Civil Design Calculations

Copas Formula 1 in 100yr Return

22 July 2022

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1. Copas Formula 1 in 100yr

1.1 Calculate the Required Storage Capacity

Return Rainfall Event (I)	=	100	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})	=	**107.59**	m^3	plus30%	139.87 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)	=	10	m	
Storage Length (W)	=	10	m	
Capacity (C_{prov})	=	**150.00**	m^3	(Approx. Pond)

1.3 Design Check

Total Capacity = Option 1 + Option 2

150.00	>	139.87	Design OK

∴ Pipe and/or Pond has Sufficient Capacity