- FARL - a difference of no more than 0.05.
- BFIHOST - a difference of no more than 0.18
- SAAR - a factor of no more than 1.25
- SPRHOST - difference of no more than 15

1.1.7 A comparison of the catchment descriptors at the four potential donor gauging stations with the study reach (Table 3) suggests that the adjacent Great Stour gauges share similar characteristics of the study reach. However it is noted that the receiving catchments of all Great Stour gauges are classified as slightly urbanised ($0.030 \leq URBEXT_{2000} < 0.060$) whereas the catchment of the study reach is classified as essentially rural ($URBEXT_{2000} < 0.030$), these gauges may therefore not be suitable as a donor.

Table 3 Catchment Descriptors at Subject Sites and Donor Gauging Stations

Site	AREA	FARL	BFIHOST	SAAR	SPRHOST	URBEXT2000
Reach Nr A2	52.63	1.000	0.713	755	28.84	0.0042
Reach Nr M2	50.44	1.000	0.714	760	28.76	0.0032
40011	341.97	0.965	0.706	747	25.40	0.0321
40008	226.42	0.983	0.659	741	28.00	0.0452
40022	66.96	0.967	0.744	726	23.30	0.0348
40005	278.05	0.992	0.353	691	44.56	0.0148

1.1.8 Although the gauges may not be suitable as a donor due to the difference in urbanisation, as a check QMED is calculated from flow data and catchment descriptors at the gauge 40022 to confirm whether the QMED ratio is low or high in this area.

1.1.9 For stations with more than 13 years of flow data FEH recommends that QMED is calculated from annual maximum (AMAX) data.

Table 4 QMED Ratio at Donor Gauging Stations

Station	QMED-Catchment Descriptors (m^3/s)	QMED-Catchment Descriptors adjusted for urban influence (m^3/s)	QMED-AMAX (m^3/s)	Ratio
40022	3.648	3.961	5.123	1.293

1.1.10 This ratio between QMED from AMAX data and catchment descriptors suggests the QMED from catchment descriptors underestimates that from flow data with a ratio of 1.293. However the Revised Statistical method requires a further adjustment based on geographical proximity as detailed below.

1.1.4 Revised Donor Adjusted QMED

1.1.11 In addition to adjusting QMED based on the ratio of QMED estimates from catchment descriptors and flow data, the Revised Statistical method requires that the QMED ratio at a donor gauging station is also adjusted according to the distance between the catchment centroids using an exponent 'a'. Exponent 'a' is derived as the straight line distance between the centroid of the subject catchment and the donor gauging station, which in this case is 40022. This exponent in the ratio of QMED at this station gives a revised adjustment ratio at the site of interest of 1.101 (Table 5).

Table 5 Adjusted QMED Ratio at Donor Gauging Stations

Site	Centroid Easting	Centroid Northing	Centroid Distance (km)	Exponent 'a'	Unadjusted Ratio	Adjusted Ratio
Reach Near A2	598182	154399				
40022	604436	145695	10.718	0.374	1.293	1.101

1.1.5 Flood Frequency Curve

1.1.12 The calculation of a flood frequency curve and the peak flows at the flood estimation points requires the construction of a pooling group and the fitting of an extreme value distribution to the pooled group data.

1.1.13 Table 6 below gives details of the pooling group including any stations added or removed and reasons for this.

Table 6 Pooling Group Details

Station removed (with reasons)
203049 (Clady @ Clady Bridge) – Station in Ireland
41020 (Bevern Stream @ Clappers Bridge) – Low BFIHOST value (0.355)
25006 (Greta @ Rutherford Bridge) – Low BFIHOST value (0.241)
27010 (Hodge Beck @ Bransdale Weir) – Low BFIHOST value (0.341)
Final Pooling Group
53023 (Sherston Avon @ Fosseway)
43014 (East Avon @ Upavon)
84009 (Nethan @ Kirkmuirhill)
54025 (Dulas @ Rhos-y-pentref)
48803 (Carnon @ Bissoe)
47009 (Tiddy @ Tideford)
45008 (Otter @ Fenny Bridges)
43017 (West Avon @ Upavon)
55013 (Arrow @ Titley Mill)
72014 (Conder @ Galgate)
67005 (Ceiriog @ Brynkinalt Weir)
28061 (Churnet @ Basford Bridge)
12006 (Gairn @ Invergairn)
96003 (Strathy @ Strathy Bridge)
73008 (Bela @ Beetham)
53023 (Sherston Avon @ Fosseway)

1.1.14 The revised pooling group contains 15 stations with 509 station years of record. Guidance from the WINFAP Software indicates the pooling group is 'acceptably homogeneous and a review of the pooling group is not required' (H2 = -1.2640). There was no valid reason for the removal of any other

of the component stations and the pooling group was considered acceptable. A 500 year record length is reasonable to calculate the 1 in 100 year peak flow and the 1 in 1000 year peak flow was extrapolated using ReFH. The pooling ground for the 1 in 1000 year event is likely to be inhomogeneous.

1.1.15 Two extreme value distributions are often used on the pooled group data (i) the Generalised Logistic (GL) and (ii) the General Extreme Value (GEV) distribution both fitted to the annual maximum data by the method of L-Moments. FEH indicates that the GL distribution can often provide the best fit to extreme value flood series and in this case WINFAP indicates that the GL provides an acceptable distribution for this site.

1.1.16 The results of the frequency analysis based on the QMED donor adjustment factor of 1.101 and on the basis that the GL distribution is recommended by WINFAP. Refer to Table 7 for the full range of results.

Table 7 Pooled Group Growth Curve and Flood Frequency Curves (m^3/s) for individual catchments

	Return periods	2	5	10	20	30	50	100	1000
	Growth Curve	1.000	1.323	1.542	1.767	1.905	2.088	2.354	3.435
Flood Frequency Curves (m^3/s)	Reach Near A2	4.662	6.167	7.188	8.237	8.880	9.733	10.973	16.013
	Reach Near M2	4.550	6.020	7.016	8.040	8.668	9.500	10.711	15.629

1.1.6 Extension to the 1 in 1000 Year Event

1.1.17 The FEH Statistical method was originally recommended for return periods only up to the 1 in 200 year event and noted as not suitable for extrapolating to very extreme events such as the 1 in 1000 year event. Flood estimates for longer return periods were historically derived using the FSR/FEH rainfall-runoff method as the rainfall growth curves for long return periods could be defined with much more confidence than flood growth curves. However the original FEH rainfall-runoff method was known to overestimate flows and more recently the extension of the Statistical method has been preferred.

1.1.18 The Environment Agency's Flood Estimation Guidelines provide two suggestions for calculating extreme floods up to the 1000 year event. Firstly using the Statistical method but the 1 in 1000 year pooling group is likely to be inhomogeneous with many component stations hence a simple extension of the 1 in 200 year and more recently the 1 in 100 year event has been proposed. A second approach is to derive the ReFH growth factor for the 1 in 100 year to 1 in 1000 year event which is then applied to the Statistical method 1 in 100 year peak flow.

1.1.19 The Statistical method flood frequency curve is extended to the 1 in 1000 year event using the ReFH growth factor as described above. (Table 8).

Table 8 Statistical Method Pooling Group Extended to 1 in 1000 year using ReFH

	Return periods	2	5	10	20	30	50	100	1000
Flood Frequency Curves (m^3/s)	Reach Near A2	4.662	6.167	7.188	8.237	8.880	9.733	10.973	20.282
	Reach Near M2	4.550	6.020	7.016	8.040	8.668	9.500	10.711	19.948

1.1.7 Hydrograph Shape

1.1.20 If a design hydrograph is required it is recommended that the hydrograph shape from the ReFH method is used and forced to fit the peak flows from the Statistical method, referred to as the hybrid method. This can be achieved in the WHS's ReFH 2 software suite.

1.1.21 The FEH Guidelines suggest two hybrid methods for ungauged sites:

1.1.22 Generating the hydrograph using ReFH method and scaling the ordinates so the peak flow matches the statistical estimate.

1.1.23 Adjusting the parameters of the ReFH model until the simulated peak flows match the preferred values. This might appear more elegant than option (a) but should be used with caution. It may prove difficult to match the statistical results over a range of return periods, because the ReFH method may give a different growth curve.

1.1.24 Option a) is the quickest method and often the best. The flood hydrographs from this method are provided in Figure 1-3 to Figure 1-4.

Figure 1-3 Hybrid Flood Hydrograph – Reach Near A2

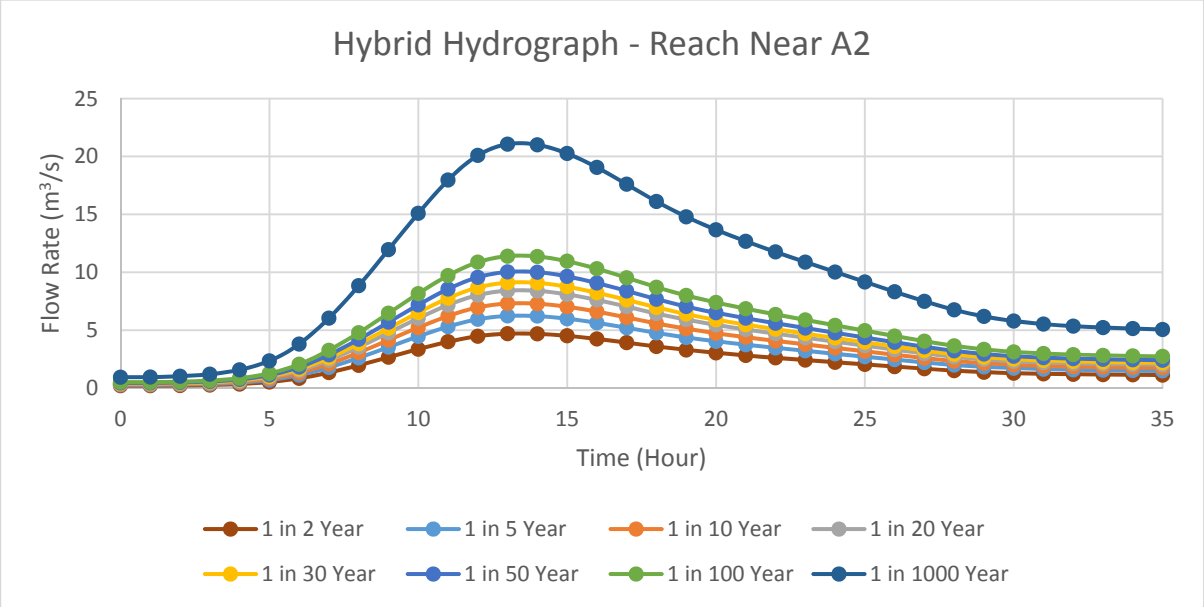
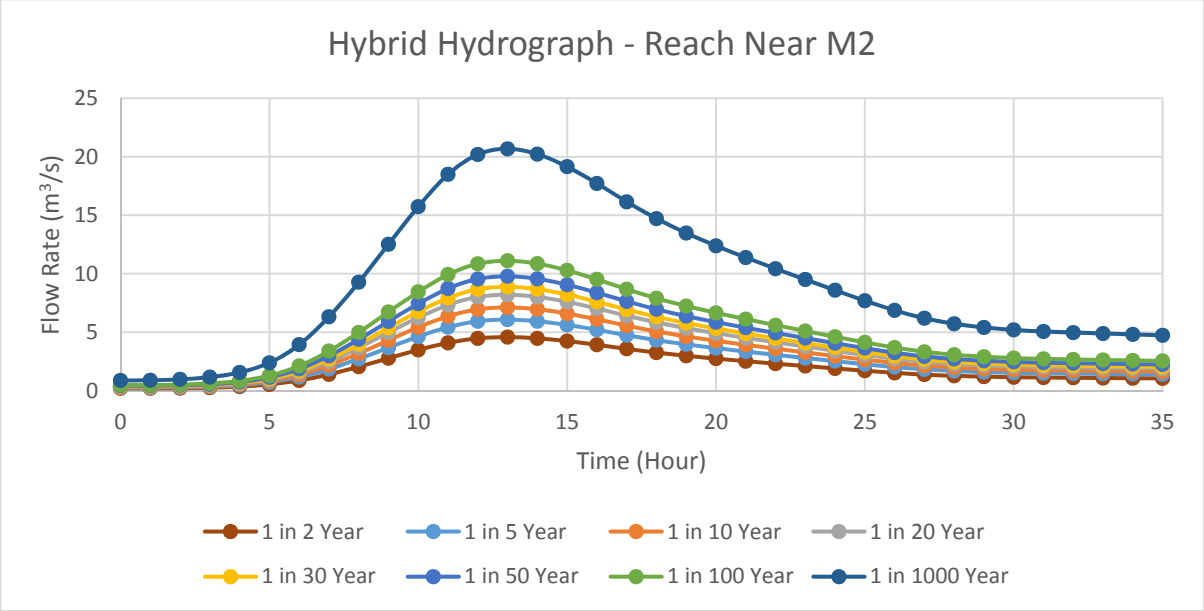


Figure 1-4 Hybrid Flood Hydrograph – Reach Near M2



UK Design Flood Estimation

Generated on 06 January 2016 09:35:13 by jho
Printed from the ReFH Flood Modelling software package, version 2.1.5798.30211

Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH)

Site details Checksum: 8C20-D687

Site name: Reach Nr A2

Easting: 600300

Northing: 160800

Country: England, Wales or Northern Ireland

Catchment Area (km²): 52.63

Using plotscale calculations: No

Site description: None

Model run: 5 year

Summary of results

Rainfall - FEH 1999 (mm):	42.75	Total runoff (ML):	232.28
Total Rainfall (mm):	29.04	Total flow (ML):	659.82
Peak Rainfall (mm):	6.60	Peak flow (m³/s):	7.01

Parameters

** Where the user has overriden a system-generated value, this original value is shown in square brackets after the value used.*

Rainfall parameters (Rainfall - FEH 1999 model)

Name	Value	User-defined?
Duration (hr)	11	No
Timestep (hr)	1	No
SCF(Seasonal correction factor)	0.72	No
ARF(Areal reduction factor)	0.94	No
Seasonality	Winter	n/a

Loss model parameters

Name	Value	User-defined?
Cini (mm)	92.68	No
Cmax (mm)	710.31	No
Use alpha correction factor	Yes	No
Alpha correction factor	1	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	6.33	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m^3/s)	1.26	No
BL (hr)	65.9	No
BR	1.86	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km^2)	0.35	No
Urbext 2000	0	No
Urban runoff factor	0.7	No
Imperviousness factor	0.3	No
Tp scaling factor	0.5	No
Sewered area (km^2)	0.00	Yes
Sewer capacity (m^3/s)	0.00	Yes

Time series data

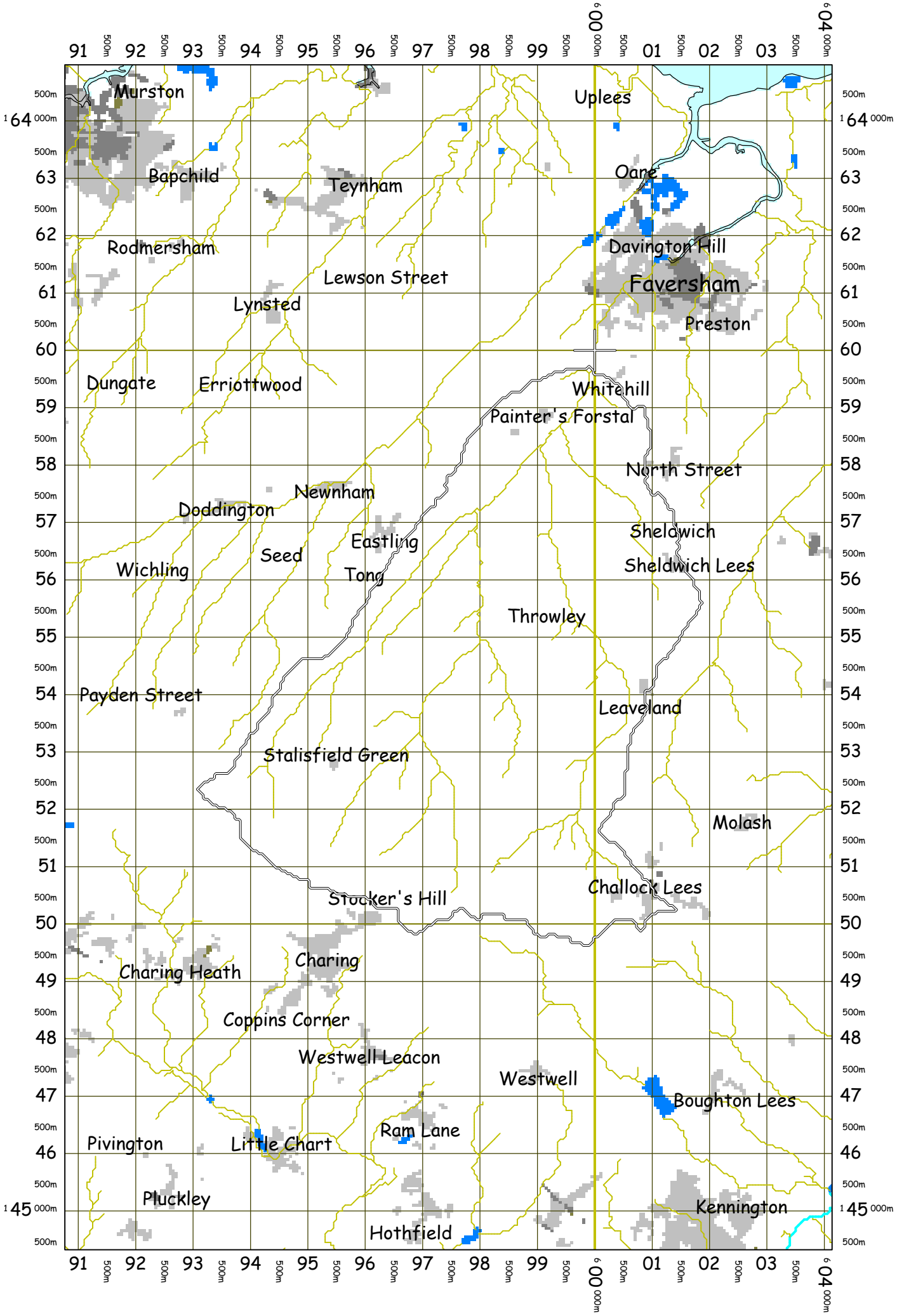
Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
00:00	0.638	0.000	0.084	0.000	1.258	1.258
01:00	1.068	0.000	0.142	0.010	1.239	1.249
02:00	1.780	0.000	0.241	0.049	1.221	1.270
03:00	2.943	0.000	0.408	0.135	1.205	1.340
04:00	4.790	0.000	0.690	0.300	1.192	1.493
05:00	6.598	0.000	1.003	0.599	1.186	1.785
06:00	4.790	0.000	0.766	1.102	1.191	2.293
07:00	2.943	0.000	0.487	1.810	1.212	3.023
08:00	1.780	0.000	0.300	2.628	1.254	3.882
09:00	1.068	0.000	0.182	3.467	1.317	4.784
10:00	0.638	0.000	0.110	4.248	1.402	5.650
11:00	0.000	0.000	0.000	4.882	1.506	6.388
12:00	0.000	0.000	0.000	5.250	1.622	6.872
13:00	0.000	0.000	0.000	5.272	1.743	7.014
14:00	0.000	0.000	0.000	5.033	1.859	6.892
15:00	0.000	0.000	0.000	4.635	1.965	6.600
16:00	0.000	0.000	0.000	4.152	2.057	6.210
17:00	0.000	0.000	0.000	3.637	2.135	5.772
18:00	0.000	0.000	0.000	3.142	2.197	5.339
19:00	0.000	0.000	0.000	2.717	2.246	4.963
20:00	0.000	0.000	0.000	2.354	2.283	4.637
21:00	0.000	0.000	0.000	2.033	2.310	4.343
22:00	0.000	0.000	0.000	1.738	2.328	4.066
23:00	0.000	0.000	0.000	1.459	2.337	3.797
24:00	0.000	0.000	0.000	1.193	2.339	3.532
25:00	0.000	0.000	0.000	0.937	2.334	3.271
26:00	0.000	0.000	0.000	0.693	2.322	3.015
27:00	0.000	0.000	0.000	0.472	2.303	2.775
28:00	0.000	0.000	0.000	0.288	2.279	2.566
29:00	0.000	0.000	0.000	0.158	2.251	2.409
30:00	0.000	0.000	0.000	0.079	2.220	2.299
31:00	0.000	0.000	0.000	0.035	2.188	2.223
32:00	0.000	0.000	0.000	0.012	2.156	2.168
33:00	0.000	0.000	0.000	0.002	2.124	2.126
34:00	0.000	0.000	0.000	0.000	2.092	2.092

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
35:00	0.000	0.000	0.000	0.000	2.060	2.060
36:00	0.000	0.000	0.000	0.000	2.029	2.029
37:00	0.000	0.000	0.000	0.000	1.999	1.999
38:00	0.000	0.000	0.000	0.000	1.969	1.969
39:00	0.000	0.000	0.000	0.000	1.939	1.939
40:00	0.000	0.000	0.000	0.000	1.910	1.910
41:00	0.000	0.000	0.000	0.000	1.881	1.881
42:00	0.000	0.000	0.000	0.000	1.853	1.853
43:00	0.000	0.000	0.000	0.000	1.825	1.825
44:00	0.000	0.000	0.000	0.000	1.797	1.797
45:00	0.000	0.000	0.000	0.000	1.770	1.770
46:00	0.000	0.000	0.000	0.000	1.744	1.744
47:00	0.000	0.000	0.000	0.000	1.717	1.717
48:00	0.000	0.000	0.000	0.000	1.691	1.691
49:00	0.000	0.000	0.000	0.000	1.666	1.666
50:00	0.000	0.000	0.000	0.000	1.641	1.641
51:00	0.000	0.000	0.000	0.000	1.616	1.616
52:00	0.000	0.000	0.000	0.000	1.592	1.592
53:00	0.000	0.000	0.000	0.000	1.568	1.568
54:00	0.000	0.000	0.000	0.000	1.544	1.544
55:00	0.000	0.000	0.000	0.000	1.521	1.521
56:00	0.000	0.000	0.000	0.000	1.498	1.498
57:00	0.000	0.000	0.000	0.000	1.475	1.475
58:00	0.000	0.000	0.000	0.000	1.453	1.453
59:00	0.000	0.000	0.000	0.000	1.431	1.431
60:00	0.000	0.000	0.000	0.000	1.410	1.410
61:00	0.000	0.000	0.000	0.000	1.389	1.389
62:00	0.000	0.000	0.000	0.000	1.368	1.368
63:00	0.000	0.000	0.000	0.000	1.347	1.347
64:00	0.000	0.000	0.000	0.000	1.327	1.327
65:00	0.000	0.000	0.000	0.000	1.307	1.307
66:00	0.000	0.000	0.000	0.000	1.287	1.287
67:00	0.000	0.000	0.000	0.000	1.268	1.268

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km²)	52.63	No
ALTBAR	112	No
ASPBAR	27	No
ASPVAR	0.46	No
BFIHOST	0.71	No
DPLBAR (km)	8.46	No
DPSBAR (mkm-¹)	52.2	No
FARL	1	No
LDP	14.11	No
PROPWET (mm)	0.34	No
RMED1H	12.3	No
RMED1D	35.3	No
RMED2D	43.1	No
SAAR (mm)	755	No
SAAR4170 (mm)	775	No
SPRHOST	28.84	No
Urbext2000	0	No
Urbext1990	0	No
URBCONC	0	No
URBLOC	0	No
Urban Area (km²)	0.35	No
DDF parameter C	-0.02	No
DDF parameter D1	0.35	No
DDF parameter D2	0.35	No
DDF parameter D3	0.3	No
DDF parameter E	0.31	No
DDF parameter F	2.53	No
DDF parameter C (1km grid value)	-0.02	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.36	No
DDF parameter D3 (1km grid value)	0.31	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.52	No



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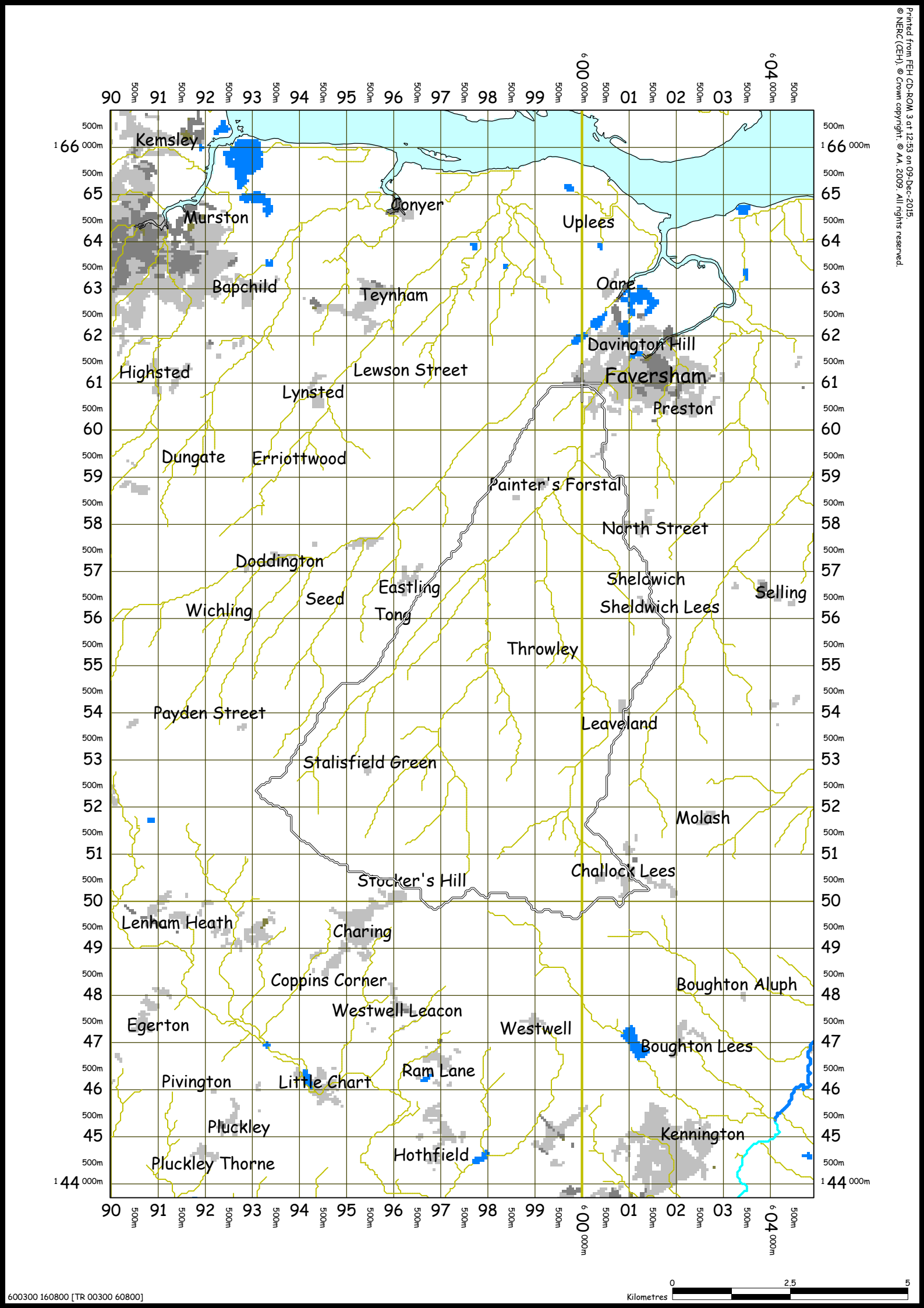

600300 160800 [TR 00300 60800]

UK Design Flood Estimation

Generated on 06 January 2016 09:39:44 by jho
Printed from the ReFH Flood Modelling software package, version 2.1.5798.30211

Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH)

Site details Checksum: 8C20-D687

Site name: Reach Nr A2

Easting: 600300

Northing: 160800

Country: England, Wales or Northern Ireland

Catchment Area (km²): 52.63

Using plotscale calculations: No

Site description: None

Model run: 1000 year

Summary of results

Rainfall - FEH 1999 (mm):	172.12	Total runoff (ML):	1045.81
Total Rainfall (mm):	116.91	Total flow (ML):	2965.22
Peak Rainfall (mm):	26.57	Peak flow (m³/s):	28.00

Parameters

** Where the user has overriden a system-generated value, this original value is shown in square brackets after the value used.*

Rainfall parameters (Rainfall - FEH 1999 model)

Name	Value	User-defined?
Duration (hr)	11	No
Timestep (hr)	1	No
SCF(Seasonal correction factor)	0.72	No
ARF(Areal reduction factor)	0.94	No
Seasonality	Winter	n/a

Loss model parameters

Name	Value	User-defined?
Cini (mm)	92.68	No
Cmax (mm)	710.31	No
Use alpha correction factor	Yes	No
Alpha correction factor	0.66	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	6.33	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m^3/s)	1.26	No
BL (hr)	65.9	No
BR	1.86	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km^2)	0.35	No
Urbext 2000	0	No
Urban runoff factor	0.7	No
Imperviousness factor	0.3	No
Tp scaling factor	0.5	No
Sewered area (km^2)	0.00	Yes
Sewer capacity (m^3/s)	0.00	Yes

Time series data

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
00:00	2.567	0.000	0.230	0.000	1.258	1.258
01:00	4.300	0.000	0.406	0.029	1.239	1.268
02:00	7.167	0.000	0.735	0.138	1.222	1.360
03:00	11.851	0.000	1.373	0.389	1.211	1.600
04:00	19.286	0.000	2.657	0.900	1.209	2.109
05:00	26.567	0.000	4.516	1.902	1.228	3.130
06:00	19.286	0.000	3.899	3.773	1.285	5.058
07:00	11.851	0.000	2.655	6.634	1.404	8.038
08:00	7.167	0.000	1.702	10.162	1.608	11.769
09:00	4.300	0.000	1.056	13.984	1.909	15.893
10:00	2.567	0.000	0.642	17.753	2.311	20.064
11:00	0.000	0.000	0.000	21.078	2.807	23.884
12:00	0.000	0.000	0.000	23.347	3.375	26.722
13:00	0.000	0.000	0.000	24.026	3.978	28.004
14:00	0.000	0.000	0.000	23.363	4.573	27.936
15:00	0.000	0.000	0.000	21.801	5.131	26.932
16:00	0.000	0.000	0.000	19.704	5.630	25.335
17:00	0.000	0.000	0.000	17.348	6.062	23.409
18:00	0.000	0.000	0.000	14.999	6.421	21.421
19:00	0.000	0.000	0.000	12.958	6.715	19.673
20:00	0.000	0.000	0.000	11.225	6.951	18.177
21:00	0.000	0.000	0.000	9.716	7.139	16.856
22:00	0.000	0.000	0.000	8.353	7.285	15.637
23:00	0.000	0.000	0.000	7.081	7.391	14.472
24:00	0.000	0.000	0.000	5.873	7.460	13.333
25:00	0.000	0.000	0.000	4.697	7.496	12.193
26:00	0.000	0.000	0.000	3.561	7.498	11.060
27:00	0.000	0.000	0.000	2.498	7.470	9.968
28:00	0.000	0.000	0.000	1.576	7.415	8.990
29:00	0.000	0.000	0.000	0.893	7.337	8.230
30:00	0.000	0.000	0.000	0.456	7.246	7.702
31:00	0.000	0.000	0.000	0.203	7.146	7.348
32:00	0.000	0.000	0.000	0.069	7.042	7.111
33:00	0.000	0.000	0.000	0.012	6.937	6.949
34:00	0.000	0.000	0.000	0.000	6.833	6.833

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
35:00	0.000	0.000	0.000	0.000	6.730	6.730
36:00	0.000	0.000	0.000	0.000	6.629	6.629
37:00	0.000	0.000	0.000	0.000	6.529	6.529
38:00	0.000	0.000	0.000	0.000	6.430	6.430
39:00	0.000	0.000	0.000	0.000	6.334	6.334
40:00	0.000	0.000	0.000	0.000	6.238	6.238
41:00	0.000	0.000	0.000	0.000	6.144	6.144
42:00	0.000	0.000	0.000	0.000	6.052	6.052
43:00	0.000	0.000	0.000	0.000	5.961	5.961
44:00	0.000	0.000	0.000	0.000	5.871	5.871
45:00	0.000	0.000	0.000	0.000	5.782	5.782
46:00	0.000	0.000	0.000	0.000	5.695	5.695
47:00	0.000	0.000	0.000	0.000	5.610	5.610
48:00	0.000	0.000	0.000	0.000	5.525	5.525
49:00	0.000	0.000	0.000	0.000	5.442	5.442
50:00	0.000	0.000	0.000	0.000	5.360	5.360
51:00	0.000	0.000	0.000	0.000	5.279	5.279
52:00	0.000	0.000	0.000	0.000	5.200	5.200
53:00	0.000	0.000	0.000	0.000	5.121	5.121
54:00	0.000	0.000	0.000	0.000	5.044	5.044
55:00	0.000	0.000	0.000	0.000	4.968	4.968
56:00	0.000	0.000	0.000	0.000	4.893	4.893
57:00	0.000	0.000	0.000	0.000	4.820	4.820
58:00	0.000	0.000	0.000	0.000	4.747	4.747
59:00	0.000	0.000	0.000	0.000	4.676	4.676
60:00	0.000	0.000	0.000	0.000	4.605	4.605
61:00	0.000	0.000	0.000	0.000	4.536	4.536
62:00	0.000	0.000	0.000	0.000	4.468	4.468
63:00	0.000	0.000	0.000	0.000	4.400	4.400
64:00	0.000	0.000	0.000	0.000	4.334	4.334
65:00	0.000	0.000	0.000	0.000	4.269	4.269
66:00	0.000	0.000	0.000	0.000	4.204	4.204
67:00	0.000	0.000	0.000	0.000	4.141	4.141
68:00	0.000	0.000	0.000	0.000	4.079	4.079
69:00	0.000	0.000	0.000	0.000	4.017	4.017
70:00	0.000	0.000	0.000	0.000	3.957	3.957

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
71:00	0.000	0.000	0.000	0.000	3.897	3.897
72:00	0.000	0.000	0.000	0.000	3.839	3.839
73:00	0.000	0.000	0.000	0.000	3.781	3.781
74:00	0.000	0.000	0.000	0.000	3.724	3.724
75:00	0.000	0.000	0.000	0.000	3.668	3.668
76:00	0.000	0.000	0.000	0.000	3.613	3.613
77:00	0.000	0.000	0.000	0.000	3.558	3.558
78:00	0.000	0.000	0.000	0.000	3.505	3.505
79:00	0.000	0.000	0.000	0.000	3.452	3.452
80:00	0.000	0.000	0.000	0.000	3.400	3.400
81:00	0.000	0.000	0.000	0.000	3.349	3.349
82:00	0.000	0.000	0.000	0.000	3.298	3.298
83:00	0.000	0.000	0.000	0.000	3.248	3.248
84:00	0.000	0.000	0.000	0.000	3.200	3.200
85:00	0.000	0.000	0.000	0.000	3.151	3.151
86:00	0.000	0.000	0.000	0.000	3.104	3.104
87:00	0.000	0.000	0.000	0.000	3.057	3.057
88:00	0.000	0.000	0.000	0.000	3.011	3.011
89:00	0.000	0.000	0.000	0.000	2.966	2.966
90:00	0.000	0.000	0.000	0.000	2.921	2.921
91:00	0.000	0.000	0.000	0.000	2.877	2.877
92:00	0.000	0.000	0.000	0.000	2.834	2.834
93:00	0.000	0.000	0.000	0.000	2.791	2.791
94:00	0.000	0.000	0.000	0.000	2.749	2.749
95:00	0.000	0.000	0.000	0.000	2.708	2.708
96:00	0.000	0.000	0.000	0.000	2.667	2.667
97:00	0.000	0.000	0.000	0.000	2.627	2.627
98:00	0.000	0.000	0.000	0.000	2.587	2.587
99:00	0.000	0.000	0.000	0.000	2.548	2.548
100:00	0.000	0.000	0.000	0.000	2.510	2.510
101:00	0.000	0.000	0.000	0.000	2.472	2.472
102:00	0.000	0.000	0.000	0.000	2.435	2.435
103:00	0.000	0.000	0.000	0.000	2.398	2.398
104:00	0.000	0.000	0.000	0.000	2.362	2.362
105:00	0.000	0.000	0.000	0.000	2.326	2.326
106:00	0.000	0.000	0.000	0.000	2.291	2.291

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
107:00	0.000	0.000	0.000	0.000	2.257	2.257
108:00	0.000	0.000	0.000	0.000	2.223	2.223
109:00	0.000	0.000	0.000	0.000	2.189	2.189
110:00	0.000	0.000	0.000	0.000	2.156	2.156
111:00	0.000	0.000	0.000	0.000	2.124	2.124
112:00	0.000	0.000	0.000	0.000	2.092	2.092
113:00	0.000	0.000	0.000	0.000	2.061	2.061
114:00	0.000	0.000	0.000	0.000	2.029	2.029
115:00	0.000	0.000	0.000	0.000	1.999	1.999
116:00	0.000	0.000	0.000	0.000	1.969	1.969
117:00	0.000	0.000	0.000	0.000	1.939	1.939
118:00	0.000	0.000	0.000	0.000	1.910	1.910
119:00	0.000	0.000	0.000	0.000	1.881	1.881
120:00	0.000	0.000	0.000	0.000	1.853	1.853
121:00	0.000	0.000	0.000	0.000	1.825	1.825
122:00	0.000	0.000	0.000	0.000	1.797	1.797
123:00	0.000	0.000	0.000	0.000	1.770	1.770
124:00	0.000	0.000	0.000	0.000	1.744	1.744
125:00	0.000	0.000	0.000	0.000	1.717	1.717
126:00	0.000	0.000	0.000	0.000	1.692	1.692
127:00	0.000	0.000	0.000	0.000	1.666	1.666
128:00	0.000	0.000	0.000	0.000	1.641	1.641
129:00	0.000	0.000	0.000	0.000	1.616	1.616
130:00	0.000	0.000	0.000	0.000	1.592	1.592
131:00	0.000	0.000	0.000	0.000	1.568	1.568
132:00	0.000	0.000	0.000	0.000	1.544	1.544
133:00	0.000	0.000	0.000	0.000	1.521	1.521
134:00	0.000	0.000	0.000	0.000	1.498	1.498
135:00	0.000	0.000	0.000	0.000	1.476	1.476
136:00	0.000	0.000	0.000	0.000	1.453	1.453
137:00	0.000	0.000	0.000	0.000	1.432	1.432
138:00	0.000	0.000	0.000	0.000	1.410	1.410
139:00	0.000	0.000	0.000	0.000	1.389	1.389
140:00	0.000	0.000	0.000	0.000	1.368	1.368
141:00	0.000	0.000	0.000	0.000	1.347	1.347
142:00	0.000	0.000	0.000	0.000	1.327	1.327

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
143:00	0.000	0.000	0.000	0.000	1.307	1.307
144:00	0.000	0.000	0.000	0.000	1.287	1.287
145:00	0.000	0.000	0.000	0.000	1.268	1.268

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km²)	52.63	No
ALTBAR	112	No
ASPBAR	27	No
ASPVAR	0.46	No
BFIHOST	0.71	No
DPLBAR (km)	8.46	No
DPSBAR (mkm-¹)	52.2	No
FARL	1	No
LDP	14.11	No
PROPWET (mm)	0.34	No
RMED1H	12.3	No
RMED1D	35.3	No
RMED2D	43.1	No
SAAR (mm)	755	No
SAAR4170 (mm)	775	No
SPRHOST	28.84	No
Urbext2000	0	No
Urbext1990	0	No
URBCONC	0	No
URBLOC	0	No
Urban Area (km²)	0.35	No
DDF parameter C	-0.02	No
DDF parameter D1	0.35	No
DDF parameter D2	0.35	No
DDF parameter D3	0.3	No
DDF parameter E	0.31	No
DDF parameter F	2.53	No
DDF parameter C (1km grid value)	-0.02	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.36	No
DDF parameter D3 (1km grid value)	0.31	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.52	No

UK Design Flood Estimation

Generated on 06 January 2016 09:39:20 by jho
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Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH)

Site details Checksum: 8C20-D687

Site name: Reach Nr A2

Easting: 600300

Northing: 160800

Country: England, Wales or Northern Ireland

Catchment Area (km²): 52.63

Using plotscale calculations: No

Site description: None

Model run: 100 year

Summary of results

Rainfall - FEH 1999 (mm):	95.01	Total runoff (ML):	547.89
Total Rainfall (mm):	64.53	Total flow (ML):	1551.96
Peak Rainfall (mm):	14.66	Peak flow (m³/s):	15.15

Parameters

** Where the user has overriden a system-generated value, this original value is shown in square brackets after the value used.*

Rainfall parameters (Rainfall - FEH 1999 model)

Name	Value	User-defined?
Duration (hr)	11	No
Timestep (hr)	1	No
SCF(Seasonal correction factor)	0.72	No
ARF(Areal reduction factor)	0.94	No
Seasonality	Winter	n/a

Loss model parameters

Name	Value	User-defined?
Cini (mm)	92.68	No
Cmax (mm)	710.31	No
Use alpha correction factor	Yes	No
Alpha correction factor	0.88	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	6.33	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m^3/s)	1.26	No
BL (hr)	65.9	No
BR	1.86	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km^2)	0.35	No
Urbext 2000	0	No
Urban runoff factor	0.7	No
Imperviousness factor	0.3	No
Tp scaling factor	0.5	No
Sewered area (km^2)	0.00	Yes
Sewer capacity (m^3/s)	0.00	Yes

Time series data

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
00:00	1.417	0.000	0.166	0.000	1.258	1.258
01:00	2.374	0.000	0.284	0.021	1.239	1.259
02:00	3.956	0.000	0.491	0.097	1.222	1.319
03:00	6.541	0.000	0.860	0.270	1.208	1.478
04:00	10.645	0.000	1.528	0.608	1.202	1.810
05:00	14.664	0.000	2.366	1.237	1.208	2.445
06:00	10.645	0.000	1.907	2.337	1.237	3.574
07:00	6.541	0.000	1.251	3.935	1.302	5.237
08:00	3.956	0.000	0.785	5.830	1.414	7.243
09:00	2.374	0.000	0.482	7.819	1.577	9.395
10:00	1.417	0.000	0.291	9.716	1.791	11.507
11:00	0.000	0.000	0.000	11.316	2.052	13.368
12:00	0.000	0.000	0.000	12.319	2.345	14.665
13:00	0.000	0.000	0.000	12.499	2.652	15.151
14:00	0.000	0.000	0.000	12.027	2.952	14.979
15:00	0.000	0.000	0.000	11.140	3.228	14.368
16:00	0.000	0.000	0.000	10.017	3.474	13.491
17:00	0.000	0.000	0.000	8.795	3.683	12.478
18:00	0.000	0.000	0.000	7.600	3.857	11.457
19:00	0.000	0.000	0.000	6.569	3.996	10.565
20:00	0.000	0.000	0.000	5.691	4.107	9.798
21:00	0.000	0.000	0.000	4.920	4.194	9.114
22:00	0.000	0.000	0.000	4.216	4.258	8.475
23:00	0.000	0.000	0.000	3.555	4.303	7.858
24:00	0.000	0.000	0.000	2.925	4.329	7.254
25:00	0.000	0.000	0.000	2.315	4.337	6.652
26:00	0.000	0.000	0.000	1.732	4.328	6.060
27:00	0.000	0.000	0.000	1.196	4.304	5.499
28:00	0.000	0.000	0.000	0.740	4.266	5.006
29:00	0.000	0.000	0.000	0.413	4.218	4.631
30:00	0.000	0.000	0.000	0.209	4.163	4.372
31:00	0.000	0.000	0.000	0.092	4.105	4.197
32:00	0.000	0.000	0.000	0.032	4.044	4.076
33:00	0.000	0.000	0.000	0.005	3.984	3.989
34:00	0.000	0.000	0.000	0.000	3.924	3.924

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
35:00	0.000	0.000	0.000	0.000	3.865	3.865
36:00	0.000	0.000	0.000	0.000	3.807	3.807
37:00	0.000	0.000	0.000	0.000	3.749	3.749
38:00	0.000	0.000	0.000	0.000	3.693	3.693
39:00	0.000	0.000	0.000	0.000	3.637	3.637
40:00	0.000	0.000	0.000	0.000	3.583	3.583
41:00	0.000	0.000	0.000	0.000	3.529	3.529
42:00	0.000	0.000	0.000	0.000	3.476	3.476
43:00	0.000	0.000	0.000	0.000	3.423	3.423
44:00	0.000	0.000	0.000	0.000	3.372	3.372
45:00	0.000	0.000	0.000	0.000	3.321	3.321
46:00	0.000	0.000	0.000	0.000	3.271	3.271
47:00	0.000	0.000	0.000	0.000	3.222	3.222
48:00	0.000	0.000	0.000	0.000	3.173	3.173
49:00	0.000	0.000	0.000	0.000	3.125	3.125
50:00	0.000	0.000	0.000	0.000	3.078	3.078
51:00	0.000	0.000	0.000	0.000	3.032	3.032
52:00	0.000	0.000	0.000	0.000	2.986	2.986
53:00	0.000	0.000	0.000	0.000	2.941	2.941
54:00	0.000	0.000	0.000	0.000	2.897	2.897
55:00	0.000	0.000	0.000	0.000	2.853	2.853
56:00	0.000	0.000	0.000	0.000	2.810	2.810
57:00	0.000	0.000	0.000	0.000	2.768	2.768
58:00	0.000	0.000	0.000	0.000	2.726	2.726
59:00	0.000	0.000	0.000	0.000	2.685	2.685
60:00	0.000	0.000	0.000	0.000	2.645	2.645
61:00	0.000	0.000	0.000	0.000	2.605	2.605
62:00	0.000	0.000	0.000	0.000	2.566	2.566
63:00	0.000	0.000	0.000	0.000	2.527	2.527
64:00	0.000	0.000	0.000	0.000	2.489	2.489
65:00	0.000	0.000	0.000	0.000	2.452	2.452
66:00	0.000	0.000	0.000	0.000	2.415	2.415
67:00	0.000	0.000	0.000	0.000	2.378	2.378
68:00	0.000	0.000	0.000	0.000	2.342	2.342
69:00	0.000	0.000	0.000	0.000	2.307	2.307
70:00	0.000	0.000	0.000	0.000	2.272	2.272

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
71:00	0.000	0.000	0.000	0.000	2.238	2.238
72:00	0.000	0.000	0.000	0.000	2.205	2.205
73:00	0.000	0.000	0.000	0.000	2.171	2.171
74:00	0.000	0.000	0.000	0.000	2.139	2.139
75:00	0.000	0.000	0.000	0.000	2.106	2.106
76:00	0.000	0.000	0.000	0.000	2.075	2.075
77:00	0.000	0.000	0.000	0.000	2.043	2.043
78:00	0.000	0.000	0.000	0.000	2.013	2.013
79:00	0.000	0.000	0.000	0.000	1.982	1.982
80:00	0.000	0.000	0.000	0.000	1.953	1.953
81:00	0.000	0.000	0.000	0.000	1.923	1.923
82:00	0.000	0.000	0.000	0.000	1.894	1.894
83:00	0.000	0.000	0.000	0.000	1.866	1.866
84:00	0.000	0.000	0.000	0.000	1.838	1.838
85:00	0.000	0.000	0.000	0.000	1.810	1.810
86:00	0.000	0.000	0.000	0.000	1.783	1.783
87:00	0.000	0.000	0.000	0.000	1.756	1.756
88:00	0.000	0.000	0.000	0.000	1.729	1.729
89:00	0.000	0.000	0.000	0.000	1.703	1.703
90:00	0.000	0.000	0.000	0.000	1.678	1.678
91:00	0.000	0.000	0.000	0.000	1.652	1.652
92:00	0.000	0.000	0.000	0.000	1.627	1.627
93:00	0.000	0.000	0.000	0.000	1.603	1.603
94:00	0.000	0.000	0.000	0.000	1.579	1.579
95:00	0.000	0.000	0.000	0.000	1.555	1.555
96:00	0.000	0.000	0.000	0.000	1.532	1.532
97:00	0.000	0.000	0.000	0.000	1.509	1.509
98:00	0.000	0.000	0.000	0.000	1.486	1.486
99:00	0.000	0.000	0.000	0.000	1.463	1.463
100:00	0.000	0.000	0.000	0.000	1.441	1.441
101:00	0.000	0.000	0.000	0.000	1.420	1.420
102:00	0.000	0.000	0.000	0.000	1.398	1.398
103:00	0.000	0.000	0.000	0.000	1.377	1.377
104:00	0.000	0.000	0.000	0.000	1.357	1.357
105:00	0.000	0.000	0.000	0.000	1.336	1.336
106:00	0.000	0.000	0.000	0.000	1.316	1.316

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
107:00	0.000	0.000	0.000	0.000	1.296	1.296
108:00	0.000	0.000	0.000	0.000	1.277	1.277

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km²)	52.63	No
ALTBAR	112	No
ASPBAR	27	No
ASPVAR	0.46	No
BFIHOST	0.71	No
DPLBAR (km)	8.46	No
DPSBAR (mkm-¹)	52.2	No
FARL	1	No
LDP	14.11	No
PROPWET (mm)	0.34	No
RMED1H	12.3	No
RMED1D	35.3	No
RMED2D	43.1	No
SAAR (mm)	755	No
SAAR4170 (mm)	775	No
SPRHOST	28.84	No
Urbext2000	0	No
Urbext1990	0	No
URBCONC	0	No
URBLOC	0	No
Urban Area (km²)	0.35	No
DDF parameter C	-0.02	No
DDF parameter D1	0.35	No
DDF parameter D2	0.35	No
DDF parameter D3	0.3	No
DDF parameter E	0.31	No
DDF parameter F	2.53	No
DDF parameter C (1km grid value)	-0.02	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.36	No
DDF parameter D3 (1km grid value)	0.31	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.52	No

UK Design Flood Estimation

Generated on 06 January 2016 09:36:51 by jho
Printed from the ReFH Flood Modelling software package, version 2.1.5798.30211

Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH)

Site details Checksum: 8C20-D687

Site name: Reach Nr A2

Easting: 600300

Northing: 160800

Country: England, Wales or Northern Ireland

Catchment Area (km²): 52.63

Using plotscale calculations: No

Site description: None

Model run: 20 year

Summary of results

Rainfall - FEH 1999 (mm):	62.43	Total runoff (ML):	349.99
Total Rainfall (mm):	42.40	Total flow (ML):	990.58
Peak Rainfall (mm):	9.64	Peak flow (m³/s):	10.05

Parameters

** Where the user has overriden a system-generated value, this original value is shown in square brackets after the value used.*

Rainfall parameters (Rainfall - FEH 1999 model)

Name	Value	User-defined?
Duration (hr)	11	No
Timestep (hr)	1	No
SCF(Seasonal correction factor)	0.72	No
ARF(Areal reduction factor)	0.94	No
Seasonality	Winter	n/a

Loss model parameters

Name	Value	User-defined?
Cini (mm)	92.68	No
Cmax (mm)	710.31	No
Use alpha correction factor	Yes	No
Alpha correction factor	0.96	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	6.33	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BFI0 (m^3/s)	1.26	No
BL (hr)	65.9	No
BR	1.86	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km^2)	0.35	No
Urbext 2000	0	No
Urban runoff factor	0.7	No
Imperviousness factor	0.3	No
Tp scaling factor	0.5	No
Sewered area (km^2)	0.00	Yes
Sewer capacity (m^3/s)	0.00	Yes

Time series data

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
00:00	0.931	0.000	0.119	0.000	1.258	1.258
01:00	1.560	0.000	0.202	0.015	1.239	1.253
02:00	2.600	0.000	0.344	0.069	1.221	1.290
03:00	4.298	0.000	0.590	0.191	1.206	1.397
04:00	6.995	0.000	1.015	0.428	1.196	1.624
05:00	9.636	0.000	1.511	0.859	1.195	2.055
06:00	6.995	0.000	1.179	1.597	1.210	2.807
07:00	4.298	0.000	0.758	2.646	1.249	3.894
08:00	2.600	0.000	0.471	3.870	1.317	5.187
09:00	1.560	0.000	0.287	5.137	1.419	6.556
10:00	0.931	0.000	0.173	6.326	1.553	7.880
11:00	0.000	0.000	0.000	7.308	1.716	9.024
12:00	0.000	0.000	0.000	7.895	1.899	9.794
13:00	0.000	0.000	0.000	7.959	2.089	10.048
14:00	0.000	0.000	0.000	7.622	2.273	9.895
15:00	0.000	0.000	0.000	7.035	2.442	9.477
16:00	0.000	0.000	0.000	6.311	2.591	8.902
17:00	0.000	0.000	0.000	5.533	2.717	8.250
18:00	0.000	0.000	0.000	4.780	2.820	7.600
19:00	0.000	0.000	0.000	4.133	2.902	7.034
20:00	0.000	0.000	0.000	3.581	2.966	6.546
21:00	0.000	0.000	0.000	3.094	3.014	6.108
22:00	0.000	0.000	0.000	2.647	3.049	5.697
23:00	0.000	0.000	0.000	2.226	3.071	5.298
24:00	0.000	0.000	0.000	1.825	3.082	4.907
25:00	0.000	0.000	0.000	1.437	3.081	4.518
26:00	0.000	0.000	0.000	1.068	3.070	4.138
27:00	0.000	0.000	0.000	0.731	3.049	3.780
28:00	0.000	0.000	0.000	0.449	3.019	3.468
29:00	0.000	0.000	0.000	0.248	2.983	3.231
30:00	0.000	0.000	0.000	0.125	2.944	3.068
31:00	0.000	0.000	0.000	0.055	2.902	2.957
32:00	0.000	0.000	0.000	0.019	2.859	2.878
33:00	0.000	0.000	0.000	0.003	2.816	2.820
34:00	0.000	0.000	0.000	0.000	2.774	2.774

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
35:00	0.000	0.000	0.000	0.000	2.732	2.732
36:00	0.000	0.000	0.000	0.000	2.691	2.691
37:00	0.000	0.000	0.000	0.000	2.651	2.651
38:00	0.000	0.000	0.000	0.000	2.611	2.611
39:00	0.000	0.000	0.000	0.000	2.571	2.571
40:00	0.000	0.000	0.000	0.000	2.533	2.533
41:00	0.000	0.000	0.000	0.000	2.494	2.494
42:00	0.000	0.000	0.000	0.000	2.457	2.457
43:00	0.000	0.000	0.000	0.000	2.420	2.420
44:00	0.000	0.000	0.000	0.000	2.383	2.383
45:00	0.000	0.000	0.000	0.000	2.348	2.348
46:00	0.000	0.000	0.000	0.000	2.312	2.312
47:00	0.000	0.000	0.000	0.000	2.277	2.277
48:00	0.000	0.000	0.000	0.000	2.243	2.243
49:00	0.000	0.000	0.000	0.000	2.209	2.209
50:00	0.000	0.000	0.000	0.000	2.176	2.176
51:00	0.000	0.000	0.000	0.000	2.143	2.143
52:00	0.000	0.000	0.000	0.000	2.111	2.111
53:00	0.000	0.000	0.000	0.000	2.079	2.079
54:00	0.000	0.000	0.000	0.000	2.048	2.048
55:00	0.000	0.000	0.000	0.000	2.017	2.017
56:00	0.000	0.000	0.000	0.000	1.987	1.987
57:00	0.000	0.000	0.000	0.000	1.957	1.957
58:00	0.000	0.000	0.000	0.000	1.927	1.927
59:00	0.000	0.000	0.000	0.000	1.898	1.898
60:00	0.000	0.000	0.000	0.000	1.870	1.870
61:00	0.000	0.000	0.000	0.000	1.842	1.842
62:00	0.000	0.000	0.000	0.000	1.814	1.814
63:00	0.000	0.000	0.000	0.000	1.786	1.786
64:00	0.000	0.000	0.000	0.000	1.760	1.760
65:00	0.000	0.000	0.000	0.000	1.733	1.733
66:00	0.000	0.000	0.000	0.000	1.707	1.707
67:00	0.000	0.000	0.000	0.000	1.681	1.681
68:00	0.000	0.000	0.000	0.000	1.656	1.656
69:00	0.000	0.000	0.000	0.000	1.631	1.631
70:00	0.000	0.000	0.000	0.000	1.606	1.606

Time (hh:mm)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m^3/s)	Baseflow (m^3/s)	Total Flow (m^3/s)
71:00	0.000	0.000	0.000	0.000	1.582	1.582
72:00	0.000	0.000	0.000	0.000	1.558	1.558
73:00	0.000	0.000	0.000	0.000	1.535	1.535
74:00	0.000	0.000	0.000	0.000	1.512	1.512
75:00	0.000	0.000	0.000	0.000	1.489	1.489
76:00	0.000	0.000	0.000	0.000	1.467	1.467
77:00	0.000	0.000	0.000	0.000	1.445	1.445
78:00	0.000	0.000	0.000	0.000	1.423	1.423
79:00	0.000	0.000	0.000	0.000	1.401	1.401
80:00	0.000	0.000	0.000	0.000	1.380	1.380
81:00	0.000	0.000	0.000	0.000	1.359	1.359
82:00	0.000	0.000	0.000	0.000	1.339	1.339
83:00	0.000	0.000	0.000	0.000	1.319	1.319
84:00	0.000	0.000	0.000	0.000	1.299	1.299
85:00	0.000	0.000	0.000	0.000	1.279	1.279

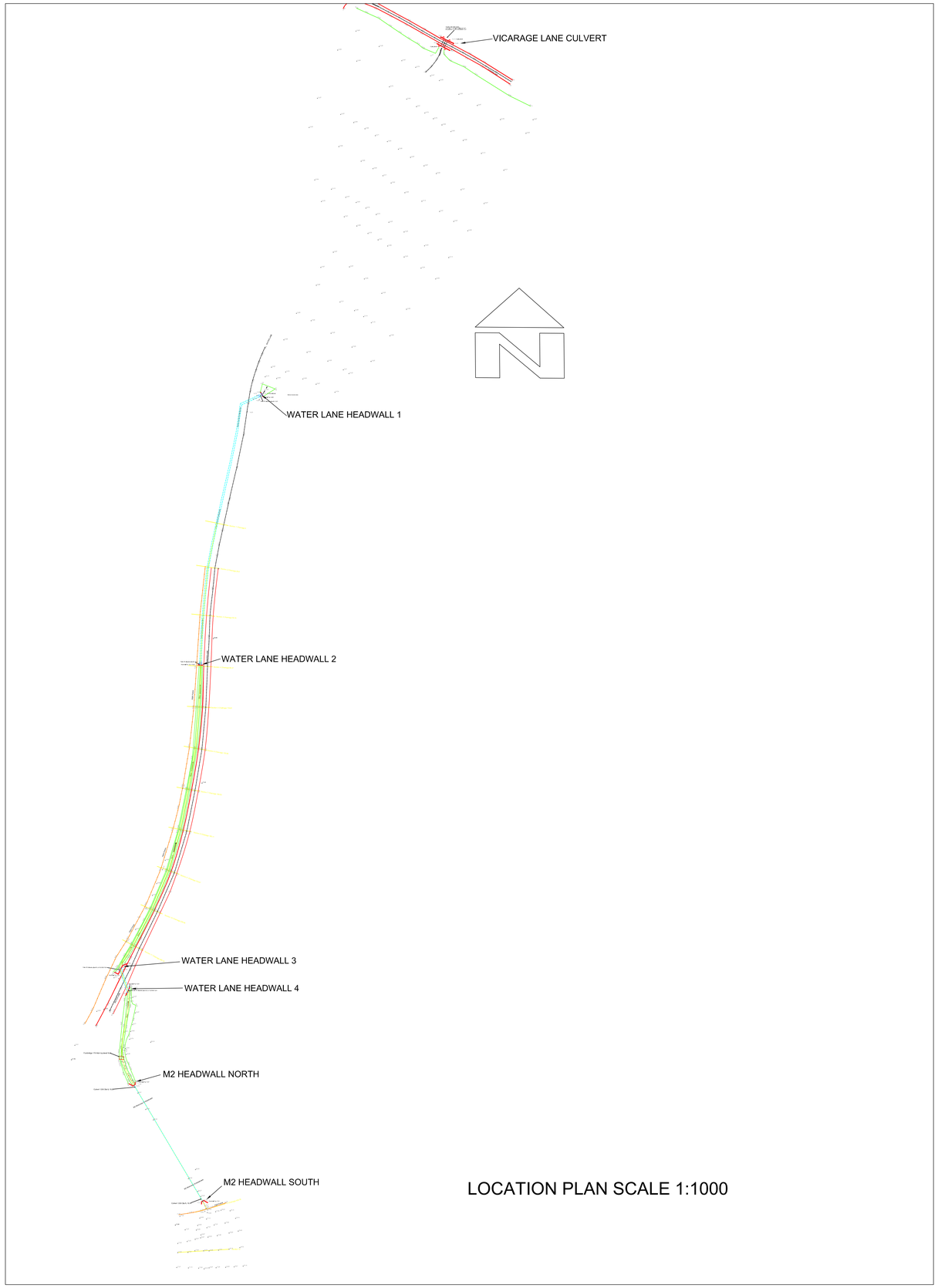
Appendix

Catchment descriptors

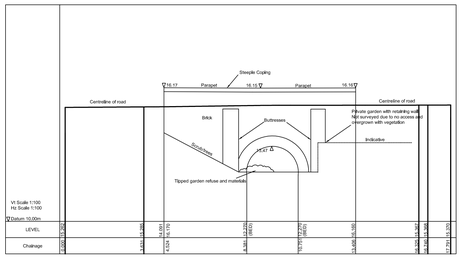
Name	Value	User-defined value used?
Area (km²)	52.63	No
ALTBAR	112	No
ASPBAR	27	No
ASPVAR	0.46	No
BFIHOST	0.71	No
DPLBAR (km)	8.46	No
DPSBAR (mkm-¹)	52.2	No
FARL	1	No
LDP	14.11	No
PROPWET (mm)	0.34	No
RMED1H	12.3	No
RMED1D	35.3	No
RMED2D	43.1	No
SAAR (mm)	755	No
SAAR4170 (mm)	775	No
SPRHOST	28.84	No
Urbext2000	0	No
Urbext1990	0	No
URBCONC	0	No
URBLOC	0	No
Urban Area (km²)	0.35	No
DDF parameter C	-0.02	No
DDF parameter D1	0.35	No
DDF parameter D2	0.35	No
DDF parameter D3	0.3	No
DDF parameter E	0.31	No
DDF parameter F	2.53	No
DDF parameter C (1km grid value)	-0.02	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.36	No
DDF parameter D3 (1km grid value)	0.31	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.52	No

APPENDIX B

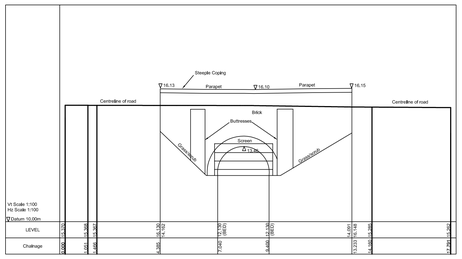
DVD with Hydraulic Models and Channel Survey



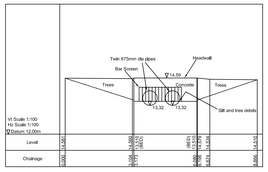
LOCATION PLAN SCALE 1:1000



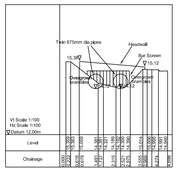
SECTIONAL ELEVATION, VICARAGE LANE CULVERT, NORTH HEADWALL



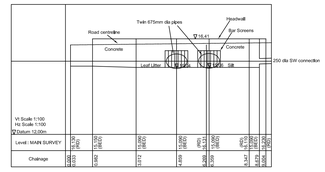
SECTIONAL ELEVATION, VICARAGE LANE CULVERT, SOUTH HEADWALL



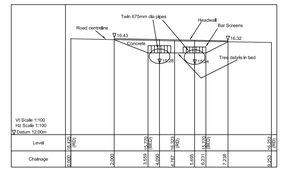
SECTIONAL ELEVATION, WATER LANE HEADWALL 1



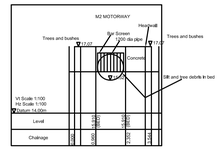
SECTIONAL ELEVATION, WATER LANE HEADWALL 2



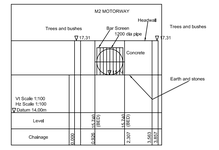
SECTIONAL ELEVATION, WATER LANE HEADWALL 3



SECTIONAL ELEVATION, WATER LANE HEADWALL 4



SECTIONAL ELEVATION, M2 HEADWALL NORTH



SECTIONAL ELEVATION, M2 HEADWALL SOUTH

C:\Users\vsnook\Desktop\surveysandinvest 8c.jpg

1. This spot level survey has been orientated to the Ordnance Survey National Grid (OSGB36) via GNSS/GLONASS RTK observations. Survey scale factor approximately 1.00009.
2. All levels are orthometric heights related to the OSGB36 datum, computed using the Leica Smart Net RTK Network.
3. Surveyed boundary features are indicative only and not necessarily legal boundaries.
4. Dimensions should not be scaled. All dimensions should be checked on site before any fabrication / construction.
5. Copyright of all data produced by Trigon Survey & Investigation Ltd shall remain with Trigon Survey & Investigation Ltd unless otherwise specifically agreed.
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7. If the AutoCAD drawing is being read by any system other than AutoCAD it should be checked against a hard copy. Trigon Survey & Investigation Ltd cannot accept liability for omissions.
8. No trees, street furniture, drainage, above or underground services, covers, storage tanks etc, have been surveyed.

Rev A:

Trigon Survey & Investigation Ltd
Basingstoke, Hants, RG24 7AS
Tel. 01256 352794 Mob.07864 269005
email: admin@trigonsurvey.co.uk
Web:www.trigonsurvey.co.uk

Drg. No:	16-187/04
Date:	15/02/16
Scale:	As shown
Sheet:	1 of 1
Surveyed:	V.Snook
Drawn:	V.Snook
Checked:	V.Snook
Sheet size:	A0

QUEEN'S COURT YARD, OSPRINGE WATERCOURSE SURVEY, WATER LANE :HEADWALL DETAILS

Client: Odyssey Markides

Mr Gerald Guma
Odyssey Markides
Tuscany House White Hart Lane
BASINGSTOKE
Hampshire
RG21 4AF

Our ref: KT/2016/121301/01-L01
Your ref: Enquiry

Date: 20 June 2016

Dear Mr Guma

Hydraulic Model Review - Charged

Queen Court Farm Yard, Kent

Thank you for your enquiry. We have reviewed the submitted hydraulic modelling of the site.

We do not hold any detailed modelling of the watercourse affecting this site. Therefore we accept the submitted model outputs as the best available information for this proposed development.

We are satisfied with the methodology used and the results produced.

The modelling shows some areas of the site to be affected by the 1 in 20 year flood event, therefore potentially putting these areas in Flood Zone 3b (functional flood plain).

We would expect a detailed Flood Risk Assessment (FRA) to be submitted using the model results and flood levels / depths to proposed flood mitigation in order to satisfy the Exception Test as detailed in the National Planning Policy Framework (NPPF).

Please note that residential development is not appropriate in areas identified as Flood Zone 3b.

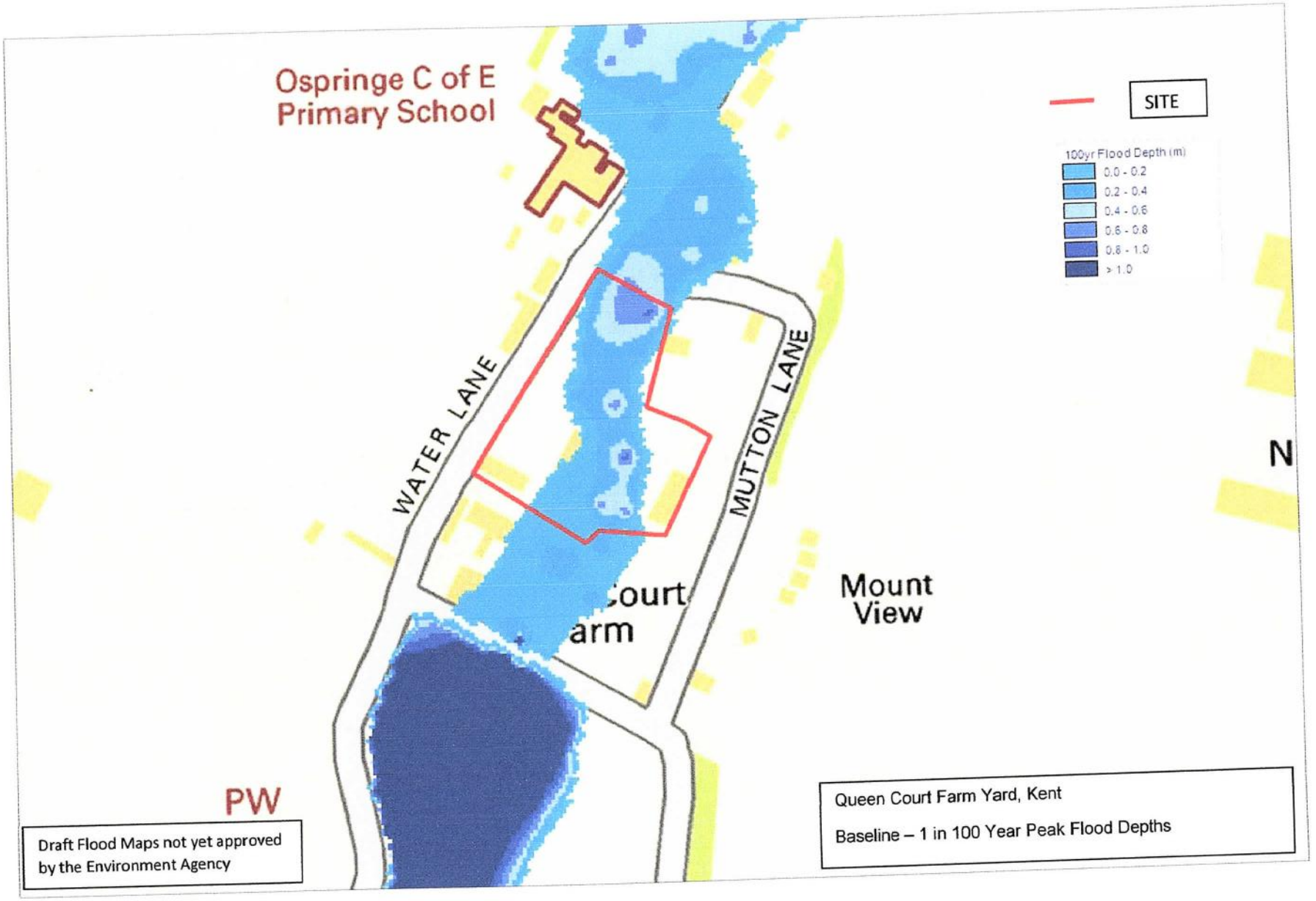
Please note that the view expressed in this letter by the Environment Agency is a response to a pre application enquiry only and does not represent our final view in relation to any future planning application made in relation to this site. We reserve the right to change our position in relation to any such application.

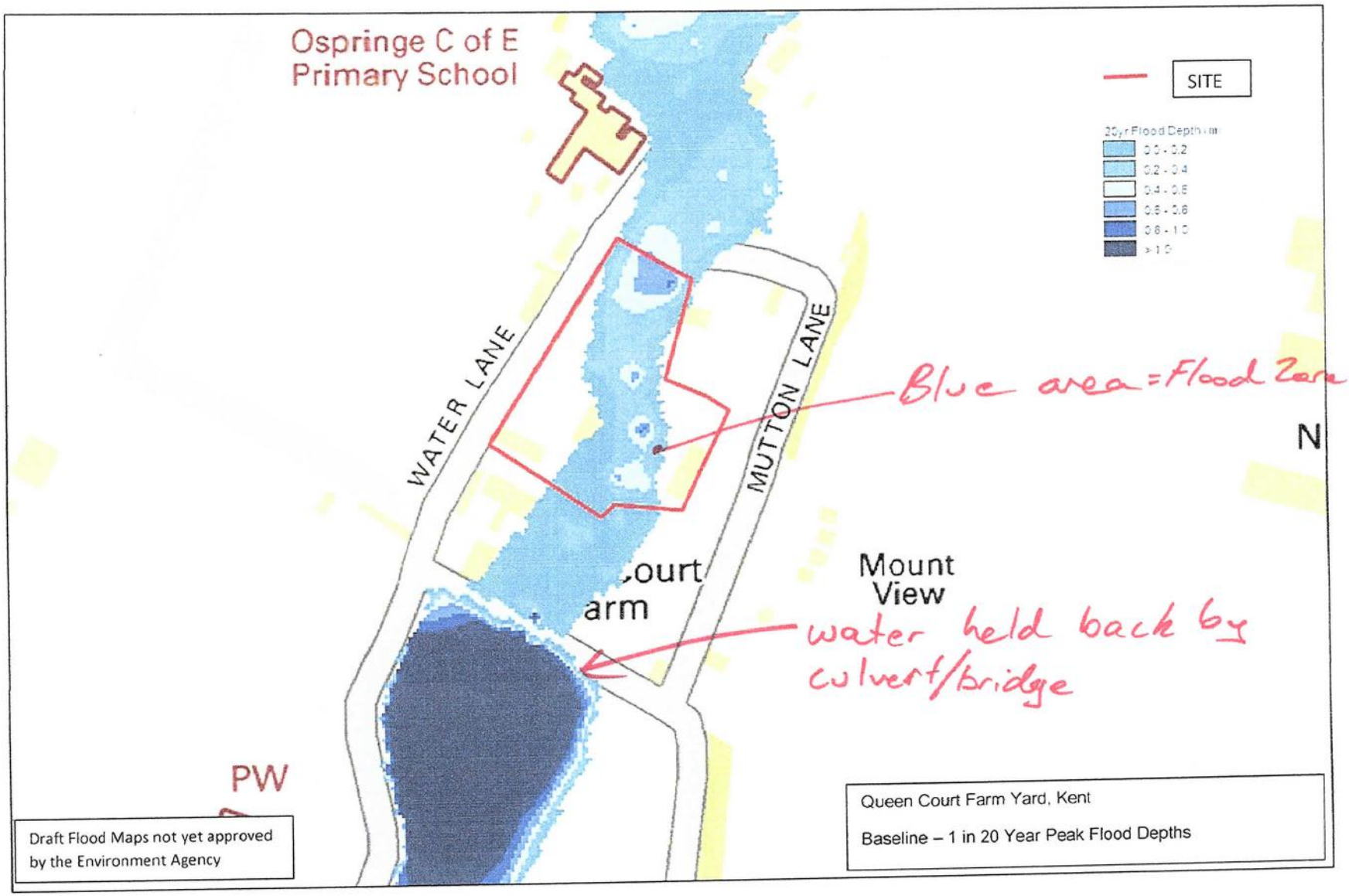
Yours sincerely

Pp Jennifer Wilson

Mrs Joanna Clemmence
Planning Advisor

Direct dial 0208 474 7773
Direct e-mail kslplanning@environment-agency.gov.uk


Ospringe C of E
Primary School
SITE
100yr Flood Depth (m)
0.0 - 0.2
0.2 - 0.4
0.4 - 0.6
0.6 - 0.8
0.8 - 1.0
> 1.0
WATER LANE
MUTTON LANE
Court
arm
Mount
View
N
PW
Draft Flood Maps not yet approved
by the Environment Agency
Queen Court Farm Yard, Kent
Baseline – 1 in 100 Year Peak Flood Depths


Ospringe C of E
Primary School
SITE
20yr Flood Depth - m
0.0 - 0.2
0.2 - 0.4
0.4 - 0.6
0.6 - 0.8
0.8 - 1.0
> 1.0
WATER LANE
MUTTON LANE
Blue area = Flood Zone 3B
N
Court
arm
Mount
View
water held back by
culvert/bridge
PW
Draft Flood Maps not yet approved
by the Environment Agency
Queen Court Farm Yard, Kent
Baseline – 1 in 20 Year Peak Flood Depths

APPENDIX H

Swale Borough Council Extracts

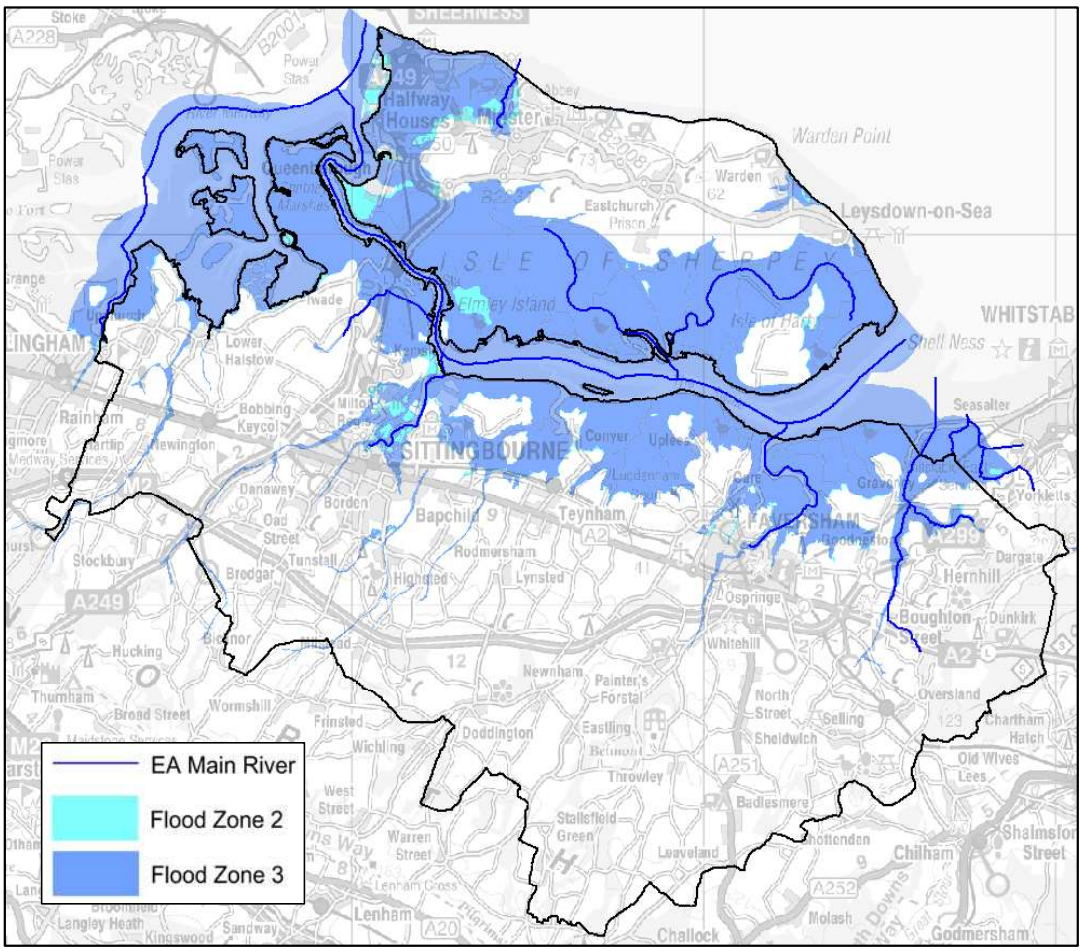


Figure C.9 – Environment Agency Flood Zones and Main Rivers

C.11 Residual Flood risk

C.11.1 Residual flood risk exists where the infrastructure that is designed to deal with flooding fails due to poor maintenance or when a storm event is above the standard of protection to which an asset has been designed for. Residual flood risk for local flooding can therefore be the result of drain, pipe or gully blockages caused by lack of maintenance as well as pump failure and pipe collapse.

C.12 Flooding of Basements

C.12.1 Flooding of basements can originate from the following flood mechanisms (assuming there is an external low level entrance to a basement):

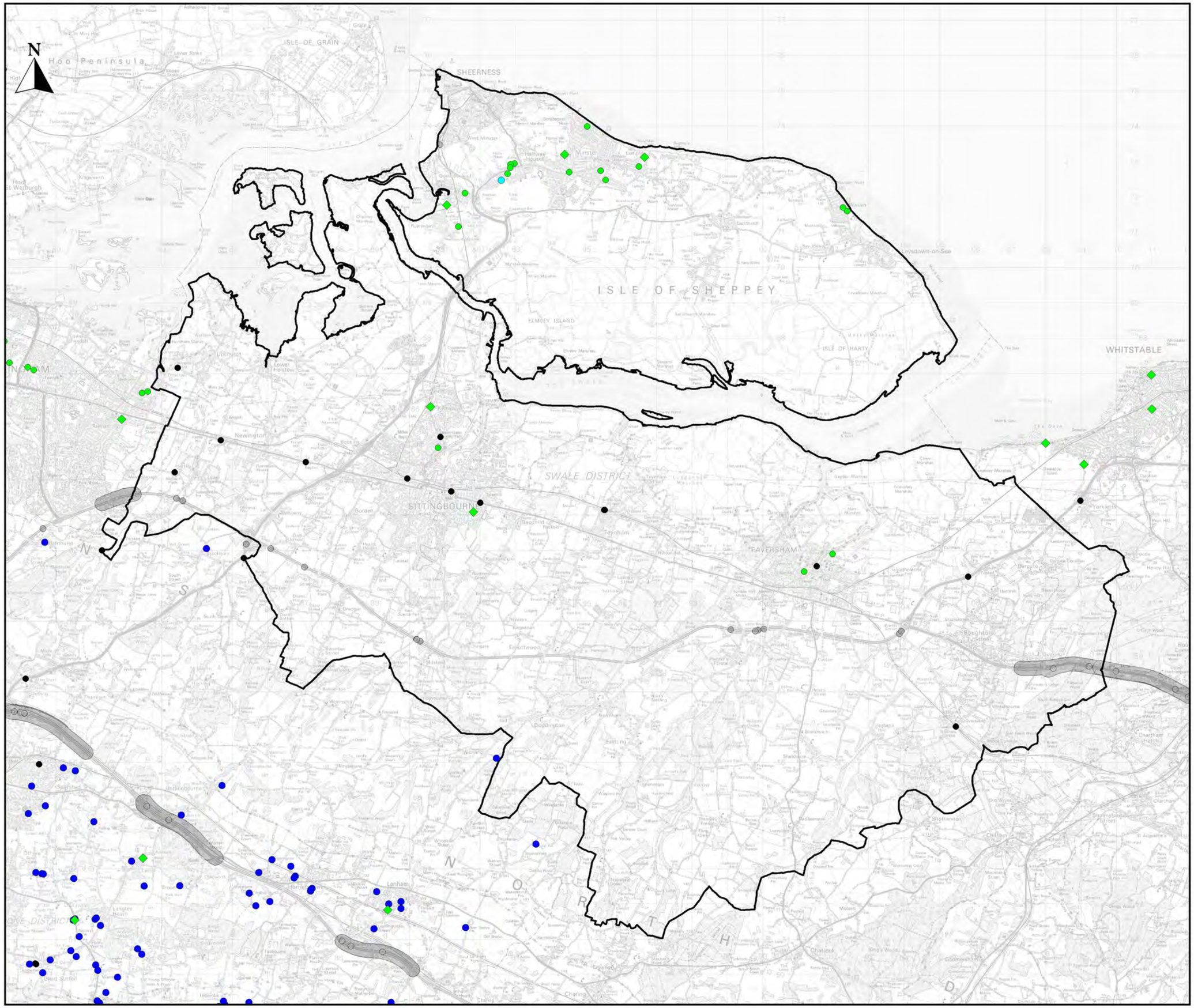
a. direct rainfall accumulating by the basement entrance and air bricks,

b. surface runoff which overtops kerbs and/or steps (if any) into a basement entrance,

c. overflows from the combined sewer system as a result of a rainfall event, which overtop kerbs and/or steps (if any) into a basement entrance,

d. the combined sewer surcharges and backflows through its connection into a basement toilet,

Appendix F – Maps



Location Plan :

Legend

- KCC Highways Flooding
- Highways Agency Flooding
- Highways Agency Flooding Hotspot
- SBC Flooding Incidents
- Southern Water Flooding Records
- Southern Water Flooding Hotspots

Halcrow
www.halcrow.com
Halcrow Group Limited
A CH2M HILL Company
3rd Floor, Elms House,
43 Brook Green, Hammersmith,
London W6 7EF

Kent County Council
Invicta House,
County Hall,
Maidstone, Kent,
ME14 1XX

Project :

Swale Surface Water Management Plan

Drawing :

Historic Surface Water Flooding Records

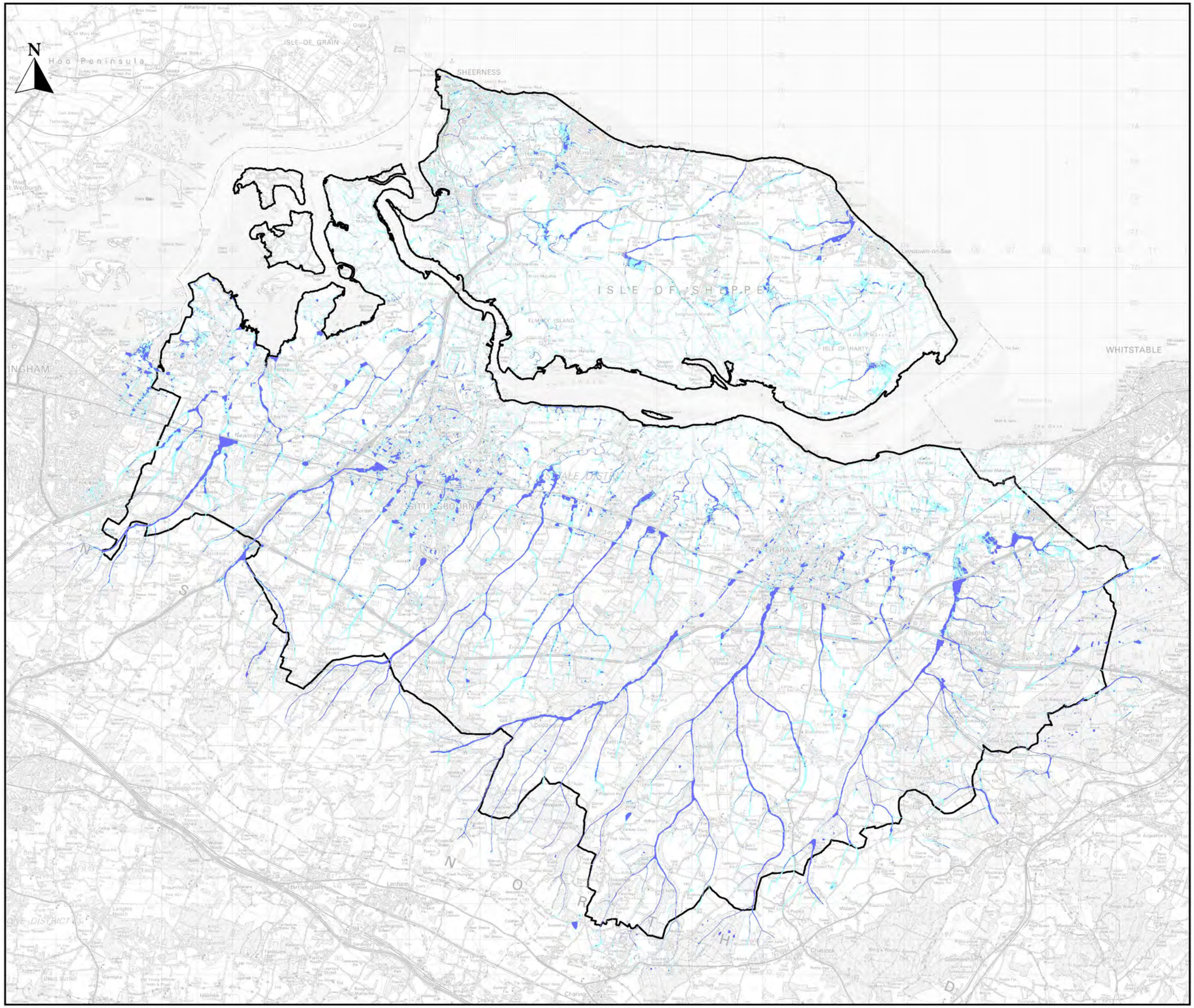
Drawn By :	MK	Date :	12 June 2012
Checked By :	OE	Date :	12 June 2012
Approved By :	BV	Date :	12 June 2012

Drawing No. :
Map 1

Revision :
A

Drawing Scale : 1:100,000

Plot Scale : 1:100000 @ A3



Location Plan :

Legend

- EA FMfSW 0.3m + deep
- EA FMfSW 0.1 - 0.3m deep

Halcrow
www.halcrow.com
Halcrow Group Limited
A CH2M HILL Company
3rd Floor, Elms House,
43 Brook Green, Hammersmith,
London W6 7EF

Kent County Council
Invicta House,
County Hall,
Maidstone, Kent,
ME14 1XX

Project :

Swale Surface Water Management Plan

Drawing :

Environment Agency's FMfSW 1 in 200 year Rainfall Event

Drawn By :	MK	Date :	12 June 2012
Checked By :	OE	Date :	12 June 2012
Approved By :	BV	Date :	12 June 2012

Drawing No. :
Map 2

Revision :
A

Drawing Scale : 1:100,000

Plot Scale : 1:100000 @ A3

Location Plan :

Legend

EA AStGWF, proportion of each 1 km sq susceptible to groundwater flooding :

- < 25 %
- 25 - 50 %
- 50 - 75 %
- > 75 %

Halcrow
www.halcrow.com
Halcrow Group Limited
A CH2M HILL Company
3rd Floor, Elms House,
43 Brook Green, Hammersmith,
London W6 7EF

Kent County Council
Invicta House,
County Hall,
Maidstone, Kent,
ME14 1XX

Project :

Swale Surface Water Management Plan

Drawing :

Environment Agency's Areas Susceptible to Ground Water Flooding

Drawn By :	MK	Date :	12 June 2012
Checked By :	OE	Date :	12 June 2012
Approved By :	BV	Date :	12 June 2012

Drawing No. :
Map 3

Revision :
A

Drawing Scale : 1:100,000

Plot Scale : 1:100000 @ A3

APPENDIX I

Micro Drainage Calculations and Preliminary Drainage Strategy Drawing

(Drawing No. 18-120/001)

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.150
Area (ha)	0.345	Urban	0.000
SAAR (mm)	708	Region Number	Region 7

Results l/s

QBAR Rural	0.1
QBAR Urban	0.1
Q100 years	0.5
Q1 year	0.1
Q30 years	0.3
Q100 years	0.5

Greenfield Runoff Volume

FEH Data

Return Period (years)	100
Storm Duration (mins)	360
FEH Rainfall Version	1999
Site Location	GB 600300 160800 TR 00300 60800
C (1km)	-0.023
D1 (1km)	0.322
D2 (1km)	0.355
D3 (1km)	0.306
E (1km)	0.315
F (1km)	2.520
Areal Reduction Factor	1.00
Area (ha)	0.345
SAAR (mm)	755
CWI	112.097
SPR Host	28.840
URBEXT (1990)	0.0048

Results

Percentage Runoff (%)	31.47
Greenfield Runoff Volume (m^3)	84.656

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 428 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	13.836	0.536	0.7	20.5	O K
30 min Summer	13.907	0.607	0.7	23.5	O K
60 min Summer	13.977	0.677	0.7	26.5	O K
120 min Summer	14.037	0.737	0.7	29.0	O K
180 min Summer	14.058	0.758	0.7	29.9	O K
240 min Summer	14.062	0.762	0.7	30.1	O K
360 min Summer	14.045	0.745	0.7	29.4	O K
480 min Summer	14.024	0.724	0.7	28.5	O K
600 min Summer	14.003	0.703	0.7	27.6	O K
720 min Summer	13.983	0.683	0.7	26.7	O K
960 min Summer	13.953	0.653	0.7	25.5	O K
1440 min Summer	13.893	0.593	0.7	22.9	O K
2160 min Summer	13.803	0.503	0.7	19.1	O K
2880 min Summer	13.720	0.420	0.7	15.6	O K
4320 min Summer	13.567	0.267	0.7	9.1	O K
5760 min Summer	13.467	0.167	0.7	4.8	O K
7200 min Summer	13.413	0.113	0.7	2.6	O K
8640 min Summer	13.397	0.097	0.7	1.9	O K
10080 min Summer	13.386	0.086	0.6	1.5	O K
15 min Winter	13.898	0.598	0.7	23.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	219.665	0.0	19
30 min Summer	127.589	0.0	33
60 min Summer	74.108	0.0	62
120 min Summer	43.044	0.0	122
180 min Summer	31.325	0.0	182
240 min Summer	25.002	0.0	240
360 min Summer	18.195	0.0	338
480 min Summer	14.522	0.0	392
600 min Summer	12.192	0.0	452
720 min Summer	10.568	0.0	518
960 min Summer	8.515	0.0	654
1440 min Summer	6.280	0.0	924
2160 min Summer	4.632	0.0	1324
2880 min Summer	3.732	0.0	1704
4320 min Summer	2.699	0.0	2420
5760 min Summer	2.144	0.0	3064
7200 min Summer	1.793	0.0	3680
8640 min Summer	1.550	0.0	4408
10080 min Summer	1.370	0.0	5136
15 min Winter	219.665	0.0	19

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	13.979	0.679	0.7	26.5	O K
60 min Winter	14.061	0.761	0.7	30.0	O K
120 min Winter	14.135	0.835	0.7	33.2	O K
180 min Winter	14.165	0.865	0.7	34.5	O K
240 min Winter	14.176	0.876	0.7	34.9	O K
360 min Winter	14.170	0.870	0.7	34.7	O K
480 min Winter	14.145	0.845	0.7	33.6	O K
600 min Winter	14.116	0.816	0.7	32.4	O K
720 min Winter	14.090	0.790	0.7	31.3	O K
960 min Winter	14.046	0.746	0.7	29.4	O K
1440 min Winter	13.950	0.650	0.7	25.3	O K
2160 min Winter	13.808	0.508	0.7	19.3	O K
2880 min Winter	13.678	0.378	0.7	13.8	O K
4320 min Winter	13.468	0.168	0.7	4.9	O K
5760 min Winter	13.397	0.097	0.7	1.9	O K
7200 min Winter	13.382	0.082	0.6	1.4	O K
8640 min Winter	13.371	0.071	0.5	1.0	O K
10080 min Winter	13.363	0.063	0.4	0.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	127.589	0.0	33
60 min Winter	74.108	0.0	62
120 min Winter	43.044	0.0	120
180 min Winter	31.325	0.0	178
240 min Winter	25.002	0.0	236
360 min Winter	18.195	0.0	346
480 min Winter	14.522	0.0	450
600 min Winter	12.192	0.0	484
720 min Winter	10.568	0.0	558
960 min Winter	8.515	0.0	712
1440 min Winter	6.280	0.0	1010
2160 min Winter	4.632	0.0	1428
2880 min Winter	3.732	0.0	1816
4320 min Winter	2.699	0.0	2464
5760 min Winter	2.144	0.0	2992
7200 min Winter	1.793	0.0	3680
8640 min Winter	1.550	0.0	4408
10080 min Winter	1.370	0.0	5136

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 600300 160800 TR 00300 60800
C (1km)	-0.023
D1 (1km)	0.322
D2 (1km)	0.355
D3 (1km)	0.306
E (1km)	0.315
F (1km)	2.520
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.053

Time (mins) From:	To:	Area (ha)
0	4	0.053

Model Details

Storage is Online Cover Level (m) 14.500

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.03600	Width (m)	9.0
Membrane Percolation (mm/hr)	1000	Length (m)	15.7
Max Percolation (l/s)	39.3	Slope (1:X)	150.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	13.300	Membrane Depth (m)	0

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 391 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	11.570	0.570	1.9	50.9	O K
30 min Summer	11.636	0.636	1.9	58.4	O K
60 min Summer	11.702	0.702	1.9	65.9	O K
120 min Summer	11.759	0.759	1.9	72.3	O K
180 min Summer	11.779	0.779	1.9	74.5	O K
240 min Summer	11.783	0.783	1.9	75.0	O K
360 min Summer	11.770	0.770	1.9	73.6	O K
480 min Summer	11.754	0.754	1.9	71.7	O K
600 min Summer	11.736	0.736	1.9	69.7	O K
720 min Summer	11.718	0.718	1.9	67.7	O K
960 min Summer	11.690	0.690	1.9	64.5	O K
1440 min Summer	11.631	0.631	1.9	57.8	O K
2160 min Summer	11.546	0.546	1.9	48.2	O K
2880 min Summer	11.469	0.469	1.9	39.5	O K
4320 min Summer	11.335	0.335	1.9	24.3	O K
5760 min Summer	11.254	0.254	1.9	15.2	O K
7200 min Summer	11.219	0.219	1.7	11.4	O K
8640 min Summer	11.195	0.195	1.5	9.0	O K
10080 min Summer	11.177	0.177	1.4	7.4	O K
15 min Winter	11.627	0.627	1.9	57.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	219.665	0.0	19
30 min Summer	127.589	0.0	33
60 min Summer	74.108	0.0	62
120 min Summer	43.044	0.0	122
180 min Summer	31.325	0.0	182
240 min Summer	25.002	0.0	240
360 min Summer	18.195	0.0	320
480 min Summer	14.522	0.0	380
600 min Summer	12.192	0.0	440
720 min Summer	10.568	0.0	506
960 min Summer	8.515	0.0	646
1440 min Summer	6.280	0.0	920
2160 min Summer	4.632	0.0	1316
2880 min Summer	3.732	0.0	1700
4320 min Summer	2.699	0.0	2380
5760 min Summer	2.144	0.0	3056
7200 min Summer	1.793	0.0	3744
8640 min Summer	1.550	0.0	4416
10080 min Summer	1.370	0.0	5144
15 min Winter	219.665	0.0	19

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	11.703	0.703	1.9	66.0	O K
60 min Winter	11.780	0.780	1.9	74.7	O K
120 min Winter	11.849	0.849	1.9	82.5	O K
180 min Winter	11.877	0.877	1.9	85.7	O K
240 min Winter	11.887	0.887	1.9	86.8	O K
360 min Winter	11.882	0.882	1.9	86.2	O K
480 min Winter	11.859	0.859	1.9	83.6	O K
600 min Winter	11.835	0.835	1.9	80.9	O K
720 min Winter	11.811	0.811	1.9	78.2	O K
960 min Winter	11.769	0.769	1.9	73.5	O K
1440 min Winter	11.677	0.677	1.9	63.0	O K
2160 min Winter	11.542	0.542	1.9	47.8	O K
2880 min Winter	11.424	0.424	1.9	34.4	O K
4320 min Winter	11.251	0.251	1.9	14.8	O K
5760 min Winter	11.203	0.203	1.6	9.7	O K
7200 min Winter	11.172	0.172	1.4	7.0	O K
8640 min Winter	11.150	0.150	1.2	5.3	O K
10080 min Winter	11.133	0.133	1.0	4.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	127.589	0.0	33
60 min Winter	74.108	0.0	62
120 min Winter	43.044	0.0	120
180 min Winter	31.325	0.0	178
240 min Winter	25.002	0.0	234
360 min Winter	18.195	0.0	344
480 min Winter	14.522	0.0	442
600 min Winter	12.192	0.0	474
720 min Winter	10.568	0.0	550
960 min Winter	8.515	0.0	702
1440 min Winter	6.280	0.0	996
2160 min Winter	4.632	0.0	1408
2880 min Winter	3.732	0.0	1784
4320 min Winter	2.699	0.0	2376
5760 min Winter	2.144	0.0	3048
7200 min Winter	1.793	0.0	3744
8640 min Winter	1.550	0.0	4416
10080 min Winter	1.370	0.0	5144

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 600300 160800 TR 00300 60800
C (1km)	-0.023
D1 (1km)	0.322
D2 (1km)	0.355
D3 (1km)	0.306
E (1km)	0.315
F (1km)	2.520
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.132

Time (mins) From:	To:	Area (ha)
0	4	0.132

Model Details

Storage is Online Cover Level (m) 12.200

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.03600	Width (m)	9.0
Membrane Percolation (mm/hr)	1000	Length (m)	41.9
Max Percolation (l/s)	104.8	Slope (1:X)	175.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	11.000	Membrane Depth (m)	0

Queen Court Farm

Proposed connection to existing Southern Water system

WATER LANE

Access from Water Lane

New 5 Bar Gates

Garden

Dutch Barn

Modern Silo Removed

BARN 1

Dwelling 2

BARN 2

Dwelling 1

Dwelling 3

Dwelling 4

Modern Lean to Removed

PP1
900mm EFFECTIVE DEPTH

PP2
900mm EFFECTIVE DEPTH

Gravel Courtyard

Garage Courtyard to Provide Parking

New Garages

Existing Building Removed

Access Road

Farm House

Queen Court Farm

0 5m 10m

Queen Court Farm

NOTES

1. DO NOT SCALE FROM THIS DRAWING. WORK FROM MEASURED DIMENSIONS ONLY.
2. THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS ISSUED BY THE ARCHITECT.
3. SURROUNDING TOPOGRAPHICAL DATA WAS PRODUCED BY OMEGA GEOMATICS IN JULY 2018. ODYSSEY DOES NOT TAKE RESPONSIBILITY FOR THE ACCURACY OF THE SURVEY INFORMATION.
4. SITE LAYOUT HAS BEEN PROVIDED BY ON ARCHITECTURE (DRAWING NUMBER SK06).
5. PROPOSALS ARE INDICATIVE ONLY TO DEMONSTRATE THE PRELIMINARY DRAINAGE STRATEGY AND ARE SUBJECT TO EVOLVE IN LINE WITH DETAILED DESIGN REQUIREMENTS.
6. INFILTRATING SuDS FEATURES HAVE BEEN DESIGNED WITH AN INFILTRATION COEFFICIENT OF 1.0 x 10^{-5}m/s.
7. CONNECTION TO EXISTING SOUTHERN WATER SEWER IS SUBJECT TO DISCUSSIONS WITH SOUTHERN WATER TO CONFIRM CAPACITY.
8. THE FOUL PUMPING STATION IS TO BE PRIVATE AND UNDERGROUND.

LEGEND:

- SITE BOUNDARY
- PROPOSED SURFACE WATER SEWER NETWORK
- PROPOSED FOUL WATER SEWER NETWORK
- PROPOSED INFILTRATING PERMEABLE PAVING
- EXISTING FOUL WATER SEWER NETWORK (SOUTHERN WATER)
- PRIVATE PACKAGED PUMPING STATION
- FOUL RISING MAIN

Revision Note & Date
Rev Date Note

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Project Title
Proposed Redevelopment of Queen Court Dairy Farm

Client's Details
Shepherd Neame

Drawing Title
Site Layout

BIM Number

Scale 1:250 @ A3 | Date October 2018 | Dwn SJR

Drawing Status

Project Number 3056 | Drawing Number SK06

Rev	Amendments	Drn	Chk	App	Date

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Job Title
SHEPHERD NEAME
FAVERSHAM

Drawing Title
PRELIMINARY DRAINAGE STRATEGY

Client
MILIKEN & COMPANY CHARTERED SURVEYORS & TOWN PLANNERS

Scale	Date	Designed
1:150 @ A1	SEP 19	NM
Drawn	Checked	Approved
NM	GG	GG
Job No	Drawing No	Rev
18-120	18-120/001	

P:\18-120 - Shepherd Neame, Faversham\Tech\Acad\Drawings\18-120-001 Preliminary Surface Water Drainage Strategy.dwg