Appendix C

Indicative Drainage Strategy
JPP drawing no. Q6694FA-FRA04
And
Indicative Drainage Strategy
JPP drawing no. Q6694PP-FRA05

Surface Water Sewer Route Assumed

Commercial Development - Industrial
Site Area: 0.447 ha
Percentage Impermeable Area: 80%
Proposed Impermeable Area: 0.357 ha
Qbar = 3.2 l/s minimum allowable

Commercial Development - Care Home
Site Area: 1.007 ha
Percentage Impermeable Area: 60%
Proposed Impermeable Area: 0.665 ha
Qbar = 3.2 l/s minimum allowable

Surface Water Attenuation - Residential West
Detention Basin 1 Vol: 1in100+30%CC = 603m³
Detention Basin 2 Vol: 1in100+30%CC = 1095m³
Total Vol: 1698m³
Outfall to watercourse located adjacent to northern boundary

Residential West
Site Area: 5.63 ha
Developable Area = 3.328 ha
Percentage Impermeable Area: 60%
Proposed Impermeable Area: 1.997 ha
Qbar = 4.2 l/s
Attenuation Vol: 1in100+30%CC = 1615m³

Residential East
Site Area: 6.426 ha
Developable Area = 4.589ha
Percentage Impermeable Area: 60%
Proposed Impermeable Area: 2.753 ha
Qbar = 5.8l/s
Attenuation Vol: 1in100+30%CC = 2232m³

Surface Water Attenuation - Residential East
Detention Basin 1 Vol: 1in100+30%CC = 1084m³
Detention Basin 2 Vol: 1in100+30%CC = 1207m³
Total Vol: 2291m³
Outfall to watercourse located adjacent to northern boundary

High Point

High Point

BALANCE OF DRAFT ALLOCATION

jpp consulting
Civil & Structural Engineers
Cedar Barn, White Lodge, Walgrave, Northampton NN6 9PY
T: (01604) 781611 E: mail@jppuk.net
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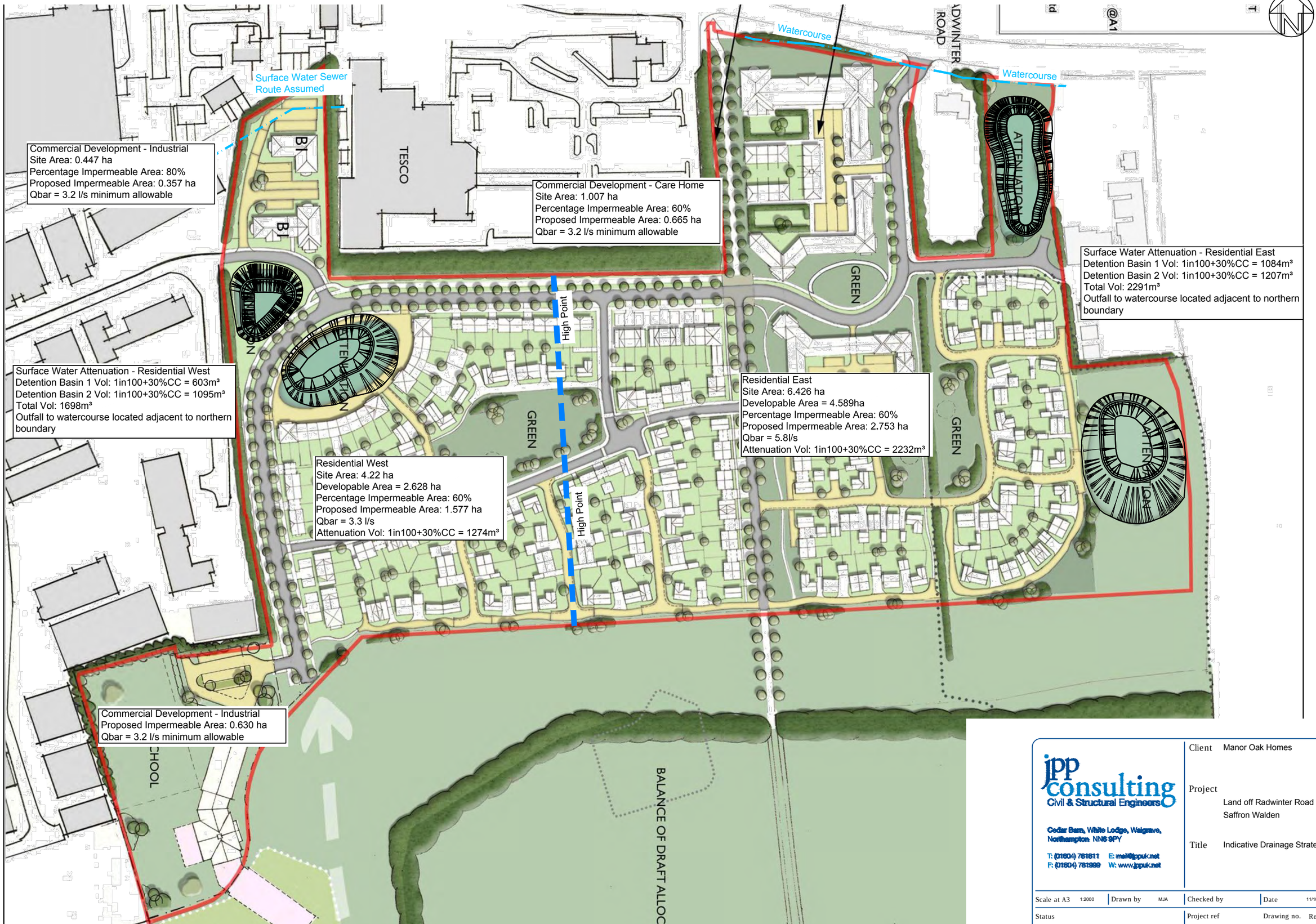
Client	Manor Oak Homes
Project	Land off Radwinter Road Saffron Walden
Title	Indicative Drainage Strategy Option 3

Scale at A3	1:2000	Drawn by	MJA	Checked by		Date	11/10/13
Status				Project ref	Drawing no.		Revision
				R6694PP	FRA04		A



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F: (01604) 781999 W: www.jppuk.net

Client	Manor Oak Homes
Project	Land off Radwinter Road Saffron Walden
Title	Indicative Drainage Strategy

Scale at A3	1:2000	Drawn by	MJA	Checked by		Date	11/10/13
Status				Project ref	R6694PP	Drawing no.	FRA05
						Revision	

Appendix D
Greenfield run off calculations

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.350
Area (ha)	1.000	Urban	0.000
SAAR (mm)	591	Region Number	Region 5

Results l/s

QBAR Rural	2.1
QBAR Urban	2.1
Q100 years	7.4
Q1 year	1.8
Q30 years	5.0
Q100 years	7.4

Appendix E
Attenuation Calculations

jpp consulting
Civil & Structural Engineers

Residential East

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	73.042	0.442	4.7	1044.9	O K
30 min Summer	73.096	0.496	4.7	1173.7	O K
60 min Summer	73.156	0.556	4.8	1316.0	O K
120 min Summer	73.222	0.622	4.8	1470.4	O K
180 min Summer	73.262	0.662	4.8	1564.7	O K
240 min Summer	73.290	0.690	4.8	1632.3	O K
360 min Summer	73.330	0.730	4.9	1726.1	O K
480 min Summer	73.357	0.757	5.0	1789.7	O K
600 min Summer	73.376	0.776	5.1	1835.9	O K
720 min Summer	73.391	0.791	5.1	1870.5	O K
960 min Summer	73.411	0.811	5.2	1916.9	O K
1440 min Summer	73.428	0.828	5.2	1957.6	O K
2160 min Summer	73.426	0.826	5.2	1954.2	O K
2880 min Summer	73.410	0.810	5.2	1915.2	O K
4320 min Summer	73.376	0.776	5.1	1835.7	O K
5760 min Summer	73.344	0.744	5.0	1760.0	O K
7200 min Summer	73.313	0.713	4.9	1686.6	O K
8640 min Summer	73.283	0.683	4.8	1615.0	O K
10080 min Summer	73.254	0.654	4.8	1545.6	O K
15 min Winter	73.095	0.495	4.8	1170.6	O K
30 min Winter	73.156	0.556	4.8	1315.0	O K
60 min Winter	73.224	0.624	4.8	1474.7	O K
120 min Winter	73.297	0.697	4.8	1648.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	203.082	0.0	385.7	19
30 min Summer	114.287	0.0	378.4	34
60 min Summer	64.316	0.0	771.7	64
120 min Summer	36.195	0.0	763.2	124
180 min Summer	25.858	0.0	763.1	184
240 min Summer	20.369	0.0	765.0	244
360 min Summer	14.552	0.0	769.5	364
480 min Summer	11.463	0.0	772.6	484
600 min Summer	9.526	0.0	774.1	602
720 min Summer	8.189	0.0	774.2	722
960 min Summer	6.451	0.0	770.9	962
1440 min Summer	4.609	0.0	754.1	1442
2160 min Summer	3.292	0.0	1502.0	2160
2880 min Summer	2.594	0.0	1470.3	2736
4320 min Summer	1.852	0.0	1384.5	3412
5760 min Summer	1.459	0.0	2738.9	4152
7200 min Summer	1.212	0.0	2716.9	4968
8640 min Summer	1.042	0.0	2592.2	5792
10080 min Summer	0.916	0.0	2448.4	6648
15 min Winter	203.082	0.0	379.9	19
30 min Winter	114.287	0.0	379.0	34
60 min Winter	64.316	0.0	768.2	64
120 min Winter	36.195	0.0	773.8	122

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
180 min Winter	73.342	0.742	5.0	1755.2	O K
240 min Winter	73.375	0.775	5.1	1831.8	O K
360 min Winter	73.420	0.820	5.2	1939.1	O K
480 min Winter	73.451	0.851	5.3	2012.5	O K
600 min Winter	73.474	0.874	5.4	2066.4	O K
720 min Winter	73.491	0.891	5.4	2107.3	O K
960 min Winter	73.515	0.915	5.5	2163.9	O K
1440 min Winter	73.539	0.939	5.5	2219.6	O K
2160 min Winter	73.544	0.944	5.6	2231.9	O K
2880 min Winter	73.532	0.932	5.5	2203.6	O K
4320 min Winter	73.488	0.888	5.4	2099.3	O K
5760 min Winter	73.449	0.849	5.3	2007.7	O K
7200 min Winter	73.408	0.808	5.2	1911.6	O K
8640 min Winter	73.367	0.767	5.0	1813.8	O K
10080 min Winter	73.326	0.726	4.9	1717.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
180 min Winter	25.858	0.0	782.6	182
240 min Winter	20.369	0.0	790.3	242
360 min Winter	14.552	0.0	801.6	360
480 min Winter	11.463	0.0	808.8	478
600 min Winter	9.526	0.0	812.8	596
720 min Winter	8.189	0.0	814.6	714
960 min Winter	6.451	0.0	813.2	946
1440 min Winter	4.609	0.0	797.1	1412
2160 min Winter	3.292	0.0	1578.5	2096
2880 min Winter	2.594	0.0	1553.5	2740
4320 min Winter	1.852	0.0	1470.7	3548
5760 min Winter	1.459	0.0	2944.9	4432
7200 min Winter	1.212	0.0	2840.0	5336
8640 min Winter	1.042	0.0	2715.5	6232
10080 min Winter	0.916	0.0	2594.1	7160

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	555200 238400 TL 55200 38400
C (1km)	-0.024
D1 (1km)	0.281
D2 (1km)	0.281
D3 (1km)	0.280
E (1km)	0.309
F (1km)	2.480
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+30

Time Area Diagram

Total Area (ha) 2.753

Time (mins) From:	To:	Area (ha)
0	4	2.753

Model Details

Storage is Online Cover Level (m) 74.000

Tank or Pond Structure

Invert Level (m) 72.600

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	2365.0	1.000	2365.0	1.001	0.0

Hydro-Brake® Outflow Control

Design Head (m) 1.000 Hydro-Brake® Type Md6 SW Only Invert Level (m) 72.600
Design Flow (l/s) 5.8 Diameter (mm) 100

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.0	1.200	6.3	3.000	9.9	7.000	15.1
0.200	4.7	1.400	6.8	3.500	10.7	7.500	15.6
0.300	4.6	1.600	7.2	4.000	11.4	8.000	16.1
0.400	4.4	1.800	7.7	4.500	12.1	8.500	16.6
0.500	4.4	2.000	8.1	5.000	12.8	9.000	17.1
0.600	4.6	2.200	8.5	5.500	13.4	9.500	17.6
0.800	5.1	2.400	8.8	6.000	14.0		
1.000	5.7	2.600	9.2	6.500	14.5		

Residential West without School

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	73.069	0.469	3.2	758.1	O K
30 min Summer	73.127	0.527	3.2	851.5	O K
60 min Summer	73.191	0.591	3.2	954.7	O K
120 min Summer	73.260	0.660	3.4	1066.5	O K
180 min Summer	73.303	0.703	3.5	1134.8	O K
240 min Summer	73.333	0.733	3.5	1183.6	O K
360 min Summer	73.375	0.775	3.6	1251.4	O K
480 min Summer	73.403	0.803	3.7	1297.1	O K
600 min Summer	73.424	0.824	3.7	1330.2	O K
720 min Summer	73.439	0.839	3.8	1354.9	O K
960 min Summer	73.459	0.859	3.8	1387.9	O K
1440 min Summer	73.477	0.877	3.9	1416.1	O K
2160 min Summer	73.474	0.874	3.9	1411.7	O K
2880 min Summer	73.456	0.856	3.8	1382.6	O K
4320 min Summer	73.421	0.821	3.7	1325.4	O K
5760 min Summer	73.387	0.787	3.7	1271.3	O K
7200 min Summer	73.355	0.755	3.6	1219.3	O K
8640 min Summer	73.324	0.724	3.5	1169.4	O K
10080 min Summer	73.294	0.694	3.5	1121.5	O K
15 min Winter	73.126	0.526	3.1	849.2	O K
30 min Winter	73.191	0.591	3.2	954.0	O K
60 min Winter	73.262	0.662	3.4	1069.8	O K
120 min Winter	73.340	0.740	3.6	1195.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	203.082	0.0	253.1	19
30 min Summer	114.287	0.0	255.9	34
60 min Summer	64.316	0.0	517.0	64
120 min Summer	36.195	0.0	526.7	124
180 min Summer	25.858	0.0	535.7	184
240 min Summer	20.369	0.0	542.8	244
360 min Summer	14.552	0.0	553.0	364
480 min Summer	11.463	0.0	559.3	484
600 min Summer	9.526	0.0	563.1	602
720 min Summer	8.189	0.0	565.1	722
960 min Summer	6.451	0.0	565.0	962
1440 min Summer	4.609	0.0	555.0	1442
2160 min Summer	3.292	0.0	1086.4	2160
2880 min Summer	2.594	0.0	1071.2	2680
4320 min Summer	1.852	0.0	1014.7	3372
5760 min Summer	1.459	0.0	1976.8	4144
7200 min Summer	1.212	0.0	1926.0	4968
8640 min Summer	1.042	0.0	1835.7	5792
10080 min Summer	0.916	0.0	1746.6	6648
15 min Winter	203.082	0.0	256.5	19
30 min Winter	114.287	0.0	263.7	34
60 min Winter	64.316	0.0	529.1	64
120 min Winter	36.195	0.0	548.0	122

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
180 min Winter	73.388	0.788	3.7	1273.1	O K
240 min Winter	73.423	0.823	3.7	1328.5	O K
360 min Winter	73.471	0.871	3.9	1406.1	O K
480 min Winter	73.503	0.903	3.9	1459.1	O K
600 min Winter	73.527	0.927	4.0	1497.9	O K
720 min Winter	73.546	0.946	4.0	1527.2	O K
960 min Winter	73.571	0.971	4.1	1567.8	O K
1440 min Winter	73.595	0.995	4.1	1607.1	O K
2160 min Winter	73.600	1.000	4.1	1614.7	O K
2880 min Winter	73.586	0.986	4.1	1593.2	O K
4320 min Winter	73.540	0.940	4.0	1518.8	O K
5760 min Winter	73.500	0.900	3.9	1453.9	O K
7200 min Winter	73.458	0.858	3.8	1386.1	O K
8640 min Winter	73.416	0.816	3.7	1318.0	O K
10080 min Winter	73.375	0.775	3.6	1251.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
180 min Winter	25.858	0.0	561.3	182
240 min Winter	20.369	0.0	571.0	242
360 min Winter	14.552	0.0	584.0	360
480 min Winter	11.463	0.0	591.8	478
600 min Winter	9.526	0.0	596.4	596
720 min Winter	8.189	0.0	598.7	714
960 min Winter	6.451	0.0	598.8	946
1440 min Winter	4.609	0.0	587.7	1412
2160 min Winter	3.292	0.0	1153.0	2092
2880 min Winter	2.594	0.0	1138.6	2740
4320 min Winter	1.852	0.0	1079.3	3504
5760 min Winter	1.459	0.0	2094.2	4384
7200 min Winter	1.212	0.0	2021.9	5328
8640 min Winter	1.042	0.0	1948.9	6232
10080 min Winter	0.916	0.0	1871.0	7160

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	555200 238400 TL 55200 38400
C (1km)	-0.024
D1 (1km)	0.281
D2 (1km)	0.281
D3 (1km)	0.280
E (1km)	0.309
F (1km)	2.480
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+30

Time Area Diagram

Total Area (ha) 1.997

Time (mins) From:	To:	Area (ha)
0	4	1.997

Model Details

Storage is Online Cover Level (m) 74.000

Tank or Pond Structure

Invert Level (m) 72.600

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1615.0	1.000	1615.0	1.001	0.0

Hydro-Brake® Outflow Control

Design Head (m) 1.000 Hydro-Brake® Type Md6 SW Only Invert Level (m) 72.600
Design Flow (l/s) 4.2 Diameter (mm) 85

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.4	1.200	4.5	3.000	7.1	7.000	10.9
0.200	3.2	1.400	4.9	3.500	7.7	7.500	11.3
0.300	3.0	1.600	5.2	4.000	8.2	8.000	11.7
0.400	2.9	1.800	5.5	4.500	8.7	8.500	12.0
0.500	3.0	2.000	5.8	5.000	9.2	9.000	12.4
0.600	3.2	2.200	6.1	5.500	9.7	9.500	12.7
0.800	3.7	2.400	6.4	6.000	10.1		
1.000	4.1	2.600	6.6	6.500	10.5		

Residential West with School

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	73.070	0.470	2.4	598.7	O K
30 min Summer	73.127	0.527	2.4	672.4	O K
60 min Summer	73.191	0.591	2.6	753.9	O K
120 min Summer	73.260	0.660	2.7	842.1	O K
180 min Summer	73.303	0.703	2.8	896.0	O K
240 min Summer	73.333	0.733	2.8	934.5	O K
360 min Summer	73.375	0.775	2.9	987.8	O K
480 min Summer	73.403	0.803	3.0	1023.8	O K
600 min Summer	73.423	0.823	3.0	1049.8	O K
720 min Summer	73.439	0.839	3.0	1069.2	O K
960 min Summer	73.459	0.859	3.1	1094.9	O K
1440 min Summer	73.476	0.876	3.1	1116.7	O K
2160 min Summer	73.473	0.873	3.1	1112.5	O K
2880 min Summer	73.454	0.854	3.0	1089.2	O K
4320 min Summer	73.419	0.819	3.0	1044.1	O K
5760 min Summer	73.386	0.786	2.9	1001.6	O K
7200 min Summer	73.354	0.754	2.9	960.9	O K
8640 min Summer	73.323	0.723	2.8	922.0	O K
10080 min Summer	73.294	0.694	2.8	884.9	O K
15 min Winter	73.126	0.526	2.4	670.6	O K
30 min Winter	73.191	0.591	2.6	753.4	O K
60 min Winter	73.263	0.663	2.7	844.8	O K
120 min Winter	73.341	0.741	2.8	944.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	203.082	0.0	193.6	19
30 min Summer	114.287	0.0	198.7	34
60 min Summer	64.316	0.0	398.6	64
120 min Summer	36.195	0.0	411.6	124
180 min Summer	25.858	0.0	421.2	184
240 min Summer	20.369	0.0	428.4	244
360 min Summer	14.552	0.0	438.0	364
480 min Summer	11.463	0.0	444.0	484
600 min Summer	9.526	0.0	447.5	602
720 min Summer	8.189	0.0	449.4	722
960 min Summer	6.451	0.0	449.8	962
1440 min Summer	4.609	0.0	442.1	1442
2160 min Summer	3.292	0.0	860.8	2160
2880 min Summer	2.594	0.0	850.5	2680
4320 min Summer	1.852	0.0	806.8	3332
5760 min Summer	1.459	0.0	1554.9	4104
7200 min Summer	1.212	0.0	1506.6	4968
8640 min Summer	1.042	0.0	1441.5	5792
10080 min Summer	0.916	0.0	1376.8	6560
15 min Winter	203.082	0.0	199.0	19
30 min Winter	114.287	0.0	206.9	34
60 min Winter	64.316	0.0	413.2	64
120 min Winter	36.195	0.0	432.2	122

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
180 min Winter	73.388	0.788	2.9	1005.2	O K
240 min Winter	73.423	0.823	3.0	1049.0	O K
360 min Winter	73.471	0.871	3.1	1110.1	O K
480 min Winter	73.503	0.903	3.1	1151.8	O K
600 min Winter	73.527	0.927	3.2	1182.3	O K
720 min Winter	73.545	0.945	3.2	1205.4	O K
960 min Winter	73.570	0.970	3.2	1237.2	O K
1440 min Winter	73.594	0.994	3.3	1267.9	O K
2160 min Winter	73.599	0.999	3.3	1273.3	O K
2880 min Winter	73.585	0.985	3.3	1255.9	O K
4320 min Winter	73.539	0.939	3.2	1197.6	O K
5760 min Winter	73.499	0.899	3.1	1146.7	O K
7200 min Winter	73.458	0.858	3.1	1093.5	O K
8640 min Winter	73.416	0.816	3.0	1040.5	O K
10080 min Winter	73.376	0.776	2.9	988.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
180 min Winter	25.858	0.0	444.4	182
240 min Winter	20.369	0.0	453.0	242
360 min Winter	14.552	0.0	464.3	360
480 min Winter	11.463	0.0	471.0	478
600 min Winter	9.526	0.0	474.9	596
720 min Winter	8.189	0.0	476.9	714
960 min Winter	6.451	0.0	477.1	944
1440 min Winter	4.609	0.0	468.2	1412
2160 min Winter	3.292	0.0	916.1	2080
2880 min Winter	2.594	0.0	905.4	2736
4320 min Winter	1.852	0.0	858.1	3500
5760 min Winter	1.459	0.0	1640.6	4384
7200 min Winter	1.212	0.0	1590.2	5328
8640 min Winter	1.042	0.0	1538.5	6224
10080 min Winter	0.916	0.0	1479.4	7160

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	555200 238400 TL 55200 38400
C (1km)	-0.024
D1 (1km)	0.281
D2 (1km)	0.281
D3 (1km)	0.280
E (1km)	0.309
F (1km)	2.480
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+30

Time Area Diagram

Total Area (ha) 1.577

Time (mins) From:	To:	Area (ha)
0	4	1.577

Model Details

Storage is Online Cover Level (m) 74.000

Tank or Pond Structure

Invert Level (m) 72.600

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1275.0	1.000	1275.0	1.001	0.0

Hydro-Brake® Outflow Control

Design Head (m) 1.000 Hydro-Brake® Type Md6 SW Only Invert Level (m) 72.600
Design Flow (l/s) 3.3 Diameter (mm) 76

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.0	1.200	3.6	3.000	5.7	7.000	8.7
0.200	2.4	1.400	3.9	3.500	6.2	7.500	9.0
0.300	2.2	1.600	4.2	4.000	6.6	8.000	9.3
0.400	2.2	1.800	4.4	4.500	7.0	8.500	9.6
0.500	2.4	2.000	4.7	5.000	7.4	9.000	9.9
0.600	2.6	2.200	4.9	5.500	7.7	9.500	10.2
0.800	3.0	2.400	5.1	6.000	8.1		
1.000	3.3	2.600	5.3	6.500	8.4		

Appendix F
Anglian Water Correspondence

Pre Planning

Assessment Report

Radwinter Road, SAFFRON WALDEN
JPP Consulting

Reference Number: 0413/SP79(004a)

Anglian Water Services contact:
Anna Lansdown
Growth Planning Advisor
Thorpe Wood House
Thorpe Wood
Peterborough
PE3 6WT
Telephone Number: 01733 414690
Please use the above reference number in all communications

YOUR DEVELOPMENT SITE: Radwinter Road, SAFRON WALDEN

The information provided within this report has been generated based on the following information provided in your application form:

- The grid reference for the site is TL55103818.
- The site does not have planning permission and is located on a Greenfield site.
- The development site will contain 300 dwellings.
- The anticipated residential build rate is:

Year	2013	2014	2015	2016	2017
Build rate	-	50	100	100	50

The comments contained within this report relate to the public water mains and sewers indicated on our records. Your attention is drawn to the disclaimer in the useful information section of this report.

Due to the recent adoption of private sewers in October 2011 many newly adopted public wastewater assets and their history are not indicated on our records. You also need to be aware that your development site may contain private water mains, drains or other assets not shown on our records. These are private assets and not the responsibility of Anglian Water but that of the landowner.

ASSETS AFFECTED

Our records indicate that we have a public foul sewer and a surface water sewer within the boundary of your development site. Additionally, it is highly recommended that you carry out a thorough investigation of your proposed working area to establish whether any unmapped public or private sewers and lateral drains are in existence.

We are unable to permit development either over or within the easement strip without prior consent. The extent of the easement is provided in the table below. Please be aware that the existing underground assets should be located in highway or open space and not in private gardens. This is to ensure available access for any future maintenance and repair. This should be taken into consideration when planning your site layout.

Wastewater Easement Information	
Sewer Size (mm)	Total Easement Required (m)
Surface Water: 225	3m either side of the centre line
Foul: 180	3m either side of the centre line

If it is not possible to avoid our asset(s) then the sewer(s) may need to be diverted in accordance with Section 185 of the Water Industry Act (1991). We have a duty to divert our sewerage infrastructure if requested to do so although this would be at your expense. You will need to make a formal application if you

would like a diversion to be considered. A copy of the section 185 diversion application form can be found at www.anglianwater.co.uk /developers

WASTEWATER SERVICES

In examining the wastewater system we assess the ability for your site to connect to the public sewerage network without causing a detriment to the operation of the system. We also assess the receiving sewage works and determine whether the sewage works can cope with the increased flow and influent quality arising from your development.

Wastewater Treatment

The foul drainage from this development is in the catchment of Saffron Walden Sewage Treatment Works, which has capacity to treat the flows from your development site. Anglian Water cannot reserve capacity at this sewage works and you are recommended to formally apply for a connection at your earliest convenience. Please note that capacity at the sewage works can be reduced at any time due to increased requirements from existing businesses and houses, from new housing and new commercial developments as well as from environmental and regulation driven changes.

Foul Sewerage Network

Unfortunately, a direct connection to your preferred connection point is likely to have a detrimental effect on the existing sewerage network. Further work is therefore needed to be able to provide you with a solution for draining your site.

An assessment has been carried out and a strategy to accommodate the full site, of which this is a part, has been identified. This part of the development will need to comply with this strategy. It is advised that you liaise with the customer promoting the overall site, to take this forward.

To assess an alternative connection point to serve this part only will require further assessment work, the cost and timescale has already been provided and subsequently, Anglian Water have been asked not to proceed down this route.

Rob Morris, our Senior Growth Planning Engineer for this area has contacted you and liaised with you regarding this issue. To discuss this matter further, he can be contacted on 07702 341018 or at rMorris2@anglianwater.co.uk.

Surface Water Disposal

In principle, the proposed method of surface water disposal is acceptable to Anglian Water. It is our understanding that the evidence to confirm your assumptions is not yet available. Once the evidence has been confirmed, then a connection point may be made to manhole 0352 off Radwinter Road located at national grid reference (NGR) TL55023838 at a rate of 6.2 Litres per second. It is your responsibility to provide the evidence to support your assumptions and these will be required before your connection can be agreed. The remainder of the site can be discharged to the ditch that runs along the north of the site subject to the approval of the riparian owner.

Anglian Water's surface water policy follows the SUDs hierarchy, outline in Part H of the Building Regulations. Should your assumptions or evidence change then

an alternative solution, connection point or flow rate may be required. You are therefore advised to update Anglian Water with the key supporting evidence at your earliest convenience.

As briefly stated above, Anglian Water will consider the adoption of SuDs provided that they meet the criteria outline in our SuDs adoption manual. This can be found on our website at www.anglianwater.co.uk/developers/sewer-connection/suds.aspx. We will adopt features located in public open space that are designed and constructed, in conjunction with the future SuDs Approving Body, to the criteria within our SuDs adoption manual. Specifically, developers must be able to demonstrate:

1. Effective upstream source control,
2. Effective exceedance design, and
3. Effective maintenance schedule demonstrating than the assets can be maintained both now and in the future with adequate access.

Our preference is that the Local Authority is requested to adopt in the first instance as duty will pass to them in future legislation. Consequently as part of your submission, evidence will need to be provided to show that you have approached the local authority. If you wish to look at the adoption of any SuDs then an expression of interest form can be found on our website at http://www.anglianwater.co.uk/_assets/media/SuDS_Adoption_Form_2012.pdf

Wastewater Budget Costs

It has been assumed that the onsite foul network will be provided under a section 104 Water Industry Act application. It is recommended that you also budget for both infrastructure charges and connection costs. The 2012/13 charges are:

Infrastructure Charge	£328.00 per connection
S104 Supervision and inspection costs	2.5% of estimated construction costs
S104 Surety costs	10% of estimated construction costs

Map of proposed connection points

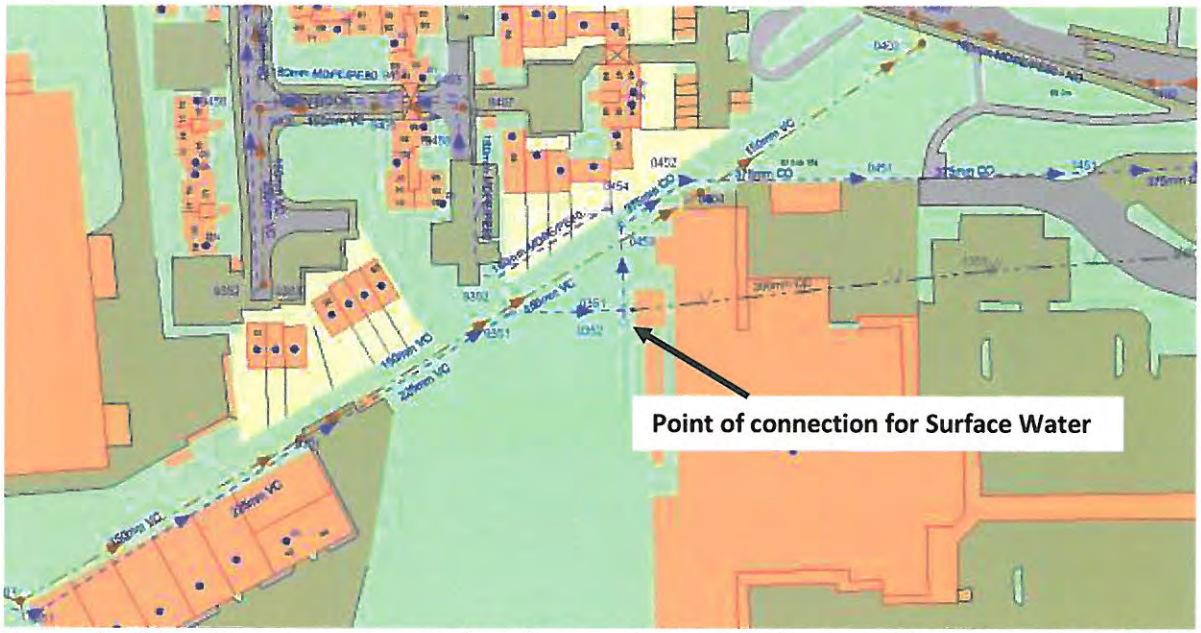

Figure 1: Showing your proposed surface water point of connection at manhole 0352 with a Cover Level of 73.371m and an Invert Level of 71.379m.

USEFUL INFORMATION

Sustainable Drainage Systems: Many existing urban drainage systems can cause problems of flooding, pollution or damage to the environment and are resilient to climate change in the long term. Therefore our preferred method of surface water disposal is through the use of Sustainable Drainage Systems (SuDS). SuDS are a range of techniques that aim to mimic the way surface water drains in natural systems within urban areas. For more information on SuDS, please visit our website at http://anglianwater.co.uk/developers/sewer-connection/suds.aspx. We also recommend that you contact the future SuDS Approving Body (SAB) for the area to discuss your application.

Water Industry Act - Key Wastewater Sections:

- Section 98: This provides you with the right to requisition a new public sewer. The new public sewer can be constructed by Anglian Water on your behalf. Alternatively, you can construct the sewer yourself under section 30 of the Anglian Water Authority Act 1977.
- Section 102: This provides you with the right to have an existing sewerage asset vested by us. It is your responsibility to bring the infrastructure to an adoptable condition ahead of the asset being vested.
- Section 104: This provides you with the right to have a design technically vetted and an agreement reached that will see us adopt your assets following their satisfactory construction and connection to the public sewer.
- Section 106: This provides you with the right to have your constructed sewer connected to the public sewer.
- Section 185: This provides you with the right to have a public sewerage asset diverted.

Details on how to make a formal application for a new sewer, new connection or diversion are available on our website at www.anglianwater.co.uk/developers/application-form or via our Developer Services team on 08457 60 66 087.

Private Sewer Transfers: Sewers and lateral drains connected to the public sewer on the 1 July 2011 transferred into Water Company ownership on the 1 October 2011. This follows the implementation of the Floods and Water Management Act (FWMA). This included sewers and lateral drains that were subject to an existing Section 104 Adoption Agreement and those that were not. There were exemptions and the main non-transferable assets were as follows:

- Surface water sewers and lateral drains that did not discharge to the public sewer, e.g. those that discharged to a watercourse.
- Foul sewers and lateral drains that discharged to a privately owned sewage treatment/collection facility.
- Pumping stations and rising mains will transfer between 1 October 2011 and 1 October 2016.

The implementation of Section 42 of the FWMA will ensure that future private sewers will not be created. It is anticipated that all new sewer applications will need to have an approved section 104 application ahead of a section 106 connection.

Encroachment: Anglian Water operates a risk based approach to development encroaching close to our wastewater infrastructure. We assess the issue of encroachment if you are planning to build within 400 metres of a Sewage Treatment Works or, within 15 metres to 100 metres of a pumping station. We have more information available on our website at http://anglianwater.co.uk/developers/ encroachment.aspx

Locating our assets: Maps detailing the location of our water and wastewater infrastructure including both underground assets and above ground assets such as pumping stations and treatment works are available from www.digdat.co.uk . All requests from members of the public or non-statutory bodies for maps showing the location of our assets will be subject to an appropriate administrative charge. We have more information on our website at: www.anglianwater.co.uk/developers/our-assets/

Summary of charges: A summary of this year's water and wastewater connection and infrastructure charges can be found at www.anglianwater.co.uk/developers /charges/

Disclaimer: The information provided within this report is based on the best data currently recorded, recorded within the last 12 months or provided by a third party. The position must be regarded as approximate. If there is further development in the area or for other reasons the position may change.

The accuracy of this report is therefore not guaranteed and does not obviate the need to make additional appropriate searches, inspections and enquiries. You are advised therefore to renew your enquiry should there be a delay in submitting your application for water supply/sewer connection to re-confirm the situation.

Any cost calculations provided within the report are estimated only and may be subject to change.

No liability whatsoever including liability for negligence is accepted by Anglian Water Services Limited for any error or inaccuracy or omission including the failure to accurately record or record at all, the location of any water main, discharge pipe, sewer, or drain or disposal main or any item of apparatus.

Contacting us: If you have any comments or suggestions based on the information provided in this report then please feel free to contact me on 01733 414690.