



Australian Government

Bureau of Meteorology

HEAVY RAINFALL – DAVIDSON CREEK AREA

April 2004

Very heavy localised rainfall was recorded in the Davidson Creek area of the Tully River in the 24 hours to 9am 26 April 2004. Initial reports from the ALERT rain gauge were treated as suspect but subsequent local observations indicate that the ALERT rain gauge may well have been correct.

Rainfall Totals

Initially, the rainfall at Davidson Creek ALERT gauge was treated as suspect as the total was more than double the next nearest rain gauge.

However, a farm, about 3km downstream from Tully Ranch, received about 350mm in 12 hours on the night of the 25th April, whilst another farm 3km further east (on the Euramo side) recorded only 200mm. This is supported by the variation in the totals recorded by the ALERT network. Residents in the area also reported intense thunderstorms during the night.

Additionally, the manual rain gauge at Tully Ranch (at the same location as the Davidson Creek ALERT gauge) overflowed that night after recording 275 mm.

Radar appeared to support a localised area of heavier rain in the Davidson Creek region on the night. However, the Davidson Creek area is about 200km from the Mt Stuart radar and, because of this distance, the images do not show the reflectivity normally associated with rainfall of this intensity.

Furthermore, the height Davidson Creek reached that night was apparently the highest ever witnessed since the area was settled in the 1960's - about 20ft over the bridge when most big floods peak about 5-6ft over.

The 569 mm recorded by the ALERT gauge in the 24 hours to 9am 26th April may very well have been correct.

Table 1: Daily Rainfall Totals (mm)

Station No	Name	Day			Total
		25	26	27	
531058	KOOMBOOLOOMBA ALERT	49	34	57	140
531056	TULLY WEIR ALERT	44	39	36	119
531055	MAALAN RD ALERT	56	118	31	205
532058	DAVIDSON CREEK ALERT	66	569	47	682
532061	UPPER MURRAY ALERT	56	88	25	169
532056	JARRA CREEK ALERT	115	201	73	389
532064	BULGUN CREEK ALERT	206	126	109	441
532057	TULLY ALERT	137	104	108	349
532042	TULLY SUGAR MILL	139	108	100	347
532059	EURAMO ALERT	120	169	113	402
532060	MURRAY FLATS ALERT	93	208	93	394

ALERT - Automatic radio telemetry station

Intensity-Frequency-Duration Analysis

An Intensity-Frequency-Duration (IFD) analysis of the rainfall at the Davidson Creek ALERT gauge was carried out for the 3 days to 9am Tuesday 27th April. The results of the analysis are presented in Table 2 and graphically in Figure 2.

Table 2
IFD Analysis – Davidson Creek ALERT

<i>Rainfall (mm)</i>	<i>Period Ending</i>	<i>ARI (yrs)</i>
77	30 mins ending at 1946 25/04/2004	>100
111	1 hour ending at 1950 25/04/2004	>100
189	2 hours ending at 2105 25/04/2004	>100
227	3 hours ending at 2143 25/04/2004	>100
267	6 hours ending at 0724 26/04/2004	50
495	12 hours ending at 0705 26/04/2004	>100
569	24 hours ending at 0913 26/04/2004	50-100
641	48 hours ending at 1142 26/04/2004	20-50
682	72 hours ending at 0722 26/04/2004	10-20

RAINFALL INTENSITY FREQUENCY DURATION DIAGRAM
LOCATION: 532058 DAVIDSON CREEK ALERT
PREPARED BY -- HYDROLOGY SECTION -- Mon May 10 2004

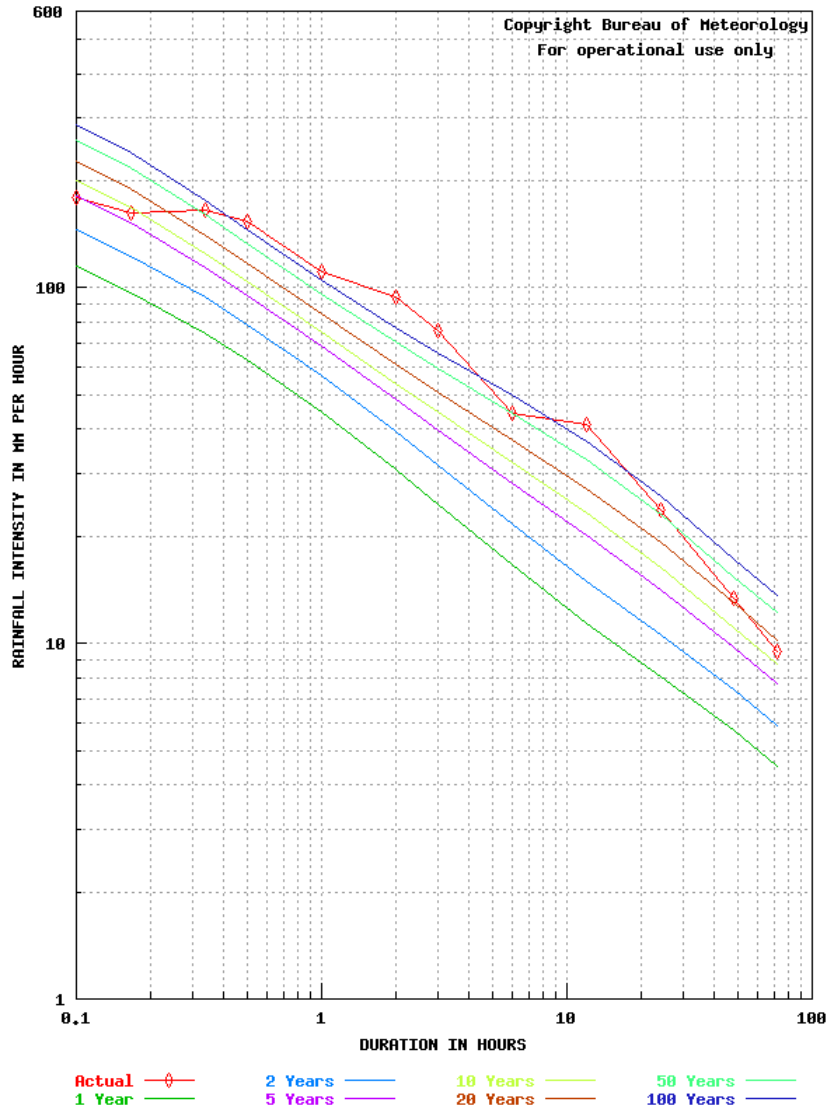


Figure 1 IFD Analysis – Davidson Creek ALERT

The analysis indicates that the rainfall at the ALERT gauge was not particularly significant for short durations less than about 20 minutes. Durations between 30 minutes and 12 hours were generally well in excess of 100 year Average Recurrence Interval.

Rainfall Plots

The rainfall record at Davidson Creek and Jarra Creek ALERT gauges was plotted for comparison. The plot shows that the heavy rainfall commenced at both stations about the same time, 9pm Sunday evening. Both stations also show an easing about 3-4 am on Monday 26th April. The similarity of the plot shapes and the co-incidence of the start time and time of the easing suggest that the gauges were operating correctly.

Between these times, the rainfall at Davidson Creek was very intense and then eased considerably afterwards but at Jarra Creek the rainfall continued at a similar rate until early Tuesday morning.

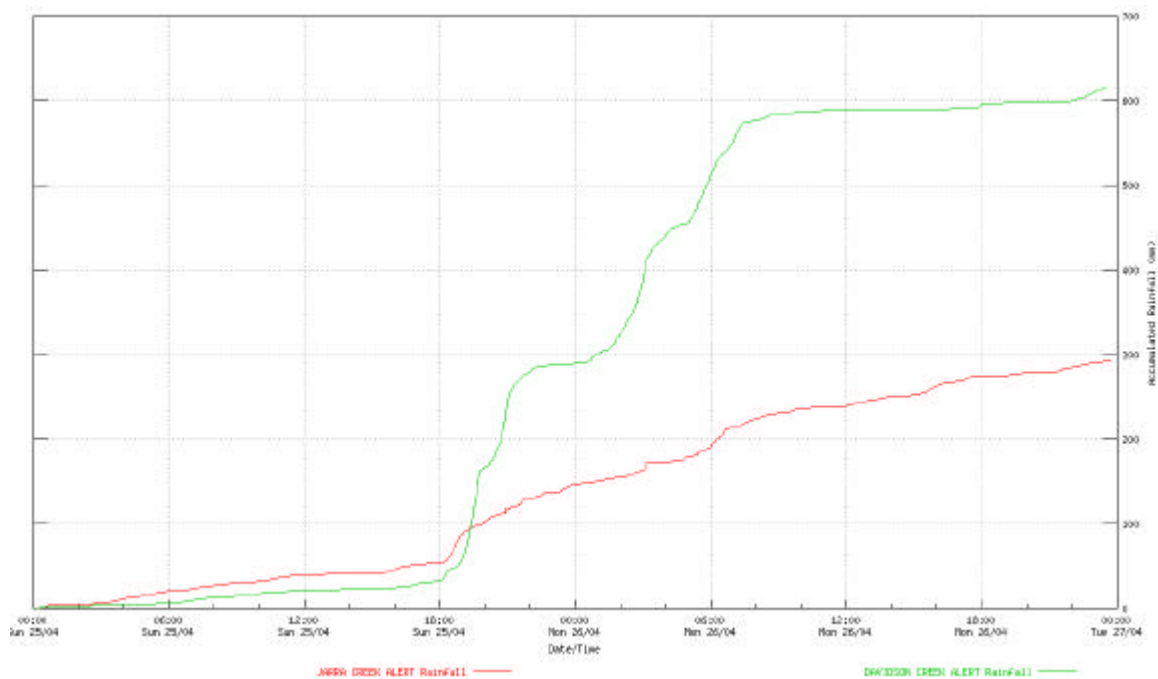


Figure 2 Rainfall Mass Curves

Maximum Hourly Intensities

The maximum hourly intensity recorded at Murray Flats ALERT gauge was 125 mm in the 60 minutes to 6:30pm on 25th April. The maximum at Davidson Creek was 111 mm in the 60 minutes ending 7:50pm on 25th April. This is slightly less than that of Murray Flats and also about 1 hour later. The very intense rainfall ceased at Murray Flats shortly after 6:30pm but continued at Davidson Creek until the early hours of 26th April.