

HEAVY RAINFALL & FLASH FLOODS CALLIDE VALLEY & CURTIS COAST

February 2003

Introduction

On the morning of Thursday 6th February flash flooding occurred in the Dee River and tributaries and in Neerkol Creek and nearby streams. One man lost his life and several houses and public buildings were inundated. Damage to the area was estimated to be over \$10 m.

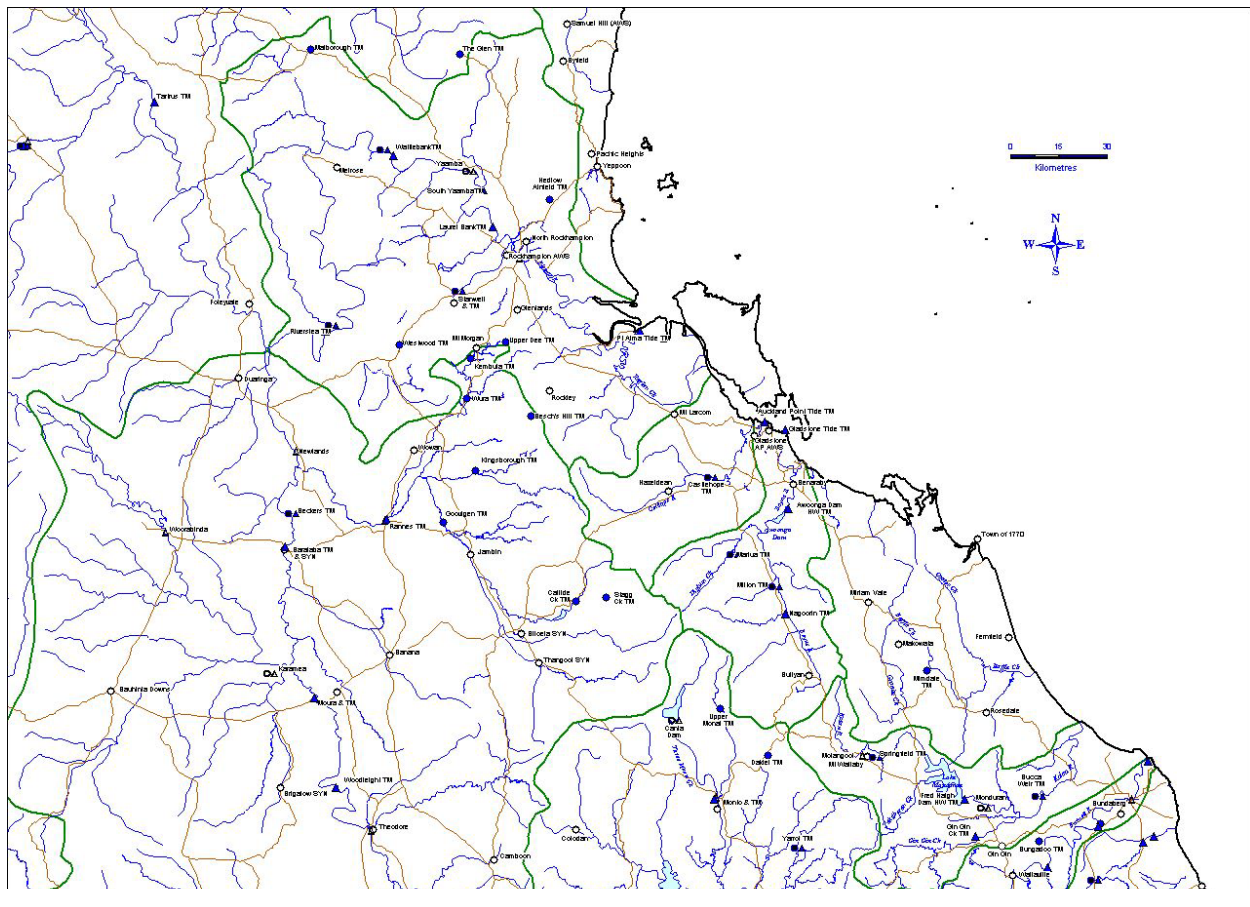


Figure 1 Flood Warning Network

This report includes some observations on the heavy rainfall and flash flooding which occurred in the Callide Valley and the coastal streams between Rockhampton and Gladstone from 9am 4th February to 9am 7th February 2003. It uses operational data from stations operated by the Bureau and the Department of Natural Resources and Mines (NRM). More detailed data may be available

from Bureau and NRM loggers in future.

Four rainfall stations, Samuel Hill, Kembula, Gladstone Airport and Springfield, were selected as being representative of the rainfall in their surrounding areas and analysed in detail. Locations mentioned in the report can be found in Figure 1.

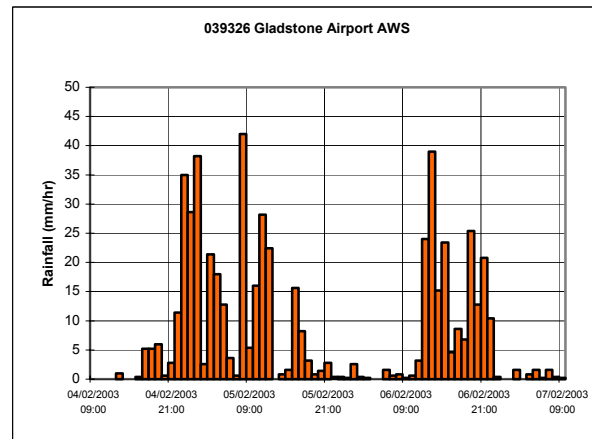
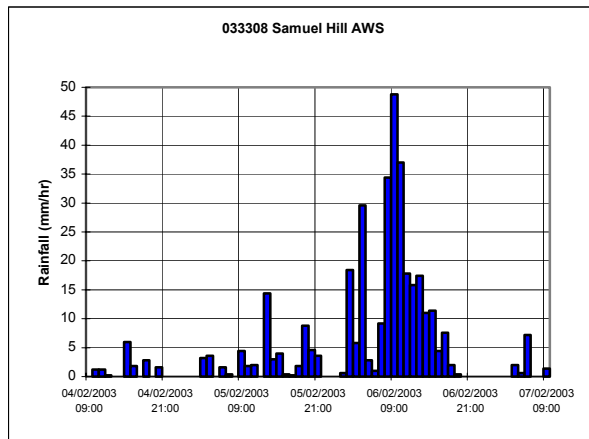
Rainfall Totals

- In the 24 hours to 9am Wednesday 5th February there was heavy rainfall in the coastal river and streams between Rockhampton and Gladstone. Up to this time, heaviest rainfall were recorded east of the Calliope Range in the coastal area from Gladstone and south about 100 kilometres.
- Ex-Tropical Cyclone Beni crossed the coast just south of Rockhampton in the early hours of Thursday morning 6th February. In hours that followed, heavy rainfall fell in the coastal region between Rockhampton and Gladstone and penetrated some 100 to 150 kilometres inland. The highest falls were recorded in the area around Mt Morgan.
- Daily rainfall for the 3 days to 7th February are shown below in millimetres for a selection of stations in the region.

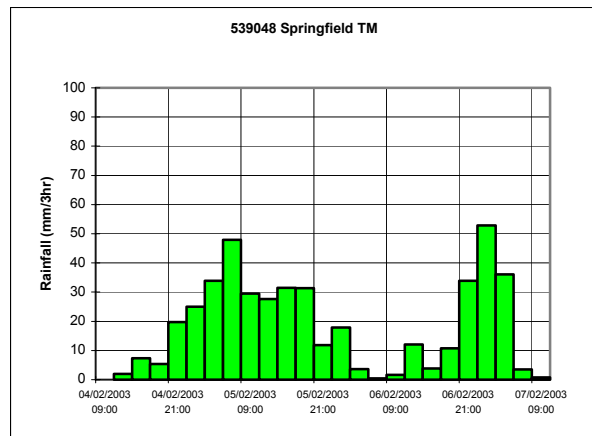
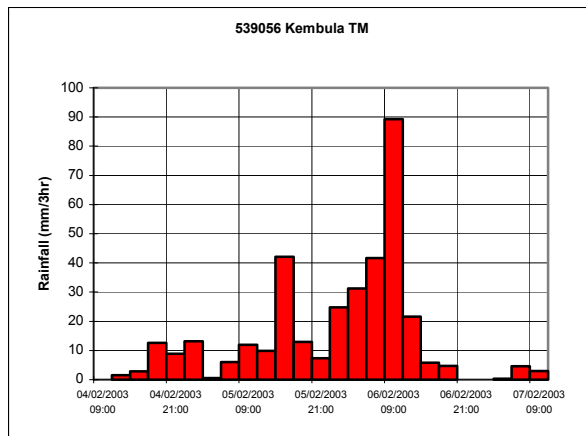
| CBM | Name | February | | | |
|--------|-----------------------|----------|-----|-----|-------|
| | | 5 | 6 | 7 | Total |
| 033308 | Samuel Hill AWS | 27 | 195 | 135 | 357 |
| 033310 | South Yaamba TM | 33 | 195 | 37 | 265 |
| 039069 | Mt Morgan | 48 | 247 | 52 | 347 |
| 539056 | Kembula TM | 57 | 257 | 43 | 357 |
| 039089 | Biloela | 62 | 87 | 52 | 201 |
| 039068 | Mt Larcom | 122 | 145 | 127 | 394 |
| 039326 | Gladstone Airport AWS | 256 | 93 | 214 | 563 |
| 039297 | Builyan | 151 | 157 | 72 | 380 |
| 039330 | Monto | 92 | 80 | 129 | 301 |
| 539048 | Springfield TM | 166 | 131 | 154 | 451 |
| 039327 | Makowata | 238 | 330 | 56 | 624 |

Temporal Patterns

- During the period, rainfall data was collected hourly from Automatic Weather Stations (AWS) and 3 hourly from telephone telemeters (TM) in the region.
- One hourly plots for the period 9am 4th to 9am 7th February are presented for the AWSs at Samuel Hill and Gladstone Airport, both of which are located on the coast. From these hyetographs, it can be seen that the most intense rainfall at Samuel Hill commenced about 7am on the morning of Thursday 6th February and continued for 3 hours with the highest hourly rainfall of 49mm. The rainfall pattern at Gladstone Airport shows several bursts of intense rain over the same period with the highest hourly rainfall of 42mm occurring at 8am on 5th February.

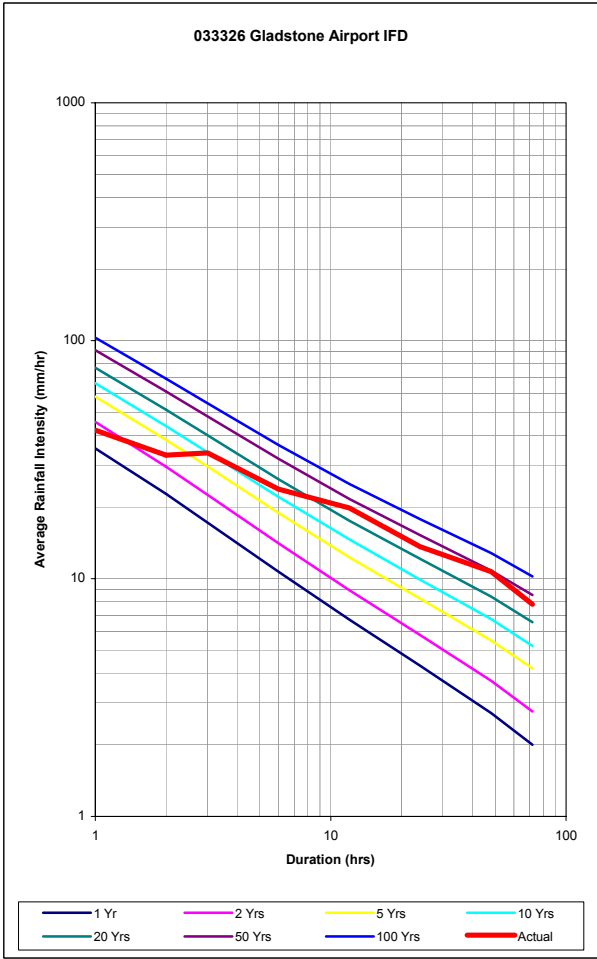
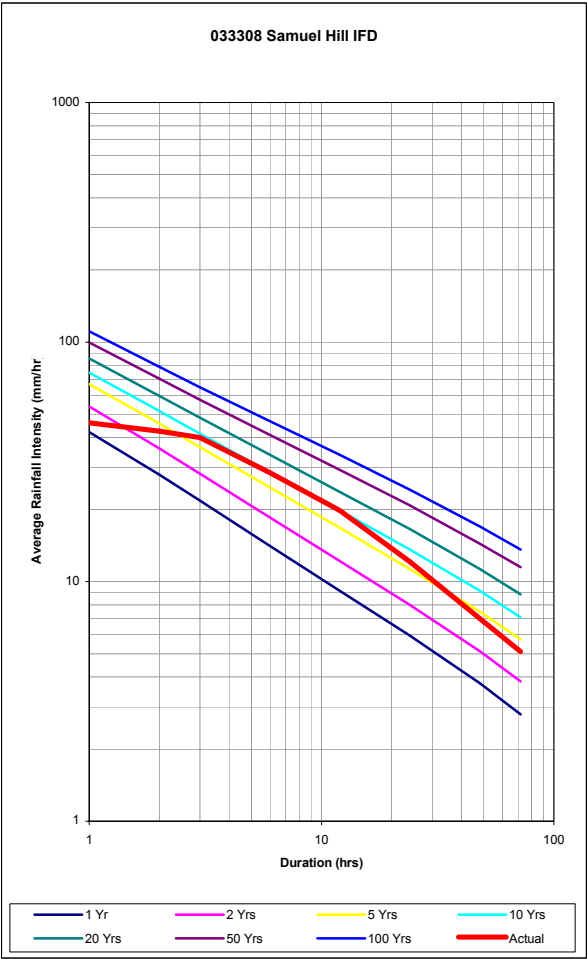


- Three hourly plots for the same period are shown for the Department of Natural Resources TMs at Kembula and Springfield. The station at Kembula shows a similar pattern to that at Samuel Hill as the Springfield station reflecting the pattern at Gladstone Airport. At Kembula, the highest three hourly rainfall of 89 mm occurred between 6am and 9am on Thursday 6th February.

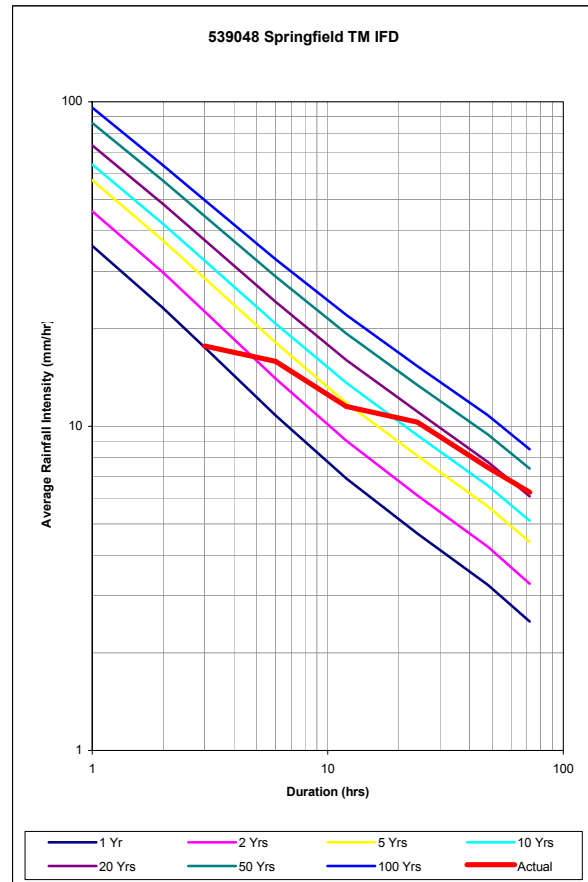
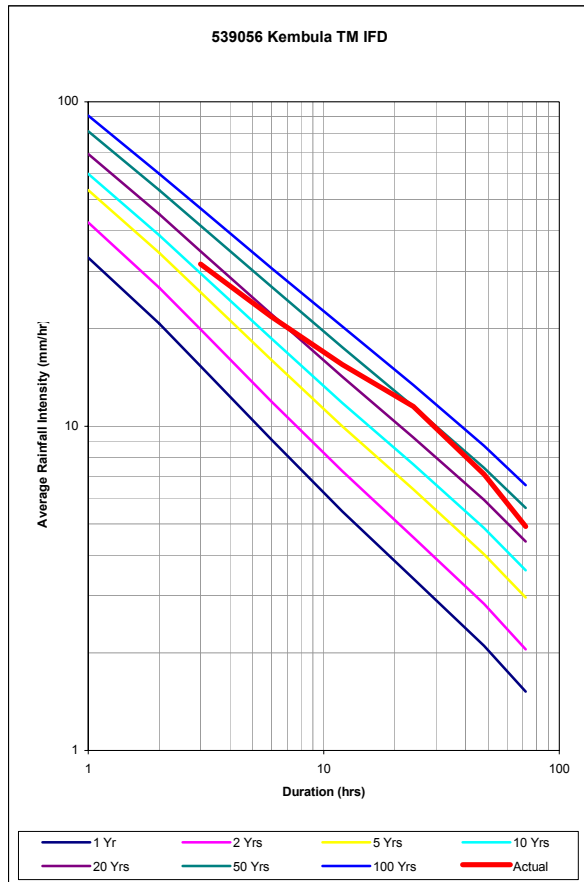


Intensity- Frequency- Duration Analysis

- Intensity-Frequency-Duration (IFD) analysis of the actual event rainfall was conducted for the four selected stations.
- The IFD analysis of the stations at Samuel Hill and Gladstone shows that the short duration less than 2 hours were less than 1 in 5 year Average Recurrence Interval (ARI). The most statistically significant rainfall appears to be the mid duration of 3 to 12 hours, which are about 10-20 year ARI.



- The IFD analysis of the stations at Kembula and Springfield TMs can only start from 3 hour durations. The 3 hour duration at Kembula was between a 10 and 20 year ARI while the longer durations up to 72 hours were between 20 and 50 year ARIs. At Springfield TM, the longer duration storm was found to be more significant.



River Heights

- Significant river rises and flooding were recorded throughout the Dee, Don, lower Dawson, Calliope, Boyne, Kolan River systems and Baffle Creek.
- Neerkol Creek at Stanwell rose over 6.5 metres in 3 hours reaching a peak of 9.2 metres at 10am Thursday. This is slightly higher than the peak in December 1990.
- Flash flooding occurring in the Dee River and tributaries with several small communities in the area inundated. The Don River at Rannes reaching a peak of 12.2 metres 2am Friday 7th February, the highest flood since December 1973.
- The Dawson River at Baralaba, a rise of nearly 9 metres was recorded between 3am and 11am at the NRM's tailwater gauge and continued rising slowly to a major flood peak early Friday morning.
- On the Boyne River, Awoonga Dam rose from 19 metres below FSL to 6.7 metres below FSL at 10am 13th February, i.e. from 20% to over 50% full.

Warning Services

- Forecasts issued during Tuesday and Wednesday for the Capricornia District included a statement "Moderate to heavy falls likely with local flooding possible."
- The first advice of flooding was an automatically issued river height bulletin, which was disseminated at 3.30am Thursday 6th February and contained advice of a river height rise at Rannes in the lower Don River and at Nagoorin in the Boyne River. From that point, river height bulletins were issued at regular three hourly intervals.
- A specific Flood Warning for the Lower Dawson River and Tributaries was commenced at 10.10am on Thursday 6 February and was updated about 3 times per day.