				63.223
S3.005	S25	960 Winter	30	+0%	30/15 Summer				63.223
S1.003	S26	960 Winter	30	+0%	30/15 Summer				63.232

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S4.004	S10	-0.216	0.000	0.18			10.8	OK	
S3.001	S11	0.049	0.000	1.14			69.8	SURCHARGED	
S3.002	S12	0.043	0.000	1.25			70.7	SURCHARGED	
S5.000	S13	-0.058	0.000	0.84			66.6	OK	
S6.000	S14	-0.023	0.000	0.76			29.1	OK	
S6.001	S15	0.176	0.000	0.59			21.8	SURCHARGED	
S6.002	S16	0.299	0.000	0.79			23.7	SURCHARGED	
S5.001	S17	0.288	0.000	1.20			67.3	SURCHARGED	
S3.003	S18	0.274	0.000	0.26			12.4	SURCHARGED	
S3.004	S19	-0.889	0.000	0.00			15.7	OK	
S7.000	S20	0.025	0.000	0.85			14.3	SURCHARGED	
S7.001	S21	0.119	0.000	1.11			19.1	SURCHARGED	
S8.000	S22	0.170	0.000	1.27			21.1	SURCHARGED	
S7.002	S23	0.352	0.000	0.06			3.8	SURCHARGED	
S7.003	S24	0.602	0.000	0.06			3.7	SURCHARGED	
S3.005	S25	0.692	0.000	0.18			12.1	SURCHARGED	
S1.003	S26	0.718	0.000	0.01			3.5	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 12 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.405
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	20.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	30, 100
Climate Change (%)	0, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	S1	15 Summer	100	+40%	100/15 Summer	30/15 Summer			65.202
S1.001	S2	30 Winter	100	+40%					64.481
S1.002	S3	15 Winter	100	+40%	30/15 Summer				64.874
S2.000	S4	15 Summer	100	+40%	100/15 Summer	100/15 Summer			65.103
S3.000	S5	15 Winter	100	+40%	100/15 Summer				64.440
S4.000	S6	240 Winter	100	+40%					65.057
S4.001	S7	240 Winter	100	+40%					65.049
S4.002	S8	15 Winter	100	+40%	100/15 Summer	100/15 Summer			65.204
S4.003	S9	30 Winter	100	+40%					65.098

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.002	1.750	0.80		3	15.8	FLOOD	3
S1.001	S2	-0.719	0.000	0.34		13	15.2	OK	
S1.002	S3	1.015	0.000	5.55		5	260.7	FLOOD RISK	
S2.000	S4	0.003	3.305	0.75		3	25.7	FLOOD	3
S3.000	S5	0.765	0.000	1.19			78.7	SURCHARGED	
S4.000	S6	-0.143	0.000	0.18		245	1.0	FLOOD RISK	
S4.001	S7	-0.151	0.000	0.88		258	4.9	FLOOD RISK	
S4.002	S8	0.004	4.232	1.76		7	18.6	FLOOD	6
S4.003	S9	-0.102	0.000	0.78			25.2	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S4.004	S10	15 Winter	100	+40%	100/15 Summer				64.326
S3.001	S11	15 Winter	100	+40%	30/15 Summer				64.306
S3.002	S12	1440 Winter	100	+40%	30/15 Summer				64.145
S5.000	S13	15 Winter	100	+40%	100/15 Summer				64.259
S6.000	S14	15 Winter	100	+40%	100/15 Summer				64.494
S6.001	S15	15 Winter	100	+40%	30/15 Summer				64.227
S6.002	S16	1440 Winter	100	+40%	30/15 Summer				64.140
S5.001	S17	1440 Winter	100	+40%	30/15 Summer				64.140
S3.003	S18	1440 Winter	100	+40%	30/15 Summer				64.140
S3.004	S19	1440 Winter	100	+40%	100/1440 Winter				64.139
S7.000	S20	15 Winter	100	+40%	30/15 Summer				64.534
S7.001	S21	15 Winter	100	+40%	30/15 Summer				64.414
S8.000	S22	15 Summer	100	+40%	30/15 Summer				64.515
S7.002	S23	1440 Winter	100	+40%	30/60 Winter				64.139
S7.003	S24	1440 Winter	100	+40%	30/15 Summer				64.139
S3.005	S25	1440 Winter	100	+40%	30/15 Summer				64.139
S1.003	S26	1440 Winter	100	+40%	30/15 Summer				64.141

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S4.004	S10	0.476	0.000	0.36			22.0	SURCHARGED	
S3.001	S11	0.808	0.000	1.94			118.4	SURCHARGED	
S3.002	S12	0.724	0.000	0.20			11.4	SURCHARGED	
S5.000	S13	0.559	0.000	1.25			99.0	SURCHARGED	
S6.000	S14	0.944	0.000	1.09			41.9	FLOOD RISK	
S6.001	S15	1.022	0.000	0.98			36.5	SURCHARGED	
S6.002	S16	1.113	0.000	0.06			1.7	SURCHARGED	
S5.001	S17	1.147	0.000	0.10			5.4	SURCHARGED	
S3.003	S18	1.190	0.000	0.34			16.4	SURCHARGED	
S3.004	S19	0.027	0.000	0.00			19.5	SURCHARGED	
S7.000	S20	1.034	0.000	1.02			17.0	FLOOD RISK	
S7.001	S21	1.116	0.000	1.53			26.3	FLOOD RISK	
S8.000	S22	0.815	0.000	2.18			36.3	SURCHARGED	
S7.002	S23	1.268	0.000	0.07			4.8	SURCHARGED	
S7.003	S24	1.518	0.000	0.08			4.8	SURCHARGED	
S3.005	S25	1.608	0.000	0.07			4.8	SURCHARGED	
S1.003	S26	1.627	0.000	0.01			3.5	SURCHARGED	

APPENDIX F

Drainage Layout Drawing

HEALTH & SAFETY RISKS

IN ADDITION TO THE STANDARD HAZARDS AND RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING, PLEASE NOTE THE FOLLOWING RESIDUAL HEALTH AND SAFETY RISKS

CONSTRUCTION RISKS

CR 01 BURIED SERVICES (KNOWN AND UNKNOWN) - DAMAGE MAY RESULT IN ELECTROCUTION, GAS LEAK, EXPLOSION, WATER LEAK ETC. OBTAIN ACCURATE LOCATIONS OF UNDERGROUND SERVICES PRIOR TO ANY EXCAVATION WORKS.

CR 02 DEEP EXCAVATIONS REQUIRED DUE TO DEPTH OF PROPOSED DRAINAGE.

CR 03 CONNECTION TO EXISTING LIVE WATERCOURSE/SEWER

CR 04 UNTREATED/POLLUTED WATER CAN CAUSE ILL HEALTH THROUGH WATERBORNE DISEASES. STAFF WORKING ON OR NEAR SEWERS/WATERCOURSES MUST BE AWARE OF THESE DISEASES AND APPROPRIATE PREVENTION MEASURES IMPLEMENTED.

CR 05 WORKS IN HIGHWAY - WORKING ADJACENT TO LIVE TRAFFIC/ROAD CLOSURES MAY BE NECESSARY

OPERATION & MAINTENANCE RISKS

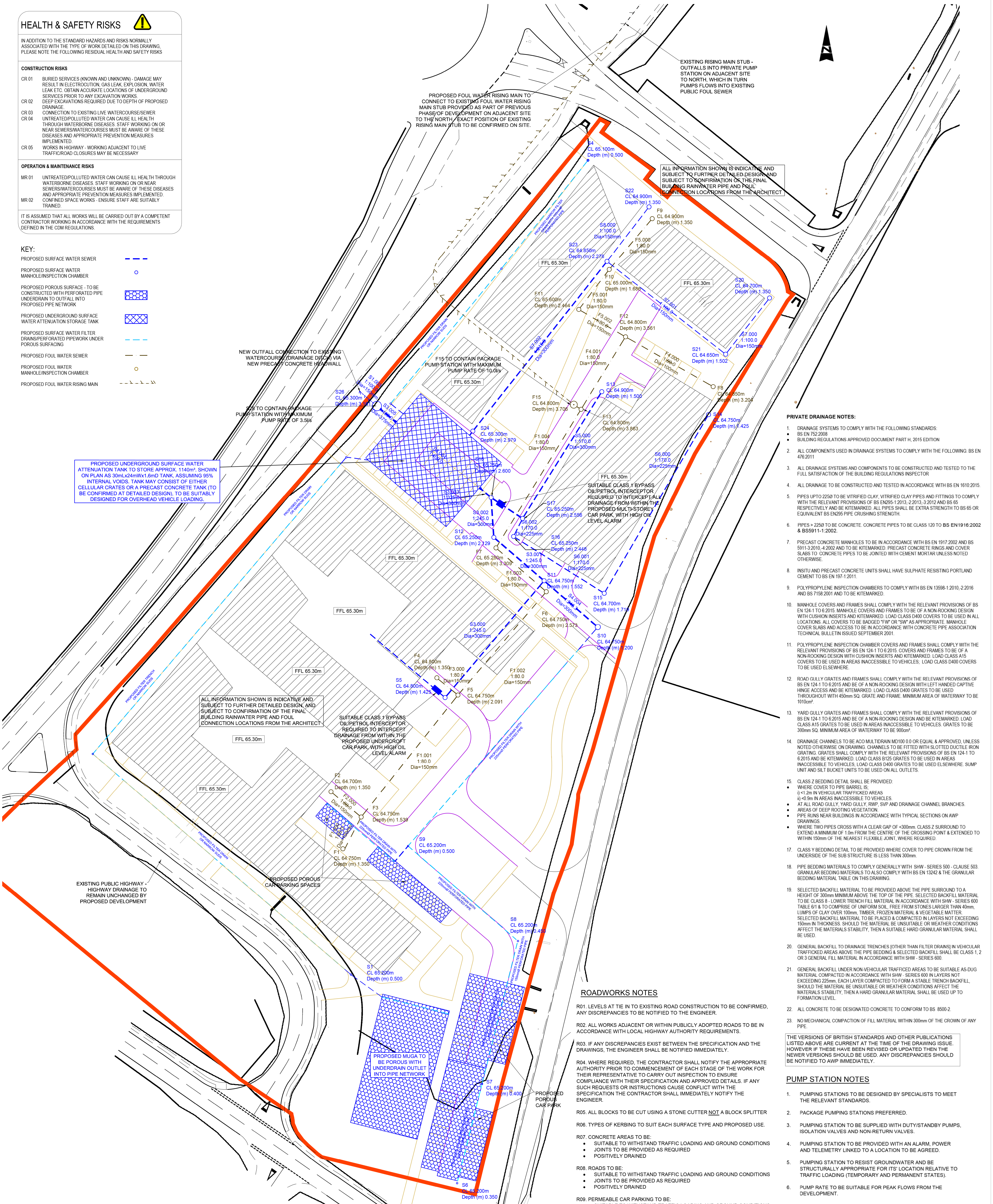
MR 01 UNTREATED/POLLUTED WATER CAN CAUSE ILL HEALTH THROUGH WATERBORNE DISEASES. STAFF WORKING ON OR NEAR SEWERS/WATERCOURSES MUST BE AWARE OF THESE DISEASES AND APPROPRIATE PREVENTION MEASURES IMPLEMENTED.

MR 02 CONFINED SPACE WORKS - ENSURE STAFF ARE SUITABLY TRAINED.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING IN ACCORDANCE WITH THE REQUIREMENTS DEFINED IN THE CDM REGULATIONS.

KEY:

- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER MANHOLE/INSPECTION CHAMBER
- PROPOSED POROUS SURFACE - TO BE CONSTRUCTED WITH PERFORATED PIPE UNDERDRAIN TO OUTFALL INTO PROPOSED PIPE NETWORK
- PROPOSED UNDERGROUND SURFACE WATER ATTENUATION STORAGE TANK
- PROPOSED SURFACE WATER FILTER DRAINS/PERFORATED PIPEWORK UNDER POROUS SURFACING
- PROPOSED FOUL WATER SEWER
- PROPOSED FOUL WATER MANHOLE/INSPECTION CHAMBER
- PROPOSED FOUL WATER RISING MAIN



ROADWORKS NOTES

R01. LEVELS AT TIE IN TO EXISTING ROAD CONSTRUCTION TO BE CONFIRMED, ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER.

R02. ALL WORKS ADJACENT OR WITHIN PUBLICLY ADOPTED ROADS TO BE IN ACCORDANCE WITH LOCAL HIGHWAY AUTHORITY REQUIREMENTS.

R03. IF ANY DISCREPANCIES EXIST BETWEEN THE SPECIFICATION AND THE DRAWINGS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

R04. WHERE REQUIRED, THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE AUTHORITY PRIOR TO COMMENCEMENT OF EACH STAGE OF THE WORK FOR THEIR REPRESENTATIVE TO CARRY OUT INSPECTION TO ENSURE COMPLIANCE WITH THEIR SPECIFICATION AND APPROVED DETAILS. IF ANY SUCH REQUESTS OR INSTRUCTIONS CAUSE CONFLICT WITH THE SPECIFICATION THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

R05. ALL BLOCKS TO BE CUT USING A STONE CUTTER NOT A BLOCK SPLITTER

R06. TYPES OF KERBING TO SUIT EACH SURFACE TYPE AND PROPOSED USE.

R07. CONCRETE AREAS TO BE:
- SUITABLE TO WITHSTAND TRAFFIC LOADING AND GROUND CONDITIONS
- JOINTS TO BE PROVIDED AS REQUIRED
- POSITIVELY DRAINED

R08. ROADS TO BE:
- SUITABLE TO WITHSTAND TRAFFIC LOADING AND GROUND CONDITIONS
- JOINTS TO BE PROVIDED AS REQUIRED
- POSITIVELY DRAINED

R09. PERMEABLE CAR PARKING TO BE:
- SUITABLE TO WITHSTAND TRAFFIC LOADING AND GROUND CONDITIONS
- IMPERMEABLE LINED AND POSITIVELY DRAINED

PRIVATE DRAINAGE NOTES:

1. DRAINAGE SYSTEMS TO COMPLY WITH THE FOLLOWING STANDARDS:
   - BS EN 752:2008
   - BUILDING REGULATIONS APPROVED DOCUMENT PART H, 2015 EDITION
2. ALL COMPONENTS USED IN DRAINAGE SYSTEMS TO COMPLY WITH THE FOLLOWING: BS EN 476:2011
3. ALL DRAINAGE SYSTEMS AND COMPONENTS TO BE CONSTRUCTED AND TESTED TO THE FULL SATISFACTION OF THE BUILDING REGULATIONS INSPECTOR
4. ALL DRAINAGE TO BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH BS EN 1610:2015.
5. PIPES UPTO 225Ø TO BE VITRIFIED CLAY, VITRIFIED CLAY PIPES AND FITTINGS TO COMPLY WITH THE RELEVANT PROVISIONS OF BS EN295-1:2013,-2:2013,-3:2012 AND BS 65 RESPECTIVELY AND BE KITEMARKED. ALL PIPES SHALL BE EXTRA STRENGTH TO BS 65 OR EQUIVALENT BS EN295 PIPE CRUSHING STRENGTH.
6. PIPES > 225Ø TO BE CONCRETE. CONCRETE PIPES TO BE CLASS 120 TO **BS EN1916:2002 & BS5911-1:2002.**
7. PRECAST CONCRETE MANHOLES TO BE IN ACCORDANCE WITH BS EN 1917:2002 AND BS 5911-3:2010,-4:2002 AND TO BE KITEMARKED. PRECAST CONCRETE RINGS AND COVER SLABS TO CONCRETE PIPES TO BE JOINTED WITH CEMENT MORTAR UNLESS NOTED OTHERWISE.
8. INSITU AND PRECAST CONCRETE UNITS SHALL HAVE SULPHATE RESISTING PORTLAND CEMENT TO BS EN 197-1:2011.
9. POLYPROPYLENE INSPECTION CHAMBERS TO COMPLY WITH BS EN 13598-1:2010,-2:2016 AND BS 7158:2001 AND TO BE KITEMARKED.
10. MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015. MANHOLE COVERS AND FRAMES TO BE OF A NON-ROCKING DESIGN WITH CUSHION INSERTS AND KITEMARKED. LOAD CLASS D400 COVERS TO BE USED IN ALL LOCATIONS. ALL COVERS TO BE BADGED "FW" OR "SW" AS APPROPRIATE. MANHOLE COVER SLABS AND ACCESS TO BE IN ACCORDANCE WITH CONCRETE PIPE ASSOCIATION TECHNICAL BULLETIN ISSUED SEPTEMBER 2001.
11. POLYPROPYLENE INSPECTION CHAMBER COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015. COVERS AND FRAMES TO BE OF A NON-ROCKING DESIGN WITH CUSHION INSERTS AND KITEMARKED. LOAD CLASS A15 COVERS TO BE USED IN AREAS INACCESSIBLE TO VEHICLES; LOAD CLASS D400 COVERS TO BE USED ELSEWHERE.
12. ROAD GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015 AND BE OF A NON-ROCKING DESIGN WITH LEFT HANDED CAPTIVE HINGE ACCESS AND BE KITEMARKED. LOAD CLASS D400 GRATES TO BE USED THROUGHOUT WITH 450mm SQ. GRATE AND FRAME. MINIMUM AREA OF WATERWAY TO BE 1010cm².
13. YARD GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015 AND BE OF A NON-ROCKING DESIGN AND BE KITEMARKED. LOAD CLASS A15 GRATES TO BE USED IN AREAS INACCESSIBLE TO VEHICLES. GRATES TO BE 300mm SQ. MINIMUM AREA OF WATERWAY TO BE 900cm².
14. DRAINAGE CHANNELS TO BE ACO MULTIDRAIN MD100 0.0 OR EQUAL & APPROVED, UNLESS NOTED OTHERWISE ON DRAWING. CHANNELS TO BE FITTED WITH SLOTTED DUCTILE IRON GRATING. GRATES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124-1 TO 6:2015 AND BE KITEMARKED. LOAD CLASS B125 GRATES TO BE USED IN AREAS INACCESSIBLE TO VEHICLES, LOAD CLASS D400 GRATES TO BE USED ELSEWHERE. SUMP UNIT AND SILT BUCKET UNITS TO BE USED ON ALL OUTLETS.
15. CLASS Z BEDDING DETAIL SHALL BE PROVIDED:
   - WHERE COVER TO PIPE BARREL IS;
     i) <1.2m IN VEHICULAR TRAFFICKED AREAS
     ii) <0.9m IN AREAS INACCESSIBLE TO VEHICLES.
   - AT ALL ROAD GULLY, YARD GULLY, RWP, SVP AND DRAINAGE CHANNEL BRANCHES.
   - AREAS OF DEEP ROOTING VEGETATION.
   - PIPE RUNS NEAR BUILDINGS IN ACCORDANCE WITH TYPICAL SECTIONS ON AWP DRAWINGS.
   - WHERE TWO PIPES CROSS WITH A CLEAR GAP OF <300mm. CLASS Z SURROUND TO EXTEND A MINIMUM OF 1.0m FROM THE CENTRE OF THE CROSSING POINT & EXTENDED TO WITHIN 150mm OF THE NEAREST FLEXIBLE JOINT, WHERE REQUIRED.
17. CLASS Y BEDDING DETAIL TO BE PROVIDED WHERE COVER TO PIPE CROWN FROM THE UNDERSIDE OF THE SUB STRUCTURE IS LESS THAN 300mm.
18. PIPE BEDDING MATERIALS TO COMPLY GENERALLY WITH SHW - SERIES 500 - CLAUSE 503. GRANULAR BEDDING MATERIALS TO ALSO COMPLY WITH BS EN 13242 & THE GRANULAR BEDDING MATERIAL TABLE ON THIS DRAWING.
19. SELECTED BACKFILL MATERIAL TO BE PROVIDED ABOVE THE PIPE SURROUND TO A HEIGHT OF 300mm MINIMUM ABOVE THE TOP OF THE PIPE. SELECTED BACKFILL MATERIAL TO BE CLASS 8 - LOWER TRENCH FILL MATERIAL IN ACCORDANCE WITH SHW - SERIES 600 TABLE 6/1 & TO COMPRISE OF UNIFORM SOIL, FREE FROM STONES LARGER THAN 40mm, LUMPS OF CLAY OVER 100mm, TIMBER, FROZEN MATERIAL & VEGETABLE MATTER. SELECTED BACKFILL MATERIAL TO BE PLACED & COMPACTED IN LAYERS NOT EXCEEDING 150mm IN THICKNESS. SHOULD THE MATERIAL BE UNSUITABLE OR WEATHER CONDITIONS AFFECT THE MATERIALS STABILITY, THEN A SUITABLE HARD GRANULAR MATERIAL SHALL BE USED.
20. GENERAL BACKFILL TO DRAINAGE TRENCHES [OTHER THAN FILTER DRAINS] IN VEHICULAR TRAFFICKED AREAS ABOVE THE PIPE BEDDING & SELECTED BACKFILL SHALL BE CLASS 1, 2 OR 3 GENERAL FILL MATERIAL IN ACCORDANCE WITH SHW - SERIES 600.
21. GENERAL BACKFILL UNDER NON-VEHICULAR TRAFFICED AREAS TO BE SUITABLE AS-DUG MATERIAL COMPACTED IN ACCORDANCE WITH SHW - SERIES 600 IN LAYERS NOT EXCEEDING 225mm, EACH LAYER COMPACTED TO FORM A STABLE TRENCH BACKFILL, SHOULD THE MATERIAL BE UNSUITABLE OR WEATHER CONDITIONS AFFECT THE MATERIALS STABILITY, THEN A HARD GRANULAR MATERIAL SHALL BE USED UP TO FORMATION LEVEL.
22. ALL CONCRETE TO BE DESIGNATED CONCRETE TO CONFORM TO BS 8500-2.
23. NO MECHANICAL COMPACTION OF FILL MATERIAL WITHIN 300mm OF THE CROWN OF ANY PIPE.

THE VERSIONS OF BRITISH STANDARDS AND OTHER PUBLICATIONS LISTED ABOVE ARE CURRENT AT THE TIME OF THE DRAWING ISSUE. HOWEVER IF THESE HAVE BEEN REVISED OR UPDATED THEN THE NEWER VERSIONS SHOULD BE USED. ANY DISCREPANCIES SHOULD BE NOTIFIED TO AWP IMMEDIATELY.

PUMP STATION NOTES

1. PUMPING STATIONS TO BE DESIGNED BY SPECIALISTS TO MEET THE RELEVANT STANDARDS.
2. PACKAGE PUMPING STATIONS PREFERRED.
3. PUMPING STATION TO BE SUPPLIED WITH DUTY/STANDBY PUMPS, ISOLATION VALVES AND NON-RETURN VALVES.
4. PUMPING STATION TO BE PROVIDED WITH AN ALARM, POWER AND TELEMETRY LINKED TO A LOCATION TO BE AGREED.
5. PUMPING STATION TO RESIST GROUNDWATER AND BE STRUCTURALLY APPROPRIATE FOR ITS' LOCATION RELATIVE TO TRAFFIC LOADING (TEMPORARY AND PERMANENT STATES).
6. PUMP RATE TO BE SUITABLE FOR PEAK FLOWS FROM THE DEVELOPMENT.
7. FOUL PUMPING STATIONS TO BE PROVIDED WITH EMERGENCY STORAGE AS REQUIRED.

NOTES:

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3. DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.
4. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE AND ENSURE THAT THE BUILDING AND ITS COMPONENTS ARE SAFE DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS WHICH MAY BE NECESSARY, SUCH MATERIAL REMAINING THE THE PROPERTY OF THE CONTRACTOR ON COMPLETION, AND FOR ENSURING THAT THE WORKS AND ANY ADJACENT PROPERTIES ARE SAFE IN THE TEMPORARY CONDITION.

100mm at A1

GENERAL NOTES:

G01. ALL WORKS SUBJECT TO ANY SECTION 38, SECTION 62/278 AND SECTION 104 AGREEMENTS THAT MAY NEED TO BE APPROVED BY THE RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS.

G02. ALL LEVELS ARE IN METRES AOD (ABOVE ORDNANCE DATUM) UNLESS NOTED OTHERWISE.

G03. ALL WORKS TO BE UNDERTAKEN IN COMPLIANCE WITH BS 8000 FOR WORKMANSHIP ON BUILDING SITES.

G04. ABBREVIATIONS:
MH = MANHOLE
CL = COVER LEVEL
IL = INVERT LEVEL
S / SW = SURFACE WATER
F / FW = FOUL WATER
SD = DEMARCATION CHAMBER
FD = FLOW CONTROL CHAMBER
CONC = CONCRETE
VC = VITRIFIED CLAY
FFL = FINISHED FLOOR LEVEL
DWG = DRAWING

G05. PROPOSED SURFACE WATER DRAINAGE AND ATTENUATION DESIGNED TO ACCOMMODATE STORM EVENTS UP TO 1 IN 100 YEAR RETURN PERIOD PLUS 40% CLIMATE CHANGE ALLOWANCE.

Rev	Description	Date	By	Chk	App
P4	DRAINAGE AMENDED TO ACCOMMODATE A +40% CLIMATE CHANGE ALLOWANCE, PROPOSED FFLS AMENDED	30.04.20	JP	JAG	JAG
P3	DRAINAGE ADJUSTED TO SUIT TREE SURVEY AND 'PRESERVATION' ZONE REQUIREMENTS	28.01.20	JP	JAG	JAG
P2	INDICATIVE FFLs ADDED	15.01.20	JP	JAG	JAG
P1	FIRST ISSUE	06.01.20	JP	AD	JAG

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Sheffield	T. 01142 440077
York	T. 01904 611594

Project: Development Site at Bicester Gateway, A41 / Oxford Road, Bicester

Client: Bicester Gateway Ltd

Drawing: Proposed Drainage Layout

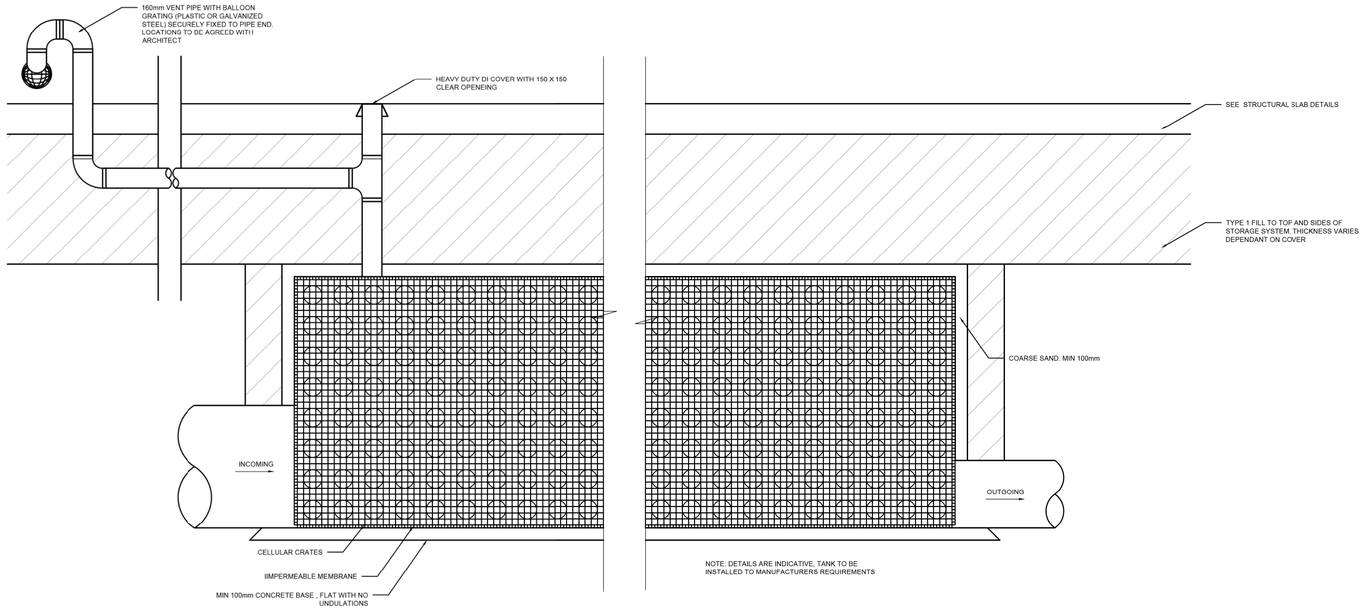
Role: Civil Engineer

Drawing Status: For Approval

Job. no. 43386 Scale@ A1: 1:500 Rev. P4

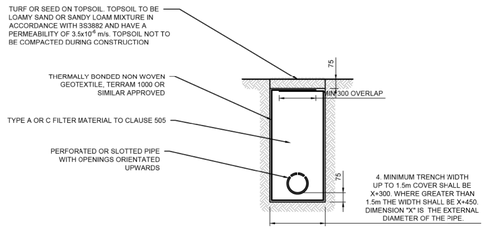
Project - Originator - Volume - Level - Type - Role - Number

BCG - AWP - ZZ - XX - DR - C - 3100



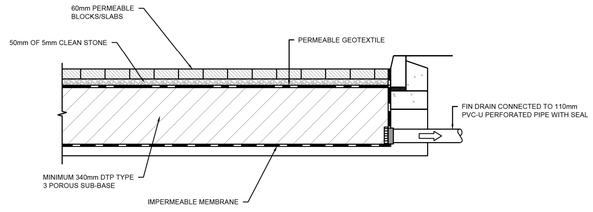
SECTION THROUGH CELLULAR CRATES
ATTENUATION TANK

SCALE - 1:20



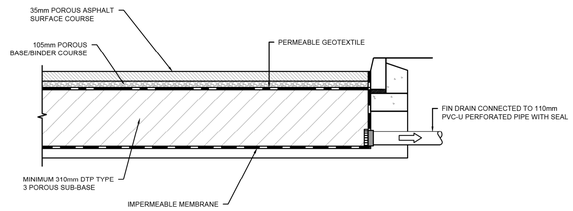
FILTER DRAIN DETAIL

SCALE - 1:20



SECTION THROUGH PERMEABLE SURFACING (BLOCK PAVING)

SCALE - 1:20



SECTION THROUGH PERMEABLE SURFACING (POROUS ASPHALT)

SCALE - 1:20

100mm at A1

NOTES:

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Rev	Description	Date	By	Chk	App
P1	FIRST ISSUE	30.04.20	JP	JAG	JAG

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York T. 01904 611594
Leeds T. 01135 311098

Project: Development Site at Bicester Gateway, A41 / Oxford Road, Bicester

Client: Bicester Gateway Ltd

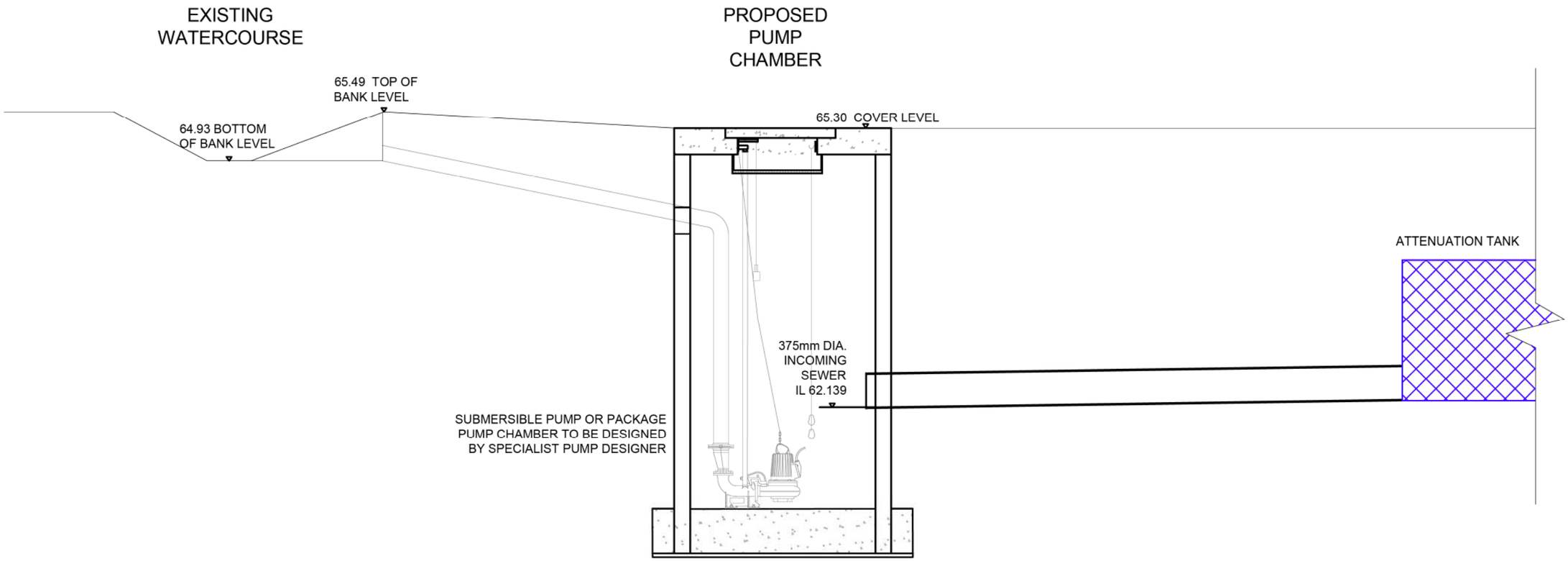
Drawing: SuDs Typical Details

Role: Civil Engineer

Drawing Status: For Approval

Job. no. 43386 | Scale@ A1: As Shown | Rev. P1

Project Originator Volume Level Type Role Number
XXX - AWP - 00 - GF - DR - S - 0001



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1. THESE NOTES ARE INTENDED TO AUGMENT DRAWINGS AND SPECIFICATIONS. WHERE CONFLICT OF REQUIREMENTS EXIST THE ORDER OF PRECEDENCE SHALL BE AS SHOWN IN THE SPECIFICATION. OTHERWISE THE STRICTEST PROVISION SHALL GOVERN.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.
3. DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.
4. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE AND ENSURE THAT THE BUILDING AND ITS COMPONENTS ARE SAFE DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS WHICH MAY BE NECESSARY, SUCH MATERIAL REMAINING THE THE PROPERTY OF THE CONTRACTOR ON COMPLETION, AND FOR ENSURING THAT THE WORKS AND ANY ADJACENT PROPERTIES ARE SAFE IN THE TEMPORARY CONDITION.

100mm at A3

Rev	Description	Date	By	Chk	App
P1	FIRST ISSUE	30.04.20	JP	JAG	JAG

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Project: Development Site at Bicester Gateway, A41/ Oxford Road, Bicester

Client: Bicester Gateway Ltd.

Drawing: Proposed Rising Main Section

Role: Civil Engineer

Drawing Status: For Information

Job. no. 43386 | Scale@ A3: 1:50 | Rev. P1

Project	Originator	Volume	Level	Type	Role	Number
BCG	AWP	ZZ	XX	DR	C	3102