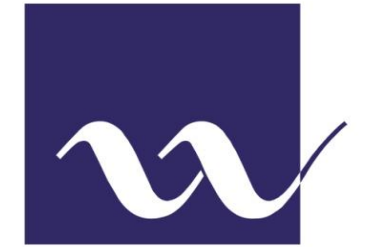


Spring Park Surface Water Drainage Strategy Water Balance Summary - 2008



5 year return period = 50mm/hr rainfall intensity = 215 l/s discharge in FRA

Attenuation volumes include 20% allowance for climate change

NOTE: Existing site area excludes undevelopable land offsite adjacent to roundabout

Location	Area (ha)	Area (%)	Drainage	Area (ha)	Area (%)	Rainfall (m ³)	Runoff (l/s)
Roofs							
Roads							
Hardstanding							
Impermeable	3.1	29%	SWDS	1.55	14.5%		215
			Att/Inf	1.55	14.5%		
Permeable	7.6	71%	Att/Inf	7.6	71.0%		
Subtotal			SWDS	1.55			215
Subtotal			Att/Inf	9.15			0
Total	10.7	100%		10.7	100%		215

Location	Area (ha)	Area (%)	Drainage	Runoff (l/s)	Maximum Discharge (l/s)	5 year Attenuation Volume (m ³)	100 year Attenuation Volume (m ³)
<i>Residual Land</i>	5.436						
Roads	0.652	12.0%	SWDS	88.36	42.20	67.40	187.20
Hardstanding	1.511	27.8%	SWDS	204.78	97.80	160.20	439.80
Plot A	0.089	1.6%	Att/Inf	12.06	Roofs to infiltration		
Plot B	0.164	3.0%	Att/Inf	22.23			
Plot N	0.129	2.4%	Att/Inf	17.48			
Plot M	0.096	1.8%	Att/Inf	13.01			
Plot O	0.098	1.8%	Att/Inf	13.28			
Plot H	0.079	1.5%	Att/Inf	10.71			
Impermeable	2.818	51.8%	SWDS	293.14			
Permeable	2.618	48.2%	Att/Inf	88.77			
Sub-Total	5.436	100.0%		381.91	140.00	227.60	627.00
<i>Spring Park</i>	5.498						
Roads	0.357	6.5%	SWDS	48.38	27.29	33.70	95.40
Hardstanding	0.624	11.3%	SWDS	84.57	47.71	59.80	168.30
Plot C	0.097	1.8%	Att/Inf	13.15	Roofs to Infiltration		
Plots DE&F	0.639	11.6%	Att/Inf	86.60			
Plots G&I	0.630	11.5%	Att/Inf	85.38			
Plots J&K	0.630	11.5%	Att/Inf	85.38			
Plot L	0.095	1.7%	Att/Inf	12.87			
Impermeable	3.072	55.9%	SWDS	132.95			
Permeable	2.426	44.1%	Att/Inf	283.38			
Sub-Total	5.498	100.0%		416.33	75.00	93.50	263.70
Total Spring Park							
Impermeable	5.890	53.9%	SWDS	426.09	215.00	321.10	890.70
Permeable	5.044	46.1%	Att/Inf	372.15			
Total Spring Park	10.93	100.0%		798.24	215.00	321.10	890.70

Notes

Key: SWDS = Public Stormwater Drainage System via attenuation
Att/Inf = Attenuation and Infiltration

Location	Area (ha)	Area (%)	Drainage	Runoff (l/s)	Maximum Discharge (l/s)	5 year Attenuation Volume (m ³)	100 year Attenuation Volume (m ³)
<i>Residual Land</i>	5.436						
Roads	0.406	7.5%	SWDS	54.99	35.00	25.70	81.14
Car Park (Ax)	0.195	3.6%	SWDS	26.47	8.15	20.92	57.08
Plot A	0.116	2.1%	Att/Inf	15.71	4.84	12.47	34.15
Plot B	0.237	4.4%	Att/Inf	32.10	9.89	25.20	69.17
Plot N	0.165	3.0%	Att/Inf	22.37	6.89	17.77	48.51
Plot M	0.280	5.1%	Att/Inf	37.91	11.67	29.86	81.90
Car Park (A)	0.304	5.6%	Att/Inf	41.15	12.67	32.38	88.70
Car Park (BN)	0.261	4.8%	Att/Inf	35.35	10.89	27.97	76.48
Impermeable	1.963	36.1%	SWDS	81.45	100.00	192.28	537.14
Permeable	3.473	63.9%	Att/Inf				
Sub-Total	5.436	100.0%		81.45	100.00	192.28	537.14
<i>Spring Park</i>	5.498						
Roads	0.357	6.5%	SWDS	48.38			
Hardstanding	0.624	11.3%	SWDS	84.57			
Plot P1	0.568	10.3%	Att/Inf	76.98	115.00	900.00	1752.00
Plot D1	0.700	12.7%	Att/Inf	94.87			
Plot D2	0.700	12.7%	Att/Inf	94.87			
Plot D3	0.700	12.7%	Att/Inf	94.87			
Security	0.014	0.3%	Att/Inf	1.90			
Impermeable	3.663	66.6%	SWDS	132.95	115.00	900.00	1752.00
Permeable	1.835	33.4%	Att/Inf				
Sub-Total	5.498	100.0%		132.95	115.00	900.00	1752.00
Total Spring Park							
Impermeable	5.626	51.5%	SWDS	214.40	215.00	1092.28	2289.14
Permeable	5.308	48.5%	Att/Inf				
Total Spring Park	10.93	100.0%		214.40	215.00	1092.28	2289.14