

CB3 Consult Ltd		Page 2
7 St James Crescent	1YRS SURFACE WATER	
Swansea	CALCULATIONS	
Wales SA1 6DP	C1941	
Date 04/01/2023	Designed by AJ	
File Storm calcs2.MDX	Checked by DH	
XP Solutions	Network 2020.1.3	
Simulation Criteria for Storm Volumetric Runoff Coeff 0.750 Manhole Headloss Coeff (Global) 0.500 Inlet Coeffiecient 0.800 Areal Reduction Factor 1.000 Foul Sewage per hectare (l/s) 0.000 Flow per Person per Day (l/per/day) 0.000 Hot Start (mins) 0 Additional Flow - % of Total Flow 0.000 Run Time (mins) 60 Hot Start Level (mm) 0 MADD Factor * 10m³/ha Storage 2.000 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 2 Number of Storage Structures 3 Number of Real Time Controls 0 Synthetic Rainfall Details Rainfall Model FSR M5-60 (mm) 18.400 Cv (Summer) 0.750 Return Period (years) 2 Ratio R 0.354 Cv (Winter) 0.840 Region England and Wales Profile Type Summer Storm Duration (mins) 30		
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Online Controls for Storm

Hydro-Brake® Optimum Manhole: 2, DS/PN: 1.001, Volume (m³): 1.3

Unit Reference	MD-SHE-0053-1000-0550-1000	Sump Available	Yes
Design Head (m)	0.550	Diameter (mm)	53
Design Flow (l/s)	1.0	Invert Level (m)	133.883
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	75
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.550	1.0	Kick-Flo®	0.358	0.8
Flush-Flo™	0.166	1.0	Mean Flow over Head Range	-	0.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

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)	Depth (m)	Flow (l/s)
0.100	1.0	0.600	1.0	1.600	1.6	2.600	2.0	5.000	2.7	7.500	3.3
0.200	1.0	0.800	1.2	1.800	1.7	3.000	2.2	5.500	2.8	8.000	3.4
0.300	0.9	1.000	1.3	2.000	1.8	3.500	2.3	6.000	3.0	8.500	3.5
0.400	0.9	1.200	1.4	2.200	1.9	4.000	2.5	6.500	3.1	9.000	3.6
0.500	1.0	1.400	1.5	2.400	1.9	4.500	2.6	7.000	3.2	9.500	3.7

Hydro-Brake® Optimum Manhole: S18, DS/PN: 1.016, Volume (m³): 6.4

Unit Reference	MD-SHE-0064-3100-3200-3100	Sump Available	Yes
Design Head (m)	3.200	Diameter (mm)	64
Design Flow (l/s)	3.1	Invert Level (m)	128.200
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	100
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.200	3.1	Kick-Flo®	0.571	1.4
Flush-Flo™	0.280	1.7	Mean Flow over Head Range	-	2.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

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)	Depth (m)	Flow (l/s)
0.100	1.5	0.600	1.4	1.600	2.3	2.600	2.8	5.000	3.8	7.500	4.6
0.200	1.7	0.800	1.6	1.800	2.4	3.000	3.0	5.500	4.0	8.000	4.8
0.300	1.7	1.000	1.8	2.000	2.5	3.500	3.2	6.000	4.2	8.500	4.9
0.400	1.7	1.200	2.0	2.200	2.6	4.000	3.4	6.500	4.3	9.000	5.0
0.500	1.6	1.400	2.1	2.400	2.7	4.500	3.6	7.000	4.5	9.500	5.2

Storage Structures for Storm

Cellular Storage Manhole: 2, DS/PN: 1.001

Invert Level (m) 133.933 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	40.0	40.0	0.500	40.0	52.6	0.501	0.0	52.7

Cellular Storage Manhole: S19, DS/PN: 2.000

Invert Level (m) 128.700 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	95.0	95.0	2.500	95.0	192.5	2.501	0.0	192.5

Cellular Storage Manhole: S18, DS/PN: 1.016

Invert Level (m) 128.200 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	87.0	87.0	2.500	87.0	180.3	2.501	0.0	180.3

