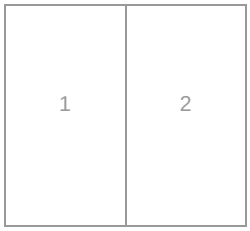
Australian Government
Bureau of Meteorology

Water Information
DATA › INFORMATION › INSIGHT

DRAFT REPORT

Southeast Queensland Floods

January 2011



1. Victoria Street Bridge, Brisbane.
2. Albert Street, Brisbane City.

Note:

1. Data in this report has been operationally quality controlled but errors may still exist.

2. This product includes data made available to the Bureau by other agencies. Separate approval may be required to use the data for other purposes. See Appendix 1 for DERM Usage Agreement.

3. This report is not a complete set of all data that is available. It is a representation of some of the key information.

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1. Introduction

An exceptional and tragic rain event occurred over southeast Queensland during the second week of January 2011 causing extreme flash flooding in the Lockyer Valley and major river flooding in the Brisbane and Bremer Rivers. As at the 18th of January, 20 people are confirmed deceased and thousands of houses and business have been inundated. A major recovery program is now underway throughout the region.

Southeast Queensland had experienced very much above average to highest on record rainfall for the month of December. Further rainfall then followed in the first week of January, saturating the catchment area.

By the 7th of January a combination of weather systems centred themselves over land over the Burnett River catchment area. These systems combined to produce heavy rainfall and major flooding in the Mary River catchment and about the Sunshine Coast before moving southward into the Pine and Brisbane River catchments. Heavy to very intense rainfall from the 9th to the 12th of January resulted, causing rapid creek rises and extreme flash flooding in the Lockyer Valley and major river flooding in the Brisbane and Bremer Rivers.

This report provides a summary and analysis of the meteorology and hydrology of the January 2011 Floods that impacted on southeast Queensland. The following links provide maps of the Upper Brisbane and Stanley Rivers and the Lockyer Creek catchment, the Bremer River and Warrill Creek catchment and the Lower Brisbane River catchment.

2. Meteorological Summary

A moist tropical airstream and potently unstable atmospheric conditions led to the development of heavy to intense rainfall over southeast Queensland between the 9th and 12th of January 2011. This rain fell over an already saturated catchment from very much above average to highest on record rainfall in December. This led to extreme river level rises and flash flooding in the Lockyer Valley and major river flooding along the Brisbane and Bremer river including Brisbane City and Ipswich.

This chapter presents a discussion and analysis of the meteorological conditions that led to the development of intense rainfall over the region.

2.1 Meteorological Analysis

A sequence of Mean Sea Level Pressure Charts from the 6th to the 13th of January 2011, shown as Figure 2.1.1, describes surface systems that assisted to produce heavy to intense rainfall over southeast Queensland causing flash flooding in the Lockyer Valley and river flooding throughout the Brisbane and Bremer River catchments including Lockyer and Warrill Creeks.

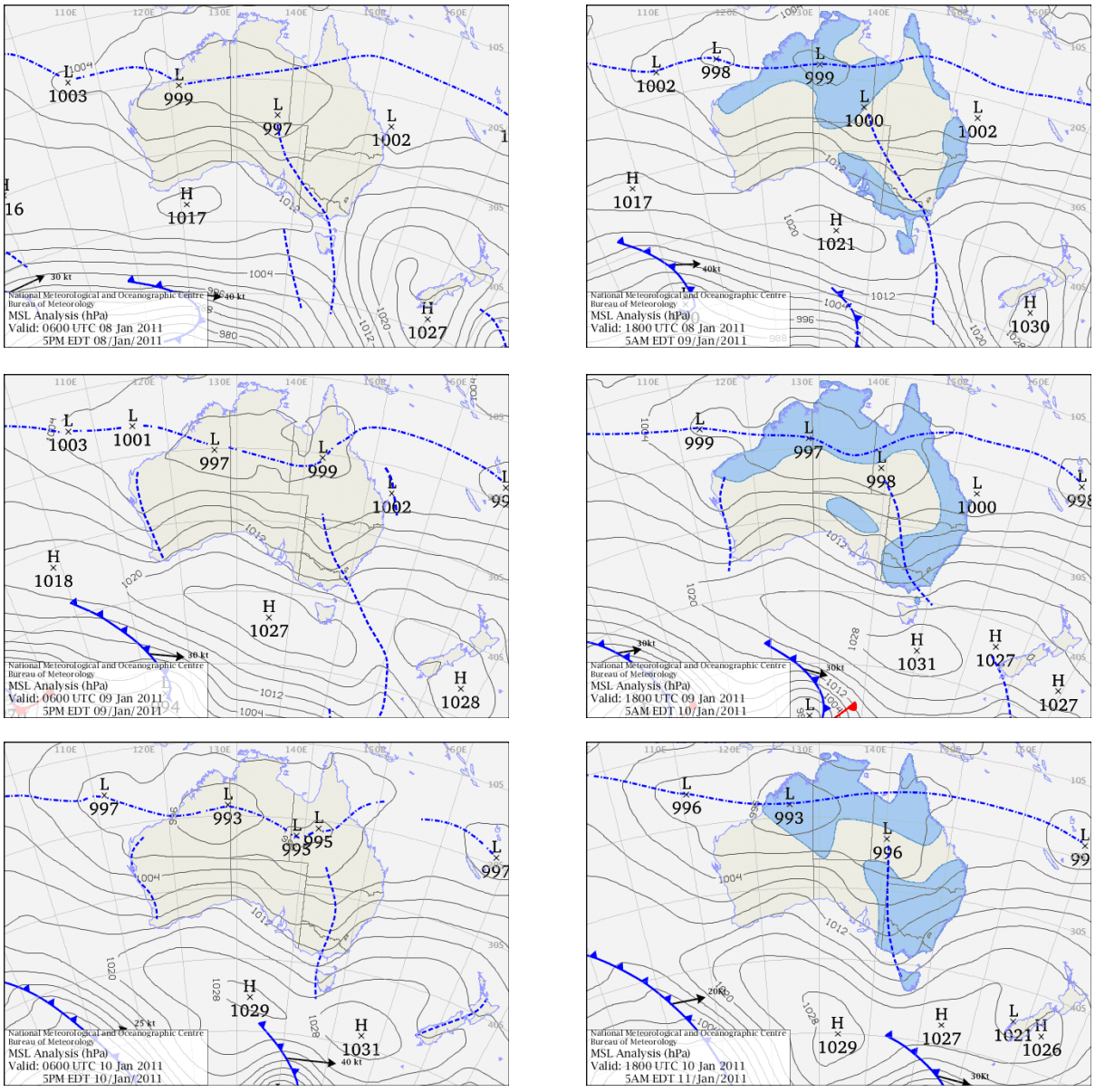
An active monsoon trough extended across northern Queensland and over the Coral Sea linking a series of low pressure systems. These combined to produce a moist northerly airstream into central eastern Queensland. A high pressure system over the southern Tasman Sea directed moist easterlies winds into the southeast corner of the state.

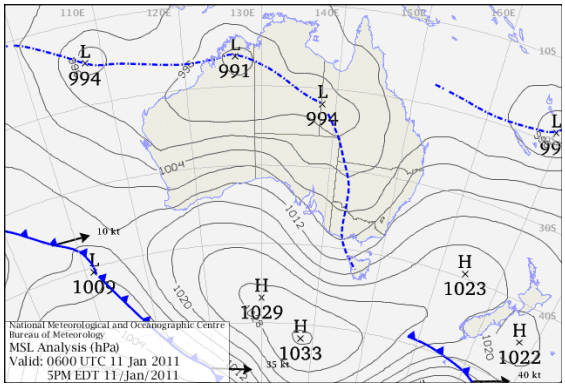
The low to the east of Gladstone remained just off the Capricornia coast for 1 to 2 days extending a surface trough onto the Burnett Coast and producing very heavy rainfall over the Burnett and Mary

River catchment area from the 7th to the 9th of January. 24-hour rainfall totals of 100 to 200 millimetres were recorded over these catchment areas with isolated heavier falls up to 300 millimetres. Rainfall totals of between 80 and 120 millimetres fell over the Upper Brisbane River catchment during this time, with lighter falls of 20 to 30 millimetres over the Lower Brisbane and Bremer River catchments.

The movement of the upper low southwest during the 9th, directed moist tropical air into the Sunshine Coast and southeast Queensland. This caused the intense rainfall move from the Mary and Burnett River catchments into the Sunshine Coast and the Upper and Lower Brisbane and Bremer River catchments including the Lockyer valley region. Daily falls in excess of 200 millimetres were recorded across these parts to 9am on the 10th and 11th of January.

Figure 2.1.1 MSLP Charts for Australia from the 6th to the 14th of January 2011.





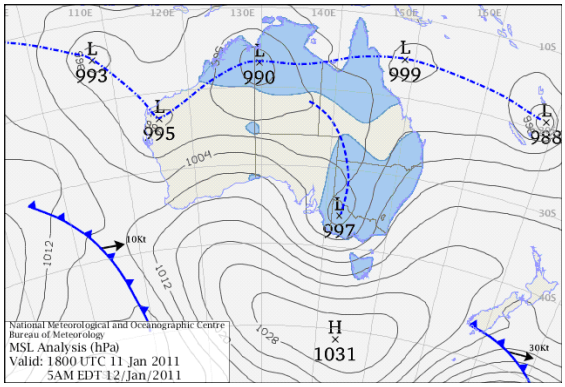
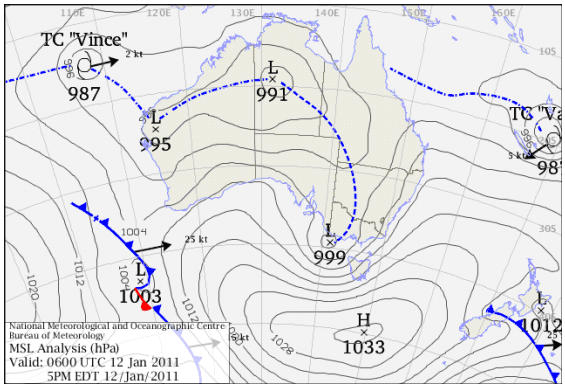
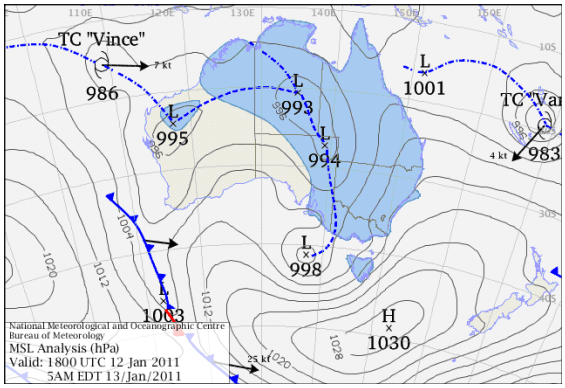
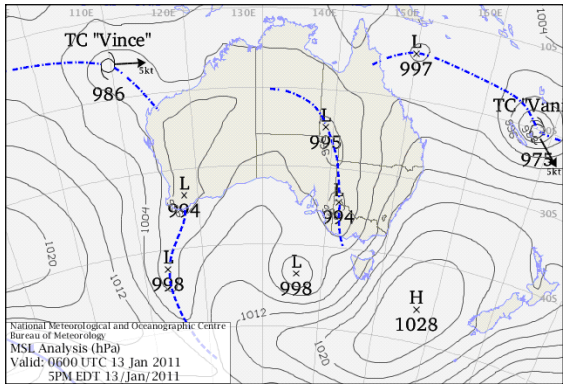
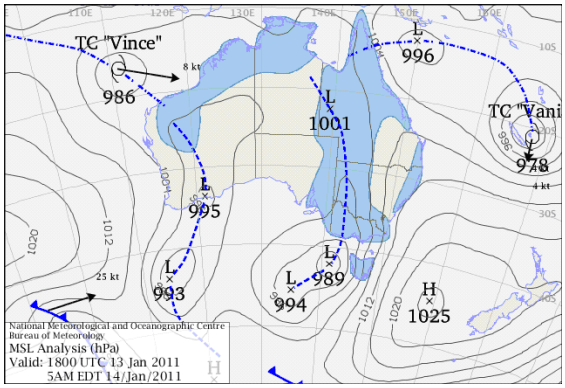


Figure 2.1.1 MSLP Charts for Australia from the 6th to the 14th of January 2011 (continued).







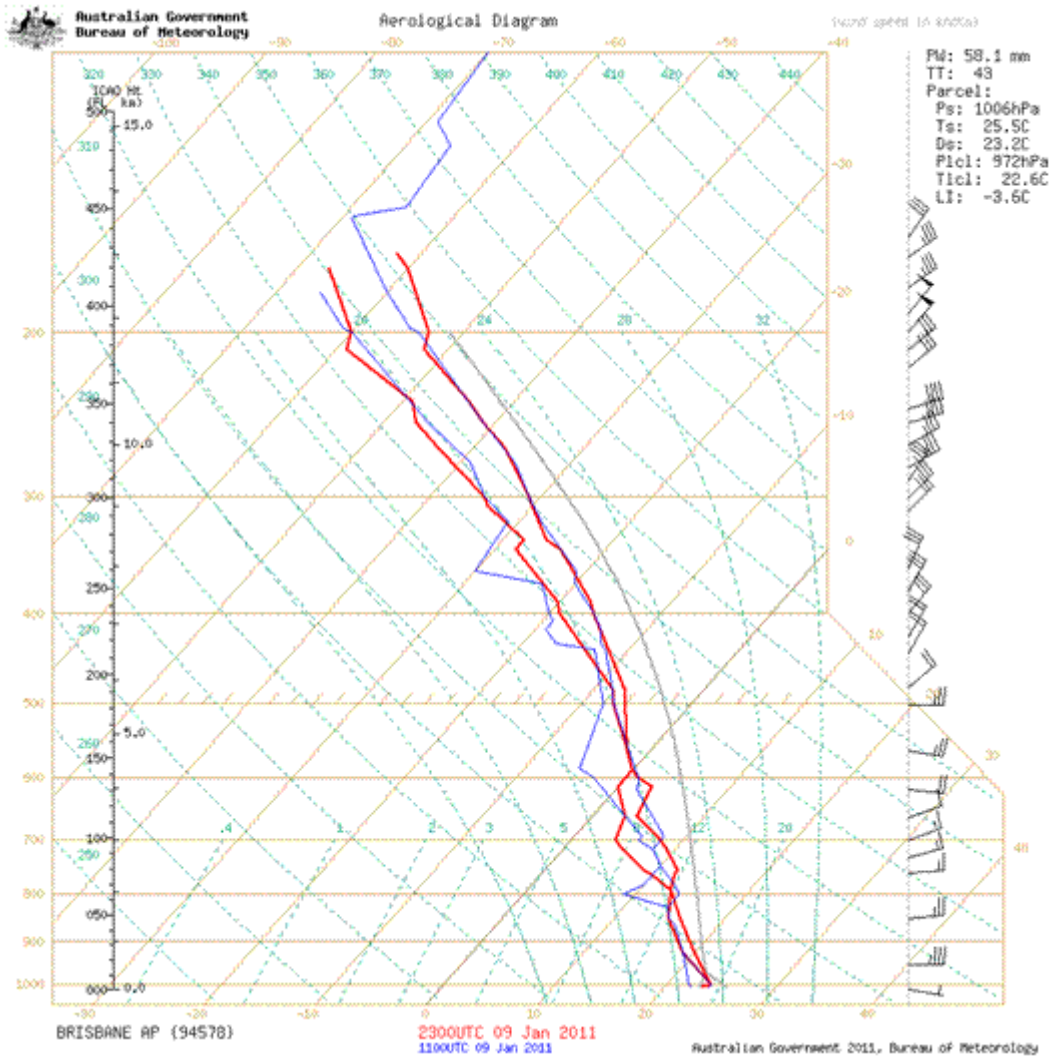


The vertical temperature and moisture profile measured at Brisbane Airport at 9am on the 10th of January shows that southeast Queensland lay under a deep, extremely moist easterly airstream (Figure 2.1.2). Of note was the precipitable water value of 58.1millimetres (derived from the vertical temperature and moisture profile), which is well above the climatological average of 33millimetres.

The vertical wind profile also at this time indicates winds backing from the east at the surface to the northeast in levels above the surface. This implies instability and the widespread ascent of air. Moderate to strong static instability was also present, as indicated by a surface to 5 kilometre lifted index value of -3.6, also derived from the vertical temperature and moisture profile. Conditions were therefore ideal for an extremely heavy rainfall event.

During the 12th of January, the upper level system weakened considerable and moved further west stabilising conditions and clearing the rainfall from southeast Queensland.

Figure 2.1.2 Vertical Temperature and Moisture profile at Brisbane Airport - 9am on 10th of January.



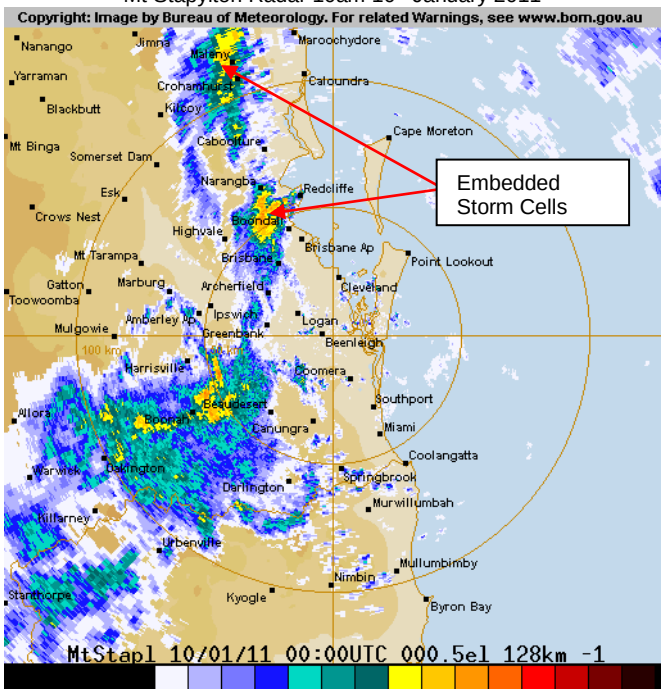
2.2 Radar Imagery Analysis

Volumetric radar imagery from Mt Stapylton, Marburg and Mt Kanign radar was available to monitor this intense rainfall event.

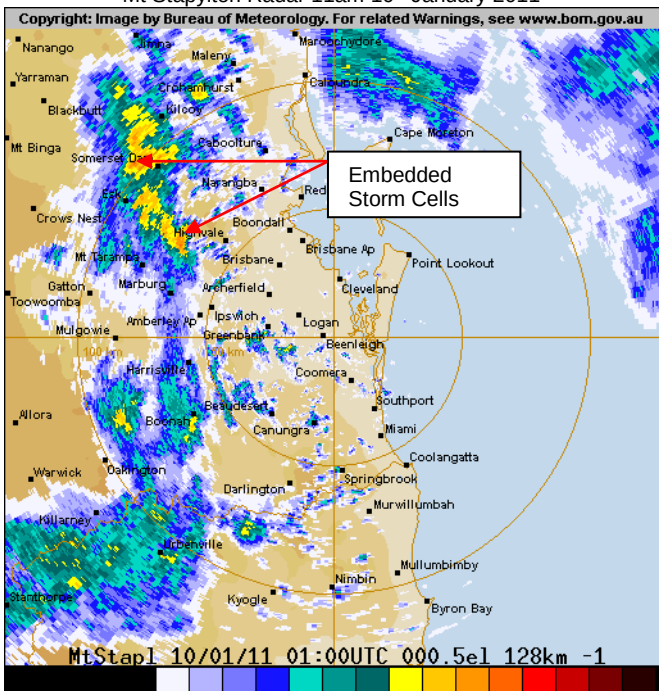
Analysis of imagery during the 9th to 12th of January indicates several periods of very intense rainfall during the 10th and 11th of January. The sequence of radar imagery in Figure 2.2.1 shows the rain band with embedded storm cells that moved through the region between 10am and 1pm on the 10th of January and attributed to flash flooding in Toowoomba and the Lockyer Valley region. A broad rain band with embedded thunderstorm cells are clearly evident.

Figure 2.2.1 Warrego radar imagery from 10am to 1pm on 10th of January 1011.

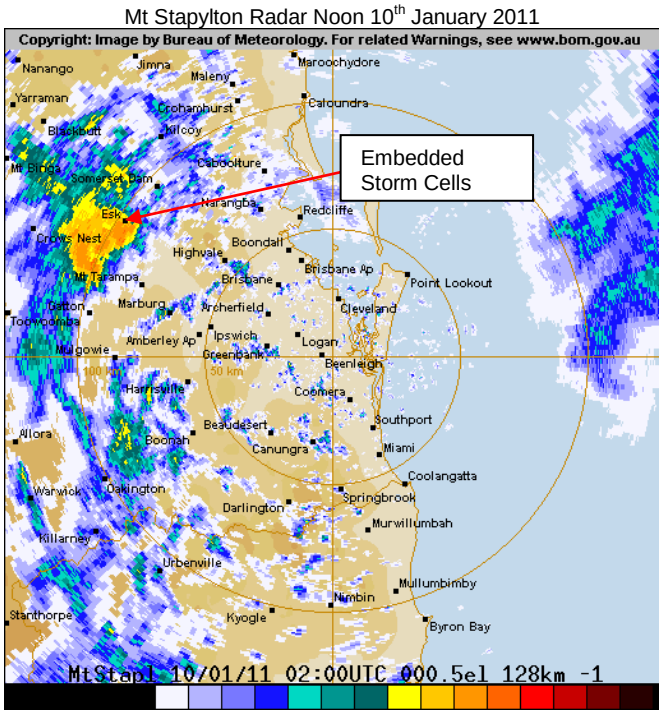
Mt Stapylton Radar 10am 10th January 2011



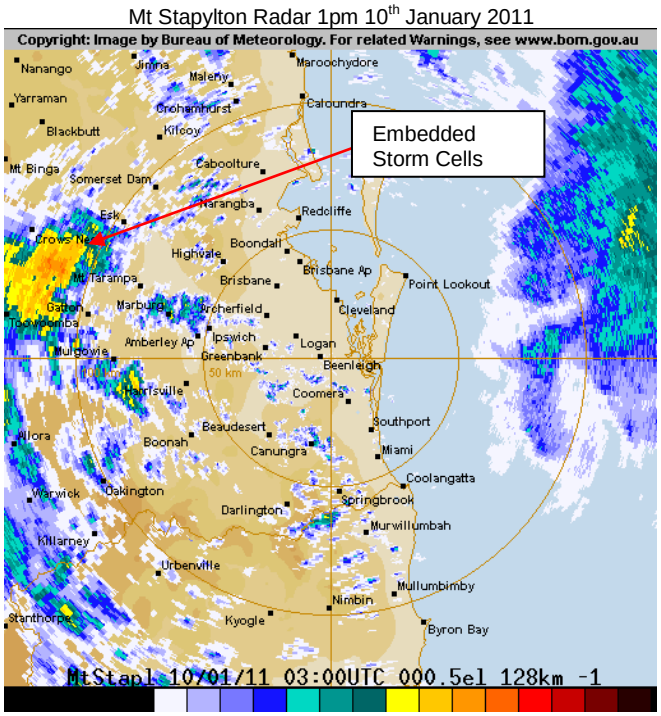
Mt Stapylton Radar 11am 10th January 2011



Mt Stapylton Radar Noon 10th January 2011



Mt Stapylton Radar 1pm 10th January 2011



3. Hydrology

Heavy rainfall was recorded across southeast Queensland from the 9th to the 12th of January 2011.This led to the develop of extreme creek level rises and extreme flash flooding in the Lockyer Valley and major river flooding in the Brisbane, Stanley and Bremer rivers including Brisbane city and Ipswich.

Record flood heights were recorded at various locations along Lockyer and Warrill Creeks and the Bremer and Brisbane River. Peak river levels on the Bremer River at Ipswich and along the Brisbane River from Mt Crosby to Brisbane city remained below the 1974 flood level.

3.1 Peak River Heights

A map displaying the peak river heights that occurred over southeast Queensland between the 9th and 14th of January 2010 is shown in Figure 3.1.1. Comparisons of peak river heights with historical peak heights at locations along creeks and rivers in the catchment area are shown in Table 3.1.1.

Figure 3.1.1 Peak Height Map for the Brisbane, Stanley and Bremer Rivers, and the Lockyer and Warrill Creeks from the 9th to the 14th of January 2011.

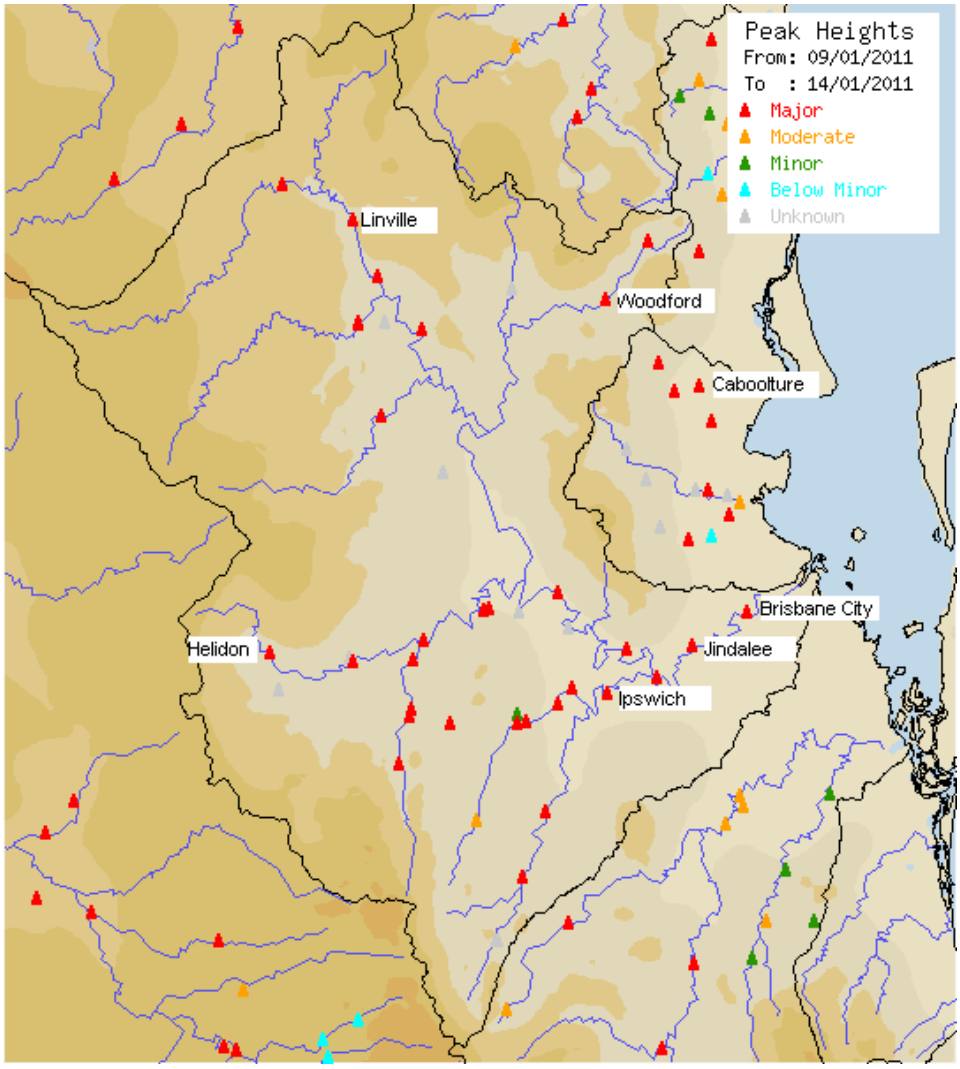


Table 3.1.1 Historical Peak Height Comparison.

Station Name	Recorded Peak Height	Effect	Highest Since	Historical Reference
KILCOY CREEK				
Mt Kilcoy Weir AL/TM	**Peak 7.26m @ 5:30pm 09/01/2011**	Effect unknown.	Highest since 1955 and 2nd on record.	Record: 7.62m in1955
STANLEY RIVER				
Peachester AL/TM	**Peak 9.04m @ 8:30pm 08/01/2011**	Effect unknown.	Highest since 1972 and 3rd on record.	Record: 9.75m in 1954
Woodford AL	**Peak 9.38m @ 6:30pm 11/01/2011**	Effect unknown.	Highest on record starting 2004.	Previous highest 6.93m in 2010.
Somerset Dam	**Peak 104.96m @ 5:30am 12/01/2011**	Nearly 6m over full supply. (189.7% full)	Highest on record starting 1999.	Previous highest 103.21m in 1999.
UPPER BRISBANE RIVER				
Cooyar Creek AL/TM	**1st Peak 9.48m @ 5:00pm 09/01/11 2nd Peak 11.02m @ 4:30am 11/01/11**	Effect unknown.	Highest on record starting 1965.	Previous highest 9.33m in 1974.
Linville AL/TM	**1st Peak 10.14m @ 8:25pm 09/01/11 2nd Peak 11m @ 4:30am 11/01/11**	Effect unknown.	Highest on record starting 1964.	Previous highest 8.93m 1999.
Devon Hills AL/TM	**1st Peak 11.25m @ 9:25pm 09/01/11 2nd Peak 11.02m @ 4:30am 11/01/11**	Effect unknown.	Highest on record starting 1985.	Previous highest 10.80m in 1999.
Boat Mountain AL/TM	**1st Peak 11.02m @ 12:20am 10/01/11 2nd Peak 10.78m @ 7:49am 11/01/11**	Effect unknown.	Highest on record starting 1965.	Previous highest 9.61m in 1974.
Glendale TM	**1st Peak 8.23m @ 8:10pm 09/01/11**	Effect unknown.	Highest on record starting 2010.	Previous highest 3.31m in 2010.
Gregor Creek	**1st peak 14.56m @ 10:15pm 09/01/11 2nd peak 13.38m @ 11:17am 11/01/2010**	Effect unknown.	Highest on record starting 1962.	Previous highest 14.53m in 1999.
Wivenhoe Dam AL	**Peak 74.85m @ 2:20pm 12/01/2010**	Nearly 8 metres above full supply. (188.5% full)	Highest on record starting 1994.	Previous highest 69.63m in 2010.
CRESSBROOK CREEK				
Rosentreters Bridge	**1st peak 5.70m @ 9:00pm 09/01/11 2nd peak 6.8m @ 4:00pm 10/01/11**	**Extreme Flash Flooding Mon 10/01.**	Highest on record starting 1994.	Previous highest 4.74m in 1999.
ESK CREEK				

Falls Road TM	**1st peak 8.84m @ 3:00pm 10/01/11 2nd peak 6.77m @ 7:20pm 09/01/11**	Effects Unknown.	Highest on record starting 2009.	Previous highest 4.84m in 2010.
LOCKYER CREEK				
Helidon	**Peak 12.74m @ 3:00pm 10/01/11**	**Extreme Flash Flooding Mon 10/01.**	Highest on record.	Previous highest 7.55m in 1974.
Flagstone Creek TM	**Peak 6.74m @ 4:50pm 10/01/11**	**Extreme Flash Flooding Mon 10/01.**	Highest since 2011 and 2nd on record.	Record: 7.16m December 2010.
Gatton	**Peak 18.92m @ 6:30pm 10/01/11**	**Extreme Flash Flooding Mon 10/01.**	Highest on record.	Record: 16.33m February 1893. **1974 - 14.63m**
Mulgowie TM	**Peak 7.88m @ 4:00pm 10/01/11**	**Extreme Flash Flooding Mon 10/01.**	Highest since 2010.	Record: 9.14m January 1976.
Warrego Highway TM	**Peak 6.42m @ 3:00am 11/01/11**	**Extreme Flash Flooding Mon 10/01.**	Highest since 1996 and 3rd on record	Record: 6.77m May 1996.
Glenore Grove AL/TM	**1st Peak 13m @ 7am Mon 10/01/11 2nd Peak 14.6m @ 11pm Mon 10/01/11 3rd Peak 15.34m @ 6:20pm 11/01/11**	**Extreme Flash Flooding Mon 10/01.**	Highest since 2011 and 3rd on record.	Previous highest 14.6m 10/01/11.
Lyons Bridge AL/Man	**1st peak 12.9m @ 5am Fri 07/01/11 2nd peak 17.25m @ 5:30pm Fri 11/01/11**	**Extreme Flash Flooding Mon 10/01.**	Highest since 1955 and 2nd highest on record.	Record: 17.46m March 1955 **1974 - 16.54m**
LAIDLEY CREEK				
Laidley	**1st peak 8.70m @ 10:00pm 10/01/11 2nd peak 8.85m @ 1:20pm 11/01/11**	Effects unknown.	Highest on record.	Previous highest 8.8m December 2010.
Showground Weir AL	**1st peak 9.30m @ 7:15pm 10/01/11 2nd peak 9.26m @ 8:50am 11/01/11**	Effects unknown.	Highest since 2010 and 2nd highest on record.	Previous highest 9.36m December 2010.
WESTERN CREEK				
Grandchester Alert	**Peak 5.43m @ 8:00am 11/01/11**	Effects unknown.	Highest on record.	Previous highest 4.05m November 2004.
Rosewood WWTP AL	**Peak 7.83m @ 3:30pm 11/01/11**	Effects unknown.	Highest on record.	Previous highest 7.20m October 2010.
FRANKLIN VALE CREEK				
Grey's Plains Road AL	**Peak 3.54m @ 11:10am 11/01/11**	Effects unknown.	Highest on record.	Previous highest 3.39m December 2010.
BREMER RIVER				
Adams Bridge AL	**Peak 5.05m @ 7:00pm 11/01/11**	Effects unknown.	Highest on record.	Previous highest 4.67m December 2010.

Spressers Bridge AL	**Peak 7.17m @ 4:25pm 11/01/11**	2.3m over Bridge.	Highest on record.	Previous highest 5.87m December 2010.
Rosewood AL	**Peak 7.5m @ 3:30pm 11/01/11**	2.3m over 7 Mile Bridge.	Highest since 1974 and 2nd highest on record.	Previous highest 7.62m January 1974.
Walloon AL	**Peak 8.9m @ 5:00pm 11/01/11**	4.4m over 5 Mile Bridge.	Highest on record.	Previous highest 7.87m November 2008.
Walloon TM	**Peak 11.27m @ 7:00pm 11/01/11**	Effects unknown.	Highest since 1974 and 2nd highest on record.	Previous highest 11.56m January 1974.
WARRILL CREEK				
Kalbar Weir AL/TM	**Peak 80.29m @ 7:29pm 11/01/11.**	5.52m over weir crest.	Highest on record.	Previous highest 79.99m December 2010.
Harrisville AL/Man	**Peak 5.98m @ 8:00pm 11/01/11.**	Effects unknown.	Highest since 1996 and 8th highest on record.	Record: 8.33 Feb 1893. **6.18m Jan 1974**.
Churchbank Weir AL	**Peak 3.47m @ 4:00am 12/01/11.**	Effects unknown.	Highest since 1959 and 3rd highest on record.	Record: 3.99m Feb 1959
Amberley AL	**Peak 8.12m @ 9:30am 11/01/11.**	Effects unknown.	Highest on record.	Previous highest 7.32m December 2010.
Amberley TM	**Peak 9.27m @ 2:00pm 11/01/11.**	Effects unknown.	Highest since 1974 and 3rd highest on record.	Previous highest 11.08m January 1974.
PURGA CREEK				
Peak Crossing AL	**Peak 4.01m @ 3:00pm 10/01/11.**	Effects unknown.	Highest on record.	Previous highest 3.81m December 2010.
Loamside AL	**Peak 7.75m @ 9:50pm 12/01/11.**	Effects unknown.	Highest since 2009 and 2nd highest on record.	Record: 8.19m May 2009
BREMER RIVER CON'T				
One Mile Bridge AL	**Peak 21.35m @ 1:00am 12/01/11**	Effects unknown.	Highest since 1974 and 2nd highest on record.	Record: 25.10m January 1974
Brassall AL	**Peak 21.58m @ 12:00pm 12/01/11**	Effects unknown.	Highest since 1974 and 2nd highest on record.	Record: 25.10m January 1974
Ipswich AL	**Peak 19.4m @ 1:45pm 12/01/11.**	Effects unknown.	Highest since 1974 and 3rd highest on record.	23.6m Feb 1893. **20.7m Jan 1974**. (Records since 1996).

BUNDAMBA CREEK				
Harding Street AL	**Peak 24.73m @ 5:30pm 11/01/11.**	Effects unknown.	Highest since 2008 and 4th highest on record.	Record: 25.20m January 1974
Blackstone Bridge AL	**Peak 18.84m @ 3:37pm 11/01/11.**	Effects unknown.	Highest since 2009 and 5th highest on record.	Record: 25.20m January 1974
Bundamba School AL	**Peak 18.98m @ 9:00pm 12/01/11.**	Effects unknown.	Highest since 1974 and 2nd highest on record.	Record: 20.60m January 1974
LOWER BRISBANE RIVER				
Lowood Pump Station AL	**Peak 22.87m @ 11:43pm 11/01/11.**	Effects unknown.	Highest on record.	Previous highest 12.20m November 2008.
Savages Crossing AL	**Peak 24.15m @ 2:10am 12/01/11.**	Effects unknown.	Highest on record.	Previous highest 23.79m January 1974.
Mt Crosby AL	**Peak 26.18m @ 9:00am 12/01/11.**	Effects unknown.	Highest since 1974 and 5th highest on record.	Record: 32.00m February 1893.
Colleges Crossing AL	**~15.5m and rising before station failed.**	Effects unknown.	Highest on record.	Previous highest 9.46m December 2010.
Moggill	**Peak 17.87m @ 2:15pm 12/01/11.**	Effects unknown.	Highest on record.	Previous highest 7.2m May 1996.
Jindalee	**Peak 12.90m @ 6:50pm 12/01/11.**	Effects unknown.	Highest since 1974 and 4th highest on record.	Record: 17.90m February 1893
Brisbane City	**Peak 4.46m @ 2:15pm 12/01/11.**	Effects unknown.	Highest since 1974 and 8th highest on record.	Record Height 8.43m Jan 1841. 8.35m Feb 1893 7.03m Jan 1844 **5.45m Jan 1974**

3.2 Rainfall Maps

Figure 3.2.1 and 3.2.2.show weekly rainfall totals across Australia for the weeks ending the 7th of January and the 14th of January 2011, respectively. As is evident, weekly rainfall totals of between 50 to 150 millimetres were recorded over southeast Queensland in the first week of 2011. The second week of January brought further heavy rainfall in the area with falls generally between 150 and 400 millimetres with some areas about the Sunshine Coast and adjacent inland receiving weekly rainfall in excess of 400 millimetres.

The heaviest period of rainfall over southeast Queensland in the first two weeks of January occurred between the 9th and 12th of January. 24-hour rainfall maps for Queensland to 9am on the 10th, 11th and 12th of January are shown in Figures 3.2.3 – 3.2.5. It is evident from the three maps that daily rainfall of at least 50 – 150 millimetres was recorded across most of the southeast corner of the state, with large areas receiving falls well in excess of that amount over consecutive days.

Figure 3.2.1 Weekly rainfall across Queensland to the 7th of January 2011.

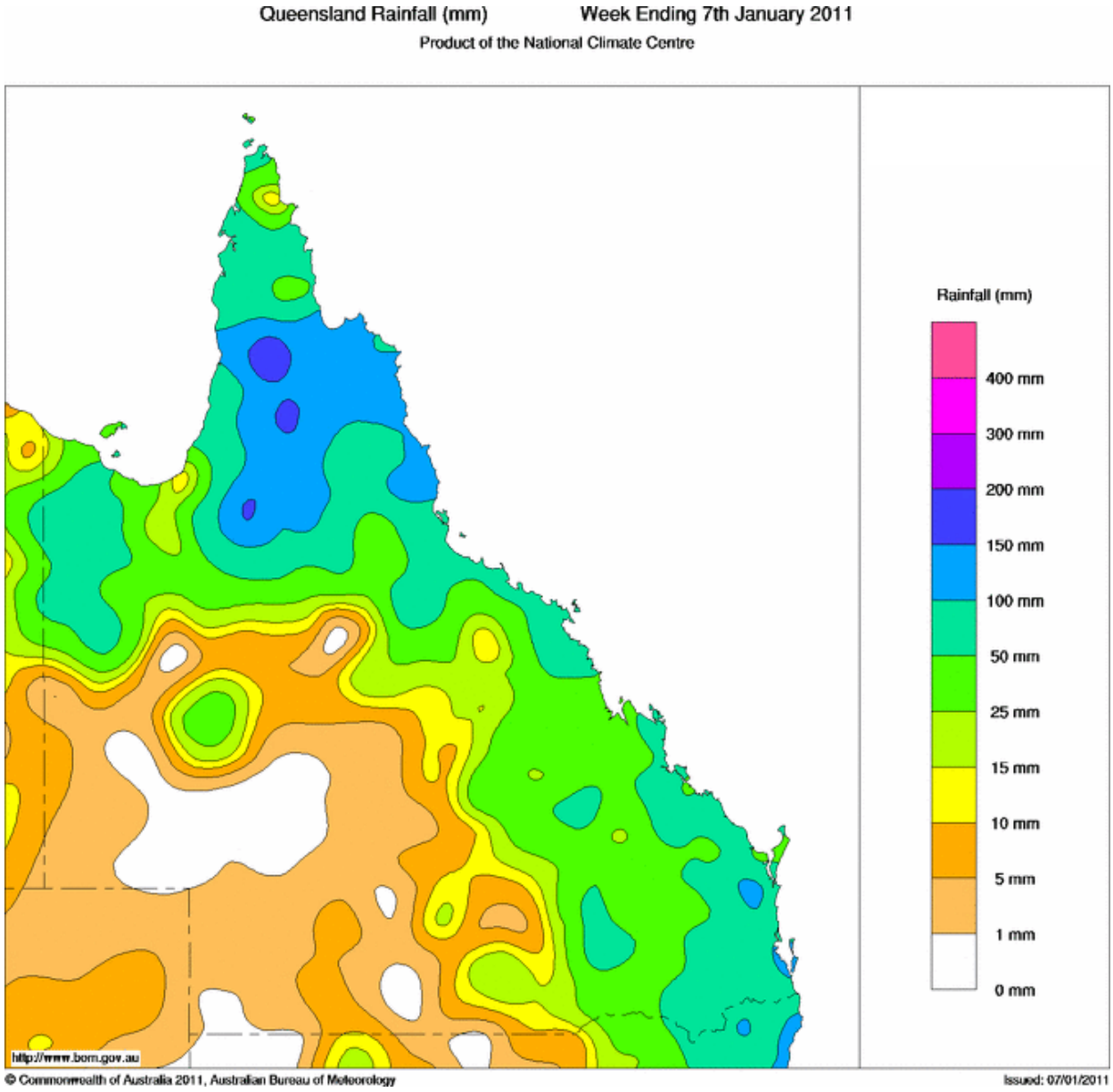


Figure 3.2.2 Weekly rainfall across Queensland to the 14th of January 2011.

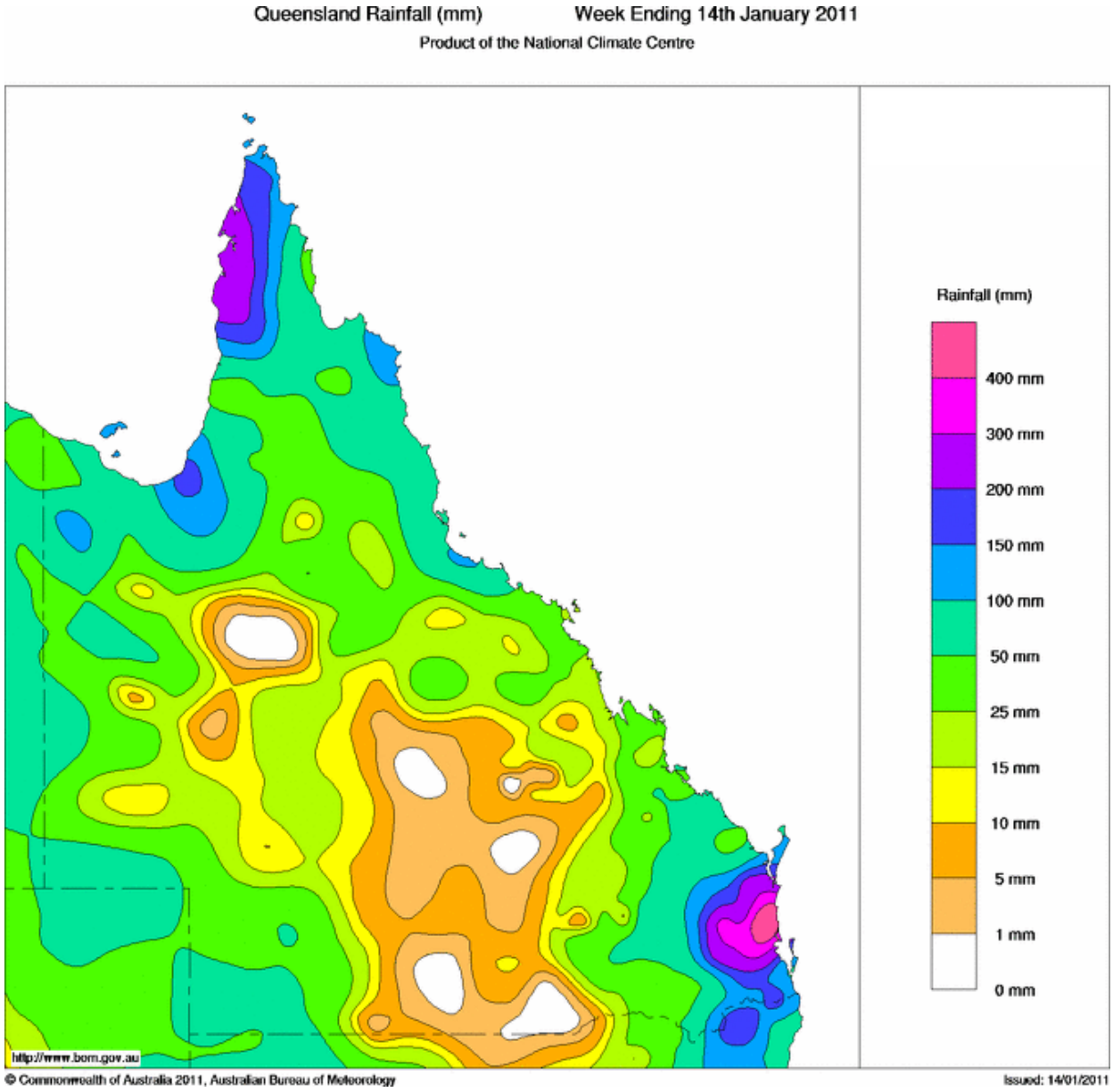


Figure 3.2.3 Queensland rainfall in the 24 hours to 9am on th 10th of January 2011.

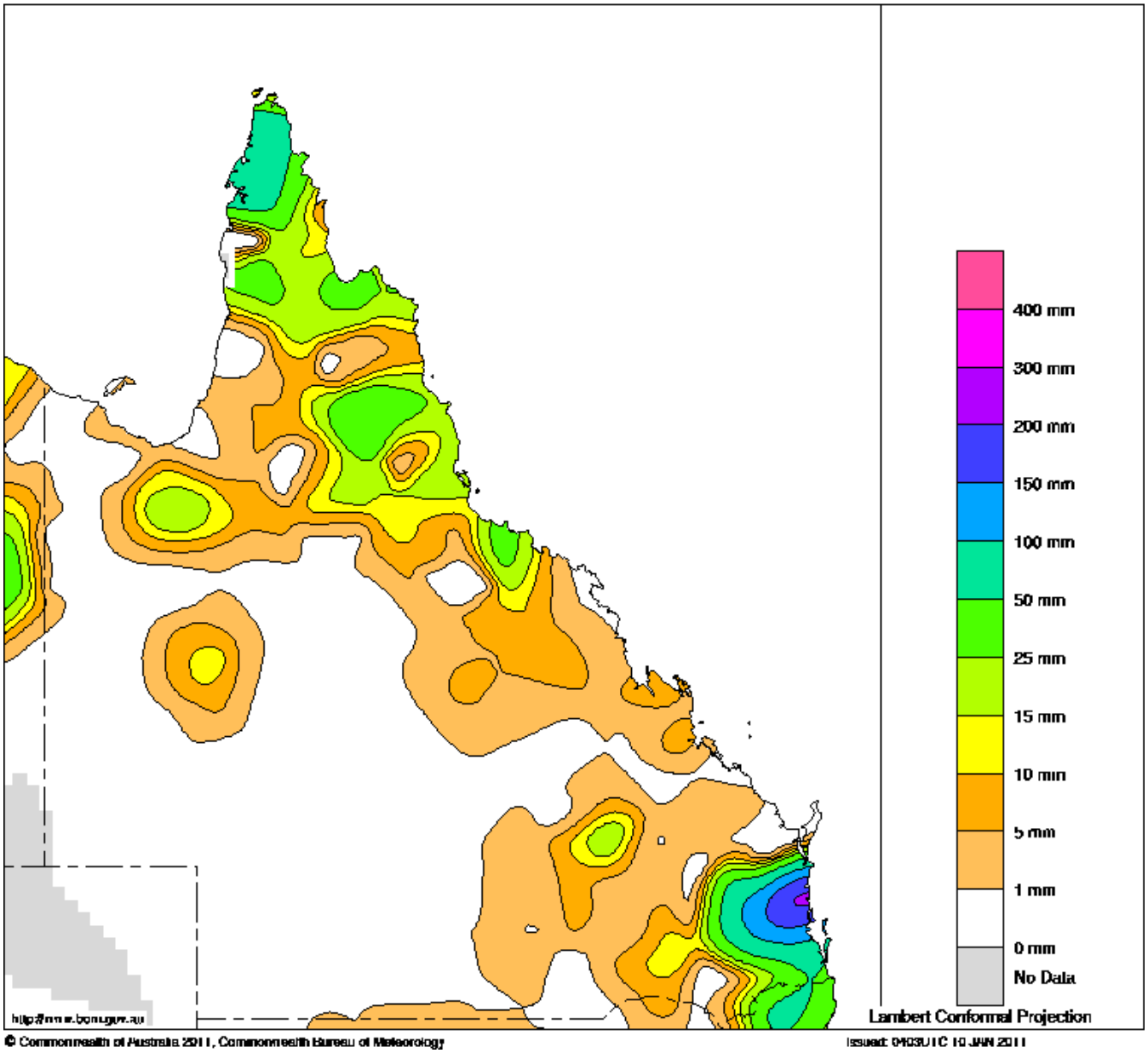


Figure 3.2.4 Queensland rainfall in the 24 hours to 9am on th 11th of January 2011.

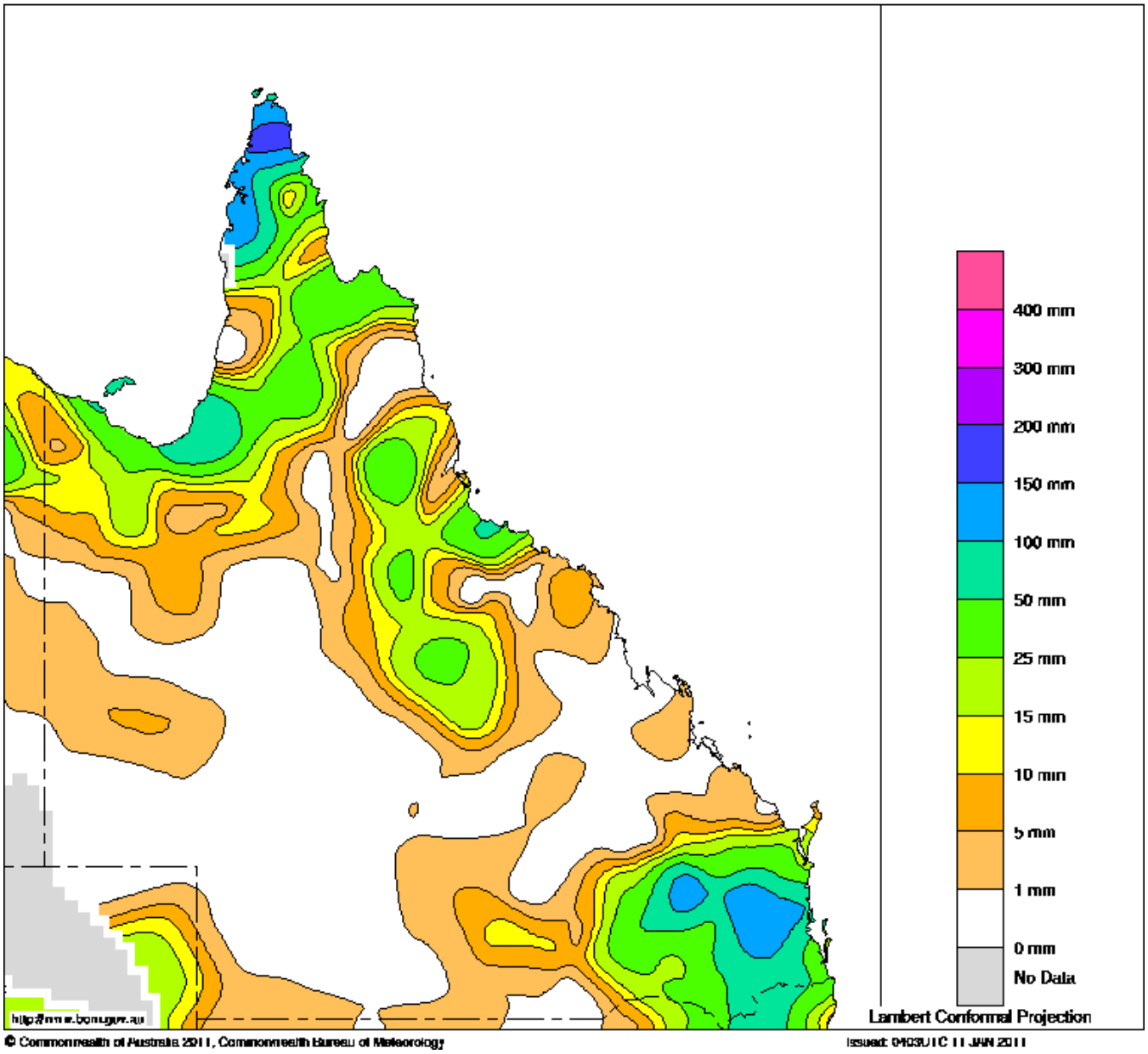
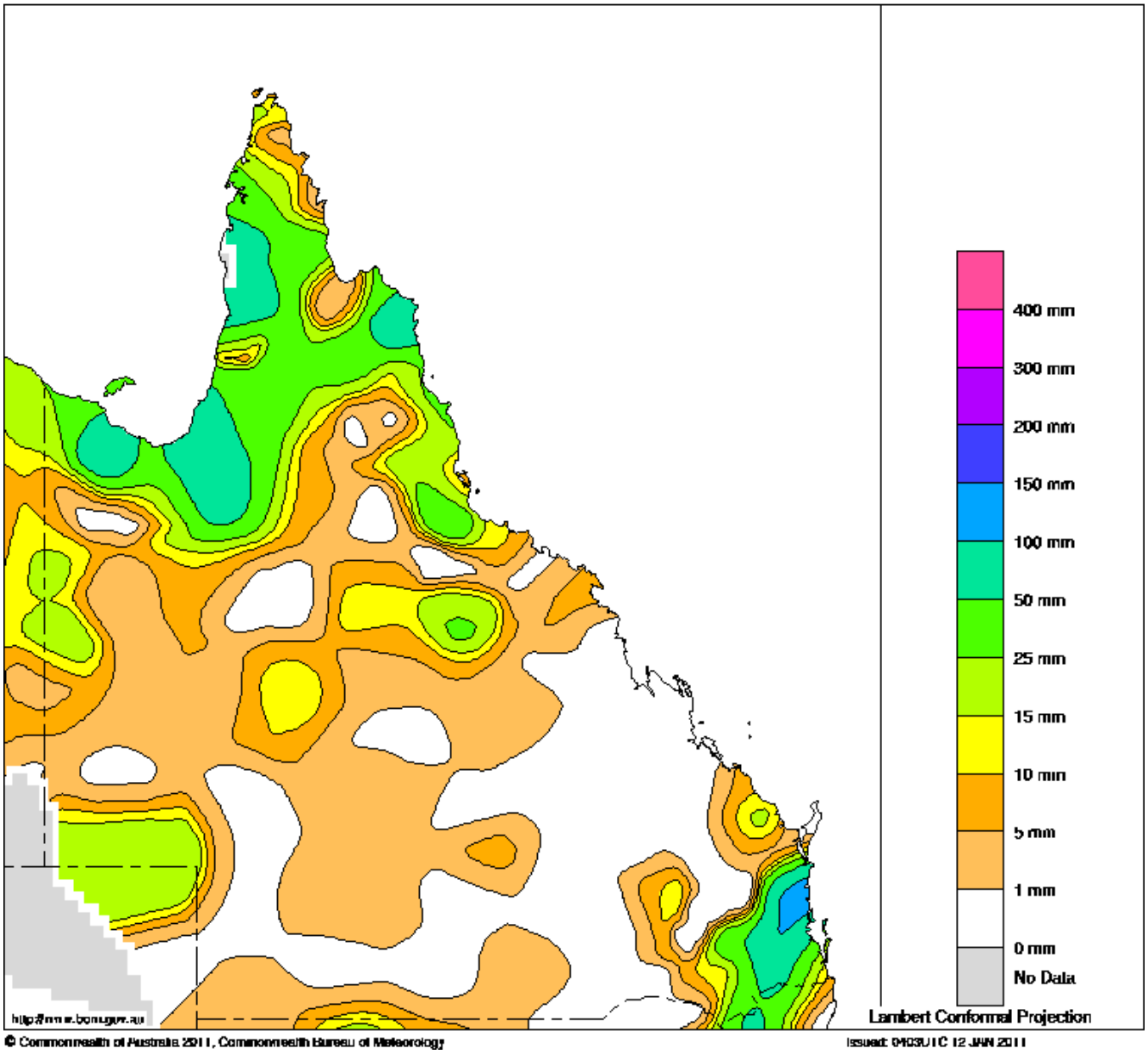


Figure 3.2.5 Queensland rainfall in the 24 hours to 9am on th 12th of January 2011.



3.3 Rainfall Intensity

The most intense rainfall over southeast Queensland associated with the Lockyer Valley Flash Flood and Brisbane River flood was recorded between the 10th and 12th of January.

The hourly hyetographs for various locations in the Brisbane, Stanley and Bremer River catchments and along Lockyer Creek along Intensity Frequency Duration (IFD) data analysis for the same locations are presented in Figures 3.3.1 to 3.3.10. These diagrams show the periods of most intense rainfall at these locations.

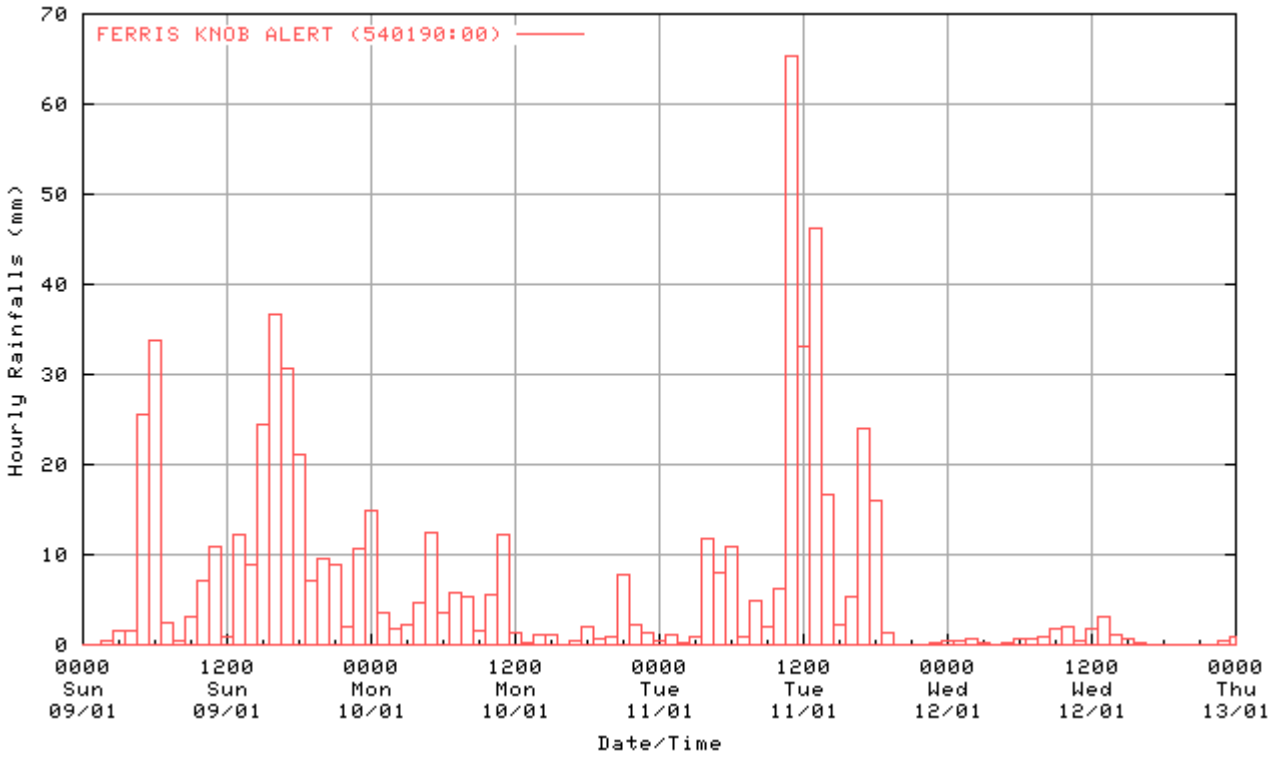
The IFD analysis show that many stations recorded rainfalls that were assessed as being greater than 1% Annual Exceedence Probability (AEP) intensity for various rainfall durations above 2 hours.

The most statistically significant short duration rainfall occurred on the 10th of January around Redbank Creek Alert, where the observed rainfall totals for 2 hours to 1:10pm were assessed as being greater than 1% AEP (100 year Average Recurrence Interval (ARI)) intensity.

Similarly, around Savages Crossing Alert, the observed rainfall for 1 and 2 hour durations to 8:35am and 8:40 am on the 11th of January respectively were assessed as being greater than 1% AEP as was the rainfall intensity for duration periods of 3, 6, 12, 24, 48 and 72 hours.

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.

Figure 3.3.1 Hourly hyetographs for Ferris Knob Alert and Woodford Alert-B in the Stanley River catchment.



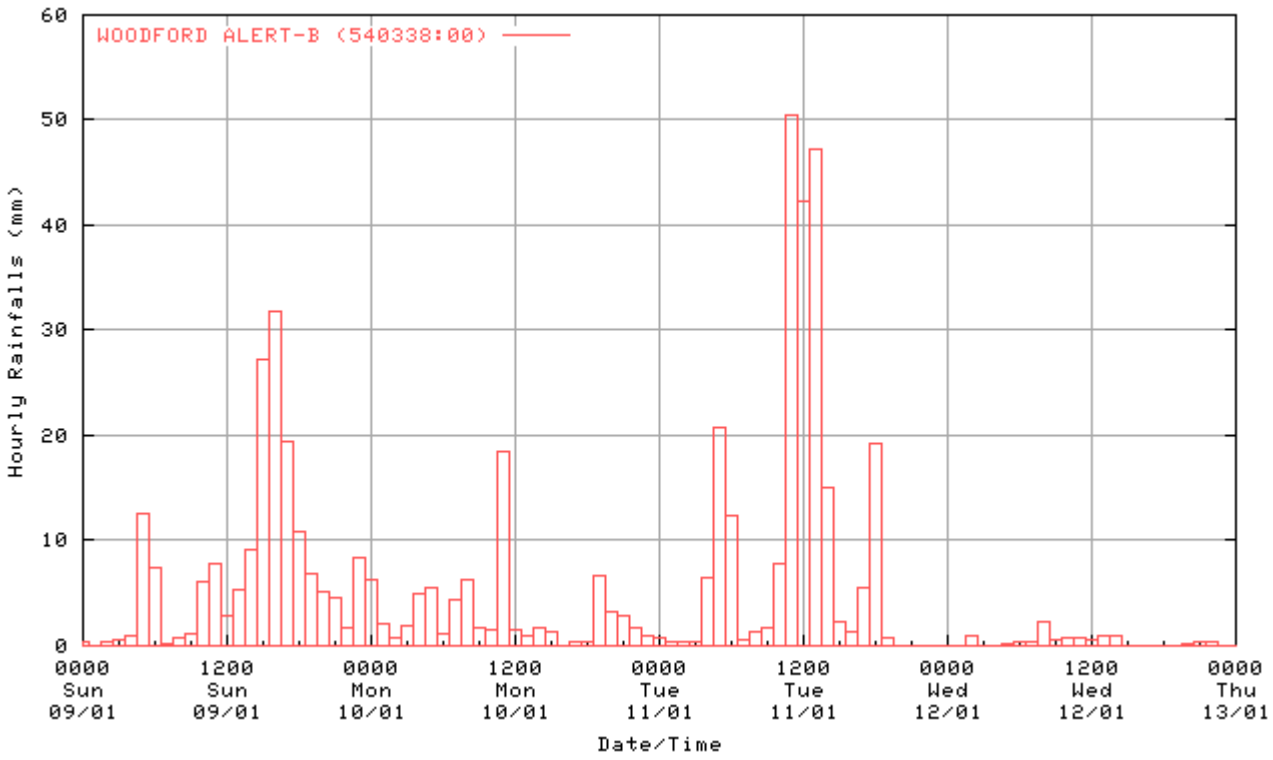


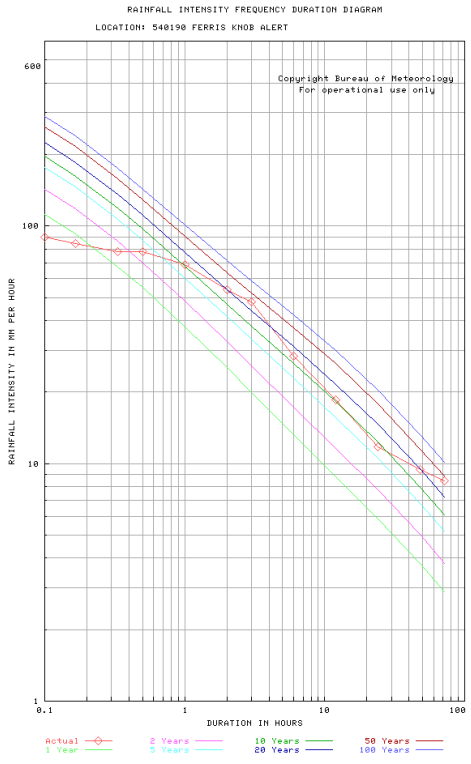
Figure 3.3.2 IFD rainfall analysis for Ferris Knob Alert and Woodford Alert-B in the Stanley River Catchment.

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540190 FERRIS KNOB ALERT

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
8	5 mins ending at 12:05:00 11/01/2011	< 1
9	6 mins ending at 12:06:00 11/01/2011	< 1
14	10 mins ending at 12:10:00 11/01/2011	< 1
26	20 mins ending at 10:50:00 11/01/2011	1-2
39	30 mins ending at 10:40:00 11/01/2011	2-5
69	60 mins ending at 11:10:00 11/01/2011	10-20
108	2 hours ending at 12:10:00 11/01/2011	20
144	3 hours ending at 12:55:00 11/01/2011	20-50
170	6 hours ending at 15:55:00 11/01/2011	10-20
223	12 hours ending at 18:35:00 11/01/2011	10-20
283	24 hours ending at 03:55:00 10/01/2011	5-10
452	48 hours ending at 14:05:00 11/01/2011	10-20
611	72 hours ending at 02:15:00 12/01/2011	20-50



RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540338 WOODFORD ALERT

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
12	5 mins ending at 10:40:00 11/01/2011	2
13	6 mins ending at 10:41:00 11/01/2011	2
20	10 mins ending at 10:45:00 11/01/2011	2-5
34	20 mins ending at 10:50:00 11/01/2011	5
44	30 mins ending at 11:00:00 11/01/2011	5-10
69	60 mins ending at 11:30:00 11/01/2011	10-20
122	2 hours ending at 12:25:00 11/01/2011	50-100
145	3 hours ending at 13:10:00 11/01/2011	50-100
165	6 hours ending at 14:55:00 11/01/2011	20-50
208	12 hours ending at 15:40:00 11/01/2011	10-20
252	24 hours ending at 18:15:00 11/01/2011	10-20
401	48 hours ending at 13:20:00 11/01/2011	20-50
486	72 hours ending at 01:45:00 12/01/2011	20-50

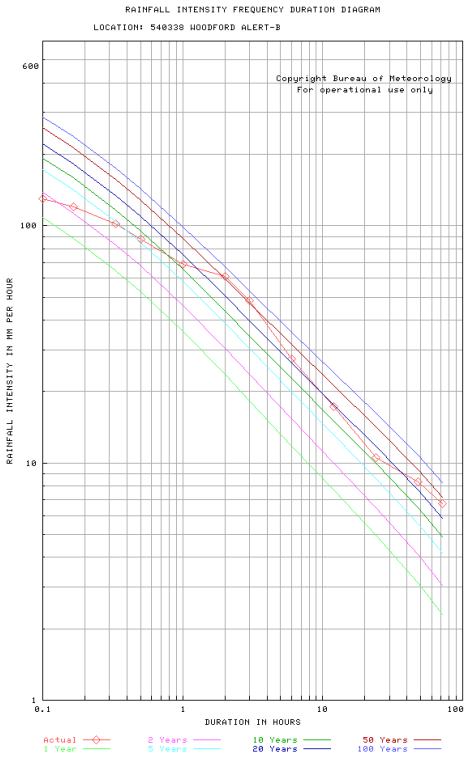


Figure 3.3.3 Hourly hyetographs for Gregor Creek Alert and Boat Mountain Alert in the Upper Brisbane River catchment.

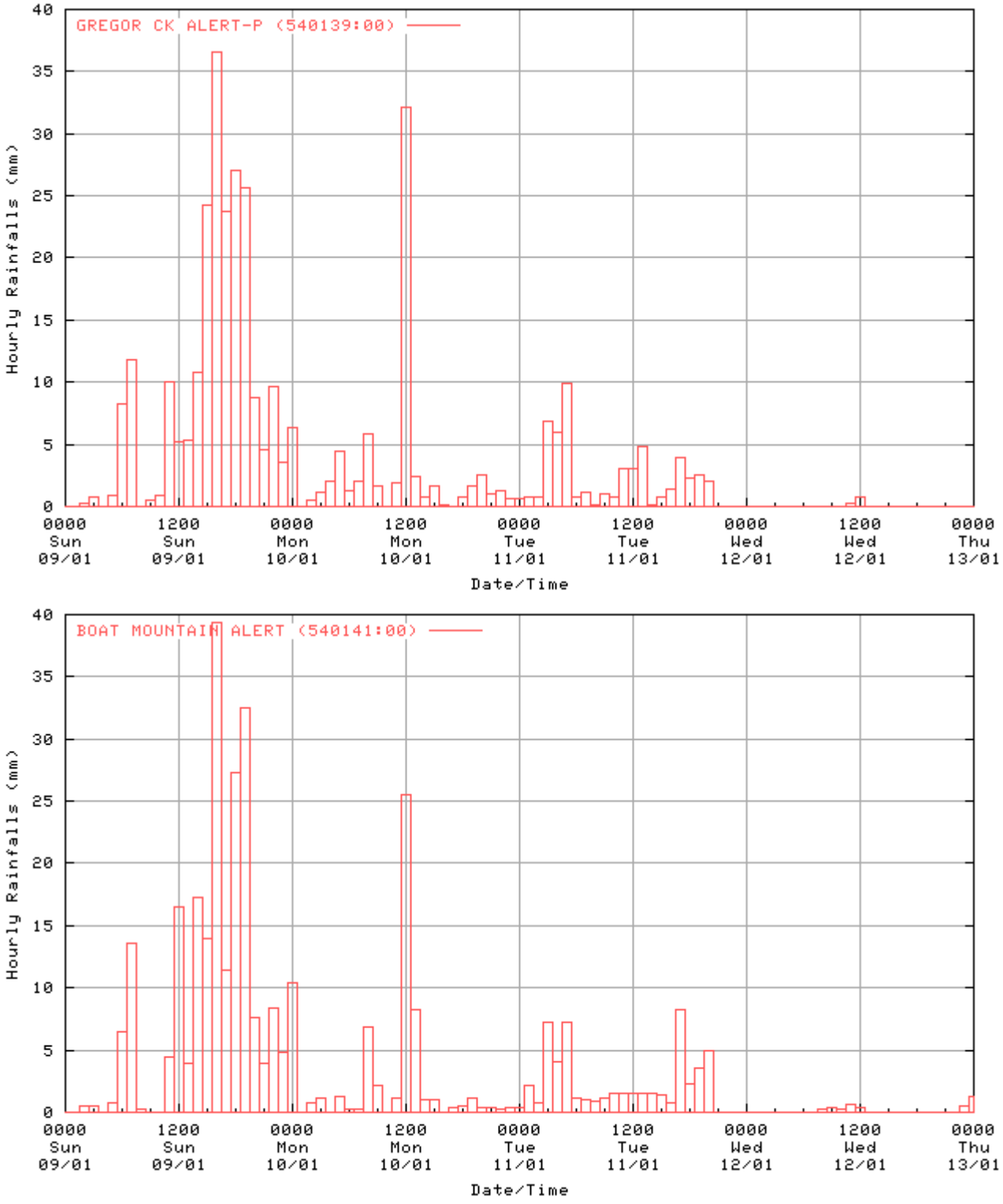


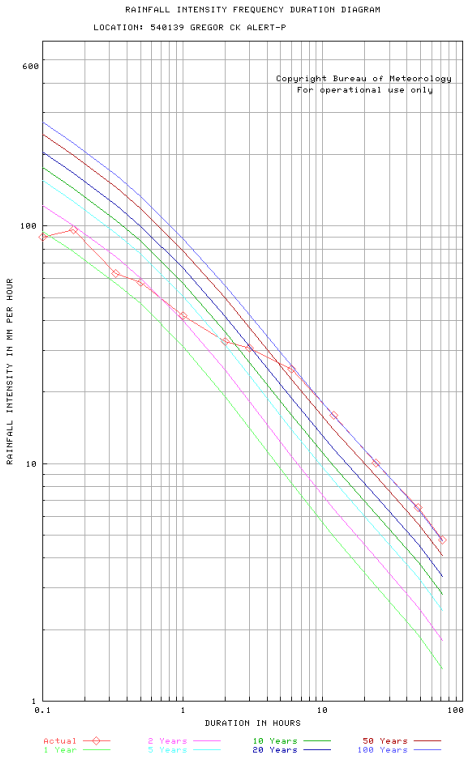
Figure 3.3.4 IFD rainfall analysis for Gregor Creek Alert and Boat Mountain Alert in the Upper Brisbane River.

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540139 GREGOR CREEK

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
8	5 mins ending at 15:05:00 09/01/2011	1
9	6 mins ending at 15:01:00 09/01/2011	1
16	10 mins ending at 15:05:00 09/01/2011	2
21	20 mins ending at 15:15:00 09/01/2011	1-2
29	30 mins ending at 15:25:00 09/01/2011	1-2
42	60 mins ending at 15:55:00 09/01/2011	2-5
65	2 hours ending at 16:55:00 09/01/2011	5-10
92	3 hours ending at 17:55:00 09/01/2011	10-20
150	6 hours ending at 18:55:00 09/01/2011	50-100
192	12 hours ending at 22:10:00 09/01/2011	> 100
241	24 hours ending at 12:15:00 10/01/2011	50-100
314	48 hours ending at 04:50:00 11/01/2011	> 100
343	72 hours ending at 00:00:00 12/01/2011	> 100



RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540141 BOAT MOUNTAIN ALERT

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
11	5 mins ending at 15:10:00 09/01/2011	2-5
12	6 mins ending at 15:11:00 09/01/2011	2
21	10 mins ending at 15:10:00 09/01/2011	5-10
33	20 mins ending at 15:20:00 09/01/2011	5-10
34	30 mins ending at 15:25:00 09/01/2011	2-5
39	60 mins ending at 15:55:00 09/01/2011	2
60	2 hours ending at 18:55:00 09/01/2011	2-5
78	3 hours ending at 18:00:00 09/01/2011	10
142	6 hours ending at 19:00:00 09/01/2011	50-100
189	12 hours ending at 22:35:00 09/01/2011	> 100
225	24 hours ending at 04:10:00 10/01/2011	50-100
298	48 hours ending at 05:25:00 11/01/2011	50-100
332	72 hours ending at 00:00:00 12/01/2011	50-100

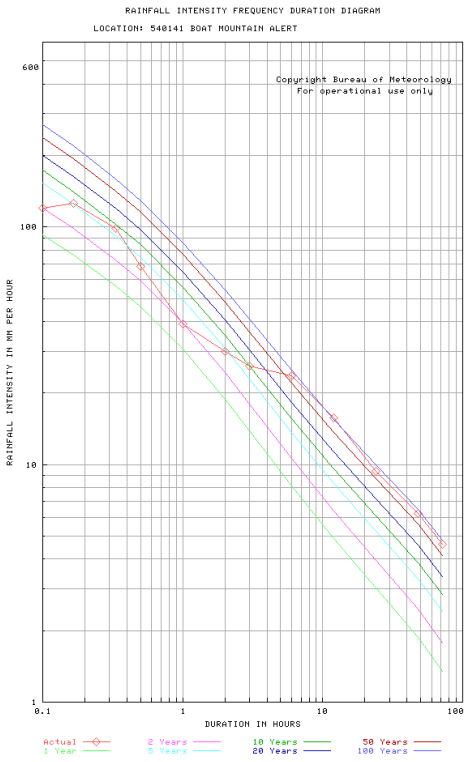


Figure 3.3.5 Hourly hyetographs for Redbank Creek Alert and Upper Sandy Creek Alert.

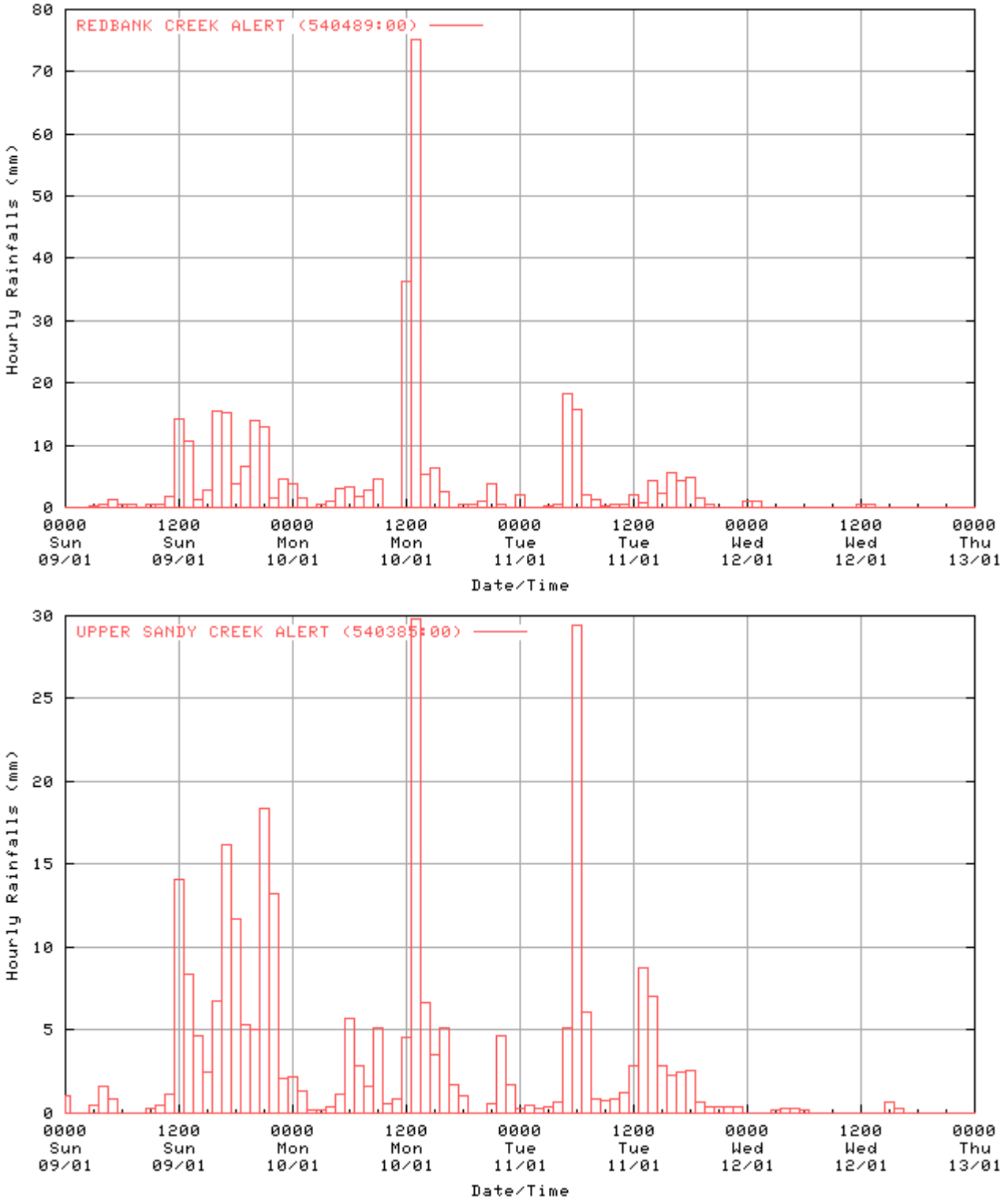


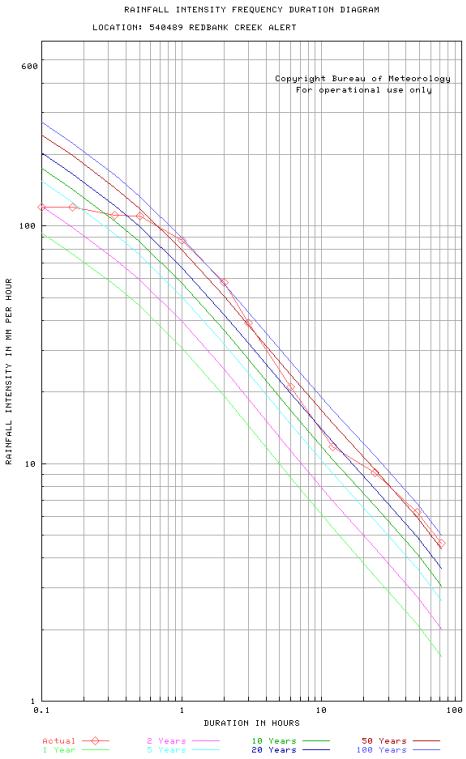
Figure 3.3.6 IFD rainfall analysis for Redbank Creek Alert and Upper Sandy Creek Alert.

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540489 REDBANK CREEK ALERT

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
11	5 mins ending at 12:15:00 10/01/2011	2-5
12	6 mins ending at 12:16:00 10/01/2011	2
20	10 mins ending at 12:00:00 10/01/2011	2-5
37	20 mins ending at 12:15:00 10/01/2011	10-20
55	30 mins ending at 12:20:00 10/01/2011	20-50
87	60 mins ending at 12:45:00 10/01/2011	50-100
116	2 hours ending at 13:10:00 10/01/2011	> 100
117	3 hours ending at 14:30:00 10/01/2011	50-100
126	6 hours ending at 15:55:00 10/01/2011	20-50
141	12 hours ending at 15:55:00 10/01/2011	10-20
219	24 hours ending at 15:15:00 10/01/2011	20-50
300	48 hours ending at 07:30:00 11/01/2011	50-100
332	72 hours ending at 00:45:00 12/01/2011	50-100



RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540385 UPPER SANDY CREEK ALERT

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
8	5 mins ending at 12:55:00 10/01/2011	1
8	6 mins ending at 12:56:00 10/01/2011	< 1
13	10 mins ending at 05:35:00 11/01/2011	1-2
20	20 mins ending at 05:40:00 11/01/2011	1-2
24	30 mins ending at 05:50:00 11/01/2011	1-2
30	60 mins ending at 05:55:00 11/01/2011	1
38	2 hours ending at 06:30:00 11/01/2011	1
41	3 hours ending at 14:05:00 10/01/2011	< 1
70	6 hours ending at 21:25:00 09/01/2011	2-5
108	12 hours ending at 23:05:00 09/01/2011	5-10
146	24 hours ending at 13:40:00 10/01/2011	5-10
237	48 hours ending at 11:05:00 11/01/2011	20-50
273	72 hours ending at 00:00:00 12/01/2011	20-50

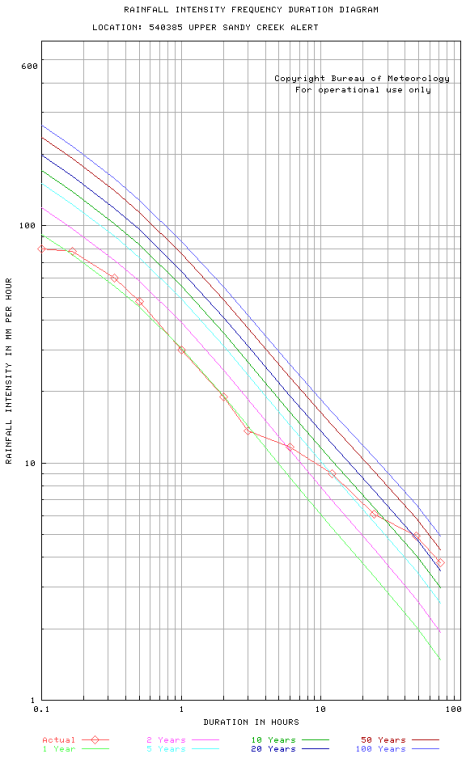
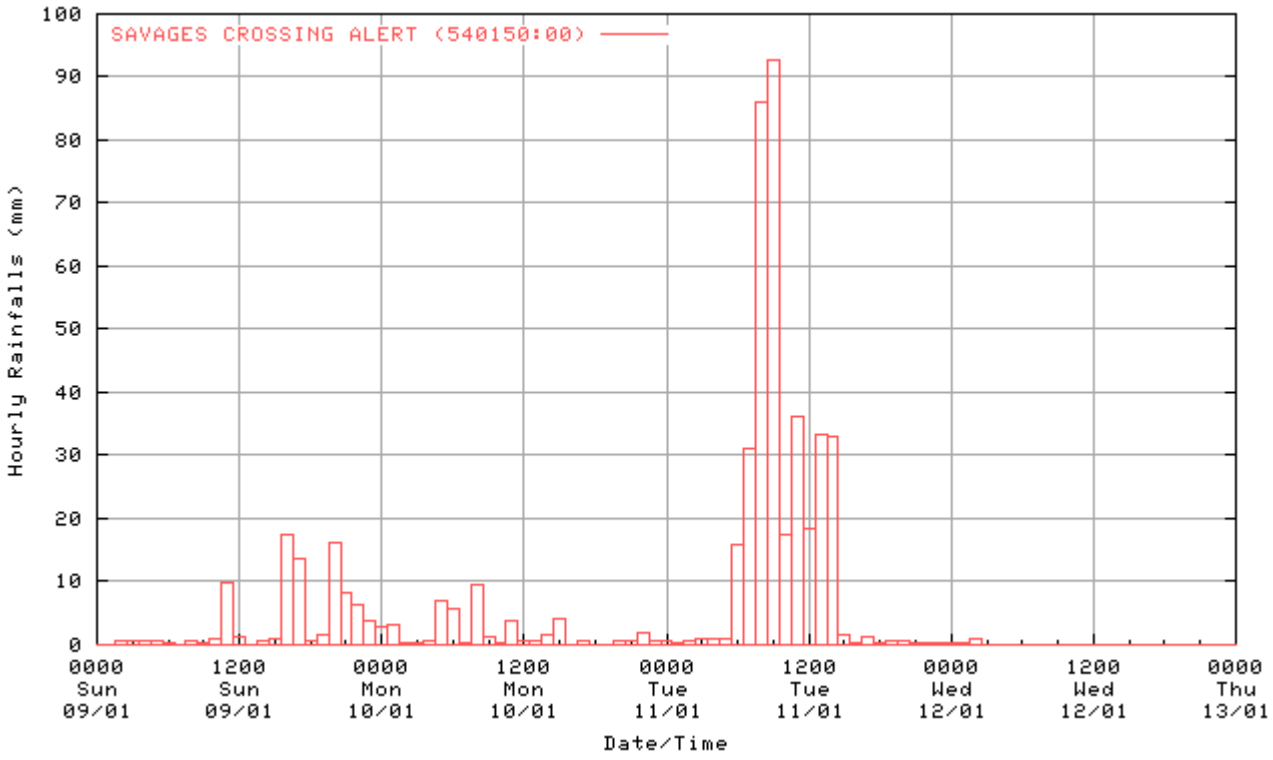


Figure 3.3.7 Hourly hyetographs for Savages Crossing Alert and Lyons Bridge Alert-B.



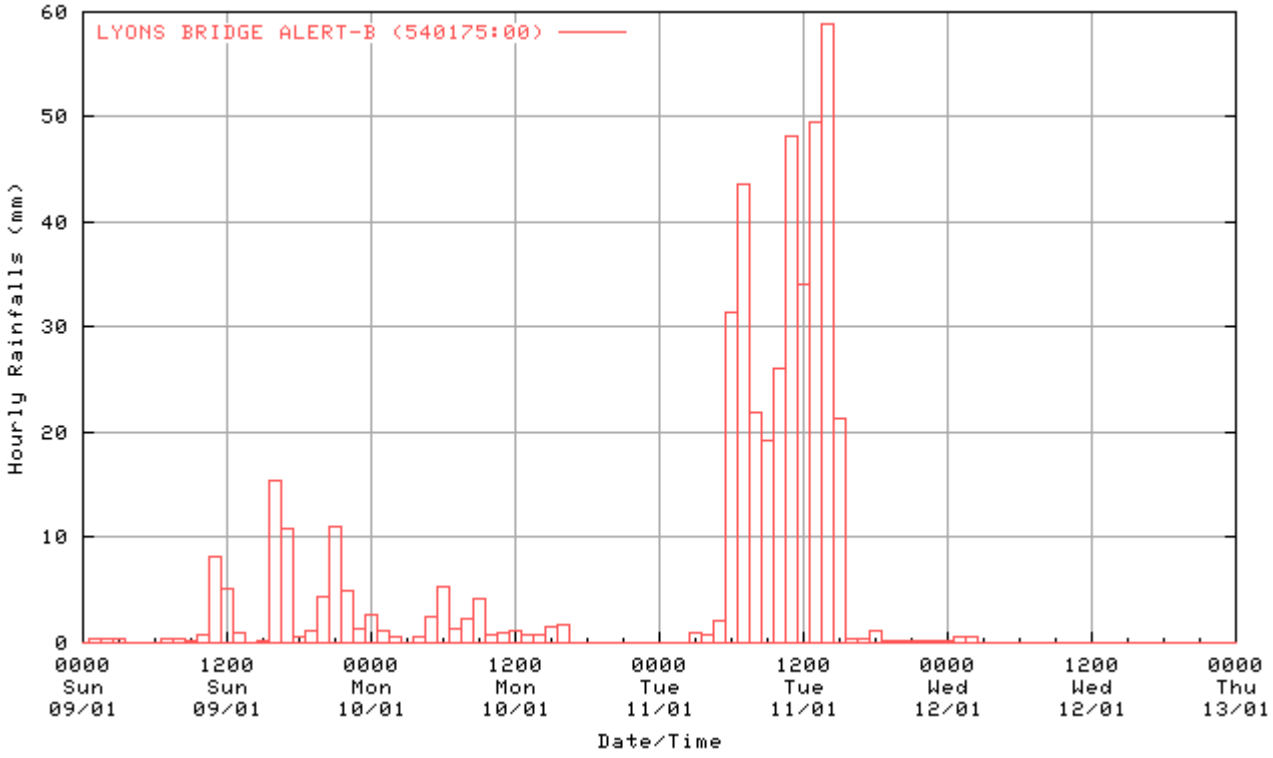


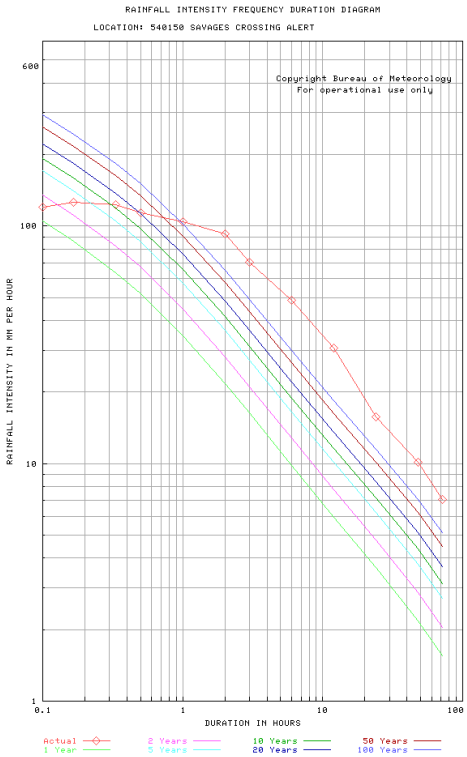
Figure 3.3.8 IFD rainfall analysis for Savages Crossing Alert and Lyons Bridge Alert-B.

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540150 SAVAGES CROSSING ALERT

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
10	5 mins ending at 08:25:00 11/01/2011	1-2
12	6 mins ending at 08:26:00 11/01/2011	1-2
21	10 mins ending at 08:25:00 11/01/2011	2-5
41	20 mins ending at 08:25:00 11/01/2011	10-20
57	30 mins ending at 08:35:00 11/01/2011	20-50
104	60 mins ending at 08:40:00 11/01/2011	> 100
186	2 hours ending at 08:50:00 11/01/2011	> 100
211	3 hours ending at 09:30:00 11/01/2011	> 100
293	6 hours ending at 13:10:00 11/01/2011	> 100
368	12 hours ending at 14:10:00 11/01/2011	> 100
378	24 hours ending at 14:05:00 11/01/2011	> 100
485	48 hours ending at 14:15:00 11/01/2011	> 100
507	72 hours ending at 02:00:00 12/01/2011	> 100



RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540175 LYONS BRIDGE ALERT-B

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
9	5 mins ending at 13:20:00 11/01/2011	1
11	6 mins ending at 13:21:00 11/01/2011	1-2
18	10 mins ending at 13:25:00 11/01/2011	2
31	20 mins ending at 13:30:00 11/01/2011	2-5
41	30 mins ending at 13:35:00 11/01/2011	5
73	60 mins ending at 13:30:00 11/01/2011	20
115	2 hours ending at 14:20:00 11/01/2011	50-100
148	3 hours ending at 13:40:00 11/01/2011	> 100
248	6 hours ending at 14:25:00 11/01/2011	> 100
358	12 hours ending at 14:45:00 11/01/2011	> 100
361	24 hours ending at 02:05:00 12/01/2011	> 100
436	48 hours ending at 14:45:00 11/01/2011	> 100
456	72 hours ending at 02:00:00 12/01/2011	> 100

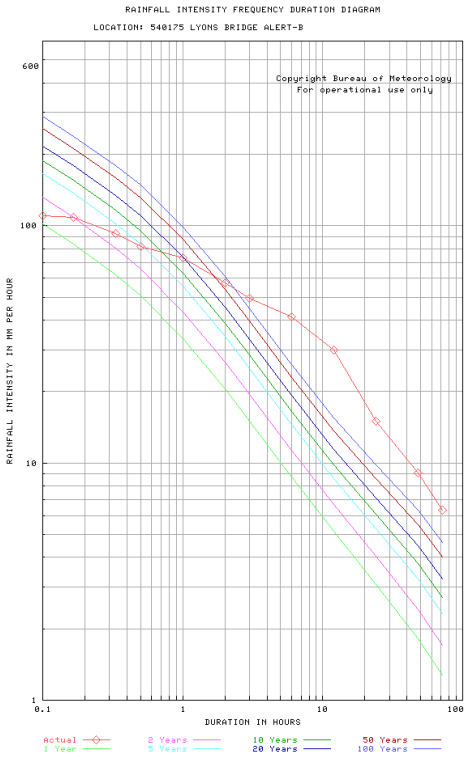


Figure 3.3.9 Hourly hyetographs for Mt Glorious Alert-P and Mt Mee Alert-P.

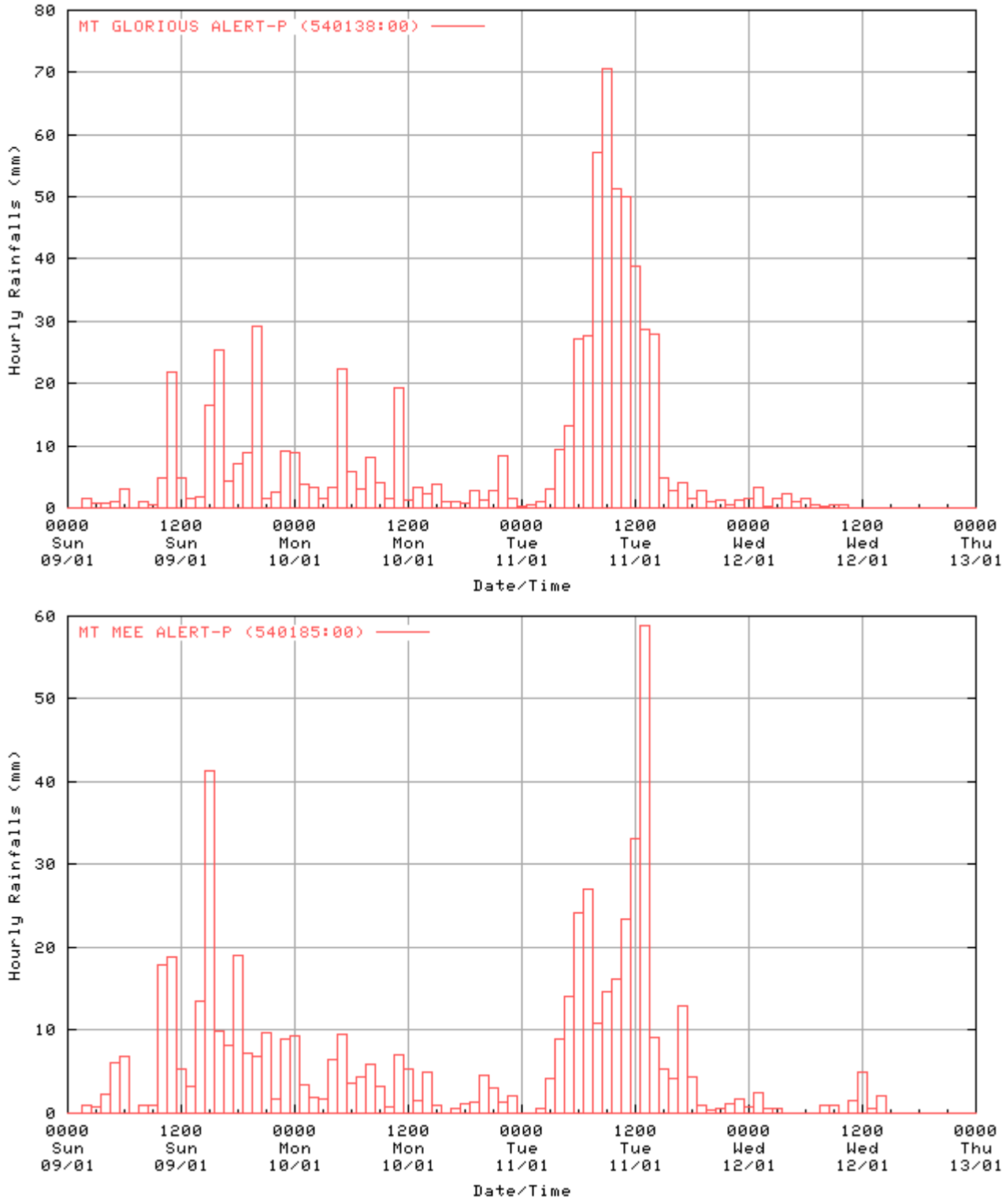


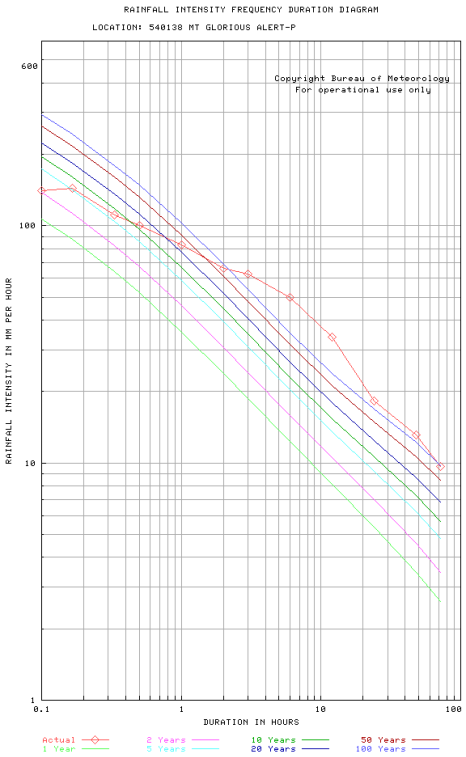
Figure 3.3.10 IFD rainfall analysis for Mt Glorious Alert-P and Mt Mee Alert-P.

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540138 MT GLORIOUS ALERT-P

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
Rainfall (mm)	Period Ending	ARI (years)
12	5 mins ending at 08:30:00 11/01/2011	2
14	6 mins ending at 08:31:00 11/01/2011	2-5
24	10 mins ending at 08:35:00 11/01/2011	5-10
37	20 mins ending at 08:35:00 11/01/2011	5-10
50	30 mins ending at 08:35:00 11/01/2011	10-20
83	60 mins ending at 08:40:00 11/01/2011	20-50
132	2 hours ending at 08:35:00 11/01/2011	50-100
188	3 hours ending at 10:25:00 11/01/2011	> 100
298	6 hours ending at 12:35:00 11/01/2011	> 100
408	12 hours ending at 14:30:00 11/01/2011	> 100
438	24 hours ending at 18:55:00 11/01/2011	> 100
630	48 hours ending at 14:30:00 11/01/2011	> 100

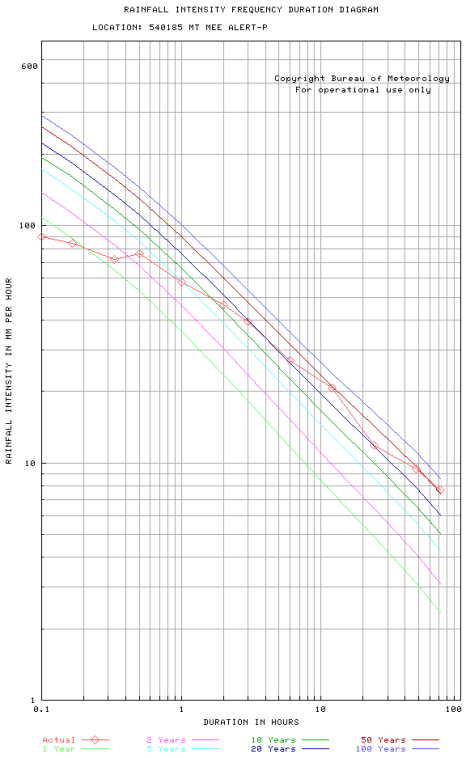


RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS

LOCATION: 540185 MT MEE ALERT-P

Analysis of the rainfall for the 96 hours to Thu Mar 4 09:00:00 2010

Rainfall (mm)	Period Ending	ARI (years)
7	5 mins ending at 12:25:00 11/01/2011	< 1
9	6 mins ending at 12:26:00 11/01/2011	< 1
14	10 mins ending at 12:30:00 11/01/2011	1
24	20 mins ending at 12:35:00 11/01/2011	1-2
38	30 mins ending at 12:30:00 11/01/2011	2-5
58	60 mins ending at 13:00:00 11/01/2011	5
93	2 hours ending at 12:55:00 11/01/2011	10-20
118	3 hours ending at 13:10:00 11/01/2011	10-20
162	6 hours ending at 13:30:00 11/01/2011	20-50
248	12 hours ending at 14:45:00 11/01/2011	20-50
284	24 hours ending at 17:50:00 11/01/2011	20-50
453	48 hours ending at 13:35:00 11/01/2011	20-50
554	72 hours ending at 00:55:00 12/01/2011	50-100



3.4 Rainfall Totals

During this heavy rainfall event several locations across southeast Queensland experienced record January 24-hour rainfall totals. New January records are shown in Table 3.4.1.

Daily rainfall records were also broken at Nanango and Linfield, listed in Table 3.4.2.

Rainfall totals for southeast Queensland for the first two weeks of January have been collated and presented in Tables 3.4.3 to 3.4.6. Highest daily rainfall totals recorded throughout the event include:

- 298 millimetres at Peachester to 9am on the 10th of January.
- 262 millimetres at Mt Glorious AL-P to 9am on the 11th of January.
- 249 millimetres at Wivenhoe Dam to 9am on the 11th of January.
- 246 millimetres at Savages Crossing AL to 9am on the 11th of January.
- 242 millimetres Lyons Bridge AL-B to 9am on the 12th of January.

The highest rainfall recorded in the period from the 1st of January to the 13th of January was 910 millimetres recorded at Peachester.

The abbreviations used in the following tables include:

- AL - ALERT Radio Telemetry
- TM - Telephone Telemetry
- AWS - Automatic Weather Station
- SYN - Bureau Synoptic Station

Note: * signifies automatic station, N/A signifies missing data. Multiple day totals are shaded and the highest daily rainfall and total rainfall for the catchment in the period is displayed in red.

Refer to the complete list of maps of the relevant river catchments and flood warning stations to locate stations listed in Tables 3.4.1 to 3.4.6.

Table 3.4.1 Record January 24-hour rainfalls over southeast Queensland set in January 2011.

Station name	New Record	Old Record
Lowood (Don Street)	203.2 mm on 12th Jan	194.0 mm 27th Jan 1974
Nanango (Wills St)	183.8 mm on 11th Jan	167.1 mm 20th Jan 1929
Peachester	298.0 mm on 10th Jan	265.0 mm on 27 Jan 1974
Lindfield	257.0 mm on 10th Jan	179.8 mm on 20th Jan 1929
Crows Nest	162.4 mm on 11th Jan	142.4 mm on 27 Jan 1974

Table 3.4.2 New record daily rainfall totals over southeast Queensland set in January 2011.

Station name	New Record	Old Record
Nanango (Wills St)	183.8 mm on 11th Jan	167.1 mm 20th Jan 1929
Lindfield	257.0 mm on 10th Jan	237.8 mm on 9th Feb 1999

Table 3.4.3 Daily Rainfall Totals to 13th of January – Upper Brisbane and Stanley Rivers.

Station Name	24 hours to 9am – January 2011													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Stanley/Upper Brisbane														
Peachester	11	28			1	5	45	32	**124**	**298**	155	211		**910**
Ferris Knob AL *	6	20	0	0	0	0	35	24	92	246	79	222	11	735
Woodford	6	17			1	20	36	27	74	219	115	**224**	7	746
Woodford AL-P *	1	29	0	0	1	8	40	43	38	181	87	197	5	630
Woodford AL-B *	1	29	0	0	1	8	40	43	38	182	87	197	5	631
Lindfield	9	10		5		41	34	17	84	257				456
Mt Kilcoy Weir TM *	4	19	0	29	0	12	29	23	36	233	105	49	5	544
Kilcoy AL *	1	10	0	30	0	12	37	19	24	183	99	61	2	478
Hazeldean AL *	0	13	0	4	0	10	40	33	20	202	123	91	5	541
Somerset Dam	1	9		0		30	24	55	30	156		66		371
Somerset Dam Hw AL-B *	1	6	0	0	0	21	20	43	24	159	136	66	2	478
Top Of Brisbane AL *		4	1	0	0	30	46	**71**	17	41	39	1	0	250
Monsildale AL *	1	5	0	1	0	25	43	62	51	118	163	5	2	476
Mt Stanley AL *	0	4	11	7	0	27	61	32	32	139	160	3	1	477
Blackbutt	0	14	0	0		39	54	40	31	149	110	15	3	456
Blackbutt AL *	1	18	1	0	0	47	**77**	30	35	160	108	13	1	491
Yarraman				22		34	48			233		160		497
Yarraman AL *	0	7	1	7	0	33	40	21	19	116	131	1	1	377
Cooyar Creek TM *	0	8	4	0	0	27	60	34	22	126	132	3	1	417
Cooyar Creek AL *	0	8	4	0	0	24	56	29	20	116	121	3	1	382
Linville TM *	0	2	0	1	0	29	33	33	36	136	51	36		357
Linville AL *	1	3	0	1	0	31	38	32	38	138	52	35	0	369
Devon Hills AL *	1	10	0	0	0	30	41	43	57	164	67	18	1	432
St Aubyns AL *	0	8	2	1	0	25	26	24	21	74	124	7	2	314
Mt Binga AL *	0	9	0	1	0	40	40	35	22	122	120	14	2	405
Nukinenda AL *	0	2	1	0	0	14	41	19	15	113	112	11	3	331
Boat Mountain TM *	0	3	0	0	0	37	48	20	26	206	63	27	3	433
Boat Mountain AL *	0	3	0	0	0	40	51	20	27	215	66	30	4	456
Glendale TM *	0	3	0	0	0	14	35	19	22	190	46	26	1	356
Pohlman Range AL *	1	12	0	4	0	30	49	18	31	234	83			461
Gregor Ck AL-P *	0	5	0	2	0	27	38	12	26	221	75	25	1	432
Crows Nest		7	11	2		53	19	26	14	148	162	27	0	469
Crows Nest AL *	0	2	3	1	0	43	21	18	11	117	99	19	1	335

Ravensbourne AL *	0	17	3	0	3	63	29	37	10	147	135	60	0	504
Cressbrook Dam AL *	0	1	0	0	0	34	28	15	8	97	122	13	1	319
Redbank Creek AL *	0	8	0	9	0	32	41	21	8	128	172	29	1	449
Rosentreters Bridge TM *	0	3	0	1	0	33	27	29	6	133	109	27	3	371
Rosentreters Bridge AL *	0	3	0	0	0	31	28	27	5	129	111	24	3	361
Toogoolawah AL *	0	5	0	1	0	17	27	22	12	179	104	27	2	396
Caboonbah AL *	0	6	0	5	0	23	24	39	11	130	153	55	0	446
Esk		6		2		45	29	28	5	131	150	39		436
Hays Landing AL *	0	3	0	0	0	13	23	13	6	137	138			333
Wivenhoe Dam	0	1		0		9	31	7	15	68	249			380
Wivenhoe Dam Hw AL-B *	0	0	0	0	1	8	29	7	4	89	136	199	0	473
Wivenhoe Dam Tw AL-P *	0	1	0	0	0	8	32	7	5	103	158	218	1	533
Wivenhoe Dam Tw AL-B *	0	1	0	0	0	8	32	8	4	100	157	207		517
Numerical Average	**1**	**8**	**1**	**3**	**0**	**26**	**38**	**28**	**28**	**156**	**115**	**66**	**2**	**457**
Maximum Rainfall	**11**	**29**	**11**	**30**	**3**	**63**	**77**	**71**	**124**	**298**	**249**	**224**	**11**	**910**

Note: The rainfall data for Yarraman includes:

- 2-day total of 22 millimetres on the 4th January.
- 2-day total of 233 millimetres on the 10th of January.
- 2-day total of 160 millimetres on the 12th of January.

Table 3.4.4 Daily Rainfall Totals to 13th of January – Lower Brisbane River.

Station Name	24 hours to 9am - January 2011													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Lower Brisbane														
Toowoomba AL *	0	8	1	0	0	43	19	26	9	79	117	22	1	325
Helidon TM *	0	8	1	1	0	38	37	23	3	57	29			197
Upper Sandy Creek AL *	0	10	0	12	1	33	23	34	8	131	105	35	1	393
Sandy Creek Road AL *	0	11	0	0	0	32	44	21	4	80	86	56	0	334
Little Egypt AL *	0	2	5	2	3	50	20	8	1	30	94	29	2	246
Tenthill TM *	0	6	0	7	2	20	48	30	1	67	76	67	1	325
Gatton AL *	0	8	0	5	0	18	36	21	4	87	68	88	0	335
Gatton AWS *	0	7	0	3	0	17	33	16	4	87	79			247
Mt Castle AL *	0	27	0	1	1	50	56	18	5	88	194	123	22	**585**
Thornton AL *							6	13	7	46	126	76	1	275
Showground Weir AL *	0	2	0	7	0	13	27	20	1	67	105	119	0	361
Bill Gunn Dam AL *	0	5	0	8	0	14	32	23	2	75	101	133	0	393
Lake Clarendon Dam AL *	0	6	0	0	0	22	35	19	6	88	78	134	0	388

Glenore Grove AL *	0	2	0	7	0	15	23	13	4	86	78	129	0	357
Mt Tarampa		5					26	22	3	102				158
Lyons Bridge AL-P *	0	2	0	0	0	27	23	11	7	75	114	214	0	473
Lyons Bridge AL-B *	0	1	0	1	0	28	26	13	6	85	128	**242**	0	530
Buaraba AL *	0	7	0	8	0	43	40	13	9	114	48	96	0	378
O'reilly's Weir TM *	0	0	0	0	0	8	39	8	3	110	162	198		528
O'reilly's Weir AL *	0	0	0	0	0	10	36	7	4	97	150	206		510
Lowood		5		3		13	32	13	6	102	181	203		558
Lowood AL-P *	0	3	0	1	0	8	24	8	7	98	165	196	0	510
Fernvale		4				6	30	9	7	126				182
Savages Crossing AL *	0	3	0	0	0	4	27	6	6	113	**246**	145	0	550
Marburg AL *	0	1	0	4	0	16	17	23	5	86	187	170	0	509
Lake Manchester AL *	0	5	0	0	0	4	31	7	8	88	60	102	2	307
Mt Crosby AL *	0	4	0	0	0	5	40	12	6	85	23	72	0	247
Colleges Crossing AL *	0	4	0	3	0	6	52	15	10	115	33			238
Karalee		10		3	1		40	28	6	80	51			219
Adams Bridge TM *	0	2	0	7	1	35	34	16	3	42	105	100	1	346
Adams Bridge AL *	0	2	0	6	1	31	32	13	3	37	94	91	1	311
Stokes Crossing AL *	0	2	0	17	0	40	29	9	2	57	90	109		355
Spressers Bridge AL *	0	2	0	3	0	24	21	19	5	75	72	176	0	397
Grey's Plains Road AL *	0	5	0	16	14	24	36	7	4	56	112	134	0	408
Grandchester AL *	0	6	0	3	0	21	27	15	3	81	166	171	0	493
Tallegalla AL *	0	6	0	0	0	15	20	22	6	76	177	197	0	519
Rosewood Wwtp AL *	0	2	0	3	0	22	17	15	4	53	93	179	0	388
Rosewood Detention Basin AL	0	2	0	2	0	14	18	14	4	68	109	187	0	418
Rosewood AL-B *	0	3	0	2	0	24	17	19	5	73	62	167	0	372
Rosewood AL *	0	2	0	2	0	21	14	17	4	65	55	152	0	332
Walloon AL-P *	0	2	0	4	0	27	16	15	7	68	43	114	0	296
Walloon AL-B *							7	15	7	68	42	115	0	254
Tarome		11		1		36		9	2	26	87	90		263
Tarome AL-P *	0	9	0	1	0	31	57	9	2	26	82	82	0	299
Moogerah Dam		9				13	**64**	17	1	14	73	102		293
Moogerah Dam AL *	0	9	0	12	0	25	56	16	1	23	94	78	0	314
Toohills Crossing TM *	0	8	0	3	0	13	45	6	2	23	82	76	0	258
Kalbar Weir AL *	0	6	0	0	0	43	39	7	5	15	69	55	0	239
Harrisville				4		11	23	10	5	12		119	0	183
Harrisville AL *	0	1	0	0	0	15	19	10	1	31	76	53	0	206

Harrisville AL-B *	0	2	0	0	0	15	20	11	2	30	63	52	0	195
Amberley AL-P *	0	0	0	7	0	41	15	16	3	67	34	86	1	270
Amberley AL-B *	0	0	0	7	0	39	13	16	3	61	33	80	1	253
Amberley (Dnr) TM *	0	0	0	4	0	43	16	16	4	45	37	94	0	259
Amberley AWS *	0	5	0	3	0	21	17	14	11	70	39			180
Washpool AL *	0	1	0	0	0	12	19	10	1	26	59	37	1	166
Peak Crossing AL *	0	0	0	0	0	17	16	8	3	42	40	39	0	165
Loamside AL *	0	0	0	6	0	24	13	16	4	70	31	106	0	270
One Mile Bridge AL *	0	1	0	4	0	8	17	11	8	64	29	74	0	216
Brassall(Hancocks Br) AL *	0	4	0	0	0	4	19	15	5	72	26	89	0	234
Moggill AL-P *	0	4	0	0	0	4	39	8	7	58	36	52	0	208
Jindalee AL *	0	3	0	5	0	25	36	8	8	74	27	47	0	233
Brisbane City AL *	1	5	0	0	0	49	36	12	16	106	21	40	0	286
Numerical Average	**0**	**4**	**0**	**3**	**0**	**23**	**29**	**15**	**5**	**69**	**86**	**111**	**1**	**326**
Maximum Rainfall	**1**	**27**	**5**	**17**	**14**	**50**	**64**	**34**	**16**	**131**	**246**	**242**	**22**	**585**

Note: Data for the Lower Brisbane catchment includes:

- 2-day total of 5.6 millimetres at Fernvale on the 6th of January.
- 2-day total of 119 millimetres at Harrisville on the 12th of January.

Table 3.4.5 Daily Rainfall Totals to 13th of January – Ipswich and Brisbane Creeks.

Station Name	24 hours to 9am - January 2011													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Ipswich/Brisbane Creeks														
Churchill AL *	0	0	0	3	1	6	18	12	6	59	25	59	0	189
Bundamba (Barclay St) AL *	0	1	0	0	0	4	39	10	4	74	32	60	0	224
Bundamba (Hanlon St) AL *	0	1	0	4	1	5	34	6	2	56	20	47	0	176
Bellbird Park AL *	0	3	0	0	0	5	23	18	6	63	26	47	1	192
Opossum AL *	0	2	0	1	0	5	24	11	3	50	20	34	1	151
Carole Park AL *	0	1	0	6	1	12	81	9	7	74	28	41	0	260
Wacol AL *	0	4	0	4	4	6	40	9	6	73	20	48	1	215
Jingle Downs AL *	0	5	0	2	1	6	13	21	4	42	60	25	0	179
Greenbank(Thompson Rd AL *	0	6	0	0	0	8	22	17	2	69	37	39	1	201
Greenbank		7		7			27	15	7		**103**	32		198
Calamvale AL *	0	4	0	0	0	25	49	10	11	60	20	25	0	204
Archerfield AWS *	0	7	0	3	0	20	45	11	9	61	28	31	1	216
Inala AL *	0	2	0	4	0	14	106	10	13	77	32	37	0	295
Corinda High AL *	0	3	0	5	0	35	52	8	9	68	20	37	2	239
Holland Park West AL *	0	6	0	0	0	40	26	7	3	88	20	13	0	203

Greenslopes	1	5				51	39	8	4	87	13			209
Brisbane Rpa Hospital						57	44			103	13	39		256
East Brisbane AL *	0	2	0	0	0	37	33	12	9	100	16	38	0	247
Brisbane AWS *	0	3	0	0	0	42	36	12	12	111	15	40	0	272
Eight Mile Plains AL *	0	6	0	0	0	44	30	13	7	61	17	19	1	198
Wishart(Greenwood St) AL *	0	4	0	0	0	42	33	11	4	69	16	19	3	201
Mansfield AL *		7	0			27	9		0	69	34	0		146
Chandler AL *	1	7	0	0	1	62	36	6	5	88	8	5	3	222
Bulimba AL *	1	8	0	0	4	95	43	15	16	124	19	43	0	368
Carindale AL *	1	6	0	0	0	55	51	9	10	94	17	32	1	276
Camp Hill AL *	1	4	0	0	0	48	39	10	10	102	20	8	2	244
Lytton AL *	2	18	0	0	11	98	72	9	13	92	17	27	0	359
Caltex Lytton		18			12	76	68	12	28	83		29		326
Capalaba	1	13					81		4					99
Ransome AL *	1	9	0	0	0	95	71	9	7	103	8	26	0	329
Manly		10				90	57	4	15		10			186
Manly AL *	1	8	0	0	0	91	56	5	17	100	11	25	0	314
Wynnum Bowls Club AL *	1	8	0	0	8	91	59	8	15	89	13	24	0	316
Pullenvale AL *	1	12	0	2	2	7	46	13	7	106	33	72	0	301
Kenmore Hills AL *	1	8	0	5	0	34	37	9	6	104	33	65	0	302
Gold Ck Reservoir AL *	2	21	0	4	1	22	50	20	14	134	39	107	2	416
Green Hill Res AL *	1	3	0	5	0	21	58	8	7	113	33	57	0	306
Long Pocket	2	2		2		33	43	7	3	89	17			197
Toowong AL *	1	3	0	3	0	19	45	14	13	102	29	55	1	285
Three Ways AL *	3	26	0	10	0	16	58	23	14	**155**	70	**131**	3	**509**
Enoggera Dam AL *	2	14	0	11	0	33	46	20	16	142	30	90	3	407
Mt Coot-tha AL *	1	14	0	31	0	27	49	25	14	123	37	71	1	393
Kelvin Grove	1	10		1		67	48	52	**90**	130		74		473
Alderley AL *	2	8	0	7	0	31	49	20	16	132	24	53	2	344
Ithaca Creek TM *	0	9	0	4	0	21	22	21	3	90	23	54	1	248
Bowen Hills AL *	0	8	0	1	0	85	48	15	17	103	20	47	0	344
Upper Kedron AL *	2	22	0	20	0	16	47	10	13	128	42	77	2	379
Mitchelton(Osborne Rd AL *	3	20	0	5	0	21	39	12	17	138	27	61	0	343
Alderley	3	12		3		26	54	19	23	123	28	54		345
Gordon Park AL *	2	8	0	0	0	40	51	18	12	123	22	46	0	322
Toombul(Nudgee Rd) AL *	2	9	0	0	0	42	97	14	11	115	22	41	0	353
Brisbane Airport AWS *	3	14	0	0	5	50	68	8	12	113	20	29	0	322

Luggage Point AL *	3	11	0	0	0	50	16	5	17	112	19	0	0	233
Frank Sleeman Park AL *	4	25	0	0	0	34	114	3	15	121	20	28	0	364
Geebung AL *	4	19	0	0	0	35	131	8	15	136	25	41	0	414
Boondall	6	26				45	95	4	12	100	27	38	2	354
Everton Hills AL *	4	26	0	14	0	23	56	6	18	140	30	65	1	383
Aspley Reservoir AL *	4	28	0	2	0	16	54	5	18	131	28	46	0	332
Deagon AL *	5	27	0	0	0	24	90	4	10	94	29	38	1	322
Bracken Ridge Res AL *	4	29	0	0	0	13	117	6	10	100	19	0		298
Numerical Average	**1**	**10**	**0**	**3**	**1**	**37**	**51**	**12**	**12**	**98**	**26**	**43**	**1**	**283**
Maximum Rainfall	**6**	**29**	**0**	**31**	**12**	**98**	**131**	**52**	**90**	**155**	**103**	**131**	**3**	**509**

Note: Data for the Ipswich and Brisbane Creeks includes:

- 2-day total of 103 millimetres at Greenbank on the 11th of January.
- 5-day total of 57 millimetres at Brisbane RPA Hospital on the 6th of January.
- 2-day total of 103 millimetres at Brisbane RPA Hospital on the 10th of January.

Table 3.4.6 Daily Rainfall Totals to 13th of January – Pine and Caboolture Rivers.

Station Name	24 hours to 9am - January 2011													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Pine/Caboolture														
Mt Glorious										188	252	208		648
Mt Glorious AL-P *	6	48	0	0	0	30	46	17	24	203	262	230	2	**868**
Mt Nebo	36					11	62	12	17	163	109	145	4	559
Cedar Ck Rd AL *	1	23	0	11	0	18	47	8	15	165	87	122	3	500
Samford AL *	0	19	0	5	0	23	41	6	12	132	54	99	2	393
Samford Village AL *	0	20	0	6	0	16	45	5	6	153	48	103	3	405
Clear Mountain AL *	1	16	0	12	0	8	37	2	13	116	68	97	1	371
Drapers Crossing AL *	2	19	0	13	0	3	48	9	10	124	47	87	2	364
Cash's Crossing AL *	3	19	0	3	0	13	38	3	14	124	37	62	3	319
Normanby Way AL *	3	16	0	0	0	26	73	3	16	105	39	48	1	330
Kluvers Lookout AL *	3	17	0	3	0	5	53	24	18	124	164	191	4	606
Laceys Creek AL *	1	17	0	9	0	4	40	26	22	145	187	188	1	640
Baxters Creek AL *	2	15	0	1	0	4	37	24	17	127	172	195	1	595
Dayboro AL *	4	18	0	4	0	14	43	29	20	149	197	228	0	706
Dayboro Wwtp AL *	3	18	0	7	0	16	53	28	20	142	208	176	1	672
Mt Samson Rd AL *	2	16	0	3	0	20	42	24	19	146	185	149	4	610
North Pine Dam AL *	1	15	0	0	0	5	45	5	11	83	52	68	0	285
North Pine Dam AL-B *	1	14	0	0	0	5	45	5	11	83	53	68	0	285

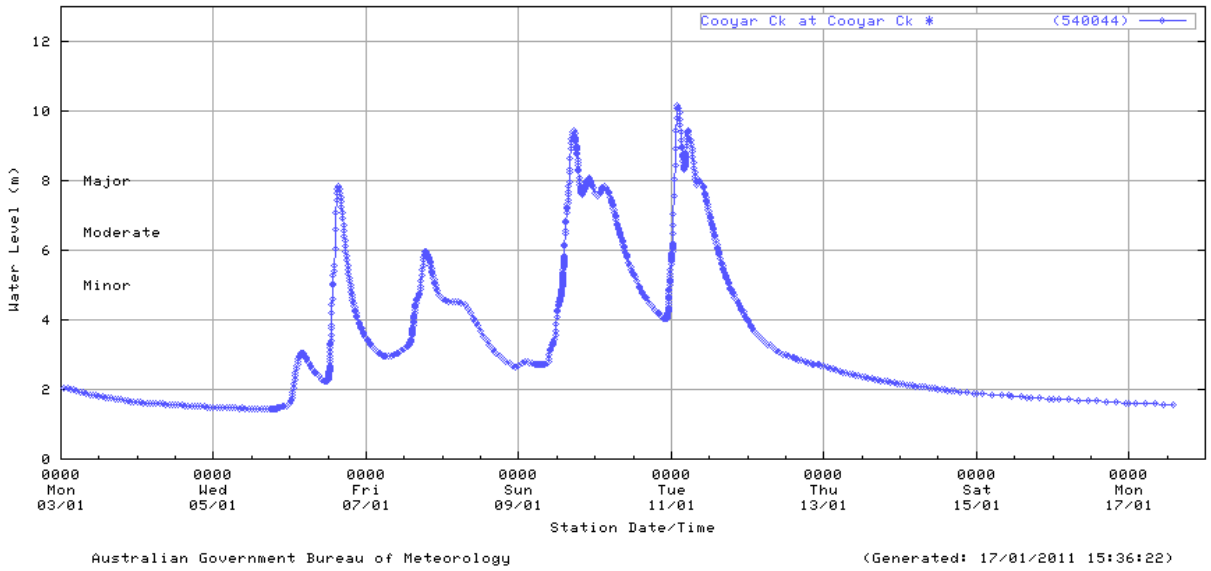
Narangba	2	14				2	58	19	12	132	104	102	1	446
Browns Creek AL *	4	19	0	0	0	2	69	14	14	132	99	102	1	456
Lake Kurwongbah AL *	3	6	0	0	0	6	52	6	13	101	33	71	1	292
Youngs Crossing AL *	4	26	0	0	0	7	47	8	15	123	74	77	1	382
Strathpine	3	30					13	7	14	134	84	87	1	372
Petrie AL *	4	26	0	0	0	6	60	5	14	122	61	55	1	354
Lawnton AL *	5	24	0	0	0	7	73	5	14	122	51	48	0	349
John Bray Park AL *	4	21	0	0	0	18	82	5	15	106	44	52	1	348
Murrumba Downs AL *	5	19	0	0	0	8	85	3	15	117	40	40	1	333
Lipscombe Rd AL *	9	33	0	0	2	6	34	9	17	120	41	46	1	318
Woody Point AL *	7	21	0	0	0	5	41	1	20	111	31	26	1	264
Redcliffe AWS *	11	40	0	0	0	1	41	3	15	104	39	22	0	276
Mt Mee AL-P *	4	16	0	5	0	10	55	48	30	**221**	140	178	9	716
Mt Mee AL-B *	4	16	0	5	0	10	55	48	30	220	140	179	9	716
Moorina AL *	2	16	0	0	0	3	56	25	18	150	202	217	2	691
Burpengary(Rowley Rd) AL *	4	11	0	0	1	1	48	11	12	68	11	3	0	170
Burpengary (Dale St) AL *	3	13	0	0	7	2	48	7	33	123	80	68	1	385
Deception Bay AL *	10	42	0	0	2	3	41	10	27	128	41	46	1	351
Round Mt Reservoir AL *	6	19	0	0	1	1	88	35	33	158	159	88	1	589
Wamuran AL *	2	25	0	0	4	3	**89**	**60**	27	202	194	182	0	788
Upper Caboolture AL *	2	5	0	0	8	5	72	30	22	142	201	125	0	612
Caboolture Wtp AL *	4	11	0	0	1	5	76	26	25	154	185	94	0	581
Morayfield AL *	4	14	0	0	3	4	65	13	27	144	146	89	3	512
Bribie Island AL *	19	18	0	2	18	10	49	6	39	104	40	22	0	327
Beerburrum AWS *	6	18	0	0	0	2	83	34	34	133	180			490
Numerical Average	**5**	**20**	**0**	**2**	**1**	**8**	**54**	**16**	**19**	**136**	**108**	**107**	**2**	**472**
Maximum Rainfall	**36**	**48**	**0**	**13**	**18**	**30**	**89**	**60**	**39**	**221**	**262**	**230**	**9**	**868**

3.5 Flood Hydrographs recorded during March 2010.

Figures 3.5.1 through to 3.5.13 shows a series of hydrographs that were recorded in the Upper and Lower Brisbane River and Bremer River catchments between the 3rd and 17th of January.

Figure 3.5.1 Flood hydrographs – Upper Brisbane River.

Upper Brisbane – Cooyar Creek Alert



Upper Brisbane – Linville Alert

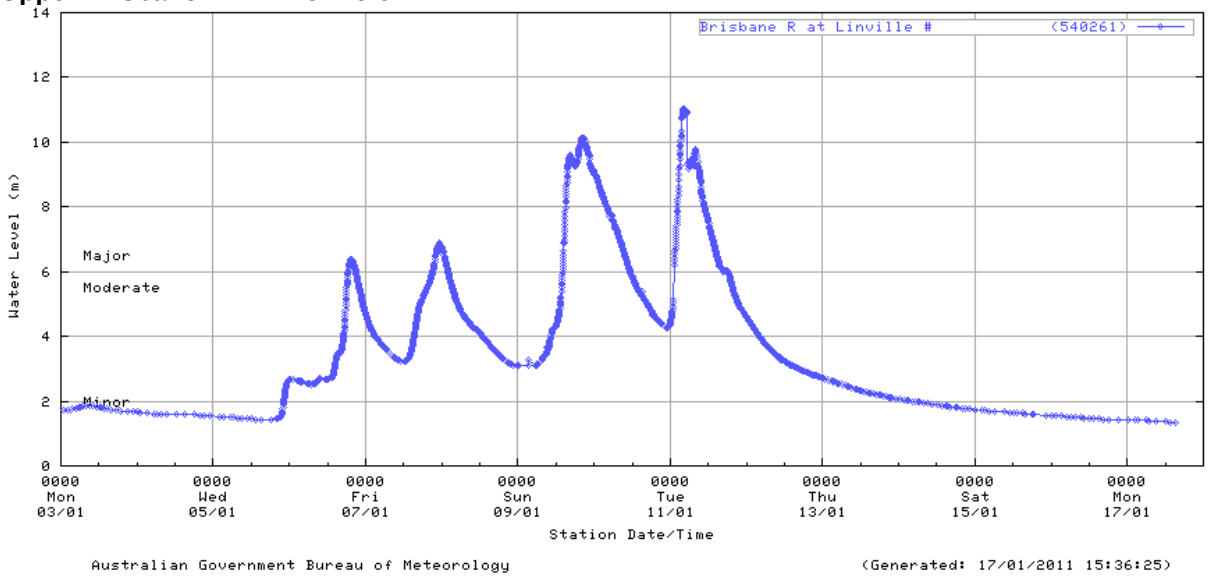
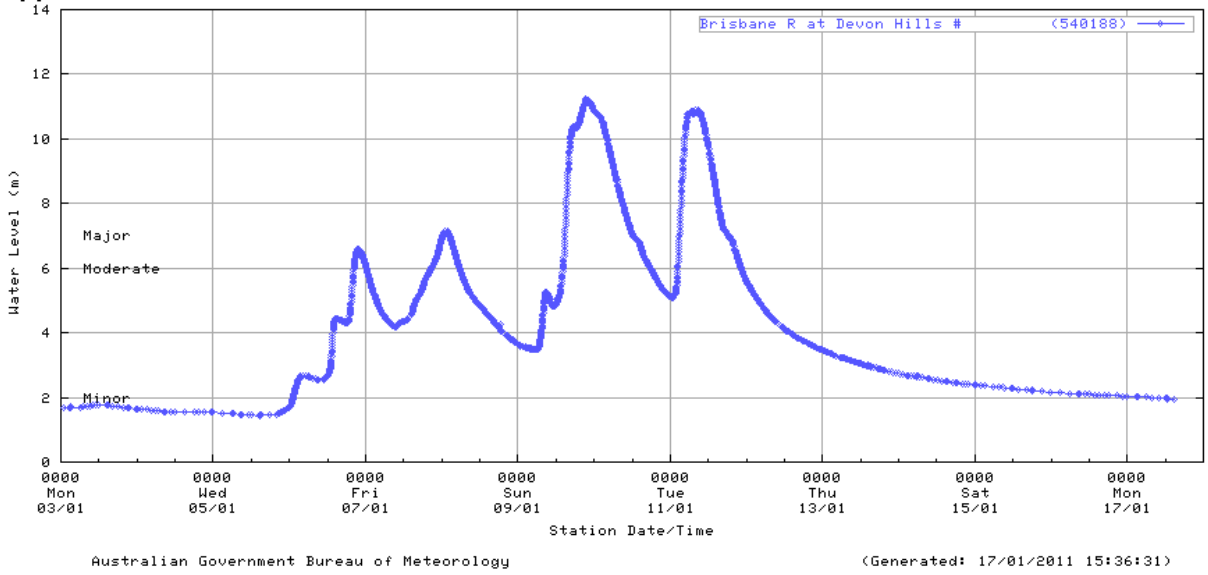


Figure 3.5.2 Flood hydrographs – Upper Brisbane River (Cont).

Upper Brisbane – Devon Hills Alert



Upper Brisbane – Gregor Creek Alert

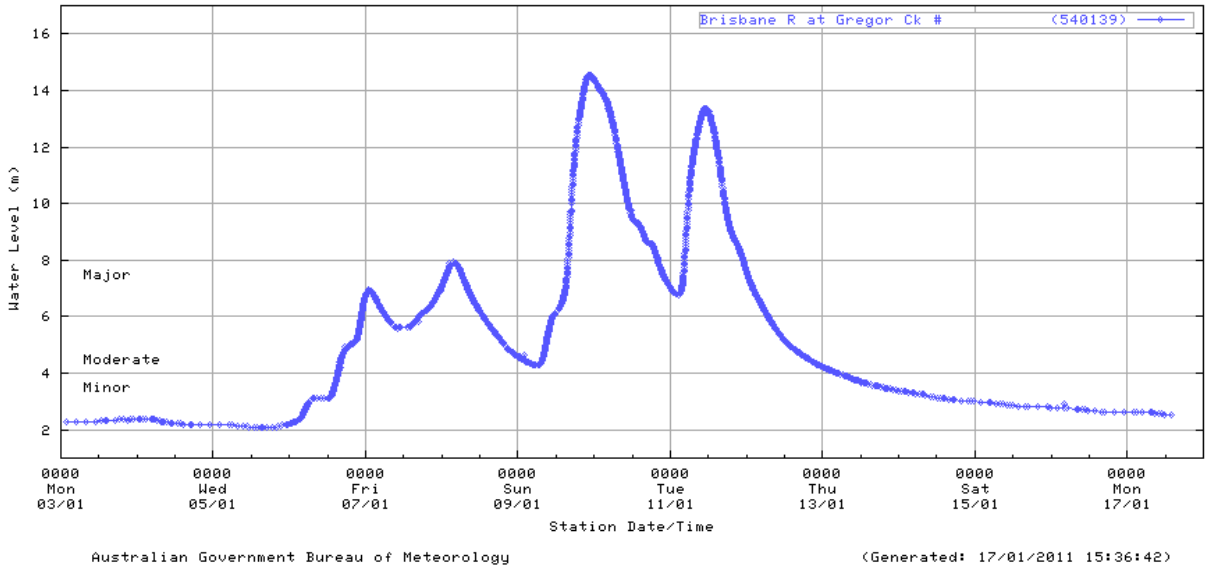
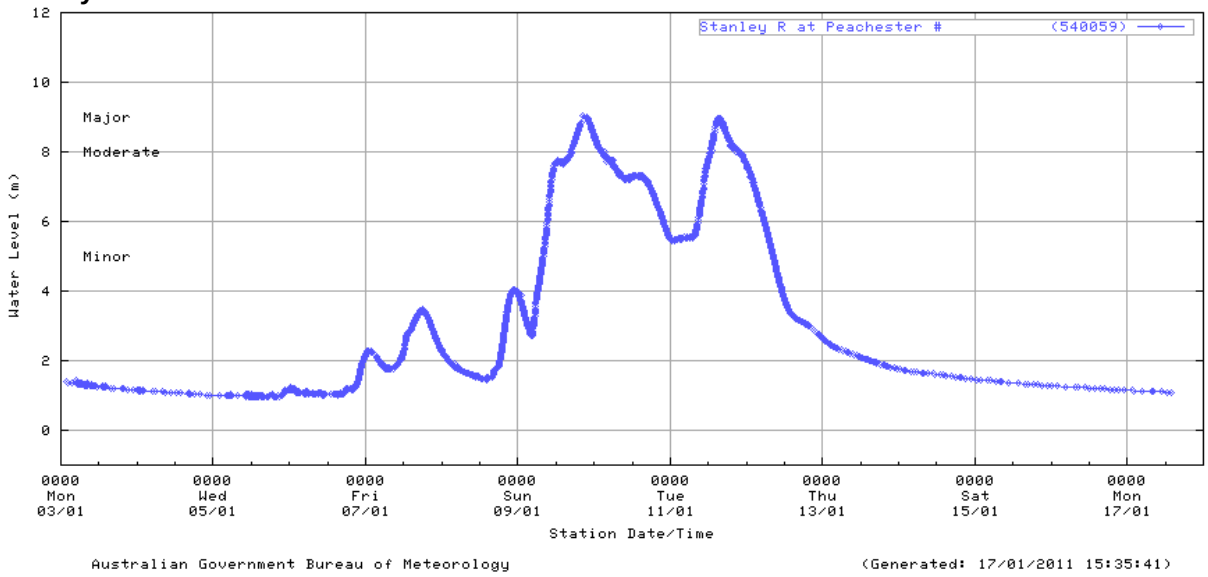


Figure 3.5.2 Flood hydrographs – Stanley River

Stanley River at Peachester Alert



Stanley River at Woodford Alert

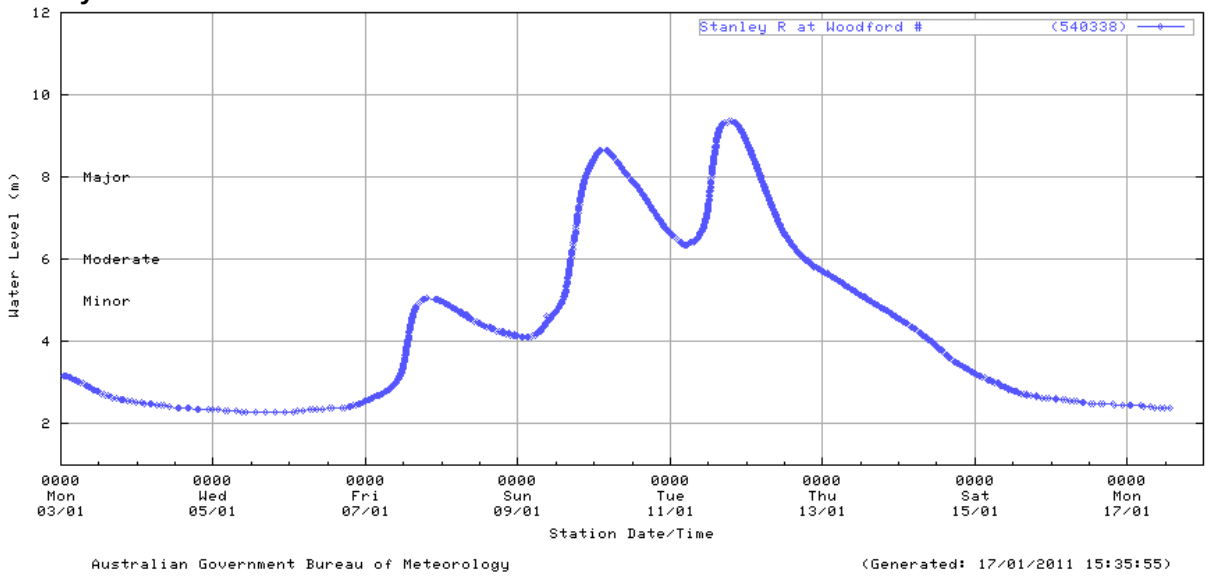
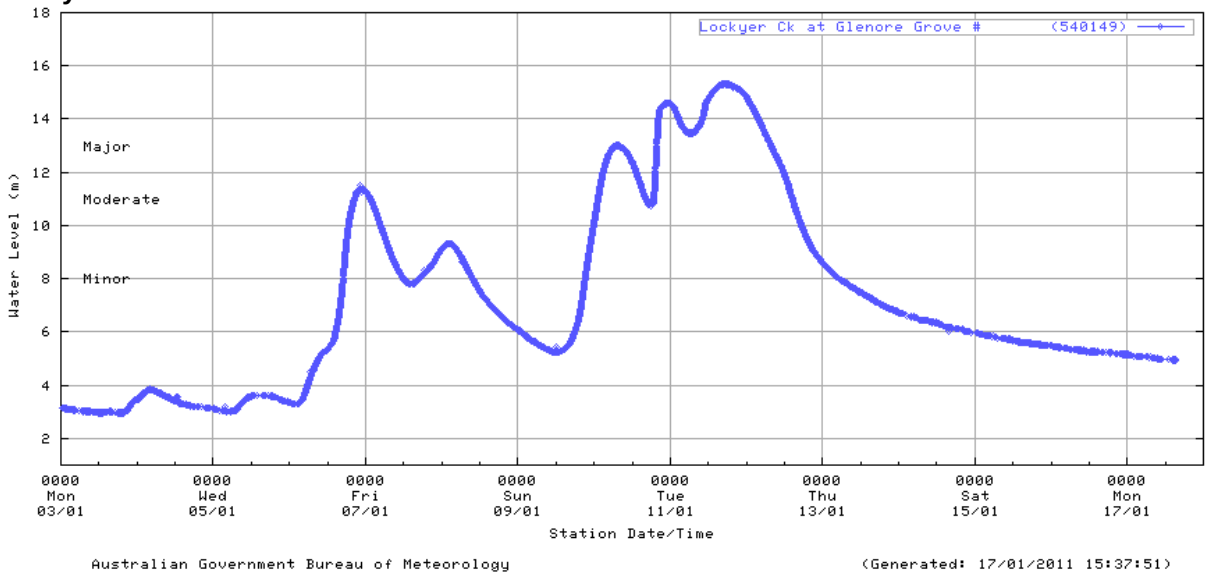
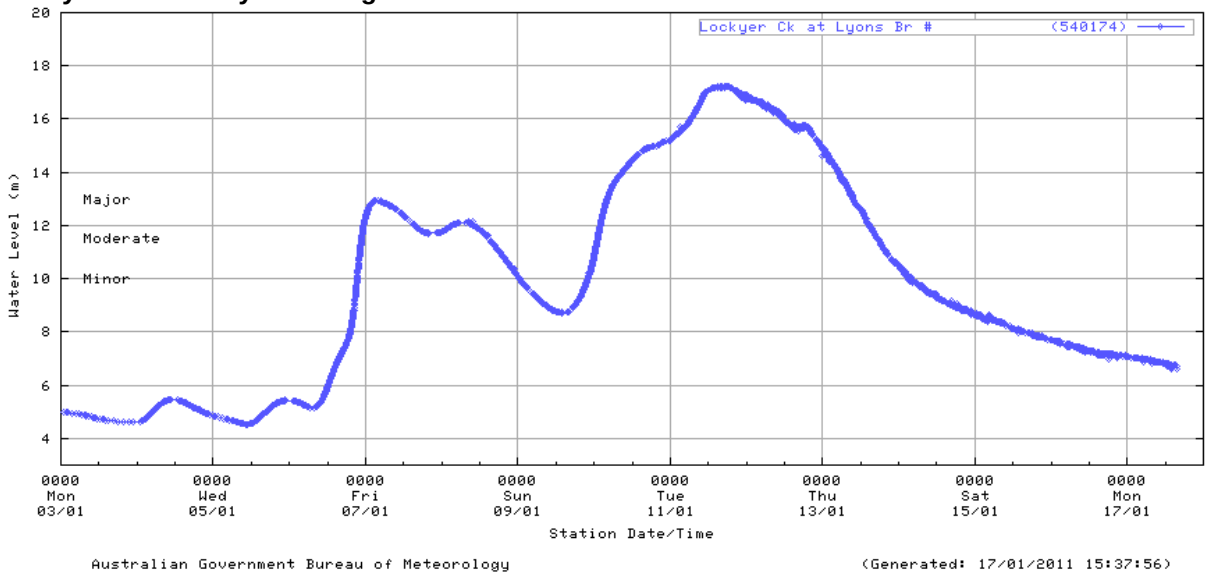


Figure 3.5.3 Flood hydrographs – Lockyer Creek

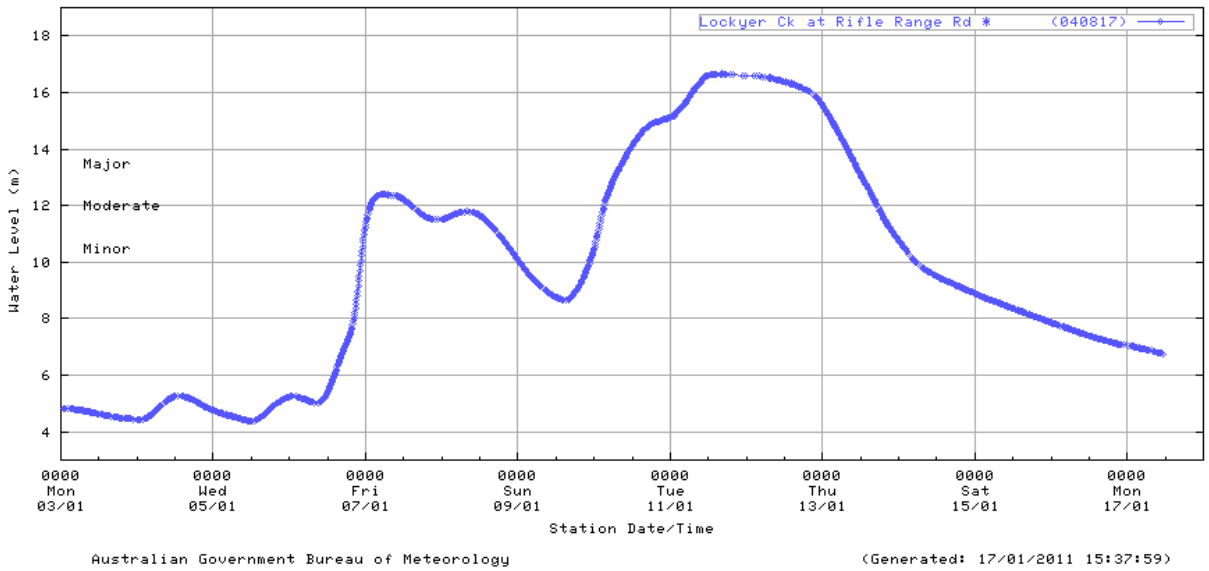
Lockyer Creek at Glenore Grove Alert



Lockyer Creek at Lyons Bridge AL



Lockyer Creek at Rifle Range Road TM



Lockyer Creek at O'Reilly's Weir Alert

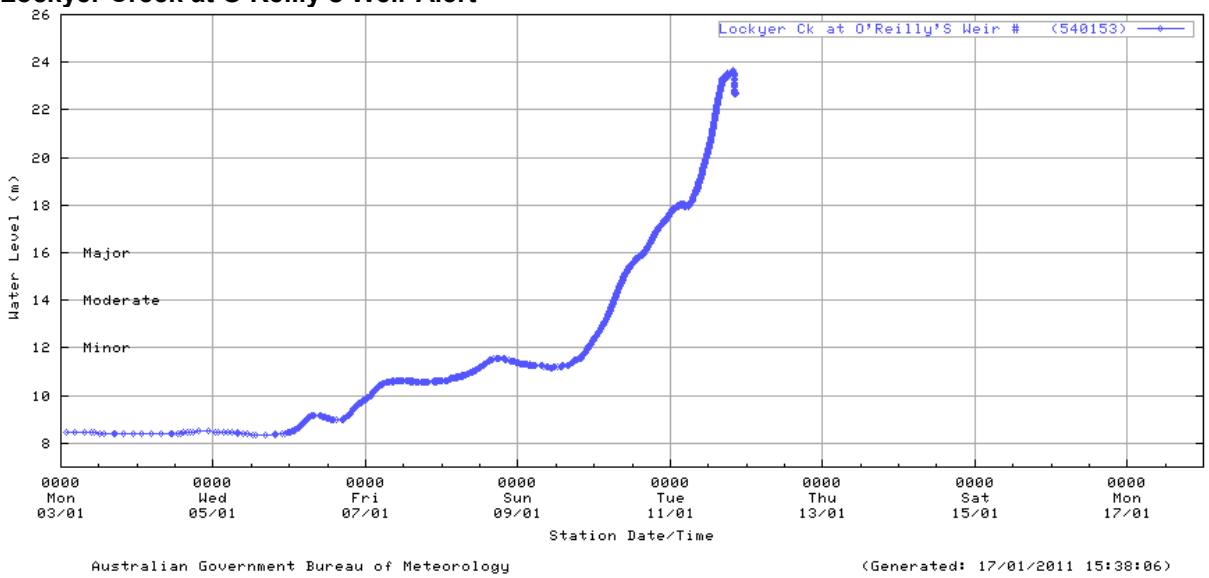
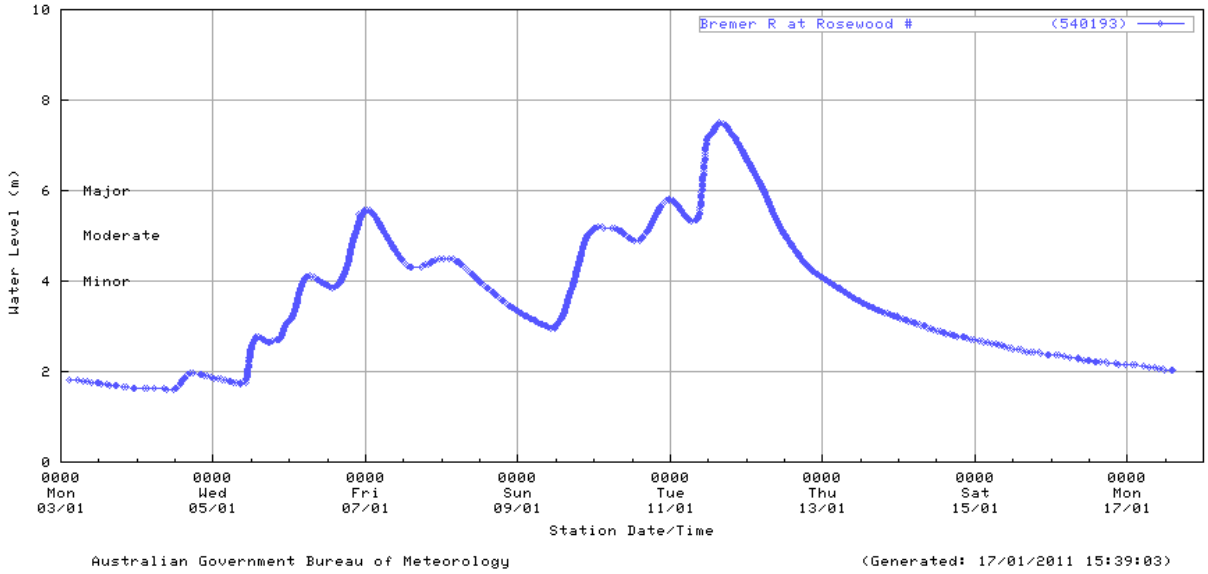
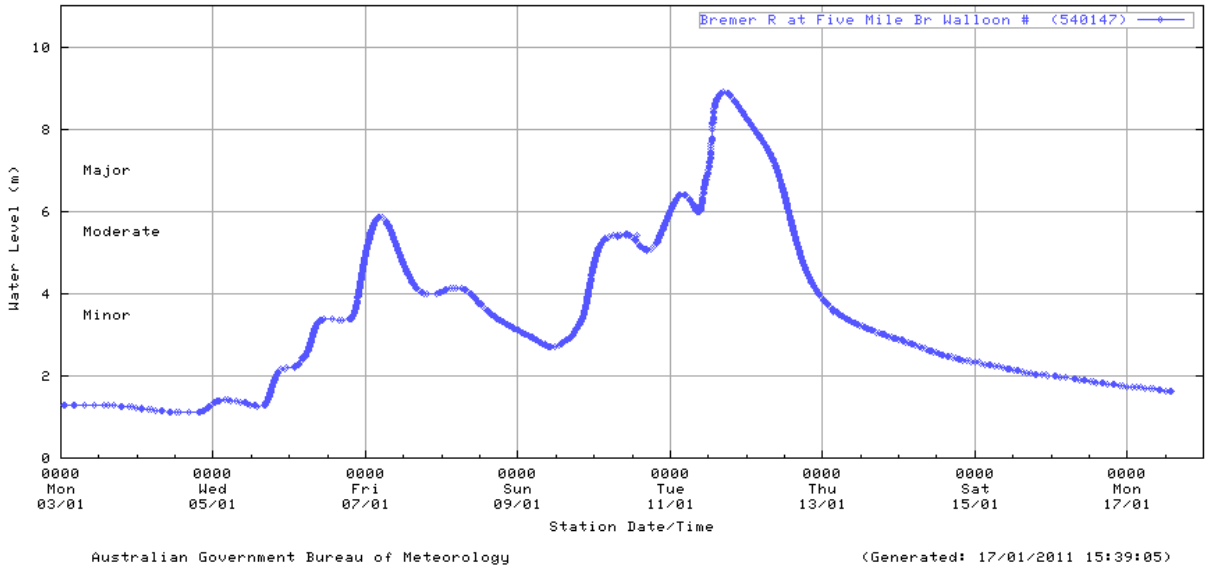


Figure 3.5.4 Flood hydrographs – Bremer River

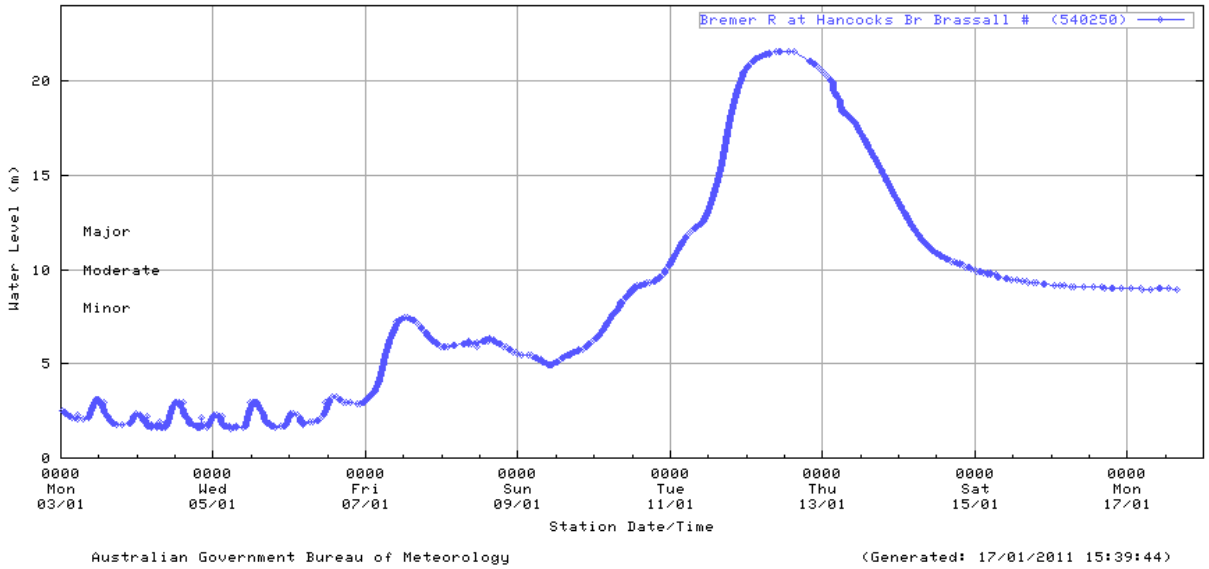
Bremer River at Rosewood Alert



Bremer River at Five Mile Bridge Walloon Alert



Bremer River at Hancock's Bridge Brassall



Bremer River at Ipswich

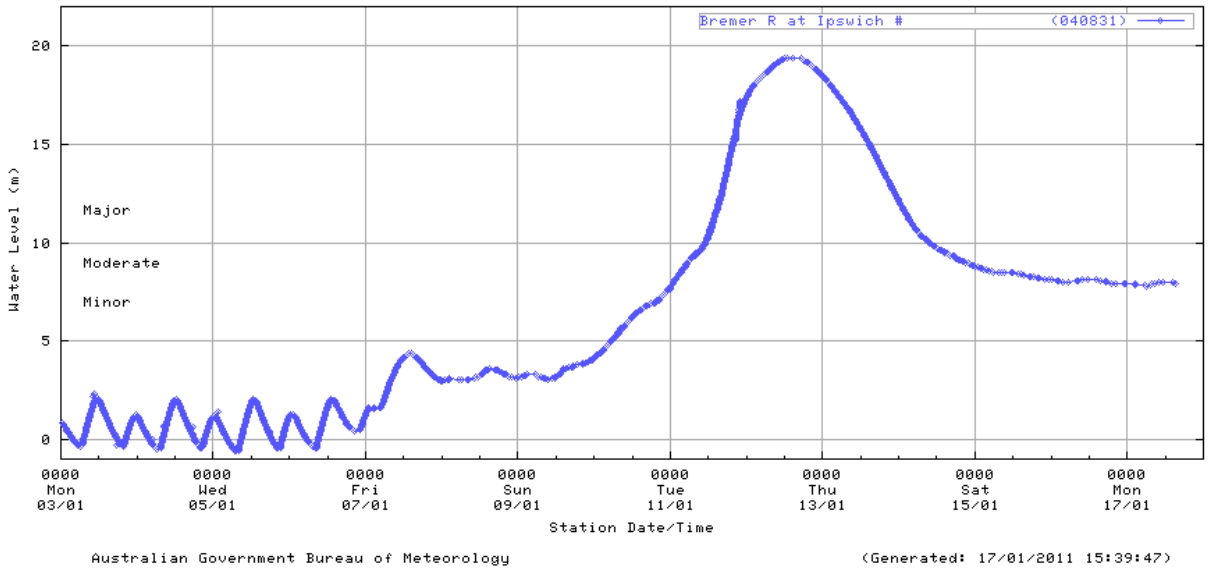
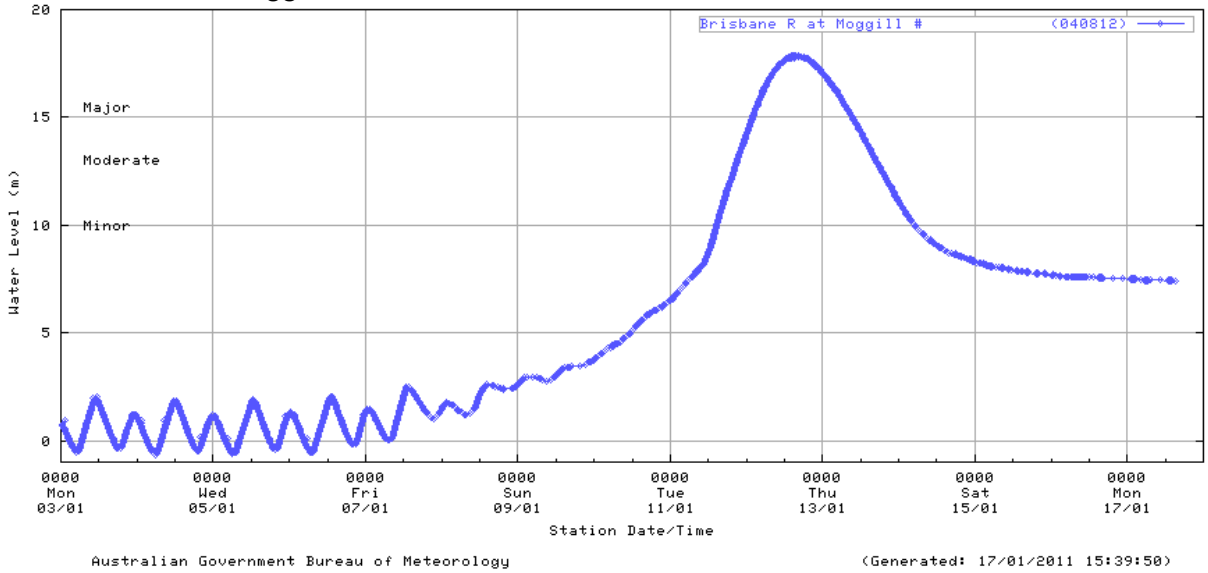
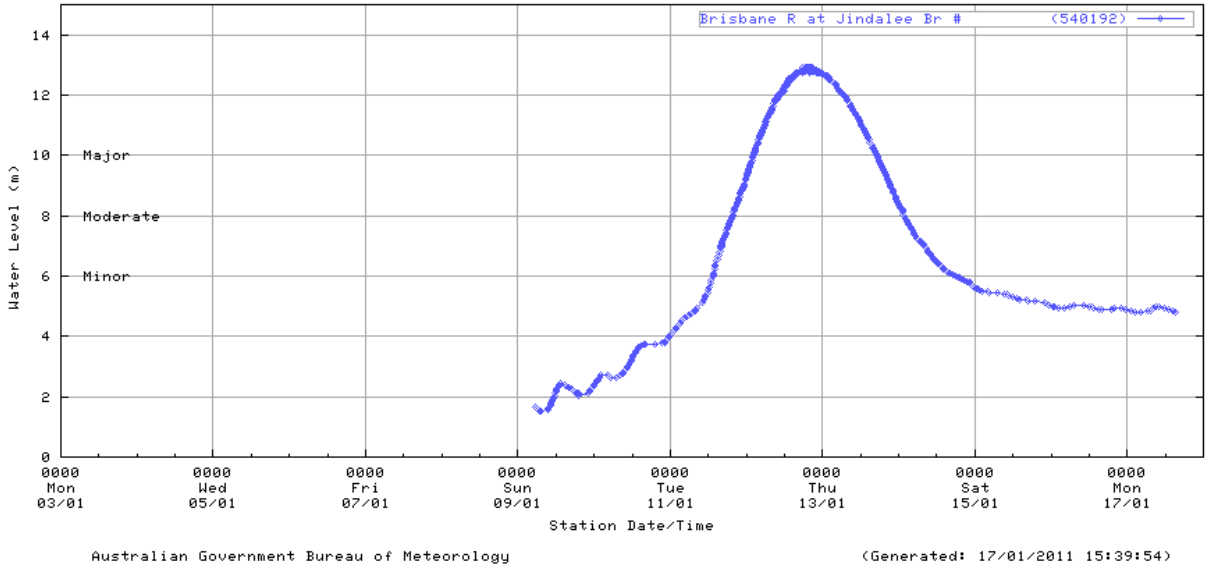


Figure 3.5.4 Flood hydrographs – Lower Brisbane River

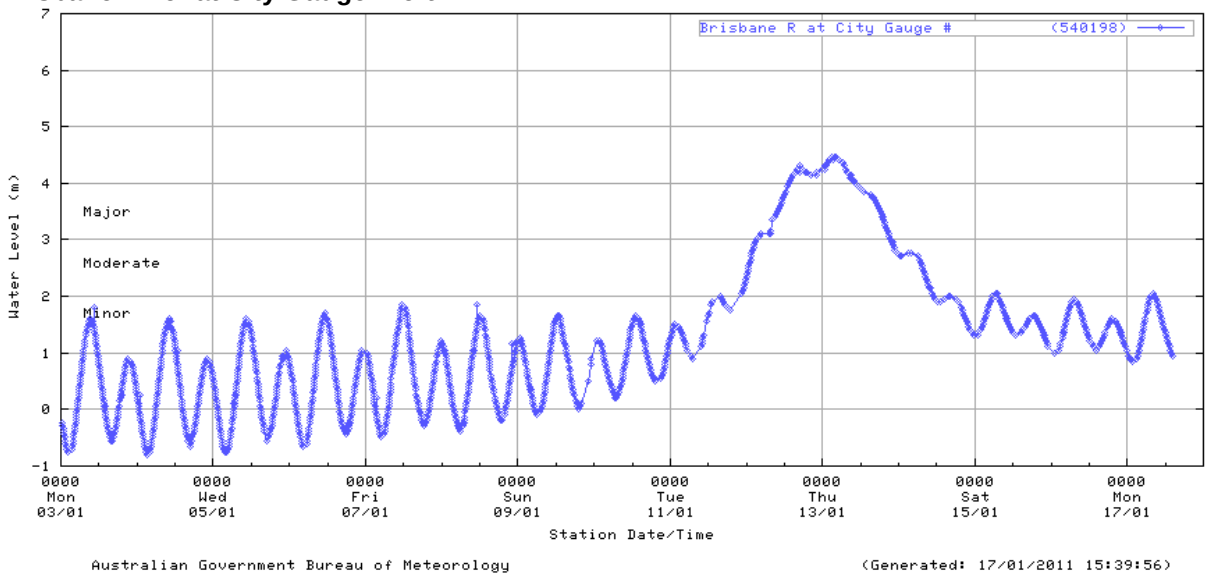
Brisbane River at Moggill Alert



Brisbane River at Jindalee Bridge Alert



Brisbane River at City Gauge Alert



4. Warning Services

Severe Weather Warnings for heavy rainfall leading to flash flooding were issued for the southeast Queensland region. The first Severe Weather warning was issued at 10:55 am on the 5th of December with the final warning issued at 10:00 pm on the 11th of January. A full transcript of Severe Weather Warnings is listed in Appendix 2.

Flood warnings were issued for:

- Upper Brisbane and Stanley River.
- Lower Brisbane and Bremer River and Lockyer and Warrill Creeks.
- Coastal streams from Maryborough to the New South Wales Border.
- Sunshine Coast Rivers including the Pine and Caboolture Rivers.

Appendix 1. DERM Usage Agreement

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Last updated: 16 March 2009