

Civil Design Calculations

Copas Formula 1 in 30yr Return

22 July 2022

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1. Copas Formula 1 in 30yr

1.1 Calculate the Required Storage Capacity

Return Rainfall Event (I)	=	30	years	
Restricted Discharge Rate (Q)	=	2.73	litres/ sec	
	=	0.003	m ³ / sec	
Impermeable Area (A _p)	=	1700		
	=	0.170	ha	
Storage Capacity Required (C _{req})	=	58.93	m ³	plus30% 76.61 m ³

1.2 Calculate the Provided Storage Capacity - Option 1: Pipe Network

Pipe Length (L)	=		m	
Pipe Diameter (Ø)	=		mm	
Pipe Capacity (C _{prov})	=	0.00	m ³	(Approx. Pipe)

1.2 Calculate the Provided Storage Capacity - Option 2: Balancing Pond

Storage Depth (d)	=	1500	mm	
Storage Length (L)	=	8	m	
Storage Length (W)	=	7	m	
Capacity (C _{prov})	=	84.00	m ³	(Approx. Pond)

1.3 Design Check

Total Capacity = Option 1 + Option 2

84.00	>	76.61
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Design OK

∴ Pipe and/or Pond has Sufficient Capacity