

Appendix C

Design Storm Events – 1 in 1/10/30 & 100year events

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	0.450
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0	Include Intermediate Ground	✓
Additional Flow (%)	45	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.010		

Results for 1 year +45% CC Critical Storm Duration. Lowest mass balance: 99.90%									
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	
15 minute summer	IC01.01	10	5.527	0.027	1.3	0.0077	0.0000	OK	
15 minute summer	IC01.02	10	5.478	0.038	2.4	0.0109	0.0000	OK	
15 minute summer	IC01.03	11	5.416	0.046	3.7	0.0130	0.0000	OK	
15 minute summer	IC01.04	11	4.930	0.067	8.9	0.0190	0.0000	OK	
360 minute summer	IC01.05	272	4.924	0.226	3.5	0.0640	0.0000	SURCHARGED	
360 minute summer	MH02.04	280	4.924	0.357	2.9	0.4038	0.0000	SURCHARGED	
15 minute summer	IC02.01	11	5.523	0.023	1.1	0.0064	0.0000	OK	
15 minute summer	IC02.02	10	5.256	0.064	6.6	0.0181	0.0000	OK	
15 minute summer	IC03.02	10	5.263	0.078	11.0	0.0220	0.0000	OK	
15 minute summer	IC02.03	11	5.223	0.081	10.2	0.0228	0.0000	OK	
15 minute summer	MH02.01	11	5.023	0.104	18.7	0.1177	0.0000	OK	
360 minute summer	MH02.02	280	4.924	0.110	7.4	0.1245	0.0000	OK	
360 minute summer	MH02.03	280	4.924	0.244	5.4	0.6211	0.0000	OK	
30 minute summer	IC03.01	20	5.109	0.062	5.9	0.0177	0.0000	OK	
15 minute summer	IC2	11	5.505	0.030	1.8	0.0084	0.0000	OK	
180 minute winter	Outfall	156	4.459	0.035	2.0	0.0000	0.0000	OK	
360 minute summer	ST1 CELLULAR STORAGE	280	4.924	0.235	7.3	11.5675	0.0000	OK	
360 minute summer	ST3 CELLULAR STORAGE	280	4.924	0.339	3.1	11.2724	0.0000	SURCHARGED	
360 minute summer	ST2 CELLULAR STORAGE	280	4.924	0.341	5.3	25.2052	0.0000	SURCHARGED	
30 minute summer	CARPARK	22	5.175	0.053	9.7	2.7023	0.0000	OK	
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)	
15 minute summer	IC01.01	1.000	IC01.02	1.3	0.449	0.072	0.0173		
15 minute summer	IC01.02	1.001	IC01.03	2.4	0.608	0.133	0.0283		
15 minute summer	IC01.03	1.002	IC01.04	3.6	0.785	0.200	0.1960		
15 minute summer	IC01.04	1.003	IC01.05	8.9	0.737	0.191	0.2492		
360 minute summer	IC01.05	1.004	ST3 CELLULAR STORAGE	3.1	0.456	0.084	0.8988		
360 minute summer	MH02.04	Outfall	Outfall	2.0	0.624	0.118	0.0515	55.8	
15 minute summer	IC02.01	2.000	IC02.02	1.1	0.207	0.021	0.1745		
15 minute summer	IC02.02	2.001	IC02.03	6.5	0.593	0.153	0.0820		
15 minute summer	IC03.02	CARPARK OUTFALL	CARPARK	10.8	1.335	0.256	0.0829		
15 minute summer	IC02.03	2.002	MH02.01	10.1	0.811	0.262	0.2960		
15 minute summer	MH02.01	2.003	MH02.02	18.6	0.826	0.237	0.4739		
360 minute summer	MH02.02	2.004	ST1 CELLULAR STORAGE	7.3	0.584	0.102	1.2347		
360 minute summer	MH02.03	2.005	ST2 CELLULAR STORAGE	5.3	0.435	0.075	1.5418		
30 minute summer	IC03.01	3.001	MH02.01	5.9	0.687	0.154	0.0828		
15 minute summer	IC2	4.000	IC03.02	1.8	0.251	0.037	0.2547		
360 minute summer	ST1 CELLULAR STORAGE	SW13 STORAGE 001	MH02.03	4.3	0.488	0.060	0.1330		
360 minute summer	ST3 CELLULAR STORAGE	SW2 STORAGE 001	MH02.04	1.2	0.104	0.033	0.1087		
360 minute summer	ST2 CELLULAR STORAGE	SW1 STORAGE 001	MH02.04	2.0	-0.109	0.028	0.2756		
30 minute summer	CARPARK	3.000	IC03.01	4.9	0.635	0.116	0.0892		

Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.07%

Node Event		US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	
15 minute summer	IC01.01		10	5.547	0.047	3.6	0.0134	0.0000	OK	
15 minute summer	IC01.02		10	5.510	0.070	6.7	0.0199	0.0000	OK	
15 minute summer	IC01.03		11	5.453	0.083	10.3	0.0234	0.0000	OK	
480 minute winter	IC01.04		472	5.311	0.448	2.8	0.1267	0.0000	SURCHARGED	
480 minute winter	IC01.05		472	5.309	0.611	3.3	0.1730	0.0000	SURCHARGED	
480 minute winter	MH02.04		464	5.309	0.742	4.8	0.8397	0.0000	SURCHARGED	
15 minute summer	IC02.01		10	5.537	0.037	3.1	0.0104	0.0000	OK	
15 minute summer	IC02.02		10	5.318	0.126	18.6	0.0357	0.0000	OK	
15 minute summer	IC03.02		10	5.325	0.140	31.1	0.0397	0.0000	OK	
480 minute winter	IC02.03		464	5.312	0.170	3.1	0.0480	0.0000	OK	
480 minute winter	MH02.01		472	5.311	0.392	8.0	0.4430	0.0000	SURCHARGED	
480 minute winter	MH02.02		464	5.310	0.496	8.3	0.5609	0.0000	SURCHARGED	
480 minute winter	MH02.03		464	5.309	0.629	5.7	1.5998	0.0000	SURCHARGED	
480 minute winter	IC03.01		464	5.310	0.263	4.3	0.0745	0.0000	SURCHARGED	
15 minute summer	IC2		10	5.524	0.049	5.2	0.0139	0.0000	OK	
60 minute winter	Outfall		35	4.459	0.035	2.0	0.0000	0.0000	OK	
360 minute winter	ST1 CELLULAR STORAGE		352	5.314	0.625	9.5	30.0427	0.0000	SURCHARGED	
480 minute winter	ST3 CELLULAR STORAGE		464	5.310	0.725	3.3	20.2991	0.0000	SURCHARGED	
480 minute winter	ST2 CELLULAR STORAGE		472	5.310	0.727	7.7	45.1221	0.0000	SURCHARGED	
480 minute winter	CARPARK		464	5.310	0.188	6.4	26.8400	0.0000	OK	

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	IC01.01	1.000	IC01.02	3.6	0.559	0.202	0.0388	
15 minute summer	IC01.02	1.001	IC01.03	6.7	0.757	0.375	0.0628	
15 minute summer	IC01.03	1.002	IC01.04	10.1	1.031	0.570	0.4245	
480 minute winter	IC01.04	1.003	IC01.05	2.5	0.421	0.055	0.8194	
480 minute winter	IC01.05	1.004	ST3 CELLULAR STORAGE	3.3	0.470	0.089	0.8991	
480 minute winter	MH02.04	Outfall	Outfall	2.0	0.624	0.118	0.0515	65.5
15 minute summer	IC02.01	2.000	IC02.02	3.1	0.238	0.059	0.4169	
15 minute summer	IC02.02	2.001	IC02.03	18.2	0.712	0.430	0.1911	
15 minute summer	IC03.02	CARPARK OUTFALL	CARPARK	30.7	1.754	0.725	0.1770	
480 minute winter	IC02.03	2.002	MH02.01	3.1	0.583	0.080	0.8539	
480 minute winter	MH02.01	2.003	MH02.02	7.7	0.631	0.098	1.4845	
480 minute winter	MH02.02	2.004	ST1 CELLULAR STORAGE	7.7	0.577	0.108	2.1042	
480 minute winter	MH02.03	2.005	ST2 CELLULAR STORAGE	5.5	0.528	0.077	1.6475	
480 minute winter	IC03.01	3.001	MH02.01	3.9	0.613	0.101	0.3806	
15 minute summer	IC2	4.000	IC03.02	5.1	0.324	0.106	0.5441	
360 minute winter	ST1 CELLULAR STORAGE	SW13 STORAGE 001	MH02.03	4.4	0.450	0.062	0.1553	
480 minute winter	ST3 CELLULAR STORAGE	SW2 STORAGE 001	MH02.04	3.6	0.160	0.098	0.1087	
480 minute winter	ST2 CELLULAR STORAGE	SW1 STORAGE 001	MH02.04	3.7	-0.164	0.052	0.2756	
480 minute winter	CARPARK	3.000	IC03.01	-4.2	0.584	-0.100	0.4217	

Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	IC01.01	10	5.556	0.056	4.7	0.0157	0.0000	OK
15 minute summer	IC01.02	10	5.523	0.083	8.7	0.0235	0.0000	OK
360 minute winter	IC01.03	360	5.490	0.120	1.7	0.0338	0.0000	OK
360 minute winter	IC01.04	352	5.488	0.625	4.3	0.1767	0.0000	SURCHARGED
360 minute winter	IC01.05	352	5.487	0.789	5.5	0.2234	0.0000	SURCHARGED
360 minute winter	MH02.04	352	5.488	0.921	6.9	1.0418	0.0000	SURCHARGED
15 minute summer	IC02.01	10	5.542	0.042	4.0	0.0118	0.0000	OK
360 minute winter	IC02.02	352	5.489	0.297	3.1	0.0840	0.0000	SURCHARGED
360 minute winter	IC03.02	352	5.489	0.304	5.3	0.0861	0.0000	SURCHARGED
360 minute winter	IC02.03	352	5.489	0.347	4.9	0.0981	0.0000	SURCHARGED
360 minute winter	MH02.01	360	5.489	0.570	12.2	0.6446	0.0000	SURCHARGED
480 minute winter	MH02.02	464	5.490	0.676	9.9	0.7643	0.0000	SURCHARGED
360 minute winter	MH02.03	360	5.487	0.807	8.2	2.0531	0.0000	SURCHARGED
360 minute winter	IC03.01	360	5.489	0.442	11.0	0.1251	0.0000	SURCHARGED
15 minute summer	IC2	10	5.531	0.056	6.7	0.0158	0.0000	OK
60 minute winter	Outfall	32	4.459	0.035	2.0	0.0000	0.0000	OK
360 minute winter	ST1 CELLULAR STORAGE	360	5.494	0.805	12.0	30.0427	0.0000	SURCHARGED
360 minute winter	ST3 CELLULAR STORAGE	352	5.490	0.905	5.4	20.2991	0.0000	SURCHARGED
360 minute winter	ST2 CELLULAR STORAGE	352	5.489	0.906	11.5	45.1221	0.0000	SURCHARGED
360 minute winter	CARPARK	360	5.489	0.367	14.9	61.8358	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	IC01.01	1.000	IC01.02	4.7	0.587	0.263	0.0479	
15 minute summer	IC01.02	1.001	IC01.03	8.6	0.792	0.485	0.0772	
360 minute winter	IC01.03	1.002	IC01.04	1.7	0.601	0.096	0.7058	
360 minute winter	IC01.04	1.003	IC01.05	4.2	0.441	0.089	0.8194	
360 minute winter	IC01.05	1.004	ST3 CELLULAR STORAGE	5.4	0.588	0.147	0.8991	
360 minute winter	MH02.04	Outfall	Outfall	2.0	0.624	0.118	0.0515	59.5
15 minute summer	IC02.01	2.000	IC02.02	3.9	0.241	0.076	0.5377	
360 minute winter	IC02.02	2.001	IC02.03	3.1	0.505	0.073	0.2969	
360 minute winter	IC03.02	CARPARK OUTFALL	CARPARK	5.3	0.735	0.125	0.3731	
360 minute winter	IC02.03	2.002	MH02.01	4.9	0.659	0.127	0.9447	
360 minute winter	MH02.01	2.003	MH02.02	11.3	0.674	0.145	1.4845	
480 minute winter	MH02.02	2.004	ST1 CELLULAR STORAGE	9.7	0.580	0.136	2.1042	
360 minute winter	MH02.03	2.005	ST2 CELLULAR STORAGE	7.9	0.568	0.111	1.6475	
360 minute winter	IC03.01	3.001	MH02.01	-10.3	0.662	-0.267	0.3806	
15 minute summer	IC2	4.000	IC03.02	6.6	0.333	0.137	0.6674	
360 minute winter	ST1 CELLULAR STORAGE	SW13 STORAGE 001	MH02.03	-7.5	0.444	-0.105	0.1553	
360 minute winter	ST3 CELLULAR STORAGE	SW2 STORAGE 001	MH02.04	4.5	0.166	0.124	0.1087	
360 minute winter	ST2 CELLULAR STORAGE	SW1 STORAGE 001	MH02.04	-5.6	-0.202	-0.079	0.2756	
360 minute winter	CARPARK	3.000	IC03.01	-11.0	0.613	-0.259	0.4463	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 98.73%

Node Event		US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	
480 minute winter	IC01.01		464	5.728	0.228	0.6	0.0645	0.0000	SURCHARGED	
480 minute winter	IC01.02		464	5.728	0.288	1.1	0.0814	0.0000	SURCHARGED	
480 minute winter	IC01.03		464	5.728	0.358	1.7	0.1012	0.0000	SURCHARGED	
480 minute winter	IC01.04		464	5.731	0.868	4.3	0.2457	0.0000	SURCHARGED	
480 minute winter	IC01.05		464	5.727	1.029	5.5	0.2912	0.0000	SURCHARGED	
480 minute winter	MH02.04		480	5.726	1.159	8.1	1.3111	0.0000	SURCHARGED	
480 minute winter	IC02.01		464	5.731	0.231	0.5	0.0655	0.0000	SURCHARGED	
480 minute winter	IC02.02		472	5.730	0.538	3.1	0.1524	0.0000	SURCHARGED	
480 minute winter	IC03.02		472	5.730	0.545	5.2	0.1541	0.0000	SURCHARGED	
480 minute winter	IC02.03		472	5.730	0.588	4.7	0.1665	0.0000	SURCHARGED	
480 minute winter	MH02.01		472	5.730	0.811	14.0	0.9173	0.0000	SURCHARGED	
480 minute winter	MH02.02		472	5.730	0.916	10.9	1.0357	0.0000	SURCHARGED	
480 minute winter	MH02.03		464	5.728	1.048	8.8	2.6665	0.0000	SURCHARGED	
480 minute winter	IC03.01		472	5.730	0.683	14.5	0.1933	0.0000	SURCHARGED	
480 minute winter	IC2		472	5.730	0.255	0.9	0.0721	0.0000	SURCHARGED	
480 minute winter	Outfall		464	4.460	0.036	2.1	0.0000	0.0000	OK	
480 minute winter	ST1 CELLULAR STORAGE		464	5.733	1.044	10.7	30.0427	0.0000	SURCHARGED	
480 minute winter	ST3 CELLULAR STORAGE		464	5.727	1.142	5.5	20.2991	0.0000	SURCHARGED	
480 minute winter	ST2 CELLULAR STORAGE		464	5.729	1.146	8.1	45.1221	0.0000	SURCHARGED	
480 minute winter	CARPARK		472	5.730	0.608	19.0	108.7507	0.0000	SURCHARGED	

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	IC01.01	1.000	IC01.02	0.6	0.369	0.034	0.1059	
480 minute winter	IC01.02	1.001	IC01.03	1.1	0.475	0.062	0.1234	
480 minute winter	IC01.03	1.002	IC01.04	1.7	0.572	0.096	0.7610	
480 minute winter	IC01.04	1.003	IC01.05	4.2	0.383	0.091	0.8194	
480 minute winter	IC01.05	1.004	ST3 CELLULAR STORAGE	5.5	0.531	0.151	0.8991	
480 minute winter	MH02.04	Outfall	Outfall	2.1	0.638	0.128	0.0545	77.6
480 minute winter	IC02.01	2.000	IC02.02	0.5	0.177	0.010	1.2242	
480 minute winter	IC02.02	2.001	IC02.03	3.0	0.499	0.071	0.2969	
480 minute winter	IC03.02	CARPARK OUTFALL	CARPARK	5.2	0.717	0.123	0.3731	
480 minute winter	IC02.03	2.002	MH02.01	4.7	0.622	0.121	0.9447	
480 minute winter	MH02.01	2.003	MH02.02	10.1	0.641	0.129	1.4845	
480 minute winter	MH02.02	2.004	ST1 CELLULAR STORAGE	10.7	0.623	0.149	2.1042	
480 minute winter	MH02.03	2.005	ST2 CELLULAR STORAGE	7.4	0.553	0.104	1.6475	
480 minute winter	IC03.01	3.001	MH02.01	-13.7	0.639	-0.354	0.3806	
480 minute winter	IC2	4.000	IC03.02	0.9	0.210	0.019	1.3361	
480 minute winter	ST1 CELLULAR STORAGE	SW13 STORAGE 001	MH02.03	-8.6	0.433	-0.121	0.1553	
480 minute winter	ST3 CELLULAR STORAGE	SW2 STORAGE 001	MH02.04	5.6	0.180	0.152	0.1087	
480 minute winter	ST2 CELLULAR STORAGE	SW1 STORAGE 001	MH02.04	-6.5	-0.182	-0.090	0.2756	
480 minute winter	CARPARK	3.000	IC03.01	-14.3	0.604	-0.338	0.4463	