

## Flood summary for the Condamine River at Warwick

- The town of Warwick is on the Condamine River in the Condamine-Balonne catchment.
- The flood heights at Warwick are measured on a combination of two automatic gauges and a manual gauge. The manual gauge is owned by the Bureau of Meteorology (Bureau station number: 041357), one of the automatic gauges is owned by the Queensland Department of Environment and Resource Management (DERM) (Bureau station number: 41503) and the other automatic gauge is owned by the Southern Downs Regional Council and the Bureau of Meteorology (Bureau station number: 041534).
- A detailed map of the flood warning network is available on the Bureau website at [http://www.bom.gov.au/hydro/flood/qld/brochures/river\\_maps.shtml](http://www.bom.gov.au/hydro/flood/qld/brochures/river_maps.shtml)

### Location map

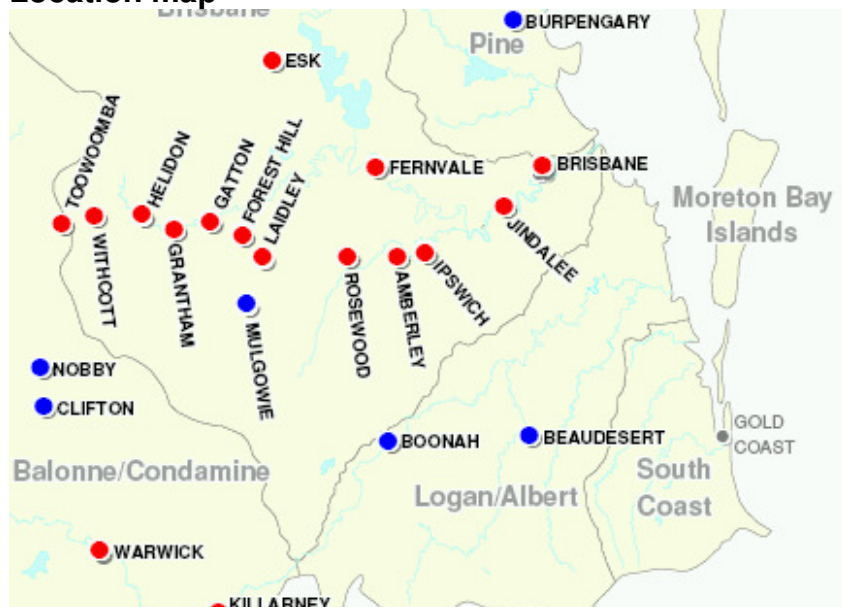
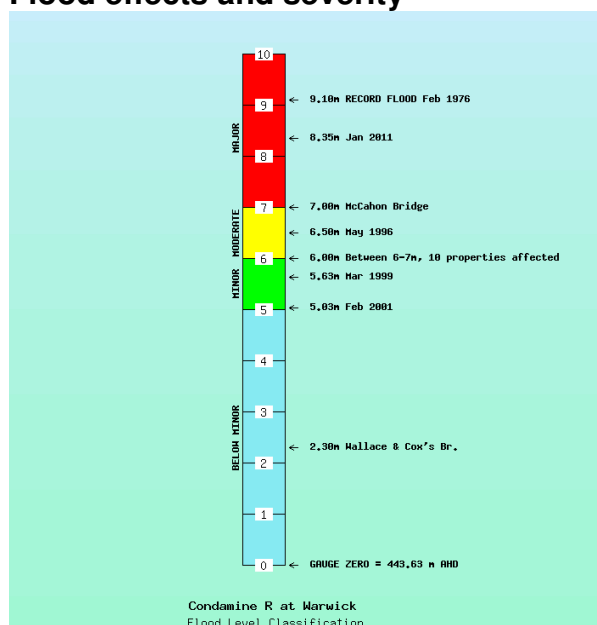


Figure 1. Map showing location of Warwick.

Note: Red dots are reported flood inundated towns or cities and blue dots are flood affected towns or cities.

### Flood effects and severity



- **Peaked at 7.9 metres on 27/12/2010, Peaked at 8.35 metres on 11/01/2011.**
- Minor: 5.0 metres  
Moderate: 6.0 metres  
Major: 7.0 metres.
- Gauge zero is 443.627 metres AHD.
- 150 homes and 25-30 businesses were inundated during the second flood peak at Warwick. (ABC News online)
- Warwick was above major flood level (7 metres) during the 27/12/2010 and again on 11/01/2011.\*

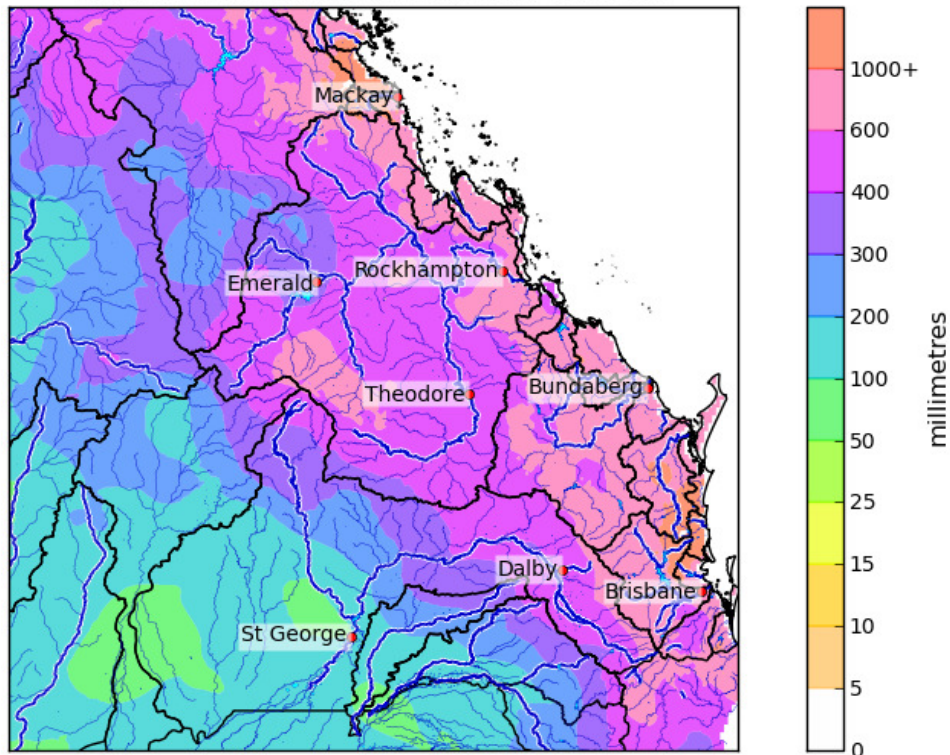
Figure 2. Flood level classifications and flood effects for Warwick.

\* Indicates dates and times were estimated due to station failure.

## Rainfall summary

- Between 300 to 400 millimetres of rainfall was recorded over the Condamine River and nearby creeks during the month of December 2010. Further heavy rainfall of between 200 and 400 millimetres were recorded during early January 2011.
- The heaviest rainfall was recorded between 06/01/2011 and 12/01/2011 with falls between 200 and 400 millimetres.

Total Rainfall 01-12-2010 to 31-01-2011



Total Rainfall 06-01-2011 to 12-01-2011

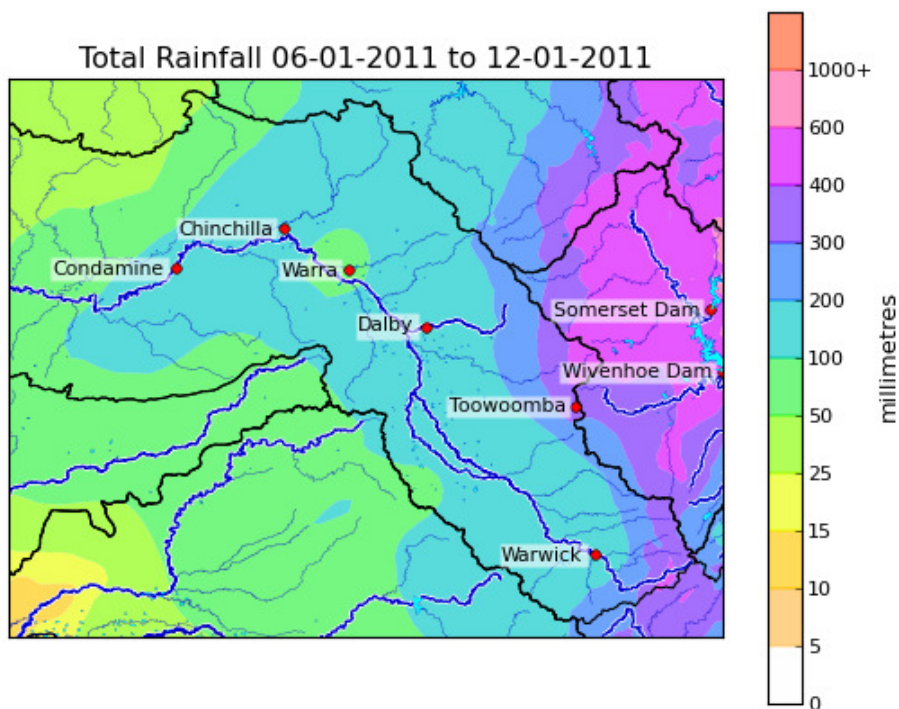


Figure 3. Rainfall map from 01/12/2010 to 31/01/2011 (top) and for the period between 06/01/2011 and 12/01/2011 (bottom).

## Rainfall Intensity

- Maximum rainfall intensities for two selected stations at Mosely's AL and Yangan AL in the upper Condamine River catchment are shown in Table 1.
- The most significant rainfall intensities for Mosely's AL in December 2010 and January 2011 occurred on the 27/12/2010 and 11/01/2011 and 12/01/2011. Intensities for all durations were below the 1% Annual Exceedence Probability (100 year Average Recurrence Interval) intensities.
- The most significant rainfall intensities for Yangan AL in December 2010 occurred on the 27/12/2010. Intensities for all durations were below the 1% Annual Exceedence Probability (100 year Average Recurrence Interval) intensities.

**Table 1. Recorded maximum rainfall intensities for Mosely's AL and Yangan AL on the upper Condamine River for December 2010 and January 2011.**

Rainfall Duration	Mosely's AL			Yangan AL		
	Rainfall (mm)	Period ending	ARI (years)	Rainfall (mm)	Period ending	ARI (years)
3hr	55	10:45 AM 11/01/2011	2-5	45	12:35 PM 27/12/2010	1-2
6hr	92	1:15 PM 27/12/2010	20-50	70	1:30 PM 27/12/2010	5-10
12hr	120	2:20 PM 27/12/2010	20-50	80	1:45 PM 27/12/2010	5-10
24hr	159	1:30 PM 27/12/2010	50	106	1:45 PM 27/12/2010	5-10
48hr	193	1:30 AM 12/01/2011	20-50	114	1:50 PM 27/12/2010	2-5
72hr	198	9:40 PM 11/01/2011	20-50	122	1:50 PM 27/12/2010	2-5

**Note:** A flood frequency analysis would be required to assess the probability of flood levels reached at each location. The frequency analysis in this report is for rainfall only.

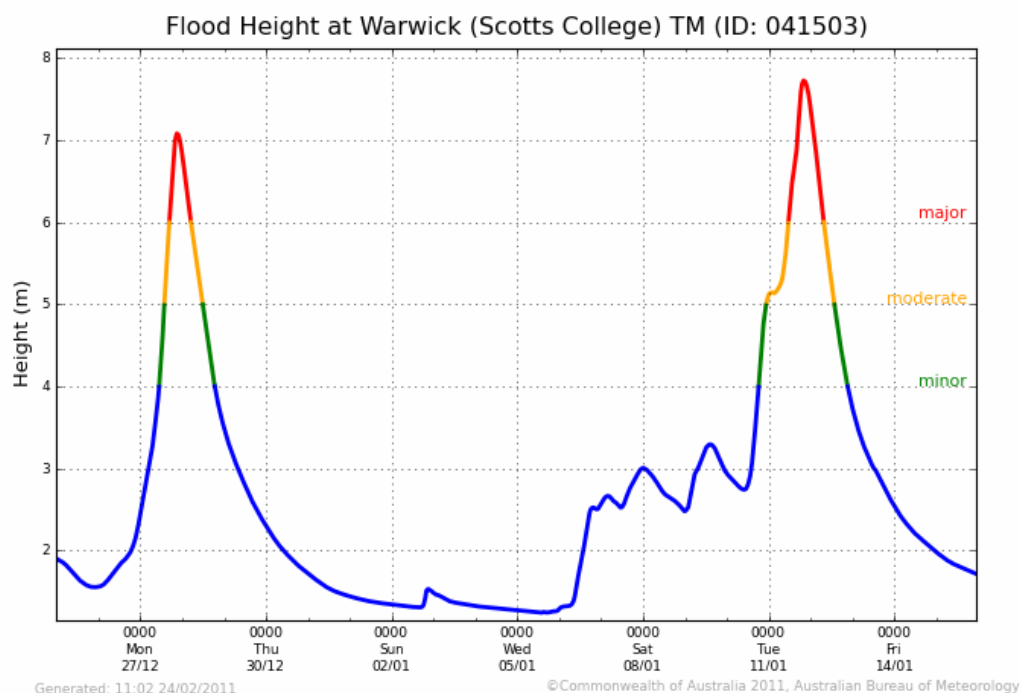
## Flood event timeline

**Table 2. Flood timeline for Warwick.**

Time/Date	Event Description	Gauge height (metres)	Comment
05/12/2010	First warning issued	2.44	
27/12/2010	First time exceeded minor	5.00	Remained above minor flood levels for ~1 day.
27/12/2010	First time exceeded moderate	6.00	Remained above minor flood levels for ~1 day
27/12/2010	First time exceeded major	7.00	Remained above minor flood levels for ~12 hours.
9:45 PM 27/12/2010	Major flood peak	7.90	8th highest on record
28/12/2010 – Est.*	Fall below major	7.00	
28/12/2010 – Est.*	Fall below moderate	6.00	
28/12/2010 – Est.*	Fall below minor	5.00	
10/01/2011	First time exceeded minor	5.00	Remained above minor flood levels for ~2.5 days.
10/01/2011	First time exceeded moderate	6.00	Remained above moderate flood levels for ~2.5 days.
11/01/2011	First time exceeded major	7.00	Remained above major flood levels for ~16 hours.
8:00 PM 11/01/2011	Major flood peak	8.35	Largest since 1976 and 4 <sup>th</sup> highest on record.
12/01/2011	Fall below major	7.00	
12/01/2011	Fall below moderate	6.00	
12/01/2011	Fall below minor	5.00	
10:55 AM 15/01/2011	Final warning issued		

\* Indicates dates and times were estimated due to station failure.

## Flood height at Warwick

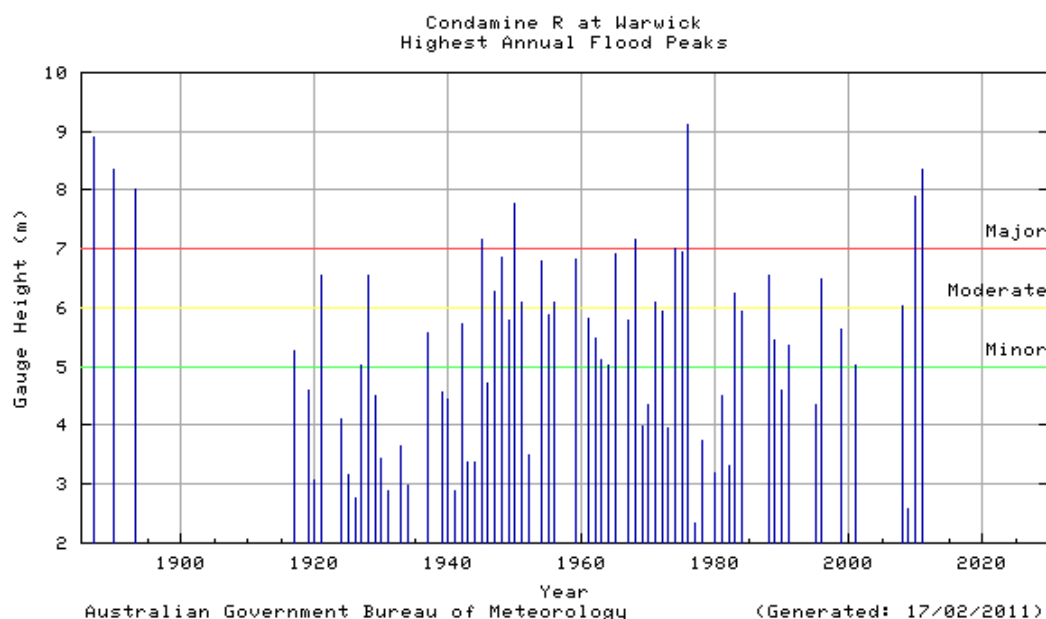


**Figure 4. Flood height at the Scotts College gauge in Warwick.**

Please note that the above hydrograph was recorded from Warwick (Scott's College) TM as the Alert gauge was un-serviceable during both events. The sites are different. All other reference to peaks heights are at the Warwick gauge where some manual reports were recorded at the peaks. (The heights at the Scott's College gauge are about 0.8m less than Warwick.)

## Comparison with previous floods

- Start of record 1887 with 12 major flood peaks in the record including 2 in 1887 and in 1890.
- Last major flood was 9.10 metres February 1976 but previous to that was 7.01 metres in 1974.



**Figure 5. Highest annual flood peaks for the Condamine River at Warwick.**

## Warning and Forecast Service

- The catchments started to become saturated during October with flood warnings for the Condamine and Balonne Rivers issued between 10/10/2010 and 25/10/2010.
- A total of 103 warnings were issued for the Condamine and Balonne River during December 2010 and January 2011.

**Table 3. Table of peak height predictions for Warwick.**

Time of Height Forecast	Forecast	Peak
<b>05/12/2010 First warning issued. Height at the time was 2.44m (below minor)</b>		
6:47 AM on Monday the 27th of December 2010	A minor flood peak up to 5.5 metres can be expected at Warwick during Monday.	7.90 metres at 9:45 PM Mon 27/12/2010.
12:36 PM on Monday the 27th of December 2010	Moderate flood levels will occur downstream at Warwick during Monday, with further rises and major flooding possible overnight.	
5:26 PM on Monday the 27th of December 2010	Warwick is predicted to peak at about 8 metres by midnight tonight causing major flooding in the area.	
11:46 PM on Sunday the 9th of January 2011	Renewed rises are possible during the next couple of days with the forecast heavy rainfall.	Forecast of heavy rainfall and renewed rises.
1:44 AM on Monday the 10th of January 2011	Renewed rises are possible during the next couple of days with the forecast heavy rainfall.	
6:13 AM on Monday the 10th of January 2011	Renewed rises and flooding is likely in tributary creeks and at Killarney to Warwick during the next 2 days with the forecast heavy rainfall.	
10:53 AM on Monday the 10th of January 2011	Renewed rises and flooding is likely in tributary creeks and at Killarney to Warwick during the next 2 days with the forecast heavy rainfall.	
5:25 PM on Monday the 10th of January 2011	Rises to 6 metres (moderate flood level) are expected downstream at Warwick during Monday night.	8.35 metres at 8:00 PM Tue 11/01/2011.
10:32 PM on Monday the 10th of January 2011	Peak up 6.5 metres (moderate) by midnight Monday.	
6:55 AM on Tuesday the 11th of January 2011	Peak up 6.5 metres (moderate) during Tuesday. Further rises are possible as rainfall continues.	
12:30 PM on Tuesday the 11th of January 2011	Major flood levels of 7.3 metres later today and overnight. Further rises are possible as rainfall continues.	
2:15 PM on Tuesday the 11th of January 2011	Major flood levels of 7.3 metres during this afternoon. Further rises are possible as rainfall continues.	
6:44 PM on Tuesday the 11th of January 2011	Reach 8.5 metres during this evening. Further rises are possible as rainfall continues.	

**Note:** This table does not include all forecasts issued during these flood events.