Flood Defence Data Sheet for Buckfastleigh [Ref: 3017]

NFCDD id	Asset Ref	Asset Comment
32.00	1131206040103L01	
33.00	1131206040102R01	
34.00	1131206040102L01	
35.00	1131206030105R01	
36.00	1131206030105R02	
37.00	1131206030105L01	Dry stonewall and natural bank.
38.00	1131206030104R08	Garden wall. Lowest point = 37.96 (mODN) (274006, 66189). Levels taken by Halcrow Group on 14/06/2007.
39.00	1131206030104R07	Parapet maintains defence level. Lowest point = 36.38 (mODN) (274023, 66190). Levels taken by Halcrow Group on 14/06/2007.
40.00	1131206030104R06	Includes mill building and private gardens.
41.00	1131206030104L07	Parapets maintain defence level. Lowest point = 36.44 (mODN) (274023, 66197). Levels taken by Halcrow Group on 14/06/2007.
42.00	1131206030104L08	Lowest point = 37.59 (mODN) (274017, 66197). Levels taken by Halcrow Group on 14/06/2007.
43.00	1131206030104L09	Buiding walls with new haunch.
44.00	1131206030104L06	Lowest point = 36.88 (mODN) (274035, 66199). Levels taken by Halcrow Group on 14/06/2007.
46.00	1131206030104R13	Stone arch bridge.
47.00	1131206030104R02	Bridge training wall. Lowest point = 35.49 (mODN) (274167, 66161). Levels taken by Halcrow Group on 14/06/2007.
48.00	1131206030104R12	
49.00	1131206030104R04	Private garden walls Lowest point = 36.73 (mODN) (274161, 66162). Levels taken by Halcrow Group on 14/06/2007Wall breached by gate, not a raised defence.
50.00	1131206030104L13	Constriction to flow.
52.00	1131206030104L01	Lowest point = 34.84 (mODN) (274176, 66165). Levels taken by Halcrow Group on 14/06/2007.
53.00	1131206030104L02	Lowest point = 34.91 (mODN) (274164, 66166). Levels taken by Halcrow Group on 14/06/2007.
54.00	1131206030104R09	
55.00	1131206030104R11	
56.00	1131206030104L12	
57.00	1131206030104L11	Natural bank on outside of bend.
58.00	1131206030104R03	House wall.

Flood Defence Data Sheet for Buckfastleigh [Ref: 3017]

NFCDD id	Asset Ref	Asset Comment
59.00	1131206030104R10	
60.00	1131206030105L02	
61.00	1131206030104R05	
62.00	1131206030105R03	
63.00	1131206030104L04	
64.00	1131206030104L05	
65.00	1131206030104L10	Lowest point = 38.17 (mODN) (273974, 66209). Levels taken by Halcrow Group on 14/06/2007.
66.00	1131206030105L03	Bank revetment.
67.00	1131206030106R01	
68.00	1131206030106L01	
69.00	1131206030105R04	Factory walls
70.00	1131206030105L04	Factory wall.
71.00	1131206000603R01	
73.00	1131206000603L01	
74.00	1131206050101R01	

Flood Defence Data Sheet for Buckfastleigh [Ref: 3017]

NFCDD id	Asset Descriptio	Asset Location	Asset Length	Asset Height	Degree of Exposure
32.00	Urban channel	d/s Whitecleave Quarry	1101.50	0.00	low
33.00	Masonry Wall	U/S DIVERSION INLET	129.70		medium
34.00	Masonry Wall	U/S DEAN BURN DIVERSION	133.20		medium
35.00	Masonry Wall	LOWER TOWN, MARDLE WAY	168.50		medium
36.00	Culvert	BUCKFASTLEIGH TANNERY	40.30		medium
37.00	Masonry Wall	LOWER TOWN, MARDLE WAY	164.50		low
38.00	Masonry Wall	U/S ACCESS BRIDGE,DIAL MOTOR	28.20	0.80	high
39.00	Abutment	ACCESS BRIDGE,DIAL MOTORS	8.40	1.20	medium
40.00	Masonry Wall	D/S ACCESS BRIDGE,DIAL MOTOR	72.60		high
41.00	Abutment	ACCESS BRIDGE,DIAL MOTORS	8.10	1.20	medium
42.00	Masonry Wall	U/S ACCESS BRIDGE,DIAL MOTOR	1.00	1.20	high
43.00	Masonry Wall	U/S ACCESS BRIDGE,DIAL MOTOR	26.20		medium
44.00	Masonry Wall	D/S ACCESS BRIDGE,DIAL MOTOR	11.00	1.20	medium
46.00	Road bridge	Station Road.	7.10		high
47.00	Masonry Wall	U/S CHURCH BRIDGE	7.10	0.60	medium
48.00	Wall	U/s Station Road	6.10		medium
49.00	Masonry Wall	U/S CHURCH BRIDGE	17.70	0.70	medium
50.00	Road bridge	Station Road.	7.60		medium
52.00	Masonry Wall	U/S CHURCH BRIDGE	20.00		medium
53.00	Masonry Wall	U/S CHURCH BRIDGE	12.30	0.70	medium
54.00	Masonry Wall	D/S MARDLE WAY ROAD BRIDGE	111.90		medium
55.00		U/s Station Rd Bridge.	14.80		
56.00			40.50		
57.00	Masonry Wall	D/S MARDLE WAY ROAD BRIDGE	73.20		medium
58.00	Masonry Wall	U/S CHURCH BRIDGE	10.20		medium

Flood Defence Data Sheet for Buckfastleigh [Ref: 3017]

NFCDD id	Asset Descriptio	Asset Location	Asset Length	Asset Height	Degree of Exposure
59.00			14.00		
60.00	Culvert	BUCKFASTLEIGH TANNERY	39.10		medium
61.00	Masonry Arch und	U/S CHURCH BRIDGE	17.90		medium
62.00	Masonry Wall	BUCKFASTLEIGH TANNERY	67.80		low
63.00	Masonry Arch und	U/S CHURCH BRIDGE	15.30		medium
64.00	Masonry Wall	U/S CHURCH BRIDGE	63.80		medium
65.00	Masonry Wall	U/S ACCESS BRIDGE,WORKSHOPS	37.10	1.20	high
66.00	Masonry Wall	BUCKFASTLEIGH TANNERY	55.80		medium
67.00	Mostly natural cha	Market St. to Brook Mill	2093.30	0.00	low
68.00	Mostly natural cha	Market St. to Brook Mill.	2128.50	0.00	low
69.00	Masonry Wall	BUCKFASTLEIGH TANNERY	50.40		medium
70.00	Concrete Wall	BUCKFASTLEIGH TANNERY	66.70		medium
71.00	Natural Bank		1787.90	0.00	low
73.00	Natural Bank		1764.50	0.00	low
74.00	Natural Bank		1094.50	0.00	low

Flood Defence Data Sheet for Buckfastleigh [Ref: 3017]

NFCDD id	Next Inspection	Bank	Year Built	Grid Ref	Condition Grade	Asset Type	Maintainer	Asset Protects From
1.00	06/09/2012	right	1988.00	SX7412366110	3.00	culverted channel	local authority	fluvial
2.00	06/09/2012	left	1988.00	SX7412166112	2.00	raised defence (man-made)	private	fluvial
3.00	06/09/2012	left	1988.00	SX7411966114	3.00	culverted channel	private	fluvial
4.00	03/08/2013	left	1988.00	SX7414666174	2.00	raised defence (man-made)	private	fluvial
5.00	06/09/2012	right	1988.00	SX7407666087	2.00	culverted channel	Environment Agency	fluvial
6.00	06/09/2012	left	1988.00	SX7407866093	0.00	maintained channel	private	fluvial
7.00	06/09/2012	left	1988.00	SX7409366089	2.00	culverted channel	Environment Agency	fluvial
8.00	06/09/2012	right	1988.00	SX7409366089	0.00	maintained channel	private	fluvial
9.00	06/09/2012	left	1988.00	SX7411266108	2.00	culverted channel	private	fluvial
10.00	06/09/2012	right	1988.00	SX7411466103	2.00	culverted channel	private	fluvial
11.00	06/09/2012	left	1988.00	SX7412266107	2.00	raised defence (man-made)	private	fluvial
12.00	06/09/2012	left	1988.00	SX7414266121	3.00	sea defence (man-made)	local authority	fluvial
13.00	06/09/2012	right	1988.00	SX7413366116	3.00	raised defence (man-made)	private	fluvial
14.00	06/09/2012	right	1988.00	SX7415366117	0.00	maintained channel	private	fluvial
15.00	06/09/2012	left	1988.00	SX7417466133	2.00	raised defence (man-made)	private	fluvial
16.00	06/09/2012	right	1988.00	SX7417566124	0.00	maintained channel	private	fluvial
17.00	06/09/2012	right	1988.00	SX7417866128	0.00	maintained channel	local authority	fluvial
18.00	06/09/2012	right	1988.00	SX7418666152	0.00	maintained channel	private	fluvial
19.00	06/09/2012	left	1988.00	SX7418866161	0.00	maintained channel	local authority	fluvial
20.00	06/09/2012	left	1988.00	SX7425466151	0.00	maintained channel	private	fluvial
21.00	06/09/2012	left	1988.00	SX7429666123	2.00	raised defence (man-made)	private	fluvial
22.00	06/09/2012	right	1988.00	SX7430166116	0.00	maintained channel	private	fluvial
23.00	06/09/2012	right		SX7440566063	0.00	natural channel	private	fluvial
24.00	06/09/2012	left		SX7441866101	0.00	natural channel	private	fluvial
30.00	06/09/2012	right		SX7329165122	0.00	natural channel	private	fluvial

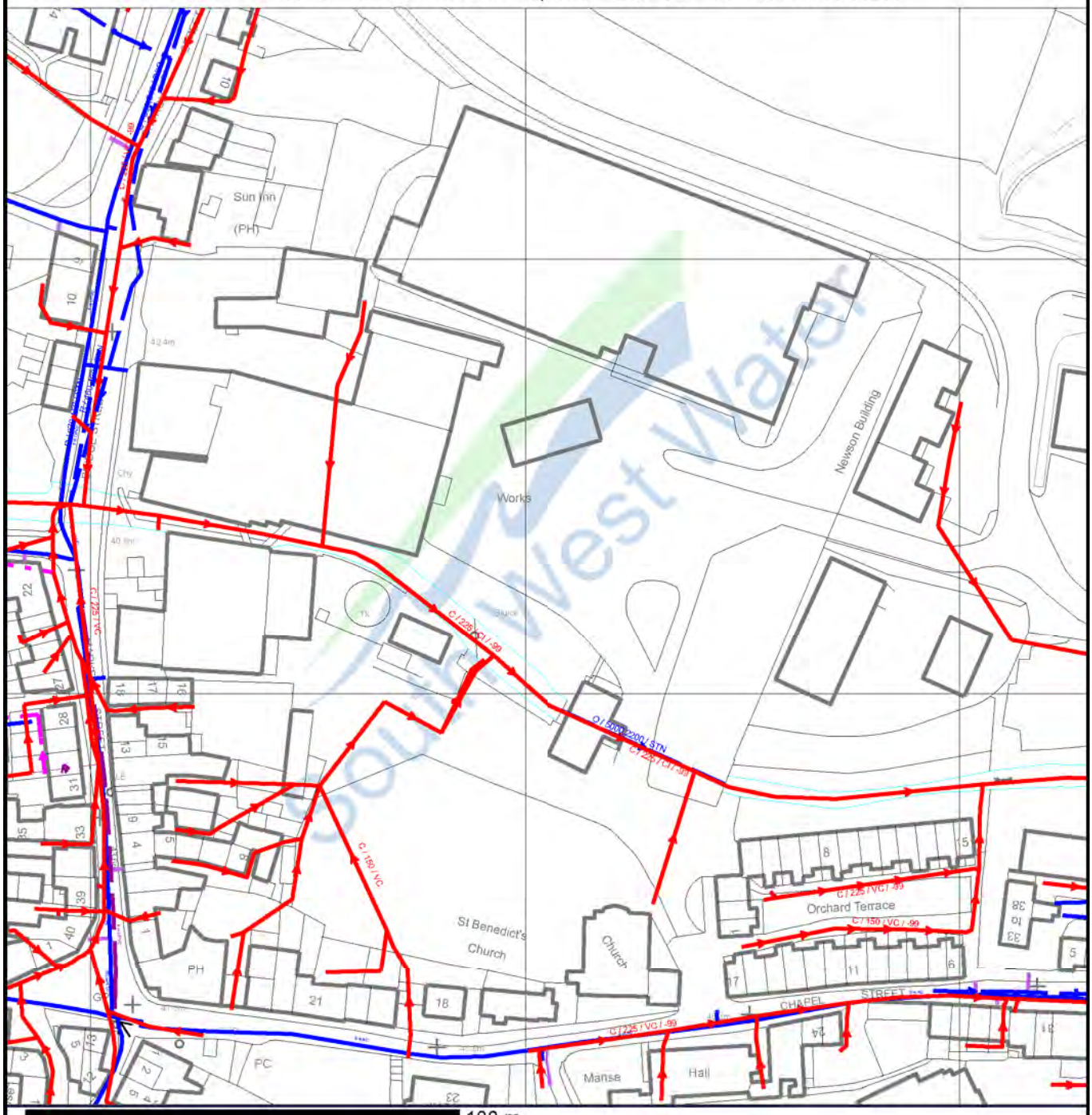
Flood Defence Data Sheet for Buckfastleigh [Ref: 3017]

NFCDD id	Next Inspection	Bank	Year Built	Grid Ref	Condition Grade	Asset Type	Maintainer	Asset Protects From
32.00	06/09/2012	left		SX7338865167	0.00	natural channel	private	fluvial
33.00	06/09/2012	right	1988.00	SX7397766021	0.00	maintained channel	private	fluvial
34.00	06/09/2012	left	1988.00	SX7397466030	0.00	maintained channel	private	fluvial
35.00	06/09/2012	right	1988.00	SX7374566180	0.00	maintained channel	private	fluvial
36.00	06/09/2012	right	1988.00	SX7370866192	2.00	culverted channel	private	fluvial
37.00	06/09/2012	left	1988.00	SX7374766185	0.00	maintained channel	private	fluvial
38.00	06/09/2012	right	1988.00	SX7399066192	2.00	raised defence (man-made)	private	fluvial
39.00	06/09/2012	right	1988.00	SX7401866189	2.00	raised defence (man-made)	private	fluvial
40.00	06/09/2012	right	1988.00	SX7402466190	0.00	maintained channel	private	fluvial
41.00	06/09/2012	left	1988.00	SX7401866197	2.00	raised defence (man-made)	private	fluvial
42.00	06/09/2012	left	1988.00	SX7401866197	1.00	raised defence (man-made)	Environment Agency	fluvial
43.00	06/09/2012	left	1988.00	SX7399066205	0.00	maintained channel	private	fluvial
44.00	06/09/2012	left	1988.00	SX7402466198	2.00	raised defence (man-made)	private	fluvial
46.00	06/09/2012	right		SX7417466160	0.00	maintained channel	local authority	fluvial
47.00	06/09/2012	right	1988.00	SX7416766161	2.00	raised defence (man-made)	local authority	fluvial
48.00	06/09/2012	right		SX7416166162	0.00	maintained channel	private	fluvial
49.00	06/09/2012	right	1988.00	SX7414566169	0.00	maintained channel	private	fluvial
50.00	06/09/2012	left		SX7418366169	0.00	maintained channel	local authority	fluvial
52.00	06/09/2012	left	1988.00	SX7416466166	2.00	raised defence (man-made)	private	fluvial
53.00	06/09/2012	left	1988.00	SX7415266169	2.00	raised defence (man-made)	private	fluvial
54.00	06/09/2012	right	1988.00	SX7390566167	2.00	raised defence (man-made)	private	fluvial
55.00	06/09/2012	right		SX7413466178	2.00	sea defence (man-made)	private	fluvial
56.00	06/09/2012	left		SX7411366196	2.00	sea defence (natural)	private	fluvial
57.00	06/09/2012	left	1988.00	SX7390866177	0.00	maintained channel	private	fluvial
58.00	06/09/2012	right	1988.00	SX7412766187	0.00	maintained channel	private	fluvial

Flood Defence Data Sheet for Buckfastleigh [Ref: 3017]

NFCDD id	Next Inspection	Bank	Year Built	Grid Ref	Condition Grade	Asset Type	Maintainer	Asset Protects From
59.00	06/09/2012	right		SX7411366187	2.00	sea defence (natural)	private	fluvial
60.00	06/09/2012	left	1988.00	SX7371166200	2.00	culverted channel	private	fluvial
61.00	06/09/2012	right	1988.00	SX7409566191	0.00	maintained channel	private	fluvial
62.00	06/09/2012	right	1988.00	SX7365466230	0.00	maintained channel	private	fluvial
63.00	06/09/2012	left	1988.00	SX7409866199	0.00	maintained channel	private	fluvial
64.00	06/09/2012	left	1988.00	SX7403566199	0.00	maintained channel	private	fluvial
65.00	06/09/2012	left	1988.00	SX7395966221	2.00	raised defence (man-made)	Environment Agency	fluvial
66.00	06/09/2012	left	1988.00	SX7367066236	0.00	maintained channel	private	fluvial
67.00	06/09/2012	right		SX7242767488	0.00	natural channel	private	fluvial
68.00	06/09/2012	left		SX7243767495	0.00	natural channel	private	fluvial
69.00	06/09/2012	right	1988.00	SX7360466237	0.00	maintained channel	private	fluvial
70.00	06/09/2012	left	1988.00	SX7360466248	0.00	maintained channel	private	fluvial
71.00	16/02/2013	right		SX7412867673	0.00	natural channel	private	fluvial
73.00	16/02/2013	left		SX7417067675	0.00	natural channel	private	fluvial
74.00	31/01/2013	right		SX7481167698	0.00	natural channel	private	fluvial

SWWIM Plot - 21/10/2012 11:50:53 - Map Width=250m, Centre = SX 73705 66236



SOUTH WEST WATER

Ordnance Survey®

www.ordnancesurvey.co.uk

THE INFORMATION CONTAINED WITHIN THIS MAP SHOULD NOT BE USED FOR ANY PURPOSE OTHER THAN AS A GENERAL GUIDE TO THE LOCATION OF EXISTING SERVICES.

PLEASE REFER TO WATER AND SEWER LEGENDS FOR CONFIRMATION OF ASSET DETAILS.

THIS PLAN MUST NOT BE USED AS PART OF A CONVEYANCING DOCUMENT FOR PROPERTY PURCHASES.

The position & depth of apparatus and other information indicated on this map is provided as a general guide only and no assurance or warranty as to its correctness or accuracy is given or should be inferred.

Exact positions & depths should be obtained by excavation trial holes and the map must not be relied on in the event of excavation or other works undertaken or planned in the vicinity of the Company's apparatus.

Please note that not all mains, service pipes and other apparatus of the Company in the area of the plan are shown.

APPENDIX B

Existing site surface water runoff calculations

1. ADAS 345 Greenfield surface water runoff from site

Determination of Mean Annual Flood (MAF) and Stormwater Run Off

ADAS 345 Methodology Table 1 / Envronment Agency

	Detail		FZ1 & FZ2 areas North	South
1	Determine catchment area A (ha)	=	1.6559	0.4120
2	Determine average length of catchment / site (m)	=	108	40
3	Determine average slope (height) across site (m)	=	10.3	4.3
4	S = Slope / Length	=	0.0954	0.1075
5	C = 0.0001 x L / S	=	0.1132	0.0372
6	Dominant crop type (Grass, Arable or Horticulture)	=	G	G
7	Determine Average Annual Rainfall (AAR)	=	1800 Taken from FEH	1800
8	Determine soil type factor St			

Very slow	<0.01 - 0.1m/day =	1.3
Slow - Mod	0.1 - 0.3m/day =	1
Moderate	0.3 - 1.0m/day =	0.8
Mod - Rapid	1.0 - 10m/day =	0.5
Very Rapid	>10m/day =	0.1

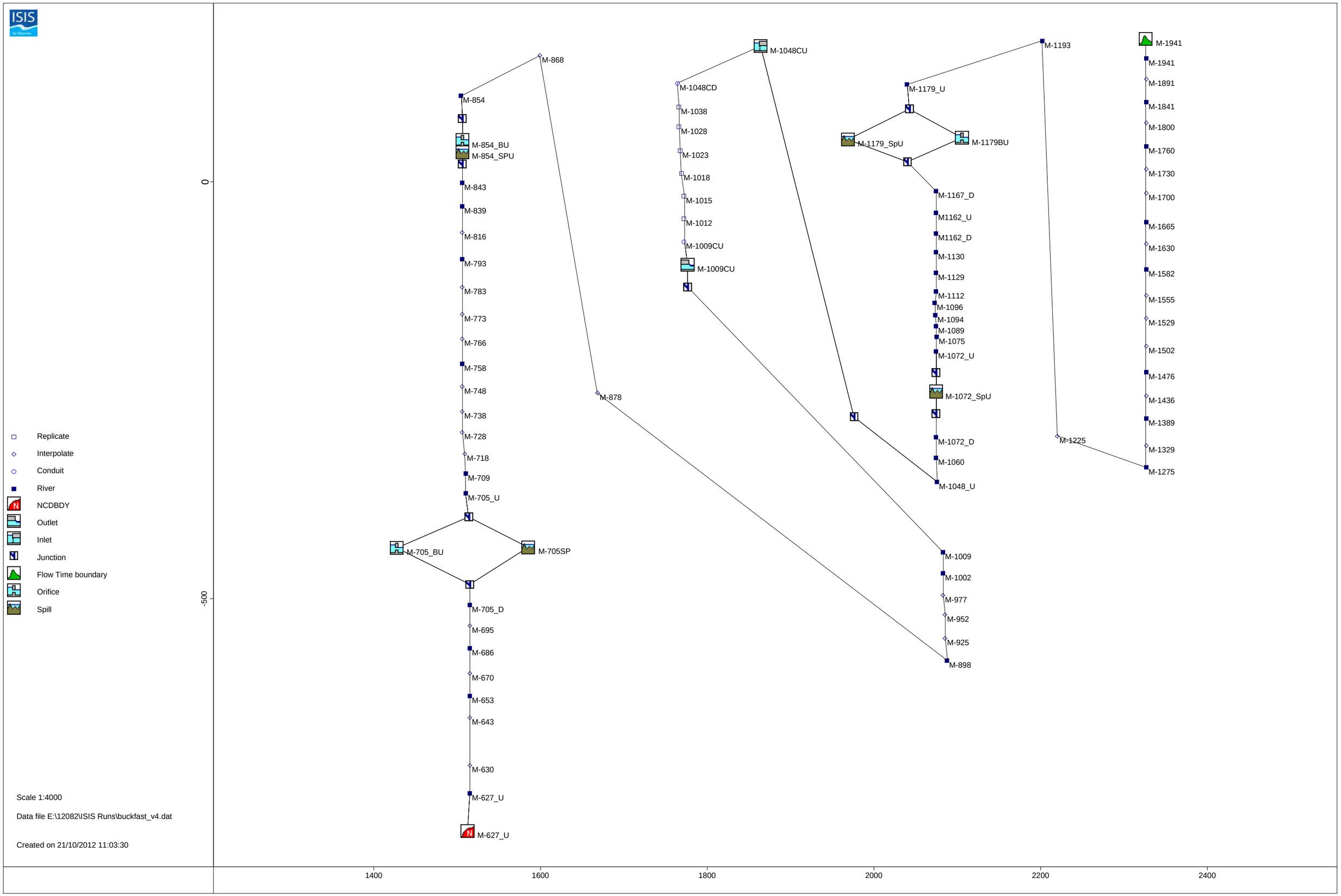
		St =	0.8	0.8
9	From Fig 3 determine F Factor	=	41.5	20
10	Peak flood flow for MAF ; Qo = St x F x A l/s	=	55.0	6.6

11	Return Periods	Growth factors			
	Mean Annual Flood (MAF)	1.00	=	55.0 l/s	6.6 l/s
	2 yr	0.88	=	48.4 l/s	5.8 l/s
	5 yr	1.28	=	70.4 l/s	8.4 l/s
	10 yr	1.58	=	86.9 l/s	10.4 l/s
	25 yr	2.03	=	111.6 l/s	13.4 l/s
	30 yr	2.14	=	117.6 l/s	14.1 l/s
	50 yr	2.45	=	134.7 l/s	16.2 l/s
	100 yr	2.93	=	161.1 l/s	19.3 l/s
	Climate Change	100yr+ 30%	=	209.4 l/s	25.1 l/s

APPENDIX C

ISI Model outputs

1. ISIS Model node map
2. 1 in 20 year snapshot
3. 1 in 100 year flow
4. Climate change 20% flow
5. 1 in 1000 year flow
6. 1 in 100 year flow culvert removed
7. 1 in 1000 year flow culvert removed
8. Climate change flow + n10% flow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River
NCDBDY
Outlet
Inlet
Junction
Flow Time boundary
Orifice
Spill
Scale 1:4000
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1800
2000
2200
2400

FILE=BUCKFAST_V4.dat ISIS VER= 6.0.1.15

Snapshot of results from ISIS at time 6.4000 hours

Approximate 1 in 20 year flow 27 Cumecs

label12	?	flow	stage	froude	velocity	umode	ustate	z
M-1941	y	27.392	50.816	0.815	2.864	0.000	0.000	47.934
M-1891	y	27.369	50.325	0.778	2.637	0.000	0.000	47.507
M-1841	y	27.336	49.866	0.745	2.435	0.000	0.000	47.080
M-1800	y	27.308	49.392	0.808	2.747	0.000	0.000	46.660
M-1760	y	27.288	48.930	0.896	3.113	0.000	0.000	46.250
M-1730	y	27.274	48.585	0.839	3.147	0.000	0.000	45.784
M-1700	y	27.262	48.348	0.685	2.931	0.000	0.000	45.318
M-1665	y	27.249	47.924	0.988	3.357	0.000	0.000	44.774
M-1630	y	27.234	47.371	0.932	3.274	0.000	0.000	44.232
M-1582	y	27.216	46.245	1.232	4.034	0.000	0.000	43.427
M-1555	y	27.211	45.510	1.204	3.923	0.000	0.000	42.708
M-1529	y	27.207	44.792	1.239	3.954	0.000	0.000	42.016
M-1502	y	27.204	44.085	1.158	3.736	0.000	0.000	41.297
M-1476	y	27.195	43.538	0.996	3.227	0.000	0.000	40.605
M-1436	y	27.165	42.839	0.911	2.816	0.000	0.000	40.222
M-1389	y	27.122	42.228	0.779	2.319	0.000	0.000	39.773
M-1329	y	27.048	41.730	0.667	1.982	0.000	0.000	39.155
M-1275	y	26.943	41.517	0.460	1.365	0.000	0.000	38.598
M-1225	y	26.807	41.329	0.469	1.406	0.000	0.000	38.010
M-1193	y	26.702	41.153	0.579	1.617	0.000	0.000	37.634
M-1179_U	y	26.669	41.127	0.320	1.454	0.000	0.000	37.611
M-1179BU	y	26.669	41.127	0.000	0.000	3.000	0.000	38.670
M-1179_SpU	y	0.000	41.127	0.000	0.000	0.000	0.000	41.700
M-1179_SpD	y	0.000	40.693	0.000	0.000	0.000	0.000	0.000
M-1179BD	y	26.669	40.693	0.000	0.000	0.000	0.000	38.670
M-1167_D	y	26.669	40.693	1.118	2.792	0.000	0.000	37.830
M1162_U	y	26.663	40.629	1.035	3.008	0.000	0.000	37.820
M1162_D	y	26.663	40.623	0.739	3.081	0.000	0.000	37.810
M-1130	y	26.646	40.217	0.819	3.299	0.000	0.000	37.350
M-1129	y	26.646	40.376	0.517	2.188	0.000	0.000	37.350
M-1112	y	26.632	40.319	0.571	1.968	0.000	0.000	37.350
M-1096	y	26.607	40.368	0.399	1.259	0.000	0.000	37.200
M-1094	y	26.604	40.272	0.540	1.800	0.000	0.000	37.200
M-1089	y	26.598	40.110	0.765	2.394	0.000	0.000	37.120
M-1075	y	26.575	40.248	0.322	1.017	0.000	0.000	36.690
M-1072_U	y	26.566	40.251	0.257	0.954	0.000	0.000	36.746
M-1072_D	y	26.566	39.989	0.314	1.104	0.000	0.000	36.580
M-1072_SpU	y	26.566	40.251	0.000	0.000	1.000	0.000	37.746
M-1072_SpD	y	26.566	39.989	0.000	0.000	0.000	0.000	0.000
M-1060	y	26.519	39.924	0.366	1.433	0.000	0.000	36.450
M-1048_U	y	26.491	39.765	0.458	2.087	0.000	0.000	36.081
M-1048CU	y	26.491	39.765	1.886	0.000	5.000	0.000	0.000
M-1048CD	y	26.491	39.643	0.000	2.191	0.000	0.000	37.080
M-1038	y	26.491	39.585	0.000	2.191	0.000	0.000	37.059
M-1028	y	26.491	39.527	0.000	2.191	0.000	0.000	37.038
M-1023	y	26.491	39.498	0.000	2.191	0.000	0.000	37.028
M-1018	y	26.491	39.469	0.000	2.191	0.000	0.000	37.018
M-1015	y	26.491	39.451	0.000	2.191	0.000	0.000	37.012
M-1012	y	26.491	39.434	0.000	2.191	0.000	0.000	37.006
M-1009CU	y	26.491	39.417	0.000	2.191	3.000	1.000	37.000
M-1009CD	y	26.491	39.172	0.000	0.000	0.000	0.000	0.000
M-1009	y	26.491	39.172	0.580	2.538	0.000	0.000	36.000
M-1002	y	26.486	39.033	0.681	2.812	0.000	0.000	35.959
M-977	y	26.464	38.785	0.673	2.778	0.000	0.000	35.748
M-952	y	26.441	38.574	0.646	2.689	0.000	0.000	35.537
M-925	y	26.415	38.398	0.596	2.529	0.000	0.000	35.309
M-898	y	26.388	38.268	0.533	2.330	0.000	0.000	35.081
M-878	y	26.367	38.172	0.512	2.257	0.000	0.000	35.038
M-868	y	26.357	38.127	0.502	2.219	0.000	0.000	35.017
M-854	y	26.342	38.068	0.488	2.167	0.000	0.000	34.987

M-854_BU	y	26.342	38.068	0.000	0.000	3.000	0.000	36.080
M-854_BD	y	26.342	37.558	0.000	0.000	0.000	0.000	36.080
M-854_SPU	y	0.000	38.068	0.497	1.172	0.000	0.000	38.984
M-854_SPD	y	0.000	37.558	0.000	0.000	0.000	0.000	0.000
M-843	y	26.342	37.558	0.754	2.900	0.000	0.000	34.987
M-839	y	26.338	37.502	0.916	3.589	0.000	0.000	34.630
M-816	y	26.310	37.209	0.691	2.402	0.000	0.000	34.355
M-793	y	26.269	36.872	0.740	2.862	0.000	0.000	34.080
M-783	y	26.237	37.011	0.647	1.967	0.000	0.000	33.873
M-773	y	26.199	37.023	0.463	1.709	0.000	0.000	33.667
M-766	y	26.180	37.012	0.398	1.664	0.000	0.000	33.522
M-758	y	26.164	36.986	0.348	1.698	0.000	0.000	33.357
M-748	y	26.147	36.975	0.331	1.631	0.000	0.000	33.266
M-738	y	26.129	36.967	0.315	1.565	0.000	0.000	33.175
M-728	y	26.111	36.960	0.299	1.500	0.000	0.000	33.083
M-718	y	26.093	36.955	0.284	1.437	0.000	0.000	32.992
M-709	y	26.076	36.951	0.275	1.387	0.000	0.000	32.910
M-705_U	y	26.068	36.968	0.233	1.221	0.000	0.000	32.800
M-705_BU	y	26.068	36.968	0.000	0.000	4.000	0.000	33.450
M-705_BD	y	26.068	36.690	0.000	0.000	0.000	0.000	33.450
M-705_D	y	26.068	36.690	0.272	1.355	0.000	0.000	32.800
M-705SP	y	0.000	36.968	0.000	0.000	0.000	0.000	37.770
M-705SPD	y	0.000	36.690	0.000	0.000	0.000	0.000	0.000
M-695	y	26.052	36.667	0.273	1.405	0.000	0.000	32.702
M-686	y	26.040	36.644	0.276	1.462	0.000	0.000	32.614
M-670	y	26.019	36.603	0.289	1.546	0.000	0.000	32.455
M-653	y	25.999	36.546	0.310	1.667	0.000	0.000	32.286
M-643	y	25.987	36.547	0.281	1.527	0.000	0.000	32.274
M-630	y	25.971	36.548	0.250	1.376	0.000	0.000	32.258
M-627_U	y	25.967	36.549	0.244	1.344	0.000	0.000	32.254

Output data frc BUCKFASTLEIGH\ENGINEERING\FRA\ISIS RUNS\BUCKFAST_V4.ZZN
Selected output data from time (hr): 1.5
to time (hr): 14

100 year flow

Label	Max Flow	Time (hr)mx1	Max Stage	Time (hr)mx2	Max Fr	Time (hr)mx3	Max Velocity	Time (hr)m
M-1941	35.714	8.167	50.992	8.083	0.876	8.167	3.283	8.167
M-1891	35.712	8.167	50.509	8.167	0.812	8.75	2.959	8.083
M-1841	35.725	8.167	50.092	8.083	0.758	7.5	2.645	8.167
M-1800	35.728	8.25	49.605	8.167	0.849	8.75	3.056	8.333
M-1760	35.748	8.167	49.146	8.25	0.93	7.5	3.477	8.167
M-1730	35.733	8.083	48.809	8.167	0.862	8.333	3.503	8.333
M-1700	35.71	8.167	48.553	8.333	0.734	7.5	3.342	8.167
M-1665	35.753	8.25	48.118	8	1.043	8.333	3.807	8.333
M-1630	35.688	8.167	47.593	8.333	0.974	7.5	3.67	8
M-1582	35.762	8.25	46.365	8	1.405	8.333	4.82	8.333
M-1555	35.704	8.167	45.609	8.333	1.346	7.5	4.602	8
M-1529	35.76	8.083	44.832	7.5	1.551	8.333	5.022	8.333
M-1502	35.716	8.083	44.203	8.333	1.176	9.417	4.058	7.5
M-1476	35.958	8.25	43.784	8.167	1.031	7.917	3.474	8.333
M-1436	35.722	8.083	43.122	8.333	0.93	7.667	2.957	7.667
M-1389	35.92	8.25	42.538	8.5	0.787	7.917	2.448	7.917
M-1329	35.765	8.167	42.297	8.333	0.677	3.25	1.991	7.5
M-1275	35.999	8.333	42.216	8.5	0.727	4.417	1.818	4.083
M-1225	36.321	8.25	42.191	8.333	0.734	4.083	1.868	3.917
M-1193	35.89	8.5	42.145	8.417	0.758	10.75	2.216	5.833
M-1179_U	35.548	8.167	42.161	8.333	0.451	6.667	1.456	6.417
M-1179BU	35.228	7.833	42.161	8.333	0	1.5	0	1.5
M-1179_SpU	2.758	8.333	42.161	8.333	0	1.5	0	1.5
M-1179_SpD	2.758	8.333	41.644	8.333	0	1.5	0	1.5
M-1179BD	35.228	7.833	41.644	8.333	0	1.5	0	1.5
M-1167_D	35.548	8.167	41.644	8.333	1.142	6.333	2.879	6.25
M1162_U	39.715	8.25	41.588	8.5	1.198	6.5	3.055	6.25
M1162_D	40.434	8.25	41.204	8.5	0.877	7.583	3.844	7.583
M-1130	36.441	8.583	40.817	8.167	0.882	8.167	3.946	8.167
M-1129	36.666	8.583	41.033	8.5	0.875	10.167	2.233	10.333
M-1112	37.989	8.333	40.908	8.5	0.793	2.167	2.143	5.583
M-1096	37.356	8.5	40.958	8.5	1.168	5.417	2.308	5.417
M-1094	36.955	8.75	40.905	8.5	0.952	5.5	2.401	5.5
M-1089	37.319	8.333	40.843	8.417	0.877	11.75	2.903	5.583
M-1075	36.651	8.583	40.901	8.417	0.493	11.583	1.255	5.25
M-1072_U	35.889	8.75	40.896	8.417	0.28	11.833	0.954	6.417
M-1072_D	35.889	8.75	40.749	8.5	0.617	2.5	1.311	5.667
M-1072_SpU	35.889	8.75	40.896	8.417	0	1.5	0	1.5
M-1072_SpD	35.889	8.75	40.749	8.5	0	1.5	0	1.5
M-1060	35.698	8.75	40.725	8.5	0.753	3.167	1.975	4.833
M-1048_U	35.574	8.5	40.655	8.417	1.404	1.917	2.231	9.75
M-1048CU	35.574	8.5	40.655	8.417	2.308	8.5	0	1.5
M-1048CD	35.574	8.5	40.434	8.417	0.394	3.667	2.942	8.5
M-1038	35.574	8.5	40.329	8.417	0.392	3.667	2.942	8.5
M-1028	35.574	8.5	40.224	8.417	0.391	3.667	2.942	8.5
M-1023	35.574	8.5	40.172	8.417	0.39	3.667	2.942	8.5
M-1018	35.574	8.5	40.119	8.417	0.39	3.667	2.942	8.5
M-1015	35.574	8.5	40.088	8.417	0.39	3.667	2.942	8.5
M-1012	35.574	8.5	40.056	8.5	0.39	3.667	2.942	8.5
M-1009CU	35.574	8.5	40.025	8.5	0.389	3.667	2.942	8.5
M-1009CD	35.574	8.5	39.899	8.5	0	1.5	0	1.5
M-1009	35.574	8.5	39.899	8.5	0.859	2.083	2.601	6.833
M-1002	35.584	8.5	39.878	8.5	0.77	3.417	2.849	10.333
M-977	35.603	8.5	39.732	8.5	0.822	3.417	2.81	10.333
M-952	35.667	8.417	39.58	8.583	0.862	3.167	2.722	10.333
M-925	35.694	8.417	39.408	8.583	0.831	8.167	2.565	10.333
M-898	35.599	8.5	39.255	8.583	0.756	9	2.382	6.833
M-878	35.508	8.5	39.031	8.583	0.7	8.75	2.311	6.75
M-868	35.493	8.5	38.958	8.583	0.573	2.167	2.275	6.75
M-854	35.504	8.5	38.909	8.583	0.525	5.833	2.225	6.75
M-854_BU	35.504	8.5	38.909	8.583	0	1.5	0	1.5
M-854_BD	35.504	8.5	38.28	8.583	0	1.5	0	1.5
M-854_SPU	3.989	1.5	38.909	8.583	0.497	1.5	1.172	1.5
M-854_SPD	3.989	1.5	38.28	8.583	0	1.5	0	1.5
M-843	35.504	8.5	38.28	8.583	1.41	3	3.061	5.667
M-839	35.506	8.5	38.031	8.583	1.383	3.333	3.75	5.667
M-816	35.515	8.5	38.055	8.583	0.949	1.5	2.646	5.667
M-793	35.503	8.583	38.127	8.583	1.017	4.583	2.977	5.667
M-783	35.5	8.583	38.111	8.583	0.969	4.417	2.715	5.333
M-773	35.499	8.583	38.087	8.583	0.919	2.917	2.409	4.917
M-766	35.499	8.583	38.063	8.583	0.84	2.5	2.114	4.5
M-758	35.499	8.583	38.02	8.583	0.591	2.75	1.774	5.667
M-748	35.498	8.583	38.014	8.583	0.595	2.75	1.709	5.667
M-738	35.497	8.583	38.01	8.583	0.606	3.583	1.681	4.25
M-728	35.496	8.583	38.006	8.583	0.635	1.583	1.672	4.25
M-718	35.495	8.583	38.003	8.583	0.728	3.167	1.696	4
M-709	35.494	8.583	38	8.583	1.12	1.833	1.908	3.75
M-705_U	35.494	8.583	38.014	8.583	0.443	1.833	1.226	5.667
M-705_BU	33.861	8.417	38.014	8.583	0	1.5	0	1.5
M-705_BD	33.861	8.417	37.546	8.583	0	1.5	0	1.5
M-705_D	35.494	8.583	37.546	8.583	0.48	1.833	1.38	8.417
M-705SP	1.663	8.583	38.014	8.583	0	1.5	0	1.5
M-705SPD	1.663	8.583	37.546	8.583	0	1.5	0	1.5
M-695	35.494	8.583	37.522	8.583	0.447	1.833	1.455	8.417
M-686	35.495	8.583	37.497	8.583	0.429	2.917	1.537	8.417
M-670	35.496	8.583	37.455	8.583	0.411	2.75	1.633	8.583
M-653	35.498	8.583	37.396	8.583	0.447	2.583	1.766	8.583
M-643	35.498	8.583	37.4	8.583	0.371	2.667	1.626	8.583
M-630	35.497	8.583	37.403	8.583	0.294	2.917	1.472	8.583
M-627_U	35.496	8.583	37.404	8.583	0.28	1.667	1.44	8.583

Output data from file E:\12082\ISIS RUNS\BUCKFAST_V4.ZZN
Selected output data from time (hr): 1.5
to time (hr): 14

Climate change flow

Label	Max Flow	Time (hr)mx1	Max Stage	Time (hr)mx2	Max Fr	Time (hr)mx3	Max Velocity	Time (hr)mx4
M-1941	42.857	8.167	51.14	8.167	0.905	8	3.563	8.167
M-1891	42.86	8.167	50.635	8	0.841	8.167	3.225	8.167
M-1841	42.849	8.167	50.229	8.167	0.784	8	2.845	8
M-1800	42.87	8.167	49.772	8.167	0.86	8.417	3.24	8.167
M-1760	42.84	8.167	49.324	8.167	0.937	9.667	3.702	8
M-1730	42.872	8.167	48.991	8.167	0.864	7	3.721	8.167
M-1700	42.837	8.167	48.717	8.167	0.75	8	3.612	8
M-1665	42.875	8.167	48.281	8.167	1.045	8.417	4.053	8.167
M-1630	42.836	8.167	47.75	8.167	0.989	8	3.96	8
M-1582	42.874	8.167	46.469	8	1.467	8.25	5.273	8.167
M-1555	42.837	8.167	45.649	8.25	1.462	8	5.188	8
M-1529	42.871	8.167	44.863	8	1.627	8.25	5.511	8.25
M-1502	42.838	8.167	44.304	8.25	1.172	9.833	4.098	9.833
M-1476	42.875	8.167	43.948	8.083	1.036	8.917	3.532	8.917
M-1436	42.83	8.167	43.287	8.25	0.923	6.417	2.96	6.833
M-1389	42.894	8.167	42.798	8.25	0.786	12.167	2.414	6.833
M-1329	42.794	8.167	42.651	8.25	0.677	3	2.005	6.667
M-1275	42.908	8.25	42.614	8.25	0.728	4.083	1.814	3.75
M-1225	42.743	8.25	42.593	8.25	0.733	3.833	1.873	3.667
M-1193	42.961	8.25	42.567	8.25	0.756	11.25	2.213	5.417
M-1179_U	42.597	8.25	42.574	8.25	0.447	6.167	1.455	5.917
M-1179BU	35.965	6.833	42.574	8.25	0	1.5	0	1.5
M-1179_SpU	8.959	8.25	42.574	8.25	0	1.5	0	1.5
M-1179_SpD	8.959	8.25	41.98	8.333	0	1.5	0	1.5
M-1179BD	35.965	6.833	41.98	8.333	0	1.5	0	1.5
M-1167_D	42.597	8.25	41.98	8.333	1.114	5.917	2.892	5.75
M1162_U	49.154	9.583	41.953	8.25	1.198	6	3.061	6.583
M1162_D	49.027	9.583	41.587	8.333	0.89	6.583	4.291	9.583
M-1130	41.97	8	41.201	8.25	0.935	9.25	4.385	8.417
M-1129	42.166	8	41.33	8.333	0.775	10.75	2.28	10.833
M-1112	43.512	8.333	41.31	8.333	0.794	1.917	2.141	5.167
M-1096	43.623	9.417	41.321	8.333	1.132	5.083	2.263	5.083
M-1094	42.835	8.25	41.305	8.333	0.941	5.167	2.39	5.167
M-1089	42.843	8.25	41.283	8.333	0.87	12.083	2.872	5.167
M-1075	42.835	8.333	41.306	8.333	0.502	12	1.238	12.083
M-1072_U	42.836	8.333	41.3	8.333	0.284	12.167	0.954	5.917
M-1072_D	42.836	8.333	41.205	8.333	0.617	2.25	1.314	5.25
M-1072_SpU	42.836	8.333	41.3	8.333	0	1.5	0	1.5
M-1072_SpD	42.836	8.333	41.205	8.333	0	1.5	0	1.5
M-1060	42.836	8.333	41.2	8.333	0.753	2.917	1.985	4.583
M-1048_U	42.838	8.333	41.168	8.333	1.366	1.75	2.182	10.5
M-1048CU	42.838	8.333	41.168	8.333	2.642	8.333	0	1.5
M-1048CD	42.838	8.333	40.848	8.333	0.394	3.417	3.542	8.333
M-1038	42.838	8.333	40.697	8.333	0.392	3.417	3.542	8.333
M-1028	42.838	8.333	40.545	8.333	0.391	3.417	3.542	8.333
M-1023	42.838	8.333	40.47	8.333	0.39	3.417	3.542	8.333
M-1018	42.838	8.333	40.394	8.333	0.39	3.417	3.542	8.333
M-1015	42.838	8.333	40.349	8.333	0.39	3.417	3.542	8.333
M-1012	42.838	8.333	40.303	8.333	0.39	3.417	3.542	8.333
M-1009CU	42.838	8.333	40.258	8.333	0.389	3.417	3.542	8.333
M-1009CD	42.838	8.333	40.032	8.333	0	1.5	0	1.5
M-1009	42.838	8.333	40.032	8.333	0.859	1.833	2.85	8.333
M-1002	42.838	8.333	40.026	8.333	0.77	3.167	2.841	6.083
M-977	42.838	8.333	39.882	8.333	0.822	3.167	2.805	6.167
M-952	42.837	8.333	39.759	8.333	0.862	2.917	2.707	6.083
M-925	42.837	8.333	39.672	8.333	0.841	6.833	2.554	6.083
M-898	42.836	8.333	39.627	8.333	0.755	7.083	2.4	6.417
M-878	42.834	8.333	39.578	8.333	0.644	10	2.325	6.417
M-868	42.832	8.333	39.561	8.333	0.581	10	2.288	6.417
M-854	42.831	8.333	39.435	8.333	0.624	8.333	2.236	6.417
M-854_BU	37.889	7.333	39.435	8.333	0	1.5	0	1.5
M-854_BD	37.889	7.333	38.788	8.417	0	1.5	0	1.5
M-854_SPU	6.819	8.333	39.435	8.333	0.497	1.5	1.172	1.5
M-854_SPD	6.819	8.333	38.788	8.417	0	1.5	0	1.5
M-843	42.831	8.333	38.788	8.417	1.41	2.75	3.058	5.333
M-839	42.831	8.333	38.471	8.333	1.383	3.167	3.751	5.333
M-816	42.83	8.333	38.693	8.417	0.949	1.5	2.641	5.167
M-793	42.826	8.333	38.741	8.417	1.017	4.333	2.982	5.333
M-783	42.824	8.333	38.726	8.417	0.969	4.167	2.72	4.833
M-773	42.823	8.333	38.703	8.417	0.92	2.583	2.414	4.75
M-766	42.823	8.333	38.677	8.417	0.841	2.25	2.113	4.167
M-758	42.822	8.333	38.627	8.417	0.591	2.5	1.772	5.333
M-748	42.821	8.333	38.622	8.417	0.595	2.583	1.705	5.333
M-738	42.821	8.333	38.618	8.417	0.606	3.333	1.683	4
M-728	42.82	8.333	38.614	8.417	0.634	3.333	1.665	3.833
M-718	42.82	8.417	38.612	8.417	0.73	1.583	1.696	3.75
M-709	42.821	8.417	38.609	8.417	1.09	1.75	1.909	3.5
M-705_U	42.821	8.417	38.623	8.417	0.427	1.833	1.262	8.333
M-705_BU	34.02	7.167	38.623	8.417	0	1.5	0	1.5
M-705_BD	34.02	7.167	38.205	8.417	0	1.5	0	1.5
M-705_D	42.821	8.417	38.205	8.417	0.463	1.833	1.392	8.083
M-705SP	10.855	8.417	38.623	8.417	0	1.5	0	1.5
M-705SPD	10.855	8.417	38.205	8.417	0	1.5	0	1.5
M-695	42.821	8.417	38.181	8.417	0.431	2.75	1.48	8.333
M-686	42.821	8.417	38.154	8.417	0.429	2.583	1.576	8.333
M-670	42.822	8.417	38.111	8.417	0.411	2.583	1.678	8.333
M-653	42.822	8.417	38.052	8.417	0.447	2.333	1.817	8.333
M-643	42.822	8.417	38.056	8.417	0.371	2.417	1.676	8.333
M-630	42.823	8.417	38.061	8.417	0.294	2.667	1.522	8.417
M-627_U	42.823	8.417	38.062	8.417	0.28	1.667	1.49	8.417

Output data fro BUCKFASTLEIGH\ENGINEERING\FRA\ISIS RUNS\BUCKFAST_V4.ZZN
Selected output data from time (hr): 1.5
to time (hr): 14

1000 year flow

Label	Max Flow	Time (hr)mx1	Max Stage	Time (hr)mx2	Max Fr	Time (hr)mx3	Max Velocity	Time (hr)mx4
M-1941	53.452	8.167	51.339	8.083	0.946	8.25	3.952	8.25
M-1891	53.458	8.167	50.817	8.25	0.877	8.083	3.568	8.083
M-1841	53.439	8.167	50.411	8.083	0.813	7.583	3.131	7.917
M-1800	53.46	8.167	50.007	8.25	0.863	9.5	3.481	8.083
M-1760	53.439	8.167	49.588	8.083	0.938	10.083	3.98	7.917
M-1730	53.459	8.167	49.257	8.25	0.864	9.833	3.996	8.083
M-1700	53.444	8.167	48.963	8.083	0.771	7.583	3.943	7.917
M-1665	53.452	8.167	48.522	8.25	1.052	9.833	4.372	8.083
M-1630	53.451	8.167	47.981	8.083	1.016	7.583	4.334	7.917
M-1582	53.457	8.083	46.622	8.25	1.555	8.083	5.899	8.083
M-1555	53.455	8.25	45.714	8.083	1.646	7.917	6.036	8.25
M-1529	53.447	8.083	44.941	7.917	1.713	7.833	6.117	7.833
M-1502	53.472	8.083	44.458	8.167	1.181	10.75	4.071	10.667
M-1476	53.449	8.167	44.153	7.917	1.04	10.25	3.554	7.333
M-1436	53.448	8.083	43.541	8.167	0.931	10.75	2.987	7.583
M-1389	53.555	8	43.177	8.25	0.785	4.833	2.441	6.167
M-1329	53.656	8.083	43.127	8.333	0.676	2.833	2	5.917
M-1275	53.861	8.167	43.139	8.25	0.728	3.833	1.812	3.5
M-1225	53.794	8.333	43.122	8.167	0.73	3.583	1.871	3.417
M-1193	53.701	8.167	43.11	8.25	0.762	11.75	2.224	5
M-1179_U	54.332	7.917	43.114	8.333	0.461	11.5	1.467	11.5
M-1179BU	35.756	10.083	43.114	8.333	0	1.5	0	1.5
M-1179_SpU	20.961	8.333	43.114	8.333	0	1.5	0	1.5
M-1179_SpD	20.961	8.333	42.57	8.333	0	1.5	0	1.5
M-1179BD	35.756	10.083	42.57	8.333	0	1.5	0	1.5
M-1167_D	54.332	7.917	42.57	8.333	1.141	5.417	2.882	5.333
M1162_U	58.149	8.167	42.58	7.917	1.187	5.5	3.05	5.333
M1162_D	57.95	8.167	41.984	8.5	0.877	6	4.103	7.417
M-1130	61.118	7.917	41.525	8.167	0.918	10	4.549	7.25
M-1129	59.702	7.917	42.03	8.417	0.861	11.417	2.313	11.5
M-1112	55.156	7.667	42.022	8.333	0.793	1.833	2.141	4.833
M-1096	56.246	7.917	42.03	8.333	1.149	4.667	2.298	4.75
M-1094	53.985	8.5	42.02	8.333	0.966	4.75	2.419	4.75
M-1089	53.5	8.25	42.012	8.333	0.864	12.417	2.892	4.833
M-1075	54.15	8.333	42.022	8.333	0.493	12.333	1.242	12.417
M-1072_U	53.827	8	42.018	8.333	0.277	12.417	0.952	11.583
M-1072_D	53.827	8	41.969	8.417	0.618	1.667	1.323	12.5
M-1072_SpU	53.827	8	42.018	8.333	0	1.5	0	1.5
M-1072_SpD	53.827	8	41.969	8.417	0	1.5	0	1.5
M-1060	54.376	8.25	41.97	8.333	0.755	2.75	1.981	4.25
M-1048_U	53.371	8.333	41.964	8.333	1.355	1.75	2.138	5.167
M-1048CU	53.371	8.333	41.964	8.333	3.134	8.333	0	1.5
M-1048CD	53.371	8.333	41.468	8.333	0.394	3.167	4.413	8.333
M-1038	53.371	8.333	41.232	8.333	0.392	3.167	4.413	8.333
M-1028	53.371	8.333	40.997	8.333	0.391	3.25	4.413	8.333
M-1023	53.371	8.333	40.879	8.333	0.391	3.25	4.413	8.333
M-1018	53.371	8.333	40.762	8.333	0.39	3.25	4.413	8.333
M-1015	53.371	8.333	40.691	8.333	0.39	3.25	4.413	8.333
M-1012	53.371	8.333	40.62	8.333	0.39	3.25	4.413	8.333
M-1009CU	53.371	8.333	40.55	8.333	0.389	3.25	4.413	8.333
M-1009CD	53.371	8.333	40.15	8.333	0	1.5	0	1.5
M-1009	53.371	8.333	40.15	8.333	0.859	1.75	3.409	8.333
M-1002	53.365	8.333	40.211	8.333	0.77	2.917	2.98	8.333
M-977	53.344	8.333	40.069	8.417	0.822	2.917	2.805	5.667
M-952	53.355	8.333	39.961	8.417	0.862	2.75	2.708	5.583
M-925	53.367	8.333	39.895	8.417	0.826	6.333	2.551	5.583
M-898	53.356	8.333	39.865	8.417	0.775	10.917	2.393	5.75
M-878	53.354	8.333	39.837	8.417	0.661	10.833	2.321	5.75
M-868	53.361	8.333	39.83	8.417	0.578	6.417	2.284	5.667
M-854	53.349	8.333	39.803	8.417	0.64	6.917	2.234	5.667
M-854_BU	38.125	6.5	39.803	8.417	0	1.5	0	1.5
M-854_BD	38.125	6.5	39.618	8.417	0	1.5	0	1.5
M-854_SPU	34.066	8.417	39.803	8.417	0.497	1.5	1.172	1.5
M-854_SPD	34.066	8.417	39.618	8.417	0	1.5	0	1.5
M-843	53.349	8.333	39.618	8.417	1.41	2.583	3.062	4.917
M-839	53.346	8.333	39.457	8.417	1.384	2.917	3.751	4.917
M-816	53.348	8.417	39.508	8.417	0.949	1.5	2.648	4.917
M-793	53.349	8.417	39.531	8.417	1.017	4	2.983	5
M-783	53.346	8.417	39.517	8.417	0.969	3.833	2.719	4.667
M-773	53.343	8.417	39.492	8.417	0.92	2.417	2.411	4.417
M-766	53.341	8.417	39.464	8.417	0.841	2.167	2.121	3.917
M-758	53.34	8.417	39.404	8.417	0.591	2.417	1.774	4.917
M-748	53.339	8.417	39.399	8.417	0.596	2.417	1.71	4.917
M-738	53.339	8.417	39.395	8.417	0.606	3.167	1.68	3.75
M-728	53.339	8.417	39.391	8.417	0.634	3.083	1.665	3.667
M-718	53.341	8.417	39.389	8.417	0.727	1.583	1.693	3.5
M-709	53.343	8.417	39.386	8.417	1.088	1.75	1.909	3.25
M-705_U	53.344	8.417	39.401	8.417	0.426	1.833	1.338	8.417
M-705_BU	34.069	6.417	39.401	8.417	0	1.5	0	1.5
M-705_BD	34.069	6.417	39.152	8.417	0	1.5	0	1.5
M-705_D	53.344	8.417	39.152	8.417	0.461	1.833	1.406	8.167
M-705SP	28.683	8.417	39.401	8.417	0	1.5	0	1.5
M-705SPD	28.683	8.417	39.152	8.417	0	1.5	0	1.5
M-695	53.345	8.417	39.127	8.417	0.431	2.583	1.505	8.167
M-686	53.345	8.417	39.098	8.417	0.429	2.417	1.614	8.333
M-670	53.346	8.417	39.054	8.417	0.411	2.417	1.723	8.417
M-653	53.346	8.417	38.994	8.417	0.447	2.25	1.868	8.417
M-643	53.345	8.417	39	8.417	0.371	2.25	1.727	8.417
M-630	53.345	8.417	39.006	8.417	0.294	2.5	1.573	8.417
M-627_U	53.345	8.417	39.007	8.417	0.28	1.667	1.541	8.417

Output data from file E:\12082\ISIS RUNS\BUCKFAST_V4NOC.ZZN
Selected output data from time (hr): 1.5
to time (hr): 14

100 year flow with culvert removed

Label	Max Flow	Time (hr)mx1	Max Stage	Time (hr)mx2	Max Fr	Time (hr)mx3	Max Velocity	Time (hr)mx4
M-1275	35.805	8.25	41.932	7.167	0.728	4.417	1.818	4.083
M-1225	35.803	8.083	41.861	7.167	0.734	4.083	1.867	3.917
M-1193	35.735	8.25	41.815	7.167	0.759	10.75	2.212	5.75
M-1179_U	35.766	8.25	41.797	7.167	0.454	6.667	1.456	6.417
M-1179BU	35.766	8.25	41.797	7.167	0	1.5	0	1.5
M-1179_SpU	0.117	7.167	41.797	7.167	0	1.5	0	1.5
M-1179_SpD	0.117	7.167	41.314	7.167	0	1.5	0	1.5
M-1179BD	35.766	8.25	41.314	7.167	0	1.5	0	1.5
M-1167_D	35.766	8.25	41.314	7.167	1.144	6.333	2.89	10.5
M1162_U	35.743	8.083	41.289	7.167	1.22	9.583	3.136	7.583
M1162_D	36.025	8.083	40.981	8.167	0.942	8.083	4.083	8.083
M-1130	35.807	8.167	40.555	8.083	0.871	9.833	3.615	7
M-1129	36.353	8.167	40.928	8.167	0.825	7.167	2.41	7
M-1112	36.545	8.25	40.759	8.25	0.793	2.167	2.143	5.583
M-1096	36.022	8.167	40.824	8.167	1.168	5.417	2.308	5.417
M-1094	35.678	8.25	40.744	8.333	0.952	5.5	2.401	5.5
M-1089	35.752	8.25	40.642	8.25	0.874	11.75	2.903	5.583
M-1075	35.752	8.333	40.745	8.25	0.505	5.25	1.233	11.667
M-1072_U	35.709	8.25	40.74	8.25	0.289	7.25	0.987	7.083
M-1072_D	35.709	8.25	40.533	8.25	0.945	1.75	1.387	6.083
M-1072_SpU	35.709	8.25	40.74	8.25	0	1.5	0	1.5
M-1072_SpD	35.709	8.25	40.533	8.25	0	1.5	0	1.5
M-1060	35.733	8.25	40.468	8.25	0.738	1.75	1.926	4.833
M-1048_U	35.706	8.25	40.301	8.25	0.685	7.833	2.456	6.917
M-1030	35.69	8.25	40.061	8.25	0.671	2	2.551	7.25
M-1009	35.716	8.25	39.902	8.25	0.859	2.083	2.619	7.25
M-1002	35.721	8.25	39.881	8.25	0.77	3.417	2.844	6.667
M-977	35.706	8.333	39.736	8.333	0.822	3.417	2.803	6.667
M-952	35.679	8.25	39.616	9.083	0.862	3.167	2.707	6.667
M-925	35.704	8.25	39.419	8.333	0.84	9.083	2.551	6.583
M-898	37.155	9.083	39.282	8.333	0.787	9	2.433	7.25
M-878	36.292	9.083	39.081	8.333	0.686	8.667	2.354	7.25
M-868	35.929	9.083	38.993	8.333	0.584	8.583	2.314	7.25
M-854	35.803	9.083	38.925	8.333	0.525	5.833	2.26	7.25

Output data from file E:\12082\ISIS RUNS\BUCKFAST_V4NOC.ZZN
Selected output data from time (hr): 1.5
to time (hr): 14

1000 year flow culvert removed

Label	Max Flow	Time (hr)mx1	Max Stage	Time (hr)mx2	Max Fr	Time (hr)mx3	Max Velocity	Time (hr)mx4
M-1002	53.141	8.417	40.207	8.5	0.771	3	2.977	8.417
M-1009	53.141	8.417	40.148	8.5	0.859	1.75	3.398	8.417
M-1048_U	53.147	8.417	40.92	8.5	0.687	6.083	2.472	5.833
M-1060	53.151	8.417	41.011	8.417	0.693	1.75	1.911	4.167
M-1072_D	53.155	8.417	41.033	8.417	0.81	1.75	1.39	5.25
M-1072_U	53.155	8.417	41.235	8.417	0.292	6	0.994	5.833
M-1075	53.156	8.417	41.245	8.417	0.504	4.583	1.238	12.417
M-1089	53.159	8.417	41.2	8.417	0.865	12.417	2.892	4.833
M-1094	53.16	8.417	41.247	8.417	0.966	4.75	2.419	4.75
M-1096	53.841	7.917	41.28	8.417	1.148	4.75	2.298	4.75
M-1112	55.198	8	41.252	8	0.812	6.417	2.142	4.833
M-1129	54.983	7.917	41.305	8.417	0.882	11.333	2.386	5.75
M-1130	53.167	8.417	41.207	8.417	1.091	8.083	5.148	8.5
M1162_D	54.05	8	41.745	8.417	1.204	7.5	5.502	7.5
M1162_U	53.163	8.417	42.318	8.417	1.255	6.833	3.117	6.833
M-1167_D	53.409	8	42.317	8.417	1.141	5.417	2.883	5.333
M-1179_U	53.409	8	42.986	8.417	0.461	11.5	1.469	11.5
M-1193	53.122	8.417	42.982	8.417	0.761	11.75	2.217	5
M-1225	53.126	8	42.999	8.417	0.731	3.583	1.872	3.417
M-1275	53.236	7.917	43.018	8.417	0.728	3.833	1.816	3.5
M-854	53.123	8.5	39.795	8.5	0.641	6.833	2.25	6
M-868	53.127	8.5	39.825	8.5	0.579	6.25	2.304	6
M-878	53.129	8.5	39.831	8.5	0.618	2.25	2.344	6
M-898	53.131	8.5	39.86	8.5	0.644	2.75	2.424	6
M-925	53.133	8.5	39.891	8.5	0.841	6.167	2.554	5.583
M-952	53.134	8.5	39.957	8.5	0.862	2.75	2.71	5.583
M-977	53.138	8.417	40.065	8.5	0.822	2.917	2.803	5.583

Output data from file E:\12082\ISIS RUNS\BUCKFAST_V4+N10%.ZZN
Selected output data from time (hr): 1.5
to time (hr): 14

Climate Change Flow n+10%

Label	Max Flow	Time (hr)mx1	Max Stage	Time (hr)mx2	Max Fr	Time (hr)mx3	Max Velocity	Time (hr)mx4
M-1941	42.857	8.167	51.195	8	0.861	8.167	3.448	8.167
M-1891	42.847	8	50.681	8.167	0.805	8	3.13	8
M-1841	42.878	8.167	50.357	8	0.757	1.5	2.604	8.167
M-1800	42.86	8	49.906	8.167	0.757	7.083	2.972	8
M-1760	42.885	8.167	49.426	8	0.85	7.417	3.491	8.167
M-1730	42.854	8	49.087	8.167	0.796	7.083	3.518	8
M-1700	42.863	8.167	48.815	8	0.69	7.833	3.417	8.167
M-1665	42.85	8.167	48.38	8.167	0.953	7.75	3.807	8.25
M-1630	42.85	8.167	47.844	8.25	0.91	7.833	3.747	8
M-1582	42.85	8.167	46.533	8	1.368	8.25	5.032	8.25
M-1555	42.865	8.167	45.676	8.25	1.401	8	5.043	8
M-1529	42.86	8.167	44.893	8	1.522	8.25	5.268	8.25
M-1502	42.917	8	44.361	8.083	1.098	1.5	3.678	8
M-1476	42.872	8.167	44.026	8	0.95	7.083	3.25	7.75
M-1436	42.903	8.25	43.343	8.083	0.862	7.167	2.821	7.167
M-1389	42.846	8.083	42.901	8	0.716	5	2.144	6.083
M-1329	43.141	8	42.729	8.25	0.674	1.5	1.81	6
M-1275	42.962	8.25	42.686	8.25	0.664	3.917	1.653	3.667
M-1225	43.097	8.083	42.656	8.25	0.672	1.5	1.67	3.5
M-1193	42.698	8.167	42.636	8.25	0.723	11.417	2.07	5.25
M-1179_U	43.084	8.167	42.637	8.333	0.428	6	1.385	5.833
M-1179BU	33.471	9.167	42.637	8.333	0	1.5	0	1.5
M-1179_Sp	10.106	8.333	42.637	8.333	0	1.5	0	1.5
M-1179_Sp	10.106	8.333	42.086	8.333	0	1.5	0	1.5
M-1179BD	33.471	9.167	42.086	8.333	0	1.5	0	1.5
M-1167_D	43.084	8.167	42.086	8.333	1.053	5.667	2.645	5.583
M1162_U	44.855	8.25	42.08	8.333	1.094	11.167	2.809	5.583
M1162_D	44.947	8.25	41.581	8.333	0.773	2	3.547	7.583
M-1130	44.178	8.5	41.041	7.667	0.842	7.083	3.957	7.667
M-1129	44.573	8.75	41.524	8.5	0.741	11	2.08	6
M-1112	45.035	8.917	41.514	8.333	0.779	1.5	2.046	5.167
M-1096	45.81	8	41.519	8.25	1.107	5	2.223	5.083
M-1094	43.335	8.25	41.508	8.333	0.94	5.083	2.355	5.083
M-1089	43.444	8.25	41.492	8.417	0.872	12.167	2.849	5.167
M-1075	43.108	8.167	41.507	8.417	0.521	4.917	1.25	4.917
M-1072_U	42.838	8.333	41.503	8.417	0.282	4.75	0.945	11.25
M-1072_D	42.838	8.333	41.438	8.333	0.584	1.667	1.242	5.25
M-1072_Sp	42.838	8.333	41.503	8.417	0	1.5	0	1.5
M-1072_Sp	42.838	8.333	41.438	8.333	0	1.5	0	1.5
M-1060	42.941	8.583	41.437	8.333	0.747	1.5	1.85	4.417
M-1048_U	42.806	8.333	41.418	8.333	1.239	1.75	2.049	10.833
M-1048CU	42.806	8.333	41.418	8.333	2.64	8.333	0	1.5
M-1048CD	42.806	8.333	41.099	8.333	0.385	1.5	3.54	8.333
M-1038	42.806	8.333	40.916	8.333	0.383	1.5	3.54	8.333
M-1028	42.806	8.333	40.733	8.333	0.381	1.5	3.54	8.333
M-1023	42.806	8.333	40.642	8.333	0.38	1.5	3.54	8.333
M-1018	42.806	8.333	40.55	8.333	0.379	1.5	3.54	8.333
M-1015	42.806	8.333	40.495	8.333	0.379	1.5	3.54	8.333
M-1012	42.806	8.333	40.44	8.333	0.379	1.5	3.54	8.333
M-1009CU	42.806	8.333	40.386	8.333	0.378	1.5	3.54	8.333
M-1009CD	42.806	8.333	40.133	8.333	0	1.5	0	1.5
M-1009	42.806	8.333	40.133	8.333	0.83	1.5	2.75	8.333
M-1002	42.804	8.333	40.132	8.333	0.765	1.5	2.587	5.917
M-977	42.792	8.333	39.981	8.417	0.816	1.5	2.559	5.917
M-952	42.78	8.417	39.85	8.417	0.861	1.5	2.486	5.917
M-925	42.785	8.333	39.753	8.417	0.825	1.5	2.362	5.917
M-898	42.808	8.333	39.7	8.417	0.725	10.417	2.218	6.25
M-878	42.793	8.333	39.656	8.417	0.648	6.75	2.16	6
M-868	42.792	8.417	39.642	8.417	0.564	1.5	2.132	6
M-854	42.792	8.417	39.527	8.417	0.606	8	2.093	6
M-854_BU	35.82	7	39.527	8.417	0	1.5	0	1.5
M-854_BD	35.82	7	39.038	8.417	0	1.5	0	1.5
M-854_SPI	11.498	8.417	39.527	8.417	0.497	1.5	1.172	1.5
M-854_SPI	11.498	8.417	39.038	8.417	0	1.5	0	1.5
M-843	42.792	8.417	39.038	8.417	1.356	1.5	2.753	5
M-839	42.792	8.417	38.803	8.417	1.292	1.5	3.478	6.25
M-816	42.789	8.417	38.969	8.417	0.949	1.5	2.374	4.917
M-793	42.788	8.417	38.997	8.417	0.952	1.5	2.755	5
M-783	42.787	8.417	38.983	8.417	0.954	1.5	2.504	4.833
M-773	42.786	8.417	38.962	8.417	0.911	1.5	2.211	4.417
M-766	42.785	8.417	38.938	8.417	0.818	1.5	1.877	4
M-758	42.785	8.417	38.891	8.417	0.585	1.5	1.612	5.25
M-748	42.784	8.417	38.884	8.417	0.591	1.5	1.559	4.917
M-738	42.784	8.417	38.878	8.417	0.605	1.5	1.524	3.917
M-728	42.785	8.417	38.873	8.417	0.633	1.5	1.514	3.833
M-718	42.785	8.417	38.868	8.417	0.725	1.5	1.57	1.5
M-709	42.786	8.417	38.865	8.417	0.97	1.833	1.814	1.5
M-705_U	42.786	8.417	38.876	8.417	0.388	1.5	1.193	8.417
M-705_BU	31.399	10.5	38.876	8.417	0	1.5	0	1.5
M-705_BD	31.399	10.5	38.583	8.417	0	1.5	0	1.5
M-705_D	42.786	8.417	38.583	8.417	0.432	1.5	1.272	8.167
M-705SP	16.023	8.417	38.876	8.417	0	1.5	0	1.5
M-705SPD	16.023	8.417	38.583	8.417	0	1.5	0	1.5
M-695	42.786	8.417	38.561	8.417	0.426	1.5	1.356	8.333
M-686	42.786	8.417	38.536	8.417	0.42	1.5	1.448	8.417
M-670	42.785	8.417	38.496	8.417	0.403	1.5	1.542	8.417
M-653	42.784	8.417	38.441	8.417	0.43	1.5	1.669	8.417
M-643	42.784	8.417	38.442	8.417	0.361	1.5	1.543	8.417
M-630	42.783	8.417	38.442	8.417	0.292	1.5	1.404	8.417
M-627_U	42.783	8.417	38.443	8.417	0.279	1.5	1.375	8.417

APPENDIX D

Outline surface water drainage strategy

1. WinDes output files – North pond 2yr, 30yr, 100yr & CC30% flow
2. WinDes output files – South pond 2yr, 30yr, 100yr & CC30% flow

Summary of Results for 2 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
15 Summer	10.5	0.0	10.5	0.4667	0.1667	0.0	64.9	O K
30 Summer	14.0	0.0	14.0	0.5232	0.2232	0.0	88.5	O K
60 Summer	15.8	0.0	15.8	0.5812	0.2812	0.0	113.2	O K
120 Summer	17.4	0.0	17.4	0.6392	0.3392	0.0	138.9	O K
180 Summer	18.1	0.0	18.1	0.6692	0.3692	0.0	152.7	O K
240 Summer	18.6	0.0	18.6	0.6862	0.3862	0.0	160.4	O K
360 Summer	18.9	0.0	18.9	0.7017	0.4017	0.0	167.5	O K
480 Summer	19.0	0.0	19.0	0.7047	0.4047	0.0	168.9	O K
600 Summer	18.9	0.0	18.9	0.7012	0.4012	0.0	167.4	O K
720 Summer	18.8	0.0	18.8	0.6952	0.3952	0.0	164.5	O K
960 Summer	18.4	0.0	18.4	0.6792	0.3792	0.0	157.2	O K
1440 Summer	17.5	0.0	17.5	0.6442	0.3442	0.0	141.3	O K
2160 Summer	16.3	0.0	16.3	0.5977	0.2977	0.0	120.6	O K
2880 Summer	15.2	0.0	15.2	0.5602	0.2602	0.0	104.2	O K
4320 Summer	13.4	0.0	13.4	0.5103	0.2103	0.0	82.9	O K
5760 Summer	12.1	0.0	12.1	0.4843	0.1843	0.0	72.2	O K
7200 Summer	10.8	0.0	10.8	0.4698	0.1698	0.0	66.2	O K
8640 Summer	9.8	0.0	9.8	0.4588	0.1588	0.0	61.7	O K
10080 Summer	9.0	0.0	9.0	0.4498	0.1498	0.0	58.1	O K
15 Winter	12.2	0.0	12.2	0.4852	0.1852	0.0	72.5	O K
30 Winter	14.8	0.0	14.8	0.5497	0.2497	0.0	99.7	O K
60 Winter	16.7	0.0	16.7	0.6152	0.3152	0.0	128.3	O K
120 Winter	18.3	0.0	18.3	0.6752	0.3752	0.0	155.2	O K
180 Winter	19.0	0.0	19.0	0.7032	0.4032	0.0	168.3	O K
240 Winter	19.3	0.0	19.3	0.7167	0.4167	0.0	174.4	O K
360 Winter	19.4	0.0	19.4	0.7222	0.4222	0.0	177.1	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	32.57	19
30 Summer	23.52	32
60 Summer	16.54	56
120 Summer	11.49	88
180 Summer	9.23	124
240 Summer	7.88	158
360 Summer	6.30	228
480 Summer	5.38	296
600 Summer	4.76	362
720 Summer	4.30	428
960 Summer	3.67	556
1440 Summer	2.93	806
2160 Summer	2.34	1168
2880 Summer	1.98	1528
4320 Summer	1.57	2244
5760 Summer	1.33	2944
7200 Summer	1.17	3672
8640 Summer	1.05	4408
10080 Summer	0.96	5136
15 Winter	32.57	19
30 Winter	23.52	32
60 Winter	16.54	58
120 Winter	11.49	94
180 Winter	9.23	134
240 Winter	7.88	172
360 Winter	6.30	246

Summary of Results for 2 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
480 Winter	19.3	0.0	19.3	0.7157	0.4157	0.0	174.0	O K
600 Winter	19.0	0.0	19.0	0.7032	0.4032	0.0	168.1	O K
720 Winter	18.6	0.0	18.6	0.6882	0.3882	0.0	161.3	O K
960 Winter	17.9	0.0	17.9	0.6577	0.3577	0.0	147.2	O K
1440 Winter	16.4	0.0	16.4	0.6012	0.3012	0.0	122.0	O K
2160 Winter	14.5	0.0	14.5	0.5382	0.2382	0.0	94.8	O K
2880 Winter	13.0	0.0	13.0	0.5003	0.2003	0.0	78.7	O K
4320 Winter	10.6	0.0	10.6	0.4673	0.1673	0.0	65.1	O K
5760 Winter	9.0	0.0	9.0	0.4503	0.1503	0.0	58.1	O K
7200 Winter	8.0	0.0	8.0	0.4383	0.1383	0.0	53.3	O K
8640 Winter	7.2	0.0	7.2	0.4293	0.1293	0.0	49.9	O K
10080 Winter	6.6	0.0	6.6	0.4228	0.1228	0.0	47.1	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
480 Winter	5.38	316
600 Winter	4.76	384
720 Winter	4.30	452
960 Winter	3.67	582
1440 Winter	2.93	834
2160 Winter	2.34	1188
2880 Winter	1.98	1528
4320 Winter	1.57	2212
5760 Winter	1.33	2944
7200 Winter	1.17	3672
8640 Winter	1.05	4408
10080 Winter	0.96	5112

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	2	Longest Storm (mins)	10080
M5-60 (mm)	20.400	Summer Storms	Yes
Ratio-R	0.200	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+0
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 1.159

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.800	4	8	0.359

Tank/Pond Details

Invert Level (m) 0.300 Ground Level (m) 1.500

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	370.1	2.40	679.4	4.80	679.4	7.20	679.4	9.60	679.4
0.40	463.4	2.80	679.4	5.20	679.4	7.60	679.4	10.00	679.4
0.80	566.6	3.20	679.4	5.60	679.4	8.00	679.4		
1.20	679.4	3.60	679.4	6.00	679.4	8.40	679.4		
1.60	679.4	4.00	679.4	6.40	679.4	8.80	679.4		
2.00	679.4	4.40	679.4	6.80	679.4	9.20	679.4		

Pipe Outflow Control

Pipe Diameter (m)	0.130	Roughness (mm)	0.600	Invert Level (m)	0.300
Slope (1:x)	80.0	Entry Loss Coef	0.500		
Length (m)	10.000	Coef of Contraction	0.600		

Weir / Flume Overflow Control

Discharge Coef 0.544 Width (m) 1.000 Crest Level (m) 1.400

Summary of Results for 30 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
15 Summer	16.4	0.0	16.4	0.6022	0.3022	0.0	122.6	O K
30 Summer	19.2	0.0	19.2	0.7132	0.4132	0.0	173.0	O K
60 Summer	21.7	0.0	21.7	0.8242	0.5242	0.0	226.3	O K
120 Summer	23.5	0.0	23.5	0.9128	0.6128	0.0	271.1	O K
180 Summer	24.2	0.0	24.2	0.9528	0.6528	0.0	292.0	O K
240 Summer	24.7	0.0	24.7	0.9758	0.6758	0.0	304.3	O K
360 Summer	25.0	0.0	25.0	0.9943	0.6943	0.0	314.3	O K
480 Summer	25.0	0.0	25.0	0.9953	0.6953	0.0	314.8	O K
600 Summer	24.9	0.0	24.9	0.9878	0.6878	0.0	310.6	O K
720 Summer	24.7	0.0	24.7	0.9753	0.6753	0.0	304.2	O K
960 Summer	24.1	0.0	24.1	0.9458	0.6458	0.0	288.3	O K
1440 Summer	22.9	0.0	22.9	0.8833	0.5833	0.0	255.9	O K
2160 Summer	21.2	0.0	21.2	0.8017	0.5017	0.0	215.2	O K
2880 Summer	19.8	0.0	19.8	0.7367	0.4367	0.0	183.8	O K
4320 Summer	17.5	0.0	17.5	0.6422	0.3422	0.0	140.4	O K
5760 Summer	15.8	0.0	15.8	0.5812	0.2812	0.0	113.3	O K
7200 Summer	14.5	0.0	14.5	0.5387	0.2387	0.0	95.1	O K
8640 Summer	13.5	0.0	13.5	0.5118	0.2118	0.0	83.6	O K
10080 Summer	12.6	0.0	12.6	0.4923	0.1923	0.0	75.5	O K
15 Winter	17.3	0.0	17.3	0.6367	0.3367	0.0	137.8	O K
30 Winter	20.3	0.0	20.3	0.7597	0.4597	0.0	194.9	O K
60 Winter	22.9	0.0	22.9	0.8842	0.5842	0.0	256.5	O K
120 Winter	24.8	0.0	24.8	0.9808	0.6808	0.0	307.0	O K
180 Winter	25.5	0.0	25.5	1.0208	0.7208	0.0	328.7	O K
240 Winter	25.8	0.0	25.8	1.0418	0.7418	0.0	340.1	O K
360 Winter	26.0	0.0	26.0	1.0513	0.7513	0.0	345.4	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	61.43	19
30 Summer	44.79	33
60 Summer	31.44	60
120 Summer	21.25	100
180 Summer	16.63	132
240 Summer	13.96	168
360 Summer	10.87	238
480 Summer	9.09	306
600 Summer	7.90	374
720 Summer	7.03	442
960 Summer	5.85	574
1440 Summer	4.51	828
2160 Summer	3.48	1196
2880 Summer	2.90	1560
4320 Summer	2.25	2292
5760 Summer	1.89	3000
7200 Summer	1.66	3680
8640 Summer	1.49	4408
10080 Summer	1.35	5144
15 Winter	61.43	20
30 Winter	44.79	33
60 Winter	31.44	60
120 Winter	21.25	112
180 Winter	16.63	142
240 Winter	13.96	180
360 Winter	10.87	256

Summary of Results for 30 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
480 Winter	25.8	0.0	25.8	1.0408	0.7408	0.0	339.5	O K
600 Winter	25.5	0.0	25.5	1.0208	0.7208	0.0	328.6	O K
720 Winter	25.0	0.0	25.0	0.9968	0.6968	0.0	315.6	O K
960 Winter	24.1	0.0	24.1	0.9448	0.6448	0.0	287.9	O K
1440 Winter	22.2	0.0	22.2	0.8467	0.5467	0.0	237.5	O K
2160 Winter	19.6	0.0	19.6	0.7312	0.4312	0.0	181.3	O K
2880 Winter	17.6	0.0	17.6	0.6477	0.3477	0.0	142.8	O K
4320 Winter	14.7	0.0	14.7	0.5448	0.2448	0.0	97.5	O K
5760 Winter	12.7	0.0	12.7	0.4953	0.1953	0.0	76.8	O K
7200 Winter	11.3	0.0	11.3	0.4753	0.1753	0.0	68.4	O K
8640 Winter	10.1	0.0	10.1	0.4623	0.1623	0.0	63.2	O K
10080 Winter	9.3	0.0	9.3	0.4528	0.1528	0.0	59.2	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
480 Winter	9.09	330
600 Winter	7.90	402
720 Winter	7.03	472
960 Winter	5.85	608
1440 Winter	4.51	868
2160 Winter	3.48	1236
2880 Winter	2.90	1612
4320 Winter	2.25	2296
5760 Winter	1.89	2992
7200 Winter	1.66	3672
8640 Winter	1.49	4408
10080 Winter	1.35	5136

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	30	Longest Storm (mins)	10080
M5-60 (mm)	20.400	Summer Storms	Yes
Ratio-R	0.200	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+0
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 1.159

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.800	4	8	0.359

Tank/Pond Details

Invert Level (m) 0.300 Ground Level (m) 1.500

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	370.1	2.40	679.4	4.80	679.4	7.20	679.4	9.60	679.4
0.40	463.4	2.80	679.4	5.20	679.4	7.60	679.4	10.00	679.4
0.80	566.6	3.20	679.4	5.60	679.4	8.00	679.4		
1.20	679.4	3.60	679.4	6.00	679.4	8.40	679.4		
1.60	679.4	4.00	679.4	6.40	679.4	8.80	679.4		
2.00	679.4	4.40	679.4	6.80	679.4	9.20	679.4		

Pipe Outflow Control

Pipe Diameter (m)	0.130	Roughness (mm)	0.600	Invert Level (m)	0.300
Slope (1:x)	80.0	Entry Loss Coef	0.500		
Length (m)	10.000	Coef of Contraction	0.600		

Weir / Flume Overflow Control

Discharge Coef 0.544 Width (m) 1.000 Crest Level (m) 1.400

Summary of Results for 100 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
15 Summer	18.5	0.0	18.5	0.6832	0.3832	0.0	159.0	O K
30 Summer	21.8	0.0	21.8	0.8287	0.5287	0.0	228.4	O K
60 Summer	24.7	0.0	24.7	0.9753	0.6753	0.0	304.1	O K
120 Summer	26.6	0.0	26.6	1.0858	0.7858	0.0	364.8	O K
180 Summer	27.3	0.0	27.3	1.1293	0.8293	0.0	389.5	O K
240 Summer	27.8	0.0	27.8	1.1548	0.8548	0.0	404.1	O K
360 Summer	28.1	0.0	28.1	1.1743	0.8743	0.0	415.4	O K
480 Summer	28.1	0.0	28.1	1.1728	0.8728	0.0	414.8	O K
600 Summer	27.9	0.0	27.9	1.1618	0.8618	0.0	408.3	O K
720 Summer	27.6	0.0	27.6	1.1458	0.8458	0.0	399.0	O K
960 Summer	27.0	0.0	27.0	1.1073	0.8073	0.0	376.9	O K
1440 Summer	25.6	0.0	25.6	1.0283	0.7283	0.0	332.6	O K
2160 Summer	23.7	0.0	23.7	0.9263	0.6263	0.0	278.1	O K
2880 Summer	22.1	0.0	22.1	0.8442	0.5442	0.0	236.3	O K
4320 Summer	19.5	0.0	19.5	0.7272	0.4272	0.0	179.3	O K
5760 Summer	17.7	0.0	17.7	0.6497	0.3497	0.0	143.7	O K
7200 Summer	16.2	0.0	16.2	0.5957	0.2957	0.0	119.8	O K
8640 Summer	15.0	0.0	15.0	0.5557	0.2557	0.0	102.3	O K
10080 Summer	14.1	0.0	14.1	0.5268	0.2268	0.0	89.9	O K
15 Winter	19.5	0.0	19.5	0.7257	0.4257	0.0	178.8	O K
30 Winter	22.9	0.0	22.9	0.8857	0.5857	0.0	257.3	O K
60 Winter	26.0	0.0	26.0	1.0493	0.7493	0.0	344.2	O K
120 Winter	28.1	0.0	28.1	1.1753	0.8753	0.0	416.1	O K
180 Winter	28.8	0.0	28.8	1.2173	0.9173	0.0	441.0	O K
240 Winter	29.2	0.0	29.2	1.2413	0.9413	0.0	455.6	O K
360 Winter	29.3	0.0	29.3	1.2528	0.9528	0.0	462.5	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	79.12	20
30 Summer	58.45	33
60 Summer	41.34	62
120 Summer	27.78	106
180 Summer	21.52	138
240 Summer	17.93	172
360 Summer	13.80	242
480 Summer	11.43	312
600 Summer	9.85	380
720 Summer	8.72	448
960 Summer	7.17	582
1440 Summer	5.44	840
2160 Summer	4.13	1212
2880 Summer	3.41	1584
4320 Summer	2.62	2296
5760 Summer	2.19	3000
7200 Summer	1.91	3744
8640 Summer	1.71	4416
10080 Summer	1.55	5144
15 Winter	79.12	20
30 Winter	58.45	33
60 Winter	41.34	60
120 Winter	27.78	116
180 Winter	21.52	146
240 Winter	17.93	184
360 Winter	13.80	262

Summary of Results for 100 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
480 Winter	29.1	0.0	29.1	1.2398	0.9398	0.0	454.7	O K
600 Winter	28.8	0.0	28.8	1.2158	0.9158	0.0	440.3	O K
720 Winter	28.3	0.0	28.3	1.1868	0.8868	0.0	422.9	O K
960 Winter	27.2	0.0	27.2	1.1228	0.8228	0.0	385.7	O K
1440 Winter	25.1	0.0	25.1	1.0008	0.7008	0.0	317.8	O K
2160 Winter	22.3	0.0	22.3	0.8557	0.5557	0.0	242.0	O K
2880 Winter	20.0	0.0	20.0	0.7492	0.4492	0.0	189.8	O K
4320 Winter	16.7	0.0	16.7	0.6137	0.3137	0.0	127.6	O K
5760 Winter	14.5	0.0	14.5	0.5377	0.2377	0.0	94.7	O K
7200 Winter	12.9	0.0	12.9	0.4983	0.1983	0.0	78.0	O K
8640 Winter	11.7	0.0	11.7	0.4793	0.1793	0.0	70.0	O K
10080 Winter	10.6	0.0	10.6	0.4678	0.1678	0.0	65.3	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
480 Winter	11.43	338
600 Winter	9.85	410
720 Winter	8.72	482
960 Winter	7.17	620
1440 Winter	5.44	884
2160 Winter	4.13	1260
2880 Winter	3.41	1620
4320 Winter	2.62	2336
5760 Winter	2.19	3048
7200 Winter	1.91	3744
8640 Winter	1.71	4400
10080 Winter	1.55	5120

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	10080
M5-60 (mm)	20.400	Summer Storms	Yes
Ratio-R	0.200	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+0
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 1.159

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.800	4	8	0.359

Tank/Pond Details

Invert Level (m) 0.300 Ground Level (m) 1.500

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	370.1	2.40	679.4	4.80	679.4	7.20	679.4	9.60	679.4
0.40	463.4	2.80	679.4	5.20	679.4	7.60	679.4	10.00	679.4
0.80	566.6	3.20	679.4	5.60	679.4	8.00	679.4		
1.20	679.4	3.60	679.4	6.00	679.4	8.40	679.4		
1.60	679.4	4.00	679.4	6.40	679.4	8.80	679.4		
2.00	679.4	4.40	679.4	6.80	679.4	9.20	679.4		

Pipe Outflow Control

Pipe Diameter (m)	0.130	Roughness (mm)	0.600	Invert Level (m)	0.300
Slope (1:x)	80.0	Entry Loss Coef	0.500		
Length (m)	10.000	Coef of Contraction	0.600		

Weir / Flume Overflow Control

Discharge Coef 0.544 Width (m) 1.000 Crest Level (m) 1.400

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

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
15 Summer	20.9	0.0	20.9	0.7877	0.4877	0.0	208.3	O K
30 Summer	24.5	0.0	24.5	0.9683	0.6683	0.0	300.2	O K
60 Summer	27.7	0.0	27.7	1.1528	0.8528	0.0	403.1	O K
120 Summer	30.0	0.0	30.0	1.2963	0.9963	0.0	489.2	O K
180 Summer	30.8	0.0	30.8	1.3508	1.0508	0.0	523.6	FLOOD RISK
240 Summer	31.3	0.0	31.3	1.3843	1.0843	0.0	545.1	FLOOD RISK
360 Summer	31.7	2.5	34.2	1.4128	1.1128	3.6	563.7	FLOOD RISK
480 Summer	31.8	3.7	35.5	1.4168	1.1168	6.2	566.3	FLOOD RISK
600 Summer	31.7	2.3	34.0	1.4123	1.1123	3.5	563.3	FLOOD RISK
720 Summer	31.6	0.1	31.6	1.4013	1.1013	0.0	556.3	FLOOD RISK
960 Summer	31.0	0.0	31.0	1.3643	1.0643	0.0	532.4	FLOOD RISK
1440 Summer	29.8	0.0	29.8	1.2823	0.9823	0.0	480.6	O K
2160 Summer	28.0	0.0	28.0	1.1693	0.8693	0.0	412.5	O K
2880 Summer	26.4	0.0	26.4	1.0728	0.7728	0.0	357.3	O K
4320 Summer	23.7	0.0	23.7	0.9268	0.6268	0.0	278.4	O K
5760 Summer	21.7	0.0	21.7	0.8247	0.5247	0.0	226.6	O K
7200 Summer	20.1	0.0	20.1	0.7497	0.4497	0.0	190.0	O K
8640 Summer	18.7	0.0	18.7	0.6907	0.3907	0.0	162.4	O K
10080 Summer	17.4	0.0	17.4	0.6417	0.3417	0.0	140.1	O K
15 Winter	22.0	0.0	22.0	0.8402	0.5402	0.0	234.1	O K
30 Winter	25.8	0.0	25.8	1.0383	0.7383	0.0	338.1	O K
60 Winter	29.2	0.0	29.2	1.2423	0.9423	0.0	456.1	O K
120 Winter	31.6	0.7	32.4	1.4058	1.1058	0.3	559.0	FLOOD RISK
180 Winter	32.1	13.8	45.9	1.4403	1.1403	29.3	581.6	FLOOD RISK
240 Winter	32.3	22.1	54.5	1.4553	1.1553	51.0	591.9	FLOOD RISK
360 Winter	32.4	25.2	57.6	1.4603	1.1603	68.1	595.1	FLOOD RISK

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	102.86	20
30 Summer	75.98	34
60 Summer	53.74	62
120 Summer	36.11	118
180 Summer	27.98	148
240 Summer	23.31	180
360 Summer	17.95	246
480 Summer	14.86	314
600 Summer	12.81	384
720 Summer	11.33	458
960 Summer	9.32	592
1440 Summer	7.07	854
2160 Summer	5.38	1236
2880 Summer	4.43	1612
4320 Summer	3.40	2336
5760 Summer	2.84	3056
7200 Summer	2.48	3752
8640 Summer	2.22	4496
10080 Summer	2.02	5240
15 Winter	102.86	20
30 Winter	75.98	34
60 Winter	53.74	62
120 Winter	36.11	116
180 Winter	27.98	140
240 Winter	23.31	174
360 Winter	17.95	244

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

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
480 Winter	32.3	21.8	54.2	1.4548	1.1548	67.1	591.4	FLOOD RISK
600 Winter	32.2	17.0	49.2	1.4463	1.1463	55.5	585.6	FLOOD RISK
720 Winter	32.0	11.5	43.6	1.4358	1.1358	38.4	578.9	FLOOD RISK
960 Winter	31.6	0.9	32.6	1.4068	1.1068	1.7	559.8	FLOOD RISK
1440 Winter	29.7	0.0	29.7	1.2768	0.9768	0.0	477.1	O K
2160 Winter	27.0	0.0	27.0	1.1073	0.8073	0.0	376.8	O K
2880 Winter	24.6	0.0	24.6	0.9733	0.6733	0.0	302.9	O K
4320 Winter	20.9	0.0	20.9	0.7887	0.4887	0.0	208.9	O K
5760 Winter	18.3	0.0	18.3	0.6757	0.3757	0.0	155.6	O K
7200 Winter	16.4	0.0	16.4	0.6022	0.3022	0.0	122.4	O K
8640 Winter	14.9	0.0	14.9	0.5503	0.2503	0.0	100.0	O K
10080 Winter	13.7	0.0	13.7	0.5158	0.2158	0.0	85.2	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
480 Winter	14.86	314
600 Winter	12.81	388
720 Winter	11.33	464
960 Winter	9.32	632
1440 Winter	7.07	908
2160 Winter	5.38	1296
2880 Winter	4.43	1672
4320 Winter	3.40	2380
5760 Winter	2.84	3112
7200 Winter	2.48	3816
8640 Winter	2.22	4496
10080 Winter	2.02	5144

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	10080
M5-60 (mm)	20.400	Summer Storms	Yes
Ratio-R	0.200	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+30
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 1.159

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.800	4	8	0.359

Tank/Pond Details

Invert Level (m) 0.300 Ground Level (m) 1.500

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	370.1	2.40	679.4	4.80	679.4	7.20	679.4	9.60	679.4
0.40	463.4	2.80	679.4	5.20	679.4	7.60	679.4	10.00	679.4
0.80	566.6	3.20	679.4	5.60	679.4	8.00	679.4		
1.20	679.4	3.60	679.4	6.00	679.4	8.40	679.4		
1.60	679.4	4.00	679.4	6.40	679.4	8.80	679.4		
2.00	679.4	4.40	679.4	6.80	679.4	9.20	679.4		

Pipe Outflow Control

Pipe Diameter (m)	0.130	Roughness (mm)	0.600	Invert Level (m)	0.300
Slope (1:x)	80.0	Entry Loss Coef	0.500		
Length (m)	10.000	Coef of Contraction	0.600		

Weir / Flume Overflow Control

Discharge Coef 0.544 Width (m) 1.000 Crest Level (m) 1.400

Summary of Results for 2 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
15 Summer	3.0	0.0	3.0	0.4203	0.1203	0.0	15.9	O K
30 Summer	3.8	0.0	3.8	0.4567	0.1567	0.0	21.5	O K
60 Summer	4.5	0.0	4.5	0.4902	0.1902	0.0	26.8	O K
120 Summer	4.8	0.0	4.8	0.5232	0.2232	0.0	32.4	O K
180 Summer	4.8	0.0	4.8	0.5392	0.2392	0.0	35.3	O K
240 Summer	4.9	0.0	4.9	0.5477	0.2477	0.0	36.8	O K
360 Summer	4.9	0.0	4.9	0.5537	0.2537	0.0	37.9	O K
480 Summer	4.9	0.0	4.9	0.5537	0.2537	0.0	37.8	O K
600 Summer	4.9	0.0	4.9	0.5497	0.2497	0.0	37.1	O K
720 Summer	4.9	0.0	4.9	0.5447	0.2447	0.0	36.2	O K
960 Summer	4.8	0.0	4.8	0.5327	0.2327	0.0	34.1	O K
1440 Summer	4.7	0.0	4.7	0.5082	0.2082	0.0	29.9	O K
2160 Summer	4.3	0.0	4.3	0.4827	0.1827	0.0	25.6	O K
2880 Summer	3.9	0.0	3.9	0.4627	0.1627	0.0	22.4	O K
4320 Summer	3.3	0.0	3.3	0.4343	0.1343	0.0	18.0	O K
5760 Summer	2.9	0.0	2.9	0.4153	0.1153	0.0	15.2	O K
7200 Summer	2.6	0.0	2.6	0.4018	0.1018	0.0	13.2	O K
8640 Summer	2.4	0.0	2.4	0.3928	0.0928	0.0	11.9	O K
10080 Summer	2.2	0.0	2.2	0.3853	0.0853	0.0	10.9	O K
15 Winter	3.3	0.0	3.3	0.4338	0.1338	0.0	17.9	O K
30 Winter	4.1	0.0	4.1	0.4742	0.1742	0.0	24.2	O K
60 Winter	4.7	0.0	4.7	0.5112	0.2112	0.0	30.3	O K
120 Winter	4.9	0.0	4.9	0.5457	0.2457	0.0	36.4	O K
180 Winter	4.9	0.0	4.9	0.5607	0.2607	0.0	39.1	O K
240 Winter	4.9	0.0	4.9	0.5662	0.2662	0.0	40.1	O K
360 Winter	4.9	0.0	4.9	0.5662	0.2662	0.0	40.1	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	32.57	17
30 Summer	23.52	31
60 Summer	16.54	50
120 Summer	11.49	86
180 Summer	9.23	120
240 Summer	7.88	156
360 Summer	6.30	226
480 Summer	5.38	292
600 Summer	4.76	358
720 Summer	4.30	422
960 Summer	3.67	550
1440 Summer	2.93	794
2160 Summer	2.34	1148
2880 Summer	1.98	1504
4320 Summer	1.57	2244
5760 Summer	1.33	2944
7200 Summer	1.17	3672
8640 Summer	1.05	4408
10080 Summer	0.96	5136
15 Winter	32.57	17
30 Winter	23.52	31
60 Winter	16.54	56
120 Winter	11.49	92
180 Winter	9.23	132
240 Winter	7.88	170
360 Winter	6.30	242

Summary of Results for 2 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
480 Winter	4.9	0.0	4.9	0.5587	0.2587	0.0	38.8	O K
600 Winter	4.9	0.0	4.9	0.5482	0.2482	0.0	36.9	O K
720 Winter	4.8	0.0	4.8	0.5367	0.2367	0.0	34.8	O K
960 Winter	4.7	0.0	4.7	0.5142	0.2142	0.0	30.8	O K
1440 Winter	4.3	0.0	4.3	0.4822	0.1822	0.0	25.6	O K
2160 Winter	3.7	0.0	3.7	0.4508	0.1508	0.0	20.5	O K
2880 Winter	3.2	0.0	3.2	0.4288	0.1288	0.0	17.1	O K
4320 Winter	2.6	0.0	2.6	0.4003	0.1003	0.0	13.0	O K
5760 Winter	2.2	0.0	2.2	0.3853	0.0853	0.0	10.9	O K
7200 Winter	2.0	0.0	2.0	0.3758	0.0758	0.0	9.5	O K
8640 Winter	1.8	0.0	1.8	0.3683	0.0683	0.0	8.5	O K
10080 Winter	1.6	0.0	1.6	0.3623	0.0622	0.0	7.8	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
480 Winter	5.38	314
600 Winter	4.76	380
720 Winter	4.30	446
960 Winter	3.67	568
1440 Winter	2.93	808
2160 Winter	2.34	1172
2880 Winter	1.98	1528
4320 Winter	1.57	2248
5760 Winter	1.33	2952
7200 Winter	1.17	3672
8640 Winter	1.05	4408
10080 Winter	0.96	5144

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	2	Longest Storm (mins)	10080
M5-60 (mm)	20.400	Summer Storms	Yes
Ratio-R	0.200	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+0
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.288

Time (mins) from:	to:	Area (ha)
0	4	0.288

Tank/Pond Details

Invert Level (m) 0.300 Ground Level (m) 1.100

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	116.8	2.40	330.0	4.80	330.0	7.20	330.0	9.60	330.0
0.40	218.8	2.80	330.0	5.20	330.0	7.60	330.0	10.00	330.0
0.80	330.0	3.20	330.0	5.60	330.0	8.00	330.0		
1.20	330.0	3.60	330.0	6.00	330.0	8.40	330.0		
1.60	330.0	4.00	330.0	6.40	330.0	8.80	330.0		
2.00	330.0	4.40	330.0	6.80	330.0	9.20	330.0		

Crown Vortex Valve Outflow Control

Design Head (m) 0.280 Diameter (mm) 118
Design Flow (l/s) 4.9 Invert Level (m) 0.300
Crown Vortex Valve Type R2

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.10	2.6	0.80	8.3	2.00	13.1	4.00	18.5	7.00	24.5
0.20	4.7	1.00	9.3	2.20	13.7	4.50	19.6	7.50	25.4
0.30	5.1	1.20	10.1	2.40	14.3	5.00	20.7	8.00	26.2
0.40	5.9	1.40	11.0	2.60	14.9	5.50	21.7	8.50	27.0
0.50	6.5	1.60	11.7	3.00	16.0	6.00	22.7	9.00	27.8
0.60	7.2	1.80	12.4	3.50	17.3	6.50	23.6	9.50	28.5

Weir / Flume Overflow Control

Discharge Coef 0.544 Width (m) 1.000 Crest Level (m) 0.990

Summary of Results for 30 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
15 Summer	4.7	0.0	4.7	0.5112	0.2112	0.0	30.4	O K
30 Summer	5.0	0.0	5.0	0.5792	0.2792	0.0	42.5	O K
60 Summer	5.4	0.0	5.4	0.6442	0.3442	0.0	55.3	O K
120 Summer	5.8	0.0	5.8	0.6937	0.3937	0.0	65.8	O K
180 Summer	6.0	0.0	6.0	0.7152	0.4152	0.0	70.5	O K
240 Summer	6.0	0.0	6.0	0.7272	0.4272	0.0	73.2	O K
360 Summer	6.1	0.0	6.1	0.7362	0.4362	0.0	75.2	O K
480 Summer	6.1	0.0	6.1	0.7352	0.4352	0.0	75.0	O K
600 Summer	6.1	0.0	6.1	0.7297	0.4297	0.0	73.8	O K
720 Summer	6.0	0.0	6.0	0.7222	0.4222	0.0	72.1	O K
960 Summer	5.9	0.0	5.9	0.7037	0.4037	0.0	67.9	O K
1440 Summer	5.6	0.0	5.6	0.6647	0.3647	0.0	59.6	O K
2160 Summer	5.2	0.0	5.2	0.6122	0.3122	0.0	48.9	O K
2880 Summer	4.9	0.0	4.9	0.5652	0.2652	0.0	39.9	O K
4320 Summer	4.7	0.0	4.7	0.5007	0.2007	0.0	28.6	O K
5760 Summer	4.1	0.0	4.1	0.4722	0.1722	0.0	23.9	O K
7200 Summer	3.7	0.0	3.7	0.4523	0.1523	0.0	20.7	O K
8640 Summer	3.4	0.0	3.4	0.4368	0.1368	0.0	18.3	O K
10080 Summer	3.1	0.0	3.1	0.4238	0.1238	0.0	16.4	O K
15 Winter	4.8	0.0	4.8	0.5332	0.2332	0.0	34.2	O K
30 Winter	5.1	0.0	5.1	0.6082	0.3082	0.0	48.1	O K
60 Winter	5.7	0.0	5.7	0.6807	0.3807	0.0	63.0	O K
120 Winter	6.1	0.0	6.1	0.7347	0.4347	0.0	74.9	O K
180 Winter	6.2	0.0	6.2	0.7562	0.4562	0.0	79.8	O K
240 Winter	6.3	0.0	6.3	0.7667	0.4667	0.0	82.3	O K
360 Winter	6.3	0.0	6.3	0.7702	0.4702	0.0	83.2	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	61.43	18
30 Summer	44.79	32
60 Summer	31.44	60
120 Summer	21.25	98
180 Summer	16.63	132
240 Summer	13.96	166
360 Summer	10.87	236
480 Summer	9.09	306
600 Summer	7.90	374
720 Summer	7.03	442
960 Summer	5.85	576
1440 Summer	4.51	834
2160 Summer	3.48	1208
2880 Summer	2.90	1560
4320 Summer	2.25	2248
5760 Summer	1.89	2952
7200 Summer	1.66	3680
8640 Summer	1.49	4408
10080 Summer	1.35	5144
15 Winter	61.43	17
30 Winter	44.79	32
60 Winter	31.44	60
120 Winter	21.25	112
180 Winter	16.63	140
240 Winter	13.96	180
360 Winter	10.87	256

Summary of Results for 30 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
480 Winter	6.3	0.0	6.3	0.7627	0.4627	0.0	81.4	O K
600 Winter	6.2	0.0	6.2	0.7502	0.4502	0.0	78.4	O K
720 Winter	6.1	0.0	6.1	0.7352	0.4352	0.0	75.0	O K
960 Winter	5.9	0.0	5.9	0.7032	0.4032	0.0	67.8	O K
1440 Winter	5.4	0.0	5.4	0.6407	0.3407	0.0	54.6	O K
2160 Winter	4.9	0.0	4.9	0.5562	0.2562	0.0	38.3	O K
2880 Winter	4.6	0.0	4.6	0.4982	0.1982	0.0	28.2	O K
4320 Winter	3.7	0.0	3.7	0.4533	0.1533	0.0	20.9	O K
5760 Winter	3.2	0.0	3.2	0.4268	0.1268	0.0	16.8	O K
7200 Winter	2.8	0.0	2.8	0.4088	0.1088	0.0	14.2	O K
8640 Winter	2.5	0.0	2.5	0.3963	0.0963	0.0	12.4	O K
10080 Winter	2.3	0.0	2.3	0.3878	0.0878	0.0	11.3	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
480 Winter	9.09	330
600 Winter	7.90	404
720 Winter	7.03	474
960 Winter	5.85	608
1440 Winter	4.51	878
2160 Winter	3.48	1236
2880 Winter	2.90	1556
4320 Winter	2.25	2252
5760 Winter	1.89	2992
7200 Winter	1.66	3680
8640 Winter	1.49	4408
10080 Winter	1.35	5144

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	30	Longest Storm (mins)	10080
M5-60 (mm)	20.400	Summer Storms	Yes
Ratio-R	0.200	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+0
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.288

Time (mins) from:	to:	Area (ha)
0	4	0.288

Tank/Pond Details

Invert Level (m) 0.300 Ground Level (m) 1.100

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	116.8	2.40	330.0	4.80	330.0	7.20	330.0	9.60	330.0
0.40	218.8	2.80	330.0	5.20	330.0	7.60	330.0	10.00	330.0
0.80	330.0	3.20	330.0	5.60	330.0	8.00	330.0		
1.20	330.0	3.60	330.0	6.00	330.0	8.40	330.0		
1.60	330.0	4.00	330.0	6.40	330.0	8.80	330.0		
2.00	330.0	4.40	330.0	6.80	330.0	9.20	330.0		

Crown Vortex Valve Outflow Control

Design Head (m) 0.280 Diameter (mm) 118
Design Flow (l/s) 4.9 Invert Level (m) 0.300
Crown Vortex Valve Type R2

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.10	2.6	0.80	8.3	2.00	13.1	4.00	18.5	7.00	24.5
0.20	4.7	1.00	9.3	2.20	13.7	4.50	19.6	7.50	25.4
0.30	5.1	1.20	10.1	2.40	14.3	5.00	20.7	8.00	26.2
0.40	5.9	1.40	11.0	2.60	14.9	5.50	21.7	8.50	27.0
0.50	6.5	1.60	11.7	3.00	16.0	6.00	22.7	9.00	27.8
0.60	7.2	1.80	12.4	3.50	17.3	6.50	23.6	9.50	28.5

Weir / Flume Overflow Control

Discharge Coef 0.544 Width (m) 1.000 Crest Level (m) 0.990

Summary of Results for 100 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
15 Summer	4.9	0.0	4.9	0.5632	0.2632	0.0	39.6	O K
30 Summer	5.5	0.0	5.5	0.6502	0.3502	0.0	56.6	O K
60 Summer	6.1	0.0	6.1	0.7342	0.4342	0.0	74.8	O K
120 Summer	6.5	0.0	6.5	0.7957	0.4957	0.0	89.3	O K
180 Summer	6.7	0.0	6.7	0.8187	0.5187	0.0	95.0	O K
240 Summer	6.7	0.0	6.7	0.8317	0.5317	0.0	98.4	O K
360 Summer	6.8	0.0	6.8	0.8412	0.5412	0.0	100.7	O K
480 Summer	6.8	0.0	6.8	0.8392	0.5392	0.0	100.3	O K
600 Summer	6.8	0.0	6.8	0.8327	0.5327	0.0	98.6	O K
720 Summer	6.7	0.0	6.7	0.8227	0.5227	0.0	96.1	O K
960 Summer	6.5	0.0	6.5	0.8002	0.5002	0.0	90.4	O K
1440 Summer	6.2	0.0	6.2	0.7532	0.4532	0.0	79.2	O K
2160 Summer	5.8	0.0	5.8	0.6907	0.3907	0.0	65.1	O K
2880 Summer	5.4	0.0	5.4	0.6392	0.3392	0.0	54.3	O K
4320 Summer	4.9	0.0	4.9	0.5547	0.2547	0.0	38.1	O K
5760 Summer	4.7	0.0	4.7	0.5017	0.2017	0.0	28.7	O K
7200 Summer	4.2	0.0	4.2	0.4782	0.1782	0.0	24.9	O K
8640 Summer	3.9	0.0	3.9	0.4603	0.1603	0.0	22.0	O K
10080 Summer	3.5	0.0	3.5	0.4453	0.1453	0.0	19.7	O K
15 Winter	5.0	0.0	5.0	0.5897	0.2897	0.0	44.6	O K
30 Winter	5.7	0.0	5.7	0.6847	0.3847	0.0	63.9	O K
60 Winter	6.4	0.0	6.4	0.7782	0.4782	0.0	85.0	O K
120 Winter	6.8	0.0	6.8	0.8472	0.5472	0.0	102.4	O K
180 Winter	7.0	0.0	7.0	0.8692	0.5692	0.0	108.1	O K
240 Winter	7.1	0.0	7.1	0.8817	0.5817	0.0	111.5	O K
360 Winter	7.1	0.0	7.1	0.8868	0.5868	0.0	112.9	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	79.12	18
30 Summer	58.45	32
60 Summer	41.34	62
120 Summer	27.78	106
180 Summer	21.52	138
240 Summer	17.93	172
360 Summer	13.80	242
480 Summer	11.43	312
600 Summer	9.85	380
720 Summer	8.72	448
960 Summer	7.17	580
1440 Summer	5.44	840
2160 Summer	4.13	1212
2880 Summer	3.41	1584
4320 Summer	2.62	2292
5760 Summer	2.19	2992
7200 Summer	1.91	3680
8640 Summer	1.71	4408
10080 Summer	1.55	5144
15 Winter	79.12	18
30 Winter	58.45	32
60 Winter	41.34	60
120 Winter	27.78	114
180 Winter	21.52	146
240 Winter	17.93	184
360 Winter	13.80	262

Summary of Results for 100 year Return Period

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
480 Winter	7.0	0.0	7.0	0.8788	0.5788	0.0	110.7	O K
600 Winter	7.0	0.0	7.0	0.8647	0.5647	0.0	106.9	O K
720 Winter	6.8	0.0	6.8	0.8477	0.5477	0.0	102.4	O K
960 Winter	6.6	0.0	6.6	0.8102	0.5102	0.0	92.9	O K
1440 Winter	6.1	0.0	6.1	0.7372	0.4372	0.0	75.5	O K
2160 Winter	5.4	0.0	5.4	0.6457	0.3457	0.0	55.7	O K
2880 Winter	4.9	0.0	4.9	0.5667	0.2667	0.0	40.2	O K
4320 Winter	4.3	0.0	4.3	0.4818	0.1818	0.0	25.5	O K
5760 Winter	3.7	0.0	3.7	0.4503	0.1503	0.0	20.4	O K
7200 Winter	3.2	0.0	3.2	0.4288	0.1288	0.0	17.1	O K
8640 Winter	2.9	0.0	2.9	0.4133	0.1133	0.0	14.8	O K
10080 Winter	2.6	0.0	2.6	0.4008	0.1008	0.0	13.1	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
480 Winter	11.43	338
600 Winter	9.85	412
720 Winter	8.72	484
960 Winter	7.17	624
1440 Winter	5.44	892
2160 Winter	4.13	1276
2880 Winter	3.41	1640
4320 Winter	2.62	2288
5760 Winter	2.19	2992
7200 Winter	1.91	3680
8640 Winter	1.71	4408
10080 Winter	1.55	5144

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	10080
M5-60 (mm)	20.400	Summer Storms	Yes
Ratio-R	0.200	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+0
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.288

Time (mins) from:	to:	Area (ha)
0	4	0.288

Tank/Pond Details

Invert Level (m) 0.300 Ground Level (m) 1.100

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	116.8	2.40	330.0	4.80	330.0	7.20	330.0	9.60	330.0
0.40	218.8	2.80	330.0	5.20	330.0	7.60	330.0	10.00	330.0
0.80	330.0	3.20	330.0	5.60	330.0	8.00	330.0		
1.20	330.0	3.60	330.0	6.00	330.0	8.40	330.0		
1.60	330.0	4.00	330.0	6.40	330.0	8.80	330.0		
2.00	330.0	4.40	330.0	6.80	330.0	9.20	330.0		

Crown Vortex Valve Outflow Control

Design Head (m) 0.280 Diameter (mm) 118
Design Flow (l/s) 4.9 Invert Level (m) 0.300
Crown Vortex Valve Type R2

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.10	2.6	0.80	8.3	2.00	13.1	4.00	18.5	7.00	24.5
0.20	4.7	1.00	9.3	2.20	13.7	4.50	19.6	7.50	25.4
0.30	5.1	1.20	10.1	2.40	14.3	5.00	20.7	8.00	26.2
0.40	5.9	1.40	11.0	2.60	14.9	5.50	21.7	8.50	27.0
0.50	6.5	1.60	11.7	3.00	16.0	6.00	22.7	9.00	27.8
0.60	7.2	1.80	12.4	3.50	17.3	6.50	23.6	9.50	28.5

Weir / Flume Overflow Control

Discharge Coef 0.544 Width (m) 1.000 Crest Level (m) 0.990

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

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
15 Summer	5.3	0.0	5.3	0.6282	0.3282	0.0	52.0	O K
30 Summer	6.1	0.0	6.1	0.7332	0.4332	0.0	74.6	O K
60 Summer	6.8	0.0	6.8	0.8367	0.5367	0.0	99.7	O K
120 Summer	7.3	0.0	7.3	0.9153	0.6153	0.0	120.7	FLOOD RISK
180 Summer	7.4	0.0	7.4	0.9443	0.6443	0.0	128.9	FLOOD RISK
240 Summer	7.5	0.0	7.5	0.9618	0.6618	0.0	134.0	FLOOD RISK
360 Summer	7.6	0.0	7.6	0.9778	0.6778	0.0	138.7	FLOOD RISK
480 Summer	7.6	0.0	7.6	0.9808	0.6808	0.0	139.5	FLOOD RISK
600 Summer	7.6	0.0	7.6	0.9768	0.6768	0.0	138.3	FLOOD RISK
720 Summer	7.6	0.0	7.6	0.9693	0.6693	0.0	136.1	FLOOD RISK
960 Summer	7.4	0.0	7.4	0.9488	0.6488	0.0	130.1	FLOOD RISK
1440 Summer	7.2	0.0	7.2	0.9023	0.6023	0.0	117.0	FLOOD RISK
2160 Summer	6.8	0.0	6.8	0.8372	0.5372	0.0	99.7	O K
2880 Summer	6.4	0.0	6.4	0.7802	0.4802	0.0	85.6	O K
4320 Summer	5.8	0.0	5.8	0.6902	0.3902	0.0	65.0	O K
5760 Summer	5.3	0.0	5.3	0.6232	0.3232	0.0	51.1	O K
7200 Summer	4.9	0.0	4.9	0.5657	0.2657	0.0	40.0	O K
8640 Summer	4.8	0.0	4.8	0.5207	0.2207	0.0	32.0	O K
10080 Summer	4.6	0.0	4.6	0.4957	0.1957	0.0	27.8	O K
15 Winter	5.5	0.0	5.5	0.6597	0.3597	0.0	58.5	O K
30 Winter	6.4	0.0	6.4	0.7742	0.4742	0.0	84.2	O K
60 Winter	7.1	0.0	7.1	0.8877	0.5877	0.0	113.1	O K
120 Winter	7.6	0.0	7.6	0.9773	0.6773	0.0	138.5	FLOOD RISK
180 Winter	7.7	1.9	9.6	1.0008	0.7008	3.7	145.4	FLOOD RISK
240 Winter	7.8	4.6	12.3	1.0093	0.7093	8.7	148.0	FLOOD RISK
360 Winter	7.8	5.7	13.5	1.0123	0.7123	12.8	149.0	FLOOD RISK

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	102.86	18
30 Summer	75.98	32
60 Summer	53.74	62
120 Summer	36.11	118
180 Summer	27.98	148
240 Summer	23.31	182
360 Summer	17.95	250
480 Summer	14.86	320
600 Summer	12.81	390
720 Summer	11.33	458
960 Summer	9.32	596
1440 Summer	7.07	864
2160 Summer	5.38	1236
2880 Summer	4.43	1616
4320 Summer	3.40	2336
5760 Summer	2.84	3064
7200 Summer	2.48	3752
8640 Summer	2.22	4488
10080 Summer	2.02	5144
15 Winter	102.86	18
30 Winter	75.98	32
60 Winter	53.74	60
120 Winter	36.11	116
180 Winter	27.98	144
240 Winter	23.31	174
360 Winter	17.95	244

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

Storm Duration (mins)	Maximum Control (l/s)	Maximum Overflow (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Overflow Volume (m³)	Maximum Volume (m³)	Status
480 Winter	7.8	4.7	12.5	1.0098	0.7098	12.3	148.3	FLOOD RISK
600 Winter	7.8	3.4	11.1	1.0058	0.7058	9.2	147.1	FLOOD RISK
720 Winter	7.7	1.9	9.6	1.0008	0.7008	4.9	145.6	FLOOD RISK
960 Winter	7.6	0.0	7.6	0.9758	0.6758	0.0	138.0	FLOOD RISK
1440 Winter	7.2	0.0	7.2	0.9013	0.6013	0.0	116.8	FLOOD RISK
2160 Winter	6.6	0.0	6.6	0.8027	0.5027	0.0	91.0	O K
2880 Winter	6.0	0.0	6.0	0.7212	0.4212	0.0	71.8	O K
4320 Winter	5.1	0.0	5.1	0.5962	0.2962	0.0	45.8	O K
5760 Winter	4.7	0.0	4.7	0.5032	0.2032	0.0	29.0	O K
7200 Winter	4.2	0.0	4.2	0.4748	0.1748	0.0	24.3	O K
8640 Winter	3.7	0.0	3.7	0.4548	0.1548	0.0	21.1	O K
10080 Winter	3.4	0.0	3.4	0.4388	0.1388	0.0	18.6	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
480 Winter	14.86	318
600 Winter	12.81	394
720 Winter	11.33	476
960 Winter	9.32	638
1440 Winter	7.07	910
2160 Winter	5.38	1300
2880 Winter	4.43	1672
4320 Winter	3.40	2420
5760 Winter	2.84	3008
7200 Winter	2.48	3744
8640 Winter	2.22	4416
10080 Winter	2.02	5144

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	10080
M5-60 (mm)	20.400	Summer Storms	Yes
Ratio-R	0.200	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+30
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.288

Time (mins) from:	to:	Area (ha)
0	4	0.288

Tank/Pond Details

Invert Level (m) 0.300 Ground Level (m) 1.100

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	116.8	2.40	330.0	4.80	330.0	7.20	330.0	9.60	330.0
0.40	218.8	2.80	330.0	5.20	330.0	7.60	330.0	10.00	330.0
0.80	330.0	3.20	330.0	5.60	330.0	8.00	330.0		
1.20	330.0	3.60	330.0	6.00	330.0	8.40	330.0		
1.60	330.0	4.00	330.0	6.40	330.0	8.80	330.0		
2.00	330.0	4.40	330.0	6.80	330.0	9.20	330.0		

Crown Vortex Valve Outflow Control

Design Head (m) 0.280 Diameter (mm) 118
Design Flow (l/s) 4.9 Invert Level (m) 0.300
Crown Vortex Valve Type R2

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.10	2.6	0.80	8.3	2.00	13.1	4.00	18.5	7.00	24.5
0.20	4.7	1.00	9.3	2.20	13.7	4.50	19.6	7.50	25.4
0.30	5.1	1.20	10.1	2.40	14.3	5.00	20.7	8.00	26.2
0.40	5.9	1.40	11.0	2.60	14.9	5.50	21.7	8.50	27.0
0.50	6.5	1.60	11.7	3.00	16.0	6.00	22.7	9.00	27.8
0.60	7.2	1.80	12.4	3.50	17.3	6.50	23.6	9.50	28.5

Weir / Flume Overflow Control

Discharge Coef 0.544 Width (m) 1.000 Crest Level (m) 0.990