

MasterDrain
SW

TDS Consultancy Limited

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Job No.	23010		
Sheet no.	1		
Date	29/11/23		
By	TDS	Checked	Reviewed

Project	Elmfield House, Petersfinger Road, Salisbury, SP5 3BZ
Title	Catchment 1 - Storage Volume Requirements

Data:-

Location = SALISBURY Grid reference = SU1429
M5-60 (mm) = 19.3 r = 0.36
Soil index = 0.30 SAAR (mm/yr) = 840
Return period = 100 WRAP = 2
UCWI = 0.0 Climate change = +45%

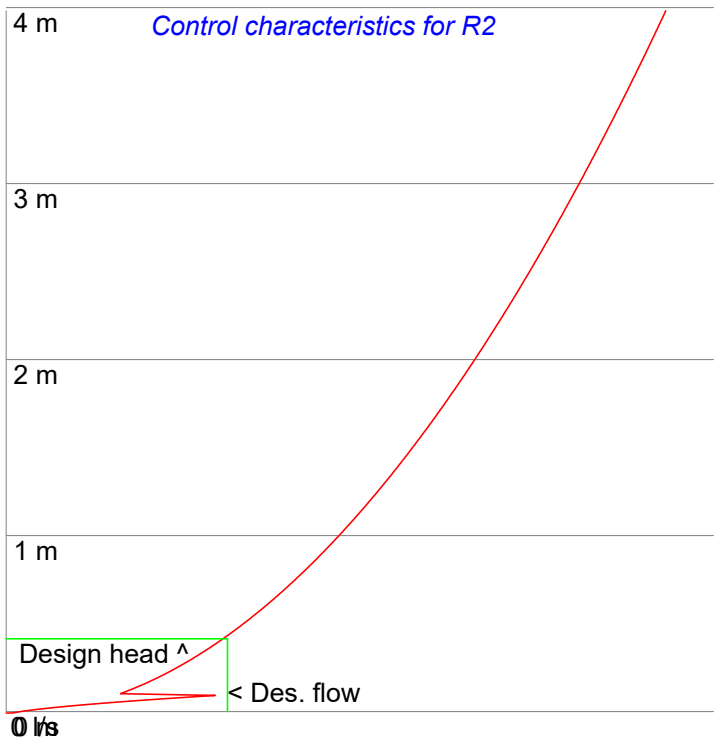
- i) Very permeable soils with shallow ground water;
- ii) Permeable soils over rock or fragipan, commonly on slopes in western Britain associated with smaller areas of less permeable wet soils; The layer is low in organic matter, mottled and (fragipan - a natural subsurface horizon having a higher bulk density than the solum above. Seemingly cemented when dry but showing moderate to weak brittleness when moist. Slowly or very slowly permeable to water. It is found in profiles of either cultivated or virgin soils but not in calcareous material).
- iii) Moderately permeable soils, some with slowly permeable subsoils.

Percentage runoff = 100.0% (manual setting)

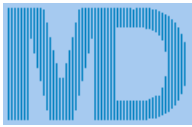
Imperv. area = 3405 m² Pervious area = 0 m²
Total area = 3405 m² Equiv area = 3405 m² (Tot. area x % runoff).
Total runoff = 311.9 m³ Discharge rate = 1.450 l/s

Design Head = 0.45m Peak flow = 1.43 l/s
Control device = R2 Orifice diam = 56.8 mm
Max. calc. depth = 0.45 m Available depth = 0.0 m³
Mean discharge = 0.00 l/s

Available system storage = 0.00 m³ under a system plane at the design head level.
Offline storage = 0.0 m³
Total storage = 301.0 m³ Peak input flow = 36.10 l/s



Head (m)	Flow (l/s)	Head (m)	Flow (l/s)
0.01	0.04	2.01	3.06
0.05	0.42	2.05	3.09
0.10	1.19	2.10	3.13
0.15	0.84	2.15	3.17
0.20	0.97	2.20	3.21
0.25	1.08	2.25	3.24
0.30	1.18	2.30	3.28
0.35	1.28	2.35	3.31
0.40	1.37	2.40	3.35
0.45	1.45	2.45	3.38
0.50	1.53	2.50	3.42
0.55	1.60	2.55	3.45
0.60	1.67	2.60	3.49
0.65	1.74	2.65	3.52
0.70	1.81	2.70	3.55
0.75	1.87	2.75	3.58
0.80	1.93	2.80	3.62
0.85	1.99	2.85	3.65
0.90	2.05	2.90	3.68
0.95	2.11	2.95	3.71
1.00	2.16	3.00	3.74
1.05	2.21	3.05	3.77
1.10	2.27	3.10	3.81
1.15	2.32	3.15	3.84
1.20	2.37	3.20	3.87
1.25	2.42	3.25	3.90
1.30	2.46	3.30	3.93
1.35	2.51	3.35	3.96
1.40	2.56	3.40	3.99
1.45	2.60	3.45	4.01
1.50	2.65	3.50	4.04
1.55	2.69	3.55	4.07
1.60	2.73	3.60	4.10
1.65	2.78	3.65	4.13
1.70	2.82	3.70	4.16
1.75	2.86	3.75	4.19



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Job No. 23010		
Sheet no. 2		
Date 29/11/23		
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Project Elmfield House, Petersfinger Road, Salisbury, SP5 3BZ
Title Catchment 1 - Storage Requirements

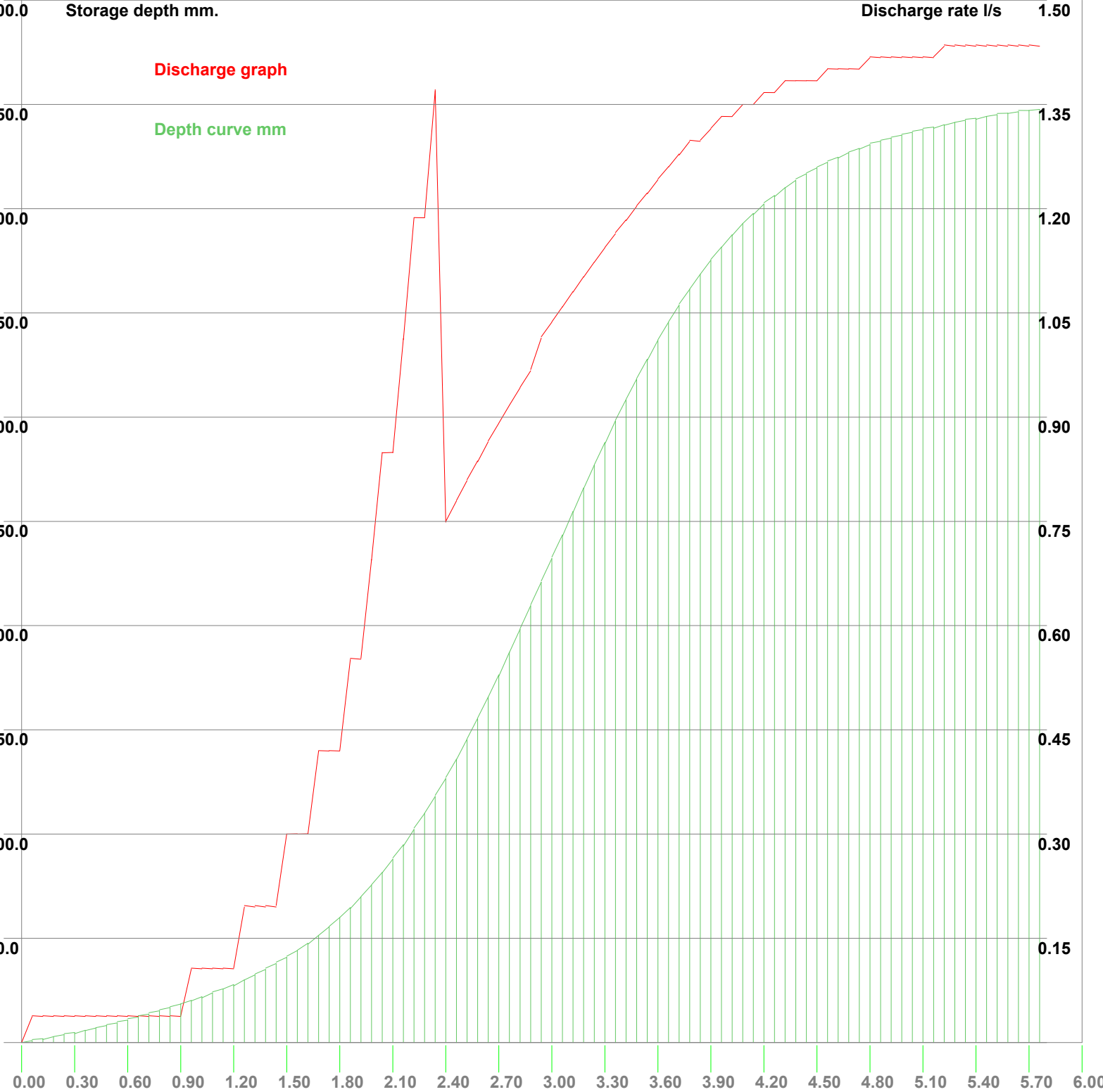
Storage curves for a 6 hours storm.

Storage depth mm.

Discharge rate l/s

Discharge graph

Depth curve mm





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Job No.	23010		
Sheet no.	3		
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Project	Elmfield House, Petersfinger Road, Salisbury, SP5 3BZ
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Incremental rainfall figures.

Storm Mins	Storage Depth mm	Control Flow l/s	Storm Mins	Storage Depth mm	Control Flow l/s
3.6	0.9	0.04	183.6	243.5	1.06
7.2	1.9	0.04	187.2	254.8	1.08
10.8	2.8	0.04	190.8	266.0	1.10
14.4	3.8	0.04	194.4	277.0	1.12
18.0	4.8	0.04	198.0	287.8	1.14
21.6	5.9	0.04	201.6	298.3	1.16
25.2	7.0	0.04	205.2	308.5	1.18
28.8	8.2	0.04	208.8	318.3	1.20
32.4	9.4	0.04	212.4	327.8	1.22
36.0	10.8	0.04	216.0	336.9	1.24
39.6	12.2	0.04	219.6	345.6	1.26
43.2	13.7	0.04	223.2	353.7	1.28
46.8	15.2	0.04	226.8	361.4	1.30
50.4	16.8	0.04	230.4	368.6	1.30
54.0	18.4	0.04	234.0	375.3	1.31
57.6	20.2	0.11	237.6	381.6	1.33
61.2	22.0	0.11	241.2	387.5	1.33
64.8	23.8	0.11	244.8	392.9	1.35
68.4	25.7	0.11	248.4	397.7	1.35
72.0	27.8	0.11	252.0	402.2	1.37
75.6	30.1	0.20	255.6	406.3	1.37
79.2	32.5	0.20	259.2	410.1	1.38
82.8	35.1	0.20	262.8	413.6	1.38
86.4	37.9	0.20	266.4	416.7	1.38
90.0	40.9	0.30	270.0	419.6	1.38
93.6	44.1	0.30	273.6	422.2	1.40
97.2	47.6	0.30	277.2	424.7	1.40
100.8	51.4	0.42	280.8	426.9	1.40
104.4	55.5	0.42	284.4	428.9	1.40
108.0	60.0	0.42	288.0	430.7	1.42
111.6	64.7	0.55	291.6	432.4	1.42
115.2	69.9	0.55	295.2	433.9	1.42
118.8	75.5	0.70	298.8	435.3	1.42
122.4	81.6	0.85	302.4	436.6	1.42
126.0	88.0	0.85	306.0	438.0	1.42
129.6	94.9	1.01	309.6	439.2	1.42
133.2	102.2	1.19	313.2	440.3	1.43
136.8	109.9	1.19	316.8	441.4	1.43
140.4	118.0	1.37	320.4	442.4	1.43
144.0	126.7	0.75	324.0	443.4	1.43
147.6	135.9	0.78	327.6	444.3	1.43
151.2	145.6	0.81	331.2	445.1	1.43
154.8	155.5	0.84	334.8	445.8	1.43
158.4	165.8	0.86	338.4	446.5	1.43
162.0	176.4	0.89	342.0	447.1	1.43
165.6	187.2	0.92	345.6	447.7	1.43
169.2	198.3	0.94	349.2	448.2	1.43
172.8	209.6	0.97	352.8	448.7	1.43
176.4	220.9	1.01	356.4	449.2	1.43
180.0	232.2	1.04	360.0	449.6	1.43

Using the Get Max button causes the program to step through a series of storm durations until a maximum volume is obtained.

Each duration is sampled 600 times and the results recorded. The storm durations (hrs) are:-

0.25, 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20, 24, 30, 36, 42, 48, 54, 60, 66, 72, 84, 96, 120, 150, 175, 200, 250, 300, 375, 500, 750, 1000, 1250, 1500, 1570, 2000, 2500, 3000, 3500, 4000

It should be noted that the six hour storm frequently requested rarely demonstrates the worst case for storage.