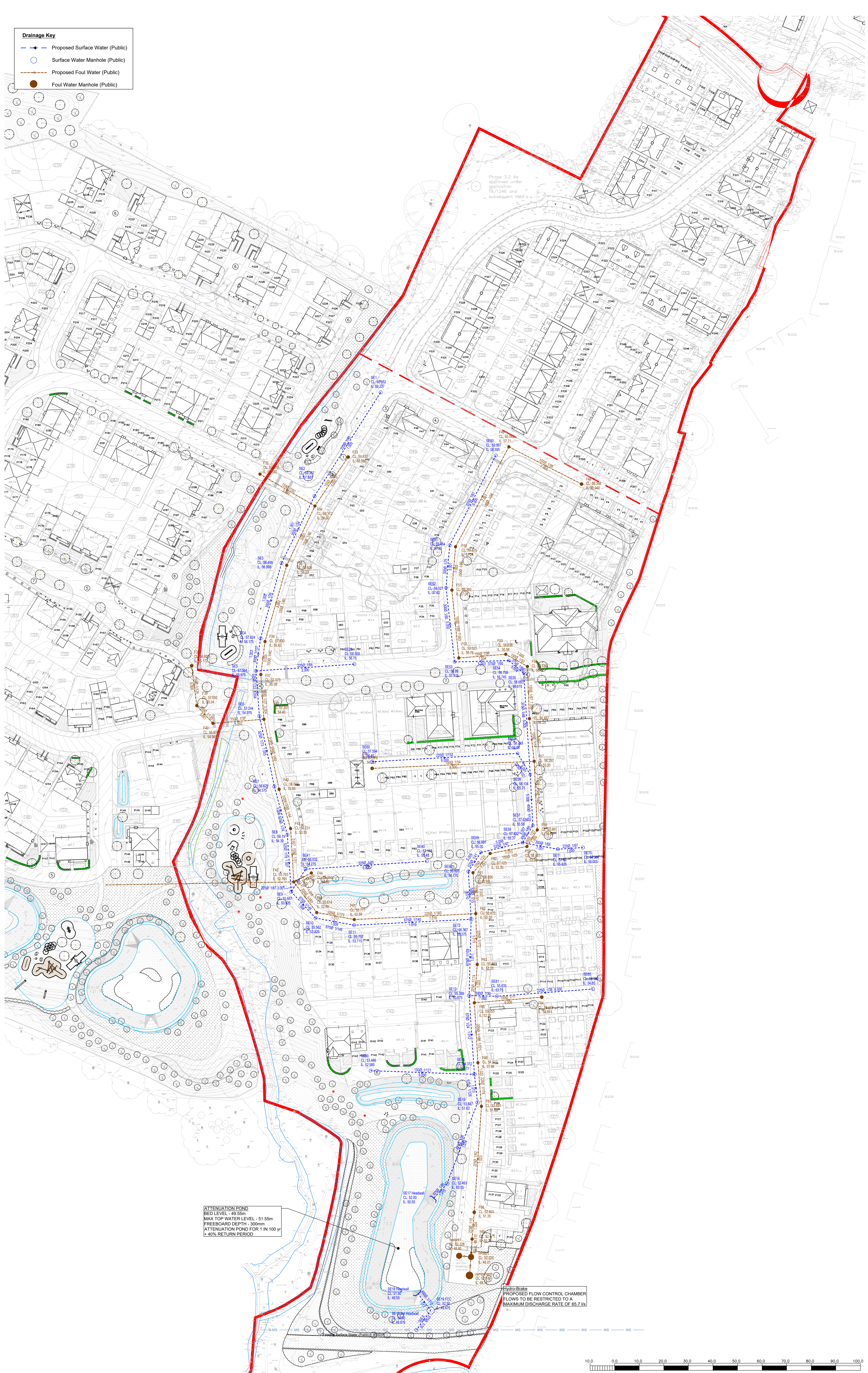




Drainage Key

- Proposed Surface Water (Public)
- Surface Water Manhole (Public)
- Proposed Foul Water (Public)
- Foul Water Manhole (Public)

ATTENUATION POND
BED LEVEL - 49.55m
MAX TOP WATER LEVEL - 51.56m
FREEBOARD DEPTH - 300mm
ATTENUATION POND FOR 1 IN 100 yr
40% RETURN PERIOD

Hydro-Brake
PROPOSED FLOW CONTROL CHAMBER
FLOWS TO BE RESTRICTED TO A
MAXIMUM DISCHARGE RATE OF 85.7 l/s

GENERAL NOTES

1.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF PRICE GROUP LTD.

1.2. ALL DIMENSIONS TO BE CHECKED ON SITE AND CO-ORDINATE WITH RELEVANT ARCHITECTS DRAWINGS. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION.

1.3. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.

1.4. ALL LEVELS IN METRES.

1.5. SIZES HEREON SHALL NOT BE MODIFIED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.

1.6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS DRAWINGS & SPECIFICATIONS.

Drainage Construction Notes

1. All materials and workmanship related to private sewers shall be in accordance with Part H of the Building Regulations and BS EN1252 and best practice.

2. All materials and workmanship related to adoptable sewers shall be in accordance with the Design and Construction Guidance 2020 as published by the Water Services Association and any subsequent revisions shown by the water authority.

3. All sustainable drainage systems to be designed and maintained in accordance with CIRA C753 The SuDS Manual and best practice guidance.

4. All patios and external surfaces to drain away from building thresholds unless explicitly noted on the plan.

5. All doorways with pathways falling towards them to be fitted with threshold drains, to be connected to nearest SW inspection chamber or pipe.

6. All parking area to be porous paving.

7. Where practicable rainwater pipe to discharge onto parking area or into diffuser.

8. Land drainage to be provided in gardens where the gradient falls towards a property.

Revision Table

REV	DATE	BY	DATE	APP	DATE
P2	26/06/24	DB	26/06/24	DB	26/06/24
P1	19/06/24	DB	19/06/24	DB	19/06/24

Client
Berkeley Homes (Southern) Ltd

Project
Southwater, Phase 4 & 5

Drawing
Strategy Surface Water Layout Overview - Phase 4

Drawn
JH

Date
JUNE 2024

Patrick Parsons Project No.
12345

Scale
@ A0
1:500

Status Description
REVIEW & COMMENT

S3

Revision
P2

Appendix G

Causeway Flow Calculation

**Design Settings**

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	5	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	1.000
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	x
Maximum Time of Concentration (mins)	999.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SE1	0.049	5.00	60.652	1350	515206.523	126162.123	2.452
SE2	0.050	5.00	59.387	1350	515179.609	126119.884	2.287
SE3	0.050	5.00	58.499	1350	515166.175	126092.686	1.949
SE4	0.067	5.00	57.824	1350	515157.645	126062.003	1.649
SE20	0.065	5.00	58.509	1350	515195.821	126051.543	1.759
SE5	0.067	5.00	57.584	1350	515156.479	126048.823	1.609
SE6	0.135	5.00	57.244	1350	515157.178	126030.448	2.269
SE7	0.131	5.00	56.629	1350	515163.275	126001.763	2.054
SE8	0.078	5.00	56.190	1350	515168.546	125982.138	1.890
SE40	0.076	5.00	57.143	1350	515225.300	125971.340	1.693
SE41	0.078	5.00	56.032	1350	515175.983	125968.131	1.757
SE9	0.000	5.00	55.667	1350	515170.134	125958.936	1.742
SE10	0.078	5.00	55.562	1350	515180.030	125948.244	1.737
SE11	0.076	5.00	55.757	1350	515195.703	125945.333	2.042
SE50	0.078	5.00	59.997	1350	515253.384	126136.414	1.402
SE51	0.076	5.00	59.464	1350	515234.613	126099.858	1.614
SE52	0.078	5.00	59.327	1200	515233.133	126082.582	1.707
SE53	0.076	5.00	58.990	1200	515236.628	126052.422	1.875
SE54	0.078	5.00	58.758	1200	515258.737	126053.000	2.013
SE55	0.076	5.00	58.653	1200	515264.743	126047.929	2.038
SE60	0.104	5.00	57.594	1350	515202.983	126011.829	1.144
SE61	0.025	5.00	58.243	1200	515262.244	126015.227	2.243
SE56	0.088	5.00	58.134	1200	515267.415	126006.585	2.384
SE57	0.136	5.00	57.636	1200	515268.465	125985.925	2.056
SE70	0.078	5.00	57.367	1350	515288.849	125976.923	1.362
SE71	0.076	5.00	57.480	1350	515278.668	125976.239	1.655
SE58	0.087	5.00	57.432	1200	515264.331	125978.919	2.062
SE59	0.085	5.00	56.997	1200	515247.319	125974.941	1.997
SE501	0.077	5.00	56.805	1350	515242.217	125967.192	2.030
SE12	0.075	5.00	56.367	1500	515243.360	125947.737	2.992
SE80	0.077	5.00	56.599	1350	515292.955	125919.366	1.749
SE81	0.075	5.00	55.635	1350	515253.824	125916.421	1.885
SE13	0.077	5.00	55.388	1500	515242.534	125916.702	2.313
SE90	0.065	5.00	53.486	1350	515202.451	125886.135	0.901
SE14	0.067	5.00	54.312	1500	515244.673	125884.651	2.602
SE15	0.065	5.00	53.947	1500	515245.964	125873.198	2.327
SE16	0.067	5.00	52.463	1500	515233.590	125840.216	1.813
SE17 Headwall			52.000		515228.229	125834.309	2.410
SE18 Headwall		5.00	51.500		515221.844	125795.306	1.950
SE19 FCC			52.500	3000	515226.885	125788.542	3.025
SE Outlet Headwall			50.800		515232.759	125780.659	1.925

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	SE1	SE2	50.085	0.600	58.200	57.175	1.025	48.9	225	5.45	50.0
1.001	SE2	SE3	30.334	0.600	57.100	56.550	0.550	55.2	300	5.68	50.0
1.002	SE3	SE4	31.847	0.600	56.550	56.175	0.375	84.9	300	5.99	50.0
1.003	SE4	SE5	13.231	0.600	56.175	56.050	0.125	105.8	300	6.14	50.0
2.000	SE20	SE5	39.436	0.600	56.750	56.125	0.625	63.1	225	5.40	50.0
1.004	SE5	SE6	18.389	0.600	55.975	55.500	0.475	38.7	375	6.24	50.0
1.005	SE6	SE7	29.326	0.600	54.975	54.575	0.400	73.3	525	6.43	50.0
1.006	SE7	SE8	20.320	0.600	54.575	54.300	0.275	73.9	525	6.56	50.0
1.007	SE8	SE9	23.256	0.600	54.300	54.000	0.300	77.5	525	6.71	50.0
4.000	SE40	SE41	49.421	0.600	55.450	54.350	1.100	44.9	225	5.42	50.0
4.001	SE41	SE9	10.898	0.600	54.275	54.150	0.125	87.2	300	5.53	50.0
1.008	SE9	SE10	14.570	0.600	53.925	53.825	0.100	145.7	675	6.82	50.0
1.009	SE10	SE11	15.941	0.600	53.825	53.715	0.110	144.9	675	6.95	50.0
1.010	SE11	SE12	47.718	0.600	53.715	53.375	0.340	140.3	675	7.31	50.0
5.000	SE50	SE51	41.093	0.600	58.595	57.925	0.670	61.3	225	5.41	50.0
5.001	SE51	SE52	17.339	0.600	57.850	57.620	0.230	75.4	300	5.57	50.0
5.002	SE52	SE53	30.362	0.600	57.620	57.115	0.505	60.1	300	5.82	50.0
5.003	SE53	SE54	22.116	0.600	57.115	56.745	0.370	59.8	375	5.98	50.0
5.004	SE54	SE55	7.860	0.600	56.745	56.615	0.130	60.5	375	6.03	50.0
5.005	SE55	SE56	41.430	0.600	56.615	55.750	0.865	47.9	375	6.29	50.0
6.000	SE60	SE61	59.358	0.600	56.450	56.000	0.450	131.9	225	5.87	50.0
6.001	SE61	SE56	10.071	0.600	56.000	55.900	0.100	100.7	225	6.00	50.0
5.006	SE56	SE57	20.687	0.600	55.750	55.580	0.170	121.7	450	6.48	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)
1.000	1.875	74.6	6.6	2.227	1.987	0.049	0.0
1.001	2.121	149.9	13.4	1.987	1.649	0.099	0.0
1.002	1.707	120.7	20.2	1.649	1.349	0.149	0.0
1.003	1.528	108.0	29.3	1.349	1.234	0.216	0.0
2.000	1.649	65.6	8.8	1.534	1.234	0.065	0.0
1.004	2.919	322.4	47.2	1.234	1.369	0.348	0.0
1.005	2.618	566.7	65.5	1.744	1.529	0.483	0.0
1.006	2.608	564.5	83.2	1.529	1.365	0.614	0.0
1.007	2.545	551.0	93.8	1.365	1.142	0.692	0.0
4.000	1.956	77.8	10.3	1.468	1.457	0.076	0.0
4.001	1.684	119.1	20.9	1.457	1.217	0.154	0.0
1.008	2.169	776.1	114.7	1.067	1.062	0.846	0.0
1.009	2.175	778.2	125.2	1.062	1.367	0.924	0.0
1.010	2.210	790.9	135.5	1.367	2.317	1.000	0.0
5.000	1.673	66.5	10.6	1.177	1.314	0.078	0.0
5.001	1.812	128.1	20.9	1.314	1.407	0.154	0.0
5.002	2.031	143.6	31.4	1.407	1.575	0.232	0.0
5.003	2.347	259.2	41.7	1.500	1.638	0.308	0.0
5.004	2.333	257.7	52.3	1.638	1.663	0.386	0.0
5.005	2.623	289.7	62.6	1.663	2.009	0.462	0.0
6.000	1.137	45.2	14.1	0.919	2.018	0.104	0.0
6.001	1.303	51.8	17.5	2.018	2.009	0.129	0.0
5.006	1.842	292.9	92.0	1.934	1.606	0.679	0.0

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)
5.007	SE57	SE58	8.135	0.600	55.580	55.445	0.135	60.3	450	6.53	50.0
7.000	SE70	SE71	10.204	0.600	56.005	55.900	0.105	97.2	225	5.13	50.0
7.001	SE71	SE58	14.586	0.600	55.825	55.600	0.225	64.8	300	5.25	50.0
5.008	SE58	SE59	17.471	0.600	55.370	55.000	0.370	47.2	525	6.62	50.0
5.009	SE59	SE501	9.277	0.600	55.000	54.775	0.225	41.2	525	6.67	50.0
5.010	SE501	SE12	19.489	0.600	54.775	53.450	1.325	14.7	525	6.72	50.0
1.011	SE12	SE13	31.046	0.600	53.375	53.075	0.300	103.5	675	7.51	50.0
8.000	SE80	SE81	39.242	0.600	54.850	53.825	1.025	38.3	225	5.31	50.0
8.001	SE81	SE13	11.293	0.600	53.750	53.375	0.375	30.1	300	5.37	50.0
1.012	SE13	SE14	32.122	0.600	53.075	51.710	1.365	23.5	675	7.61	50.0
9.000	SE90	SE14	42.248	0.600	52.585	52.085	0.500	84.5	225	5.49	50.0
1.013	SE14	SE15	11.525	0.600	51.710	51.620	0.090	128.1	675	7.69	50.0
1.014	SE15	SE16	35.227	0.600	51.620	50.650	0.970	36.3	675	7.82	50.0
1.015	SE16	SE17 Headwall	7.976	0.600	50.650	50.550	0.100	79.8	675	7.87	50.0
1.017	SE18 Headwall	SE19 FCC	8.436	0.600	49.550	49.475	0.075	112.5	450	5.07	50.0
1.018	SE19 FCC	SE Outlet Headwall	9.831	0.600	49.475	48.875	0.600	16.4	375	5.11	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)
5.007	2.622	417.1	110.5	1.606	1.537	0.815	0.0
7.000	1.326	52.7	10.6	1.137	1.355	0.078	0.0
7.001	1.955	138.2	20.9	1.355	1.532	0.154	0.0
5.008	3.265	706.8	143.1	1.537	1.472	1.056	0.0
5.009	3.495	756.6	154.6	1.472	1.505	1.141	0.0
5.010	5.861	1268.7	165.1	1.505	2.392	1.218	0.0
1.011	2.576	921.8	310.8	2.317	1.638	2.293	0.0
8.000	2.120	84.3	10.4	1.524	1.585	0.077	0.0
8.001	2.875	203.2	20.6	1.585	1.713	0.152	0.0
1.012	5.416	1938.1	341.8	1.638	1.927	2.522	0.0
9.000	1.423	56.6	8.8	0.676	2.002	0.065	0.0
1.013	2.314	828.2	359.7	1.927	1.652	2.654	0.0
1.014	4.357	1559.2	368.5	1.652	1.138	2.719	0.0
1.015	2.936	1050.6	377.6	1.138	0.775	2.786	0.0
1.017	1.916	304.7	0.0	1.500	2.575	0.000	0.0
1.018	4.494	496.4	0.0	2.650	1.550	0.000	0.0

**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	50.085	48.9	225	Circular	60.652	58.200	2.227	59.387	57.175	1.987
1.001	30.334	55.2	300	Circular	59.387	57.100	1.987	58.499	56.550	1.649
1.002	31.847	84.9	300	Circular	58.499	56.550	1.649	57.824	56.175	1.349
1.003	13.231	105.8	300	Circular	57.824	56.175	1.349	57.584	56.050	1.234
2.000	39.436	63.1	225	Circular	58.509	56.750	1.534	57.584	56.125	1.234
1.004	18.389	38.7	375	Circular	57.584	55.975	1.234	57.244	55.500	1.369
1.005	29.326	73.3	525	Circular	57.244	54.975	1.744	56.629	54.575	1.529
1.006	20.320	73.9	525	Circular	56.629	54.575	1.529	56.190	54.300	1.365
1.007	23.256	77.5	525	Circular	56.190	54.300	1.365	55.667	54.000	1.142
4.000	49.421	44.9	225	Circular	57.143	55.450	1.468	56.032	54.350	1.457
4.001	10.898	87.2	300	Circular	56.032	54.275	1.457	55.667	54.150	1.217
1.008	14.570	145.7	675	Circular	55.667	53.925	1.067	55.562	53.825	1.062
1.009	15.941	144.9	675	Circular	55.562	53.825	1.062	55.757	53.715	1.367
1.010	47.718	140.3	675	Circular	55.757	53.715	1.367	56.367	53.375	2.317
5.000	41.093	61.3	225	Circular	59.997	58.595	1.177	59.464	57.925	1.314
5.001	17.339	75.4	300	Circular	59.464	57.850	1.314	59.327	57.620	1.407
5.002	30.362	60.1	300	Circular	59.327	57.620	1.407	58.990	57.115	1.575
5.003	22.116	59.8	375	Circular	58.990	57.115	1.500	58.758	56.745	1.638
5.004	7.860	60.5	375	Circular	58.758	56.745	1.638	58.653	56.615	1.663
5.005	41.430	47.9	375	Circular	58.653	56.615	1.663	58.134	55.750	2.009
6.000	59.358	131.9	225	Circular	57.594	56.450	0.919	58.243	56.000	2.018
6.001	10.071	100.7	225	Circular	58.243	56.000	2.018	58.134	55.900	2.009
5.006	20.687	121.7	450	Circular	58.134	55.750	1.934	57.636	55.580	1.606
5.007	8.135	60.3	450	Circular	57.636	55.580	1.606	57.432	55.445	1.537

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SE1	1350	Manhole	Adoptable	SE2	1350	Manhole	Adoptable
1.001	SE2	1350	Manhole	Adoptable	SE3	1350	Manhole	Adoptable
1.002	SE3	1350	Manhole	Adoptable	SE4	1350	Manhole	Adoptable
1.003	SE4	1350	Manhole	Adoptable	SE5	1350	Manhole	Adoptable
2.000	SE20	1350	Manhole	Adoptable	SE5	1350	Manhole	Adoptable
1.004	SE5	1350	Manhole	Adoptable	SE6	1350	Manhole	Adoptable
1.005	SE6	1350	Manhole	Adoptable	SE7	1350	Manhole	Adoptable
1.006	SE7	1350	Manhole	Adoptable	SE8	1350	Manhole	Adoptable
1.007	SE8	1350	Manhole	Adoptable	SE9	1350	Manhole	Adoptable
4.000	SE40	1350	Manhole	Adoptable	SE41	1350	Manhole	Adoptable
4.001	SE41	1350	Manhole	Adoptable	SE9	1350	Manhole	Adoptable
1.008	SE9	1350	Manhole	Adoptable	SE10	1350	Manhole	Adoptable
1.009	SE10	1350	Manhole	Adoptable	SE11	1350	Manhole	Adoptable
1.010	SE11	1350	Manhole	Adoptable	SE12	1500	Manhole	Adoptable
5.000	SE50	1350	Manhole	Adoptable	SE51	1350	Manhole	Adoptable
5.001	SE51	1350	Manhole	Adoptable	SE52	1200	Manhole	Adoptable
5.002	SE52	1200	Manhole	Adoptable	SE53	1200	Manhole	Adoptable
5.003	SE53	1200	Manhole	Adoptable	SE54	1200	Manhole	Adoptable
5.004	SE54	1200	Manhole	Adoptable	SE55	1200	Manhole	Adoptable
5.005	SE55	1200	Manhole	Adoptable	SE56	1200	Manhole	Adoptable
6.000	SE60	1350	Manhole	Adoptable	SE61	1200	Manhole	Adoptable
6.001	SE61	1200	Manhole	Adoptable	SE56	1200	Manhole	Adoptable
5.006	SE56	1200	Manhole	Adoptable	SE57	1200	Manhole	Adoptable
5.007	SE57	1200	Manhole	Adoptable	SE58	1200	Manhole	Adoptable

**Pipeline Schedule**

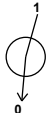
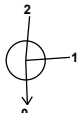
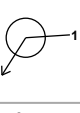
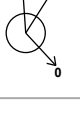
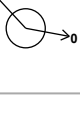
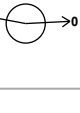
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
7.000	10.204	97.2	225	Circular	57.367	56.005	1.137	57.480	55.900	1.355
7.001	14.586	64.8	300	Circular	57.480	55.825	1.355	57.432	55.600	1.532
5.008	17.471	47.2	525	Circular	57.432	55.370	1.537	56.997	55.000	1.472
5.009	9.277	41.2	525	Circular	56.997	55.000	1.472	56.805	54.775	1.505
5.010	19.489	14.7	525	Circular	56.805	54.775	1.505	56.367	53.450	2.392
1.011	31.046	103.5	675	Circular	56.367	53.375	2.317	55.388	53.075	1.638
8.000	39.242	38.3	225	Circular	56.599	54.850	1.524	55.635	53.825	1.585
8.001	11.293	30.1	300	Circular	55.635	53.750	1.585	55.388	53.375	1.713
1.012	32.122	23.5	675	Circular	55.388	53.075	1.638	54.312	51.710	1.927
9.000	42.248	84.5	225	Circular	53.486	52.585	0.676	54.312	52.085	2.002
1.013	11.525	128.1	675	Circular	54.312	51.710	1.927	53.947	51.620	1.652
1.014	35.227	36.3	675	Circular	53.947	51.620	1.652	52.463	50.650	1.138
1.015	7.976	79.8	675	Circular	52.463	50.650	1.138	52.000	50.550	0.775
1.017	8.436	112.5	450	Circular	51.500	49.550	1.500	52.500	49.475	2.575
1.018	9.831	16.4	375	Circular	52.500	49.475	2.650	50.800	48.875	1.550

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
7.000	SE70	1350	Manhole	Adoptable	SE71	1350	Manhole	Adoptable
7.001	SE71	1350	Manhole	Adoptable	SE58	1200	Manhole	Adoptable
5.008	SE58	1200	Manhole	Adoptable	SE59	1200	Manhole	Adoptable
5.009	SE59	1200	Manhole	Adoptable	SE501	1350	Manhole	Adoptable
5.010	SE501	1350	Manhole	Adoptable	SE12	1500	Manhole	Adoptable
1.011	SE12	1500	Manhole	Adoptable	SE13	1500	Manhole	Adoptable
8.000	SE80	1350	Manhole	Adoptable	SE81	1350	Manhole	Adoptable
8.001	SE81	1350	Manhole	Adoptable	SE13	1500	Manhole	Adoptable
1.012	SE13	1500	Manhole	Adoptable	SE14	1500	Manhole	Adoptable
9.000	SE90	1350	Manhole	Adoptable	SE14	1500	Manhole	Adoptable
1.013	SE14	1500	Manhole	Adoptable	SE15	1500	Manhole	Adoptable
1.014	SE15	1500	Manhole	Adoptable	SE16	1500	Manhole	Adoptable
1.015	SE16	1500	Manhole	Adoptable	SE17 Headwall		Junction	
1.017	SE18 Headwall		Junction		SE19 FCC	3000	Manhole	Adoptable
1.018	SE19 FCC	3000	Manhole	Adoptable	SE Outlet Headwall		Junction	

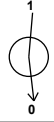
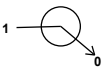
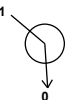
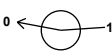
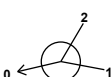
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
SE1	515206.523	126162.123	60.652	2.452	1350	 0	0	1.000	58.200	225
SE2	515179.609	126119.884	59.387	2.287	1350	 0 1	1	1.000	57.175	225
						 0	0	1.001	57.100	300
SE3	515166.175	126092.686	58.499	1.949	1350	 0 1	1	1.001	56.550	300
						 0	0	1.002	56.550	300

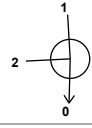
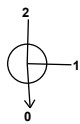
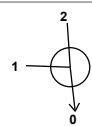
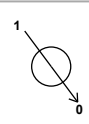
**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SE4	515157.645	126062.003	57.824	1.649	1350	 1 0	1.002	56.175	300
SE20	515195.821	126051.543	58.509	1.759	1350	 0 1	1.003	56.175	300
SE5	515156.479	126048.823	57.584	1.609	1350	 1 2 0	2.000 1.003	56.125 56.050	225 300
SE6	515157.178	126030.448	57.244	2.269	1350	 1 0	1.004	55.975	375
SE7	515163.275	126001.763	56.629	2.054	1350	 1 0	1.004	55.500	375
SE8	515168.546	125982.138	56.190	1.890	1350	 1 0	1.005	54.975	525
SE40	515225.300	125971.340	57.143	1.693	1350	 0 1	1.005	54.575	525
SE41	515175.983	125968.131	56.032	1.757	1350	 1 2 0	4.000 1.007	55.450 54.350	225 225
SE9	515170.134	125958.936	55.667	1.742	1350	 1 2 0	4.001 1.007	54.275 54.000	300 525
SE10	515180.030	125948.244	55.562	1.737	1350	 1 2 0	1.008	53.925	675
SE11	515195.703	125945.333	55.757	2.042	1350	 1 2 0	1.008	53.825	675
SE50	515253.384	126136.414	59.997	1.402	1350	 1 0	1.009	53.715	675
SE51	515234.613	126099.858	59.464	1.614	1350	 1 0	1.010	53.715	675
SE50	515253.384	126136.414	59.997	1.402	1350	 1 0	5.000	58.595	225
SE51	515234.613	126099.858	59.464	1.614	1350	 1 0	5.000	57.925	225
SE51	515234.613	126099.858	59.464	1.614	1350	 1 0	5.001	57.850	300

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SE52	515233.133	126082.582	59.327	1.707	1200	 1	5.001	57.620	300
						0	5.002	57.620	300
SE53	515236.628	126052.422	58.990	1.875	1200	 1	5.002	57.115	300
						0	5.003	57.115	375
SE54	515258.737	126053.000	58.758	2.013	1200	 1	5.003	56.745	375
						0	5.004	56.745	375
SE55	515264.743	126047.929	58.653	2.038	1200	 1	5.004	56.615	375
						0	5.005	56.615	375
SE60	515202.983	126011.829	57.594	1.144	1350	 0	6.000	56.450	225
SE61	515262.244	126015.227	58.243	2.243	1200	 1	6.000	56.000	225
						0	6.001	56.000	225
SE56	515267.415	126006.585	58.134	2.384	1200	 1 2	6.001	55.900	225
						0	5.005	55.750	375
SE57	515268.465	125985.925	57.636	2.056	1200	 1	5.006	55.750	450
						0	5.006	55.580	450
SE70	515288.849	125976.923	57.367	1.362	1350	 0	7.000	56.005	225
SE71	515278.668	125976.239	57.480	1.655	1350	 0 1	7.000	55.900	225
						0	7.001	55.825	300
SE58	515264.331	125978.919	57.432	2.062	1200	 2 1	7.001	55.600	300
						0	5.007	55.445	450
SE59	515247.319	125974.941	56.997	1.997	1200	 1	5.008	55.370	525
						0	5.008	55.000	525
SE501	515242.217	125967.192	56.805	2.030	1350	 1	5.009	55.000	525
						0	5.010	54.775	525

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
SE12	515243.360	125947.737	56.367	2.992	1500		1	5.010	53.450	525
						2	1.010	53.375	675	
						0	1.011	53.375	675	
SE80	515292.955	125919.366	56.599	1.749	1350		0	8.000	54.850	225
SE81	515253.824	125916.421	55.635	1.885	1350		1	8.000	53.825	225
SE13	515242.534	125916.702	55.388	2.313	1500		0	8.001	53.750	300
						1	8.001	53.375	300	
						2	1.011	53.075	675	
SE90	515202.451	125886.135	53.486	0.901	1350		0	1.012	53.075	675
						0	9.000	52.585	225	
						1	9.000	52.085	225	
SE14	515244.673	125884.651	54.312	2.602	1500		2	1.012	51.710	675
						0	1.013	51.710	675	
						1	1.013	51.620	675	
SE15	515245.964	125873.198	53.947	2.327	1500		0	1.014	51.620	675
						1	1.014	50.650	675	
						0	1.015	50.650	675	
SE16	515233.590	125840.216	52.463	1.813	1500		1	1.014	50.650	675
SE17 Headwall	515228.229	125834.309	52.000	2.410			1	1.015	50.550	675
						0	1.017	49.550	450	
						1	1.017	49.475	450	
SE18 Headwall	515221.844	125795.306	51.500	1.950			0	1.018	49.475	375
SE19 FCC	515226.885	125788.542	52.500	3.025	3000		0	1.018	48.875	375
SE Outlet Headwall	515232.759	125780.659	50.800	1.925			1	1.018		

**Simulation Settings**

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m ³ /ha)	0.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	10080	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 %)
2	0	0	0
30	35	0	0
100	40	0	0

Node SE19 FCC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	49.475	Product Number	CTL-SHE-0325-6570-1500-6570
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.375
Design Flow (l/s)	65.7	Min Node Diameter (mm)	2100

Node SE18 Headwall Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	20.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	49.550	Main Channel Slope (1:X)	500.0
Safety Factor	1.0	Time to half empty (mins)	84	Main Channel n	0.600

Inlets**SE17 Headwall**

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)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	660.3	0.0	0.600	934.9	0.0	1.200	1230.7	0.0	1.800	1546.8	0.0
0.100	704.0	0.0	0.700	982.8	0.0	1.300	1282.0	0.0	1.900	1601.5	0.0
0.200	749.0	0.0	0.800	1031.3	0.0	1.400	1333.8	0.0	2.000	1656.7	0.0
0.300	794.7	0.0	0.900	1080.3	0.0	1.500	1386.2	0.0			
0.400	840.9	0.0	1.000	1129.9	0.0	1.600	1439.2	0.0			
0.500	887.6	0.0	1.100	1180.0	0.0	1.700	1492.7	0.0			

**Results for 2 year Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SE1	11	58.247	0.047	7.2	0.0668	0.0000	OK
15 minute winter	SE2	10	57.162	0.062	14.3	0.0882	0.0000	OK
15 minute winter	SE3	11	56.634	0.084	21.5	0.1205	0.0000	OK
15 minute winter	SE4	11	56.293	0.118	30.6	0.1688	0.0000	OK
15 minute winter	SE20	10	56.808	0.058	9.6	0.0830	0.0000	OK
15 minute winter	SE5	11	56.080	0.105	49.3	0.1504	0.0000	OK
15 minute winter	SE6	11	55.100	0.125	68.2	0.1789	0.0000	OK
15 minute winter	SE7	11	54.723	0.148	86.6	0.2118	0.0000	OK
15 minute winter	SE8	11	54.460	0.160	97.9	0.2294	0.0000	OK
15 minute winter	SE40	10	55.507	0.057	11.2	0.0820	0.0000	OK
15 minute winter	SE41	10	54.369	0.094	22.3	0.1351	0.0000	OK
15 minute winter	SE9	11	54.130	0.205	120.3	0.2932	0.0000	OK
15 minute winter	SE10	11	54.032	0.207	131.3	0.2963	0.0000	OK
15 minute winter	SE11	11	53.905	0.190	142.1	0.2723	0.0000	OK
15 minute winter	SE50	10	58.658	0.063	11.5	0.0905	0.0000	OK
15 minute winter	SE51	10	57.937	0.087	22.3	0.1251	0.0000	OK
15 minute winter	SE52	10	57.720	0.100	33.6	0.1134	0.0000	OK
15 minute winter	SE53	10	57.221	0.106	44.3	0.1203	0.0000	OK
15 minute winter	SE54	11	56.880	0.135	55.2	0.1527	0.0000	OK
15 minute winter	SE55	11	56.735	0.120	65.7	0.1360	0.0000	OK
15 minute winter	SE60	10	56.539	0.089	15.3	0.1274	0.0000	OK
15 minute winter	SE61	11	56.101	0.101	18.6	0.1138	0.0000	OK
15 minute winter	SE56	11	55.945	0.195	96.8	0.2208	0.0000	OK
15 minute winter	SE57	11	55.774	0.194	116.3	0.2189	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SE1	1.000	SE2	7.0	1.180	0.093	0.2953	
15 minute winter	SE2	1.001	SE3	14.1	1.072	0.094	0.4022	
15 minute winter	SE3	1.002	SE4	21.1	1.015	0.175	0.6669	
15 minute winter	SE4	1.003	SE5	30.7	1.264	0.285	0.3217	
15 minute winter	SE20	2.000	SE5	9.3	1.165	0.141	0.3143	
15 minute winter	SE5	1.004	SE6	49.5	2.055	0.153	0.4428	
15 minute winter	SE6	1.005	SE7	68.5	1.538	0.121	1.3078	
15 minute winter	SE7	1.006	SE8	87.1	1.650	0.154	1.0731	
15 minute winter	SE8	1.007	SE9	98.5	1.871	0.179	1.2249	
15 minute winter	SE40	4.000	SE41	10.8	1.378	0.139	0.3880	
15 minute winter	SE41	4.001	SE9	22.0	1.233	0.185	0.1950	
15 minute winter	SE9	1.008	SE10	120.5	1.310	0.155	1.3408	
15 minute winter	SE10	1.009	SE11	131.6	1.503	0.169	1.3959	
15 minute winter	SE11	1.010	SE12	141.7	1.198	0.179	5.6964	
15 minute winter	SE50	5.000	SE51	11.1	1.240	0.167	0.3695	
15 minute winter	SE51	5.001	SE52	22.1	1.177	0.173	0.3265	
15 minute winter	SE52	5.002	SE53	33.1	1.549	0.231	0.6520	
15 minute winter	SE53	5.003	SE54	44.0	1.441	0.170	0.6773	
15 minute winter	SE54	5.004	SE55	55.2	1.671	0.214	0.2599	
15 minute winter	SE55	5.005	SE56	66.1	1.504	0.228	1.8311	
15 minute winter	SE60	6.000	SE61	14.9	0.955	0.331	0.9340	
15 minute winter	SE61	6.001	SE56	18.5	1.140	0.357	0.1635	
15 minute winter	SE56	5.006	SE57	97.5	1.487	0.333	1.3559	
15 minute winter	SE57	5.007	SE58	116.5	2.017	0.279	0.4704	

**Results for 2 year Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SE70	10	56.081	0.076	11.5	0.1082	0.0000	OK
15 minute winter	SE71	10	55.911	0.086	22.5	0.1236	0.0000	OK
15 minute winter	SE58	11	55.550	0.180	150.2	0.2037	0.0000	OK
15 minute winter	SE59	11	55.201	0.201	162.3	0.2272	0.0000	OK
15 minute winter	SE501	11	54.904	0.129	173.2	0.1844	0.0000	OK
15 minute winter	SE12	11	53.680	0.305	325.4	0.5384	0.0000	OK
15 minute winter	SE80	10	54.906	0.056	11.3	0.0799	0.0000	OK
15 minute winter	SE81	10	53.821	0.071	22.0	0.1013	0.0000	OK
15 minute winter	SE13	11	53.266	0.191	356.5	0.3379	0.0000	OK
15 minute winter	SE90	10	52.647	0.062	9.6	0.0890	0.0000	OK
15 minute winter	SE14	11	52.063	0.353	374.0	0.6233	0.0000	OK
15 minute winter	SE15	11	51.855	0.235	381.1	0.4150	0.0000	OK
15 minute winter	SE16	11	50.966	0.316	389.0	0.5575	0.0000	OK
120 minute winter	SE17 Headwall	86	49.865	0.275	149.2	0.0000	0.0000	OK
120 minute winter	SE18 Headwall	88	49.864	0.314	109.9	0.0000	0.0000	OK
180 minute winter	SE19 FCC	120	49.895	0.420	108.8	2.9710	0.0000	SURCHARGED
15 minute summer	SE Outlet Headwall	1	48.875	0.000	58.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SE70	7.000	SE71	11.3	1.018	0.215	0.1138	
15 minute winter	SE71	7.001	SE58	22.3	1.392	0.161	0.2335	
15 minute winter	SE58	5.008	SE59	150.5	2.129	0.213	1.2351	
15 minute winter	SE59	5.009	SE501	162.5	2.806	0.215	0.5424	
15 minute winter	SE501	5.010	SE12	173.3	2.842	0.137	1.2843	
15 minute winter	SE12	1.011	SE13	324.4	2.733	0.352	3.7149	
15 minute winter	SE80	8.000	SE81	11.0	1.462	0.131	0.2964	
15 minute winter	SE81	8.001	SE13	21.9	1.814	0.108	0.1363	
15 minute winter	SE13	1.012	SE14	355.5	2.643	0.183	4.3624	
15 minute winter	SE90	9.000	SE14	9.3	1.051	0.164	0.3720	
15 minute winter	SE14	1.013	SE15	372.1	2.508	0.449	1.7226	
15 minute winter	SE15	1.014	SE16	379.7	2.785	0.244	4.8238	
15 minute winter	SE16	1.015	SE17 Headwall	387.8	2.583	0.369	1.1979	
120 minute winter	SE17 Headwall	Flow through pond	SE18 Headwall	109.9	0.018	0.010	213.9999	
120 minute winter	SE18 Headwall	1.017	SE19 FCC	103.2	0.912	0.339	1.1259	
180 minute winter	SE19 FCC	Hydro-Brake®	SE Outlet Headwall	64.8				511.3

**Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SE1	10	58.291	0.091	25.4	0.1302	0.0000	OK
15 minute winter	SE2	10	57.219	0.119	50.6	0.1701	0.0000	OK
15 minute winter	SE3	10	56.723	0.173	76.0	0.2483	0.0000	OK
15 minute winter	SE4	11	56.497	0.322	110.8	0.4603	0.0000	SURCHARGED
15 minute winter	SE20	10	56.867	0.117	33.7	0.1671	0.0000	OK
15 minute winter	SE5	11	56.198	0.223	173.6	0.3196	0.0000	OK
15 minute winter	SE6	10	55.241	0.266	241.8	0.3808	0.0000	OK
15 minute winter	SE7	11	54.909	0.334	308.0	0.4779	0.0000	OK
15 minute winter	SE8	11	54.673	0.373	344.0	0.5333	0.0000	OK
15 minute winter	SE40	10	55.562	0.112	39.4	0.1601	0.0000	OK
15 minute winter	SE41	12	54.611	0.336	79.4	0.4805	0.0000	SURCHARGED
15 minute winter	SE9	12	54.539	0.614	416.3	0.8790	0.0000	OK
15 minute winter	SE10	12	54.490	0.665	450.6	0.9522	0.0000	OK
15 minute winter	SE11	12	54.421	0.706	472.4	1.0109	0.0000	SURCHARGED
15 minute winter	SE50	10	58.725	0.130	40.4	0.1855	0.0000	OK
15 minute winter	SE51	10	58.044	0.194	78.9	0.2779	0.0000	OK
15 minute winter	SE52	10	57.845	0.225	118.7	0.2543	0.0000	OK
15 minute winter	SE53	10	57.357	0.242	156.6	0.2737	0.0000	OK
15 minute winter	SE54	11	57.215	0.470	194.7	0.5317	0.0000	SURCHARGED
15 minute winter	SE55	11	57.071	0.456	230.1	0.5154	0.0000	SURCHARGED
15 minute winter	SE60	11	57.270	0.820	53.9	1.1734	0.0000	SURCHARGED
15 minute winter	SE61	11	56.646	0.646	62.6	0.7308	0.0000	SURCHARGED
15 minute winter	SE56	11	56.438	0.688	327.1	0.7776	0.0000	SURCHARGED
15 minute winter	SE57	11	56.111	0.531	393.1	0.6011	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SE1	1.000	SE2	24.7	1.675	0.331	0.7397	
15 minute winter	SE2	1.001	SE3	50.1	1.489	0.334	1.0341	
15 minute winter	SE3	1.002	SE4	76.1	1.300	0.631	1.7841	
15 minute winter	SE4	1.003	SE5	108.4	1.647	1.004	0.8866	
15 minute winter	SE20	2.000	SE5	32.9	1.628	0.502	0.7989	
15 minute winter	SE5	1.004	SE6	174.5	2.774	0.541	1.1563	
15 minute winter	SE6	1.005	SE7	241.3	1.898	0.426	3.7243	
15 minute winter	SE7	1.006	SE8	306.0	2.008	0.542	3.1378	
15 minute winter	SE8	1.007	SE9	345.2	2.050	0.626	4.3705	
15 minute winter	SE40	4.000	SE41	39.0	1.780	0.501	1.4023	
15 minute winter	SE41	4.001	SE9	77.9	1.539	0.654	0.7674	
15 minute winter	SE9	1.008	SE10	410.2	1.559	0.529	5.0770	
15 minute winter	SE10	1.009	SE11	433.0	1.774	0.556	5.6818	
15 minute winter	SE11	1.010	SE12	476.5	1.568	0.603	17.0343	
15 minute winter	SE50	5.000	SE51	39.5	1.718	0.594	0.9460	
15 minute winter	SE51	5.001	SE52	78.3	1.497	0.611	0.9093	
15 minute winter	SE52	5.002	SE53	117.2	2.016	0.816	1.7845	
15 minute winter	SE53	5.003	SE54	154.3	1.734	0.595	2.0417	
15 minute winter	SE54	5.004	SE55	190.7	2.056	0.740	0.8669	
15 minute winter	SE55	5.005	SE56	224.5	2.041	0.775	4.5696	
15 minute winter	SE60	6.000	SE61	50.4	1.266	1.114	2.3607	
15 minute winter	SE61	6.001	SE56	61.4	1.544	1.186	0.4005	
15 minute winter	SE56	5.006	SE57	326.8	2.063	1.116	3.2777	
15 minute winter	SE57	5.007	SE58	392.6	2.559	0.941	1.1954	

**Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SE70	10	56.170	0.165	40.4	0.2365	0.0000	OK
15 minute winter	SE71	10	56.011	0.185	79.3	0.2655	0.0000	OK
15 minute winter	SE58	11	55.804	0.434	510.9	0.4904	0.0000	OK
15 minute winter	SE59	11	55.451	0.451	551.5	0.5106	0.0000	OK
15 minute winter	SE501	11	55.083	0.308	589.0	0.4401	0.0000	OK
15 minute winter	SE12	12	54.265	0.890	1067.6	1.5718	0.0000	SURCHARGED
15 minute winter	SE80	10	54.962	0.112	39.9	0.1596	0.0000	OK
15 minute winter	SE81	10	53.894	0.144	78.1	0.2065	0.0000	OK
15 minute winter	SE13	12	53.625	0.550	1173.1	0.9713	0.0000	OK
15 minute winter	SE90	12	53.072	0.487	33.7	0.6971	0.0000	SURCHARGED
15 minute winter	SE14	12	52.928	1.218	1218.2	2.1530	0.0000	SURCHARGED
15 minute winter	SE15	12	52.438	0.818	1249.0	1.4460	0.0000	SURCHARGED
15 minute winter	SE16	12	51.514	0.864	1277.7	1.5273	0.0000	SURCHARGED
120 minute winter	SE17 Headwall	120	50.665	1.075	468.7	0.0000	0.0000	OK
120 minute winter	SE18 Headwall	120	50.665	1.115	270.2	0.0000	0.0000	SURCHARGED
120 minute winter	SE19 FCC	120	50.660	1.185	69.1	8.3777	0.0000	SURCHARGED
15 minute summer	SE Outlet Headwall	1	48.875	0.000	65.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SE70	7.000	SE71	40.0	1.369	0.758	0.2973	
15 minute winter	SE71	7.001	SE58	78.7	1.812	0.570	0.6971	
15 minute winter	SE58	5.008	SE59	510.0	2.626	0.722	3.3924	
15 minute winter	SE59	5.009	SE501	551.4	3.370	0.729	1.5261	
15 minute winter	SE501	5.010	SE12	587.8	3.025	0.463	3.3857	
15 minute winter	SE12	1.011	SE13	1060.4	3.307	1.150	10.3731	
15 minute winter	SE80	8.000	SE81	39.2	2.050	0.465	0.7509	
15 minute winter	SE81	8.001	SE13	78.1	2.417	0.384	0.5122	
15 minute winter	SE13	1.012	SE14	1163.3	3.308	0.600	10.7326	
15 minute winter	SE90	9.000	SE14	30.5	1.207	0.540	1.6802	
15 minute winter	SE14	1.013	SE15	1222.7	3.426	1.476	4.1142	
15 minute winter	SE15	1.014	SE16	1250.6	3.504	0.802	12.5753	
15 minute winter	SE16	1.015	SE17 Headwall	1278.1	3.581	1.217	2.8185	
120 minute winter	SE17 Headwall	Flow through pond	SE18 Headwall	270.2	0.023	0.026	999.7532	
120 minute winter	SE18 Headwall	1.017	SE19 FCC	69.1	0.699	0.227	1.3366	
120 minute winter	SE19 FCC	Hydro-Brake®	SE Outlet Headwall	65.6				1356.3

**Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SE1	10	58.306	0.106	33.2	0.1520	0.0000	OK
15 minute winter	SE2	10	57.239	0.139	66.3	0.1986	0.0000	OK
15 minute winter	SE3	12	57.004	0.454	100.0	0.6493	0.0000	SURCHARGED
15 minute winter	SE4	12	56.743	0.568	135.6	0.8132	0.0000	SURCHARGED
15 minute winter	SE20	10	56.889	0.139	44.1	0.1989	0.0000	OK
15 minute winter	SE5	12	56.474	0.499	221.6	0.7145	0.0000	SURCHARGED
15 minute winter	SE6	11	56.200	1.225	311.6	1.7524	0.0000	SURCHARGED
15 minute winter	SE7	11	56.068	1.493	357.9	2.1364	0.0000	SURCHARGED
15 minute winter	SE8	11	55.890	1.590	394.2	2.2753	0.0000	FLOOD RISK
15 minute winter	SE40	12	56.143	0.693	51.5	0.9917	0.0000	SURCHARGED
15 minute winter	SE41	12	55.748	1.473	99.3	2.1074	0.0000	FLOOD RISK
15 minute winter	SE9	11	55.644	1.719	482.4	2.4595	0.0000	FLOOD RISK
15 minute winter	SE10	11	55.562	1.737	524.5	2.4856	5.5140	FLOOD
15 minute winter	SE11	11	55.475	1.760	529.2	2.5191	0.0000	FLOOD RISK
15 minute winter	SE50	12	59.485	0.890	52.9	1.2742	0.0000	SURCHARGED
15 minute winter	SE51	12	59.176	1.326	96.8	1.8981	0.0000	FLOOD RISK
15 minute winter	SE52	12	59.037	1.417	142.3	1.6021	0.0000	FLOOD RISK
15 minute winter	SE53	12	58.543	1.428	183.6	1.6146	0.0000	SURCHARGED
15 minute winter	SE54	12	58.318	1.573	211.4	1.7794	0.0000	SURCHARGED
15 minute winter	SE55	12	58.134	1.519	253.4	1.7185	0.0000	SURCHARGED
15 minute winter	SE60	10	57.594	1.144	70.5	1.6371	5.1921	FLOOD
15 minute winter	SE61	12	57.403	1.403	66.6	1.5869	0.0000	SURCHARGED
15 minute winter	SE56	12	57.301	1.551	363.0	1.7543	0.0000	SURCHARGED
15 minute winter	SE57	12	56.934	1.354	448.8	1.5309	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SE1	1.000	SE2	32.4	1.795	0.434	0.9048	
15 minute winter	SE2	1.001	SE3	66.1	1.502	0.441	1.5379	
15 minute winter	SE3	1.002	SE4	93.3	1.374	0.774	2.2426	
15 minute winter	SE4	1.003	SE5	133.0	1.890	1.232	0.9317	
15 minute winter	SE20	2.000	SE5	43.1	1.727	0.658	1.2553	
15 minute winter	SE5	1.004	SE6	220.1	2.887	0.683	2.0283	
15 minute winter	SE6	1.005	SE7	281.1	1.877	0.496	6.3354	
15 minute winter	SE7	1.006	SE8	352.9	2.000	0.625	4.3898	
15 minute winter	SE8	1.007	SE9	395.7	2.040	0.718	5.0241	
15 minute winter	SE40	4.000	SE41	47.0	1.782	0.604	1.9655	
15 minute winter	SE41	4.001	SE9	92.9	1.515	0.780	0.7674	
15 minute winter	SE9	1.008	SE10	483.2	1.554	0.623	5.2012	
15 minute winter	SE10	1.009	SE11	499.7	1.774	0.642	5.6906	
15 minute winter	SE11	1.010	SE12	542.1	1.520	0.685	17.0343	
15 minute winter	SE50	5.000	SE51	48.3	1.722	0.727	1.6343	
15 minute winter	SE51	5.001	SE52	96.7	1.489	0.755	1.2210	
15 minute winter	SE52	5.002	SE53	135.1	1.952	0.941	2.1381	
15 minute winter	SE53	5.003	SE54	170.0	1.725	0.656	2.4393	
15 minute winter	SE54	5.004	SE55	212.6	2.036	0.825	0.8669	
15 minute winter	SE55	5.005	SE56	255.6	2.318	0.882	4.5696	
15 minute winter	SE60	6.000	SE61	50.6	1.272	1.119	2.3607	
15 minute winter	SE61	6.001	SE56	64.2	1.616	1.241	0.4005	
15 minute winter	SE56	5.006	SE57	356.6	2.251	1.218	3.2777	
15 minute winter	SE57	5.007	SE58	442.0	2.790	1.060	1.2889	

**Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.92%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SE70	12	56.873	0.868	52.9	1.2415	0.0000	SURCHARGED
15 minute winter	SE71	12	56.754	0.929	96.5	1.3296	0.0000	SURCHARGED
15 minute winter	SE58	12	56.611	1.241	586.1	1.4034	0.0000	SURCHARGED
15 minute winter	SE59	11	56.208	1.208	631.1	1.3658	0.0000	SURCHARGED
15 minute winter	SE501	11	55.869	1.094	661.8	1.5657	0.0000	SURCHARGED
15 minute winter	SE12	11	55.296	1.921	1215.9	3.3936	0.0000	SURCHARGED
15 minute winter	SE80	11	54.991	0.141	52.2	0.2019	0.0000	OK
15 minute winter	SE81	11	54.589	0.839	103.1	1.2011	0.0000	SURCHARGED
15 minute winter	SE13	11	54.491	1.416	1342.7	2.5024	0.0000	SURCHARGED
15 minute winter	SE90	11	53.486	0.901	44.1	1.2893	3.1689	FLOOD
15 minute winter	SE14	11	53.483	1.773	1395.8	3.1329	0.0000	SURCHARGED
15 minute winter	SE15	11	52.844	1.224	1432.7	2.1624	0.0000	SURCHARGED
15 minute winter	SE16	11	51.623	0.973	1471.8	1.7195	0.0000	SURCHARGED
120 minute winter	SE17 Headwall	120	50.964	1.374	611.4	0.0000	0.0000	OK
120 minute winter	SE18 Headwall	120	50.965	1.415	340.8	0.0000	0.0000	SURCHARGED
120 minute winter	SE19 FCC	120	50.959	1.484	70.0	10.4938	0.0000	SURCHARGED
15 minute summer	SE Outlet Headwall	1	48.875	0.000	65.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SE70	7.000	SE71	48.1	1.405	0.911	0.4058	
15 minute winter	SE71	7.001	SE58	94.2	1.815	0.682	1.0271	
15 minute winter	SE58	5.008	SE59	573.6	2.655	0.811	3.7743	
15 minute winter	SE59	5.009	SE501	611.6	3.354	0.808	2.0041	
15 minute winter	SE501	5.010	SE12	655.1	3.238	0.516	4.2103	
15 minute winter	SE12	1.011	SE13	1212.7	3.470	1.316	11.0827	
15 minute winter	SE80	8.000	SE81	52.2	2.128	0.619	1.2943	
15 minute winter	SE81	8.001	SE13	93.5	2.439	0.460	0.7952	
15 minute winter	SE13	1.012	SE14	1345.4	3.769	0.694	11.4668	
15 minute winter	SE90	9.000	SE14	35.0	1.172	0.618	1.6802	
15 minute winter	SE14	1.013	SE15	1391.8	3.899	1.681	4.1142	
15 minute winter	SE15	1.014	SE16	1429.1	4.004	0.917	12.5753	
15 minute winter	SE16	1.015	SE17 Headwall	1470.9	4.121	1.400	2.8185	
120 minute winter	SE17 Headwall	Flow through pond	SE18 Headwall	340.8	0.026	0.032	1375.5034	
120 minute winter	SE18 Headwall	1.017	SE19 FCC	70.0	0.724	0.230	1.3366	
120 minute winter	SE19 FCC	Hydro-Brake®	SE Outlet Headwall	65.6				1768.1

Appendix H

Environment Agency Flood Map (For Planning)

Flood map for planning

Your reference
Phase 4 South

Location (easting/northing)
515238/125967

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17 Jun 2024 17:44

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following:**

- bigger than 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

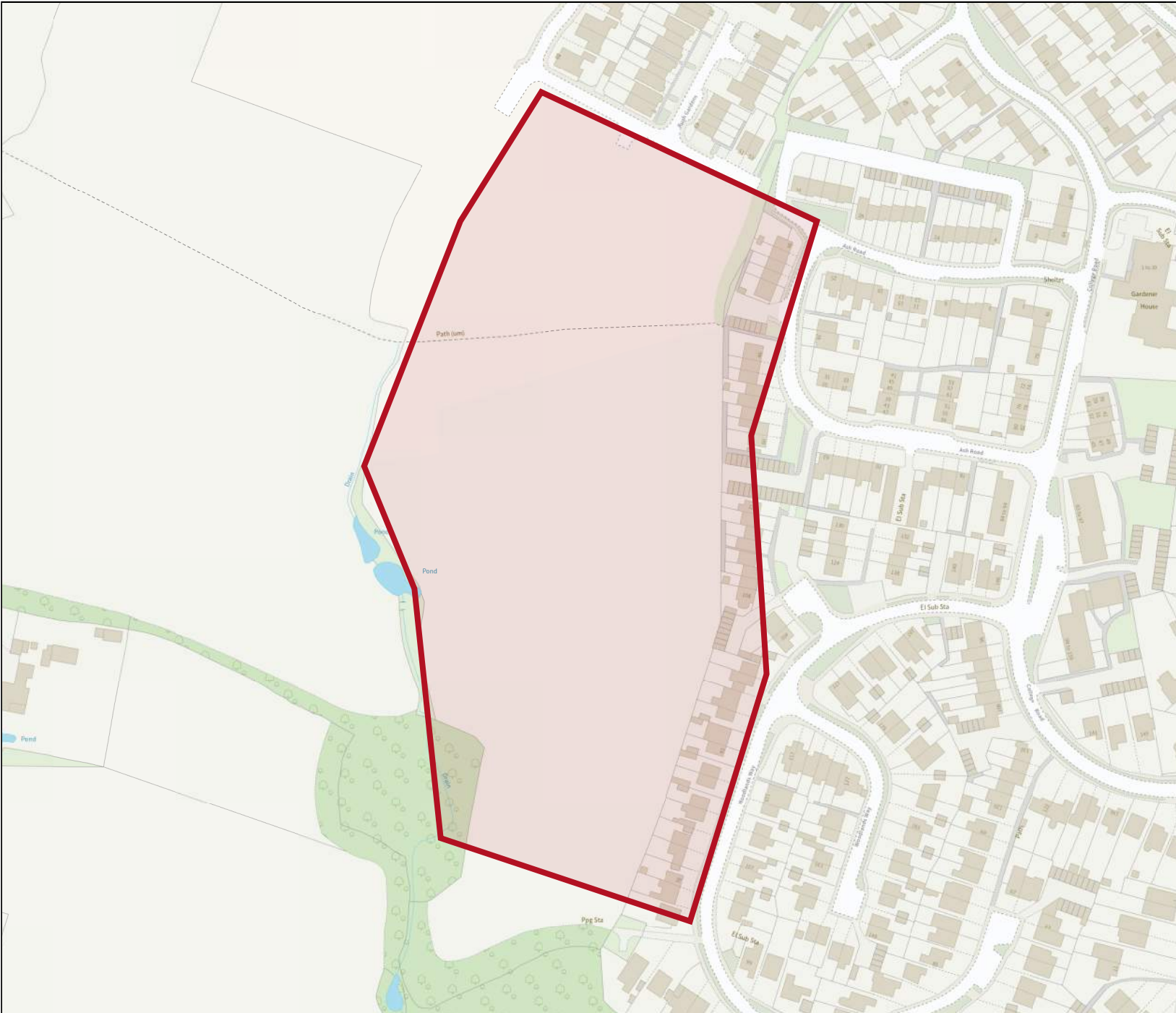
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

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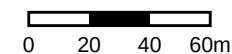
Your reference
Phase 4 South

Location (easting/northing)
515238/125967

Scale
1:2500

Created
17 Jun 2024 17:44

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area



Appendix J
Horsham District Council Strategic Flood Risk Assessment

Horsham District Council LDF: Level 1 SFRA



**Horsham
District
Council**

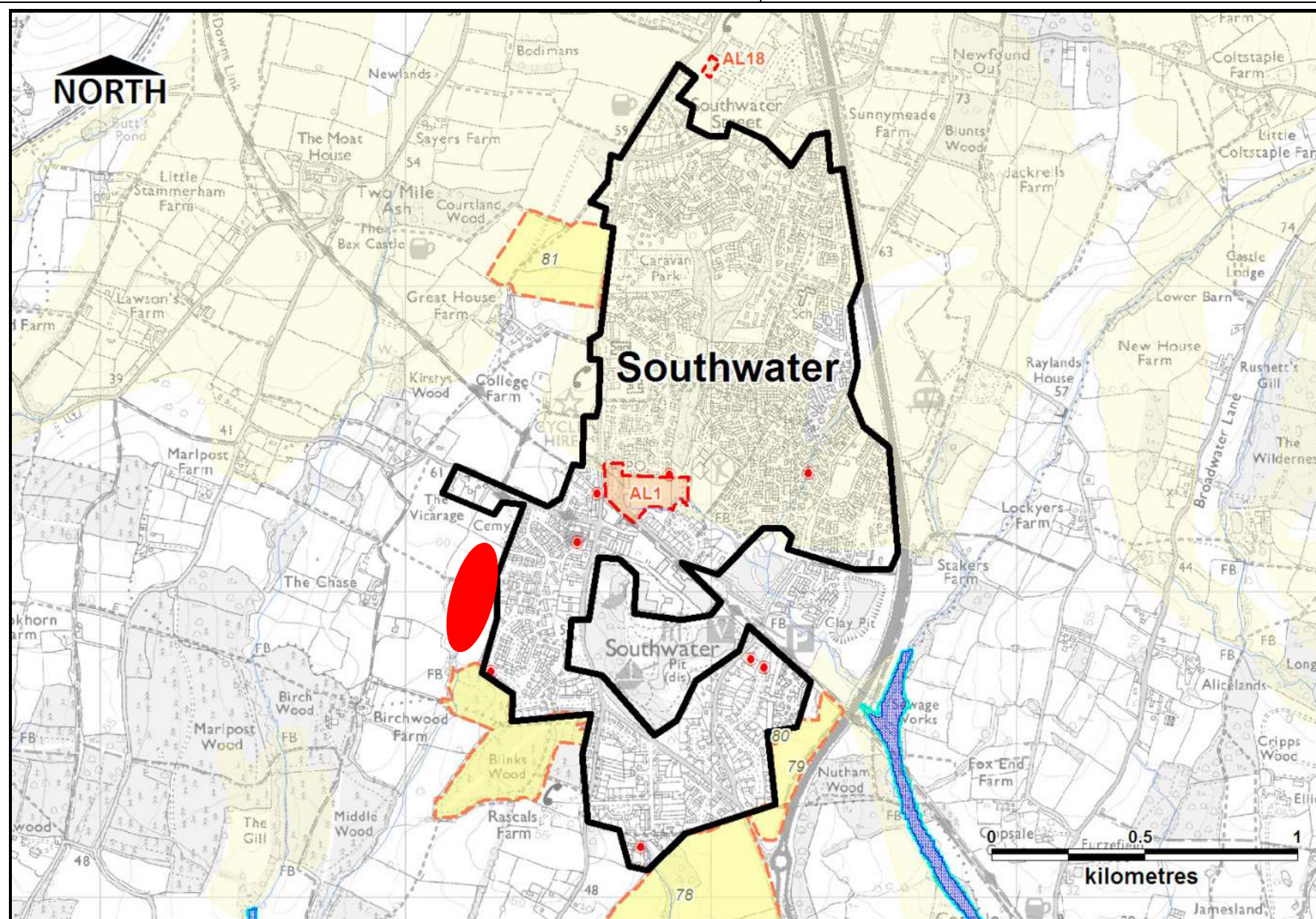


Settlement Sustainability Hierarchy:

Category 1

Southwater

Preliminary Core Strategy Assessment



Flood Zone	1
Potential Housing Allocation	The Adopted Core Strategy classifies Southwater as a Category 1 Settlement, one which is "capable of sustaining some expansion, infilling and redevelopment") and could therefore be allocation for some of the proposed 2740 further homes which are to be provided by 2018. Preliminary assessment shows that any new allocations for housing development at Billingshurst will not fall within Flood Zone 2 or 3 regions.
Potential Employment Allocation	The Adopted Core Strategy states that there is "no provision before 2018 for any further large scale development at Southwater but recognition that this position may need to be reviewed in the light of the approval of the South East Plan and any requirements stemming from the final regional/sub regional strategy to accommodate additional development in the District". Preliminary assessment shows that any new allocations for employment development at Southwater will not fall within Flood Zone 2 or 3 regions.
Main River	None
Flood Record Information data	An extensive flooding incident was recorded in 1981 in the area of Southwater Street. As a result extensive watercourse improvements and large land drainage culverts were carried out. Minor flooding events have been recorded at Cripplegate Lane, New Road, Worthing Road, Boars Head Pub, King Edwards Close, Two Mile Ash Road and Downslink.

Settlement Level Coarse Assessment

	Size of settlement	Area in Zone 3		Area in Zone 2	Likely new development in Zones 2 and 3
		FZ3b FFP	FZ3a 100yr		
Area (ha)	180.10	0.00	0.00	0.00	0.00
% of Area		0.00	0.00	0.00	0.00

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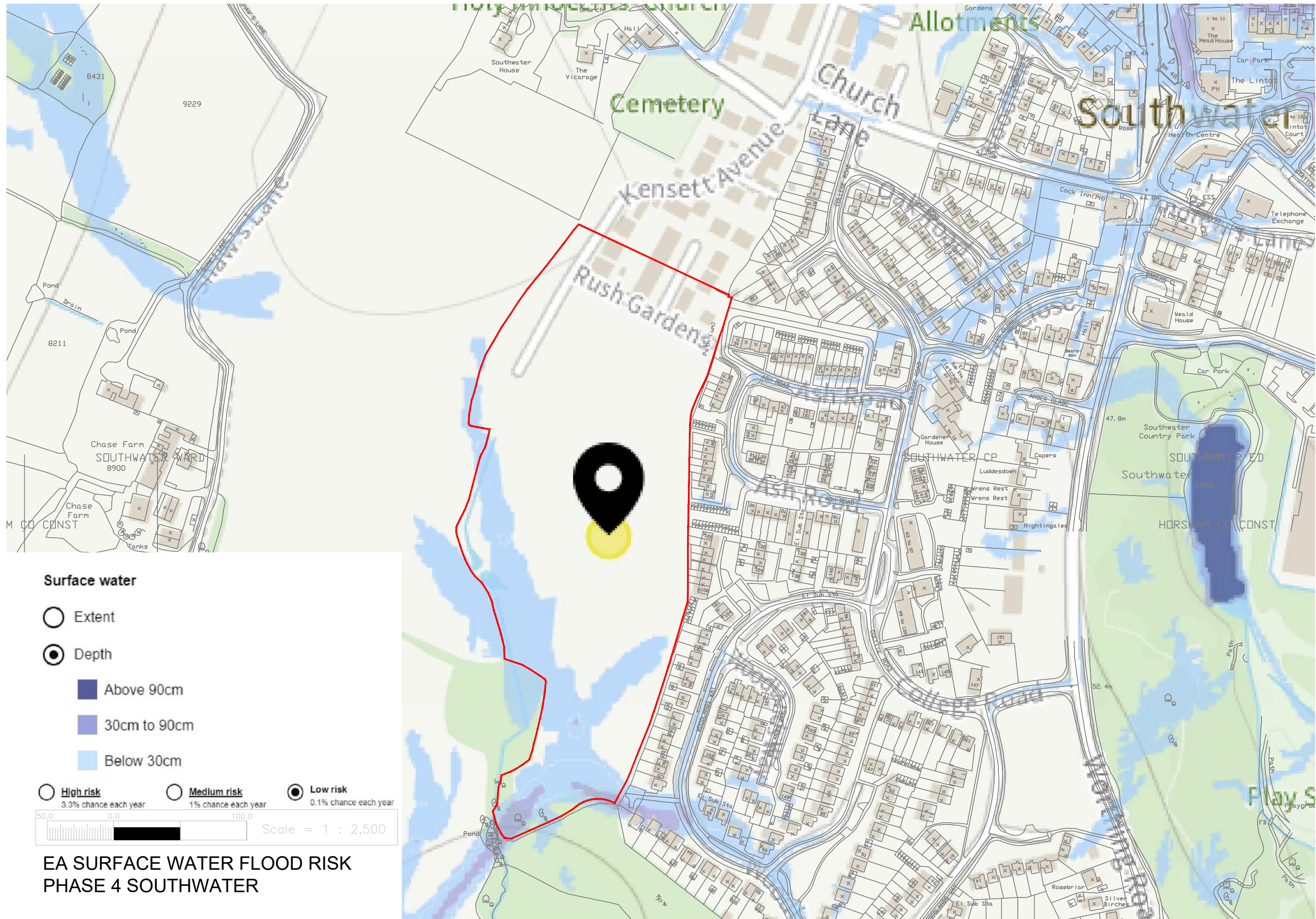
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Appendix K

Environment Agency Surface Water Flood Map



Appendix L

Hazard Technical Note

SUPPLEMENTARY NOTE ON FLOOD HAZARD RATINGS AND THRESHOLDS
FOR DEVELOPMENT PLANNING AND CONTROL PURPOSE
– Clarification of the Table 13.1 of FD2320/TR2 and Figure 3.2 of FD2321/TR1.

Suresh Surendran and Geoff Gibbs (Environment Agency),
Steven Wade and Helen Udale-Clarke (HR Wallingford)
May 2008

Introduction

This document is a supplementary note to reconcile information provided in the ‘Flood Risks to People Methodology’ (FD2321/TR1¹) and the ‘Framework and Guidance for Assessing and Managing Flood Risk for New Development’ (FD2320/TR2²) reports about the Flood Hazard Rating. It has been produced because both PPS25 in England and TAN15 in Wales require that people should be appropriately safe around new development. The document emphasises that for FRAs and FCAs at all levels to inform development allocations and proposals the simplified approach of FD2320 with regard to flood hazard rating should be used rather than the approach in FD2321. Although the final version of FD2321/TR1 post-dates FD2320/TR2, the work presented actually pre-dates the guidance in FD2320/TR2. This supplementary guidance is issued for those involved in development planning and control and to clarify the detail or difference of the Table 13.1 of FD2320/TR2 and Figure 3.2 of FD2321/TR1.

FD2321/TR1 was a research project based on the detailed literature review and analysis of empirical evidence related to flood hazard, derived mainly from theoretical assumptions and some basic laboratory experiments. Factors that affected flood hazard and vulnerability were combined in a form of multi-criteria analysis that was used to identify the hot-spots and broadly estimate the probability of people seriously harmed and fatalities during the event of a flood. The multi-criteria method was calibrated to actual events, validated using data from seven flood events and shown to work well. The FD2321 (Risk to people) methodology illustrates the fundamental concepts and demonstrate how the approach could be used for different applications - it did not set a policy for flood hazard thresholds.

(Nevertheless there are a number of assumptions used in the FD2321 methodology, particularly with respect to the impact of debris and people’s behaviour during flood events. There is a requirement for further research to collate more evidence on flood hazard, particularly the impacts of debris, and vulnerability in order to refine assumptions made in the flood hazard calculations, flood hazard thresholds and risks to people guidance. The study recommend more laboratory and field based tests on the impact of physical water quality aspect such as debris, mudflow; chemical and biological water quality that cause seriously harm or fatalities to people.)

¹ Defra and Agency (2006) *The Flood Risks to People Methodology*, Flood Risks to People Phase 2, FD2321 Technical Report 1, HR Wallingford et al. did the report for Defra/EA Flood and Coastal Defence R&D Programme, March 2006.

(http://sciencesearch.defra.gov.uk/Document.aspx?Document=FD2321_3436_TRP.pdf)

² Defra and Agency (2005) *Framework and Guidance for Assessing and Managing Flood Risk for New Development*, Flood Risk Assessment Guidance for New Development, FD2320 Technical Report 2, HR Wallingford et al. did the report for Defra/EA Flood and Coastal Defence R&D Programme, October 2005. (http://sciencesearch.defra.gov.uk/Document.aspx?Document=FD2320_3364_TRP.pdf)

FD2320/TR2 (FRA guidance for new development) provides guidance that is a specific interpretation of the methodology developed under FD2321, within the context of development planning and control. Based on FD2320 consultation workshops, the project board (key users and experts) advised the project team to provide a simple methodology. Due to uncertainties and limitations related to estimating risks to people, FD2320 adopted a precautionary approach, particularly with respect to the selection of debris factors and flood hazard thresholds

Risk to People (Ninj)

$$\text{Ninj} = N_z \times \text{Flood Hazard Rating} \times \text{Area Vulnerability} \times \text{People Vulnerability}$$

where,

Ninj (Risk to People) = number of injuries within a particular hazard 'zone';

N_z = number of people within the hazard zone (at ground/basement level);

Flood Hazard Rating = HR = function of flood depth/velocity (within the hazard zone being considered) and debris factor;

Area Vulnerability = function of effectiveness of flood warning, speed of onset of flooding and nature of area (including types of buildings); and

People Vulnerability = function of presence of people who are very old and/or infirm/disabled/long-term sick

Flood Hazard Rating (HR) and thresholds

The revised 'hazard rating' expression based primarily, on consideration to the direct risks of people exposed to floodwaters.

$$\text{HR} = d \times (v + n) + \text{DF}$$

where, HR = (flood) hazard rating;

d = depth of flooding (m);

v = velocity of floodwaters (m/sec); and

DF = debris factor (0, 0.5, 1 depending on probability that debris will lead to a hazard)

n = a constant of 0.5

This final revised Flood Hazard Rating formula from the Flood Risks to People project is presented on page 10 (section 3.5) of FD2321/TR1. The formula is identical in both FD2320 and FD2321 reports.

Based on Table 3.2 of FD2321, the Figure 3.2 of FD2321 illustrates the "Hazard to People Classifications" as a function of depth, velocity and debris factor. Such categorisation and the look-up table with flood hazard threshold could be useful for a range of application as an initial indication of Risks to People.

In this case (Figure 3.2 of FD2321) the calculation takes a debris factor as zero

$$(\text{HR} = d \times (v + 0.5) + 0).$$

However FD2321 strongly recommends the use of the debris factor and the formulas described in the Guidance Document for further calculation. The Table 3.1 of FD2321/TR1 (Table 1 of this note) suggests appropriate debris factors for different depths, velocities and the dominant land use.

Table 1: Guidance on debris factors for different flood depths, velocities and dominant land uses. (Source FD2321 Table 3.1):

Depths (d)	Pasture/Arable	Woodland	Urban
0 to 0.25 m	0	0	0
0.25 to 0.75 m	0	0.5	1
d>0.75 m and/or v>2	0.5	1	1

The way that Flood Hazard Rating and thresholds have been presented in Table 13.1 in FD2320/TR2 compared to Figure 3.2 of FD2321/TR1

A concern was raised in the FD2320 consultation workshops and by the FD2320 Project Board during discussions on FD2321, that the methodology was complex and the results presented in the Figure 3.2 of FD2321 were not reflecting the potential risk to people (as this table was of hazard rating for different depths and velocity without debris). There was a need for further work to include debris, area vulnerability and people vulnerability aspects. They requested a simpler single table to represent the risk to people.

For example Figure 3.2 of FD2321 did not reflect the fact that there is a risk from drowning even at low depths and velocities. In reality FD2321/TR1 recognises this but only in the subsequent “people vulnerability” calculation (risk to children, old, sick and disable). For still water up to 1.25m depth, the Figure 3.2 of FD2321/TR1 assumes that there is low hazard, if there are no debris or vulnerable group. However to avoid further calculation, but include the vulnerability aspect the Table 13.1 of FD2320 for still water with the depths between 0.25–1.25m were reclassified as “danger to some”, which was felt to be more appropriate for development planning and control, where users may make use of flood hazard without completing the more complex full calculations including people and area vulnerability.

Similarly Figure 3.2 of FD2321/TR1 shows that at the depth of 0.25m, if there is no debris then up to the flow velocity of 2.0 m/sec there would be low hazard. However FD2321/TR1 suggests the usage of an appropriate debris factor dependent on depth, velocity and the dominant land use. To make the process simpler (whatever the land use), FD2320/TR2 includes a default debris factor. In the Table 13.1 of FD2320/TR2 a debris factor of 0.5 has been applied for depths less than and equal to 0.25m and a debris factor of 1.0 has been used for depths greater than 0.25m. Therefore, in the Table 13.1 of FD2320/TR2 at the depth of 0.25m, up to the flow velocity of 0.30 m/sec is treated as low hazard.

Table 3.2 of FD2321/TR1 (Table 2 of this note) provides thresholds for classifying the hazard to people. In the FD2321/TR1 report the threshold between “danger for most” and “danger for all” is 2.5 and it was used as an initial indication of Risk to People (further calculation is recommended using the formulas). However as there is no further analysis in FD2320 but the Project Board decided that the threshold between “danger for most” and “danger for all” should be more precautionary and a Flood Hazard Rating of 2.0 is selected as a key threshold. i.e. In FD2321 the threshold for “danger for all” is 2.5 and it lowered to 2.0 in FD2320. Therefore, the Flood Hazard Rating between 2.0 to 2.5 in FD2320 is not classified as it is in FD2321.

Table 2: Hazard to People (Source Table 3.2 in FD2321/TR1)

Thresholds for Flood Hazard Rating $H = d \times (v + 0.5) + DF$		Degree of Flood Hazard	Description
FD2321	FD2320		
<0.75	<0.75	Low	Caution - "Flood zone with shallow flowing water or deep standing water"
0.75 - 1.25	0.75 - 1.25	Moderate	Dangerous for some (i.e. children) - "Danger: Flood zone with deep or fast flowing water"
1.25 - 2.5	1.25 - 2.0	Significant	Dangerous for most people - "Danger: flood zone with deep fast flowing water"
>2.5	>2.0	Extreme	Dangerous for all - "Extreme danger: flood zone with deep fast flowing water"

The final difference between Table 13.1 in FD2320/TR2 and Figure 3.2 of FD2321/TR1 is the use of smaller increments of depth, so that lower depths are presented more fully in FD2320/TR2. This was felt to be more helpful for identifying what might be judged as acceptable depending on site specific circumstances.

Conclusions

Table 13.1 of FD2320 and Figure 3.2 of FD2321 look very similar but there are significant differences (see Table 3 of this paper). Either Table/Figure can be used as the basis for assessing the risks to people associated with different flood depths velocities and debris factors.

Table 3: comparison of Table 13.1 of FD2320/TR2 and Figure 3.2 of FD2321/TR1

	In Table 13.1 of FD2320/TR2	In Figure 3.2 of FD2321/TR1
The depths above 0.25m	Danger for some, most or all	For still water, up to 1.25m the hazard is low (In addition to hazard rating further calculation to include vulnerability aspect is recommended)
Debris factor	Debris factor of 0.5 has been applied for depths $\leq 0.25m$ and a debris factor of 1.0 has been used for depths $\geq 0.25m$.	In this case a Debris factor of zero applied (in addition to this further calculation is recommended using debris factor and the formulas)
HR Thresholds for "Dangerous for all" hazard classification	>2.0 (precautionary due to uncertainties and to avoid further calculation as FD2321)	>2.5
Increments of depth	Small increments at lower depths	Every 0.25 m

Table 13.1 of FD2320/TR2 is a simple method applies the precautionary principle and uses suitable assumptions (so that there is no need for further calculations) for application in the development planning and control context (see Table 4 of this paper - an extended version of table 13.1).

This table is recommended for development planning and control use.

Table 4 – Hazard to People Classification using Hazard Rating ($HR = d \times (v + 0.5) + DF$) for (Source Table 13.1 of FD2320/TR2 - Extended version)

HR	Depth of flooding - d (m)												
	DF = 0.5				DF = 1								
Velocity v (m/s)	0.05	0.10	0.20	0.25	0.30	0.40	0.50	0.60	0.80	1.00	1.50	2.00	2.50
0.0	0.03 + 0.5 = 0.53	0.05 + 0.5 = 0.55	0.10 + 0.5 = 0.60	0.13 + 0.5 = 0.63	0.15 + 1.0 = 1.15	0.20 + 1.0 = 1.20	0.25 + 1.0 = 1.25	0.30 + 1.0 = 1.30	0.40 + 1.0 = 1.40	0.50 + 1.0 = 1.50	0.75 + 1.0 = 1.75	1.00 + 1.0 = 2.00	1.25 + 1.0 = 2.25
0.1	0.03 + 0.5 = 0.53	0.06 + 0.5 = 0.56	0.12 + 0.5 = 0.62	0.15 + 0.5 = 0.65	0.18 + 1.0 = 1.18	0.24 + 1.0 = 1.24	0.30 + 1.0 = 1.30	0.36 + 1.0 = 1.36	0.48 + 1.0 = 1.48	0.60 + 1.0 = 1.60	0.90 + 1.0 = 1.90	1.20 + 1.0 = 2.20	1.50 + 1.0 = 2.55
0.3	0.04 + 0.5 = 0.54	0.08 + 0.5 = 0.58	0.15 + 0.5 = 0.65	0.19 + 0.5 = 0.69	0.23 + 1.0 = 1.23	0.30 + 1.0 = 1.30	0.38 + 1.0 = 1.38	0.45 + 1.0 = 1.45	0.60 + 1.0 = 1.60	0.75 + 1.0 = 1.75	1.13 + 1.0 = 2.13	1.50 + 1.0 = 2.50	1.88 + 1.0 = 2.88
0.5	0.05 + 0.5 = 0.55	0.10 + 0.5 = 0.60	0.20 + 0.5 = 0.70	0.25 + 0.5 = 0.75	0.30 + 1.0 = 1.30	0.40 + 1.0 = 1.40	0.50 + 1.0 = 1.50	0.60 + 1.0 = 1.60	0.80 + 1.0 = 1.80	1.00 + 1.0 = 2.00	1.50 + 1.0 = 2.50	2.00 + 1.0 = 3.00	2.50 + 1.0 = 3.50
1.0	0.08 + 0.5 = 0.58	0.15 + 0.5 = 0.65	0.30 + 0.5 = 0.80	0.38 + 0.5 = 0.88	0.45 + 1.0 = 1.45	0.60 + 1.0 = 1.60	0.75 + 1.0 = 1.75	0.90 + 1.0 = 1.90	1.20 + 1.0 = 2.20	1.50 + 1.0 = 2.50	2.25 + 1.0 = 3.25	3.00 + 1.0 = 4.00	3.75 + 1.0 = 4.75
1.5	0.10 + 0.5 = 0.60	0.20 + 0.5 = 0.70	0.40 + 0.5 = 0.90	0.50 + 0.5 = 1.00	0.60 + 1.0 = 1.60	0.80 + 1.0 = 1.80	1.00 + 1.0 = 2.00	1.20 + 1.0 = 2.20	1.60 + 1.0 = 2.60	2.00 + 1.0 = 3.00	3.00 + 1.0 = 4.00	4.00 + 1.0 = 5.00	5.00 + 1.0 = 6.00
2.0	0.13 + 0.5 = 0.63	0.25 + 0.5 = 0.75	0.50 + 0.5 = 1.00	0.63 + 0.5 = 1.13	0.75 + 1.0 = 1.75	1.00 + 1.0 = 2.00	1.25 + 1.0 = 2.25	1.50 + 1.0 = 2.50	2.00 + 1.0 = 3.00	3.50	4.75	6.00	7.25
2.5	0.15 + 0.5 = 0.65	0.30 + 0.5 = 0.80	0.60 + 0.5 = 1.10	0.75 + 0.5 = 1.25	0.90 + 1.0 = 1.90	1.20 + 1.0 = 2.20	1.50 + 1.0 = 2.50	1.80 + 1.0 = 2.80	3.40	4.00	5.50	7.00	8.50
3.0	0.18 + 0.5 = 0.68	0.35 + 0.5 = 0.85	0.70 + 0.5 = 1.20	0.88 + 0.5 = 1.38	1.05 + 1.0 = 2.05	1.40 + 1.0 = 2.40	1.75 + 1.0 = 2.75	3.10	3.80	4.50	6.25	8.00	9.75
3.5	0.20 + 0.5 = 0.70	0.40 + 0.5 = 0.90	0.80 + 0.5 = 1.30	1.00 + 0.5 = 1.50	1.20 + 1.0 = 2.20	1.60 + 1.0 = 2.60	3.00	3.40	4.20	5.00	7.00	9.00	11.00
4.0	0.23 + 0.5 = 0.73	0.45 + 0.5 = 0.95	0.90 + 0.5 = 1.40	1.13 + 0.5 = 1.63	1.35 + 1.0 = 2.35	1.80 + 1.0 = 2.80	3.25	3.70	4.60	5.50	7.75	10.00	12.25
4.5	0.25 + 0.5 = 0.75	0.50 + 0.5 = 1.00	1.00 + 0.5 = 1.50	1.25 + 0.5 = 1.75	1.50 + 1.0 = 2.50	2.00 + 1.0 = 3.00	3.50	4.00	5.00	6.00	8.50	11.00	13.50
5.0	0.28 + 0.5 = 0.78	0.60 + 0.5 = 1.10	1.10 + 0.5 = 1.60	1.38 + 0.5 = 1.88	1.65 + 1.0 = 2.65	3.20	3.75	4.30	5.40	6.50	9.25	12.00	14.75
Flood Hazard Rating (HR)		Colour Code		Hazard to People Classification									
Less than 0.75				Very low hazard - Caution									
0.75 to 1.25				Danger for some – includes children, the elderly and the infirm									
1.25 to 2.0				Danger for most – includes the general public									
More than 2.0				Danger for all – includes the emergency services									

UK Locations

Ash Vale
Birmingham
London
Wakefield

