Simulaəon Se ǩ ngs

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Raəo-R	0.300	Addiəonal Storage (m³/ha)	0.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Duraəons

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Addiəonal Area (A %)	Addiəonal Flow (Q %)
1	0	0	0
2	0	0	0
30	0	0	0
100	30	0	0

Node 1.5 Online Hydro-Brake® Control

Flap Valve	x	Objecəve	(HE) Minimise upstream storage
Downstream Link	1.005	Sump Available	
Replaces Downstream Link		Product Number	CTL-SHE-0117-6600-1200-6600
Invert Level (m)	5.750	Min Outlet Diameter (m)	0.150
Design Depth (m)	1.200	Min Node Diameter (mm)	1200
Design Flow (l/s)	6.6		

Node BASIN Depth/Area Storage Structure

Base Inf CoeŶcient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	6.230
Side Inf CoeŶcient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	51.0	0.0	1.120	201.0	0.0	1.121	0.0	0.0

Node TANK Depth/Area Storage Structure

Base Inf CoeŶcient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	5.925
Side Inf CoeŶcient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	196.0	0.0	1.200	196.0	0.0	1.201	0.0	0.0

Node Carpark 1 Carpark Storage Structure

Base Inf CoeŶcient (m/hr)	0.00000	Invert Level (m)	7.230	Slope (1:X)	80.0
Side Inf CoeŶcient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.300
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.35	Length (m)	40.500		

Results for 1 year Criəcal Storm Duraəon. Lowest mass balance: 99.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inbow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	10	7.346	0.096	17.7	0.0270	0.0000	OK
15 minute winter	1.1	11	6.513	0.063	17.2	0.0179	0.0000	OK
180 minute winter	1.2	140	6.163	0.228	5.3	0.4022	0.0000	OK
180 minute winter	1.3	140	6.162	0.247	11.1	0.4367	0.0000	OK
180 minute winter	1.4	140	6.162	0.377	5.7	0.6656	0.0000	SURCHARGED
180 minute winter	1.5	140	6.162	0.412	8.3	0.7281	0.0000	SURCHARGED
15 minute summer	1.6	1	5.710	0.000	6.6	0.0000	0.0000	OK
15 minute winter	2.0	11	6.699	0.099	17.8	0.0281	0.0000	OK
180 minute winter	2.1	140	6.162	0.177	5.3	0.2003	0.0000	OK
15 minute winter	3.0	10	7.025	0.025	2.8	0.0279	0.0000	OK
15 minute winter	3.1	10	6.491	0.066	11.3	0.0751	0.0000	OK
180 minute winter	3.2	140	6.162	0.217	7.9	0.2452	0.0000	OK
180 minute winter	3.3	140	6.162	0.247	9.5	0.4360	0.0000	OK
180 minute winter	PI	140	6.162	0.397	9.2	5.1509	0.0000	SURCHARGED
15 minute summer	5.0	1	6.185	0.000	0.0	0.0000	0.0000	OK
15 minute summer	BASIN	1	6.230	0.000	0.0	0.0000	0.0000	OK
180 minute winter	TANK	140	6.162	0.237	15.7	44.1499	0.0000	OK
180 minute winter	5.2	140	6.162	0.132	1.2	0.1490	0.0000	OK
15 minute summer	4.0	1	7.000	0.000	0.0	0.0000	0.0000	OK
15 minute winter	5.1	10	6.177	0.047	4.0	0.0529	0.0000	OK
15 minute summer	Carpark 1	1	7.230	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Ouùlow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1.0	1.000	1.1	17.2	1.389	0.331	1.0002	
15 minute winter	1.1	1.001	1.2	17.3	1.987	0.151	0.0801	
180 minute winter	1.2	1.002	TANK	5.1	1.135	0.046	0.0587	
180 minute winter	1.3	1.003	1.4	5.7	0.395	0.079	1.9991	
180 minute winter	1.4	1.004	1.5	6.2	0.323	0.083	0.5418	
180 minute winter	1.5	Hydro-Brake®	1.6	6.6				108.5
15 minute winter	2.0	2.000	2.1	16.8	1.008	0.397	1.3522	
180 minute winter	2.1	2.001	1.3	5.2	0.537	0.044	0.3359	
15 minute winter	3.0	3.000	3.1	2.8	0.495	0.025	0.0781	
15 minute winter	3.1	3.001	3.2	11.2	1.093	0.186	0.3989	
180 minute winter	3.2	3.004	3.3	7.6	0.534	0.105	0.4052	
180 minute winter	3.3	4.004	PI	9.2	0.586	0.120	0.6879	
180 minute winter	PI	4.004-	1.5	8.3	0.128	0.121	0.2746	
15 minute summer	5.0	5.001	5.1	0.0	0.000	0.000	0.0377	
15 minute summer	BASIN	5.000	5.0	0.0	0.000	0.000	0.0000	
180 minute winter	TANK	1.002-	1.3	-10.6	-0.721	-0.096	0.0609	
180 minute winter	5.2	5.003	3.2	1.2	0.142	0.016	0.8320	
15 minute summer	4.0	4.000	3.1	0.0	0.000	0.000	0.0559	
15 minute winter	5.1	5.002	5.2	3.9	0.528	0.054	0.2914	
15 minute summer	Carpark 1	3.000_1	2.1	0.0	0.000	0.000	0.0000	

Results for 2 year Criəcal Storm Duraəon. Lowest mass balance: 99.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inbow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	10	7.360	0.110	22.9	0.0313	0.0000	OK
15 minute winter	1.1	11	6.523	0.073	22.2	0.0207	0.0000	OK
180 minute winter	1.2	156	6.249	0.314	6.4	0.5555	0.0000	SURCHARGED
180 minute winter	1.3	136	6.245	0.330	14.1	0.5827	0.0000	SURCHARGED
180 minute winter	1.4	144	6.245	0.460	5.7	0.8131	0.0000	SURCHARGED
180 minute winter	1.5	136	6.245	0.495	9.1	0.8738	0.0000	SURCHARGED
15 minute summer	1.6	1	5.710	0.000	6.6	0.0000	0.0000	OK
15 minute winter	2.0	11	6.716	0.116	23.0	0.0327	0.0000	OK
180 minute winter	2.1	152	6.246	0.261	6.5	0.2950	0.0000	OK
15 minute winter	3.0	10	7.028	0.028	3.6	0.0314	0.0000	OK
15 minute winter	3.1	10	6.499	0.074	14.5	0.0839	0.0000	OK
180 minute winter	3.2	144	6.244	0.299	9.2	0.3386	0.0000	OK
180 minute winter	3.3	144	6.244	0.329	10.9	0.5819	0.0000	SURCHARGED
180 minute winter	PI	144	6.244	0.479	10.5	6.2245	0.0000	SURCHARGED
180 minute winter	5.0	140	6.244	0.059	0.7	0.1048	0.0000	OK
180 minute winter	BASIN	156	6.243	0.013	0.5	0.6599	0.0000	OK
180 minute winter	TANK	144	6.245	0.320	19.6	59.6346	0.0000	SURCHARGED
180 minute winter	5.2	144	6.244	0.214	1.4	0.2425	0.0000	OK
15 minute summer	4.0	1	7.000	0.000	0.0	0.0000	0.0000	OK
180 minute winter	5.1	140	6.245	0.115	1.4	0.1295	0.0000	OK
15 minute summer	Carpark 1	1	7.230	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Ouùlow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1.0	1.000	1.1	22.2	1.478	0.428	1.2110	
15 minute winter	1.1	1.001	1.2	22.4	2.122	0.196	0.0970	
180 minute winter	1.2	1.002	TANK	6.1	1.188	0.055	0.0704	
180 minute winter	1.3	1.003	1.4	5.7	0.392	0.078	2.1246	
180 minute winter	1.4	1.004	1.5	6.2	0.321	0.083	0.5418	
180 minute winter	1.5	Hydro-Brake®	1.6	6.6				132.5
15 minute winter	2.0	2.000	2.1	21.9	1.077	0.516	1.6449	
180 minute winter	2.1	2.001	1.3	6.3	0.534	0.054	0.4318	
15 minute winter	3.0	3.000	3.1	3.6	0.531	0.032	0.0913	
15 minute winter	3.1	3.001	3.2	14.3	1.121	0.237	0.5854	
180 minute winter	3.2	3.004	3.3	8.5	0.516	0.117	0.4896	
180 minute winter	3.3	4.004	PI	10.5	0.590	0.137	0.7324	
180 minute winter	PI	4.004-	1.5	9.1	0.131	0.133	0.2746	
180 minute winter	5.0	5.001	5.1	-0.7	0.119	-0.009	0.1914	
180 minute winter	BASIN	5.000	5.0	-0.5	0.149	-0.007	0.0471	
180 minute winter	TANK	1.002-	1.3	-13.5	-0.697	-0.121	0.0704	
180 minute winter	5.2	5.003	3.2	1.3	0.138	0.017	1.2267	
15 minute summer	4.0	4.000	3.1	0.0	0.000	0.000	0.0652	
180 minute winter	5.1	5.002	5.2	1.4	0.398	0.019	0.9076	
15 minute summer	Carpark 1	3.000_1	2.1	0.0	0.000	0.000	0.0000	

Results for 30 year Criəcal Storm Duraəon. Lowest mass balance: 99.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inbow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	10	7.417	0.167	43.3	0.0473	0.0000	OK
360 minute winter	1.1	336	6.606	0.156	7.4	0.0442	0.0000	OK
360 minute winter	1.2	304	6.609	0.674	7.4	1.1903	0.0000	SURCHARGED
360 minute winter	1.3	320	6.608	0.693	14.4	1.2240	0.0000	SURCHARGED
240 minute winter	1.4	240	6.606	0.821	8.6	1.4499	0.0000	SURCHARGED
240 minute winter	1.5	232	6.605	0.855	11.5	1.5104	0.0000	SURCHARGED
15 minute summer	1.6	1	5.710	0.000	6.6	0.0000	0.0000	OK
15 minute winter	2.0	11	6.784	0.184	43.6	0.0522	0.0000	OK
240 minute winter	2.1	236	6.607	0.622	9.8	0.7031	0.0000	SURCHARGED
15 minute winter	3.0	10	7.038	0.038	6.9	0.0429	0.0000	OK
240 minute winter	3.1	236	6.605	0.180	6.3	0.2039	0.0000	OK
240 minute winter	3.2	236	6.605	0.660	12.8	0.7465	0.0000	SURCHARGED
240 minute winter	3.3	232	6.605	0.690	13.9	1.2192	0.0000	SURCHARGED
240 minute winter	PI	232	6.605	0.840	13.6	10.9088	0.0000	SURCHARGED
240 minute winter	5.0	236	6.605	0.420	13.8	0.7420	0.0000	SURCHARGED
240 minute winter	BASIN	236	6.605	0.375	13.3	28.5427	0.0000	SURCHARGED
240 minute winter	TANK	232	6.605	0.680	29.4	126.6830	0.0000	SURCHARGED
240 minute winter	5.2	236	6.605	0.575	12.5	0.6503	0.0000	SURCHARGED
15 minute summer	4.0	1	7.000	0.000	0.0	0.0000	0.0000	OK
240 minute winter	5.1	236	6.605	0.475	14.4	0.5371	0.0000	SURCHARGED
15 minute summer	Carpark 1	1	7.230	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Ouùlow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1.0	1.000	1.1	42.1	1.680	0.810	1.9924	
360 minute winter	1.1	1.001	1.2	7.4	1.357	0.065	0.3178	
360 minute winter	1.2	1.002	TANK	8.0	1.128	0.072	0.0704	
360 minute winter	1.3	1.003	1.4	4.6	0.302	0.063	2.1246	
240 minute winter	1.4	1.004	1.5	5.5	0.332	0.073	0.5418	
240 minute winter	1.5	Hydro-Brake®	1.6	6.6				159.7
15 minute winter	2.0	2.000	2.1	41.2	1.227	0.972	2.7139	
240 minute winter	2.1	2.001	1.3	9.0	0.509	0.077	0.4490	
15 minute winter	3.0	3.000	3.1	6.9	0.632	0.062	0.1457	
240 minute winter	3.1	3.001	3.2	6.3	0.821	0.104	1.1212	
240 minute winter	3.2	3.004	3.3	10.5	0.492	0.144	0.4898	
240 minute winter	3.3	4.004	PI	13.6	0.547	0.177	0.7324	
240 minute winter	PI	4.004-	1.5	11.5	0.163	0.167	0.2746	
240 minute winter	5.0	5.001	5.1	-13.8	-0.279	-0.178	0.7807	
240 minute winter	BASIN	5.000	5.0	-13.3	-0.510	-0.170	0.6338	
240 minute winter	TANK	1.002-	1.3	-20.6	-0.494	-0.185	0.0704	
240 minute winter	5.2	5.003	3.2	-12.5	-0.177	-0.172	1.3905	
15 minute summer	4.0	4.000	3.1	0.0	0.000	0.000	0.0987	
240 minute winter	5.1	5.002	5.2	-12.3	0.396	-0.169	1.6277	
15 minute summer	Carpark 1	3.000_1	2.1	0.0	0.000	0.000	0.0000	

Results for 100 year +30% CC Criəcal Storm Duraəon. Lowest mass balance: 99.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inbow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	12	7.982	0.732	72.8	0.2071	0.0000	FLOOD RISK
360 minute winter	1.1	352	7.119	0.669	12.3	0.1893	0.0000	SURCHARGED
360 minute winter	1.2	344	7.120	1.185	11.2	2.0939	0.0000	SURCHARGED
360 minute winter	1.3	360	7.118	1.203	21.8	2.1260	0.0000	SURCHARGED
360 minute winter	1.4	344	7.117	1.332	6.8	2.3544	0.0000	FLOOD RISK
360 minute winter	1.5	352	7.116	1.366	9.8	2.4128	0.0000	FLOOD RISK
15 minute summer	1.6	1	5.710	0.000	6.6	0.0000	0.0000	OK
15 minute winter	2.0	11	7.774	1.174	73.4	0.3321	0.0000	FLOOD RISK
480 minute winter	2.1	456	7.119	1.134	10.0	1.2827	0.0000	SURCHARGED
480 minute winter	3.0	464	7.118	0.118	1.6	0.1330	0.0000	OK
480 minute winter	3.1	464	7.117	0.692	6.4	0.7832	0.0000	SURCHARGED
360 minute winter	3.2	352	7.118	1.173	15.3	1.3263	0.0000	SURCHARGED
360 minute winter	3.3	352	7.118	1.203	11.9	2.1253	0.0000	SURCHARGED
360 minute winter	PI	352	7.117	1.352	11.7	17.5598	0.0000	FLOOD RISK
360 minute winter	5.0	352	7.117	0.932	16.9	1.6474	0.0000	FLOOD RISK
360 minute winter	BASIN	352	7.118	0.888	16.8	98.0694	0.0000	FLOOD RISK
360 minute winter	TANK	352	7.118	1.193	31.0	222.2074	0.0000	SURCHARGED
360 minute winter	5.2	352	7.117	1.087	14.7	1.2299	0.0000	SURCHARGED
480 minute winter	4.0	464	7.118	0.118	0.3	0.0209	0.0000	OK
360 minute winter	5.1	352	7.117	0.987	17.0	1.1164	0.0000	FLOOD RISK
15 minute summer	Carpark 1	1	7.230	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Ouùlow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1.0	1.000	1.1	62.1	1.721	1.196	2.6794	
360 minute winter	1.1	1.001	1.2	11.2	1.281	0.098	0.3656	
360 minute winter	1.2	1.002	TANK	11.9	1.309	0.107	0.0704	
360 minute winter	1.3	1.003	1.4	-6.4	0.346	-0.088	2.1246	
360 minute winter	1.4	1.004	1.5	6.7	0.278	0.090	0.5418	
360 minute winter	1.5	Hydro-Brake®	1.6	7.0				228.3
15 minute winter	2.0	2.000	2.1	64.8	1.630	1.531	3.2204	
480 minute winter	2.1	2.001	1.3	9.1	0.479	0.078	0.4490	
480 minute winter	3.0	3.000	3.1	1.6	0.419	0.014	0.3914	
480 minute winter	3.1	3.001	3.2	6.0	0.708	0.100	1.2072	
360 minute winter	3.2	3.004	3.3	8.8	0.477	0.121	0.4898	
360 minute winter	3.3	4.004	PI	11.7	0.568	0.152	0.7324	
360 minute winter	PI	4.004-	1.5	9.8	0.140	0.144	0.2746	
360 minute winter	5.0	5.001	5.1	-16.9	-0.276	-0.217	0.7807	
360 minute winter	BASIN	5.000	5.0	-16.8	-0.503	-0.215	0.6338	
360 minute winter	TANK	1.002-	1.3	21.8	-0.512	0.196	0.0704	
360 minute winter	5.2	5.003	3.2	-14.7	-0.209	-0.203	1.3905	
480 minute winter	4.0	4.000	3.1	0.4	0.035	0.013	0.2495	
360 minute winter	5.1	5.002	5.2	-14.5	0.343	-0.200	1.6277	
15 minute summer	Carpark 1	3.000_1	2.1	0.0	0.000	0.000	0.0000	