

Calcs Ref.	20652-CALC-0201
Sheet	1 of 14
Engineer	J. Wills
Date	March 2025
Revision	C

DESIGN CALCULATIONS FRONT SHEET

SCHEME	Chapel Lane, Witherley
CLIENT	A.R. Cartwright
ASPECTS OF SCHEME TO BE DESIGNED	1. Surface Water Sewers design 2. 1 in 2, 30-year + 35% climate change and 100 year + 45% climate change design simulations 3. Foul Water Sewers design
CODES OF PRACTICE, DESIGN SPECIFICATIONS & BRITISH STANDARDS	1. Wallingford Procedure. 2. Sewer Sector Guidance Appendix C. 3. CIRIA C753 (2015) The SuDS Manual.
NOTES	Calculations carried out using Flow. Max surface water discharge 3.6l/s in accordance with the FRA. Refer to design drawing 20652_02_020_01 for sewer layout.

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Pages	Calculations	Checked by	Date
2–10	Surface Water Sewer design details and 1:2, 1:30-year + 35% climate change & 1:100 year +45% climate change simulation results.	AW/DMH	27/03/2025
11	Hydro-international - hydrobrake design drawing / ref. SHE-0070-2700-1600-2700	AW/DMH	27/03/2025
12	Hydro-international – hydrobrake hydraulic characteristics / ref. SHE-0070-2700-1600-2700	AW/DMH	27/03/2025

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
6		5.00	72.180	460	432995.655	297530.484	1.945
7			72.150	460	433003.538	297549.876	2.124
8	0.100	5.00	72.063	460	432990.157	297554.941	2.180
9			71.950	460	432980.602	297558.788	2.170
10	0.037	5.00	72.055	460	432973.678	297561.531	2.349
11			72.050	460	432962.738	297567.024	2.466
12	0.026	5.00	72.000	460	432950.312	297572.355	2.551
13	0.030	5.00	71.780	460	432943.694	297575.680	2.405
14			71.780	460	432934.856	297579.503	2.501
15	0.020	5.00	71.579	460	432929.284	297581.083	2.358
16			71.416	460	432920.085	297583.459	2.290
1	0.018	5.00	71.288	1200	432915.199	297585.040	2.213
2			71.300	1200	432914.928	297587.081	2.284
3			71.306	1200	432914.640	297590.917	2.330
4			70.530	1200	432880.523	297602.291	2.090

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)
2.000	6	7	20.933	0.600	70.235	70.026	0.209	100.0	150	5.35	50.0
2.001	7	8	14.308	0.600	70.026	69.883	0.143	100.0	150	5.58	50.0
2.002	8	9	10.300	0.600	69.883	69.780	0.103	100.0	150	5.76	50.0
2.003	9	10	7.448	0.600	69.780	69.706	0.074	100.0	150	5.88	50.0
2.004	10	11	12.242	0.600	69.706	69.584	0.122	100.0	150	6.08	50.0
2.005	11	12	13.521	0.600	69.584	69.449	0.135	100.0	150	6.31	50.0
2.006	12	13	7.406	0.600	69.449	69.375	0.074	100.0	150	6.43	50.0
2.007	13	14	9.629	0.600	69.375	69.279	0.096	100.0	150	6.59	50.0
2.008	14	15	5.792	0.600	69.279	69.221	0.058	100.0	150	6.69	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)
2.000	1.005	17.8	0.0	1.795	1.974	0.000	0.0
2.001	1.005	17.8	0.0	1.974	2.030	0.000	0.0
2.002	1.005	17.8	13.6	2.030	2.020	0.100	0.0
2.003	1.005	17.8	13.6	2.020	2.199	0.100	0.0
2.004	1.005	17.8	18.6	2.199	2.316	0.137	0.0
2.005	1.005	17.8	18.6	2.316	2.401	0.137	0.0
2.006	1.005	17.8	22.1	2.401	2.255	0.163	0.0
2.007	1.005	17.8	26.2	2.255	2.351	0.193	0.0
2.008	1.005	17.8	26.2	2.351	2.208	0.193	0.0

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)
2.009	15	16	9.501	0.600	69.221	69.126	0.095	100.0	150	6.84	50.0
2.010	16	1	5.135	0.600	69.126	69.075	0.051	100.0	150	6.93	50.0
2.011	1	2	2.059	0.600	69.075	69.054	0.021	100.1	150	6.96	50.0
2.012	2	3	3.847	0.600	69.016	68.978	0.038	100.0	150	7.03	50.0
1.003	3	4	35.963	0.600	68.976	68.440	0.536	67.1	150	7.51	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)
2.009	1.005	17.8	28.9	2.208	2.140	0.213	0.0
2.010	1.005	17.8	28.9	2.140	2.063	0.213	0.0
2.011	1.004	17.7	31.3	2.063	2.096	0.231	0.0
2.012	1.005	17.8	31.3	2.134	2.178	0.231	0.0
1.003	1.229	21.7	31.3	2.180	1.940	0.231	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)
2.000	20.933	100.0	150	Circular_Default Sewer Type	72.180	70.235	1.795	72.150	70.026	1.974
2.001	14.308	100.0	150	Circular_Default Sewer Type	72.150	70.026	1.974	72.063	69.883	2.030
2.002	10.300	100.0	150	Circular_Default Sewer Type	72.063	69.883	2.030	71.950	69.780	2.020
2.003	7.448	100.0	150	Circular_Default Sewer Type	71.950	69.780	2.020	72.055	69.706	2.199
2.004	12.242	100.0	150	Circular_Default Sewer Type	72.055	69.706	2.199	72.050	69.584	2.316
2.005	13.521	100.0	150	Circular_Default Sewer Type	72.050	69.584	2.316	72.000	69.449	2.401
2.006	7.406	100.0	150	Circular_Default Sewer Type	72.000	69.449	2.401	71.780	69.375	2.255
2.007	9.629	100.0	150	Circular_Default Sewer Type	71.780	69.375	2.255	71.780	69.279	2.351
2.008	5.792	100.0	150	Circular_Default Sewer Type	71.780	69.279	2.351	71.579	69.221	2.208
2.009	9.501	100.0	150	Circular_Default Sewer Type	71.579	69.221	2.208	71.416	69.126	2.140
2.010	5.135	100.0	150	Circular_Default Sewer Type	71.416	69.126	2.140	71.288	69.075	2.063
2.011	2.059	100.1	150	Circular_Default Sewer Type	71.288	69.075	2.063	71.300	69.054	2.096
2.012	3.847	100.0	150	Circular_Default Sewer Type	71.300	69.016	2.134	71.306	68.978	2.178
1.003	35.963	67.1	150	Circular_Default Sewer Type	71.306	68.976	2.180	70.530	68.440	1.940

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.000	6	460	Manhole	Adoptable	7	460	Manhole	Adoptable
2.001	7	460	Manhole	Adoptable	8	460	Manhole	Adoptable
2.002	8	460	Manhole	Adoptable	9	460	Manhole	Adoptable
2.003	9	460	Manhole	Adoptable	10	460	Manhole	Adoptable
2.004	10	460	Manhole	Adoptable	11	460	Manhole	Adoptable
2.005	11	460	Manhole	Adoptable	12	460	Manhole	Adoptable
2.006	12	460	Manhole	Adoptable	13	460	Manhole	Adoptable
2.007	13	460	Manhole	Adoptable	14	460	Manhole	Adoptable
2.008	14	460	Manhole	Adoptable	15	460	Manhole	Adoptable
2.009	15	460	Manhole	Adoptable	16	460	Manhole	Adoptable
2.010	16	460	Manhole	Adoptable	1	1200	Manhole	Adoptable
2.011	1	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
2.012	2	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable
1.003	3	1200	Manhole	Adoptable	4	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
6	432995.655	297530.484	72.180	1.945	460				
						0	2.000	70.235	150
7	433003.538	297549.876	72.150	2.124	460		1	2.000	70.026
						0	2.001	70.026	150
8	432990.157	297554.941	72.063	2.180	460		1	2.001	69.883
						0	2.002	69.883	150
9	432980.602	297558.788	71.950	2.170	460		1	2.002	69.780
						0	2.003	69.780	150
10	432973.678	297561.531	72.055	2.349	460		1	2.003	69.706
						0	2.004	69.706	150
11	432962.738	297567.024	72.050	2.466	460		1	2.004	69.584
						0	2.005	69.584	150
12	432950.312	297572.355	72.000	2.551	460		1	2.005	69.449
						0	2.006	69.449	150
13	432943.694	297575.680	71.780	2.405	460		1	2.006	69.375
						0	2.007	69.375	150
14	432934.856	297579.503	71.780	2.501	460		1	2.007	69.279
						0	2.008	69.279	150
15	432929.284	297581.083	71.579	2.358	460		1	2.008	69.221
						0	2.009	69.221	150
16	432920.085	297583.459	71.416	2.290	460		1	2.009	69.126
						0	2.010	69.126	150
1	432915.199	297585.040	71.288	2.213	1200		1	2.010	69.075
						0	2.011	69.075	150
2	432914.928	297587.081	71.300	2.284	1200		1	2.011	69.054
						0	2.012	69.016	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
3	432914.640	297590.917	71.306	2.330	1200		1	2.012	68.978	150
4	432880.523	297602.291	70.530	2.090	1200		0 1	1.003 1.003	68.976 68.440	150 150

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	✓	2 year (l/s)	0.0
Rainfall Events	Singular	Drain Down Time (mins)	240	30 year (l/s)	0.0
Summer CV	0.750	Additional Storage (m³/ha)	20.0	100 year (l/s)	0.0
Winter CV	0.840	Starting Level (m)		Check Discharge Volume	✓
Analysis Speed	Normal	Check Discharge Rate(s)	✓	100 year 360 minute (m³)	

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	35	0	0
100	40	0	0

Pre-development Discharge Rate

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

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m³)	

Node 1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	69.075	Product Number	CTL-SHE-0070-2700-1600-2700
Design Depth (m)	1.600	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.7	Min Node Diameter (mm)	1200

Node 8 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	70.897	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	104	Depth (m)	0.450
Safety Factor	2.0	Width (m)	13.600	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node 10 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	70.884	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	104	Depth (m)	0.450
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.30	Length (m)	11.000		

Node 13 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	70.731	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	128	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.700	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node 13 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	69.931
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	37.6	0.0	0.800	37.6	0.0	0.801	0.0	0.0

Node 15 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	71.044	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	72	Depth (m)	0.450
Safety Factor	2.0	Width (m)	4.700	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	70.753	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	188	Depth (m)	0.450
Safety Factor	2.0	Width (m)	4.000	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	69.953
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	16.0	0.0	0.800	16.0	0.0	0.801	0.0	0.0

Node 15 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	70.244
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	16.0	0.0	0.800	16.0	0.0	0.801	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 92.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	6	1	70.235	0.000	0.0	0.0000	0.0000	OK
15 minute winter	7	13	70.186	0.160	5.3	0.0265	0.0000	SURCHARGED
15 minute winter	8	13	70.185	0.302	13.5	0.3268	0.0000	SURCHARGED
15 minute winter	9	13	70.160	0.380	12.1	0.0631	0.0000	SURCHARGED
180 minute winter	10	140	70.158	0.452	4.8	0.2172	0.0000	SURCHARGED
180 minute winter	11	140	70.157	0.573	4.7	0.0950	0.0000	SURCHARGED
180 minute winter	12	140	70.155	0.706	5.6	0.2614	0.0000	SURCHARGED
180 minute winter	13	140	70.155	0.779	6.7	8.3255	0.0000	SURCHARGED
180 minute winter	14	140	70.153	0.874	3.5	0.1451	0.0000	SURCHARGED
180 minute winter	15	140	70.152	0.931	3.4	0.3128	0.0000	SURCHARGED
180 minute winter	16	144	70.150	1.024	3.3	0.1700	0.0000	SURCHARGED
180 minute winter	1	144	70.149	1.074	3.9	4.3815	0.0000	SURCHARGED
180 minute winter	2	144	69.055	0.039	2.3	0.0439	0.0000	OK
180 minute winter	3	144	69.009	0.033	2.3	0.0372	0.0000	OK
180 minute winter	4	144	68.473	0.033	2.3	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 summer	6	2.000	7	0.0	0.000	0.000	0.1399	
15 minute winter	7	2.001	8	-5.3	-0.374	-0.296	0.2519	
15 minute winter	8	2.002	9	12.1	0.952	0.679	0.1813	
15 minute winter	9	2.003	10	11.6	0.799	0.653	0.1311	
180 minute winter	10	2.004	11	4.7	0.758	0.266	0.2155	
180 minute winter	11	2.005	12	4.6	0.688	0.261	0.2380	
180 minute winter	12	2.006	13	5.5	0.679	0.311	0.1304	
180 minute winter	13	2.007	14	3.5	0.726	0.197	0.1695	
180 minute winter	14	2.008	15	2.8	0.648	0.160	0.1020	
180 minute winter	15	2.009	16	3.3	0.603	0.185	0.1673	
180 minute winter	16	2.010	1	3.2	0.314	0.179	0.0904	
180 minute winter	1	Hydro-Brake®	2	2.3				
180 minute winter	2	2.012	3	2.3	0.656	0.127	0.0132	
180 minute winter	3	1.003	4	2.3	0.795	0.104	0.1020	39.1

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 92.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	6	23	71.136	0.901	5.9	0.1496	0.0000	SURCHARGED
30 minute winter	7	24	71.136	1.110	10.3	0.1842	0.0000	SURCHARGED
30 minute winter	8	24	71.135	1.252	34.6	7.6701	0.0000	SURCHARGED
30 minute winter	9	24	71.054	1.274	15.7	0.2116	0.0000	SURCHARGED
240 minute winter	10	232	71.048	1.342	11.2	3.0720	0.0000	SURCHARGED
240 minute winter	11	228	71.046	1.462	11.0	0.2427	0.0000	SURCHARGED
240 minute winter	12	232	71.045	1.596	13.0	0.5904	0.0000	SURCHARGED
240 minute winter	13	232	71.043	1.668	15.5	33.9128	0.0000	SURCHARGED
240 minute winter	14	232	71.041	1.762	9.5	0.2924	0.0000	SURCHARGED
240 minute winter	15	232	71.039	1.818	10.5	12.7025	0.0000	SURCHARGED
240 minute winter	16	232	71.036	1.910	5.7	0.3171	0.0000	SURCHARGED
240 minute winter	1	232	71.034	1.959	6.7	17.0894	0.0000	FLOOD RISK
240 minute winter	2	232	69.061	0.045	3.0	0.0509	0.0000	OK
240 minute winter	3	232	69.014	0.038	3.0	0.0428	0.0000	OK
240 minute winter	4	232	68.477	0.037	3.0	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)
30 minute winter	6	2.000	7	-5.9	-0.337	-0.334	0.3685	
30 minute winter	7	2.001	8	-10.3	-0.584	-0.579	0.2519	
30 minute winter	8	2.002	9	15.7	0.893	0.885	0.1813	
30 minute winter	9	2.003	10	13.7	0.796	0.769	0.1311	
240 minute winter	10	2.004	11	11.0	0.675	0.617	0.2155	
240 minute winter	11	2.005	12	10.7	0.642	0.604	0.2380	
240 minute winter	12	2.006	13	12.8	0.727	0.721	0.1304	
240 minute winter	13	2.007	14	9.5	0.726	0.533	0.1695	
240 minute winter	14	2.008	15	9.1	0.664	0.515	0.1020	
240 minute winter	15	2.009	16	5.7	0.600	0.319	0.1673	
240 minute winter	16	2.010	1	5.4	0.353	0.304	0.0904	
240 minute winter	1	Hydro-Brake®	2	3.0				
240 minute winter	2	2.012	3	3.0	0.707	0.167	0.0162	
240 minute winter	3	1.003	4	3.0	0.859	0.137	0.1242	73.8

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 92.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	6	228	71.323	1.088	0.7	0.1806	0.0000	SURCHARGED
240 minute winter	7	220	71.323	1.297	1.2	0.2152	0.0000	SURCHARGED
240 minute winter	8	220	71.323	1.440	11.6	15.5275	0.0000	SURCHARGED
240 minute winter	9	220	71.321	1.541	9.7	0.2558	0.0000	SURCHARGED
240 minute winter	10	220	71.320	1.614	13.4	12.1303	0.0000	SURCHARGED
240 minute winter	11	220	71.316	1.732	13.0	0.2875	0.0000	SURCHARGED
240 minute winter	12	220	71.312	1.863	15.6	0.6894	0.0000	SURCHARGED
240 minute winter	13	220	71.309	1.934	18.7	36.8014	0.0000	SURCHARGED
240 minute winter	14	220	71.303	2.024	11.2	0.3360	0.0000	SURCHARGED
240 minute winter	15	220	71.299	2.078	13.1	15.3048	0.0000	FLOOD RISK
240 minute winter	16	220	71.292	2.166	7.0	0.3596	0.0000	FLOOD RISK
240 minute winter	1	188	71.288	2.213	8.7	19.4512	3.6466	FLOOD
180 minute winter	2	160	69.062	0.046	3.1	0.0525	0.0000	OK
180 minute winter	3	160	69.015	0.039	3.1	0.0440	0.0000	OK
180 minute winter	4	160	68.479	0.039	3.1	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)
240 minute winter	6	2.000	7	-0.7	-0.059	-0.040	0.3685	
240 minute winter	7	2.001	8	-1.2	-0.068	-0.067	0.2519	
240 minute winter	8	2.002	9	9.7	0.664	0.549	0.1813	
240 minute winter	9	2.003	10	9.3	0.589	0.525	0.1311	
240 minute winter	10	2.004	11	13.0	0.739	0.733	0.2155	
240 minute winter	11	2.005	12	12.6	0.718	0.712	0.2380	
240 minute winter	12	2.006	13	15.3	0.871	0.864	0.1304	
240 minute winter	13	2.007	14	11.2	0.755	0.630	0.1695	
240 minute winter	14	2.008	15	10.8	0.682	0.609	0.1020	
240 minute winter	15	2.009	16	7.0	0.643	0.393	0.1673	
240 minute winter	16	2.010	1	6.6	0.375	0.372	0.0904	
240 minute winter	1	Hydro-Brake®	2	3.1				
180 minute winter	2	2.012	3	3.1	0.717	0.177	0.0168	
180 minute winter	3	1.003	4	3.1	0.873	0.145	0.1293	70.0

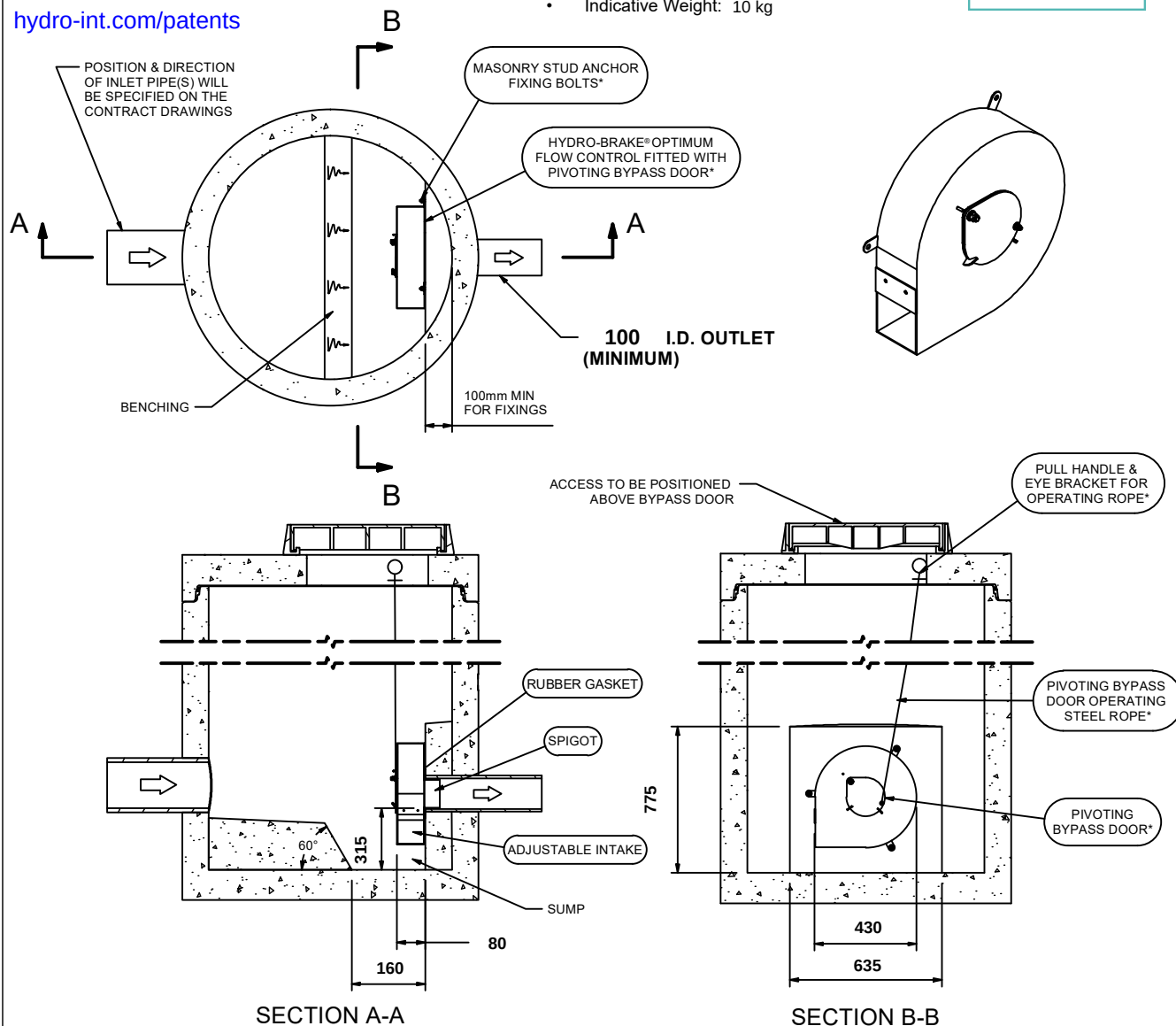
Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.600	2.700
Flush-Flo™	0.307	2.180
Kick-Flo®	0.626	1.760
Mean Flow		2.117

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Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Variable flow rate post installation via adjustable inlet
- Indicative Weight: 10 kg



IMPORTANT: ○ LIMIT OF HYDRO INTERNATIONAL SUPPLY
 THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
 FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
 ALL CIVIL AND INSTALLATION WORK BY OTHERS
 * WHERE SUPPLIED
 HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW
 CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE



The head/flow characteristics of this SHE-0070-2700-1600-2700 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

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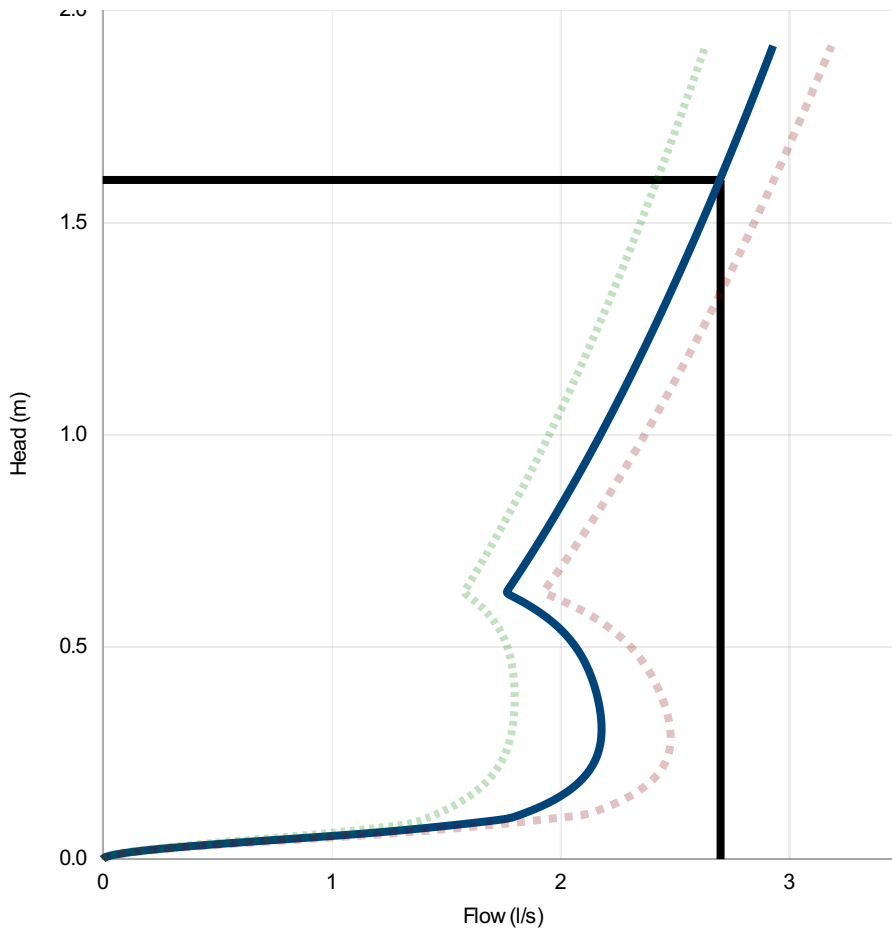
DATE	09/08/2024 13:25	SHE-0070-2700-1600-2700 Hydro-Brake® Optimum
SITE	Chapel Lane	
DESIGNER	Michael Webb	
REF	20652	

Technical Specification

	Original Setting		Minimum Setting		Maximum Setting	
Control Point	Head (m)	Flow (l/s)	Head (m)	Flow (l/s)	Head (m)	Flow (l/s)
Primary Design	1.600	2.700	1.600	2.423	1.600	2.933
Flush-Flo™	0.307	2.180	0.379	1.800	0.286	2.482
Kick-Flo®	0.626	1.760	0.627	1.577	0.627	1.922
Mean Flow		2.117		1.853		2.334



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Head (m)	Flow (l/s)
0.000	0.000
0.055	1.019
0.110	1.854
0.166	2.047
0.221	2.140
0.276	2.176
0.331	2.178
0.386	2.160
0.441	2.126
0.497	2.071
0.552	1.980
0.607	1.833
0.662	1.805
0.717	1.871
0.772	1.935
0.828	1.996
0.883	2.055
0.938	2.113
0.993	2.168
1.048	2.222
1.103	2.275
1.159	2.326
1.214	2.376
1.269	2.425
1.324	2.472
1.379	2.519
1.434	2.564
1.490	2.609
1.545	2.653
1.600	2.696

DESIGN ADVICE



The head/flow characteristics of this SHE-0070-2700-1600-2700 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.

The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

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DATE 09/08/2024 13:25

Site Chapel Lane

DESIGNER Michael Webb

Ref 20652

SHE-0070-2700-1600-2700

Hydro-Brake® Optimum