

Soakage design - 10% AEP



Canmap Hawley Job No.	6623 NZGems Ltd		
Address	18 Salisbury Road, Rotorua		
Computed	GB	Date	21/05/2009
Checked	ND	Date	21/05/2009

Design Data

Soakage test reference	1
Catchment	All
Depth to Ground Water	1.60 m
Soakhole diameter	900 mm
Soakhole depth	1.35 m
Soakhole area	0.64 m ²
Soakhole volume	0.86 m ³
Soakage rate	4000 mm/hr
V _{soak}	2.54 m ³ /hr/soakhole

Design Storm 10% AEP

Runoff coefficient for area
(C) 0.9

Calculation Summary

Soakhole requirement for 10minute Time of Concentration for 10% AEP Design Storm

Area of roof & hard standing (m ²)	No. of 900 dia soakholes
100	1
150	1
200	2
250	2
300	2
350	2
400	3

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Calculation Summary

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 Catchment All
 Depth to Ground Water 1.6 m
 Soakhole diameter 900 mm
 Soakhole depth 1.35 m
 Soakhole area 0.64 m²
 Soakhole volume 0.86 m³
 0
 Soakage rate 4000 mm/hr
 V_{soak} 2.54 m³/hr/soakhole
 0
 0
 Design Storm 10% AEP
 0
 Area of catchment (m²) 100 or 0.01 ha
 Runoff coefficient for
 area (C) 0.9

Calculation results

10% AEP Storm Duration	Rainfall intensity (mm/hr)	runoff volume R _c (m ³)	No. of 900mm dia Soakholes req.	runoff volume R _c per Soakhole (m ³)	V _{stor} per Soakhole (m ³)	Spare capacity per Soakhole (m ³)
10 min	124	1.86	1	1.86	-0.68	1.54
20 min	89	2.67	1	2.67	0.13	0.73
30 min	72	3.24	1	3.24	0.70	0.16
60 min	51	4.59	2	2.30	-0.25	1.11
120 min	34	6.12	2	3.06	0.52	0.34

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Calculation Summary

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 Depth to Ground Water 1.6 m
 Soakhole diameter 900 mm
 Soakhole depth 1.35 m
 Soakhole area 0.64 m²
 Soakhole volume 0.86 m³

Soakage rate 4000 mm/hr
 V_{soak} 2.54 m³/hr/soakhole

Design Storm 10% AEP

Area of catchment (m²) 150 or 0.015 ha
 Runoff coefficient for area (C) 0.9

Calculation results

10% AEP Storm Duration	Rainfall intensity (mm/hr)	runoff volume R_c (m ³)	No. of 900mm dia Soakholes req.	runoff volume R_c per Soakhole (m ³)	V_{stor} per Soakhole (m ³)	Spare capacity per Soakhole (m ³)
10 min	124	2.79	1	2.79	0.25	0.61
20 min	89	4.01	2	2.00	-0.54	1.40
30 min	72	4.86	2	2.43	-0.11	0.97
60 min	51	6.89	3	2.30	-0.25	1.11
120 min	34	9.18	3	3.06	0.52	0.34

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 Soakhole diameter 900 mm
 Soakhole depth 1.35 m
 Soakhole area 0.64 m²
 Soakhole volume 0.86 m³

Soakage rate 4000 mm/hr
 V_{soak} 2.54 m³/hr/soakhole

Design Storm 10% AEP

Area of catchment (m²) 200 or 0.02 ha

Runoff coefficient for area (C) 0.9

Calculation results

10% AEP Storm Duration	Rainfall intensity (mm/hr)	runoff volume R_c (m ³)	No. of 900mm dia Soakholes req.	runoff volume R_c per Soakhole (m ³)	V_{stor} per Soakhole (m ³)	Spare capacity per Soakhole (m ³)
10 min	124	3.72	2	1.86	-0.68	1.54
20 min	89	5.34	2	2.67	0.13	0.73
30 min	72	6.48	2	3.24	0.70	0.16
60 min	51	9.18	3	3.06	0.52	0.34
120 min	34	12.24	4	3.06	0.52	0.34

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Calculation Summary

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 Soakhole diameter 900 mm
 Soakhole depth 1.35 m
 Soakhole area 0.64 m²
 Soakhole volume 0.86 m³

Soakage rate 4000 mm/hr
 V_{soak} 2.54 m³/hr/soakhole

Design Storm 10% AEP

Area of catchment (m²) 250 or 0.025 ha
 Runoff coefficient for area (C) 0.9

Calculation results

10% AEP Storm Duration	Rainfall intensity (mm/hr)	runoff volume R_c (m ³)	No. of 900mm dia Soakholes req.	runoff volume R_c per Soakhole (m ³)	V_{stor} per Soakhole (m ³)	Spare capacity per Soakhole (m ³)
10 min	124	4.65	2	2.33	-0.22	1.08
20 min	89	6.68	2	3.34	0.79	0.07
30 min	72	8.10	3	2.70	0.16	0.70
60 min	51	11.48	4	2.87	0.32	0.53
120 min	34	15.30	5	3.06	0.52	0.34

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 Soakhole depth 1.35 m
 Soakhole area 0.64 m²
 Soakhole volume 0.86 m³

 Soakage rate 4000 mm/hr
 V_{soak} 2.54 m³/hr/soakhole

Design Storm 10% AEP

Area of catchment (m²) 300 or 0.03 ha
 Runoff coefficient for area (C) 0.9

Calculation results

10% AEP Storm Duration	Rainfall intensity (mm/hr)	runoff volume R _c (m ³)	No. of 900mm dia Soakholes req.	runoff volume R _c per Soakhole (m ³)	V _{stor} per Soakhole (m ³)	Spare capacity per Soakhole (m ³)
10 min	124	5.58	2	2.79	0.25	0.61
20 min	89	8.01	3	2.67	0.13	0.73
30 min	72	9.72	3	3.24	0.70	0.16
60 min	51	13.77	5	2.75	0.21	0.65
120 min	34	18.36	6	3.06	0.52	0.34

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 Soakhole depth 1.35 m
 Soakhole area 0.64 m²
 Soakhole volume 0.86 m³

 Soakage rate 4000 mm/hr
 V_{soak} 2.54 m³/hr/soakhole

Design Storm 10% AEP

Area of catchment (m²) 350 or 0.035 ha
 Runoff coefficient for area (C) 0.9

Calculation results

10% AEP Storm Duration	Rainfall intensity (mm/hr)	runoff volume R _c (m ³)	No. of 900mm dia Soakholes req.	runoff volume R _c per Soakhole (m ³)	V _{stor} per Soakhole (m ³)	Spare capacity per Soakhole (m ³)
10 min	124	6.51	2	3.26	0.71	0.15
20 min	89	9.35	3	3.12	0.57	0.29
30 min	72	11.34	4	2.84	0.29	0.57
60 min	51	16.07	5	3.21	0.67	0.19
120 min	34	21.42	7	3.06	0.52	0.34

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 Soakhole depth 1.35 m
 Soakhole area 0.64 m²
 Soakhole volume 0.86 m³

 Soakage rate 4000 mm/hr
 V_{soak} 2.54 m³/hr/soakhole

Design Storm 10% AEP

Area of catchment (m²) 400 or 0.04 ha
 Runoff coefficient for area (C) 0.9

Calculation results

10% AEP Storm Duration	Rainfall intensity (mm/hr)	runoff volume R _c (m ³)	No. of 900mm dia Soakholes req.	runoff volume R _c per Soakhole (m ³)	V _{stor} per Soakhole (m ³)	Spare capacity per Soakhole (m ³)
10 min	124	7.44	3	2.48	-0.06	0.92
20 min	89	10.68	4	2.67	0.13	0.73
30 min	72	12.96	4	3.24	0.70	0.16
60 min	51	18.36	6	3.06	0.52	0.34
120 min	34	24.48	8	3.06	0.52	0.34