

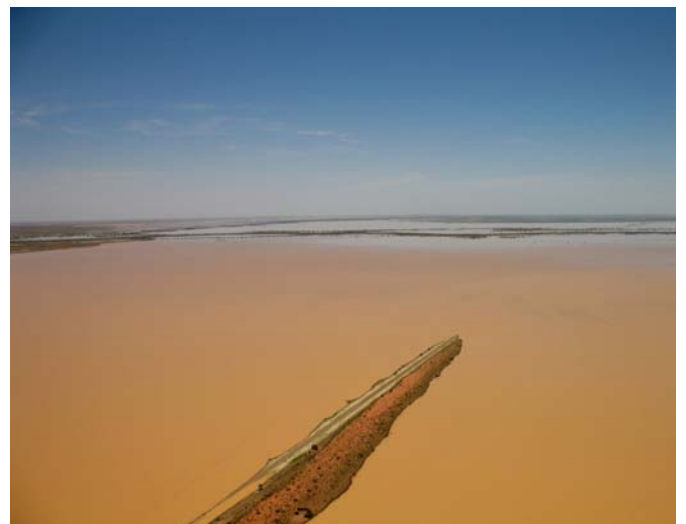


Australian Government
Bureau of Meteorology

 Water Information
DATA > INFORMATION > INSIGHT

Flooding in the Western Queensland Rivers

January to March 2009



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1. Floodwater rising in Eyre Creek, Bedourie - Photo taken by Jo Lewington.
2. Thomson River flood at Longreach – Photo taken by Tony Martin on 16/2/09
3. Floodwaters at Birdsville, February 7th 2009 – Photo taken by Wrightsair
4. The Thomson River starting to rise over the old bridge at Longreach – Photo taken by Julia Harris on 11/2/09
5. A view of Urandangi in flood. Photo by Steve Hagan.
6. Road goes underwater at Bedourie, as the floodwaters travel down the Georgina River catchment - Photo taken by Darren Mills.

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 DNRW 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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Flooding in the Western Queensland Rivers

January to March 2009

1. The Thomson, Barcoo, Cooper catchment

1.1 Introduction

The Thomson, Barcoo, Cooper catchment drains an area of approximately 237,000 square kilometres and is the largest river basin in Queensland. The catchment falls within the Lake Eyre basin, the largest and only co-ordinated internal drainage system in Australia with no external outlet, and which covers over 1.1 million square kilometres of central Australia. Floodwaters can reach Lake Eyre after major flood events in the Cooper.

The Thomson River and its tributaries flow in a general southerly direction and has several of the larger towns of the region including Longreach and Jundah along its banks. The Barcoo River flows in a general westerly direction and has major centres such as Isisford, Blackall, Barcaldine and Tambo in its catchment. The Thomson and Barcoo Rivers merge into the Cooper Creek approximately 40 kilometres upstream of Windorah.

The Thomson, Barcoo, Cooper basin can be divided into two distinct areas:

- Above Windorah, numerous well-defined creeks and channels flow into the Thomson and Barcoo.
- Below Windorah, the typical wide ranging channel country develops.

In the dry season, the channels are restricted to numerous lagoons and claypans. During the wet season the actual main channel becomes hard to define, particularly when the river at Windorah could be up to 40 kilometres wide. Below this point however, in a big flood, the area becomes a huge inland sea broken only by a few ridges and numerous stunted trees.

Large rainfall totals were recorded during Monday 9th to Wednesday 11th February 2009 across the Thomson, Barcoo, Cooper catchment. This caused riverine flooding in the Landsborough, Cornish, Aramac, Jordan and Cooper Creeks and in the Darr, Alice, Barcoo and Thomson Rivers. A major flood level was reached in the Thomson River at Longreach, Bogewong and Jundah and in the Cooper Creek at Windorah.

River levels exceeded the level of the old Thomson River Bridge on the Landsborough Highway at Longreach for over two weeks. Two SES members rescued a stranded couple near Muttaborra who were isolated by floodwaters.

This report provides a summary and analysis of the meteorology and hydrology of the Thomson, Barcoo, Cooper Floods of January to March 2009. A [map of the Thomson and Barcoo Rivers and Cooper Creek catchment](#) shows the location of flood warning stations referred to in this report.

1.2 Meteorological Summary

On 9 February, a low pressure system was located around the Queensland/New South Wales border near Cunnamulla with an associated surface trough extending over south west Queensland. The system then moved slowly eastwards over the next few days. This caused heavy rainfall during 9th-11th February across the Thomson, Barcoo, Cooper catchment. The radar imagery for these periods is shown in Figures 2.1-2.3.

For a more detailed discussion of the meteorology of the event and a summary of flooding in Queensland throughout January to March 2009, refer to the report [Queensland Floods January and February 2009](#).

Figure 11.1 Selected radar imagery on 09/02/09 and 10/02/09.

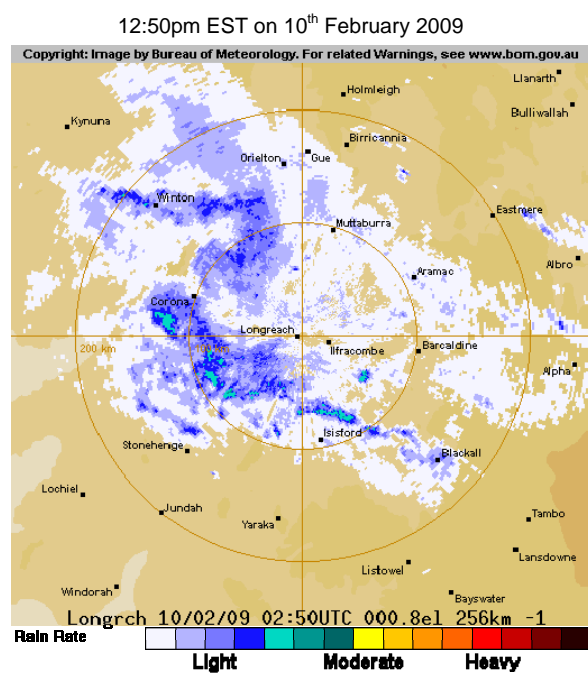
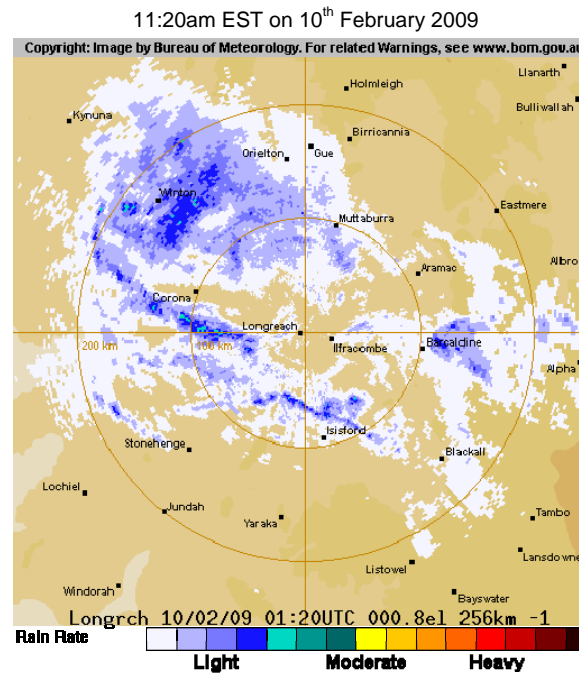
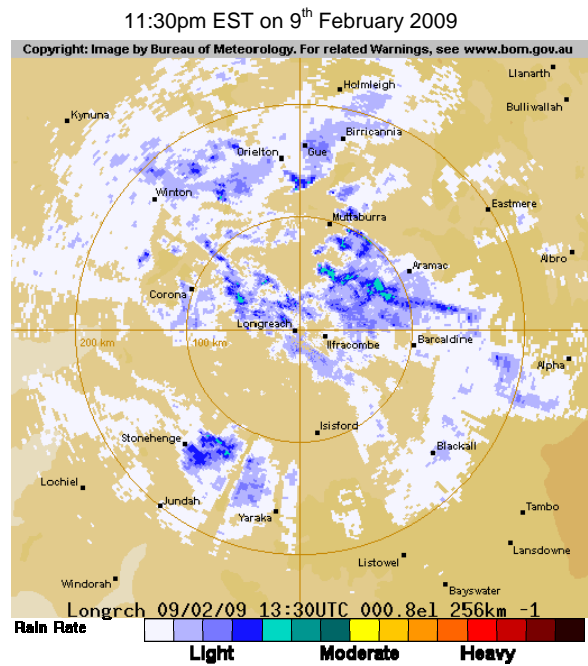
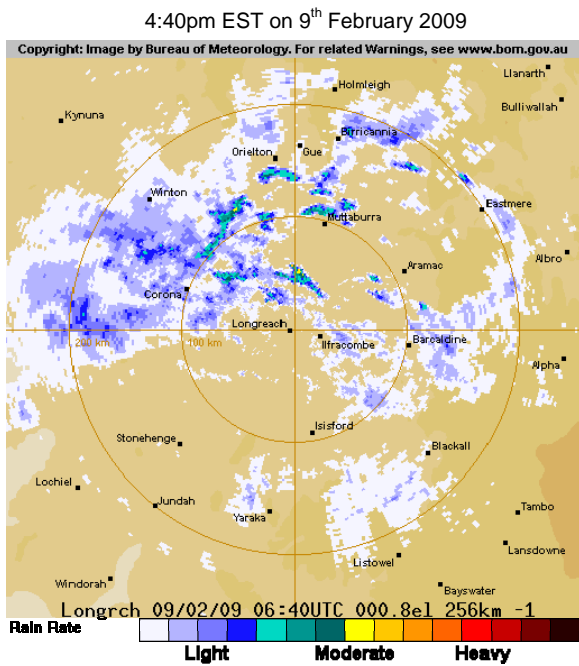
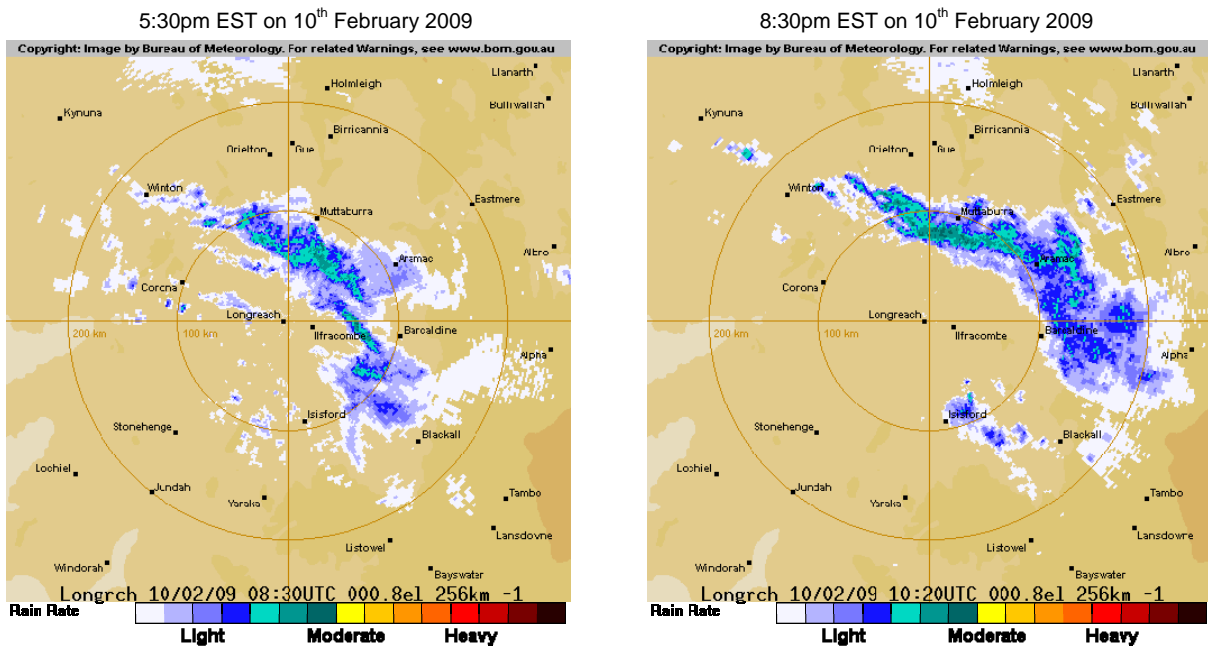


Figure 11.2 Radar imagery for 5:30pm and 8:20pm on 10/02/09.



1.3 Hydrology

Large rainfall totals were recorded during Monday 9th to Wednesday 11th February 2009 across the Thomson, Barcoo, Cooper catchment, particularly north of Longreach and east of Wahroongah. This caused riverine flooding in the Landsborough, Cornish, Aramac, Jordan and Cooper Creeks and in the Darr, Alice, Barcoo and Thomson Rivers. Fast rises occurred within a few days due to local rainfall and then continued as the main flood waters moved through the river system. Refer to the [Flood Warning Network Map for the Thomson and Barcoo Rivers and Cooper Creek](#) for the station names of the river height and rainfall locations.

No significant rainfall totals were recorded in the Thomson, Barcoo, and Cooper catchment after 11th February.

At Muttaborra on Landsborough Creek a minor flood peak was reached on the 11th and 18th February. The flood waters from the Cornish, Landsborough and Aramac Creeks travelled downstream to Camoola Park on the Thomson River. A moderate flood peak was reached at Camoola Park on 12 February, with a minor flood peak on the 20th February. These flood waters then continued downstream to Longreach.

A major flood peak was recorded at Longreach TM on the Thomson River on 12th February. A minor flood peak was later recorded on the 23rd February. The flood waters from Darr Creek flowed downstream to merge with the Thomson River downstream of Longreach, where a major flood peak was reached on the 12th February and minor peak occurred later on the 23rd February.

On the Thomson River further downstream at Jundah a moderate flood peak was reached on 13th February and a major flood peak on 20th February.

The flood waters from the Barcoo River and the Thomson River merge upstream of Windorah, contributing to the major flood peak that occurred at Windorah on 21st February. These flood waters as at 3 March continued to flow towards Nappa Merrie.

1.3.1 Peak River Heights

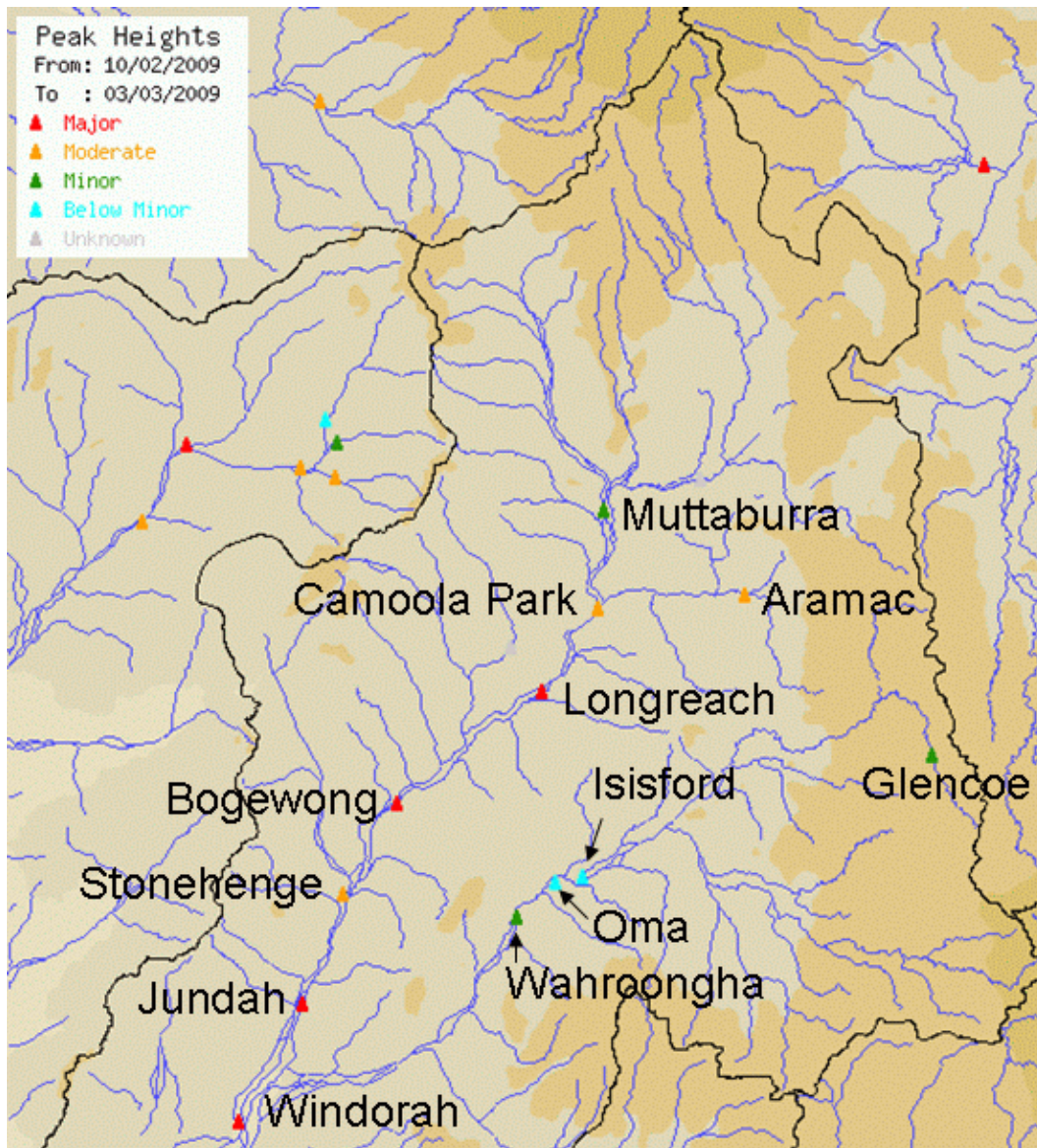
The flooding in the Thomson, Barcoo, and Cooper catchment was the most significant flooding in some parts of the region since 1997. The peak river heights for the period 10th February – 3rd March 2009 are shown in Figure 1.3.1.1. The highest ranking flood peak heights for February 2009 were in the upper Thomson River and in Darr River. Refer to Table 1.3.1.1.

In Darr River at Darr the 3rd highest flood peak was reached, from a record dating back to 1971. At Longreach TM on the Thomson River major flooding was the 6th highest on record and the highest since February 2000, with the record starting in 1969. Moderate flooding in the Thomson River at Camoola Park was the 6th highest peak on record and the highest since February 2000, with the record starting in 1954.

Table 1.3.1.1 Peak height comparison to records

Gauging station	Feb 2009 peak (metres)	Start of record	Ranking	Highest since	Highest on record
Thomson River at Camoola Park	5.75m	1954	6 th	Feb 2000	7.42m Feb 2000
Thomson River at Longreach TM	5.70m	1971	6 th	Feb 2000	6.94m Feb 2000
Thomson River at Longreach	4.35m	1894	18 th	Feb 2000	5.78m May 1955
Darr River at Darr TM	5.37m	1971	3 rd	Feb 1997	6.1m Feb 1997
Thomson River at Bogewong	6.35m	1955	8 th	Feb 2004	8.64m Jan 1974
Thomson River at Stonehenge TM	5.65m	1968	11 th	Jan 2008	50.30m Jan 2008
Thomson River at Jundah	5.90m	1944	20 th	Jan 2004	8.46m June 1955
Cooper Creek at Windorah	6.05m	1970	16 th =	Jan 2004	8.48m Feb 1974

Figure 1.3.1.1 Peak height map 10th February – 3rd March 2009

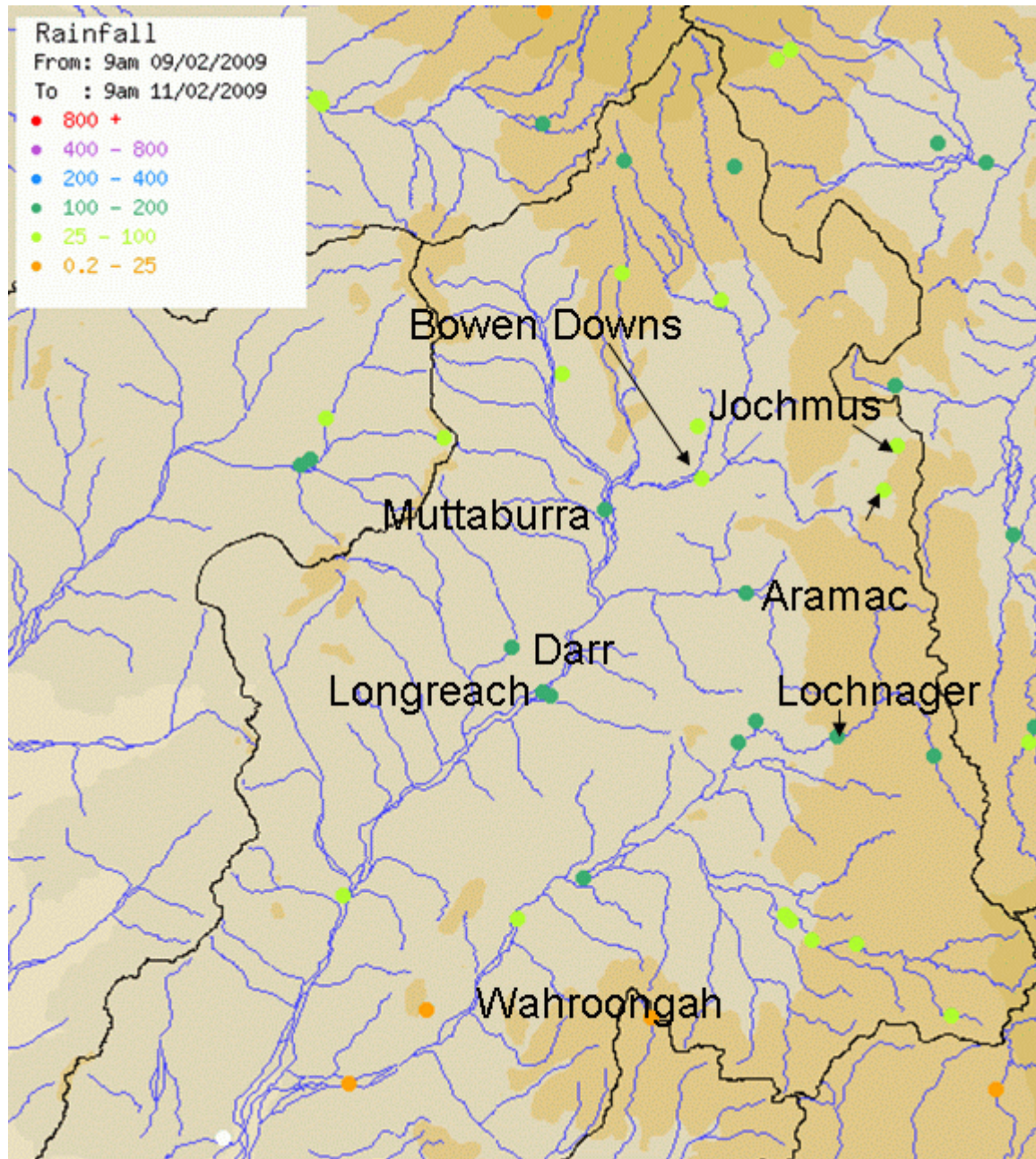


1.3.2 Rainfall Maps

The highest daily rainfall total in the period 9th-11th February of 167mm was recorded at Darr TM in the 24 hours to 9am on 10th February. Darr TM during the 48 hours to 9am on 11th February received 178mm. (Table 1.4.1.1)

The rainfall amounts in Figure 1.3.2.1 are given in millimetres. Refer to the [Flood Warning Network Map for the Thomson and Barcoo Rivers and Cooper Creek](#) for the station names of the rainfall locations used in Figure 1.3.2.1

Figure 1.3.2.1 Rainfall map for the period 09/02/09 to 11/02/09



The highest rainfall totals were recorded in the catchment north of Longreach and east of Wahroongah.

1.3.3 Rainfall Intensity

The most intense rainfall in the Thomson, Barcoo, Cooper catchment occurred during Monday 9th to Wednesday 11th February 2009. For some of the key stations in this catchment Hourly Hyetographs (Figures 1.3.3.2 to 1.3.3.4) have been produced. An Intensity Frequency Duration (IFD) analysis for Longreach is shown in Figure 1.3.3.1.

In the Thomson River a comparison of observed intensities to IFD intensities for the rainfall at Longreach, the observed total of 117 mm in the 24 to 48 hours to 11:00am 11th February is assessed as being greater than 20-50% AEP (2-5 year ARI) intensity. Refer to Figure 1.3.3.1.

In Darr River a comparison of observed intensities to IFD intensities for the rainfall at Darr TM, the observed total of 145 mm in the 12 hours to 5:00am 10th February is assessed as being greater than 2-5% AEP (20-50 year ARI) intensity. The rainfall total of 167 mm in the 24 hours to 9:00am 10th February is assessed as being greater than 2-5% AEP (20-50 year ARI) intensity. Refer to Figure 1.3.3.2.

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 1.3.3.1 IFD rainfall analysis for Longreach

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS		
LOCATION: 036031 LONGREACH		
Analysis of the rainfall for the 119 hours to Thu Feb 12 23:00:00 2009		
Rain (mm)	Period Ending	ARI (years)
26	60 mins ending at 18:00:00 10/02/2009	< 1
35	2 hours ending at 18:00:00 10/02/2009	1-2
36	3 hours ending at 18:00:00 10/02/2009	1
40	6 hours ending at 06:00:00 10/02/2009	< 1
61	12 hours ending at 06:00:00 10/02/2009	1-2
103	24 hours ending at 18:00:00 10/02/2009	2-5
117	48 hours ending at 02:00:00 11/02/2009	2-5
117	72 hours ending at 11:00:00 11/02/2009	2-5

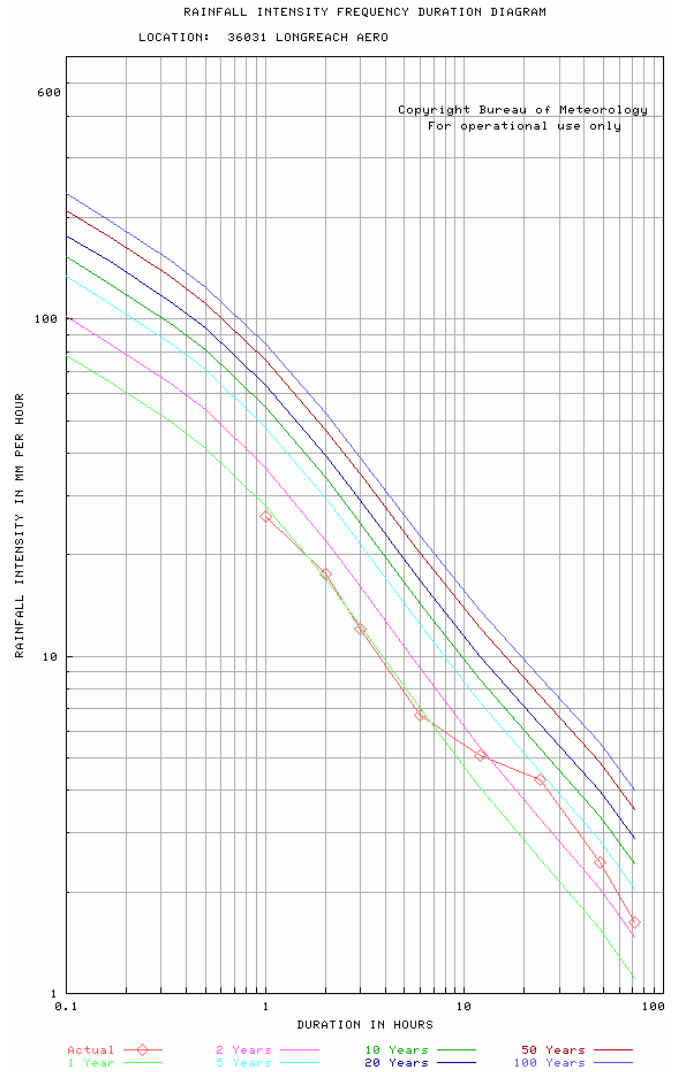


Figure 1.3.3.2 IFD rainfall analysis for Darr TM

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS		
LOCATION: 037010 DARR TM		
Analysis of the rainfall for the 72 hours to Thu Feb 12 09:00:00 2009		
Rain (mm)	Period Ending	ARI (years)
30	60 mins ending at 02:00:00 10/02/2009	1-2
50	2 hours ending at 03:00:00 10/02/2009	2-5
64	3 hours ending at 04:00:00 10/02/2009	2-5
84	6 hours ending at 05:00:00 10/02/2009	5-10
145	12 hours ending at 05:00:00 10/02/2009	20-50
167	24 hours ending at 09:00:00 10/02/2009	20-50
178	48 hours ending at 09:00:00 11/02/2009	10-20
178	72 hours ending at 09:00:00 12/02/2009	5-10

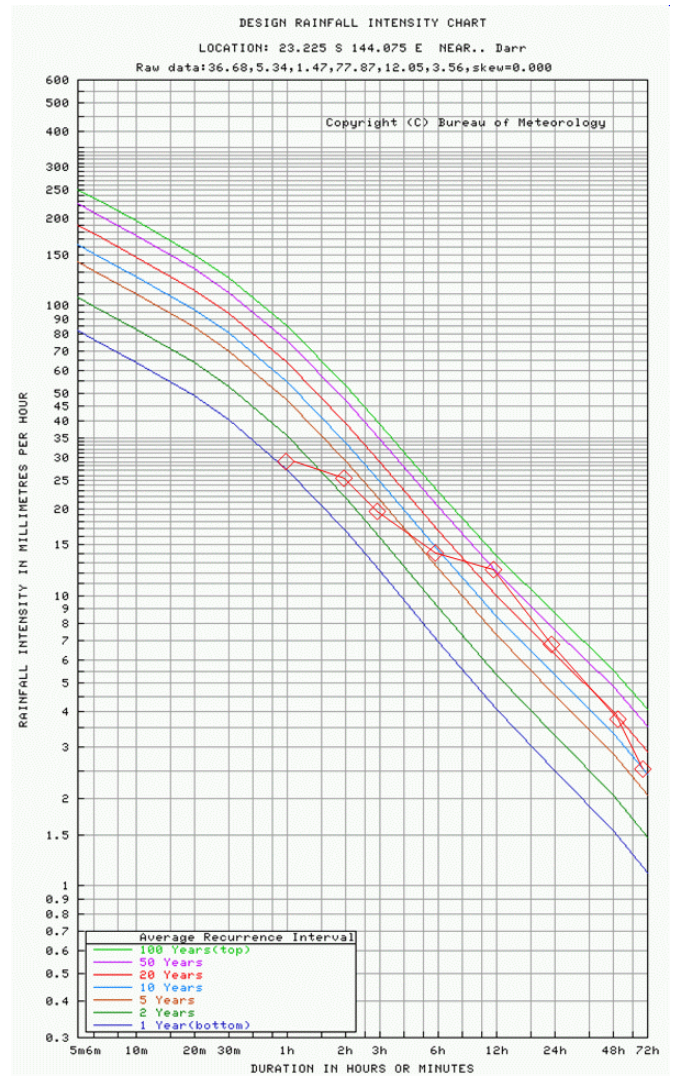


Figure 1.3.3.2 Hourly hyetographs for Torrens Creek TM and Bowen Downs TM.

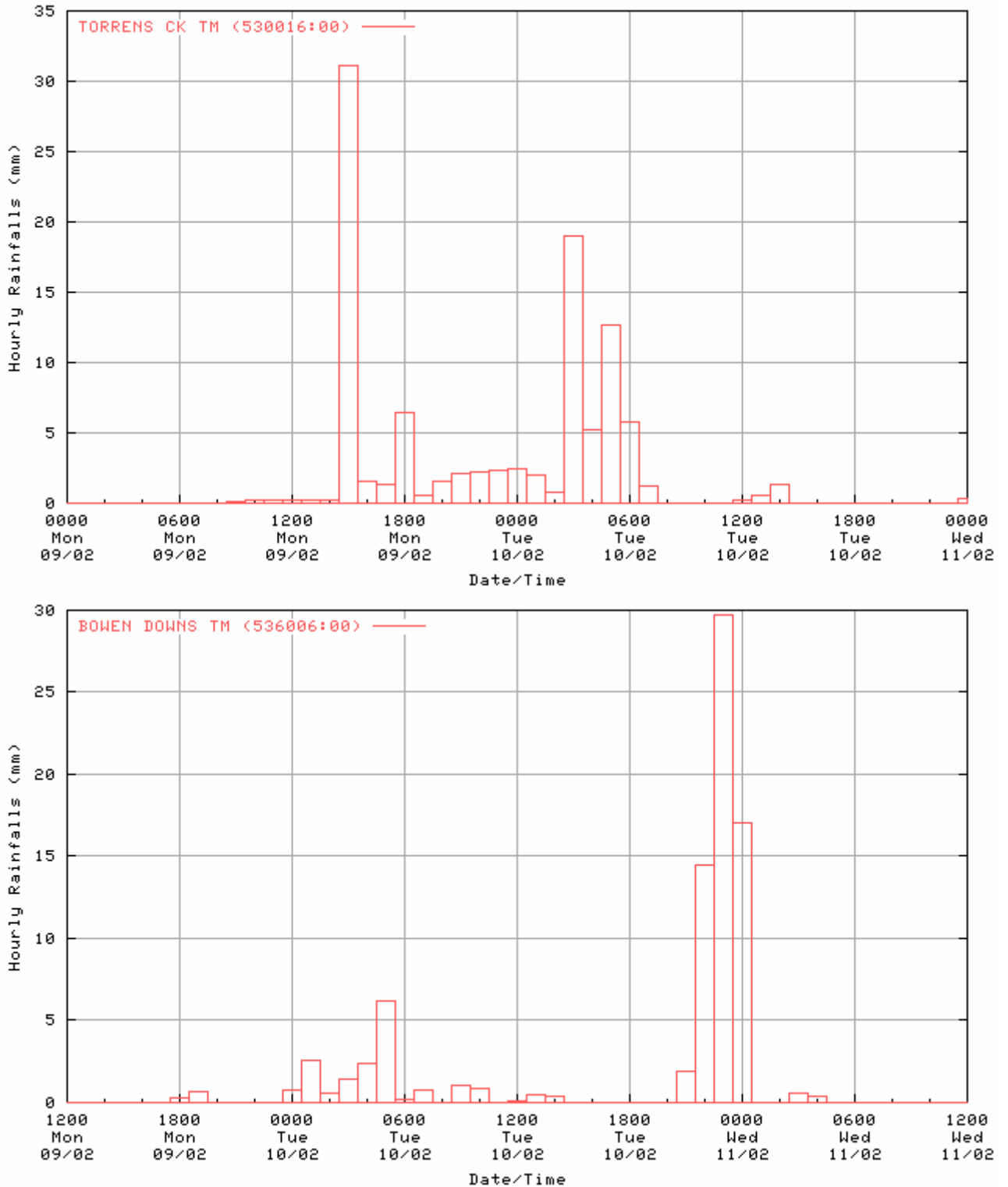


Figure 1.3.3.3 Hourly hyetographs for Barcaldine Weir TM and Darr TM.

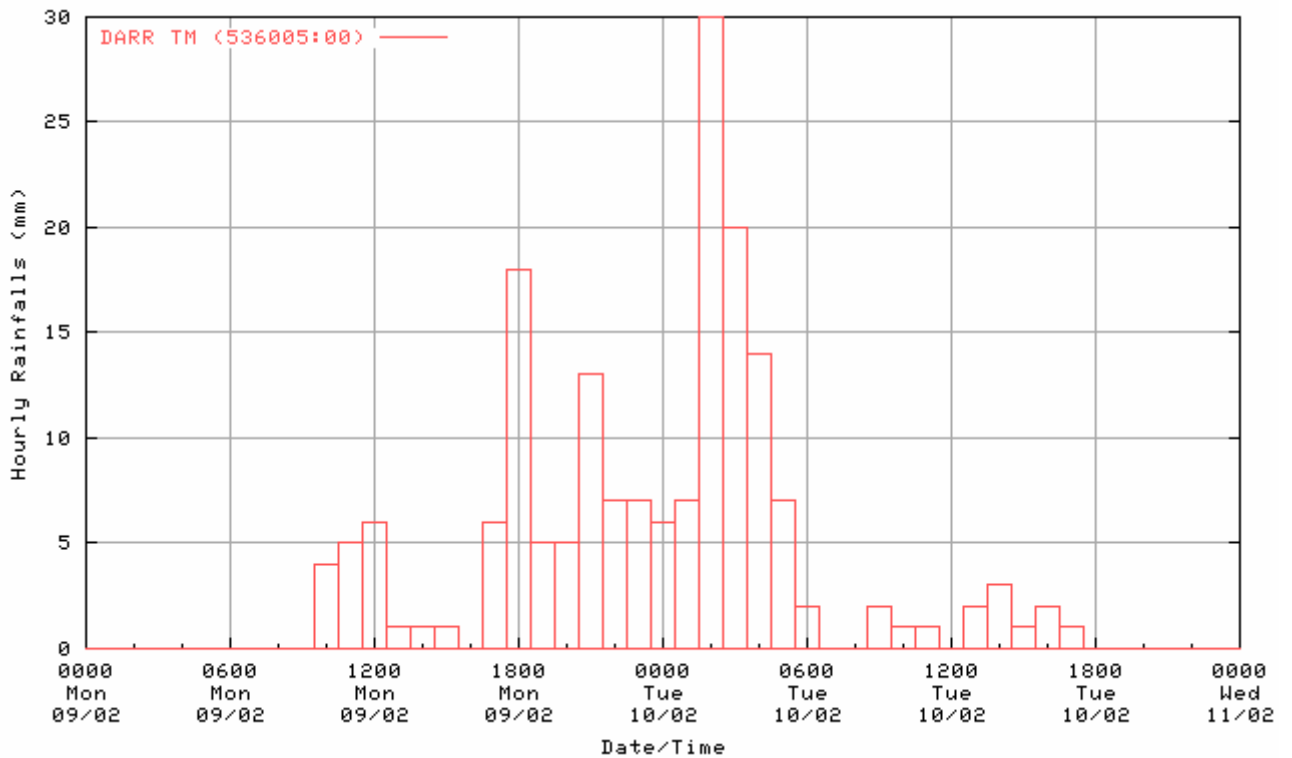
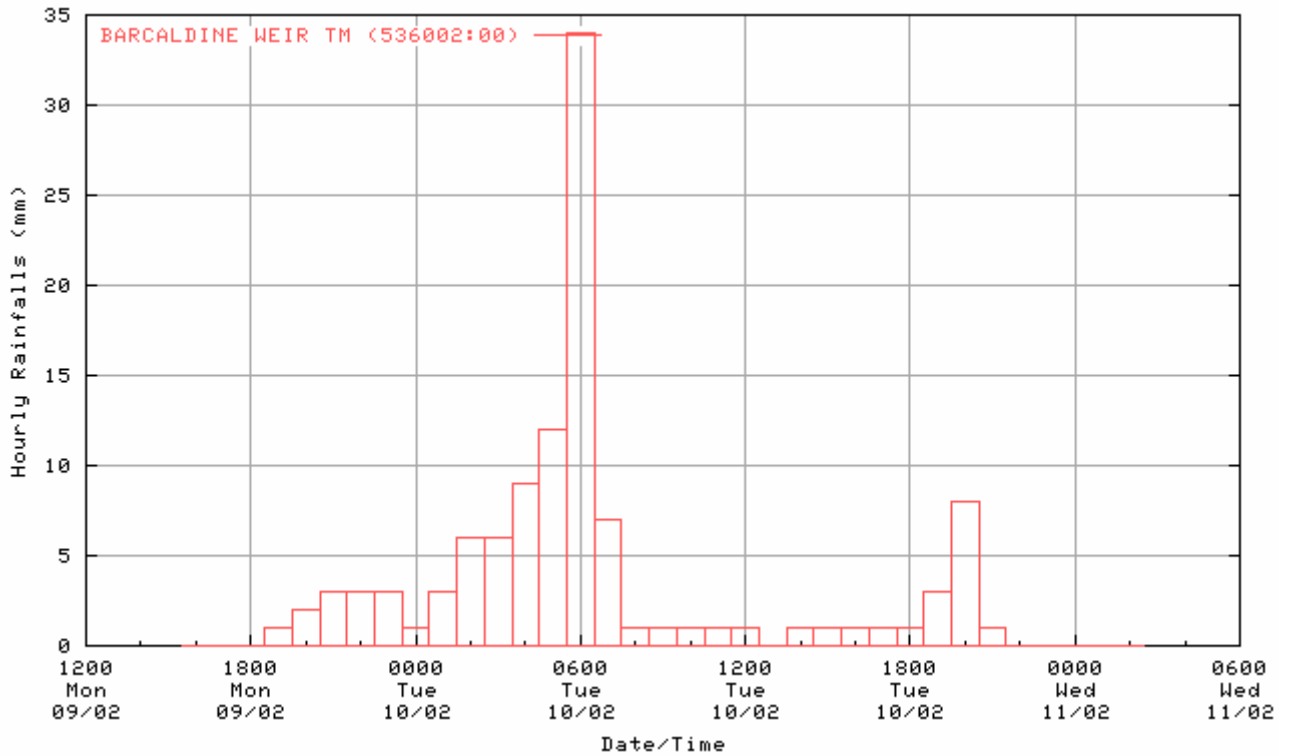
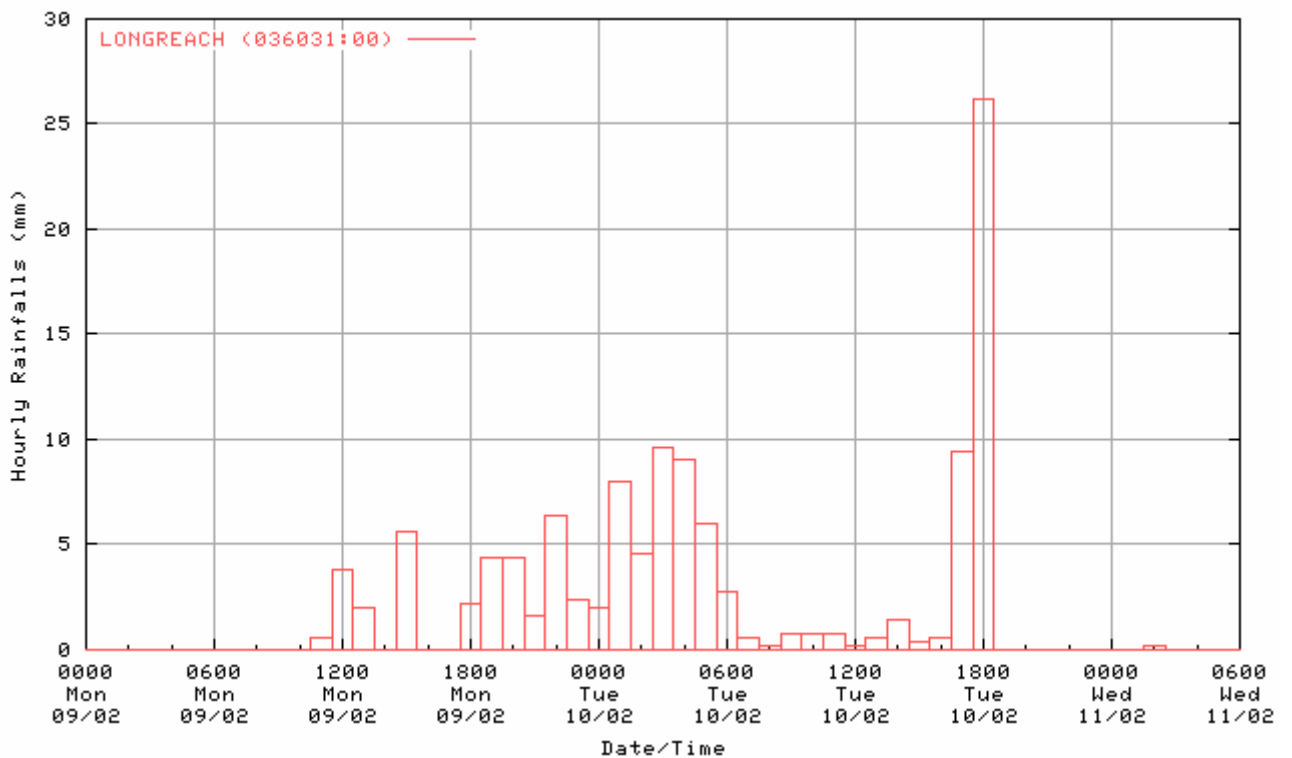
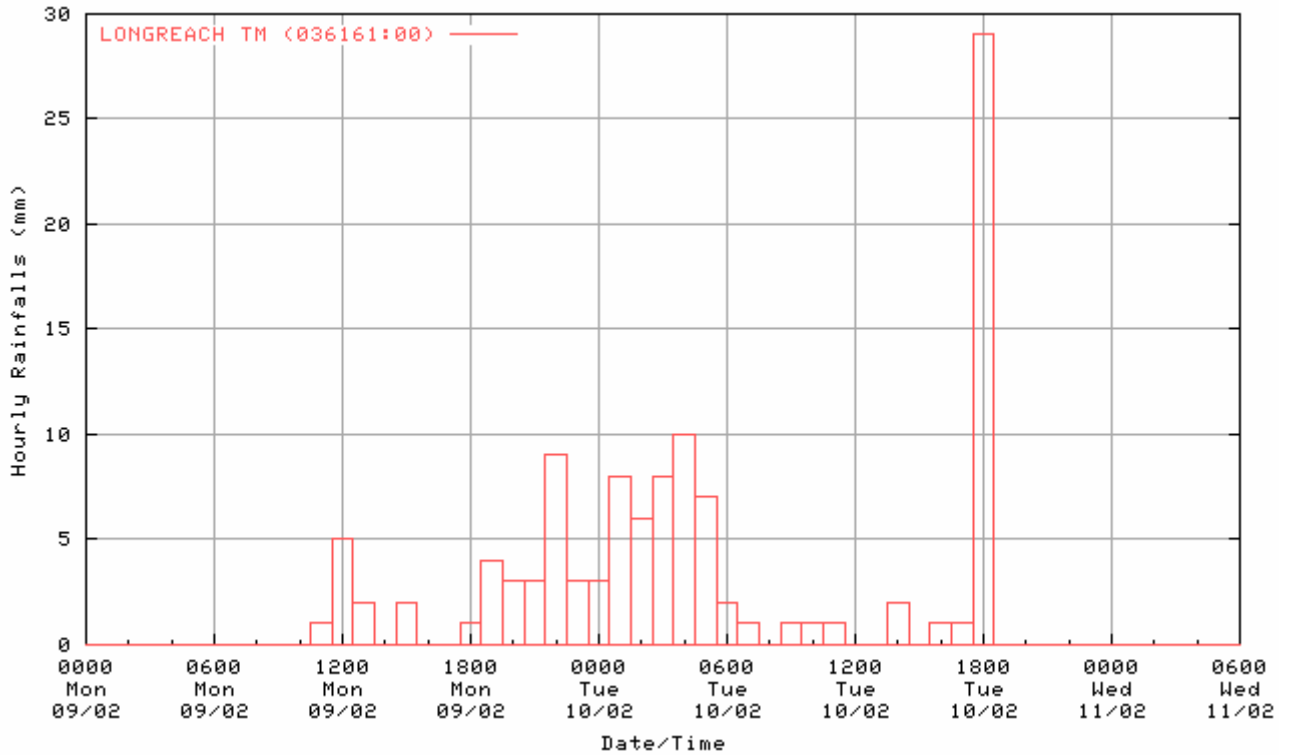


Figure 1.3.3.4 Hourly hyetographs for Longreach TM and Longreach.



1.3.4 Rainfall Totals

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

Refer to the [Flood Warning Network Map for the Thomson and Barcoo Rivers and Cooper Creek](#) for the station names of the rainfall locations used in Table 1.3.4.1.

Table 1.3.4.1 Rainfall totals for the Cooper Creek basin

Station name	24 hour rainfall to 9am on				Total (mm)
	February				
	9	10	11	12	
Gue	3.4	22	21		46
Torrens Creek TM *	0	99	44	4	147
Woodbine	3	84	49	4	140
Tiree	7	48	40		95
Jochmus		20	62		82
Eastmere	1.4	27	63	1.2	93
Holmleigh		61	24	1.6	87
Marengo	6.2	15	38		59
Bowen Downs TM *	8	17	66	0	91
Muttaborra	4	89	98		191
Aramac	2.6	86	78		167
Longreach TM *		79	35	0	114
Longreach AWS *	0	77	41	0.2	118
Darr TM *	0	167	11	0	178
Stonehenge TM *	0	37	16	0	53
Tambo TM *	0	4.8	21	0	26
Tambo SYN	0	4.8	24	0	29
Gillespie		7.6	31		39
Duneira		9	32		41
Blackall TM *	0	11	59	0	70
Blackall AWS *	0	12	55	0.2	67
Glencoe		154	42	0	196
Lochnagar		112	34		146
Barcaldine SYN	0	91	17	0	108
Barcaldine Weir TM *	0	96	20	0	116
Isisford	0	80	59	0	139
Wahroongha		47	25		72
Navarra		21			21
Retreat TM *	0	0	1	0	1
Numerical Average	2	54	40	1	94
Maximum	8	167	98	4	196

1.3.5 Peak Heights

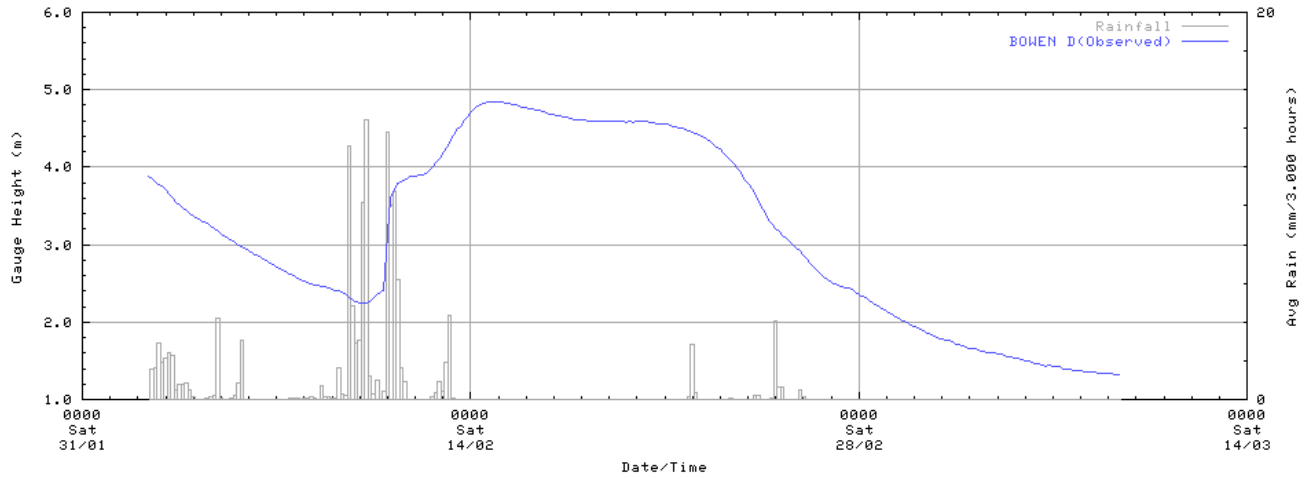
Table 1.3.5.1 Peak flood heights between 10/02/2009 and 07/03/2009

Station no.	Station name	Date	Height (metres)	Flood class
Thomson River				
536006	BOWEN DOWNS TM	14/02/2009 14:00	4.84	Unknown
036037	MUTTABURRA	11/02/2009 14:00	4.82	Minor
036037	MUTTABURRA	18/02/2009 09:00	4.57	Minor
036162	ARAMAC	12/02/2009 06:30	2.40	Moderate
036013	CAMoola PARK	12/02/2009 05:30	5.75	Moderate
036013	CAMoola PARK	20/02/2009 06:00	3.25	Minor
036161	LONGREACH TM	12/02/2009 21:00	5.70	Major
036161	LONGREACH TM	23/02/2009 01:00	3.94	Minor
036107	LONGREACH	13/02/2009 06:00	4.35	Major
536005	DARR TM	12/02/2009 02:00	5.37	Unknown
036116	BOGEWONG	16/02/2009 17:00	6.35	Major
537004	STONEHENGE TM	10/02/2009 22:10	4.47	Moderate
537004	STONEHENGE TM	18/02/2009 06:00	5.65	Moderate
038037	JUNDAH	13/02/2009 15:00	4.00	Moderate
038037	JUNDAH	20/02/2009 06:00	5.90	Major
Barcoo River				
035286	GLENCOE	12/02/2009 14:00	2.10	Minor
036026	ISISFORD	11/02/2009 18:00	3.26	Below Minor
036026	ISISFORD	15/02/2009 19:30	3.54	Below Minor
036104	OMA	11/02/2009 18:00	3.95	Below Minor
036094	WAHROONGHA	12/02/2009 06:00	3.05	Minor
036094	WAHROONGHA	18/02/2009 06:00	3.00	Minor
Cooper Creek				
038038	WINDORAH	21/02/2009 15:00	6.05	Major

1.3.6 Flood Hydrographs

Figure 1.3.6.1 River heights for Bowen Downs and Camoola Park

Cornish Creek at Bowen Downs



Thomson River at Camoola Park

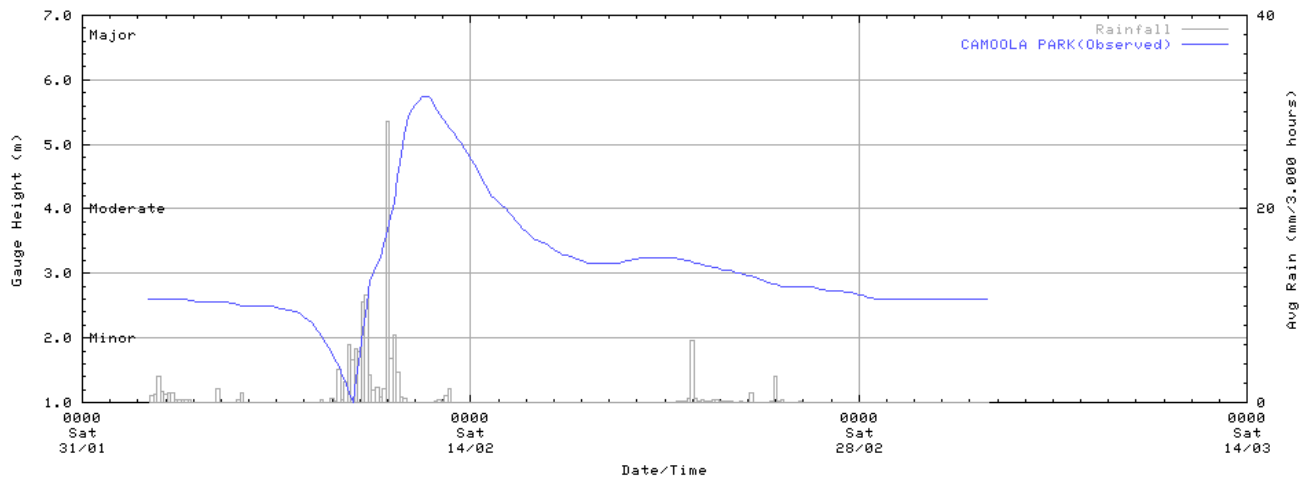
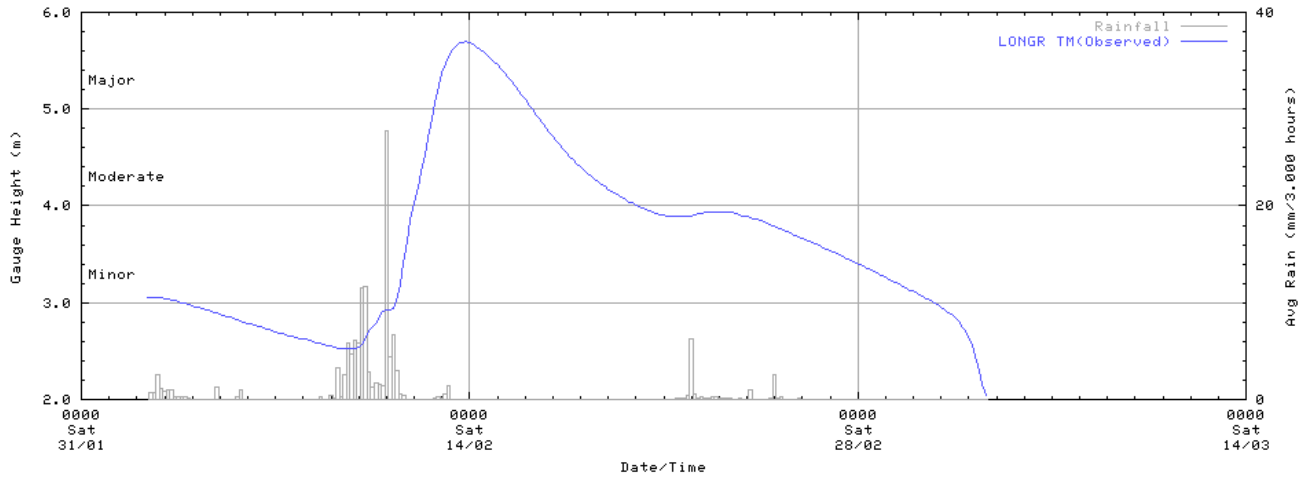


Figure 1.3.6.2 River heights for Longreach TM and Longreach

Thomson River at Longreach TM



Thomson River at Longreach

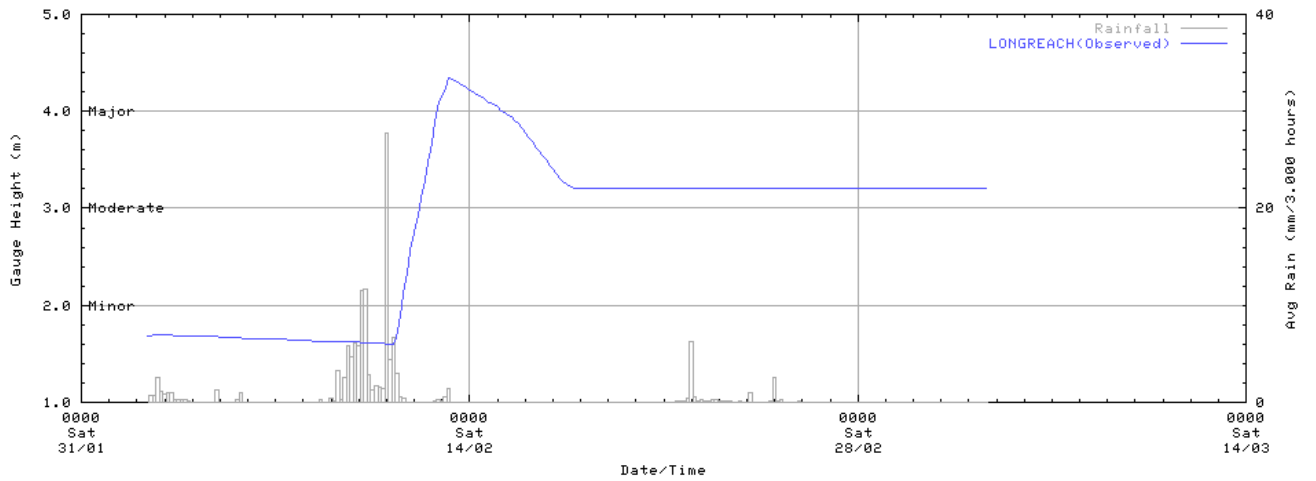
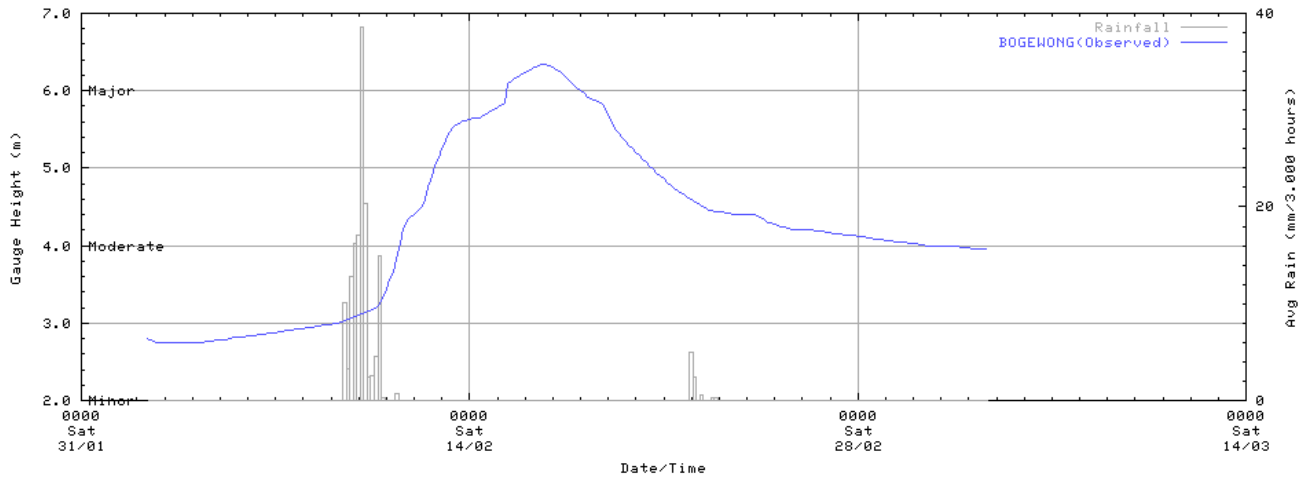
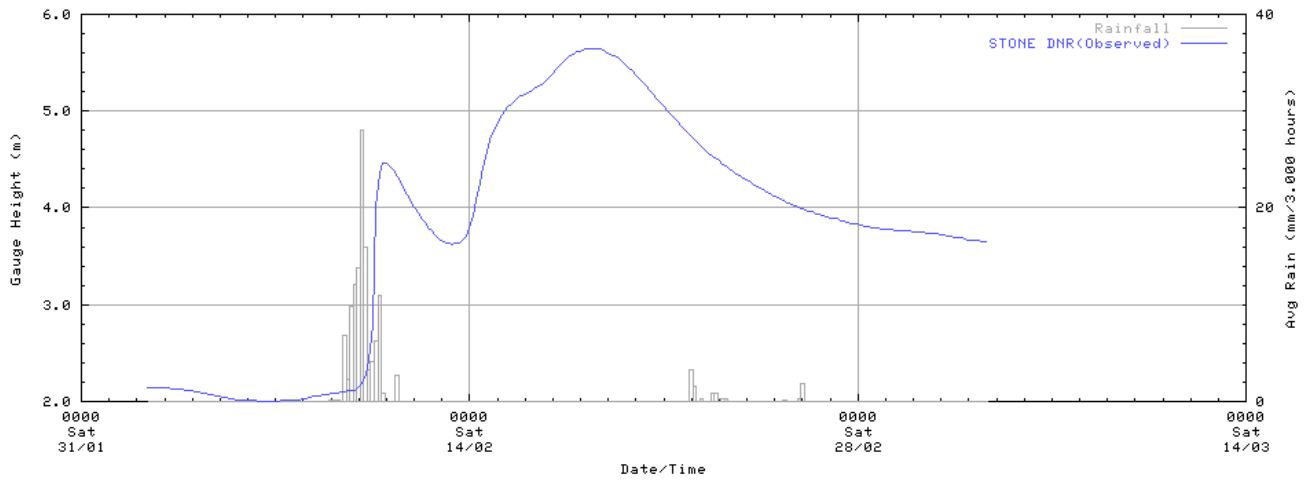


Figure 1.3.6.3 River heights for Bogewong, Stonehenge TM and Stonehenge

Thomson River at Bogewong



Thomson River at Stonehenge TM



Thomson River at Stonehenge

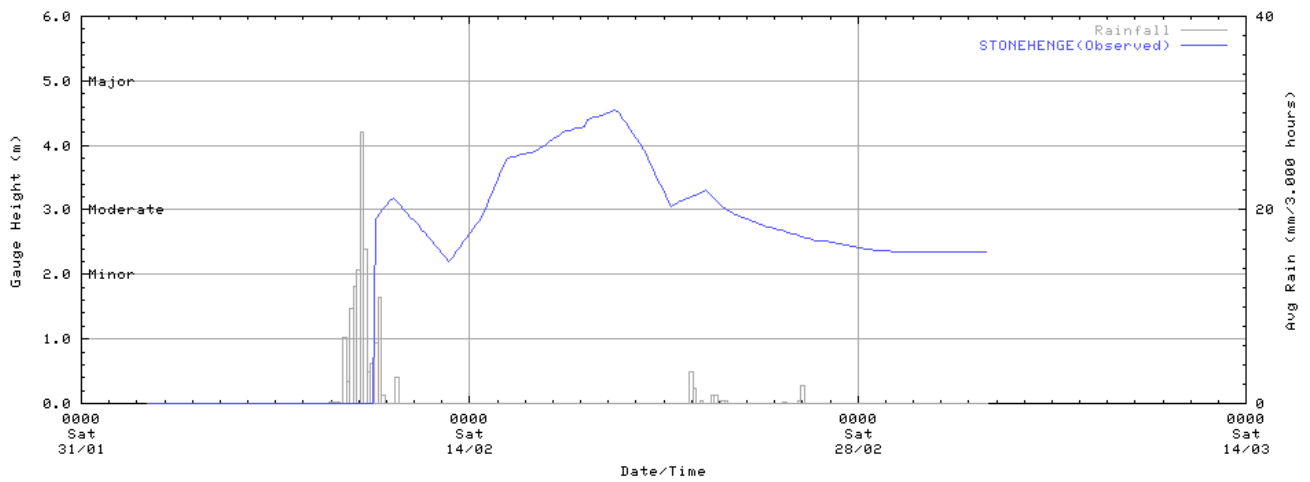
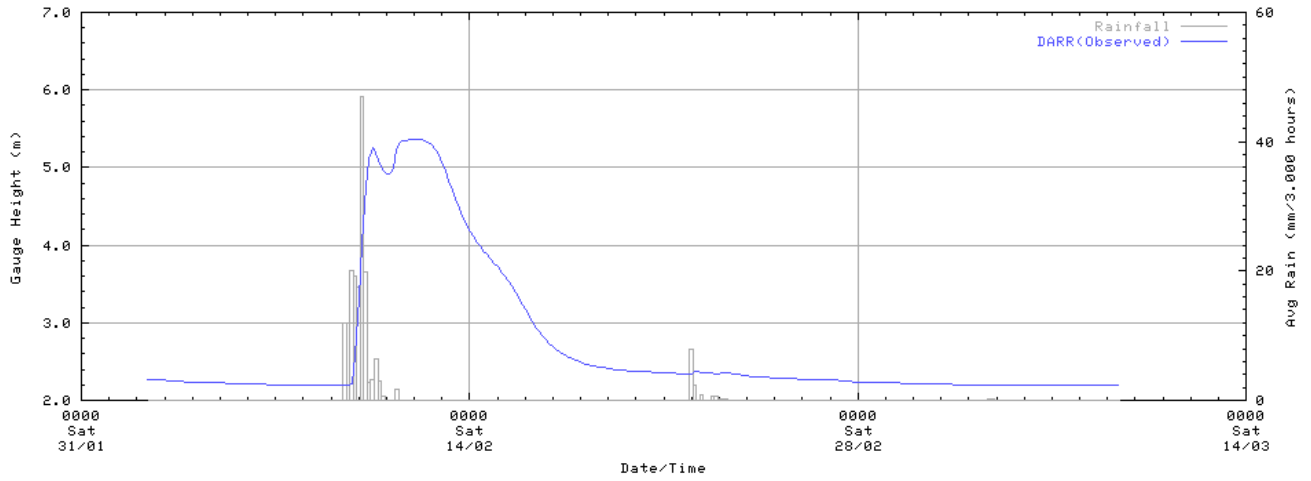
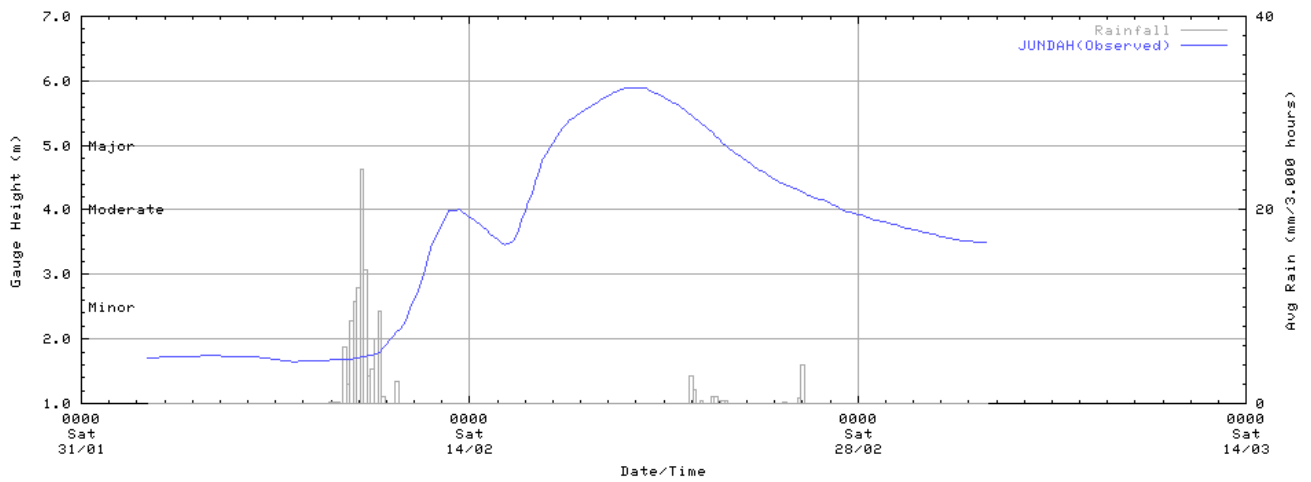


Figure 1.3.6.4 River heights for Darr, Jundah and Windorah

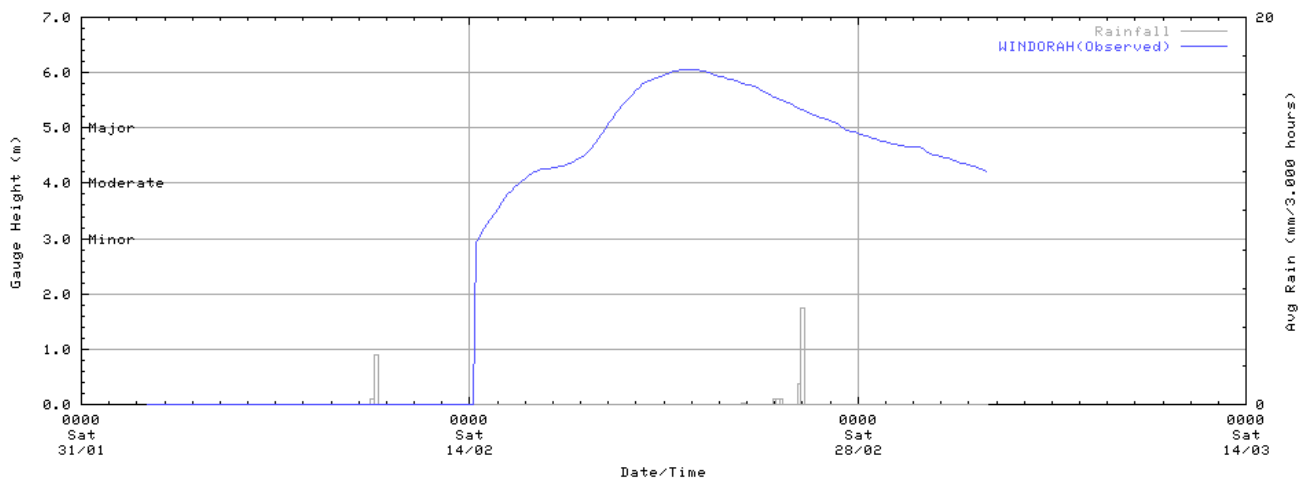
Darr River at Darr



Thomson River at Jundah



Cooper Creek at Windorah



1.3.7 Warning Services

Table 1.3.7.1 Flood warnings and predictions issued between 10/02/2009 and 07/03/2009.

River catchment	Number of warnings	Number of major warnings	Number of predictions	Number of locations	First warning	Last warning
Thomson, Barcoo, Cooper	31	18	22	5	12:56pm Tues 10/02/2008	10:14am Sat 7/03/2009

2. The Georgina River and Eyre Creek catchment

2.1 Introduction

The Georgina River and Eyre Creek system drains an area of approximately 210,000 square kilometres. It rises to the north west of Mt Isa with three main tributaries, the Buckle, Sander and Ranken Rivers. The latter two have their headwaters in the Northern Territory. Further inflow enters the system from numerous creeks and rivers, the two main tributaries being the Burke and Hamilton Rivers. The Burke River drains the area to the north of Boulia and enters the Georgina River about 20 kilometres upstream of Marion Downs, whilst the Hamilton rises to the northeast of Boulia and enters the main Georgina below Marion Downs. Towns located within the catchment include Urandangi, Dajarra, Boulia and Bedourie.

Very little rainfall is needed to bring the area to a standstill. Following flood rains, the main channel fills fairly quickly and then spreads out into the neighbouring channels and watercourses for kilometres on either side. In the event of severe flooding, the Georgina can vary in width in the upper reaches from 15 to 20 kilometres, and in the lower reaches it is estimated in some sections to be 25 to 30 kilometres wide.

The main impact of flooding is the isolation of towns and properties and the extensive inundation of grazing lands which can last several months in some areas. Road transport is disrupted for long periods.

Significant rainfall was recorded in the Georgina River and Eyre Creek catchment during the 2nd-9th January 2009, 19th-22nd January and the 9th-10th February. This caused riverine flooding in the Georgina River, Eyre Creek and Burke River. A major flood level was reached in the Georgina River at Camooweal, Roxborough Downs, Glenormiston and Marion Downs, in Eyre Creek at Bedourie and Glengyle and in King Creek at Cluny.

A number of towns, including Urandangi, Boulia and Bedourie, were cut off for extended periods due to poor road conditions and flooding.

This report provides a summary and analysis of the meteorology and hydrology of the Georgina River and Eyre Creek Floods of January to March 2009. A [map of the Georgina River and Eyre Creek catchment](#) shows the location of flood warning stations referred to in this report.

2.2 Meteorological Summary

In early January a low pressure system, located over the Northern Territory, and the monsoon trough that extended over Cape York Peninsula brought widespread rain and storms over northern and north-west areas of Queensland. This produced large rainfall totals during 2nd-9th January 2009 across the Georgina River and Eyre Creek catchment.

During mid to late January isolated showers and thunderstorms over the northern and western parts of Queensland produced isolated heavy falls. On the 19th-22nd January in particular the catchment received further heavy falls.

On 9th February, a low pressure system was located around the Queensland/New South Wales border near Cunnamulla with an associated surface trough extending over south west Queensland. The system then moved slowly eastwards over the next few days. This caused heavy rainfall during 9th-10th February across the catchment.

For a more detailed discussion of the meteorology of the event and a summary of flooding in Queensland throughout January to March 2009, refer to the report [Queensland Floods January and February 2009](#).

2.3 Hydrology

Heavy rainfall received in the period 2nd-9th January 2009, caused the initial flood peak heights at Camooweal, Urandangi, Roxborough Downs TM, Glenormiston, Boulia TM, Marion Downs and Cluny. Five of these stations, Camooweal, Roxborough Downs TM, Glenormiston, Marion Downs and Cluny, reached major flood level between 9th-14th January. Refer to the [Flood Warning Network Map for the Georgina River and Eyre Creek](#) for the station names of the rainfall locations.

The rainfall received from mid to late January, in particular the 19th-22nd January period, prolonged the flooding throughout the catchment.

Rainfall was recorded between 9th-10th February, with the largest falls occurring at Camooweal, Urandangi and Trepell. This gave rise to a second flood peak. A moderate flood peak as a result of this latest rainfall was recorded at Urandangi on 12th February. These floodwaters then traveled downstream over the following two weeks to give a major flood peak at Glengyle on the 26 February.

2.3.1 Peak River Heights

The flooding in the Georgina River and Eyre Creek catchment was the most significant flooding in some parts of the region since 1977. In Table 2.3.1.1, the flood peak height comparisons to records for January-February 2009 are shown. The peak river heights for the period January – March 2009 are shown in Figure 2.3.1.1.

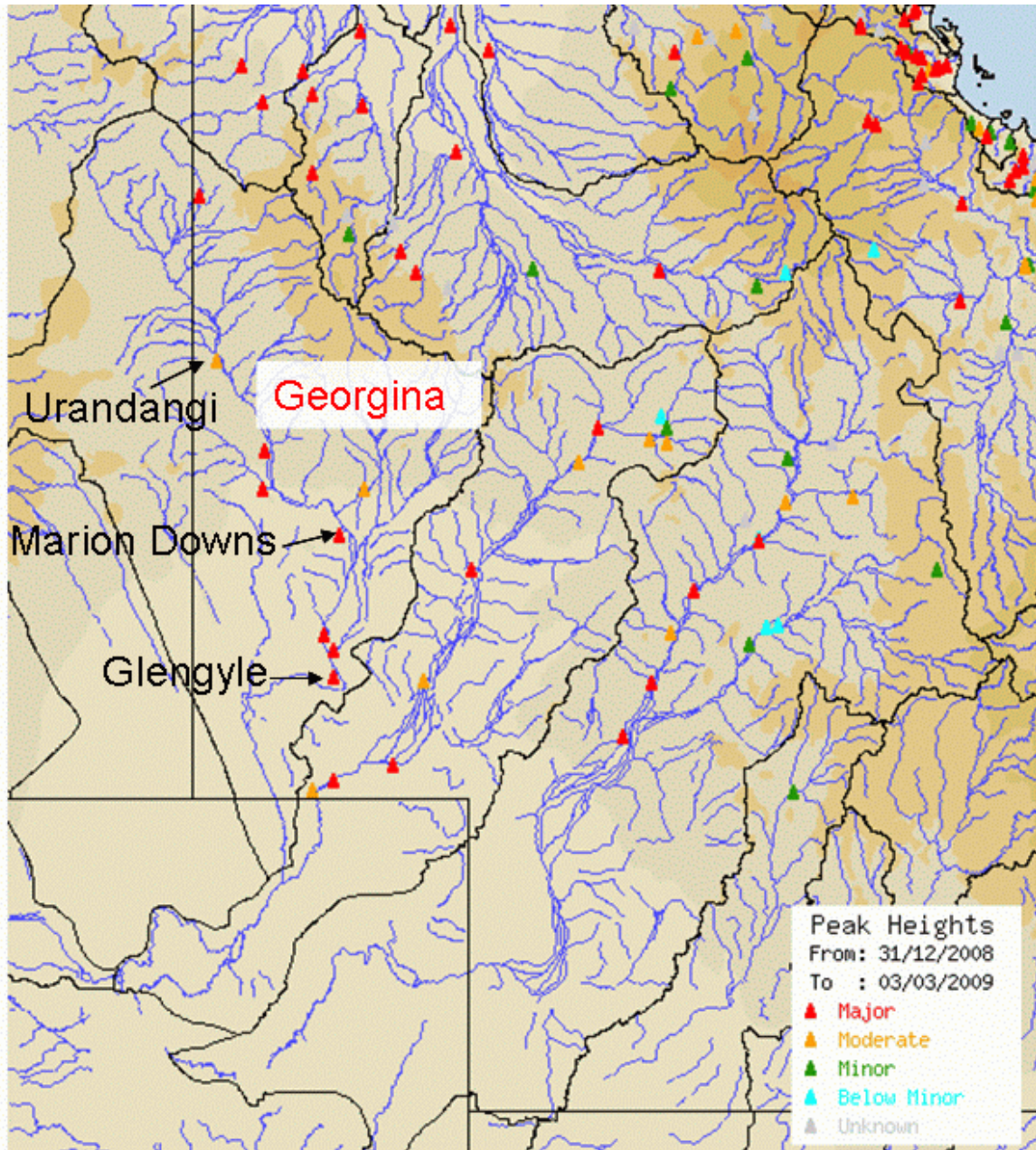
The flood peak on the Georgina River at Camooweal was the highest flood peak on record with records starting in 2005. At Roxborough Downs on the Georgina River major flooding was the 4th highest on record and the highest since 1977, from a record starting in 1968.

The flood peak on Eyre Creek at Bedourie was the 2nd highest on record with records starting in 1999. At Cluny on King Creek the 4th equal highest flood peak height was recorded, from a long record going back to 1961.

Table 2.3.1.1 Peak height comparison to records

Gauging station	Jan-Feb 2009 peak (metres)	Start of record	Ranking	Highest since	Highest on record
Georgina River at Camooweal	6.50m	2005	1 st	2007	New Record
Georgina River at Urandangi	6.85m	1974	5 th	1997	7.45m 1974
Georgina River at Roxborough Downs	9.22m	1968	4 th	1977	9.93m 1977
Georgina River at Glenormiston	7.50m	1950	6 th =	1997	8.89m Jan 1974
Georgina River at Marion Downs	6.15m	1941	8 th =	2000	7.42m Jan 1974
Eyre Creek at Bedourie	5.38m	1999	2 nd	2007	5.40m Jan 2007
Eyre Creek at Glengyle	5.25m	1971	16 th	1997	6.45m Feb 1974
King Creek at Cluny	5.50m	1961	4 th =	1997	6.40m Feb 1974
Burke River at Boulia	5.26m	1967	15 th =	2005	5.96m Feb 1974

Figure 2.3.1.1 Peak height map January – March 2009

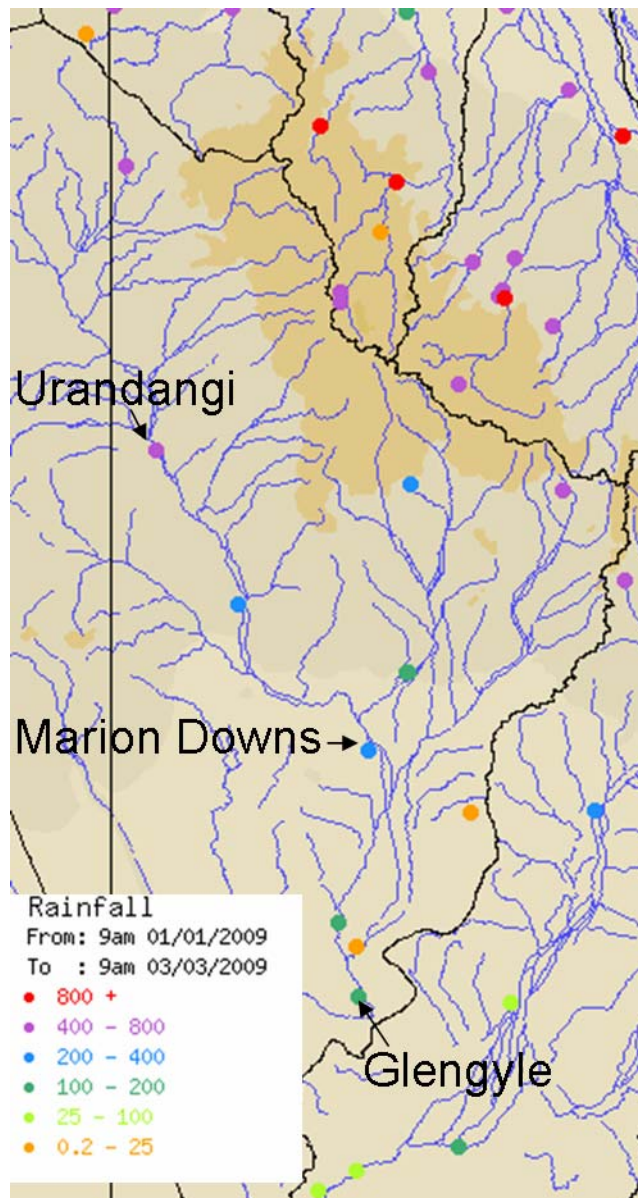


2.3.2 Rainfall Maps

The highest daily rainfall total in the period January to March 2009 of 192mm was recorded at Marion Downs in the 24 hours to 9am on 7th January. Camooweal during the 24 hours to 9am on 9 February received 132mm. (Table 2.3.4.1)

The rainfall amounts in Figure 2.3.2.1 are given in millimetres. Refer to the [Flood Warning Network Map for the Georgina River and Eyre Creek](#) for the station names of the rainfall locations used in Figure 2.3.2.1.

Figure 2.3.2.1 Rainfall map for the period 01/01/09 to 03/03/09



The highest rainfall totals were recorded in the catchment north of Marion Downs.

2.3.3 Rainfall Intensity

For some of the key stations in the Georgina River and Eyre Creek catchment Hourly Hyetographs (Figures 2.3.3.2 to 2.3.3.3) have been produced. An Intensity Frequency Duration (IFD) analysis for Trepell Airport is shown in Figure 2.3.3.1.

At Trepell the observed rainfall total of 83 mm in the 6 hours to 10:00am 8th January is assessed as being greater than 5-10% AEP (10-20 year ARI) intensity. Refer to Figure 2.3.3.1.

In the Georgina River at Camooweal the observed rainfall total of 114 mm in the 24 hours to 9:00am 7th January is assessed as being greater than 10-20% AEP (5-10 year ARI) intensity. Refer to Figure 2.3.3.2.

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 2.3.3.1 IFD rainfall analysis for Trepell Ap

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS		
LOCATION: 037036 TREPELL AP		
Analysis of the rainfall for the 192 hours to Fri Jan 9 09:00:00 2009		
Rain (mm)	Period Ending	ARI (years)
22	60 mins ending at 05:00:00 08/01/2009	1-2
36	2 hours ending at 06:00:00 08/01/2009	2-5
53	3 hours ending at 07:00:00 08/01/2009	2-5
83	6 hours ending at 10:00:00 08/01/2009	10-20
88	12 hours ending at 11:00:00 08/01/2009	5-10
94	24 hours ending at 10:00:00 08/01/2009	2-5
107	48 hours ending at 10:00:00 04/01/2009	2-5
163	72 hours ending at 10:00:00 04/01/2009	5-10

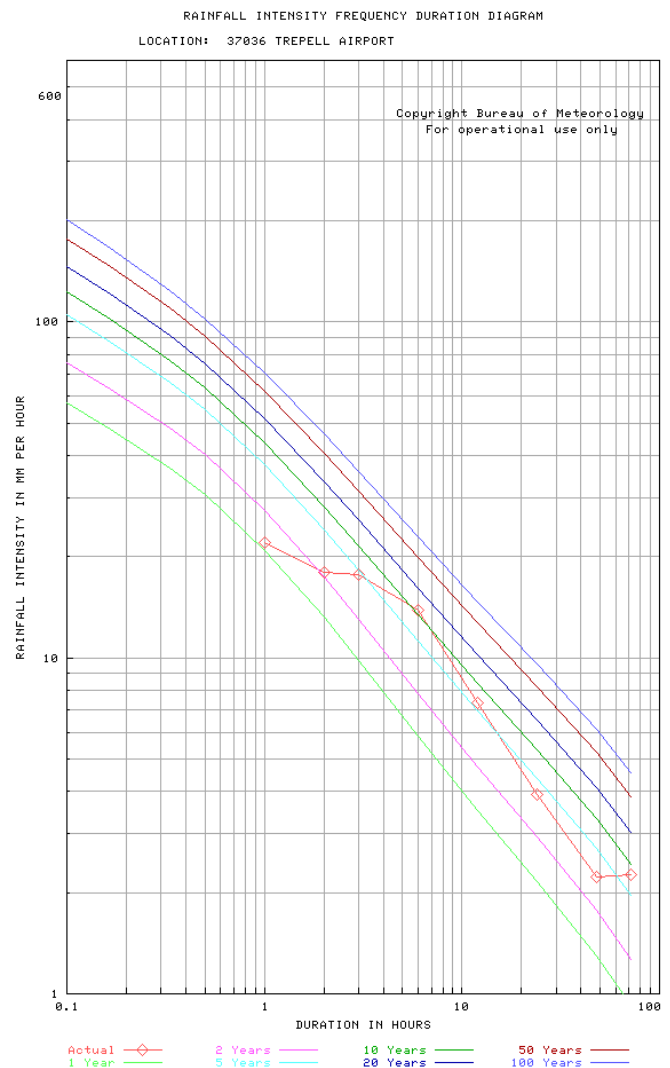


Figure 2.3.3.2 IFD rainfall analysis for Camooweal

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS		
LOCATION: 037010 CAMOOWEAL		
Analysis of the rainfall for the 72 hours to Fri Jan 9 09:00:00 2009		
Rain (mm)	Period Ending	ARI (years)
113.6	24 hours ending at 09:00:00 07/01/2009	5-10
116.4	48 hours ending at 09:00:00 08/01/2009	2-5
165	72 hours ending at 09:00:00 09/01/2009	2-5

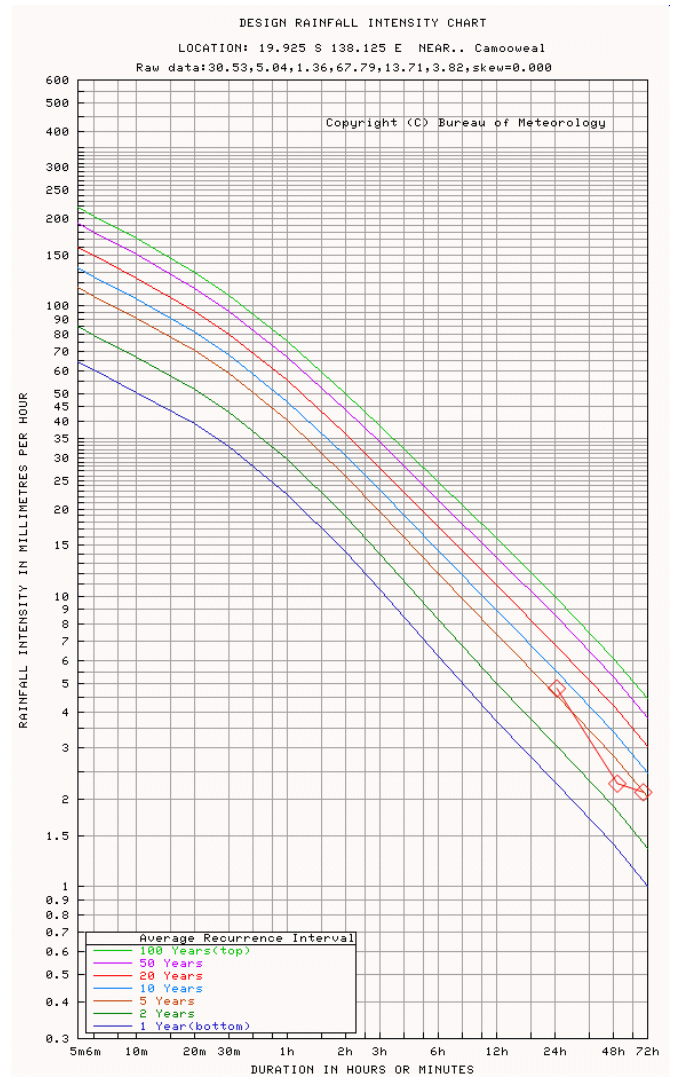


Figure 2.3.3.2 Hourly hyetographs for Roxborough Downs TM and Trepell Ap

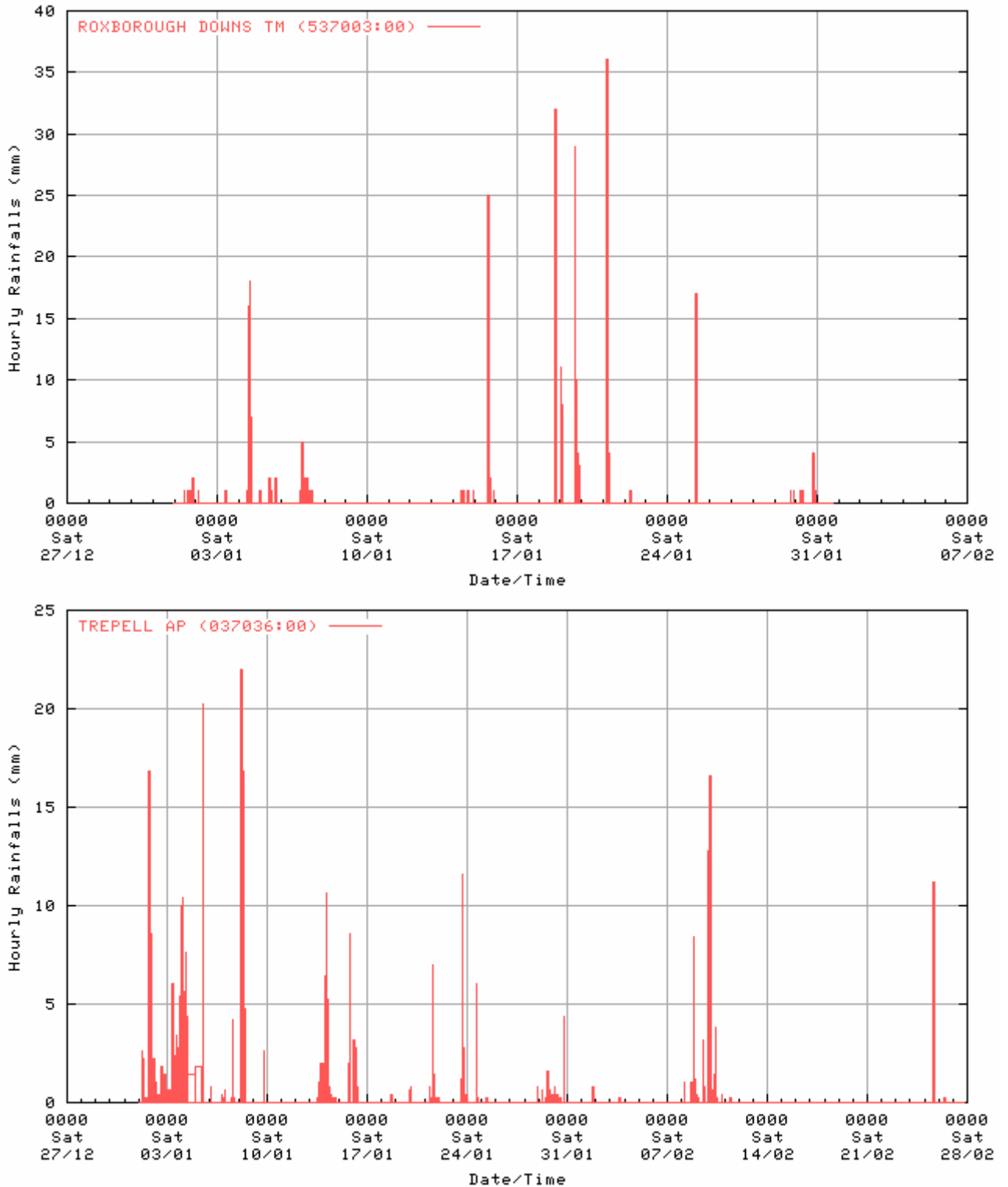
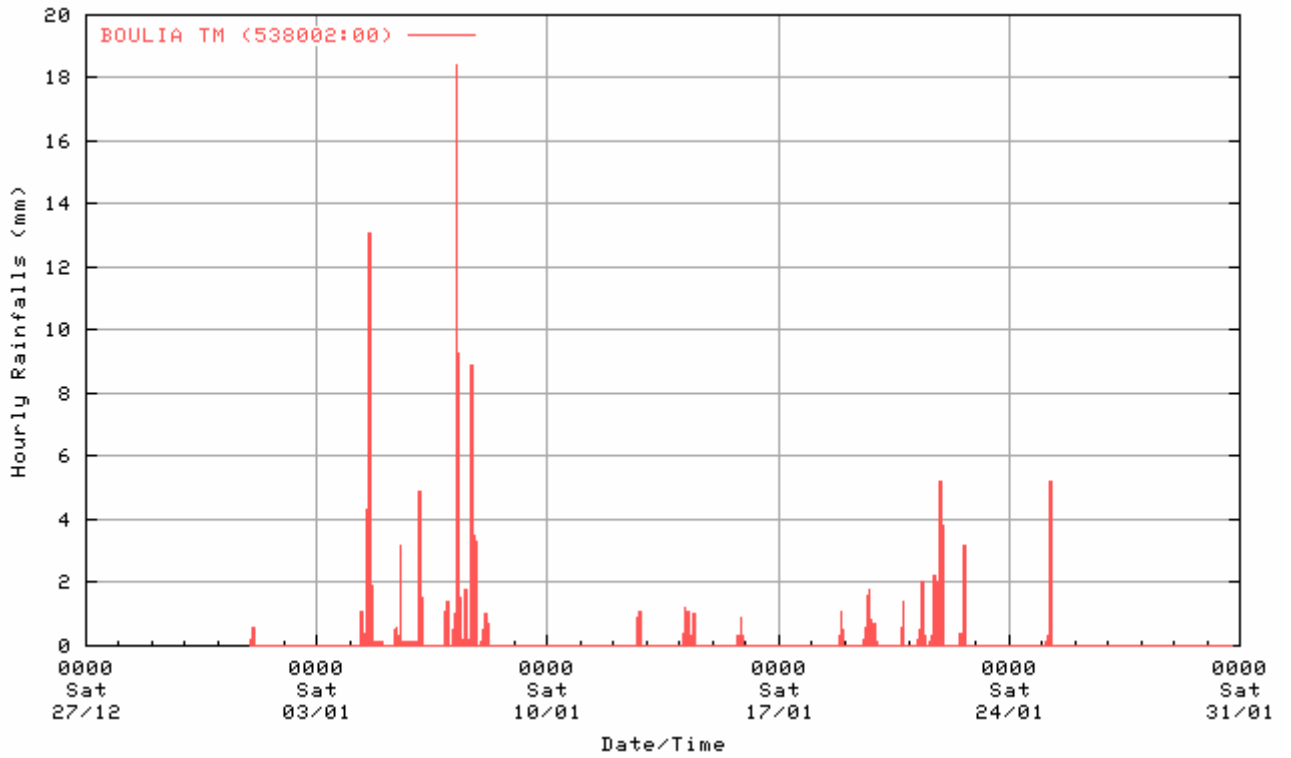


Figure 2.3.3.3 Hourly hyetograph for Boulia TM



2.3.4 Rainfall Totals

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, only selected dates of rainfall are shown.

Refer to the [Flood Warning Network Map for the Georgina River and Eyre Creek](#) for the station names of the rainfall locations used in Table 2.3.4.1.

Table 2.3.4.1 Rainfall totals for the Georgina River and Eyre Creek catchment

Station name	24 hour rainfall to 9am on														Total (mm)
	January												February		
	2	3	4	5	6	7	8	9	19	20	21	22	9	10	
Camooweal *	56	57	58	7.2	22	114	2.8	49	1.6	58	0	2.2	132	103	663
Urandangi *	46	12	11	5	35	55	16		3.4	61	5	56	2.6	50	358
Roxborough Downs TM *	7	0	1		5	14	1	0	60	49	40	1	0	3	181
The Monument AWS *	0	0	90	21	2.8	17	44	0.2	0	0	0	0	0	0	175
Boulia TM *	0	0	0	34	12	34	23	0	2	6	6	15	0	9	141
Boulia SYN	0	0	0.8	47	14	38	20	0	0	6.2	3.8	18	0	9	157
Marion Downs				7	3.5	192	22	0		33	24	12	2	12	308
Trepell AWS *	56	23	84		23	1.2	89	5	0.6	2	0.8	10	13	63	371
Coorabulka											9	14			23
Bedourie			0.6		0.1	40	46	0.1		2.6	12	16	0	0.3	118
Glengyle						85	59				54				198
Numerical average	24	13	35	20	13	59	32	7	10	24	14	14	17	28	245
Maximum	56	57	90	47	35	192	89	49	60	61	54	56	132	103	663

2.3.5 Peak Heights

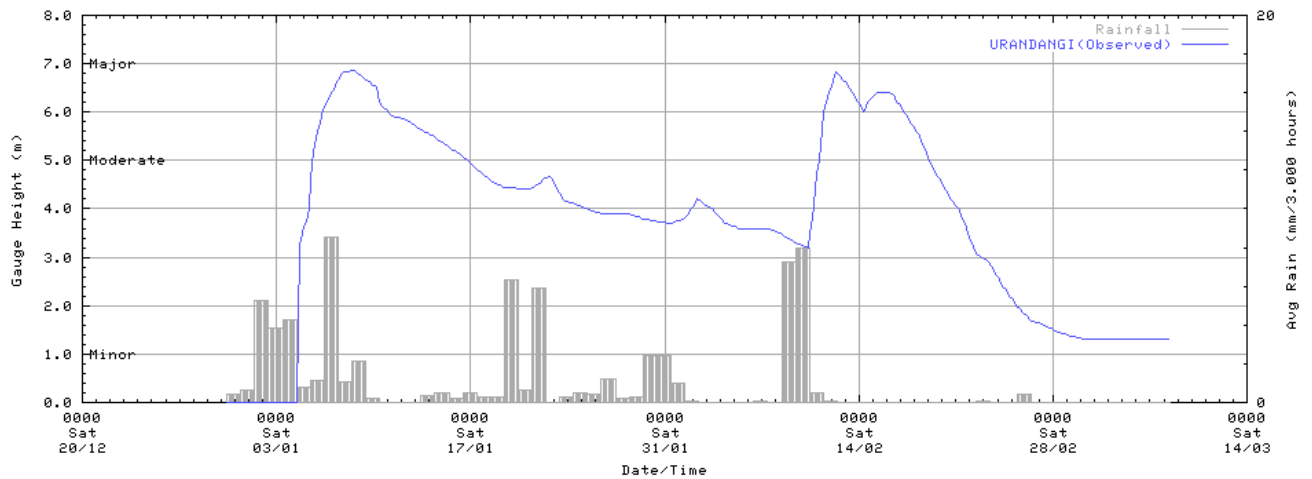
Table 2.3.5.1 Peak flood heights between 07/01/2009 and 13/03/2009

Station no.	Station name	Date	Height (metres)	Flood class
Georgina River				
037010	CAMOOWEAL	09/01/2009 09:00	6.50	Major
037043	URANDANGI	08/01/2009 08:45	6.85	Moderate
037043	URANDANGI	02/02/2009 09:00	4.20	Minor
037043	URANDANGI	12/02/2009 07:00	6.85	Moderate
037043	URANDANGI	15/02/2009 08:30	6.40	Moderate
537003	ROXBOROUGH DOWNS TM	10/01/2009 19:00	9.22	Major
537003	ROXBOROUGH DOWNS TM	15/02/2009 12:00	9.07	Major
038010	GLENORMISTON	11/01/2009 15:00	7.50	Major
038010	GLENORMISTON	19/02/2009 07:30	7.27	Major
538002	BOULIA TM	06/01/2009 20:50	5.13	Moderate
538002	BOULIA TM	10/01/2009 04:00	5.26	Moderate
538002	BOULIA TM	18/01/2009 08:30	4.27	Minor
038014	MARION DOWNS	09/01/2009 08:00	5.65	Major
038014	MARION DOWNS	14/01/2009 07:00	6.15	Major
038014	MARION DOWNS	19/02/2009 18:30	6.05	Major
038000	BEDOURIE	22/01/2009 06:00	5.38	Major
038000	BEDOURIE	27/02/2009 06:00	5.19	Major
038005	CLUNY	14/01/2009 06:00	5.50	Major
038005	CLUNY	21/01/2009 06:00	5.45	Major
038005	CLUNY	25/02/2009 18:00	5.15	Major
038009	GLENGYLE	22/01/2009 19:00	5.25	Major
038009	GLENGYLE	26/02/2009 06:00	4.90	Major

2.3.6 Flood Hydrographs

Figure 2.3.6.1 River Heights for Urandangi and Roxborough Downs

Georgina River at Urandangi



Georgina River at Roxborough Downs

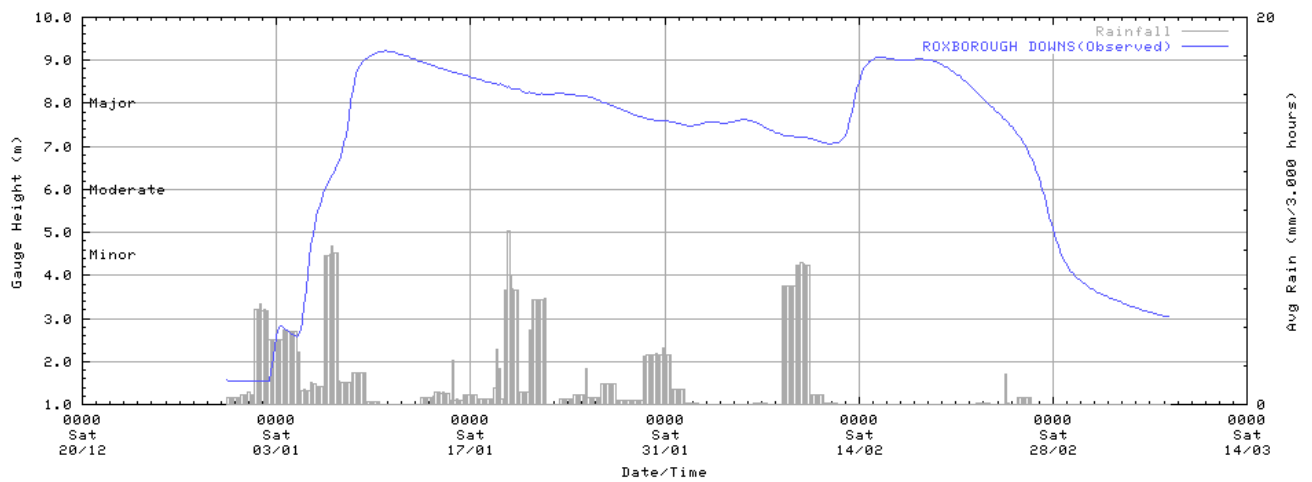
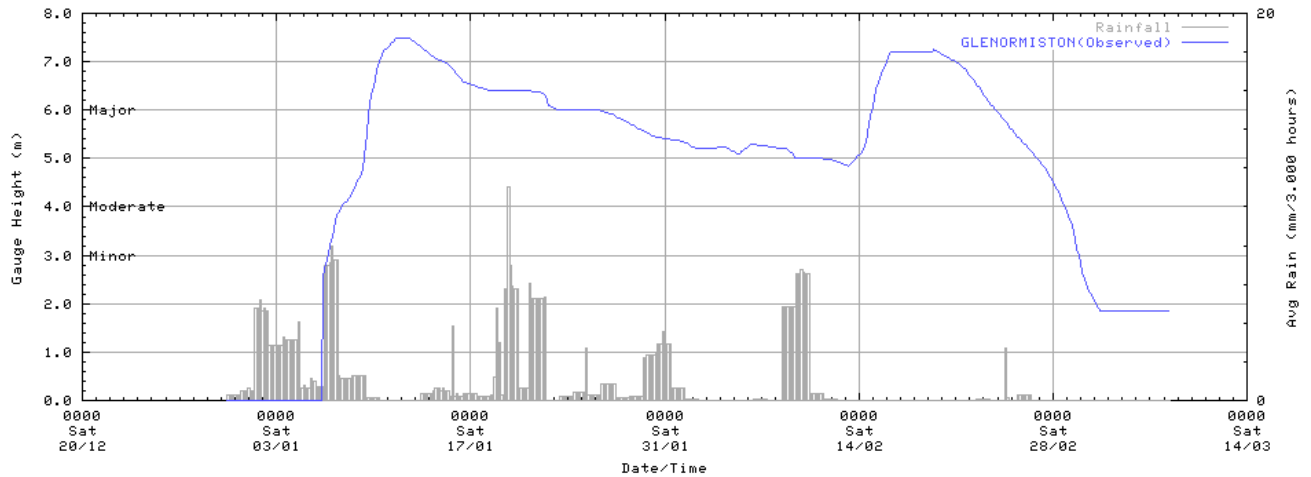
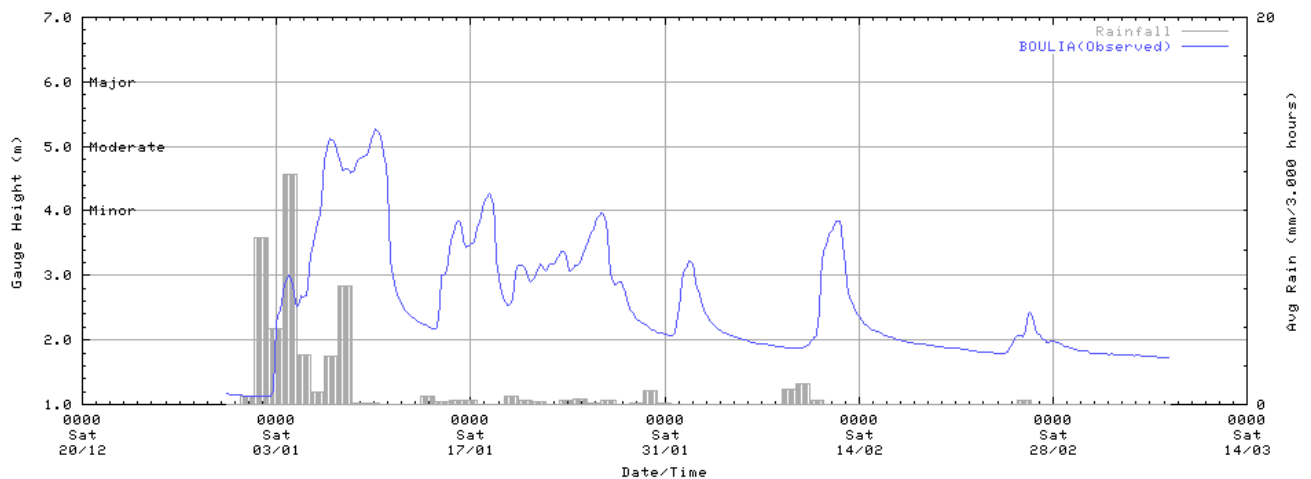


Figure 2.3.6.2 River Heights for Glenormiston, Boulia and Marion Downs

Georgina River at Glenormiston



Burke River at Boulia



Georgina River at Marion Downs

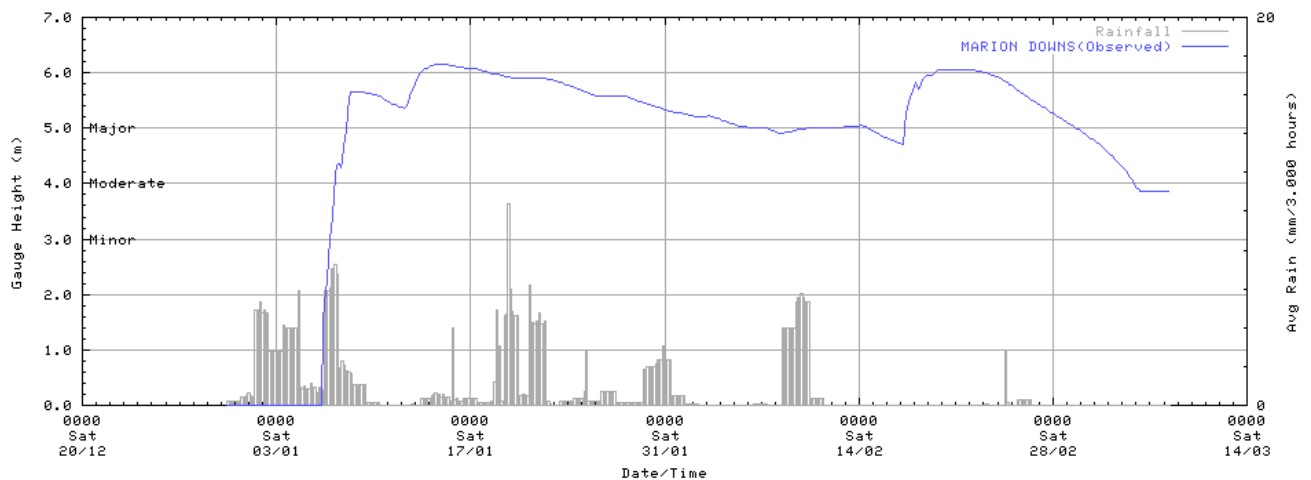
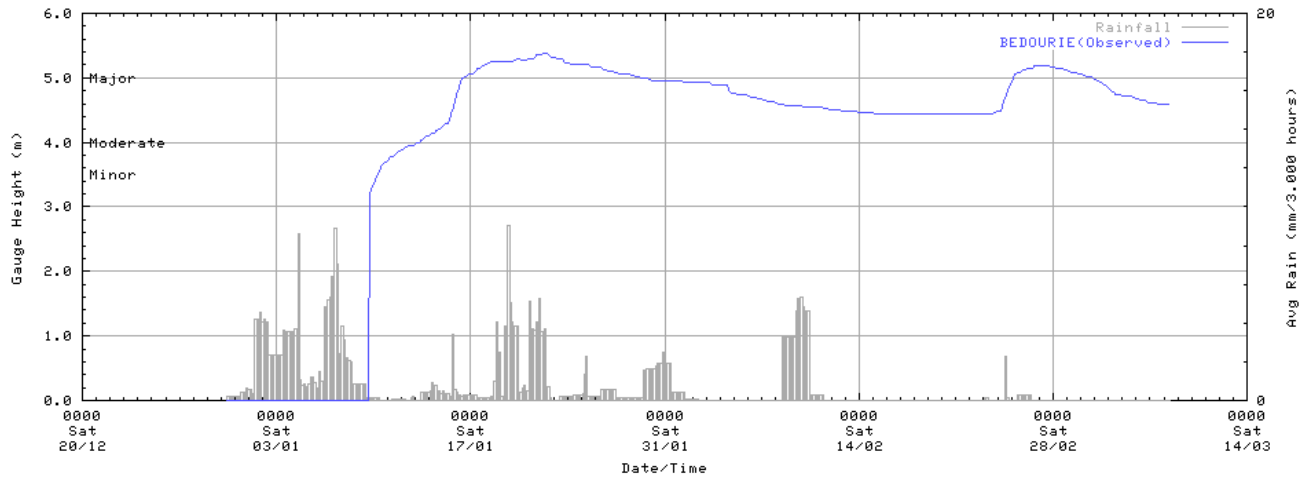
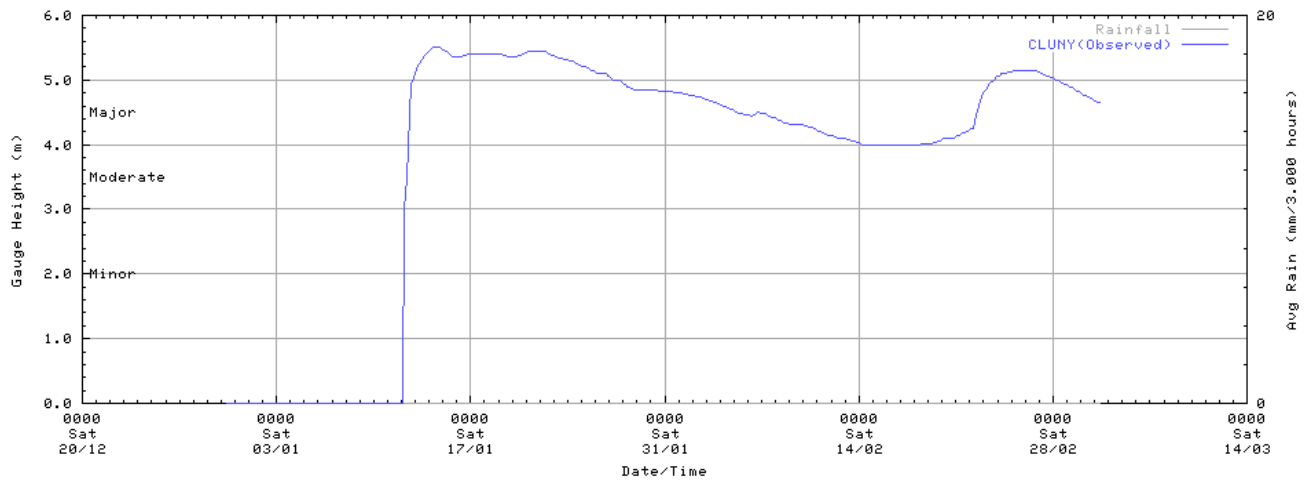


Figure 2.3.6.3 River Heights for Bedourie, Cluny and Glengyle

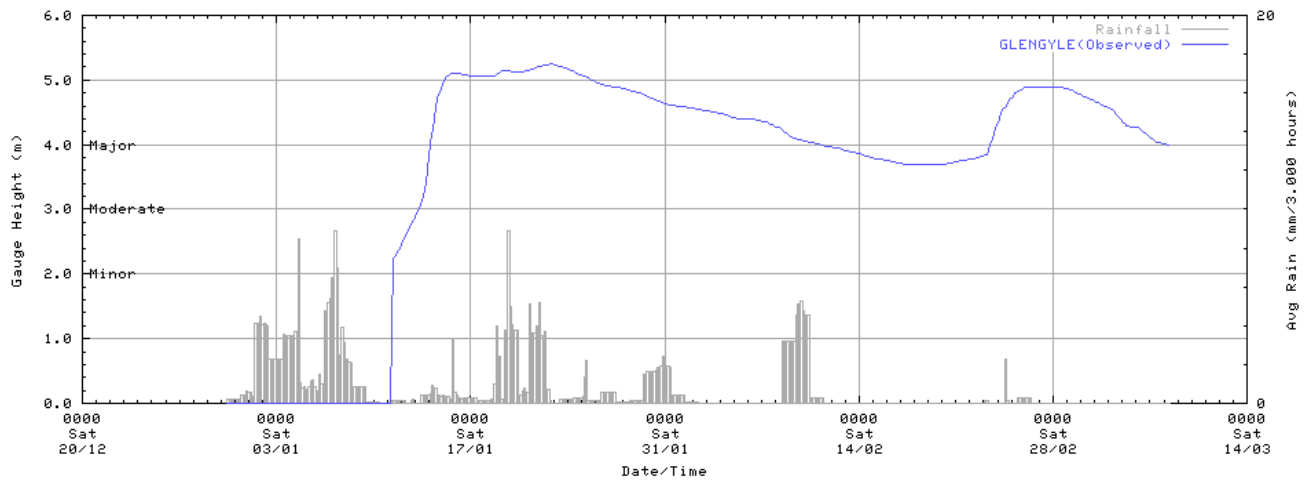
Georgina River at Bedourie



King Creek at Cluny



Georgina River at Glengyle



2.3.7 Warning Services

Table 2.3.7.1 Flood warnings and predictions issued between 01/01/2009 and 03/03/2009.

River catchment	Number of warnings	Number of major warnings	Number of predictions	Number of locations	First warning	Last warning
Georgina	69	62	4	2	10:39am Tues 06/01/2009	10:10am Fri 13/03/2009

3. The Diamantina River catchment

3.1 Introduction

The vast Diamantina River catchment is located in south west Queensland and covers an area of approximately 119,000 square kilometres. The river rises in the Swords Range, 70 kilometres southwest of Kynuna and flows initially in a north and easterly direction before changing to a southwesterly direction 70 kilometres west of Winton. Major tributaries joining the river are the Western and Mayne Rivers above Diamantina Lakes and Farrars Creek below Monkira. The river does not have a well defined main channel but consists generally of a series of wide relatively shallow channels. The river passes through the town of Birdsville before crossing the Queensland-South Australia border 10 kilometres south of Birdsville. Floods normally develop in the headwaters of the Diamantina River and its major tributaries, however, flooding may result from heavy rainfall falling in the middle to lower reaches of the catchment around Diamantina Lakes. Local area rainfalls can be a significant factor throughout these areas.

The main impact of the record major flooding in January 1974 at Birdsville, and more recently the floods of 1991 and 2000, is the isolation of towns and properties and the extensive inundation of grazing lands which can last several months in some areas, with road transport disrupted for considerable periods of time.

Significant rainfall was recorded in the Diamantina River catchment during the 2-9 January 2009, 14-16, 19-22 January and the 9-10 February. This caused riverine flooding in the Diamantina and Western Rivers. A major flood level was reached in the Diamantina River at Elderslie, Diamantina Lakes, Durrie Station and Birdsville.

This report provides a summary and analysis of the meteorology and hydrology of the Diamantina River Floods of January to March 2009. A [map of the Diamantina River catchment](#) shows the location of flood warning stations referred to in this report.

3.2 Meteorological Summary

In early January a low pressure system, located over the Northern Territory, and the monsoon trough that extended over Cape York Peninsula brought widespread rain and storms over northern and north-west areas of Queensland. This produced large rainfall totals during 2-9 January 2009 across the Diamantina River catchment.

During mid to late January isolated showers and thunderstorms over the northern and western parts of Queensland produced isolated heavy falls. On the 14-16 and 19-23 January in particular the catchment received further heavy falls.

On 9 February, a low pressure system was located around the Queensland/New South Wales border near Cunnamulla with an associated surface trough extending over south west Queensland. The system then moved slowly eastwards over the next few days. This caused heavy rainfall during 9-11 February across the catchment.

For a more detailed discussion of the meteorology of the event and a summary of flooding in Queensland throughout January and February 2009, refer to the report [Queensland Floods January and February 2009](#).

3.3 Hydrology

Heavy rainfall received in the period 2-9 January 2009, caused flooding throughout the Diamantina River catchment. Major flood peaks were recorded at Elderslie, Diamantina Lakes, Durrie and Birdsville. Minor to moderate flood peaks were also recorded at Apsley, Winton, Tulumur, Monkira and Birdsville. Refer to the [catchment map](#)

The rainfall received from mid to late January, in particular the 19-22 January period, prolonged the flooding throughout the catchment.

Rainfall was recorded during the 9-10 February, with the largest falls occurring at Mackunda Downs. This gave rise to a second flood peak. A flood peak as a result of this latest rainfall was first recorded at Elderslie on 11 February. These floodwaters then traveled downstream over the following two weeks to peak at Birdsville on the 9 March.

3.3.1 Peak River Heights

The flooding in the Diamantina River catchment was the most significant flooding since 2000. In Table 3.3.1.1, the flood peak height comparisons to records for January-March 2009 are shown.

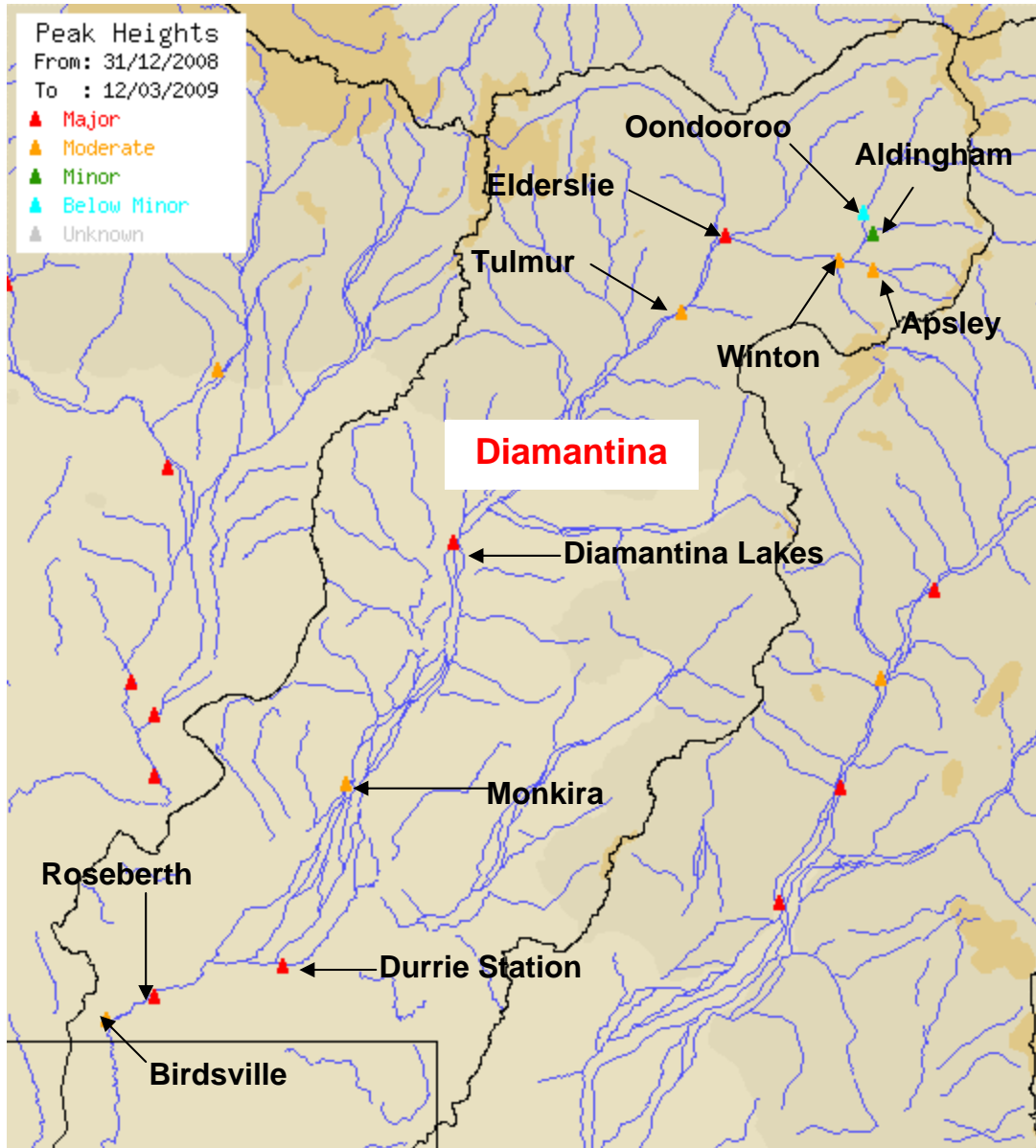
Record flood heights were recorded at Apsley and Elderslie, with short records starting in 2004 and 2000 respectively. At Diamantina Lakes on the Diamantina River major flooding was the equal 6th highest on record and the highest since 2000, from a record starting in 1965.

In the Lower Diamantina River at Monkira the 16th highest flood peak was reached, from a record dating back to 1947. At Birdsville the equal 17th highest flood peak height was recorded, from a long record going back to 1949.

Table 3.3.1.1 Peak height comparison to records

Gauging station	Jan-Feb 2009 peak (metres)	Start of record	Ranking	Highest since	Highest on record
Mills Creek at Oondooroo	3.91	2000	3 rd	Feb 2007 (2 years)	4.11m February 2000
Jessamine Creek at Aldingham	1.60	2000	2 nd	2000	2.66m 2000
Western River at Apsley	2.70	2004	1 st	New Record	New Record
Western River at Winton	2.45	1955	7 th	2004	5.01m 1955
Diamantina River at Elderslie	4.80	2000	1 st	New Record	New Record
Diamantina River at Tulmur	7.40	1937	6 th	2000	9.75m 1974
Diamantina River at Diamantina Lakes	6.53	1965	= 6 th	2000	7.71m 1974
Diamantina River at Monkira	4.15	1949	16 th	2004	6.12m 1974
Diamantina River at Durrie	2.81	1974	7 th	2000	5.30m 1974
Diamantina River at Roseberth	5.70	1971	8 th	2000	7.60m 1974
Diamantina River at Birdsville	7.20	1949	= 17 th	2004	9.45m 1974

Figure 3.3.1.1 Peak height map 31/12/08 – 12/03/09

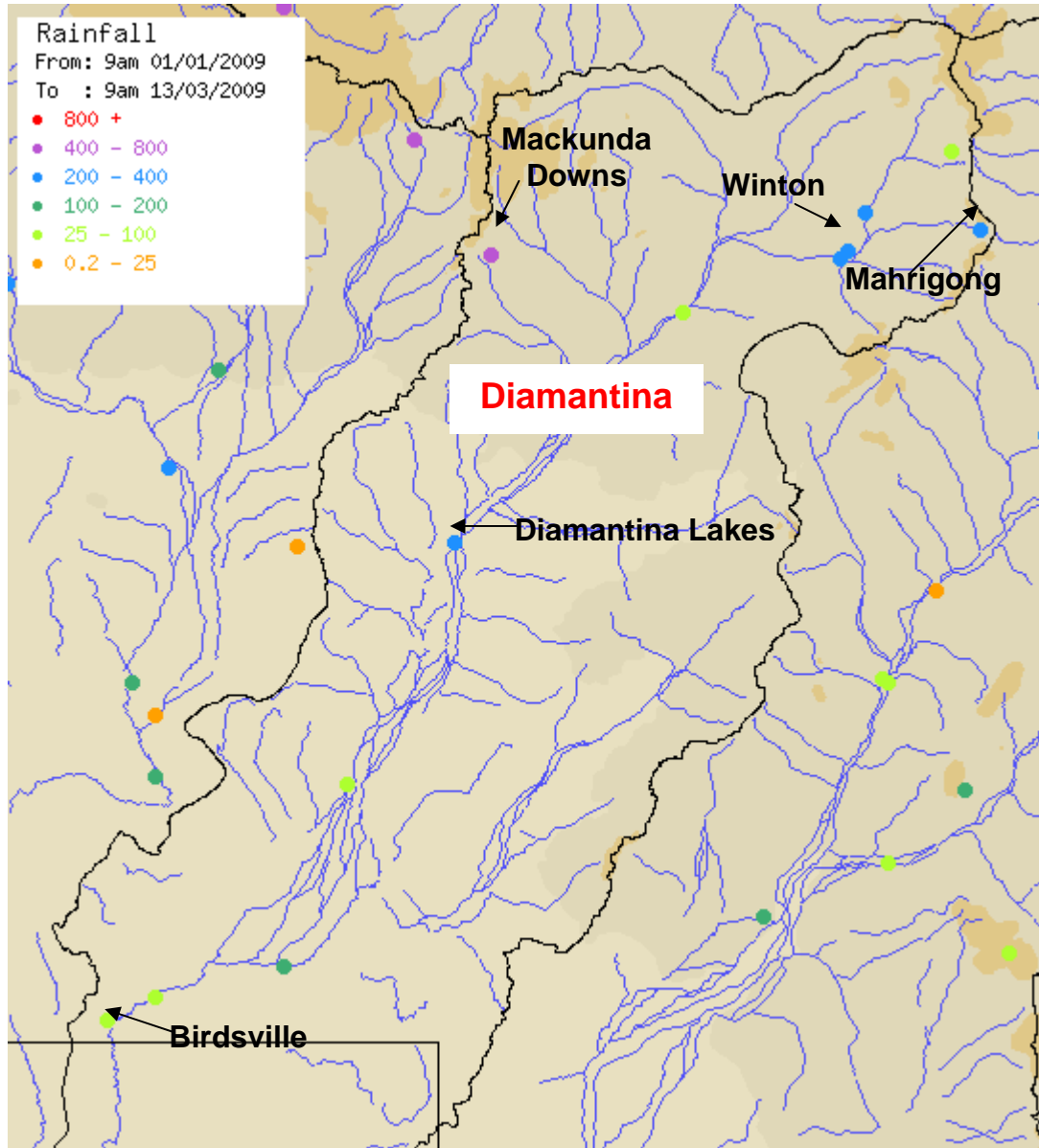


3.3.2 Rainfall Maps

The highest daily rainfall total in the period 1 January to 16 March 2009 of 154mm was recorded at Mackunda Downs in the 24 hours to 9am on 10 February. Refer to Table 3.3.4.1 for more totals.

The rainfall amounts in Figure 3.3.2.1 are given in millimeters. Refer to the [catchment map](#) for the station names of the rainfall locations used in Figure 3.3.2.1.

Figure 3.3.2.1 Rainfall map for the period 01/01/09 to 13/03/09



The highest rainfall totals were recorded in the catchment north of the Diamantina Lakes area.

3.3.3 Rainfall Intensity

For some of the key stations in the Diamantina River catchment Hourly Hyetographs (Figures 3.3.3.2 to 3.3.3.3) have been produced. Two Intensity Frequency Duration (IFD) analyses have been produced for Mackunda Downs and Birdsville Airport as shown in Figure 3.3.3.1.

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 3.3.3.1 IFD rainfall analysis for Mackunda Downs and Birdsville Airport.

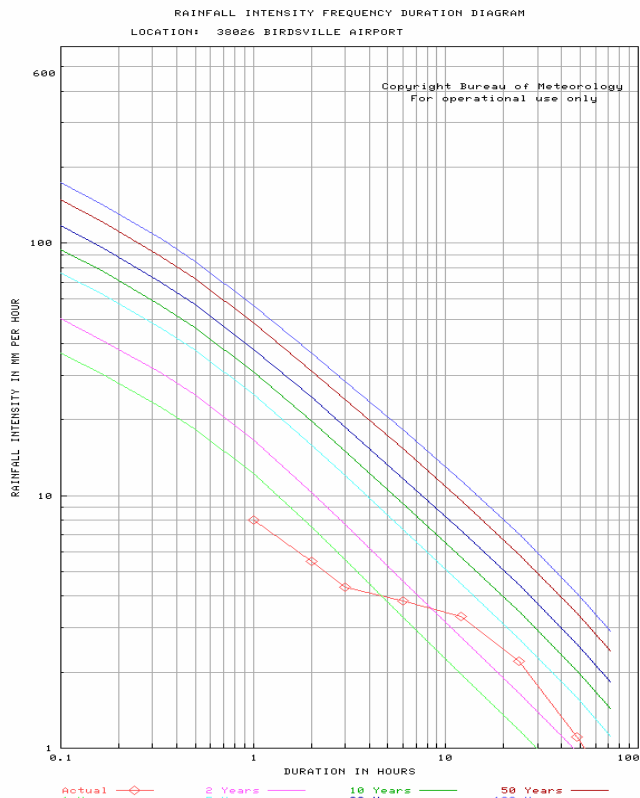
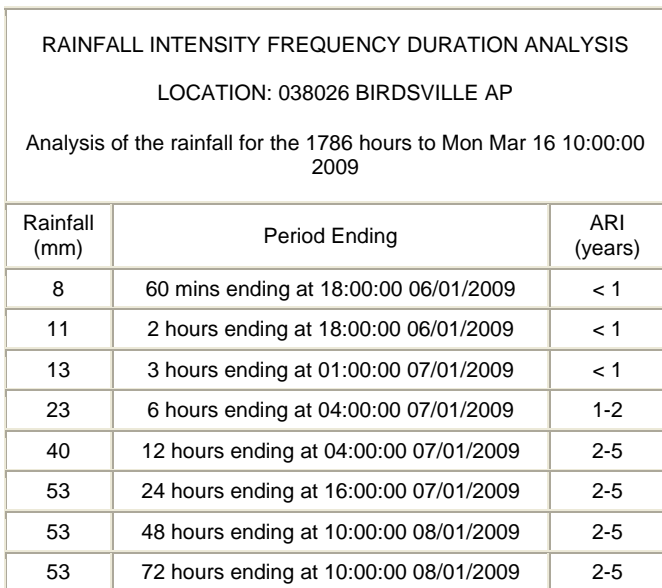
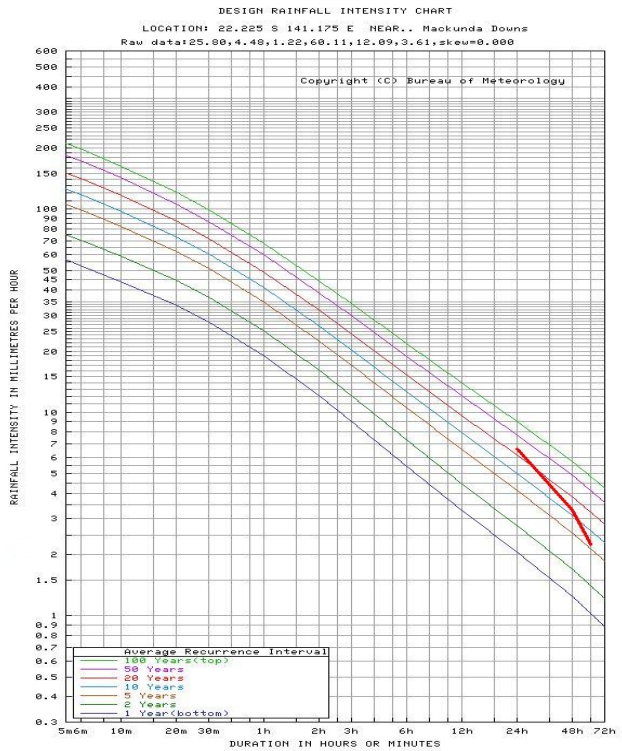
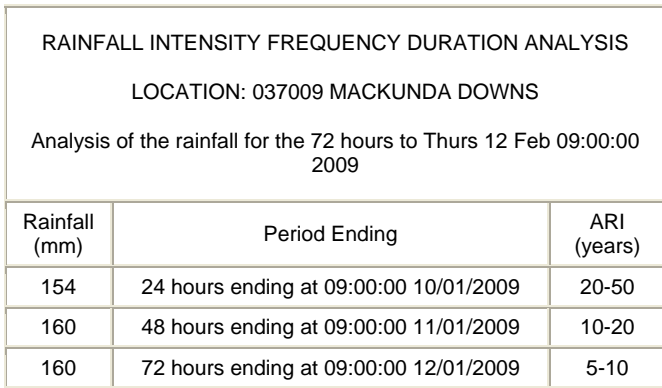


Figure 3.3.3.1 shows that the rainfall recorded at Mackunda Downs during the 24 hours to 9am on the 10/01/2009 exceeded the 2-5% AEP (20-50 year ARI).

Figure 3.3.3.2 Hourly hyetographs for Oondooroo TM and Winton Airport

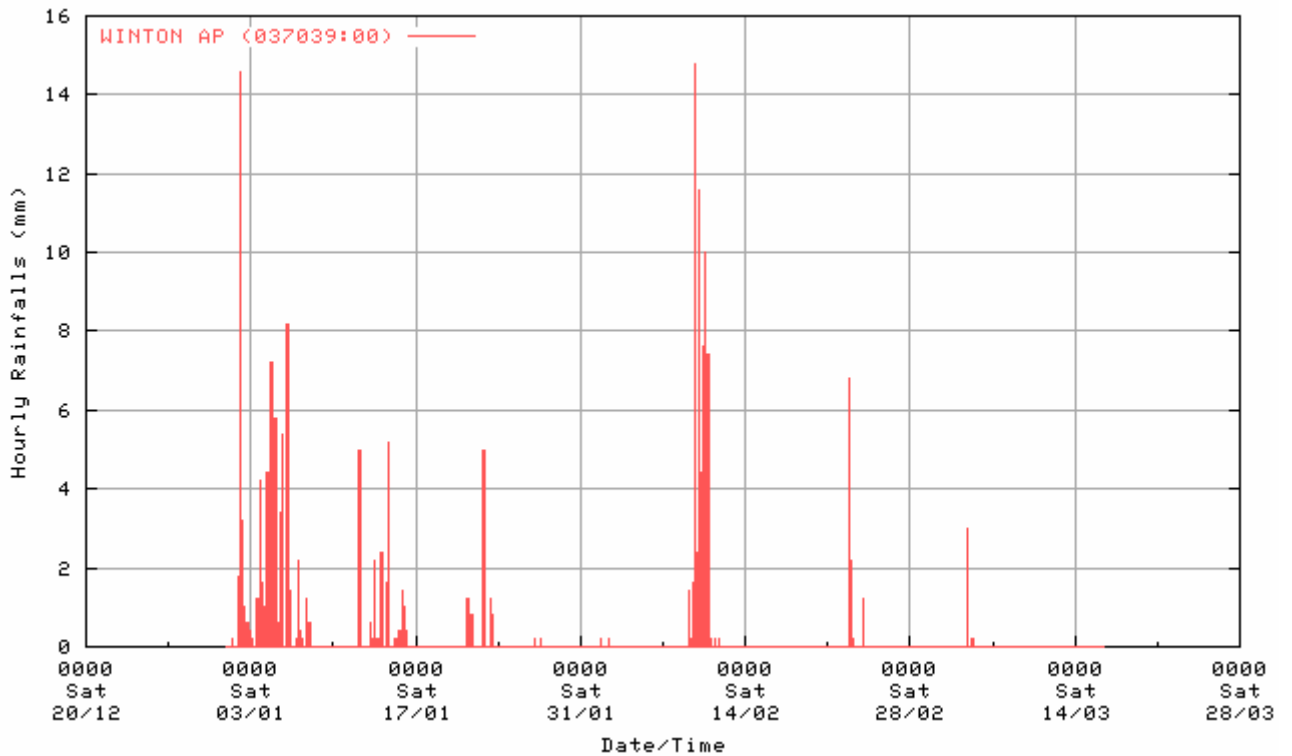
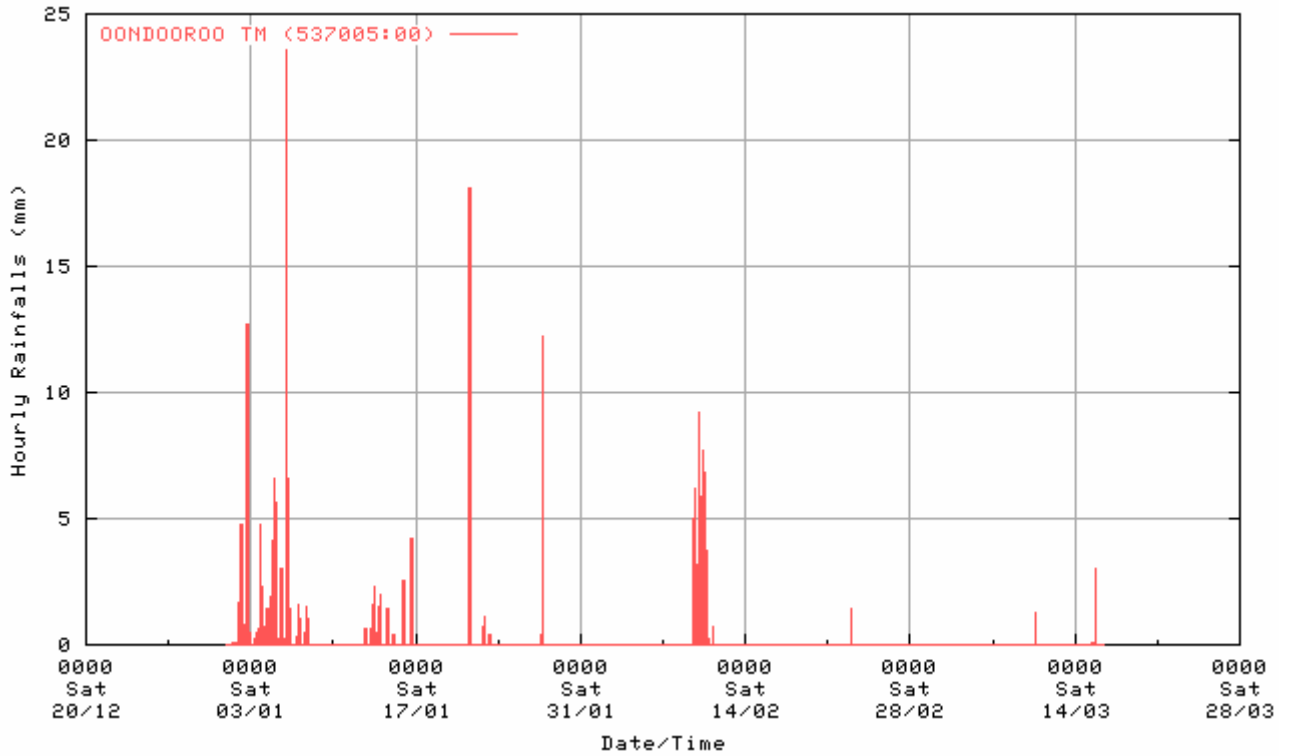
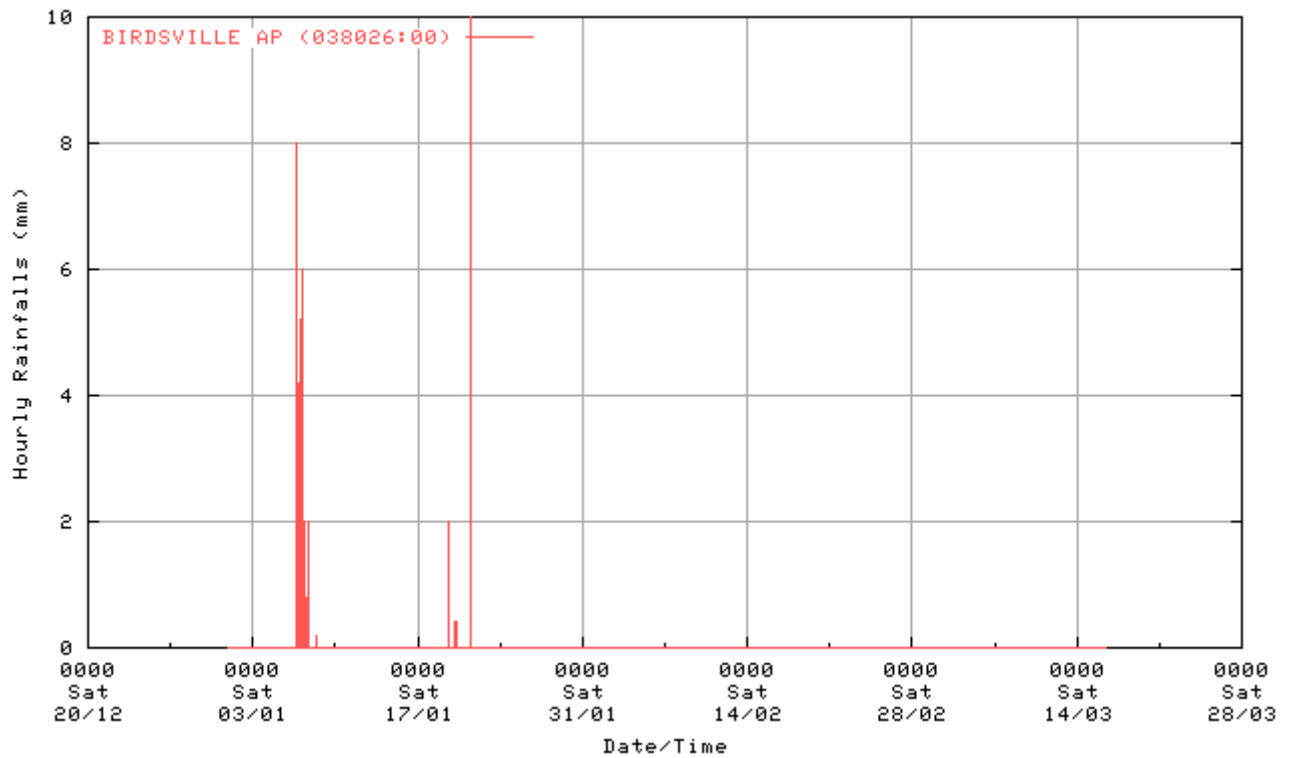
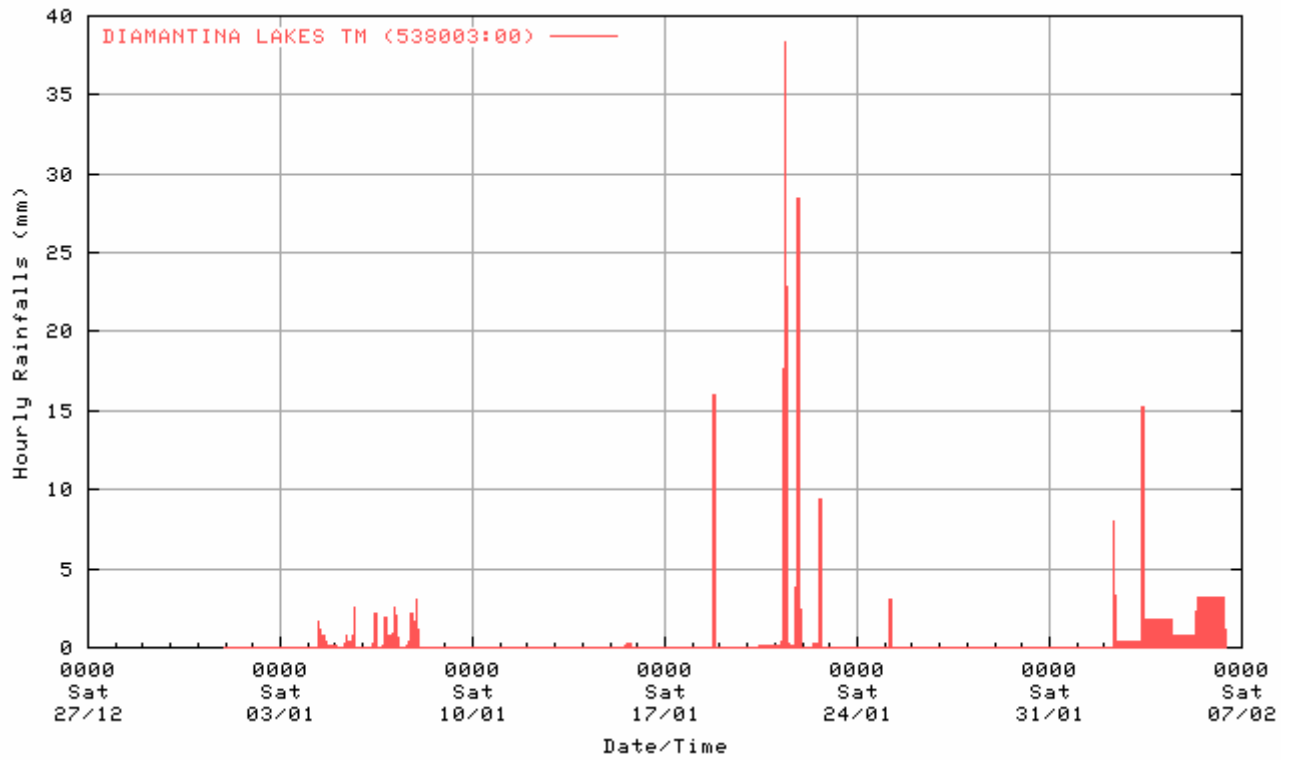


Figure 3.3.3.3 Hourly hyetograph for Diamantina Lakes TM and Birdsville Airport



3.3.4 Rainfall Totals

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, only selected dates of rainfall are shown.

Refer to the [catchment map](#) for the station names of the rainfall locations used in Figure 3.3.4.1.

Table 3.3.4.1 Rainfall totals for the Diamantina River catchment

Station name	24 hour rainfall to 9am on																	Total (mm)			
	January														February						
	2	3	4	5	6	7	8	9	14	15	16	21	22	23	9	10	11				
Mahrigong	34	8	11	46	26	2	1		8	4	52		12					79	20	303	
Oondooroo TM *	19	27	20	26	55	5	4	0	14	5	5	0	19	4				71			274
Winton SYN	43	12	18	34	40	6	7	0	14	7	16	0	4	30				0	68	29	328
Winton AWS *	36	6	16	31	36	6	3	0	12	9	4	0	3	10				2	76	54	304
Tulmur								0	21	8	22	1		1				2	78	43	176
Mackunda Downs	9	10	22	21	2	66	44	7	40	5	20	29	3					1	154	6	439
Diamantina Lakes TM *	0	0	0	4	6	14	11	0			0	59	66								160
Monkira					5	5						20	13								43
Durrie					85		40														125
Roseberth							4	6			1	25	4								39
Birdsville AWS*	0	0	0	0	0	51	3	0.2	0	0	0	0	11	0				0	0	0	65
Numerical Average	24	101	15	27	32	18	13	1	18	6	20	22	15	9				15	91	30	205
Maximum	43	27	20	46	85	66	44	7	40	9	52	59	66	30				71	154	54	439

3.3.5 Peak Heights

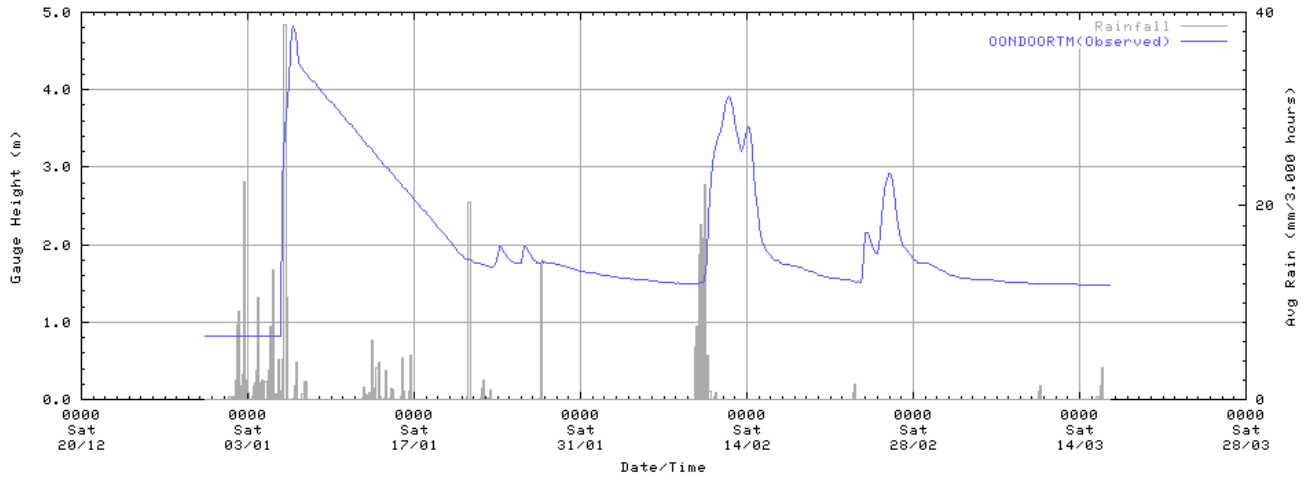
Table 3.3.5.1 Peak flood heights between 01/01/09 and 16/03/09

Station no.	Station name	Date	Height (metres)	Flood class
037046	ELDERSLIE	08/01/2009 11:30	3.80	Major
037046	ELDERSLIE	16/01/2009 06:00	2.45	Minor
037046	ELDERSLIE	23/01/2009 10:00	2.20	Minor
037046	ELDERSLIE	28/01/2009 06:00	2.60	Moderate
037046	ELDERSLIE	11/02/2009 11:30	4.80	Major
037029	APSLEY	11/02/2009 10:00	2.70	Moderate
037026	ALDINGHAM	11/02/2009 19:00	1.60	Minor
037082	OONDOOROO	07/01/2009 06:00	3.00	Moderate
537005	OONDOOROO TM	12/02/2009 10:00	3.91	Unknown
037018	WINTON	07/01/2009 15:00	2.45	Moderate
037018	WINTON	12/02/2009 12:00	2.45	Moderate
037122	TULMUR	09/01/2009 09:00	6.25	Minor
037122	TULMUR	18/01/2009 16:00	5.15	Minor
037122	TULMUR	12/02/2009 10:00	7.40	Moderate
538003	DIAMANTINA LAKES TM	09/01/2009 16:00	6.49	Major
538003	DIAMANTINA LAKES TM	20/01/2009 04:00	5.81	Moderate
538003	DIAMANTINA LAKES TM	23/01/2009 16:00	5.75	Moderate
538003	DIAMANTINA LAKES TM	16/02/2009 20:00	6.53	Major
038015	MONKIRA	16/01/2009 06:00	4.15	Moderate
038015	MONKIRA	22/02/2009 06:00	4.13	Moderate
038031	DURRIE STATION	02/02/2009 18:00	2.81	Major
038020	ROSEBERTH STATION	09/01/2009 06:00	5.25	Major
038020	ROSEBERTH STATION	22/01/2009 06:00	5.30	Major
038020	ROSEBERTH STATION	03/02/2009 18:00	5.70	Major
038002	BIRDSVILLE	10/01/2009 14:40	6.70	Moderate
038002	BIRDSVILLE	24/01/2009 14:30	6.55	Moderate
038002	BIRDSVILLE	05/02/2009 09:00	7.20	Moderate

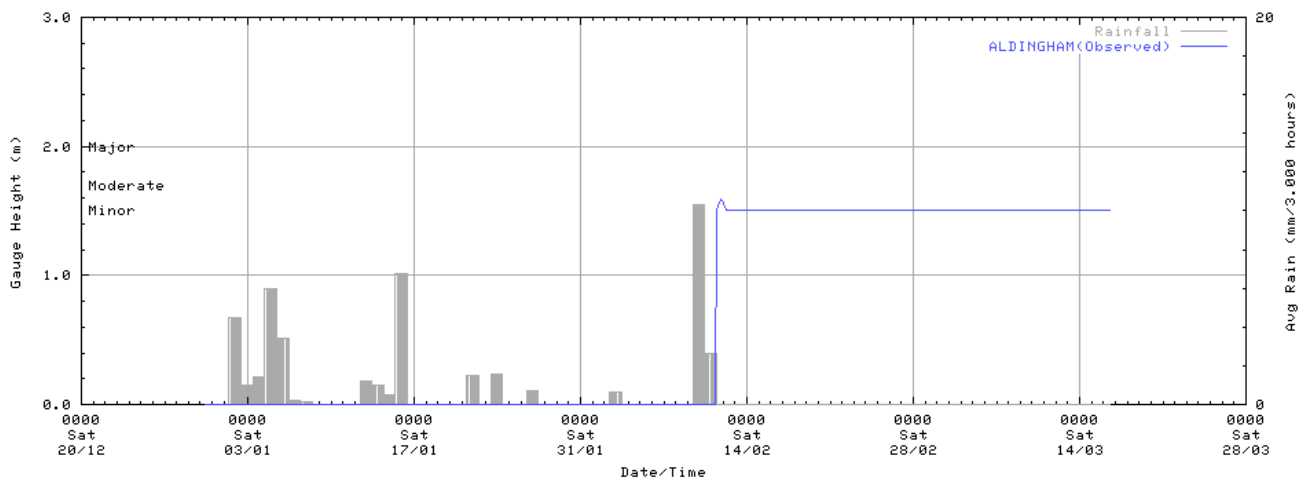
3.3.6 Flood Hydrographs

Figure 3.3.6.1 River heights for Oondooroo TM, Aldingham and Winton

Diamantina River at Oondooroo TM



Diamantina River at Aldingham



Diamantina River at Winton

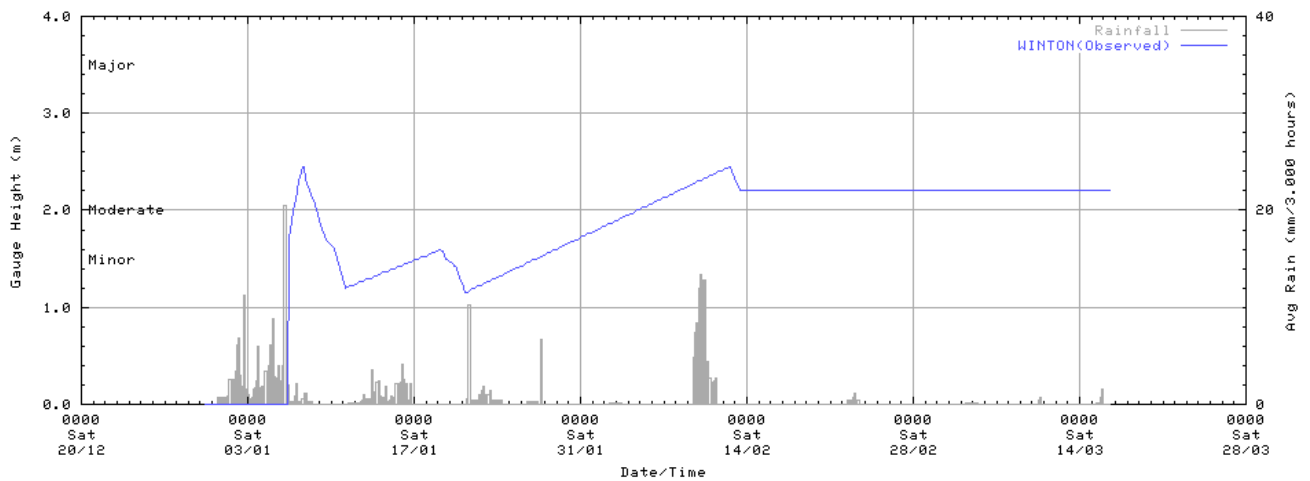
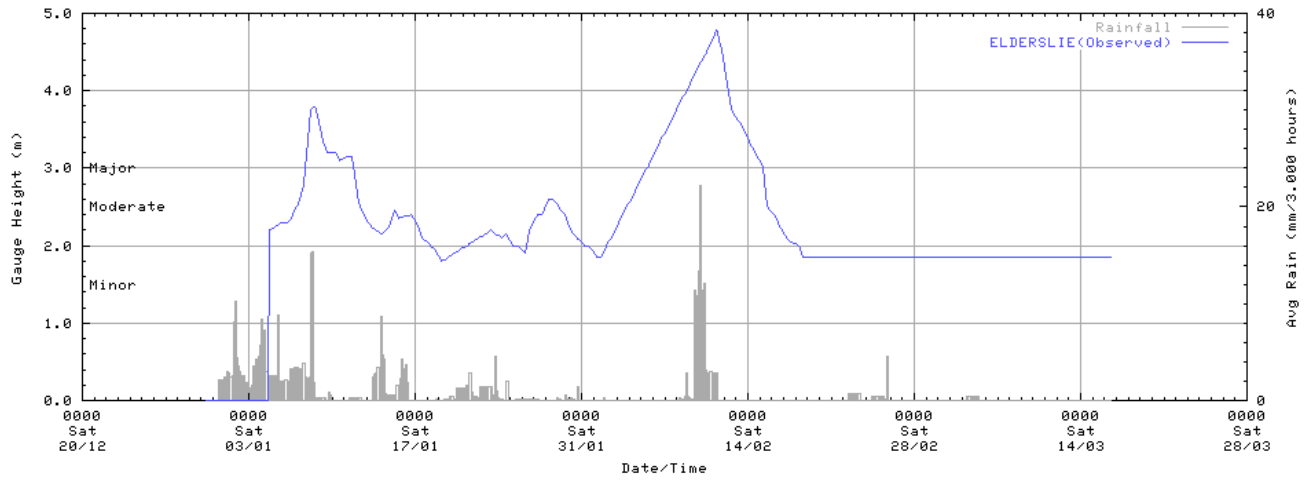
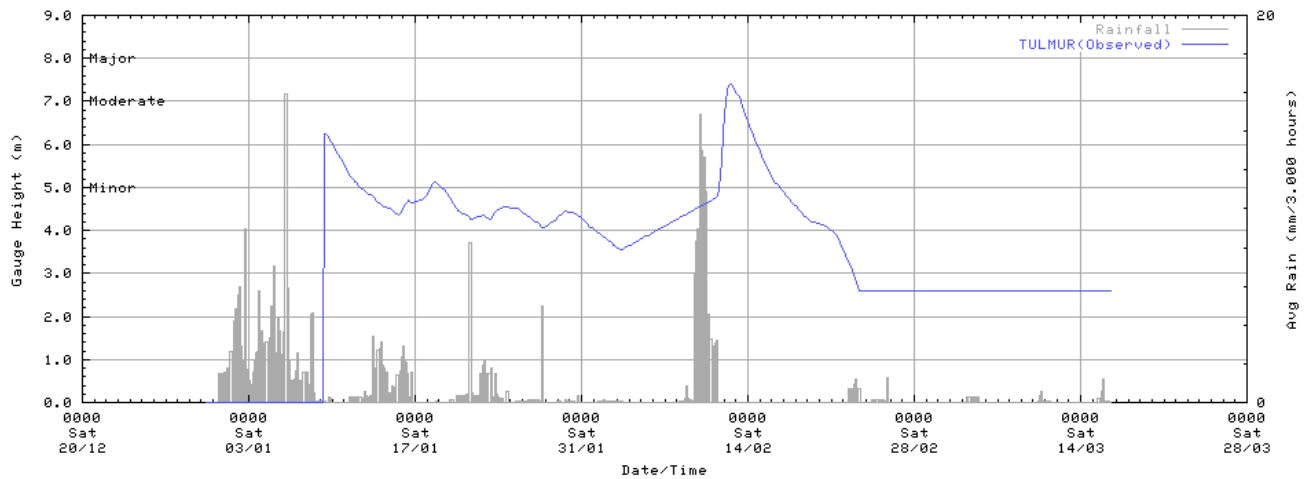


Figure 3.3.6.2 River heights for Elderslie, Tulumur and Diamantina Lakes TM

Diamantina River at Elderslie



Diamantina River at Tulumur



Diamantina River at Diamantina Lakes TM

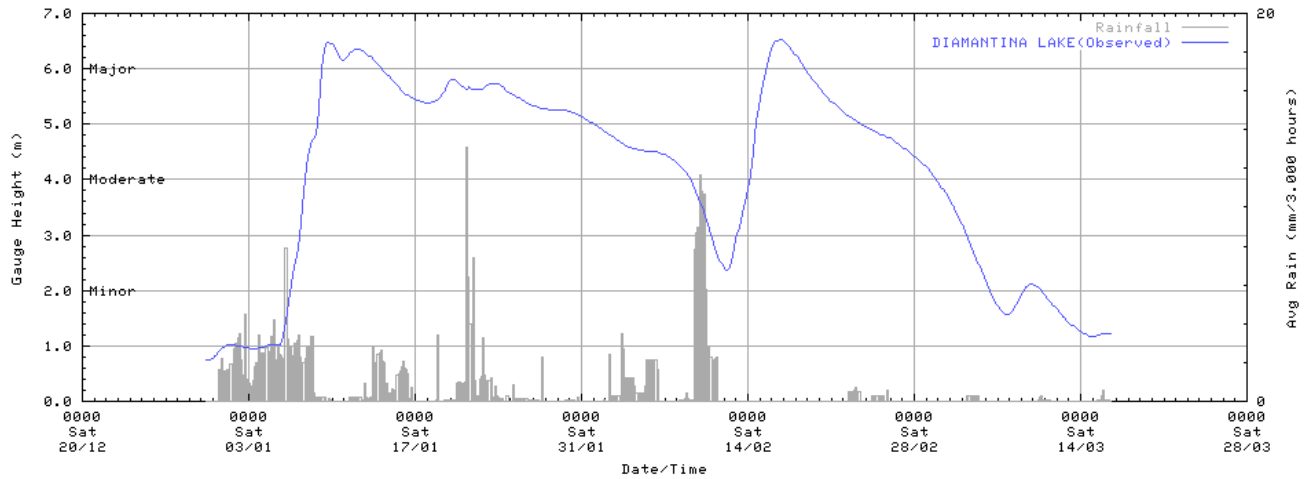
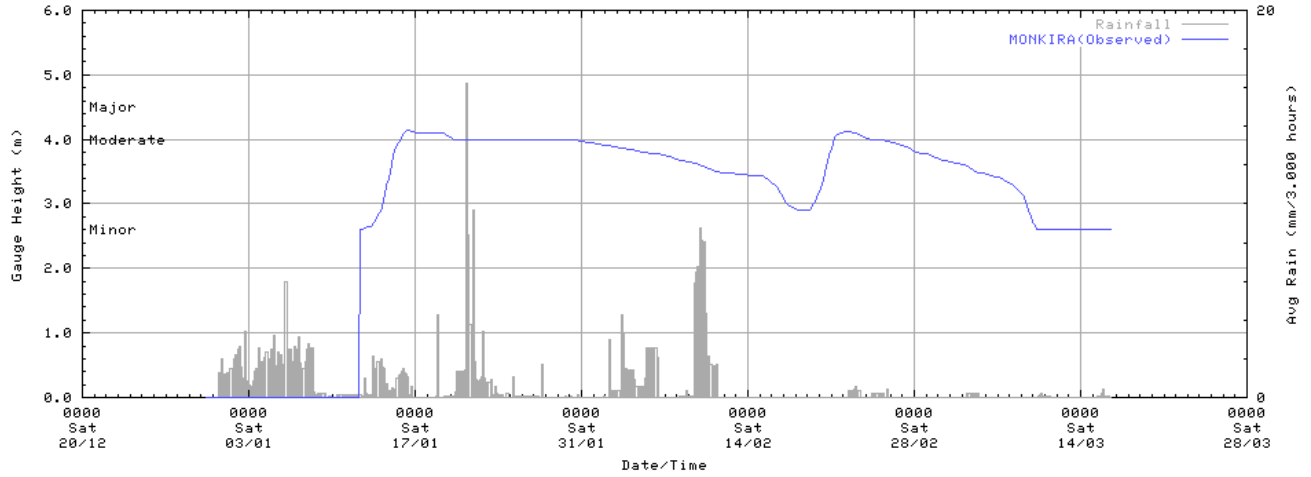
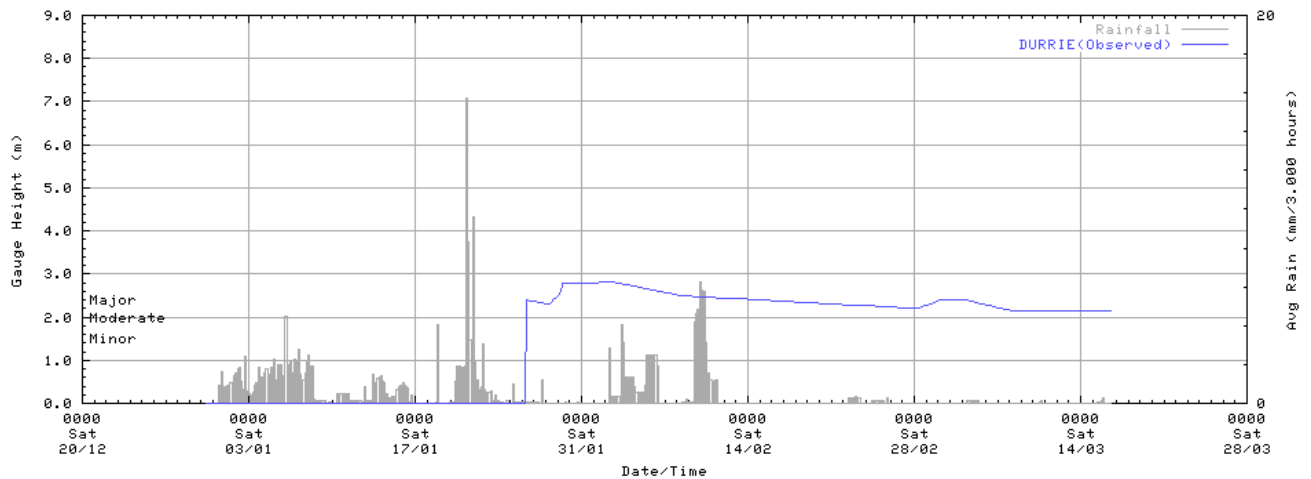


Figure 3.3.6.3 River heights for Monkira, Durrie and Roseberth

Diamantina River at Monkira



Diamantina River at Durrie



Diamantina River at Roseberth

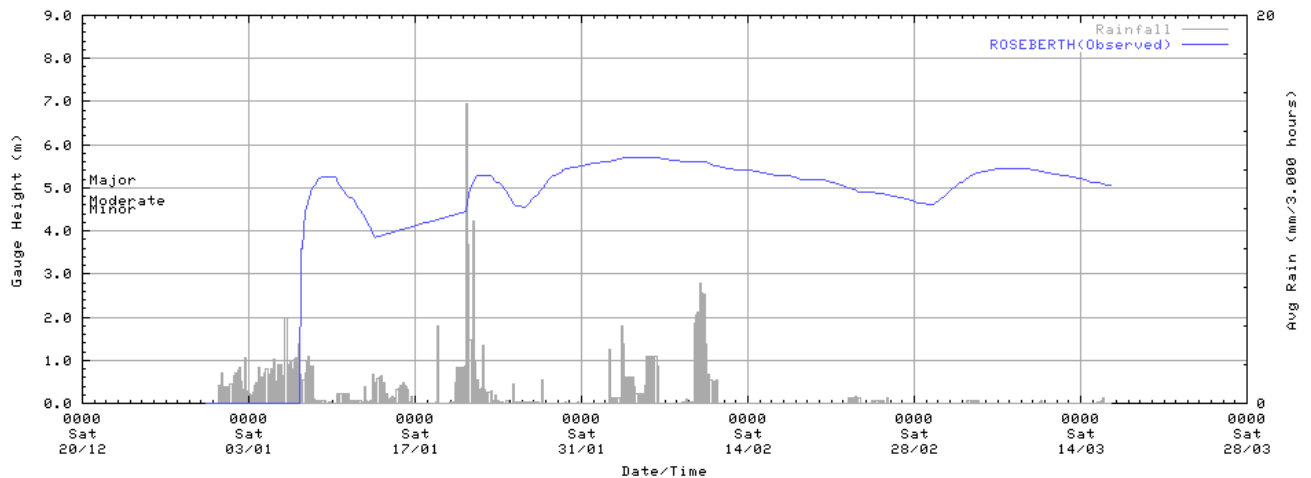
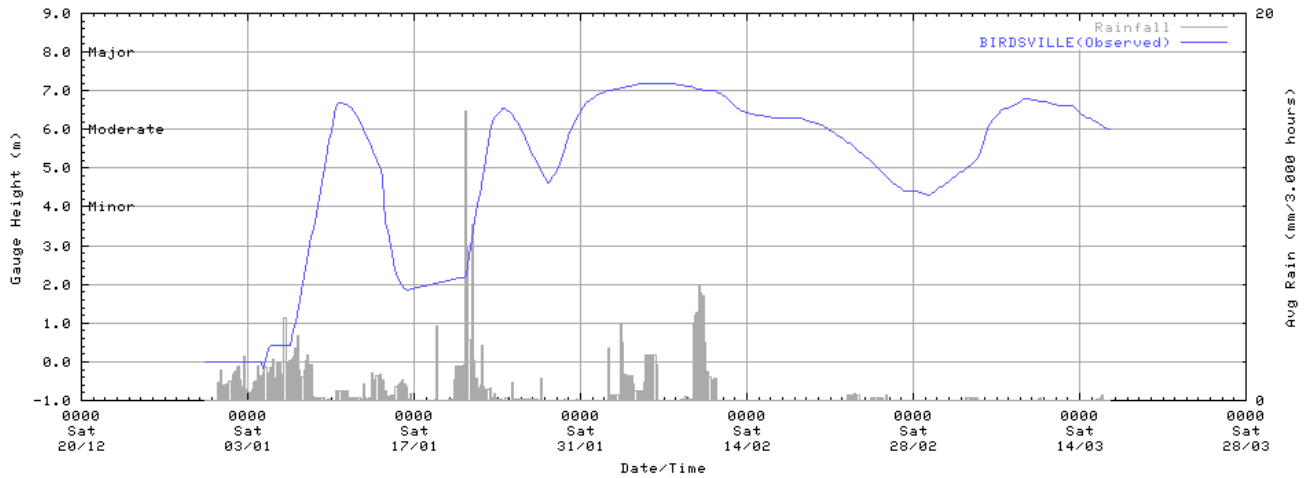


Figure 3.3.6.4 River heights for Birdsville

Diamantina River at Birdsville



3.3.7 Warning Services

Table 3.3.7.1 Flood warnings and predictions issued between 01/01/09 and 03/03/09.

River catchment	Number of warnings	Number of Major warnings	Number of predictions	Number of locations	First warning	Last warning
Diamantina	58	37	4	1	10:12am on the 07/01/2009	Continuing as at 16/03/2009

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