1.1 Block Characteristics

The block characteristics used in the ADAS method are given in Table 1-1.

Table 1-1. Experimental block characteristics

Block	Lowest elevation (m AOD)	Highest elevation (m AOD)	Maximum catchment length (m)	Slope (m/m)	Slope (%)	Area (km^2)	Area (ha)
1	143	179	394	0.091	9.1	0.076	7.57
1a	160	184	330	0.073	7.3	0.060	6.00
2	138	182	445	0.099	9.9	0.122	12.19
3	133	170	527	0.070	7.0	0.087	8.71
4	135	157	349	0.063	6.3	0.069	6.94
4a	129	149	430	0.047	4.7	0.051	5.10
5	161	188	425	0.064	6.4	0.078	7.79
5a	153	167	210	0.067	6.7	0.032	3.22
6	156	182	350	0.074	7.4	0.086	8.64
7	151	170	254	0.075	7.5	0.020	1.96
8	151	168	159	0.107	10.7	0.015	1.47
9	168	180	190	0.063	6.3	0.020	2.00
10	155	169	210	0.067	6.7	0.019	1.92
11	149	157	210	0.038	3.8	0.018	1.83
12	144	154	210	0.048	4.8	0.018	1.83

1.2 Design Flow Estimations

Using the ADAS Reference Book 345 method design flow estimations were calculated for a range of flood magnitudes (flood return periods) and for a clay soil type (prevalent at North Wyke). The results are given in the tables below.

The results are slightly different to those reported in the original hydrological assessment (dated October 2008) due to an error that has been found in the MS Excel spreadsheet macro used to generate to ADAS 345 estimates. The new tables below superseded all previous estimations given.

Block 1	Clay
Return Period (years)	Peak Flow (l/s)
2	115.6
5	161.2
10	194.3
20	228.5
50	276.6
100	315.7

Block 1a	Clay
Return Period (years)	Peak Flow (l/s)
2	90.0
5	125.5
10	151.3
20	177.9
50	215.4
100	245.8

Block 2	Clay
Return Period (years)	Peak Flow (l/s)
2	183.5
5	255.8
10	308.3
20	362.6
50	438.9
100	501.0

Block 3	Clay
Return Period (years)	Peak Flow (l/s)
2	114.0
5	159.0
10	191.6
20	225.4
50	272.8
100	311.4

Block 4	Clay
Return Period (years)	Peak Flow (l/s)
2	98.1
5	136.8
10	165.0
20	194.0
50	234.8
100	268.0

Block 4a	Clay
Return Period (years)	Peak Flow (l/s)
2	42.7
5	59.5
10	71.8
20	84.4
50	102.2
100	116.6

Block 5	Clay
Return Period (years)	Peak Flow (l/s)
2	105.4
5	147.0
10	177.2
20	208.4
50	252.3
100	287.9

Block 5a	Clay
Return Period (years)	Peak Flow (l/s)
2	52.9
5	73.8
10	89.0
20	104.7
50	126.7
100	144.6

Block 6	Clay
Return Period (years)	Peak Flow (l/s)
2	127.7
5	178.1
10	214.7
20	252.5
50	305.6
100	348.8

Block 7	Clay
Return Period (years)	Peak Flow (l/s)
2	32.4
5	45.2
10	54.5
20	64.1
50	77.6
100	88.6

Block 8	Clay
Return Period (years)	Peak Flow (l/s)
2	30.3
5	42.3
10	51.0
20	60.0
50	72.6
100	82.8

Block 9	Clay
Return Period (years)	Peak Flow (l/s)
2	33.5
5	46.7
10	56.3
20	66.2
50	80.2
100	91.5

Block 10	Clay
Return Period (years)	Peak Flow (l/s)
2	31.4
5	43.8
10	52.8
20	62.1
50	75.2
100	85.9

Block 11	Clay
Return Period (years)	Peak Flow (l/s)
2	25.6
5	35.7
10	43.1
20	50.7
50	61.3
100	70.0

Block 12	Clay
Return Period (years)	Peak Flow (l/s)
2	27.2
5	37.9
10	45.7
20	53.8
50	65.1
100	74.3

1.3 Flume sizing

Based on the flow estimates given above the following flume sizes are appropriate for each of the experimental blocks based on the requirement to be able to freely discharge the predicted 1 in 50 years flood event.

Block	1 in 50 year discharge (l/s)	H Flume size	Max. flume capacity (l/s)
1	277	2'H	311
1a	215	2'H	311
2	439	2.5'H	543
3	273	2'H	311
4	234	2'H	311
4a	102	1.5'H	151
5	252	2'H	311
5a	127	1.5'H	151
6	306	2'H	311
7	78	1.5'H	151
8	73	1.5'H	151
9	80	1.5'H	151
10	75	1.5'H	151
11	61	1.5'H	151
12	65	1.5'H	151

In total there is a requirement for eight 1.5'H flumes, six 2'H flumes and one 2.5'H flume.