



## Heavy Rainfall – South East Queensland 6<sup>th</sup> and 7<sup>th</sup> November 2004

The long dry period in South East Queensland was broken by heavy rainfall over the weekend of 6<sup>th</sup> and 7<sup>th</sup> November 2004 from Bundaberg to the Gold Coast. Two children were tragically drowned when the car in which they were travelling was swept from a flooded causeway near Biggenden. The heavy rain also caused local flooding in areas from Brisbane to the Gold Coast and several people were rescued after becoming stranded in floodwaters.

### Rainfall Totals

During the 48 hours to 9am Monday 8<sup>th</sup> November, rainfall totals of up to 365 mm were recorded in South East Queensland. Highest totals tended to be between Brisbane and Coolangatta and were limited to a strip about 20 to 30km from the coast. Totals in the Gold Coast hinterland and in upper parts of the Logan-Albert Rivers were generally below 60mm during the same period.

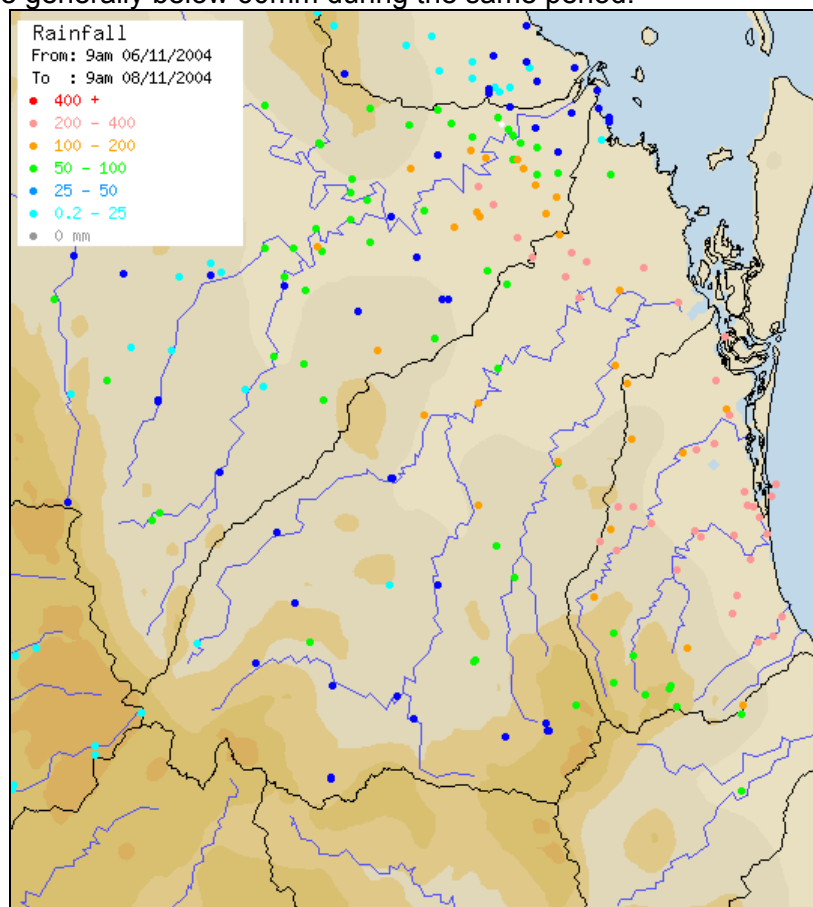


Figure 1 - Rainfall Totals 48 Hours to 9am 8 Nov 2004

**Figure 2 – Selected Rainfall Totals**

Number	Name	24 Hours to 9am		Total
		7-Nov	8-Nov	
40294	KERKIN ROAD ALERT	190.0	175.0	365.0
540295	STEIGLITZ WHARF ALERT	151.0	190.0	341.0
540360	BIGGERA CK DAM ALERT	139.0	162.0	301.0
40190	SOUTHPORT	152.4	146.0	298.4
40764	GOLD CST SEAWAY	149.8	147.4	297.2
540269	MONTEREY KEYS ALERT	159.0	138.0	297.0
540293	COOMERA SHORES ALERT	144.0	150.0	294.0
540318	EVANDALE ALERT	161.0	127.0	288.0
540319	CARRARA ALERT	174.0	111.0	285.0
540359	LODER CK DAM ALERT	140.0	145.0	285.0
540320	COPLICKS BRIDGE ALERT	209.0	73.0	282.0
540255	CARBROOK ALERT	52.0	227.0	279.0
540291	CLAGIRABA ROAD ALERT	221.0	58.0	279.0
40197	MT TAMBORINE	238.2	38.2	276.4
40881	AIR SEA RESCUE ALERT	124.0	150.0	274.0
540252	OYSTER CREEK ALERT	203.0	65.0	268.0
40237	BEGA ROAD QUARRY ALERT	121.0	146.0	267.0
540254	MUDGEERABA ALERT	210.0	57.0	267.0
540356	TALLEBUDGERA CK RD ALERT	205.0	61.0	266.0
40335	MT TAMBORINE ALERT	220.0	45.0	265.0
40160	NERANG	180.0	84.0	264.0
540236	CARBROOK (RIEDEL ROAD) ALERT	98.0	164.0	262.0
40846	CLEARVIEW ALERT	199.0	62.0	261.0
540352	BONOGIN CREEK ALERT	208.0	51.0	259.0
40717	COOLANGATTA	207.4	49.0	256.4
540238	LODER CREEK ALERT	115.0	140.0	255.0
540253	BOOBEGAN CREEK LOCK AL	160.0	90.0	250.0

In the 24 hours to 9am Sunday 7<sup>th</sup> November, the highest totals were recorded in a relatively small area around Mt Tamborine, which recorded in excess of 220mm. In the next 24 hours, the heavy rainfall was more widespread extending from Brisbane to the Gold Coast with the highest totals recorded in the area between Kerkin Rd and Carbrook, just to the north east of Mt Tamborine.

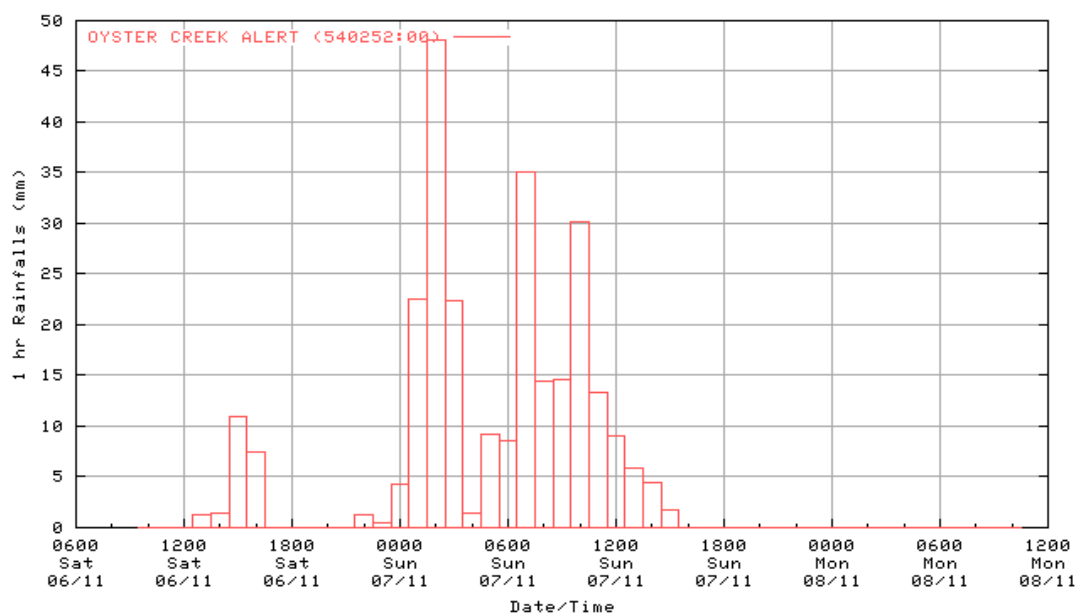
## Temporal Distributions

The very heavy rainfall commenced on the Gold Coast late on Saturday night 6<sup>th</sup> November and continued until clearing from the Brisbane area round 2pm Sunday 7<sup>th</sup> November.

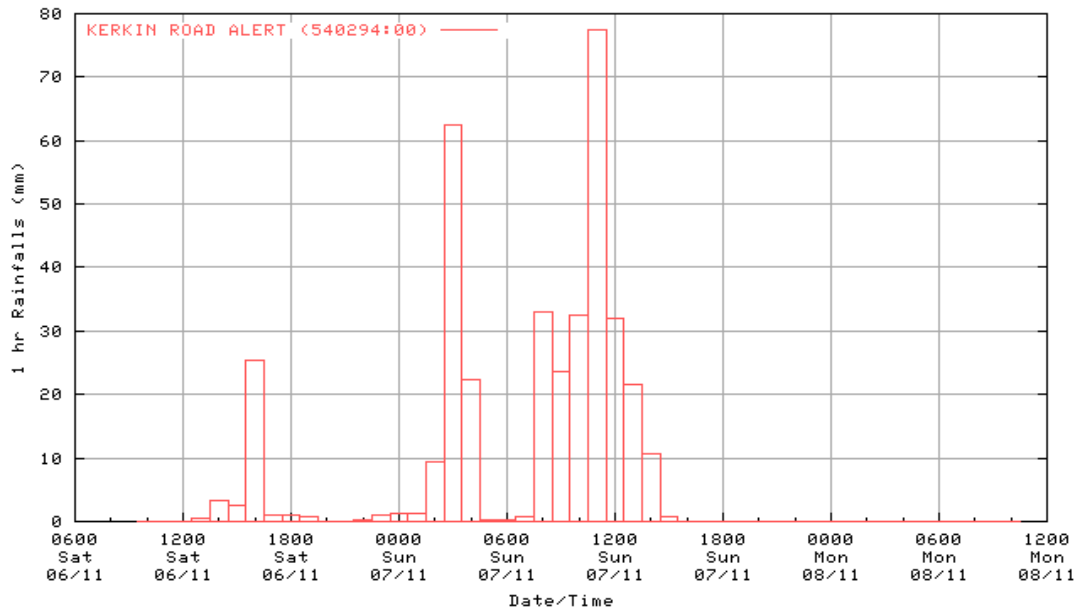
The figures below show the hourly rainfall at selected stations from Coolangatta to Brisbane. The first figure clearly shows that the heaviest period of rain occurred at the Oyster Creek ALERT gauge near Coolangatta in the early hours of Sunday morning.

The figures also show the progress of the heavy rainfall from the Gold Coast to Brisbane, eventually arriving in the southern Brisbane suburbs around noon Sunday 7<sup>th</sup> November.

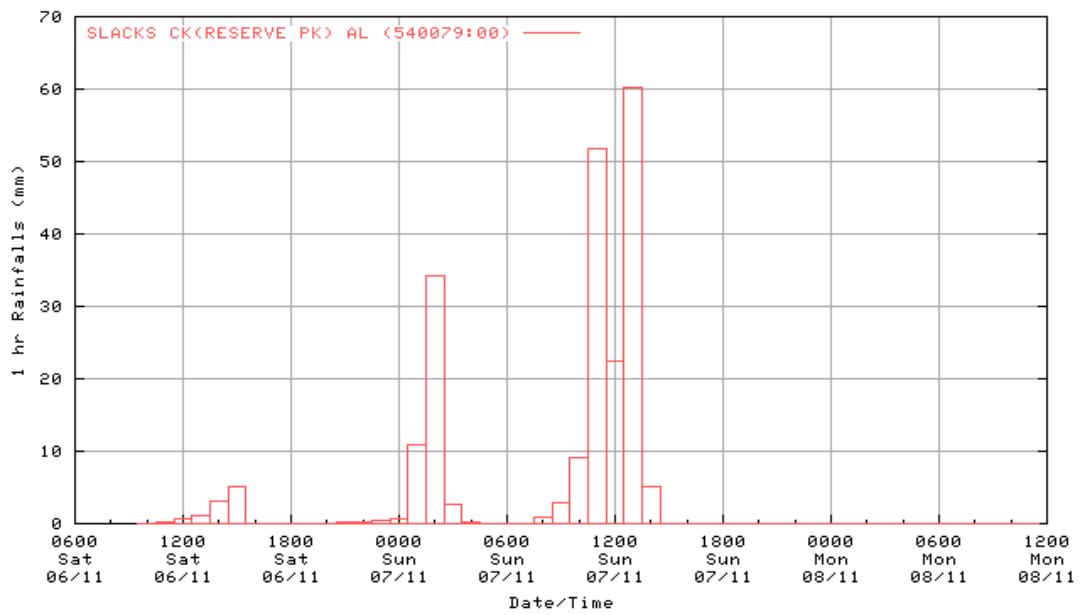
Figure 3 - Temporal Pattern Oyster Ck ALERT



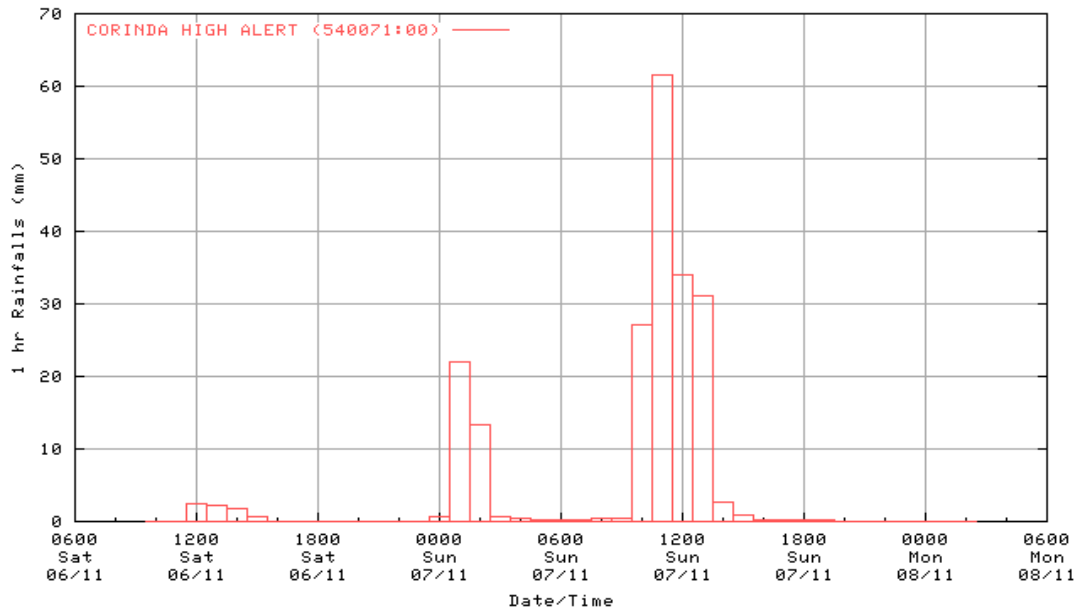
**Figure 4 - Temporal Pattern Kerkin Rd ALERT**



**Figure 5 - Temporal Pattern Reserve Park ALERT**



**Figure 3 - Temporal Pattern Corinda High ALERT**



### **Intensity- Frequency- Duration Analysis**

Intensity-Frequency-Duration (IFD) analysis was carried out on 4 stations from Brisbane to the Gold Coast:

- 540252 Oyster Ck ALERT
- 040429 Kerkin Rd ALERT
- 540079 Reserve Pk ALERT (Slacks Ck)
- 540071 Cordina High ALERT

At Oyster Creek near Coolangatta, the event did not commence to be statistically significant until the 30 to 60 minute durations. The most significant was the 12 hour duration being in the 20-50 year Average Recurrence Interval (ARI) range. The 6-12 hours storms tended to be the significant durations at Kerkin Rd, well in excess of 100 year ARI. At Reserve Park and Corinda High, the 3 hour storm was the most significant.

**IFD Analysis – Oyster Ck ALERT**

<i>Rainfall (mm)</i>	<i>Period Ending</i>	<i>ARI (yrs)</i>
13	10 mins ending at 01:25:56 07/11/2004	< 1
23	20 mins ending at 01:07:32 07/11/2004	< 1
33	30 mins ending at 01:25:08 07/11/2004	1-2
52	60 mins ending at 01:44:20 07/11/2004	2-5
86	2 hours ending at 02:30:44 07/11/2004	5-10
94	3 hours ending at 02:38:44 07/11/2004	2-5
129	6 hours ending at 06:49:08 07/11/2004	5-10
229	12 hours ending at 12:30:20 07/11/2004	20-50
264	24 hours ending at 14:09:08 07/11/2004	10-20
281	48 hours ending at 14:52:20 07/11/2004	2-5

**IFD Analysis – Kerkin Rd ALERT**

<i>Rainfall (mm)</i>	<i>Period Ending</i>	<i>ARI (yrs)</i>
22	10 mins ending at 10:07:04 07/11/2004	1-2
39	20 mins ending at 10:17:34 07/11/2004	2
57	30 mins ending at 10:26:04 07/11/2004	20-50
85	60 mins ending at 10:40:34 07/11/2004	20-50
126	2 hours ending at 11:37:34 07/11/2004	50-100
146	3 hours ending at 11:44:19 07/11/2004	50-100
223	6 hours ending at 13:17:34 07/11/2004	> 100
321	12 hours ending at 13:39:34 07/11/2004	> 100
360	24 hours ending at 13:39:04 07/11/2004	50-100
378	48 hours ending at 14:18:43 07/11/2004	20-50

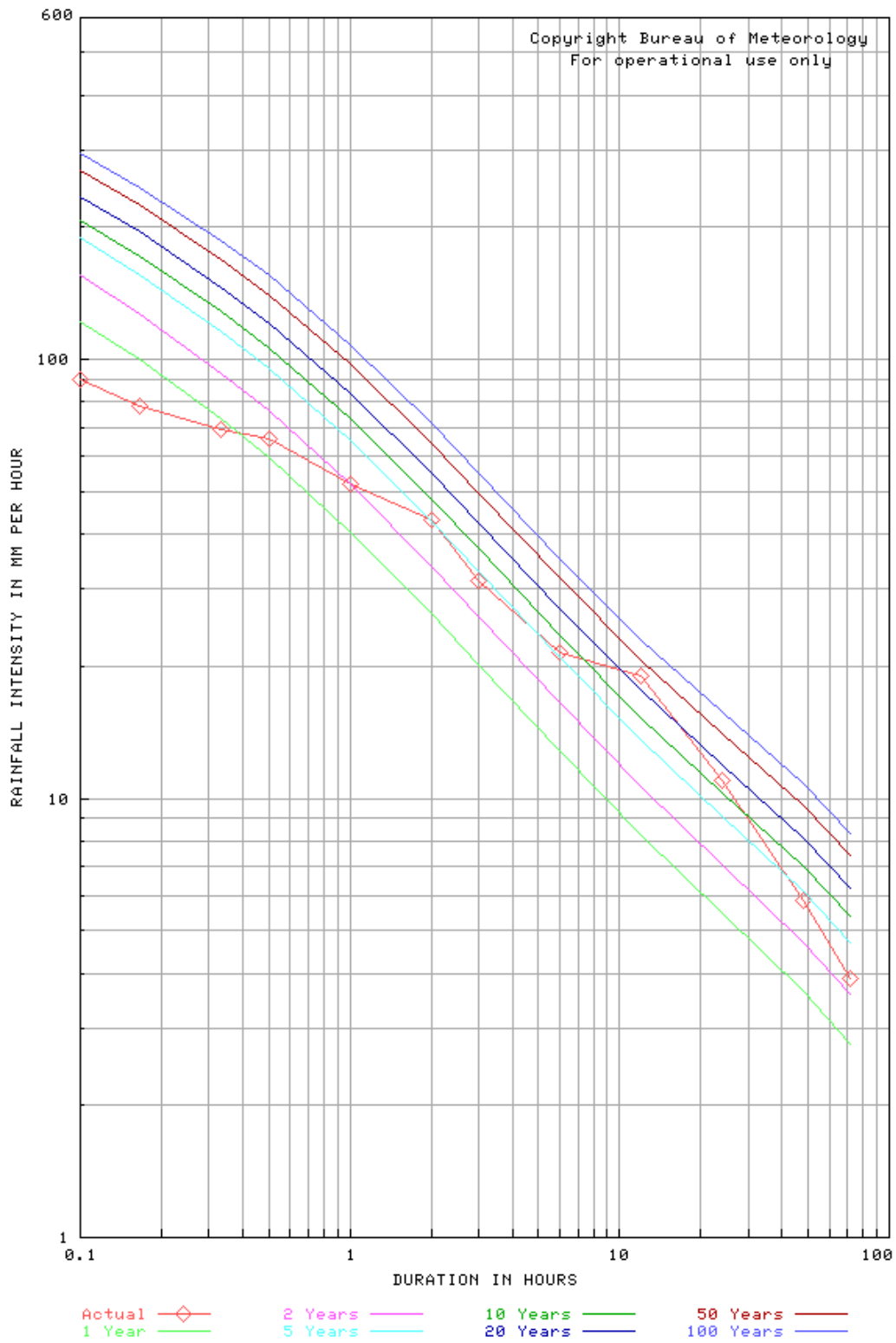
### IFD Analysis – Reserve Park ALERT

<i>Rainfall (mm)</i>	<i>Period Ending</i>	<i>ARI (yrs)</i>
14	10 mins ending at 10:12:10 07/11/2004	< 1
25	20 mins ending at 12:32:13 07/11/2004	1-2
38	30 mins ending at 12:42:13 07/11/2004	2-5
61	60 mins ending at 12:51:58 07/11/2004	5-10
83	2 hours ending at 12:43:34 07/11/2004	5-10
135	3 hours ending at 12:56:19 07/11/2004	50
151	6 hours ending at 13:38:37 07/11/2004	20-50
184	12 hours ending at 12:56:46 07/11/2004	10-20
209	24 hours ending at 13:38:10 07/11/2004	5-10
224	48 hours ending at 13:38:37 07/11/2004	2-5

### IFD Analysis – Corinda High ALERT

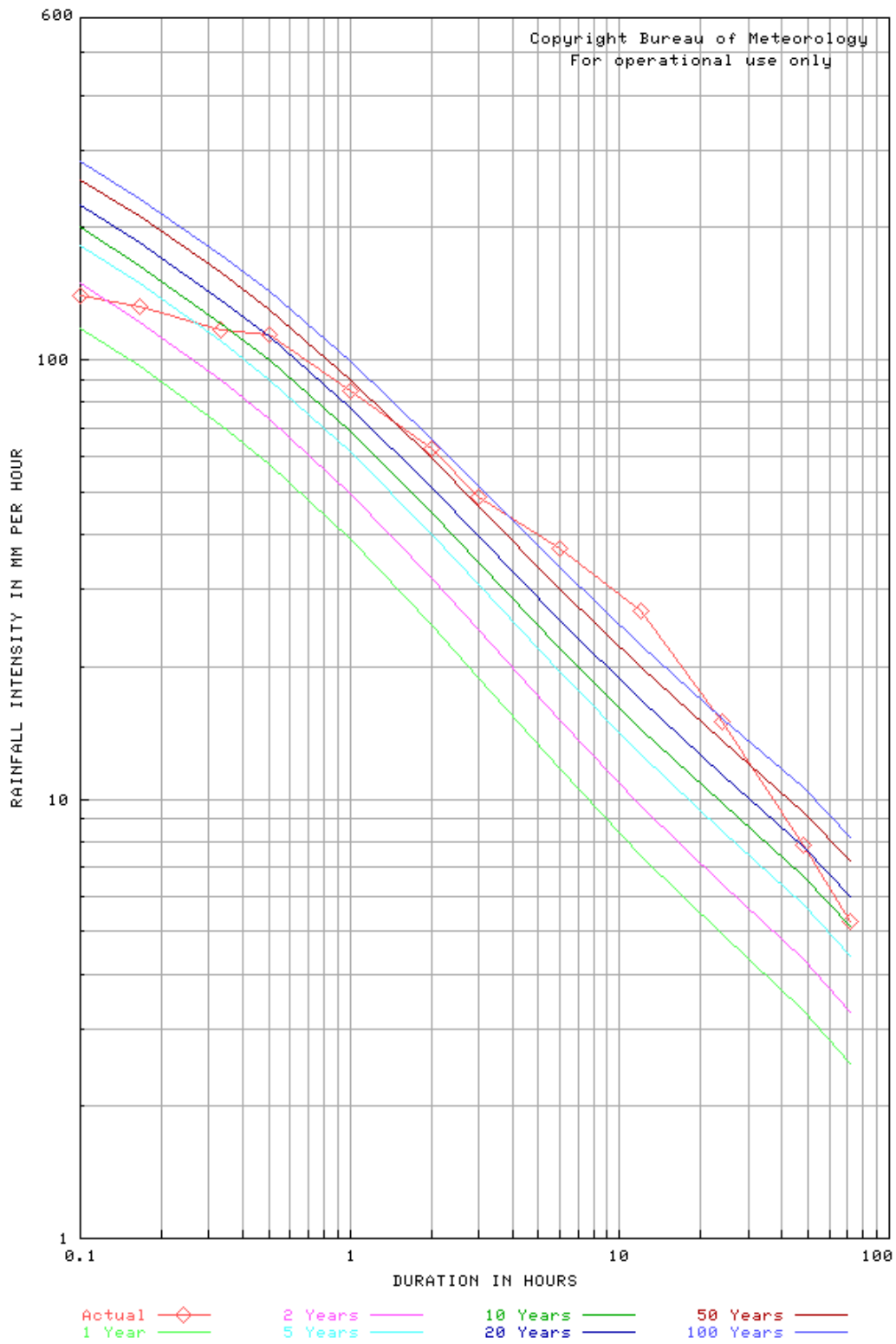
<i>Rainfall (mm)</i>	<i>Period Ending</i>	<i>ARI (yrs)</i>
17	10 mins ending at 10:56:30 07/11/2004	1-2
29	20 mins ending at 11:06:30 07/11/2004	2-5
38	30 mins ending at 11:14:12 07/11/2004	2-5
65	60 mins ending at 11:14:18 07/11/2004	5-10
110	2 hours ending at 11:28:18 07/11/2004	20-50
146	3 hours ending at 12:28:18 07/11/2004	50-100
157	6 hours ending at 14:46:08 07/11/2004	20-50
181	12 hours ending at 12:22:03 07/11/2004	20-50
198	24 hours ending at 13:13:08 07/11/2004	10-20
217	48 hours ending at 13:12:57 07/11/2004	5-10

RAINFALL INTENSITY FREQUENCY DURATION DIAGRAM  
 LOCATION: 540252 OYSTER CREEK ALERT  
 PREPARED BY -- HYDROLOGY SECTION -- Mon Nov 8 2004

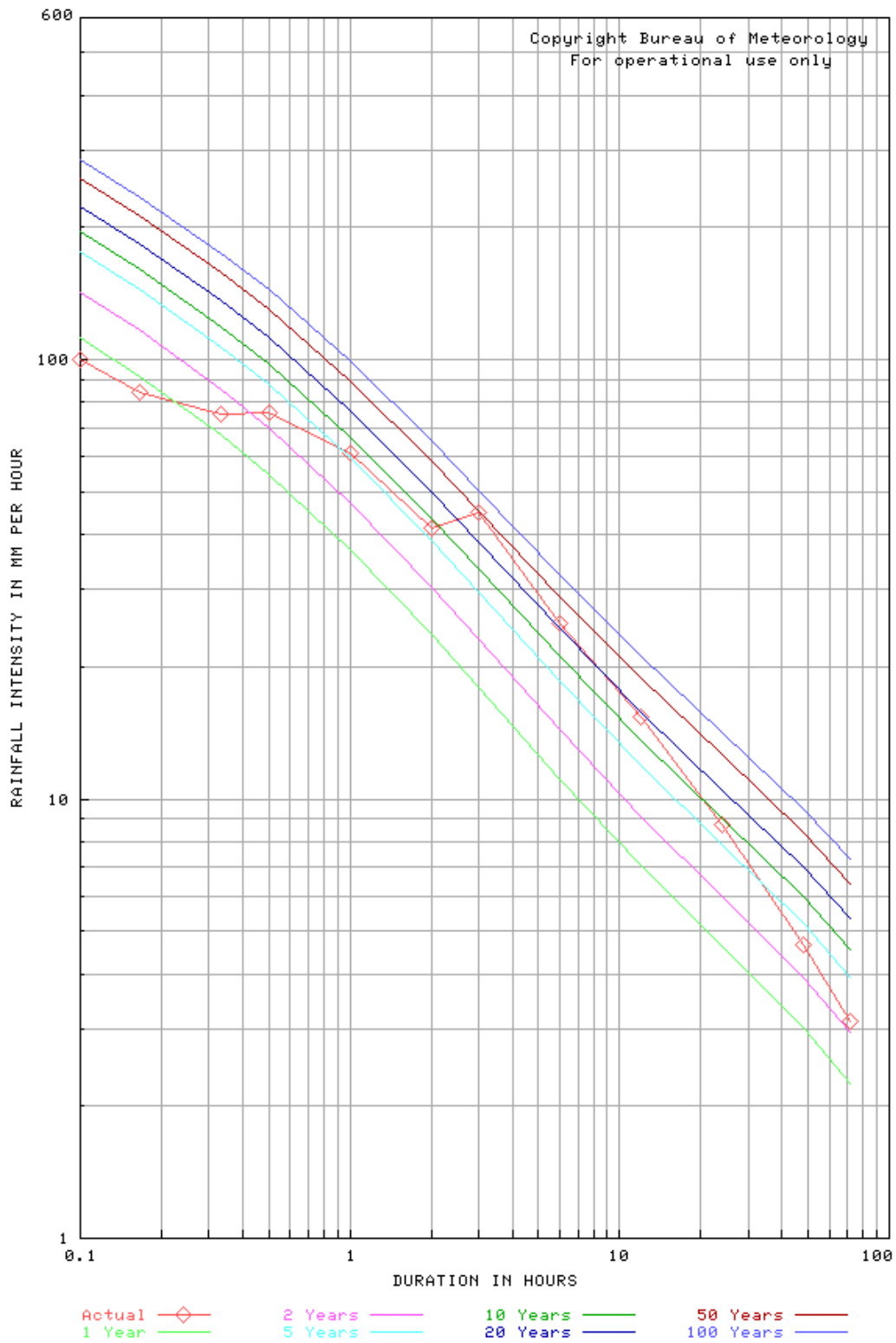




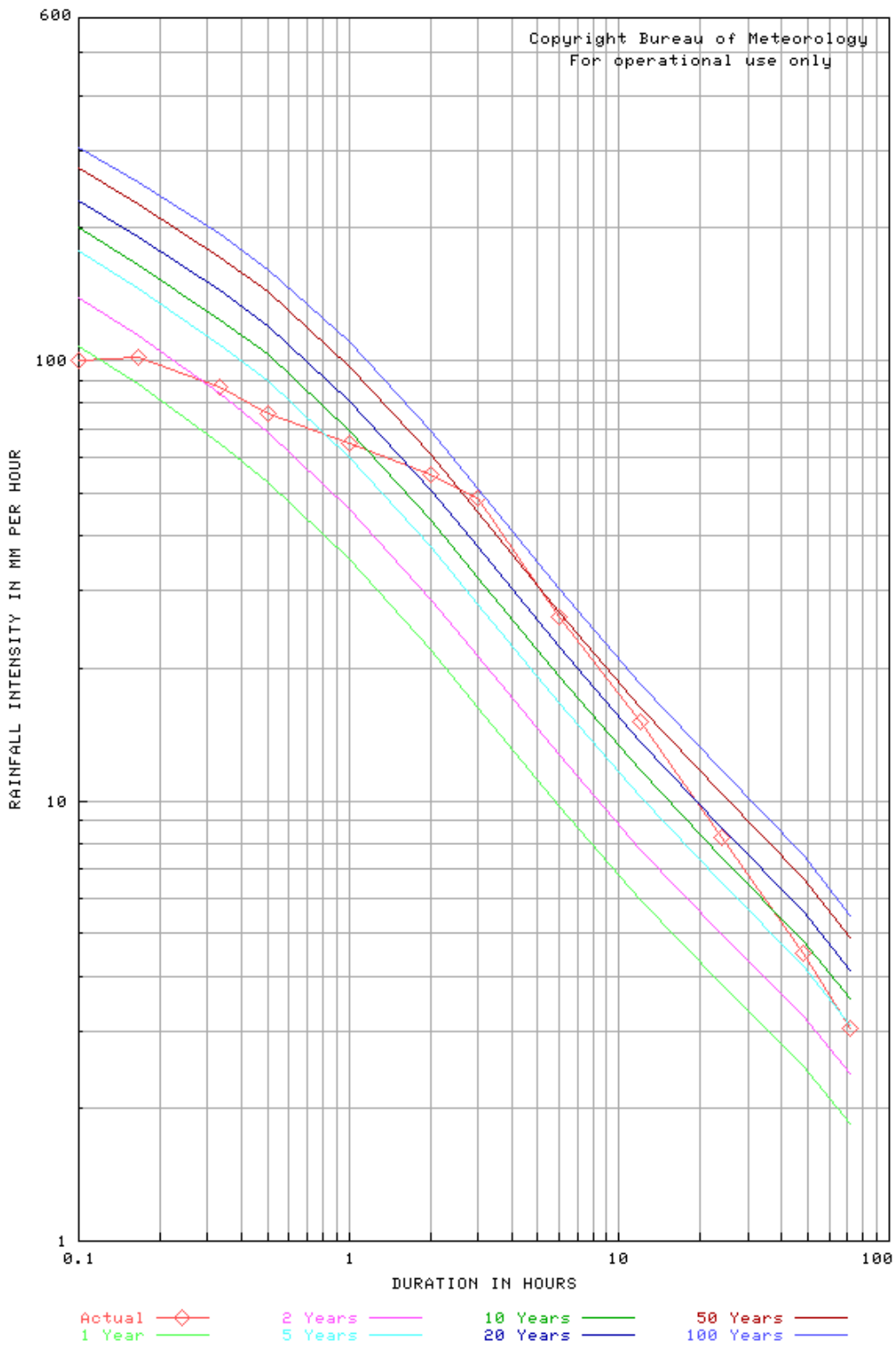
RAINFALL INTENSITY FREQUENCY DURATION DIAGRAM  
LOCATION: 540294 KERKIN ROAD WEIR ALERT  
PREPARED BY -- HYDROLOGY SECTION -- Mon Nov 8 2004



RAINFALL INTENSITY FREQUENCY DURATION DIAGRAM  
 LOCATION: 540079 SLACKS CK(RESERVE PK) AL  
 PREPARED BY -- HYDROLOGY SECTION -- Mon Nov 8 2004



RAINFALL INTENSITY FREQUENCY DURATION DIAGRAM  
 LOCATION: 540071 CORINDA HIGH ALERT  
 PREPARED BY -- HYDROLOGY SECTION -- Mon Nov 8 2004



## Heavy Rainfall Bulletins & Warnings

The rainfall bulletin software was recently upgraded to generate heavy rainfall bulletins whenever threshold rainfalls were exceeded. Initially, the thresholds were defined as the 2 Year ARI rainfalls for 1,2,3 and 6 hours durations. This event was the one of the first events where the software was applied operationally. The software generates alarms in the Regional Forecasting Centre and send SMS messages to designated mobile phones.

The first heavy rainfall bulletin, shown below, was generated at 12.11am on Sunday morning 7<sup>th</sup> November. The bulletin assisted the RFC staff in identifying the significance of the heavy rainfall and, as a result, the first Severe Thunderstorm Warning advising of flash flooding was issued at 1.40am 7<sup>th</sup> November.

A further 24 heavy rainfall bulletins were automatically generated up to 3pm Sunday and the Severe Thunderstorm Warnings were also updated regularly through Sunday.

**IDQ60433**

### **Three Hourly HEAVY Rainfall Bulletin for Nerang, Logan-Albert**

**Issued at 12.11am on Sunday, 7 November 2004**

**Bureau of Meteorology, Brisbane**

Station Name	3 hours to							
	3am	6am	9am	12pm	3pm	6pm	9pm	12am
<b>Logan-Albert</b>								
Laheys Lookout AL *	0.9	0.0	0.0	0.0	6.9	0.6	0.2	<b>81</b>
Yarrahappini AL *	0.0	0.0	0.0	0.0	3.0	0.0	0.0	<b>104</b>

Notes:

1. The above rainfall stations have exceeded given threshold conditions for a 3 hour and/or 6 hour duration.
2. Rainfall is in millimetres for the 3 hour period to the time indicated.
3. Stations marked with \* are automatic stations and have not been verified.
4. TM = Telephone Telemetry AL = Radio Telemetry AWS = Automatic Weather Station SYN = Svnoptic