

Utility Programs for Drainage

Flood calculations



Sinotech

Project name: 323 - Wellington Erven 15712
Analysed by: Jana Marais
Name of river: Unknown
Description of site: Erf 15712
Filename: C:\Dropbox (Triple 3 Engineering)\T3CivilEng\Projects\323 - Erf 15712 Wellington\design\storm water\UPD Drainage\Erf 15712.fld
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Flood Frequency Analysis: Rational Method

Project = 323 - Wellington Erven 15712
 Analysed by = Jana Marais
 Name of river = Unknown
 Description of site = Erf 15712
 Date = 5/10/2018
 Area of catchment = 2.448 km²
 Dolomitic area = 0.0 %
 Mean annual rainfall (MAR) = 620.00 mm
 Length of longest watercourse = 1.997 km
 Flow of water = Defined water course
 Height difference along 10-85 slope = 75.0 m
 Rainfall region = Coastal
 Area distribution = Rural: 100 %, Urban: 0 %, Lakes: 0 %

Catchment description - Urban area (%)

Lawns		Residential and industry	Business	
Sandy, flat (<2%)	0	Houses	City centre	0
Sandy, steep (>7%)	0	Flats	Suburban	0
Heavy soil, flat (<2%)	0	Light industry	Streets	0
Heavy soil, steep (>7%)	0	Heavy industry	Maximum flood	0

Catchment description - Rural area (%)

Surface slopes		Permeability	Vegetation	
Lakes and pans	10	Very permeable	Thick bush & forests	0
Flat area	80	Permeable	Light bush & cultivated land	90
Hilly	10	Semi-permeable	Grasslands	10
Steep areas	0	Impermeable	Bare	0

 Average slope = 0.05008 m/m
 Time of concentration = 21.5 min
 Run-off factor
 Rural - C1 = 0.323
 Urban - C2 = 0.000
 Lakes - C3 = 0.000
 Combined - C = 0.323

The HRU, Report 2/78, Depth-Duration-Frequency diagram was used to determine the point rainfall.

Return Period (years)	Time of concentration (hours)	Point rainfall (mm)	ARF (%)	Average intensity (mm/h)	Factor Ft	Runoff coefficient (%)	Peak flow (m ³ /s)
1:2	0.36	12.3	99.8	34.3	0.75	24.2	5.654
1:5	0.36	16.8	99.7	46.7	0.80	25.8	8.206
1:10	0.36	21.2	99.6	59.1	0.85	27.5	11.03
1:20	0.36	26.2	99.5	72.8	0.90	29.1	14.40
1:50	0.36	34.0	99.4	94.6	0.95	30.7	19.73
1:100	0.36	41.9	99.2	116.2	1.00	32.3	25.52

Run-off coefficient percentage includes adjustment saturation factors (Ft) for steep and impermeable catchments

Calculated using Utility Programs for Drainage 1.1.0

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