

Flood summary for the Dawson River at Theodore

- The town of Theodore is on the Dawson River in the Fitzroy catchment
- The flood heights at Theodore are measured on a manual gauge owned by the Bureau of Meteorology (Bureau station number: 039315).
- 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

Location map

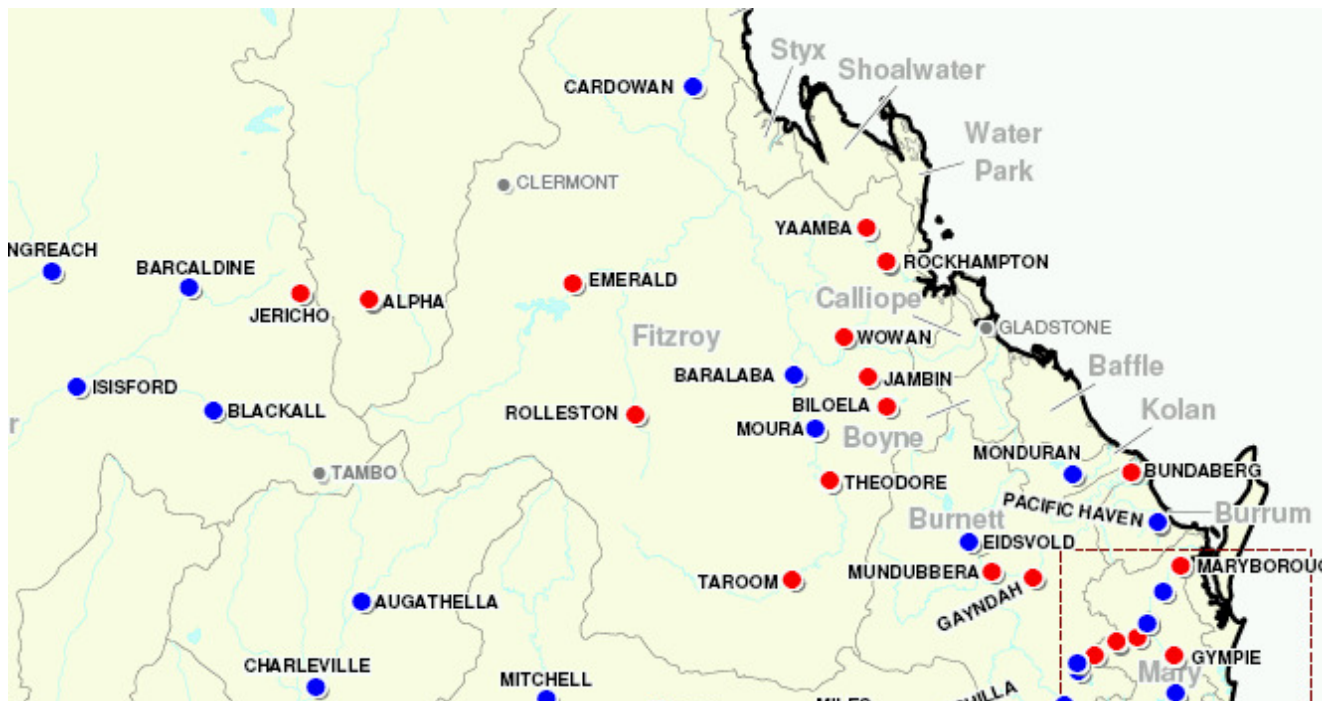


Figure 1. Map showing location of Theodore.

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

Flood effects and severity

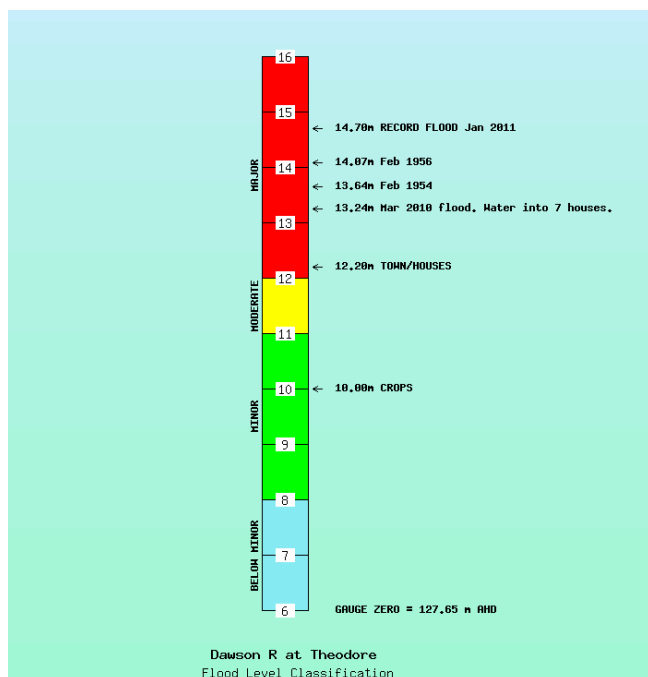


Figure 2. Flood level classifications and flood effects for Theodore.

- **Peaked at:**
13.00 metres on 10/12/2010
12.09 metres on 17/12/2010
13.56 metres on 25/12/2010
14.60 metres on 28/12/2010
14.70 metres on 01/01/2011
- Minor: 8 metres
Moderate: 11 metres
Major: 12 metres
- Gauge zero is 127.654 AHD.
- All 350 residents were evacuated on 28/12/2010 (Source: ABC).
- Above major flood level (12 metres) from 07/12/2010 to 13/12/2010, 17/12/2010 to 18/12/2010 and again from 23/12/2010 to 6/01/2011.
- Above minor flood level (8 metres) from 04/12/2010 to 17/1/2011.

Rainfall summary

- Over 600 mm of rainfall was recorded in the upper Dawson and over 400 mm in the middle Dawson during December 2010.
- Very heavy rainfall of over 200 mm was recorded in the upper Dawson River between 9 AM on the 26/12/2010 and 9am on the 28/12/2010. The area around Theodore recorded between 100 and 200 mm in the same time period. This rainfall was the most significant during December and led to the new river height record on the 01/01/2011.

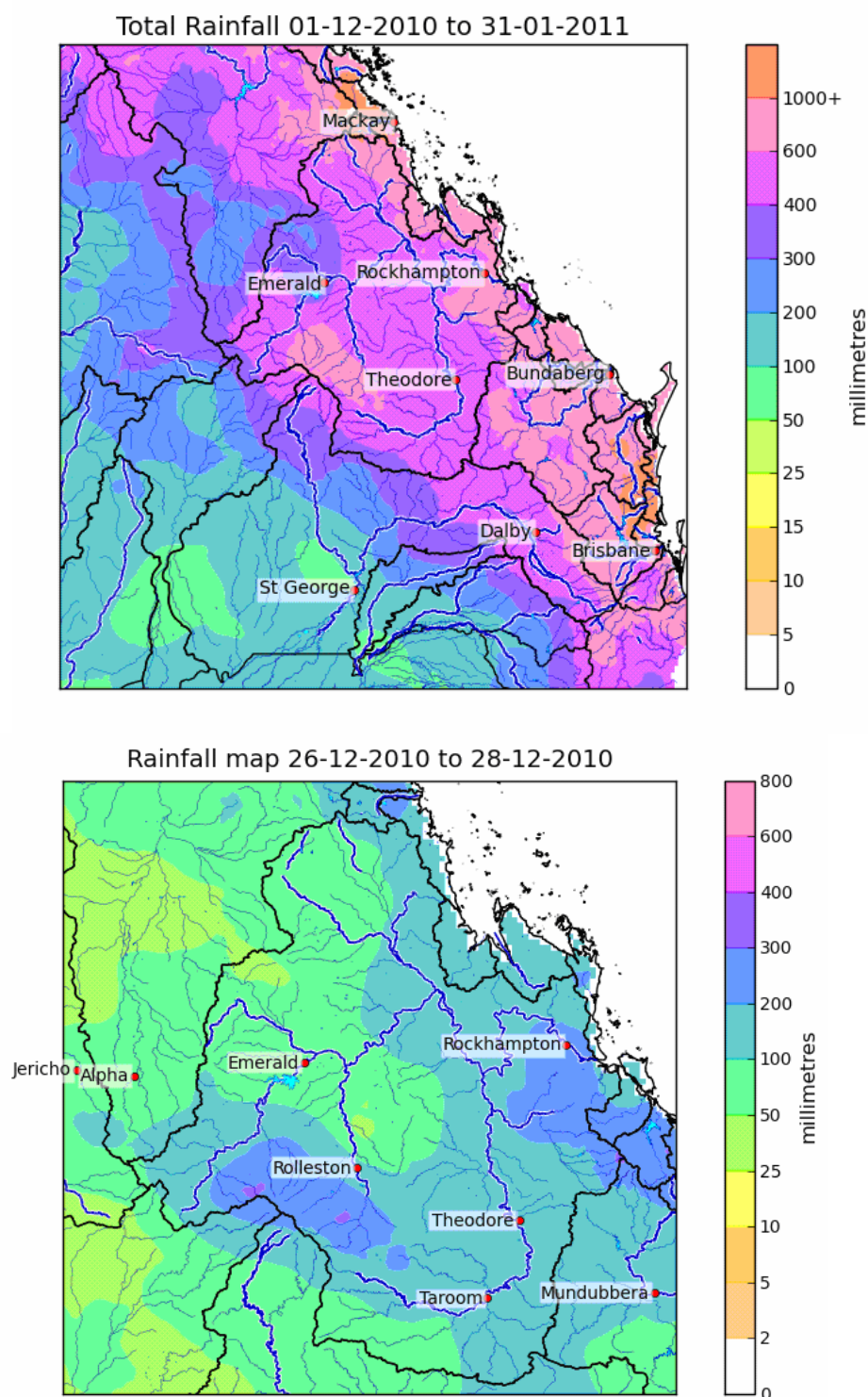


Figure 3. Rainfall map from 01/12/2010 to 31/01/2011 (top) and for the 48 hours to 9 AM on the 28/12/2010 (bottom).

Rainfall Intensity

- Maximum rainfall intensities for Boxvale TM on the Upper Dawson River and Windamere TM on Jundah Creek, both upstream from Theodore, have been selected as examples of recorded rainfall intensities across the Dawson River catchment during December 2010 and January 2011. The rainfall intensity data is shown in Table 1, however intensities are all well above the 1% Annual Exceedence Probability (100 year Average Recurrence Interval).

Table 1. Recorded Maximum Rainfall Intensities for Windamere and Boxvale on the Upper Dawson River for December 2010 and January 2011.

Rainfall Duration	Windamere TM			Boxvale TM		
	Rainfall (mm)	Period ending	ARI (years)	Rainfall (mm)	Period ending	ARI (years)
12hr	72	10:40 AM 27/12/2010	2-5	107	2:35 PM 27/12/2010	5-10
24hr	107	10:40 AM 27/12/2010	2-5	134	2:35 PM 27/12/2010	5-10
48hr	134	3:15 PM 27/12/2010	5-10	149	2:40 PM 27/12/2010	2-5
72hr	140	6:25 PM 27/12/2010	2-5	158	2:45 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 Theodore

Time/Date	Event Description	Gauge Height (metres)	Comment
4:34 AM 22/11/2010	First warning issued	7.40	
4/12/2010	First time it exceeded minor flood level	8.00	Remained above minor flood level for about 44 days
7/12/2010	First time it exceeded moderate flood level	11.00	Remained above moderate flood level for ~7 days
8/12/2010	First time it exceeded major flood level	12.00	Remained above the major flood level for ~5 days.
2:00 PM 10/12/2010	Major flood peak	13.00	
13/12/2010	Below major flood level	12.00	
14/12/2010	Below moderate flood level	11.00	
16/12/2010	Exceeded the moderate flood level	11.00	Remained above moderate flood level for ~3 days.
17/12/2010	Exceeded the major flood level	12.00	Remained above the major flood level for ~27 hours.
7:30 PM 17/12/2010	Major flood peak	12.09	
18/12/2010	Below the major flood level	12.00	
19/12/2010	Below the moderate flood level	11.00	
22/12/2010	Exceeded the moderate flood level	11.00	Remained above the moderate flood level for ~16 days.
23/12/2010	Exceeded the major flood level	12.00	Remained above the major flood level for ~14 days.
3:00 PM 25/12/2010	Major flood peak	13.56	Greater than March 2010
7:00 PM 28/12/2010	Major flood peak	14.60	New record
10:00 AM 01/01/2011	Major flood peak	14.70	New record
06/01/2011	Final fall below major	12.00	
07/01/2011	Final fall below moderate	11.00	
17/01/2011	Final fall below minor	8.00	
7:54 AM 17/01/2011	Final warning issued		

Flood Heights at Theodore

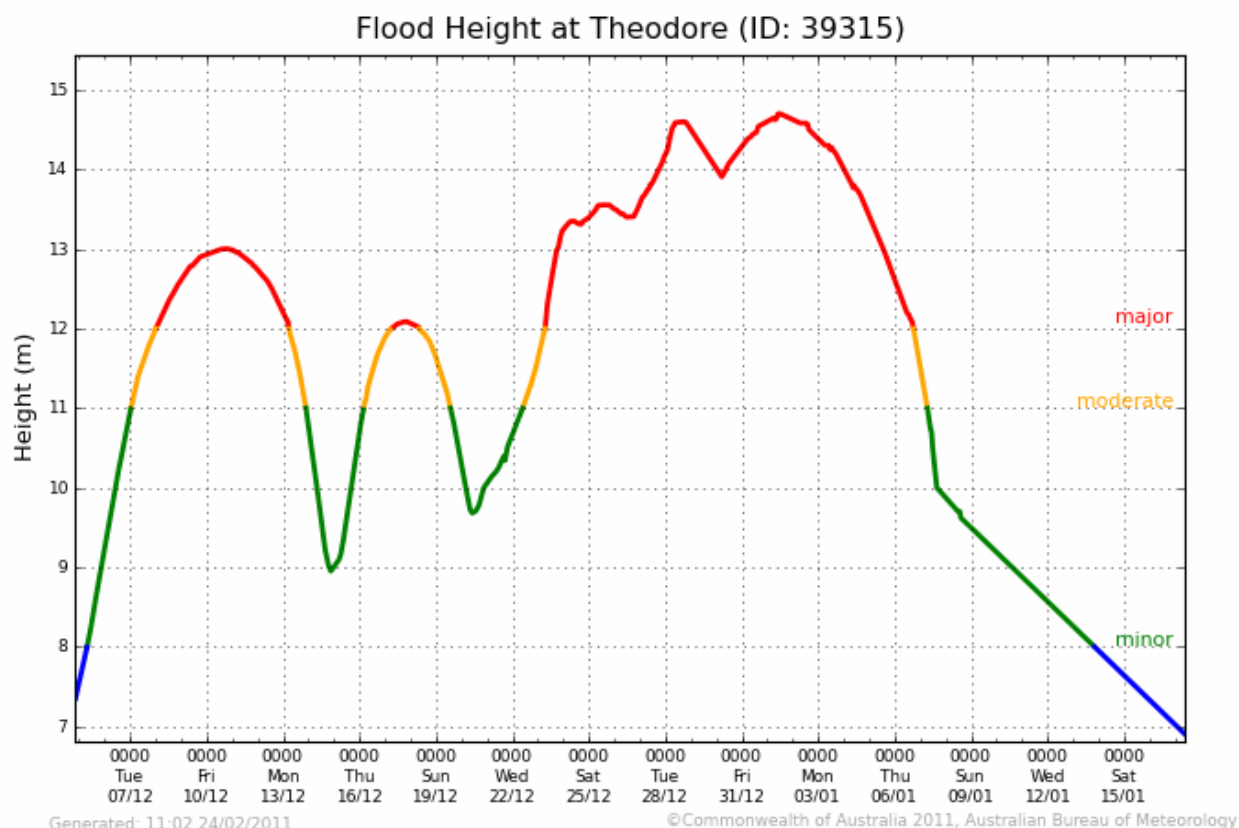


Figure 4. Flood Heights at Theodore manual gauge for December 2010 and January 2011

Comparison with previous floods

- Start of record 1924 with 20 major flood peaks in the record including 4 in 2010.
- Last major flood was 13.45 metres in March 2010 but previous to that was 12.22 metres in 1996.

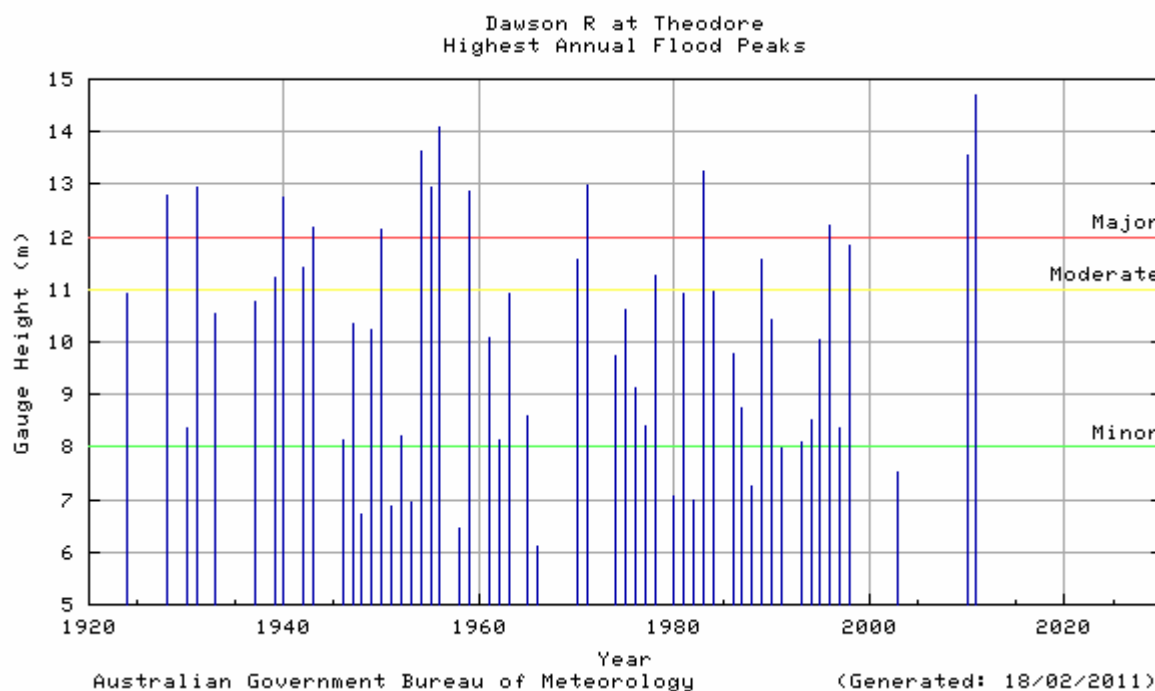


Figure 5. Highest annual flood peaks for the Dawson River at Theodore

Warning and Forecast Service

- Significant runoff commenced during September with flood warnings for the Dawson River issued between 05/09/2010 and 13/09/2010 and again between 22/09/2010 and 04/10/2010.
- Further rainfall occurred in late November with warnings commencing 22/11/2010 and continuing through to 17/01/2011.
- A total of 94 warnings were issued for the Fitzroy River system including the Dawson River during December 2010 and January 2011.

Table 3. Table of peak height predictions for Theodore.

Time of Height Forecast	Forecast	Peak
22/11/2010 First warning issued. River height at the time was 7.40m (below minor)		
10:27 AM on Wednesday the 8th of December 2010	peak to 13 metres is possible during Friday	13.00 metres at 2:00 PM Fri 10/12/2010
9:41 AM on Thursday the 9th of December 2010	peak around 13.2 metres overnight Friday	
10:06 AM on Friday the 10th of December 2010	peak around 13.2 metres overnight Friday	
9:14 AM on Thursday the 16th of December 2010	Peak just over 12 metres overnight Friday.	12.09 metres at 7:30 PM Fri 17/12/2010
9:01 AM on Friday the 17th of December 2010	Peak around 12.3 metres overnight Friday.	
2:37 PM on Thursday the 23rd of December 2010	Reach at least 13.2 metres during Friday	13.56m at 3:00 PM Sat 25/12/2010
5:48 PM on Thursday the 23rd of December 2010	Reach at least 13.5 metres during Friday	
9:59 AM on Friday the 24th of December 2010	Reach at least 13.5 metres during Friday.	
12:21 PM on Saturday the 25th of December 2010	Stay around the 13.4 metre mark for the rest of the weekend	
1:25 PM on Monday the 27th of December 2010	Possibly exceed 14 metres (major) during Monday/Tuesday	14.6m at 7:00 PM Tue 28/12/2010
5:57 PM on Monday the 27th of December 2010	Exceed 14 metres during Monday/Tuesday	
7:06 AM on Tuesday the 28th of December 2010	Rises to 15 metres possible during Tuesday/Wednesday	
6:51 PM on Tuesday the 28th of December 2010	Rises to 15 metres (major) still possible during Wednesday	
7:20 PM on Thursday the 30th of December 2010	Continue rising and exceed 14.5 metres early next week	14.7m at 10:00 AM Sat 1/1/2011
7:34 AM on Friday the 31st of December 2010	Continue rising slowly and exceed 14.5 metres during the weekend	
6:48 AM on Saturday the 1st of January 2011	Continue to rise slowly and exceed 14.5 metres during the weekend	
12:17 PM on Saturday the 1st of January 2011	Continue to rise slowly with levels up to 15 metres possible.	
12:21 PM on Sunday the 2nd of January 2011	Remain near the flood peak during Sunday	

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