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
Date: 10 May 2018

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

Catchment description - Rural area (%)

Surface slopes		Permeability		Vegetation	
Lakes and pans	10	Very permeable	0	Thick bush & forests	0
Flat area	80	Permeable	50	Light bush & cultivated land	90
Hilly	10	Semi-permeable	50	Grasslands	10
Steep areas	0	Impermeable	0	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 (m³/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