Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	19.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.322	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.088	5.00	117.100	1200	414569.274	415416.050	1.450
2	0.175	5.00	115.500	1200	414597.574	415399.309	2.200
3	0.136	5.00	111.595	1200	414639.284	415374.636	1.595
4	0.043	5.00	109.600	1200	414668.040	415394.027	1.350
5	0.031	5.00	110.250	1500	414656.895	415386.511	2.375
6_IN			110.850	1200	414651.115	415395.082	4.000
7_OUT			111.450	1200	414645.523	415401.467	4.650
8_FC			111.200	1200	414645.538	415407.108	4.450
9			111.137	1200	414645.565	415416.932	4.462
10			111.400	1200	414564.256	415464.958	5.450
11			106.900	1200	414584.313	415498.458	1.425

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	32.881	0.600	115.650	113.300	2.350	14.0	225	5.16	50.0
1.001	2	3	48.461	0.600	113.300	110.075	3.225	15.0	225	5.39	50.0
1.002	3	5	21.241	0.600	110.000	107.950	2.050	10.4	300	5.47	50.0
2.000	4	5	13.443	0.600	108.250	108.100	0.150	89.6	150	5.21	50.0
1.003	5	6_IN	10.338	0.600	107.875	107.825	0.050	206.8	375	5.60	50.0
1.004	6_IN	7_OUT	8.488	0.600	106.850	106.800	0.050	169.8	2200	5.63	50.0
1.005	7_OUT	8_FC	5.641	0.600	106.800	106.750	0.050	112.8	300	5.69	50.0
1.006	8_FC	9	9.824	0.600	106.750	106.675	0.075	131.0	225	5.83	50.0
1.007	9	10	94.433	0.600	106.675	105.950	0.725	130.3	225	7.21	50.0
1.008	10	11	39.045	0.600	105.950	105.475	0.475	82.2	225	7.66	50.0

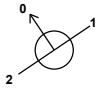
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	3.516	139.8	11.9	1.225	1.975	0.088	0.0
1.001	3.392	134.9	35.6	1.975	1.295	0.263	0.0
1.002	4.911	347.1	54.1	1.295	2.000	0.399	0.0
2.000	1.062	18.8	5.8	1.200	2.000	0.043	0.0
1.003	1.256	138.7	64.1	2.000	2.650	0.473	0.0
1.004	5.827	199205.6	64.1	1.800	2.450	0.473	0.0
1.005	1.479	104.6	64.1	4.350	4.150	0.473	0.0
1.006	1.141	45.3	64.1	4.225	4.237	0.473	0.0
1.007	1.144	45.5	64.1	4.237	5.225	0.473	0.0
1.008	1.443	57.4	64.1	5.225	1.200	0.473	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	32.881	14.0	225	Circular	117.100	115.650	1.225	115.500	113.300	1.975
1.001	48.461	15.0	225	Circular	115.500	113.300	1.975	111.595	110.075	1.295
1.002	21.241	10.4	300	Circular	111.595	110.000	1.295	110.250	107.950	2.000
2.000	13.443	89.6	150	Circular	109.600	108.250	1.200	110.250	108.100	2.000
1.003	10.338	206.8	375	Circular	110.250	107.875	2.000	110.850	107.825	2.650
1.004	8.488	169.8	2200	Tank	110.850	106.850	1.800	111.450	106.800	2.450
1.005	5.641	112.8	300	Circular	111.450	106.800	4.350	111.200	106.750	4.150
1.006	9.824	131.0	225	Circular	111.200	106.750	4.225	111.137	106.675	4.237
1.007	94.433	130.3	225	Circular	111.137	106.675	4.237	111.400	105.950	5.225
1.008	39.045	82.2	225	Circular	111.400	105.950	5.225	106.900	105.475	1.200

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
1.001	2	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable
1.002	3	1200	Manhole	Adoptable	5	1500	Manhole	Adoptable
2.000	4	1200	Manhole	Adoptable	5	1500	Manhole	Adoptable
1.003	5	1500	Manhole	Adoptable	6_IN	1200	Junction	
1.004	6_IN	1200	Junction		7_OUT	1200	Junction	
1.005	7_OUT	1200	Junction		8_FC	1200	Manhole	Adoptable
1.006	8_FC	1200	Manhole	Adoptable	9	1200	Manhole	Adoptable
1.007	9	1200	Manhole	Adoptable	10	1200	Manhole	Adoptable
1.008	10	1200	Manhole	Adoptable	11	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	414569.274	415416.050	117.100	1.450	1200		0	1.000	115.650	225
2	414597.574	415399.309	115.500	2.200	1200		1	1.000	113.300	225
							0	1.001	113.300	225
3	414639.284	415374.636	111.595	1.595	1200		1	1.001	110.075	225
							0	1.002	110.000	300
4	414668.040	415394.027	109.600	1.350	1200		0	2.000	108.250	150
5	414656.895	415386.511	110.250	2.375	1500		1	2.000	108.100	150
							2	1.002	107.950	300
							0	1.003	107.875	375
6_IN	414651.115	415395.082	110.850	4.000	1200		1	1.003	107.825	375
							0	1.004	106.850	2200

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
7_OUT	414645.523	415401.467	111.450	4.650	1200	1	1.004	106.800	2200
						0	1.005	106.800	300
8_FC	414645.538	415407.108	111.200	4.450	1200	1	1.005	106.750	300
						0	1.006	106.750	225
9	414645.565	415416.932	111.137	4.462	1200	1	1.006	106.675	225
						0	1.007	106.675	225
10	414564.256	415464.958	111.400	5.450	1200	1	1.007	105.950	225
						0	1.008	105.950	225
11	414584.313	415498.458	106.900	1.425	1200	1	1.008	105.475	225

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	✓
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	19.000	Additional Storage (m³/ha)	0.0
Ratio-R	0.322	Check Discharge Rate(s)	✓
Summer CV	0.750	Check Discharge Volume	✓
Winter CV	0.840	100 year 360 minute (m³)	
Analysis Speed	Detailed		

Storm Durations

15	60	180	360	600	960	2160	4320
30	120	240	480	720	1440	2880	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	30	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	SPR	0.10	Betterment (%)	0
Greenfield Method	IH124	Region	1	QBar	
Positively Drained Area (ha)		Growth Factor 1 year	0.85	Q 1 year (l/s)	
SAAR (mm)		Growth Factor 30 year	1.95	Q 30 year (l/s)	
Soil Index	1	Growth Factor 100 year	2.48	Q 100 year (l/s)	

Pre-development Discharge Volume

Site Makeup	Greenfield	SPR	0.10	Storm Duration (mins)	360
Greenfield Method	FSR/FEH	CWI		Betterment (%)	0
Positively Drained Area (ha)		Return Period (years)	100	PR	
Soil Index	1	Climate Change (%)	0	Runoff Volume (m^3)	

Node 8_FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	106.750	Product Number	CTL-SHE-0090-5000-2200-5000
Design Depth (m)	2.200	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	125.048	35.384	30 year 180 minute winter	34.931	13.829
2 year 15 minute winter	87.753	35.384	30 year 240 minute summer	42.534	11.241
2 year 30 minute summer	83.797	23.712	30 year 240 minute winter	28.259	11.241
2 year 30 minute winter	58.805	23.712	30 year 360 minute summer	32.610	8.392
2 year 60 minute summer	58.092	15.352	30 year 360 minute winter	21.197	8.392
2 year 60 minute winter	38.595	15.352	30 year 480 minute summer	25.774	6.811
2 year 120 minute summer	36.913	9.755	30 year 480 minute winter	17.124	6.811
2 year 120 minute winter	24.524	9.755	30 year 600 minute summer	21.166	5.790
2 year 180 minute summer	28.944	7.448	30 year 600 minute winter	14.462	5.790
2 year 180 minute winter	18.814	7.448	30 year 720 minute summer	18.907	5.067
2 year 240 minute summer	23.249	6.144	30 year 720 minute winter	12.707	5.067
2 year 240 minute winter	15.446	6.144	30 year 960 minute summer	15.582	4.103
2 year 360 minute summer	18.111	4.661	30 year 960 minute winter	10.322	4.103
2 year 360 minute winter	11.773	4.661	30 year 1440 minute summer	11.354	3.043
2 year 480 minute summer	14.485	3.828	30 year 1440 minute winter	7.631	3.043
2 year 480 minute winter	9.623	3.828	30 year 2160 minute summer	8.153	2.253
2 year 600 minute summer	12.011	3.285	30 year 2160 minute winter	5.617	2.253
2 year 600 minute winter	8.207	3.285	30 year 2880 minute summer	6.785	1.819
2 year 720 minute summer	10.819	2.900	30 year 2880 minute winter	4.560	1.819
2 year 720 minute winter	7.271	2.900	30 year 4320 minute summer	5.136	1.343
2 year 960 minute summer	9.042	2.381	30 year 4320 minute winter	3.382	1.343
2 year 960 minute winter	5.990	2.381	100 year +30% CC 15 minute summer	397.223	112.400
2 year 1440 minute summer	6.730	1.804	100 year +30% CC 15 minute winter	278.753	112.400
2 year 1440 minute winter	4.523	1.804	100 year +30% CC 30 minute summer	270.862	76.645
2 year 2160 minute summer	4.940	1.365	100 year +30% CC 30 minute winter	190.078	76.645
2 year 2160 minute winter	3.404	1.365	100 year +30% CC 60 minute summer	188.962	49.937
2 year 2880 minute summer	4.181	1.121	100 year +30% CC 60 minute winter	125.542	49.937
2 year 2880 minute winter	2.810	1.121	100 year +30% CC 120 minute summer	118.778	31.389
2 year 4320 minute summer	3.247	0.849	100 year +30% CC 120 minute winter	78.913	31.389
2 year 4320 minute winter	2.139	0.849	100 year +30% CC 180 minute summer	91.459	23.536
30 year 15 minute summer	236.506	66.923	100 year +30% CC 180 minute winter	59.451	23.536
30 year 15 minute winter	165.969	66.923	100 year +30% CC 240 minute summer	71.999	19.027
30 year 30 minute summer	159.616	45.166	100 year +30% CC 240 minute winter	47.834	19.027
30 year 30 minute winter	112.011	45.166	100 year +30% CC 360 minute summer	54.823	14.108
30 year 60 minute summer	110.635	29.238	100 year +30% CC 360 minute winter	35.636	14.108
30 year 60 minute winter	73.503	29.238	100 year +30% CC 480 minute summer	43.109	11.392
30 year 120 minute summer	69.512	18.370	100 year +30% CC 480 minute winter	28.640	11.392
30 year 120 minute winter	46.182	18.370	100 year +30% CC 600 minute summer	35.252	9.642
30 year 180 minute summer	53.738	13.829	100 year +30% CC 600 minute winter	24.086	9.642

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +30% CC 720 minute summer	31.374	8.409
100 year +30% CC 720 minute winter	21.085	8.409
100 year +30% CC 960 minute summer	25.702	6.768
100 year +30% CC 960 minute winter	17.025	6.768
100 year +30% CC 1440 minute summer	18.556	4.973
100 year +30% CC 1440 minute winter	12.471	4.973
100 year +30% CC 2160 minute summer	13.190	3.645
100 year +30% CC 2160 minute winter	9.088	3.645
100 year +30% CC 2880 minute summer	10.894	2.920
100 year +30% CC 2880 minute winter	7.322	2.920
100 year +30% CC 4320 minute summer	8.151	2.131
100 year +30% CC 4320 minute winter	5.368	2.131
100 year +45% CC 15 minute summer	443.056	125.370
100 year +45% CC 15 minute winter	310.916	125.370
100 year +45% CC 30 minute summer	302.115	85.488
100 year +45% CC 30 minute winter	212.011	85.488
100 year +45% CC 60 minute summer	210.766	55.699
100 year +45% CC 60 minute winter	140.028	55.699
100 year +45% CC 120 minute summer	132.483	35.011
100 year +45% CC 120 minute winter	88.018	35.011
100 year +45% CC 180 minute summer	102.012	26.251
100 year +45% CC 180 minute winter	66.311	26.251
100 year +45% CC 240 minute summer	80.307	21.223
100 year +45% CC 240 minute winter	53.354	21.223
100 year +45% CC 360 minute summer	61.149	15.736
100 year +45% CC 360 minute winter	39.748	15.736
100 year +45% CC 480 minute summer	48.083	12.707
100 year +45% CC 480 minute winter	31.945	12.707
100 year +45% CC 600 minute summer	39.319	10.755
100 year +45% CC 600 minute winter	26.865	10.755
100 year +45% CC 720 minute summer	34.994	9.379
100 year +45% CC 720 minute winter	23.518	9.379
100 year +45% CC 960 minute summer	28.667	7.549
100 year +45% CC 960 minute winter	18.990	7.549
100 year +45% CC 1440 minute summer	20.697	5.547
100 year +45% CC 1440 minute winter	13.910	5.547
100 year +45% CC 2160 minute summer	14.712	4.066
100 year +45% CC 2160 minute winter	10.137	4.066
100 year +45% CC 2880 minute summer	12.151	3.257
100 year +45% CC 2880 minute winter	8.167	3.257
100 year +45% CC 4320 minute summer	9.092	2.377
100 year +45% CC 4320 minute winter	5.987	2.377

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	115.698	0.048	14.2	0.0544	0.0000	OK
15 minute winter	2	10	113.388	0.087	42.3	0.0989	0.0000	OK
15 minute winter	3	10	110.086	0.086	63.4	0.0973	0.0000	OK
15 minute winter	4	10	108.315	0.065	6.9	0.0739	0.0000	OK
15 minute winter	5	10	108.079	0.204	75.0	0.3598	0.0000	OK
180 minute winter	6_IN	148	107.233	0.383	31.7	0.0000	0.0000	OK
180 minute winter	7_OUT	152	107.233	0.433	19.5	0.0000	0.0000	SURCHARGED
180 minute winter	8_FC	148	107.233	0.483	15.4	0.5459	0.0000	SURCHARGED
60 minute winter	9	44	106.721	0.045	3.9	0.0514	0.0000	OK
60 minute winter	10	92	105.990	0.040	3.9	0.0454	0.0000	OK
60 minute summer	11	58	105.515	0.040	3.9	0.0000	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 winter	1	1.000	2	14.1	1.402	0.101	0.3362	
15 minute winter	2	1.001	3	41.5	2.962	0.308	0.6790	
15 minute winter	3	1.002	5	63.2	3.023	0.182	0.4833	
15 minute winter	4	2.000	5	6.8	0.951	0.361	0.0959	
15 minute winter	5	1.003	6_IN	74.0	1.263	0.533	0.6077	
180 minute winter	6_IN	1.004	7_OUT	19.5	0.027	0.000	53.7853	
180 minute winter	7_OUT	1.005	8_FC	15.4	0.513	0.147	0.3972	
180 minute winter	8_FC	Hydro-Brake®	9	3.9				
60 minute winter	9	1.007	10	3.9	0.748	0.086	0.4952	
60 minute winter	10	1.008	11	3.9	0.828	0.068	0.1849	59.8

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	115.716	0.066	26.8	0.0750	0.0000	OK
15 minute winter	2	10	113.428	0.128	79.9	0.1444	0.0000	OK
15 minute winter	3	10	110.121	0.121	120.0	0.1363	0.0000	OK
15 minute winter	4	10	108.348	0.098	13.1	0.1108	0.0000	OK
15 minute winter	5	10	108.187	0.312	142.1	0.5505	0.0000	OK
240 minute winter	6_IN	236	107.802	0.952	31.0	0.0000	0.0000	OK
240 minute winter	7_OUT	236	107.802	1.002	29.0	0.0000	0.0000	SURCHARGED
240 minute winter	8_FC	236	107.802	1.052	15.1	1.1898	0.0000	SURCHARGED
15 minute winter	9	12	106.721	0.046	3.9	0.0516	0.0000	OK
15 minute summer	10	76	105.990	0.040	3.9	0.0454	0.0000	OK
15 minute summer	11	76	105.515	0.040	3.9	0.0000	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 winter	1	1.000	2	26.6	1.629	0.191	0.5423	
15 minute winter	2	1.001	3	78.6	3.469	0.583	1.0988	
15 minute winter	3	1.002	5	119.8	2.965	0.345	0.9139	
15 minute winter	4	2.000	5	12.9	1.103	0.686	0.1570	
15 minute winter	5	1.003	6_IN	140.8	1.518	1.015	0.9572	
240 minute winter	6_IN	1.004	7_OUT	29.0	0.042	0.000	128.8870	
240 minute winter	7_OUT	1.005	8_FC	15.1	0.519	0.144	0.3972	
240 minute winter	8_FC	Hydro-Brake®	9	3.9				
15 minute winter	9	1.007	10	3.9	0.836	0.086	0.4952	
15 minute summer	10	1.008	11	3.9	0.828	0.068	0.1849	54.9

Results for 100 year +30% CC Critical Storm Duration. Lowest mass balance: 99.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	115.737	0.087	45.0	0.0986	0.0000	OK
15 minute winter	2	10	113.493	0.193	134.3	0.2185	0.0000	OK
15 minute winter	3	10	110.164	0.164	201.2	0.1850	0.0000	OK
360 minute winter	4	352	108.678	0.428	3.6	0.4841	0.0000	SURCHARGED
360 minute winter	5	352	108.678	0.803	39.4	1.4192	0.0000	SURCHARGED
360 minute winter	6_IN	352	108.678	1.828	39.3	0.0000	0.0000	OK
360 minute winter	7_OUT	352	108.678	1.878	21.6	0.0000	0.0000	SURCHARGED
360 minute winter	8_FC	352	108.678	1.928	12.0	2.1806	0.0000	SURCHARGED
360 minute winter	9	352	106.725	0.050	4.7	0.0563	0.0000	OK
360 minute winter	10	352	105.994	0.044	4.7	0.0496	0.0000	OK
360 minute winter	11	352	105.518	0.043	4.7	0.0000	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 winter	1	1.000	2	44.8	1.766	0.320	0.8299	
15 minute winter	2	1.001	3	131.6	3.775	0.976	1.8073	
15 minute winter	3	1.002	5	200.1	3.228	0.577	1.1650	
360 minute winter	4	2.000	5	3.6	0.806	0.192	0.2367	
360 minute winter	5	1.003	6_IN	39.3	1.072	0.283	1.1403	
360 minute winter	6_IN	1.004	7_OUT	21.6	0.034	0.000	244.4500	
360 minute winter	7_OUT	1.005	8_FC	12.0	0.481	0.115	0.3972	
360 minute winter	8_FC	Hydro-Brake®	9	4.7				
360 minute winter	9	1.007	10	4.7	0.789	0.103	0.5636	
360 minute winter	10	1.008	11	4.7	0.873	0.082	0.2103	144.5

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	115.743	0.093	50.2	0.1046	0.0000	OK
15 minute winter	2	11	113.793	0.493	149.7	0.5577	0.0000	SURCHARGED
15 minute summer	3	10	110.174	0.174	213.2	0.1966	0.0000	OK
480 minute winter	4	456	108.941	0.691	3.2	0.7820	0.0000	SURCHARGED
480 minute winter	5	456	108.941	1.066	35.2	1.8841	0.0000	SURCHARGED
480 minute winter	6_IN	456	108.941	2.091	35.1	0.0000	0.0000	OK
480 minute winter	7_OUT	456	108.941	2.141	19.9	0.0000	0.0000	SURCHARGED
480 minute winter	8_FC	456	108.941	2.191	14.9	2.4780	0.0000	SURCHARGED
480 minute winter	9	456	106.726	0.051	5.0	0.0580	0.0000	OK
480 minute winter	10	464	105.995	0.045	5.0	0.0511	0.0000	OK
480 minute winter	11	464	105.520	0.045	5.0	0.0000	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 winter	1	1.000	2	50.0	1.771	0.358	0.9066	
15 minute winter	2	1.001	3	134.4	3.668	0.996	1.8550	
15 minute summer	3	1.002	5	212.9	3.371	0.613	1.1972	
480 minute winter	4	2.000	5	3.2	0.781	0.171	0.2367	
480 minute winter	5	1.003	6_IN	35.1	1.040	0.253	1.1403	
480 minute winter	6_IN	1.004	7_OUT	19.9	0.034	0.000	279.1411	
480 minute winter	7_OUT	1.005	8_FC	14.9	0.530	0.143	0.3972	
480 minute winter	8_FC	Hydro-Brake®	9	5.0				
480 minute winter	9	1.007	10	5.0	0.802	0.110	0.5882	
480 minute winter	10	1.008	11	5.0	0.889	0.087	0.2193	180.8