



## RECORD FLOODING LEICHHARDT RIVER

March 2006

### Introduction

This report includes some observations on the heavy rainfall and flooding that occurred in the Leichhardt River in March 2006 as a result of Cyclone Larry. It uses operational data from stations operated by the Bureau and the Department of Natural Resources and Mines (NRM).

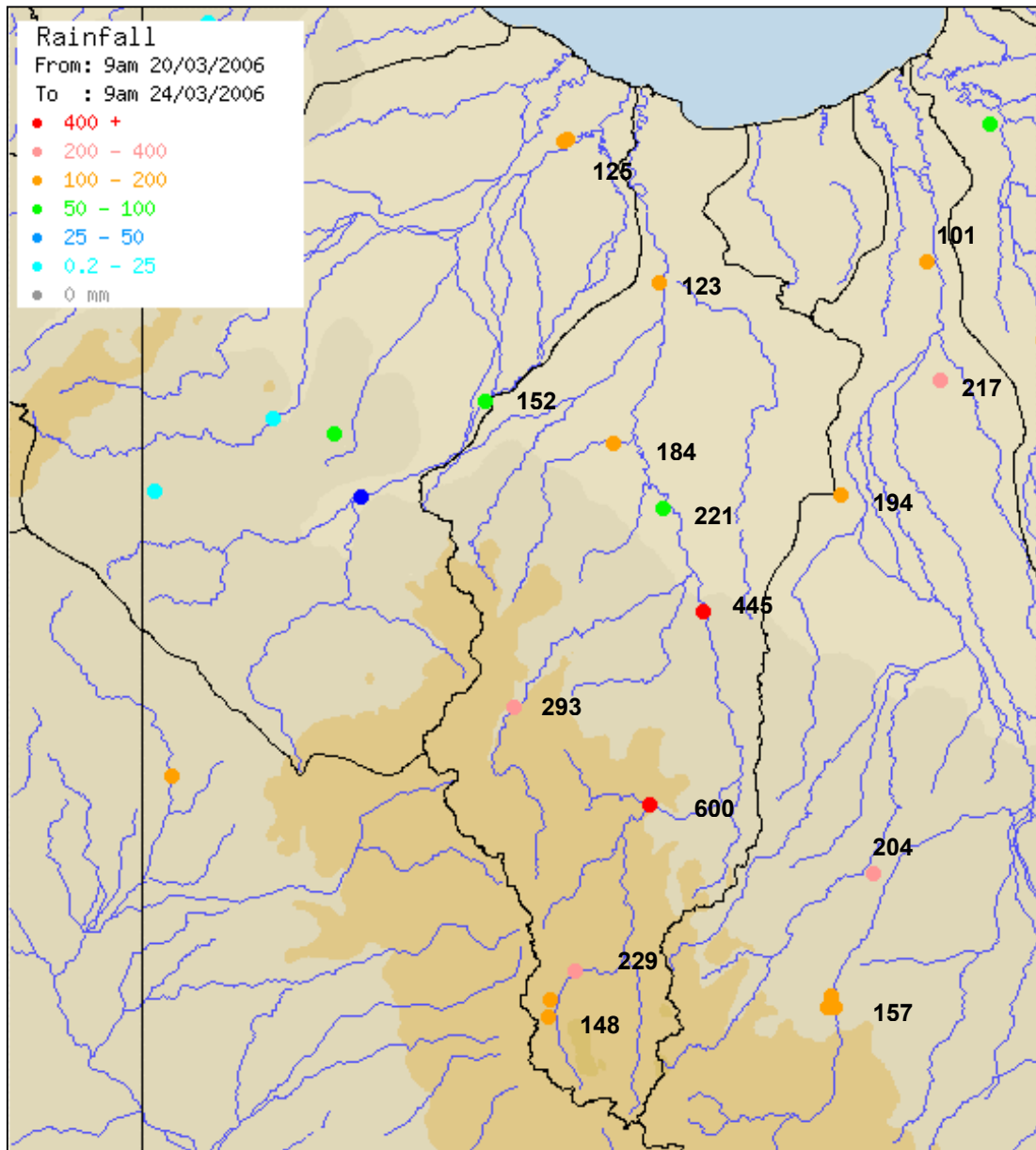
### Rainfall Totals

- Tropical Cyclone Larry crossed the coast near Innisfail in the early hours of Monday morning 20<sup>th</sup> March. A day later, very heavy rainfall fell in the Leichhardt River catchment with the highest falls recorded in about 100 kilometres area north of Mt Isa.

#### Rainfall Totals

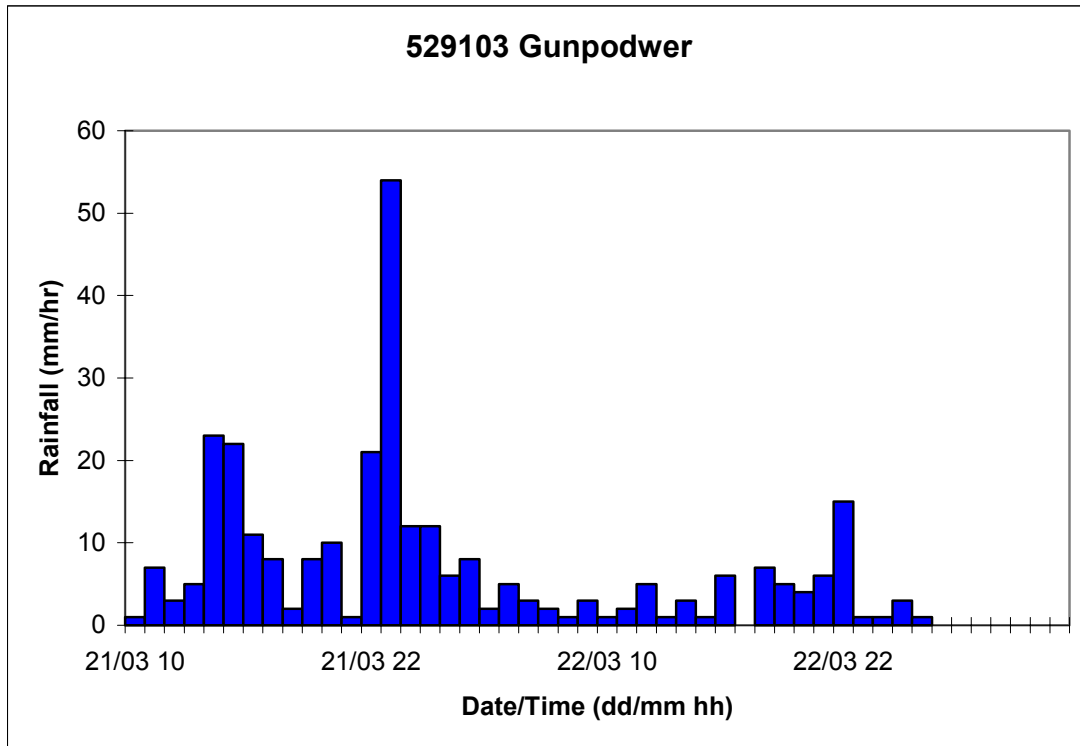
CBM No	Station	Rainfall (mm) 24 Hours to 9am				Total
		21-Mar	22-Mar	23-Mar	24-Mar	
029141	CLONCURRY AWS	5.0	109.6	42.0	0.2	156.8
029127	MT ISA	0.4	89.2	58.2	0.4	148.2
029126	MT ISA MINE		84.6	57.6	0.2	142.4
029123	LAKE MOONDARRA	4.2	154.0	70.8		229.0
029027	KAMILAROI	12.4	278.6	148.8	4.8	444.6
029131	GERETA STATION	17.2	435.5	147.2		599.9
029032	LORRAINE		129.0	92.0	0.4	221.4
529013	GUNPOWDER TM	0.0	230.0	62.0	1.0	293.0
029065	NARDOO	4.2	80.0	100.0		184.2
52901	FLORAVILLE TM	1.2	78.5	38.6	6.0	124.3
029078	COTSWOLD STATION	9.6	135.6	58.0	0.6	203.8
029086	COWAN DOWNS	6.8	31.4	111.6	44.6	194.4
029050	WONDOOLA STATION	22.0	65.4	51.4	78.0	216.8
029167	CENTURY MINE AWS	2.6	0.0	28.2	21.8	52.6
52900	GREGORY DOWNS TM	2.2	0.0	na	na	151.9
029077	BURKETOWN AWS	9.2	98.8	19.6	0.2	127.8

- In the 24 hours to 9am Wednesday 22<sup>nd</sup> March, a total of 435mm was recorded at Gereta Station. This was the highest 24 hour total recorded in the region by a large margin and totals of this amount did not seem to extend much beyond the area between Gereta and Kamilaroi.
- Daily rainfall for the 4 days to 24<sup>th</sup> March is shown in the table and map for a selection of stations in and around the catchment.
- In the 4 days to 9am 24<sup>th</sup> march, rainfall totals for the catchment area above Julius Dam were less than 230mm.



## Temporal Patterns

- The nearest pluviograph in the area is operated by DNRM at Gunpowder, approximately 75 kilometres northwest of Gereta Station.
- A one hourly plot for the period 9am 21<sup>st</sup> March to 9am 23<sup>rd</sup> March is shown below.
- The most intense 1 hourly rainfall of 54 mm was recorded in the hour to 11pm 21<sup>st</sup> March, more than double the next highest hourly period.

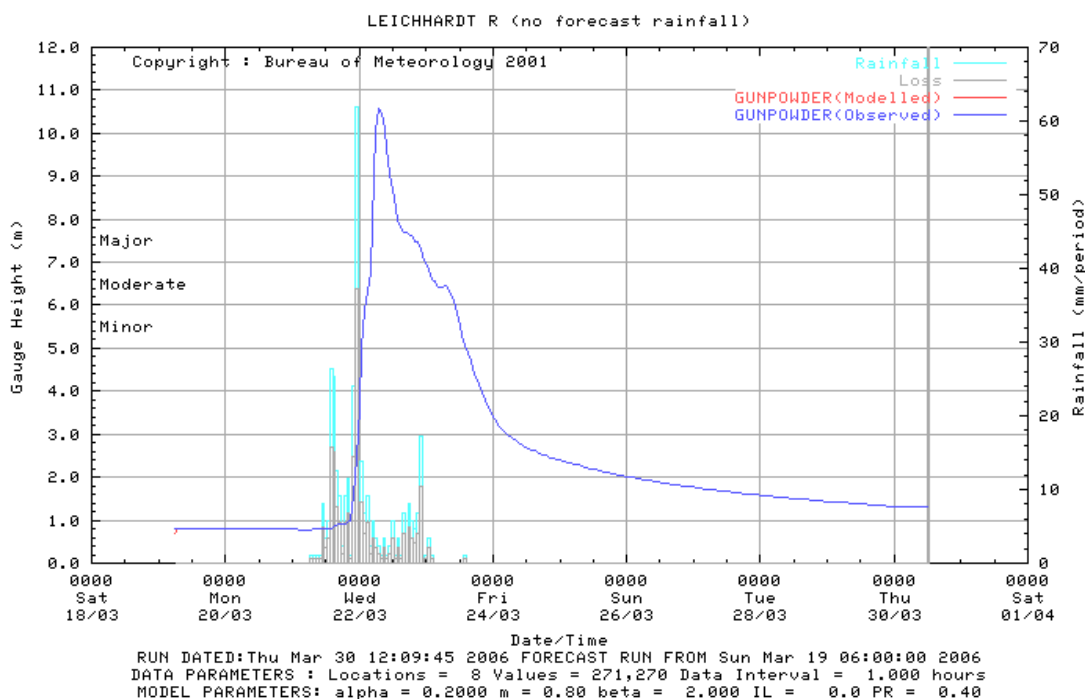


## Intensity- Frequency- Duration Analysis

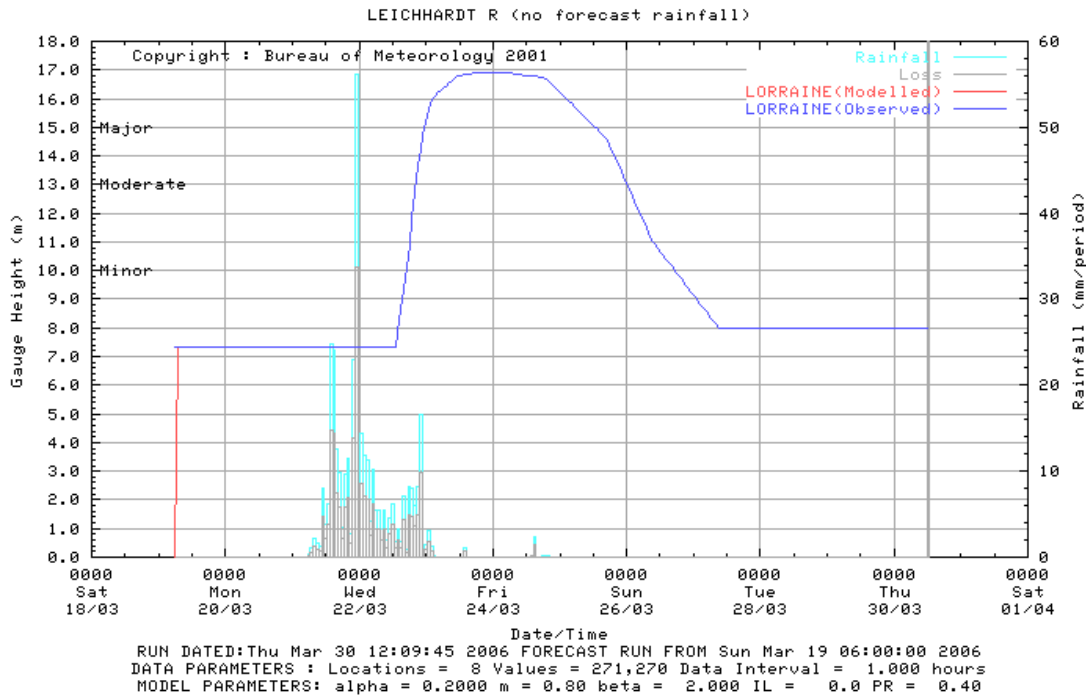
- Intensity-Frequency-Duration (IFD) analysis of the actual event rainfall was conducted at the Gunpowder station.
- The IFD analysis of the station at Gunpowder shows that the maximum hourly intensity of 54 mm was between a 5 and 10 year Average Recurrence Interval (ARI) or had an Annual Exceedance Probability (AEP) between 18% and 10%. The 24-hour total of 230 mm was between a 20 and 50 year ARI.
- The 24 hour total of 435 mm at Gereta Station was in excess of 1% AEP. Records from Gereta Station start in 1908 but there are numerous decades missing between 1920 and 2000. However in 1<sup>st</sup> August 1911, 457 mm was reported in 24 hours.

## River Heights and Flood Levels

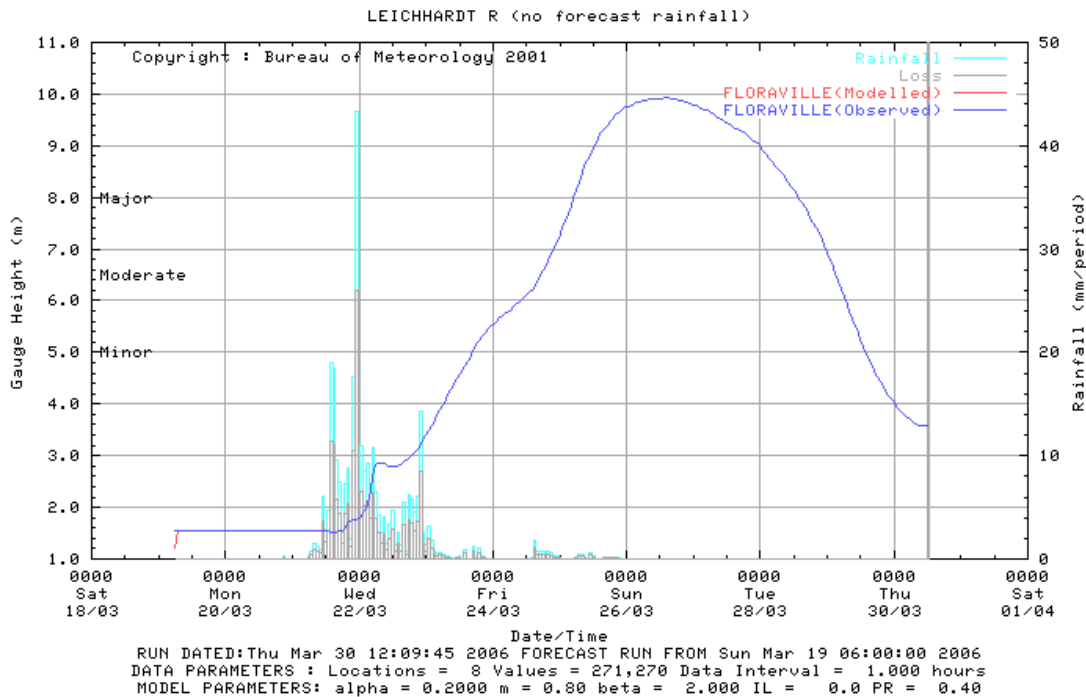
- The rapid onset of the intense rainfall meant that rivers and streams responded very quickly and were generally in minor flood by the morning of Wednesday 22<sup>nd</sup> March.
- Upstream of Julius Dam, the DNRM gauge on Doughboy Ck peaked about 1 metre over the minor flood level.
- On Gunpowder Creek, the peak reached at the DNRM gauge, 10.63 metres at 7am Wednesday 23<sup>rd</sup> March, was only about 8 hours after the intense rainfall and was the highest peak, by nearly 2 metres, in a record which commenced in 1971.



- At Lorraine, the river commenced to rise rapidly on the morning of Wednesday 23<sup>rd</sup> March and had reached the major flood level of 15 metres later than night. It continued to rise slowly and reached at peak of 16.9 metres at 6pm Thursday and maintained this level overnight before starting to fall quickly on Saturday.
- The peak of 16.90 metres at Lorraine was the highest recorded level at the site in records starting in 1974.



- Downstream at Floraville, the river did not reach the minor flood level of 5 metres until Thursday evening. It continued to rise slowly over the next few days and peaked at 9.91 metres on Sunday morning.



- The peak of 9.91 metres was the highest recorded at the DNRM station since recorded commenced in 1984. It should also be noted that the river level in March 1998 peaked at 9.55 metres. Unfortunately, records at an earlier DNRM station at Floraville (1969 to 1984) cannot be directly compared with the record at the current station.
- Locals advise that this flood was the highest in the area since 1964.

## FLOOD WARNINGS

- The first flood warning for the Leichhardt River was issued at 10am Wednesday 22<sup>nd</sup> March. It advised of reports of very heavy rainfall, rapid river rises and major flooding.
- The warning issued at 10am on Thursday 23<sup>rd</sup> March advised of major flooding and near record levels in the Lorraine area. It also advised of major flooding extending downstream to Floraville over the next few days.
- The final warning for the Leichhardt River was issued on Thursday 30<sup>th</sup> March after the river level at Floraville had fallen below the minor flood level.
- In all, nine flood warnings were issued for the Leichhardt River, daily at about 10am.