

Wallingford Maps	Rainfall Intensity							
	M5-60 R						20.6 mm 0.438	
	1 Year Return Period							
	Duration	Z1	M5-D	Z2	M2-D	I (mm/hr)		
	10	0.55	11.33	0.61	6.91	41.46		
	15	0.65	13.39	0.61	8.17	32.68		
	30	0.8	16.48	0.62	10.22	20.44		
	360	1.6	32.96	0.62	20.44	3.41		
							I _{15min} I _{360min}	32.68 mm/hr 3.41 mm/hr
	2 Year Return Period							
	Duration	Z1	M5-D	Z2	M2-D	I (mm/hr)		
	10	0.55	11.33	0.79	8.95	53.7		
	15	0.65	13.39	0.79	10.58	42.32		
	30	0.8	16.48	0.8	13.18	26.36		
	360	1.6	32.96	0.8	26.37	4.40		
							I _{15min} I _{360min}	42.32 mm/hr 4.40 mm/hr
	30 Year Return Period							
	Duration	Z1	M5-D	Z2	M30-D	I (mm/hr)		
	10	0.55	11.33	1.5	17	102		
	15	0.65	13.39	1.52	20.35	81.4		
	30	0.8	16.48	1.53	25.21	50.42		
	360	1.6	32.96	1.5	49.44	8.24		
							I _{15min} I _{360min}	81.4 mm/hr 8.24 mm/hr
	100 Year Return Period							
	Duration	Z1	M5-D	Z2	M100-D	I (mm/hr)		
	10	0.55	11.33	1.93	21.87	131.22		
	15	0.65	13.39	1.96	26.24	104.96		
	30	0.8	16.48	2	32.96	65.92		
	360	1.6	32.96	1.95	64.27	10.71		
							I _{15min} I _{360min}	104.96 mm/hr 10.71 mm/hr
Drg. Xxx.xxx	Greenfield Analysis							
	Assumed as greenfield runoff rate							
	Hydrological Region:						6	
	Soil Type						2	
	Development Size						0.017 ha	
	Annual Rainfall (SAAR)						605 mm	
	Soil Runoff Coefficient (SPR)						0.3	
	Development area under 50 ha, therefore calculate Q _{BAR50} and linearly interpolate							
	$Q_{BAR50} = 1.08(A/100)^{0.89} \times SAAR^{1.17} \times SPR^{2.17}$							
	Q _{BAR50}						76.83 l/s	
	Q _{BAR}						0.03 l/s	
	Calculate Q for different return periods using growth curve value for region 10 (GC)							

FAIRHURST consulting engineers		Job No.		Sheet No.		Rev.		
		114085		C01				
		Member/Location						
Job Title	GOSH - Italian Building		Drg. Ref.					
Calculation	Runoff Calculation		Made by	JB	Date	24.07.2017	Chd.	JL
			GC ₁		0.85			
			Q _{1yr}		0.03 l/s			
			GC ₃₀		2.3			
			Q _{30yr}		0.1 l/s			
			GC ₁₀₀		3.19			
			Q _{100yr}		0.1 l/s			
	Existing Site Discharge Rates							
			Total Area		0.017 ha			
			Impermeable Area		0.017 ha			
			CV		0.75			
			CR		1.3			
	Calculate surface water flow using 15 minute duration rainfall intensities at 1, 2, 30 and 100 year return periods							
			Q ₁		1.5 l/s			
			Q ₂		2 l/s			
			Q ₃₀		3.8 l/s			
			Q ₁₀₀		4.8 l/s			
			Q _{100+30%CC}		6.2 l/s			
	Proposed Site Discharge Rates							
			Total Area (not blue roof)		0.005 ha			
			Blue Roof controlled Discharge		0.1 l/s			
		CV		0.75				
		CR		1.3				
Calculate surface water flow using 15 minute duration rainfall intensities at 1, 2, 30 and 100 year return periods								
		Q ₁		0.7 l/s				
		Q ₂		0.9 l/s				
		Q ₃₀		1.7 l/s				
		Q ₁₀₀		2.1 l/s				
		Q _{100+30%CC}		2.4 l/s				
	Site Volume of Runoff							
			Greenfield Volume 1		1.04 m ³			
			Greenfield Volume 30		2.52 m ³			
			Greenfield Volume 100		3.28 m ³			
			Greenfield prior to mitigation (includes Climate Change)		4.26 m ³			
	This is based on a 100 year event of 6 hour duration		Pre-development Volume 1		3.47 m ³			
			Pre-development Volume 30		8.40 m ³			
			Pre-development Volume 100		10.93 m ³			
			Post-development prior to mitigation (includes Climate Change)		14.20 m ³			

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Calculation	Runoff Calculation		Made by	JB	Date	24.07.2017	Chd. JL
	For 100 Year + 30% Climate Change (6Hour)						
	Additional Volume post-development prior to mitigation					3.28 m ³	
	Volume lost due to absorption and evapotranspiration from planters on the blue roof					3.41 m ³	
	Net volume increase post development					-0.13 m ³	