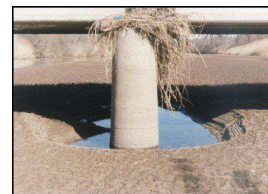


Utility Programs for Drainage

Flood calculations



Sinotech

Project name: 16018_Mkhondo Establishment
Analysed by: AC
Name of river: Unknown
Description of site: Dirkiesdorp
Filename: R:\Projects\Active\16018_PRO_HIS_Mkhondo Township Development\6 Reports\6.2
 Concept and Viability Report\Prelim\16018_Dirkisdorp Floodline_Rev000\Old\16018 Draft_Mkhon
Date: 31 August 2016

Printed: 31 August 2016

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Flood Frequency Analysis: Rational Method

Project = 16018_Mkhondo Establishment
 Analysed by = AC
 Name of river = Unknown
 Description of site = Dirkiesdorp
 Date = 31/08/2016
 Area of catchment = 36.25 km²
 Dolomitic area = 0.0 %
 Mean annual rainfall (MAR) = 681.00 mm
 Length of longest watercourse = 9.37 km
 Flow of water = Defined water course
 Height difference along 10-85 slope = 120.0 m
 Rainfall region = Inland
 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 0	Very permeable 0	Thick bush & forests 0
Flat area 80	Permeable 80	Light bush & cultivated land 60
Hilly 20	Semi-permeable 20	Grasslands 40
Steep areas 0	Impermeable 0	Bare 0

 Average slope = 0.01708 m/m
 Time of concentration = 1.78 h
 Run-off factor
 Rural - C1 = 0.342
 Urban - C2 = 0.000
 Lakes - C3 = 0.000
 Combined - C = 0.342

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)	Factor Ft	Runoff coefficient (%)	Peak flow (m ³ /s)
1:10	1.78	64.4	95.8	34.7	0.85	29.1	101.49
1:20	1.78	79.5	94.8	42.4	0.90	30.8	131.30
1:50	1.78	103.4	93.3	54.2	0.95	32.5	177.23

Run-off coefficient percentage includes adjustment saturation factors (Ft)

Calculated using Utility Programs for Drainage 1.0.1

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