Australian Government
Bureau of Meteorology

WESTERN QUEENSLAND FLOODING

January 2004

Introduction

Widespread January rains brought welcome relief from Queensland's long dry spell with the most significant rain in a broad band across northwestern, central and southern districts, with below average falls only in small parts of the northeast and far southwest.

An active monsoon event in the middle of the month saw a deep low move from the Gulf of Carpentaria through the interior and cause widespread flooding contributing to a large proportion of this rain, together with an unusual succession of severe thunderstorms in the southeast toward month's end.

The rainfall in the western part of the state resulted in widespread flooding in 13 river basins stretching from the Nicholson/Gregory basin in the northwest to the Border Rivers in the southeast.

This report includes some observations on the heavy rainfall and flooding that occurred in the western Queensland beginning the middle of January 2004.

Synoptic Situation

The month began with a high over the Tasman Sea extending a ridge along Queensland's east coast and a developing monsoon low over the eastern Coral Sea drawing closer to the Queensland coast.

Seasonal showers and thunderstorms continued about the monsoon trough in the far north and isolated showers along the east coast became more frequent as the gradient tightened and southeasterlies strengthened. Large ocean swells developed in the south. The interior was generally fine and hot in a northerly stream with very isolated showers and thunderstorms near a trough in the southwest. Birdsville reached the high 40's on several days.

Scattered showers and isolated thunderstorms gradually developed in eastern districts, as the upper atmosphere became more unstable and surface moisture increased. The trough in the southwest deepened and moved slowly east on the 7th as it linked to a passing southern cold front and upper trough triggering showers and thunderstorms in the hot northerlies to it's east and bringing cooler southerlies in it's wake.

In the following days, scattered to widespread showers and thunderstorms occurred over the interior and tropics. Eastern districts became more settled as a new high moved into the Great Australian Bight on the 10th and gradually pushed the surface trough in the south to the far west.

A low developed on the monsoon trough in the Gulf of Carpentaria and brought widespread falls while increasing cloud tempered temperatures in the north west. Localised heavy falls brought the upper reaches of the Barcoo and Nogoa rivers to flood level on the 12th.

On the 14th a surface and upper trough in the west, in conjunction with the monsoon low, maintained widespread rain and thunderstorms over most of the northern tropics and interior. The deep monsoon low moved slowly south through north west Queensland to the southern interior bringing heavy falls, with many record high daily totals, and only the far south west missing out. Widespread flooding developed over the Gulf Country and much of the interior. The heavy rain and cloud cover also kept daytime temperatures well below average.

By the 17th the low was over New South Wales taking the heavy rain south of the border though scattered falls continued in north and east Queensland. A large high pushed across South Australia and into the Tasman Sea on the 19th, gradually extending drier southeasterlies into the south and then spreading into the tropics. Showers and thunderstorms contracted to sultry northern tropics with a few showers near the east coast in the onshore stream.

As the high moved slowly east the stream became humid northeasterly. A frontal system entered the southwest on the 22nd and became stationary triggering showers and thunderstorms over the Channel Country and east through the southern interior. The activity spread to eastern districts from the 24th as an upper trough enhanced instability and triggered many severe thunderstorms for several days in the southeast.

Fine conditions returned to the southwest and southern interior to the west of the inland trough. Another upper trough moved across the state on the 29th and 30th again increasing shower and thunderstorm activity in the sultry airmass over the southeast until month's end.

Rainfalls

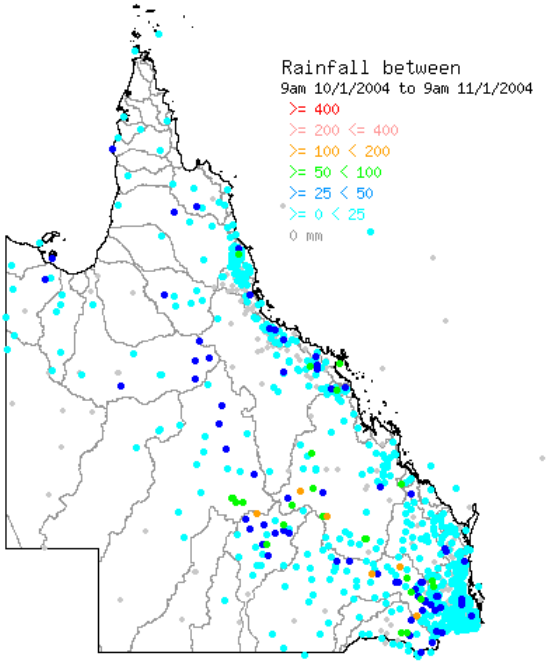
Over the 9 and 10 January 2005 a weak monsoon low developed in the southwest Gulf of Carpentaria, moved up to the Top End of the Northern Territory and deepened by 12 January 2004. The low then turned back towards the southeast and into Queensland, which resulted in widespread heavy rainfall throughout the state.

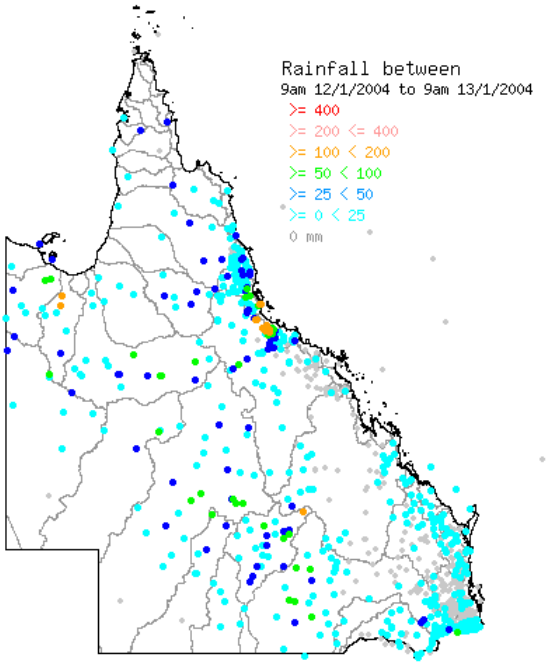
Records show that several major centres across the state have recorded their wettest January since the extensive floods of 1974, among them Brisbane City [279mm], Emerald [211mm], Longreach [199mm] and Mt Isa [392mm]. Many other centres recorded their highest ever monthly totals.

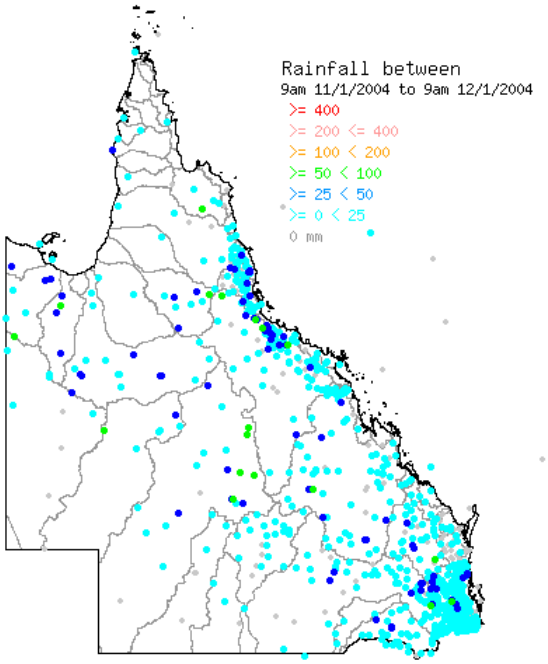
The highest total January falls were recorded at Eveleigh Station 468.6mm, Graham Range 460.0mm, Paluma Ivy Cottage 459.2mm, Tree House Creek 447.4mm, Euleilah Creek 446.2mm, Menavale Alert 439.0mm, Turkey Station 425.2mm, Werrington Station Wrc 424.6mm, Japoonvale Warrakin Rd 422.4mm, Paluma Alert 415.0mm, Deeragun Alert 414.0mm, Tully Mcquillen St 410.0mm, Bellenden Ker Top Stn 409.0mm, Kenmore Hills Alert 405.0mm, Mt Margaret Alert 404.0mm, Tully Alert 403.0mm, Stirling 402.5mm, Cape Keerweer 400.9mm.

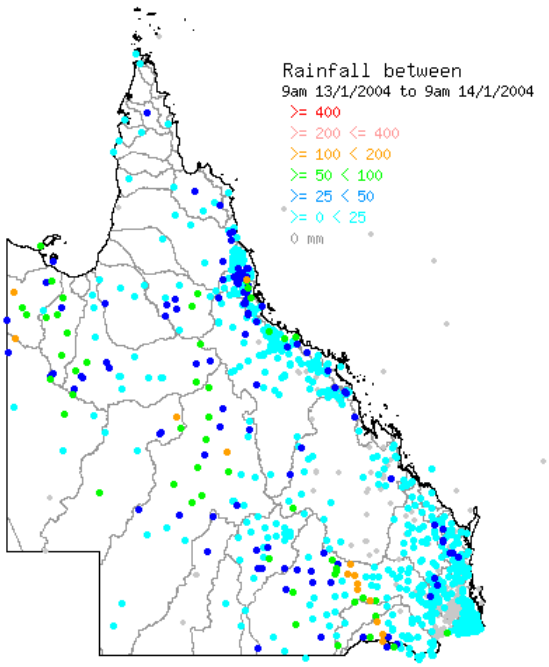
Station Name	24 Hours to 9am							Total
	Sun 11	Mon 12	Tue 13	Wed 14	Thu 15	Fri 16	Sat 17	
Nicholson/Gregory								
Morstone	20	54	39	157	22			292
Escott Station	34	32	52	38	77			233
Leichhardt								
Mount Isa AWS *	Tr	7.4	51	43	198	20	0	319
Floraville TM *	3	48	127	93	74			345
Flinders								
Devoncourt Station		30	45	52	167	44		338
Cloncurry	8.1	25	23	39	138			233
Cloncurry Airport AWS *	0.2	25	15	49	128			217
Cotswold Station		22	3	84	120	6		235
Carsland		14	8	99	125	10		256
Thomson/Barcoo/Cooper								
Jochmus		70	34	31	117		63	315
Aramac	42	24	18	134	11	9.4	13	251
Longreach AWS *	2.6	11	7.8	68	24	37	1.6	152
Bogewong			28	77	80	82	4	271
Tambo SYN	110	16	39/2	17	50	6	6.8	206
Blackall	89	100	51	21	19	34	9.8	324
Barcaldine SYN	19	32	38	66	8.6	28	19	211
Diamantina								
Malboona		49		102	75	10		236
Winton SYN	1.8	4.8	81	28	11	40	1.4	168
Tulmur					23	194	1	218
Georgina								
Camoweal	5	1.6	27	48	35		0.2	117
The Monument Ap AWS *	0	0	14	53	95		0	162
Trepell Airport AWS *	0	23	9	15	34	96	1	178
Warrego								
Chesterton TM *	20	2.4	36	10	34	8.6	26	137
Augathella	78	0.8	32	30	14	2.6	17	174
Drensmaine TM *	25	15	59	16	22	1.2	13	151
Charleville AWS *	11	Tr	23	33	5.4	39	44	155
Toliness	34	14	3	23	19	10	25	128
Bakers Bend TM *	0.6	0.2	42	17	9.2	20	38	127
Cunnamulla SYN	0	0.2	0.6	0.8	0	75	70	147
Paroo								
Humeburn TM *	1	0.4	3.6	2.4	0	30	43	80
Bulloo								
Idalia Np		8	66	48	50	49	16	237
Quilpie Airport SYN	0	0	13	0	0	113	81	207
Condamine-Balonne								
Warwick Hermitage AWS	9.8	1.2	2	0	52	50	24	139
Toowoomba Airport AWS *	32	57	0.8	4.8	7.8	36	11	149
Oakey AWS *	38	7.8	0.6	3.2	10	39	4.6	103
Mt Mowbullan	45	39	0.2	8.6	12	67	11	183
Dalby Airport SYN	75	16	0	0.8	9.6	40	2.2	144
Ballon TM *	176	3.2	0.2	1.2	8.6	45	1	235
Meandarra		3.0/3	6	100	14	34		154
Drillham	125	1.6		1.6	16	20	8.8	173
Warkon	3.8	2.8		121		33	20	181
Roma Airport AWS *	1.6	47	2.2	100	28	18	13	210

Mitchell SYN	10	2.4	92	27	19	21	27	198
Whyenbah	21		2.6	45		4	97	170
Wallam/Mungallala Creeks								
Rosehill			94	21	0.2	4	97	216
Bollon	Tr	0.2	27	54	Tr	8	59	148
Mungallala	8	23	85	47	17	7.4	33	220









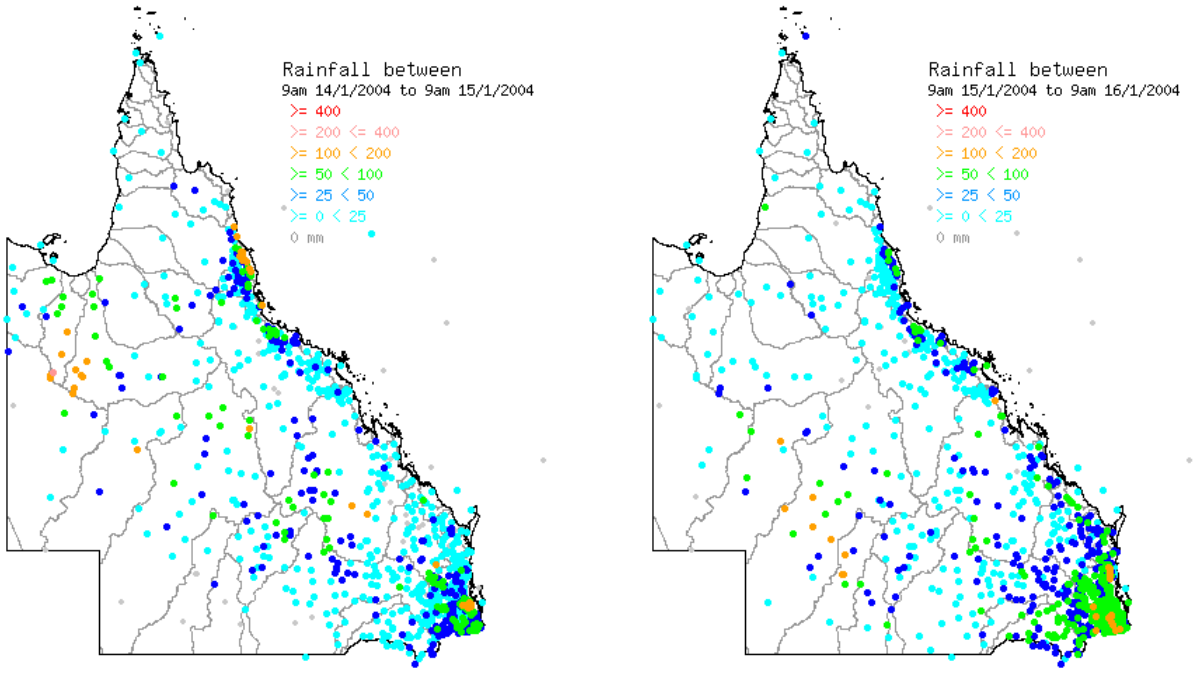


Figure 1 Daily Rainfall

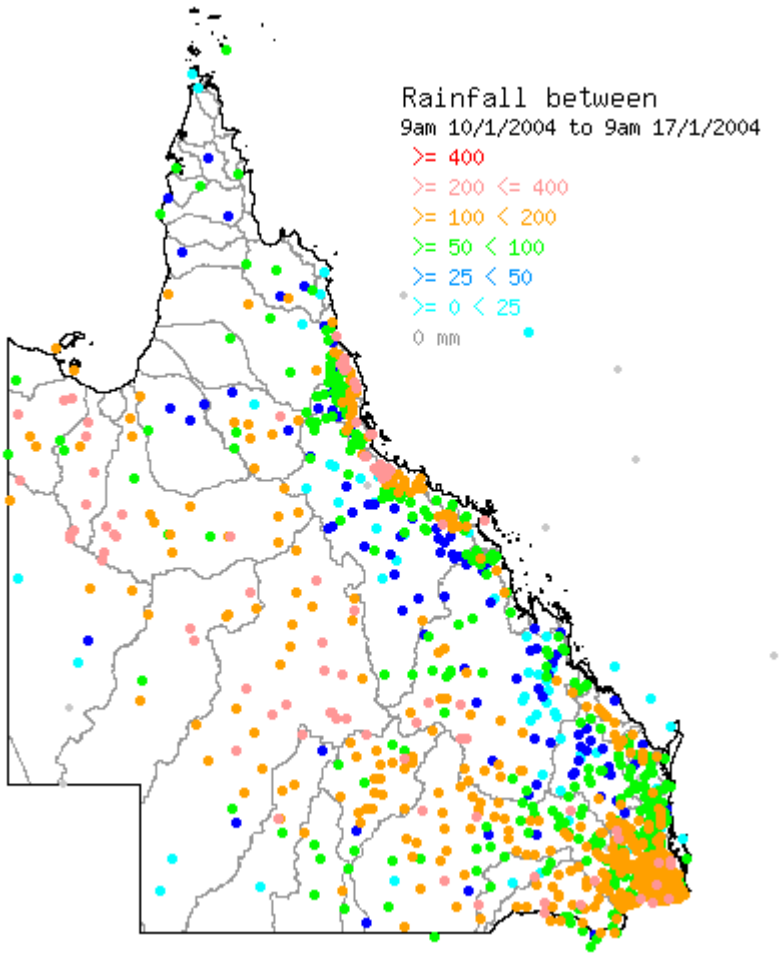


Figure 2 Rainfall Totals - 10 to 17 January 2004

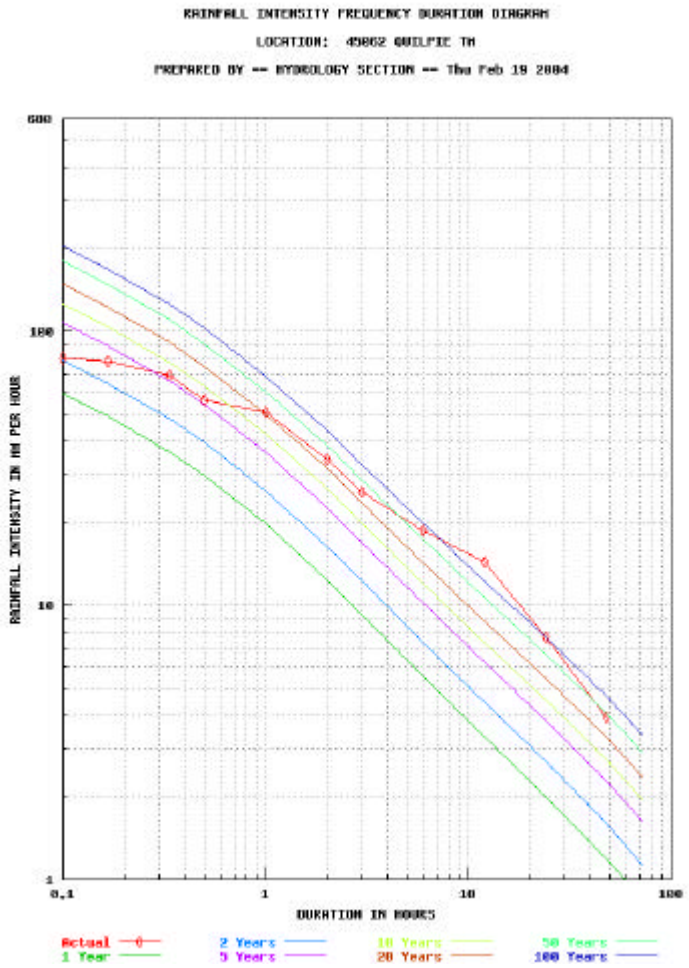
Rainfall Records

Numerous stations throughout the state not only recorded their wettest January on record and their wettest month on record but also recorded their highest ever daily rainfall.

Daily Rainfall – Highest on Record for any month				
Location	Dist	New Record	Previous record	Length of Record (years)
Norfolk Station	29	140.0 mm 14th	140.0 mm 14 Jan 2004	35
West Leichhardt Station	29	250.0 mm 15th	202.7 mm 08 Jan 1911	82
Mount Isa Mine	29	196.2 mm 15th	148.8 mm 14 Jan 1951	73
Mount Isa Aero	29	198.2 mm 15th	148.8 mm 05 Feb 2001	38
Mim Rifle Creek	29	120.2 mm 15th	112.4 mm 16 Dec 1984	25
Bruslee	34	247.0 mm 10th	191.6 mm 30 Apr 1983	32
Raymond	35	184.0 mm 11th	168.0 mm 29 Jan 1984	33
Ronlow Park	36	155.0 mm 16th	153.7 mm 15 Feb 1968	43
Moorrinya NP	36	65.8 mm 15th	63.0 mm 23 Apr 1998	77
Cork Station	38	158.0 mm 15th	139.7 mm 23 Mar 1949	97
Retreat (Barcoo R)	38	135.0 mm 16th	124.5 mm 13 Jan 1963	93

Glenhaven	39	123.0 mm 09th	107.2 mm 09 Dec 1970	53
Jackson Postal Agent	42	140.0 mm 15th	118.0 mm 19 Jan 1982	42
Roma Airport	43	120.2 mm 14th	118.0 mm 14 Apr 2003	19

IFD Analysis



River Levels

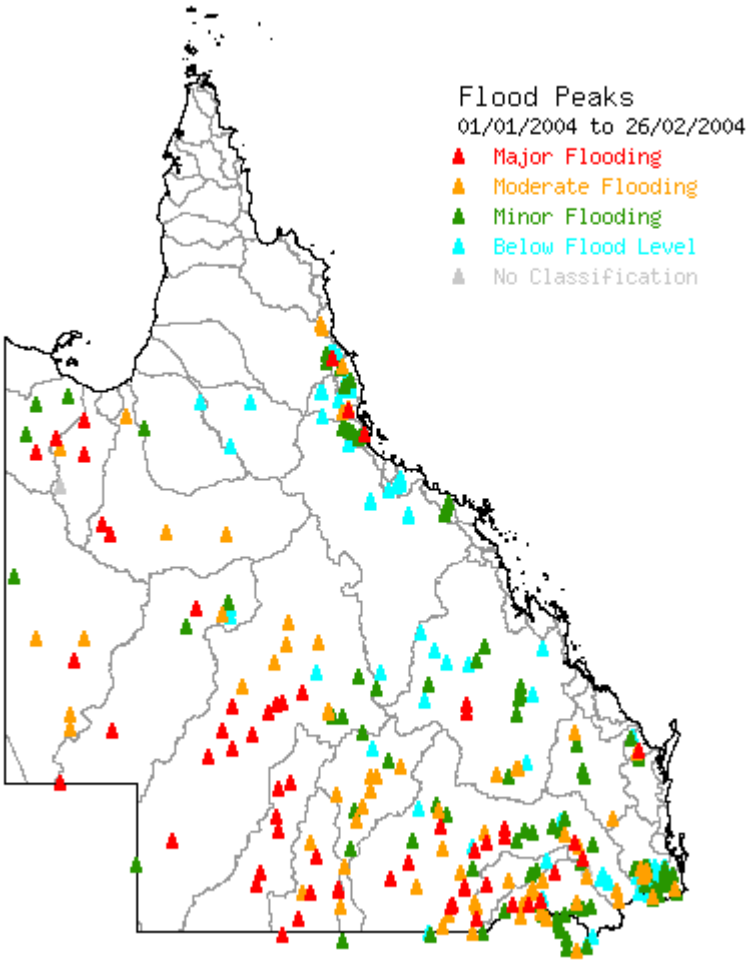


Figure 3 Flood Peaks in January/February 2004

Fitzroy River:

Minor flooding occurred in the Nogoa River above Fairbairn Dam with the river at Raymond reaching two separate peaks just under the minor flood level, firstly on the 11th and then again on the 16th. There was no spillage from Fairbairn Dam.

At the same time, major occurred along the Comet River with a peak above the major flood level occurring at Rolleston on 18th. Runoff from this system coupled with local inflow resulted in minor flooding along the upper Mackenzie River to its junction with the Connors River during the period

The Dawson River at Taroom started rising on Saturday 17th January and peaked on Tuesday 20th resulting in moderate flooding in the area. Rises up to minor flood level occurred along the Dawson River to Newlands during the following week.

Condamine-Balonne River:

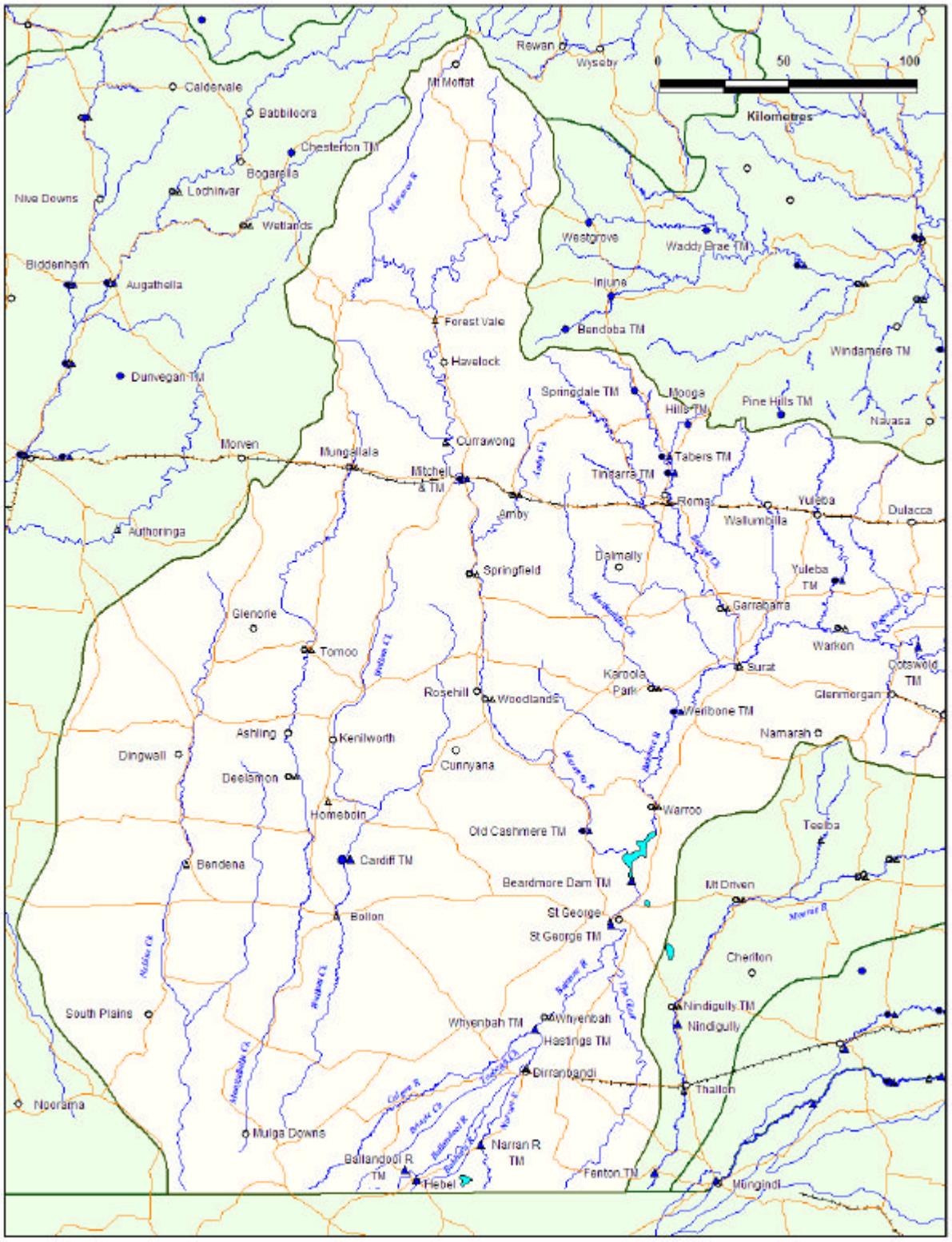


Figure 4 Balonne and Maranoa Rivers

Until 14th January, rainfall throughout the Condamine-Balonne system had been relatively light with only isolated heavy falls. However, in the 24 hours to 9am 14th January, a band of heavy rain with totals up to 100mm, was recorded in a band from Roma to Glenmorgan. This caused rapid river rises up to major flood levels in the Balonne River at Warkon and Surat within 2 days.

During the following days, rainfall in the system was more widespread and resulted in minor to moderate flooding in the Condamine, Balonne and Maranoa systems, which continued until the end of the month. The initial flood peak reached St George on 22nd January causing major flooding but flooding continued until the end of the month.

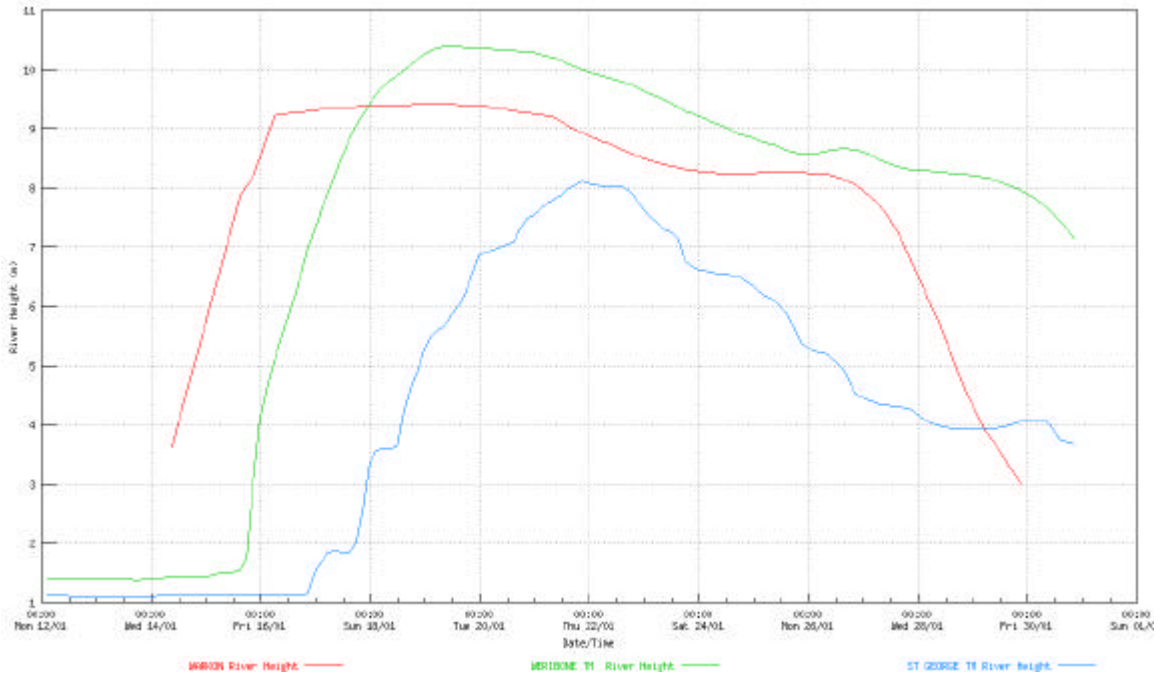


Figure 5 Selected Hydrographs - Balonne River

Border Rivers:

Minor flooding occurred along the Macintyre River in NSW around 17th January. Coupled with minor flooding in the Macintyre Brook and runoff from the Dumaresq River, this caused a moderate flood at Goondiwindi on Monday 19th January.

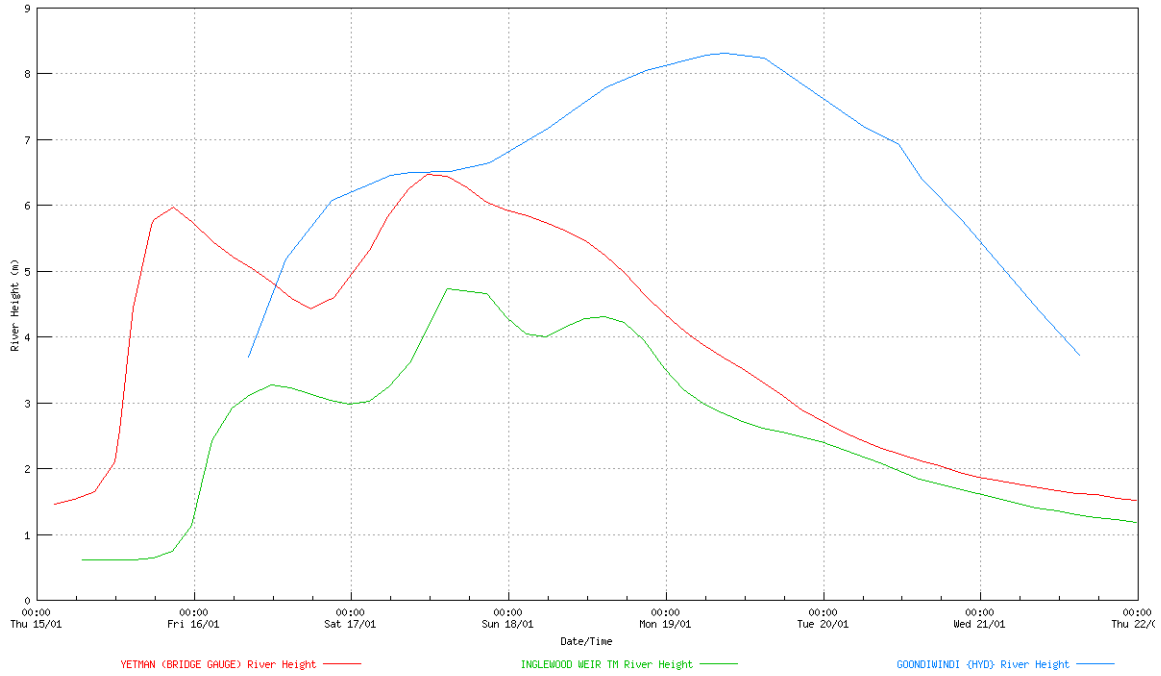


Figure 6 Selected Hydrographs - Macintyre River

Flooding in the Weir River system first developed on Saturday 17th January at O'Connor with moderate to major flood levels being recorded in the upper reaches down to Gunn Bridge on Monday 19th January. High river levels with moderate to major flooding continued downstream to Surrey for the next 5 days but only minor flooding resulted at Talwood.

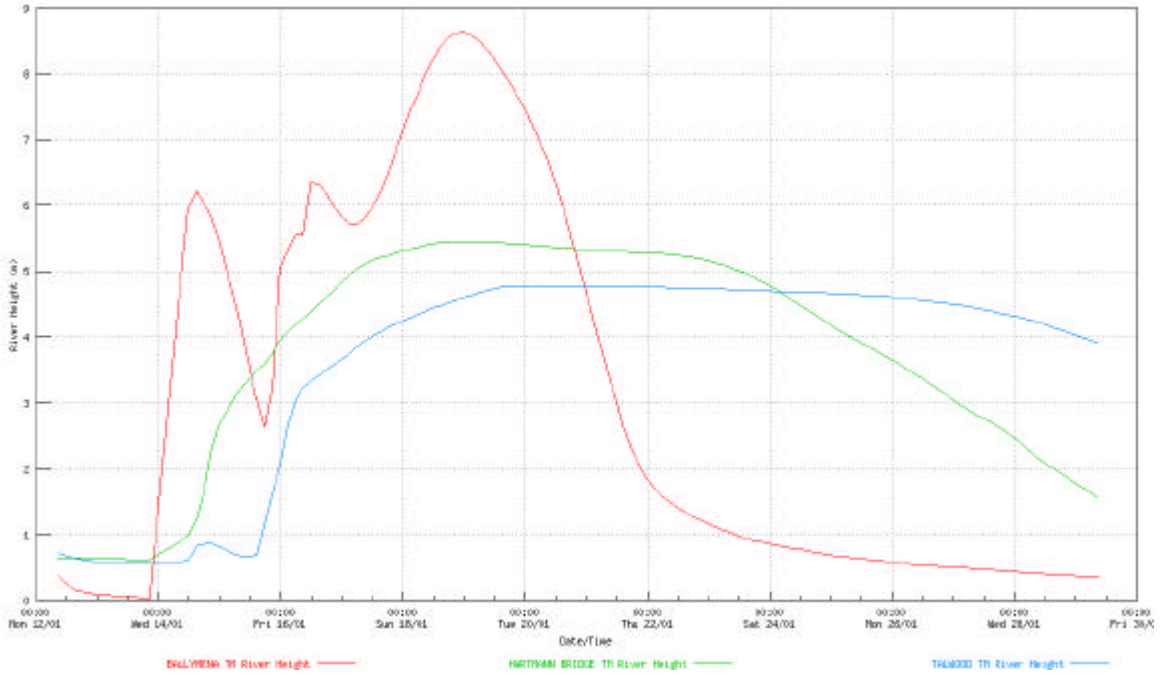


Figure 7 Selected Hydrographs - Weir River

Moonie River:

Moderate flooding developed in the middle reaches of the Moonie River around Flinton following a few days of heavy rain and extended down to Fenton, near the NSW border, by the 24th January.

Warrego River:

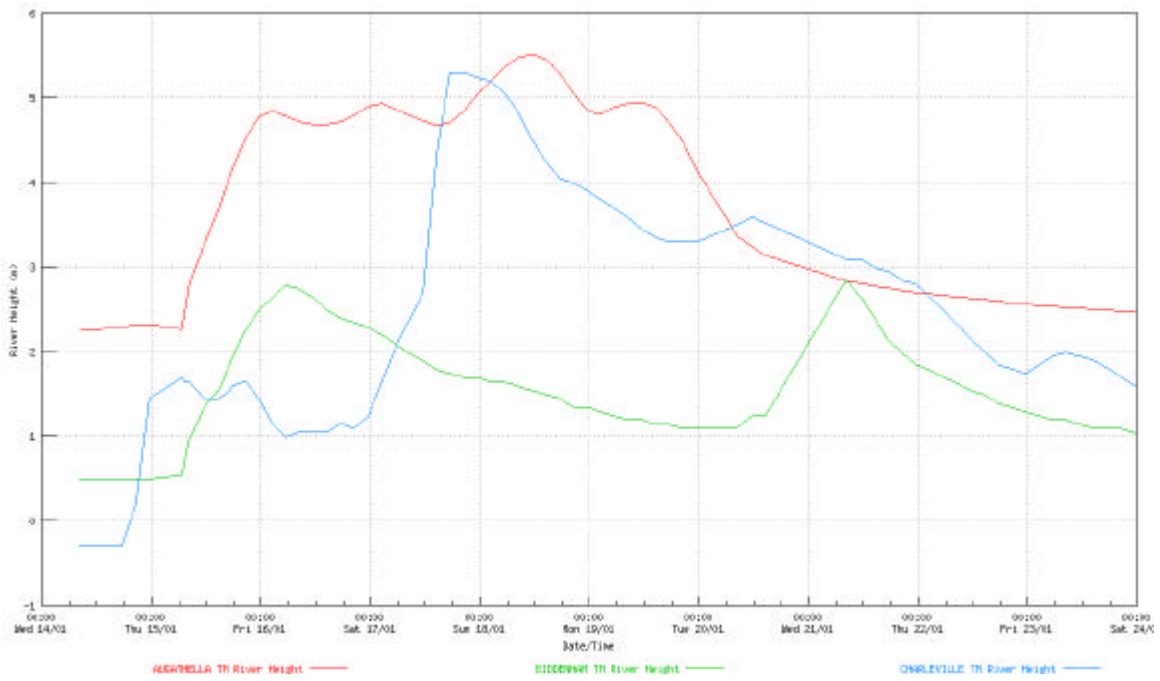


Figure 8 Selected Hydrographs - Upper Warrego River

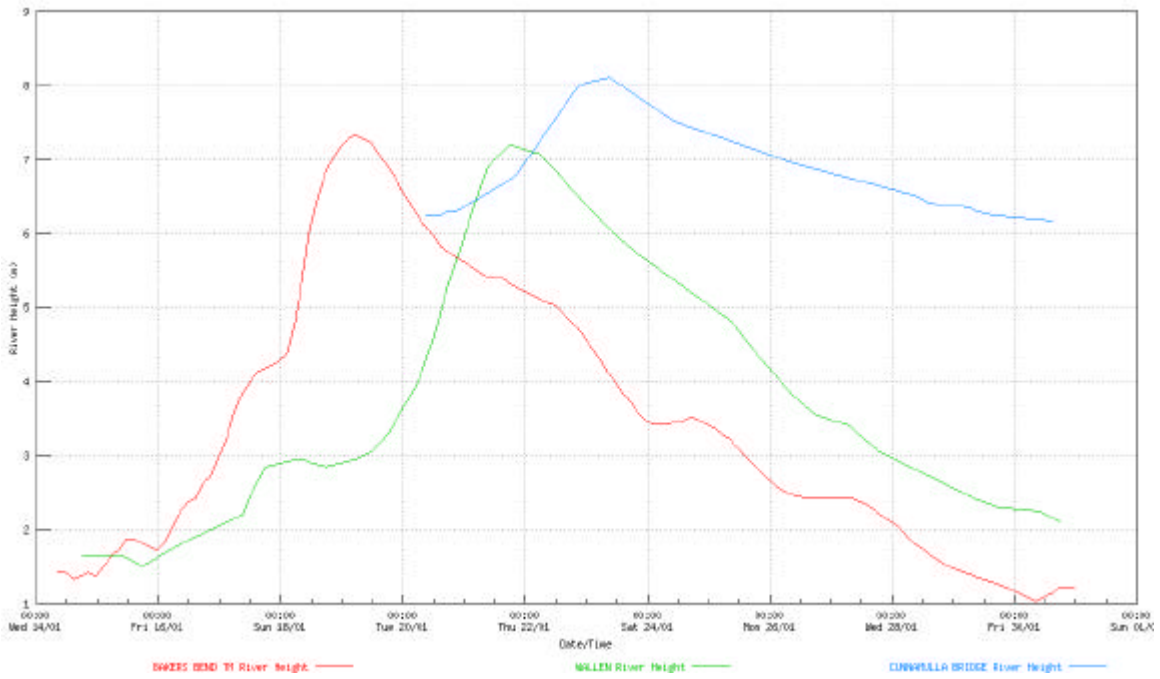


Figure 9 Selected Hydrographs – Lower Warrego River

There were several rainfall episodes during January in the Warrego system, which resulted in flooding at different parts of the catchment at different times. Moderate flooding occurred in the upper Warrego River at Augathella on Sunday 18th January and in the Nive River at Biddenham at the end of the month. Moderate flooding occurred at Charleville on 17th January. These floodwaters coupled with runoff from the Ward and Langlo system, caused moderate flooding along the main Warrego River from Bakers Bend to Cunnamulla

with minor flooding still continuing at the end of the month.

Paroo River:

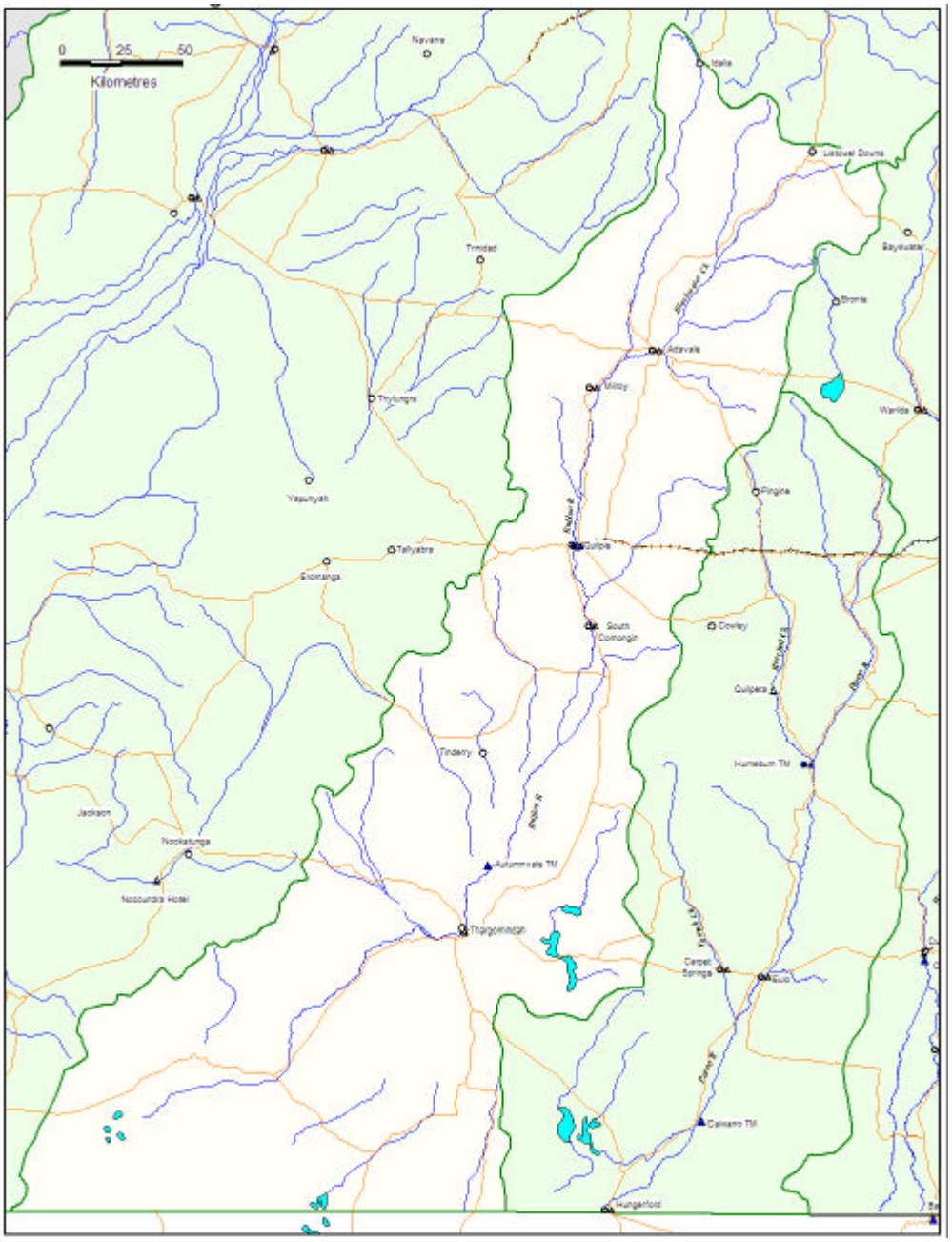


Figure 10 Paroo and Bulloo Rivers

Station Number	Name	Date/Time	Peak Height (m)	Classification
44222	QUILPETA	17/01/2004 22:30	3.90	Moderate
44198	HUMEBURN TM	18/01/2004 23:00	6.15	Major
44153	EULO	18/01/2004 03:00	5.15	Major
44019	CARPET SPRINGS	17/01/2004 09:00	2.40	Moderate
544015	CAIWARRO TM	20/01/2004 09:00	4.50	Major
44181	HUNGERFORD	24/01/2004 15:00	2.45	Major

Rainfall totals up to 150mm were recorded in the Paroo River above Eulo in the 48 hours to 9am 17th January. This resulted in major flooding along the Paroo River from Humeburn to Hungerford. The Paroo River at Humeburn peaked on Sunday 18th January and the main floodwaters did not reach Hungerford until Saturday 24th January. At Eulo, it was the highest flood since April 1990.

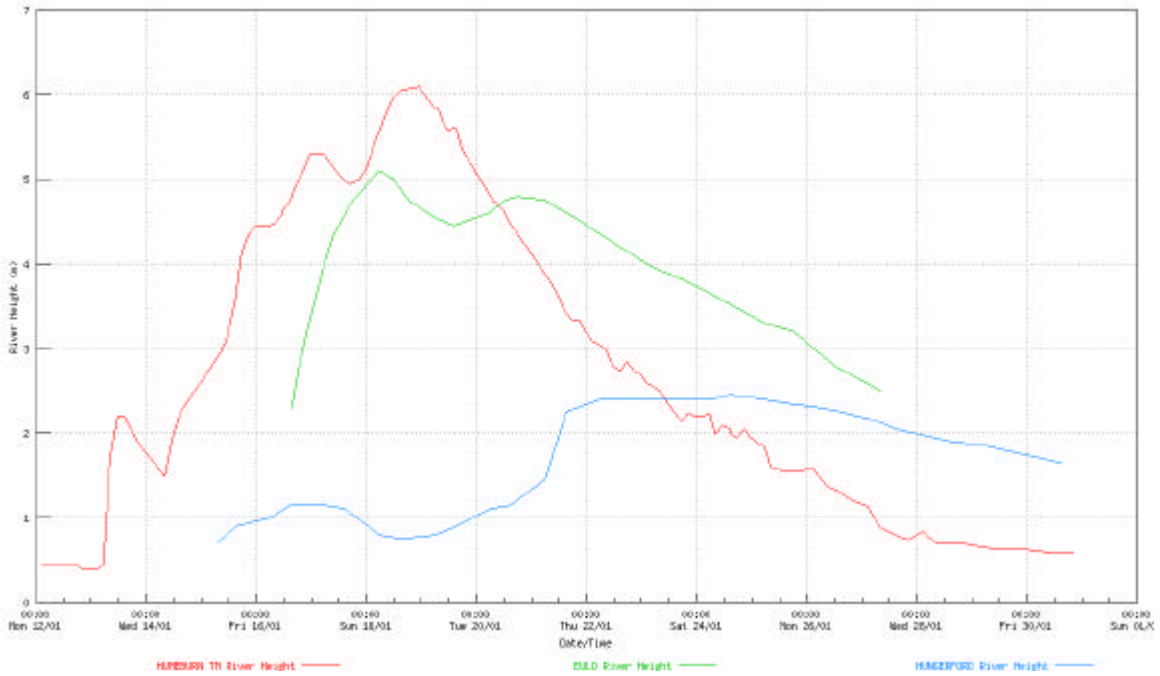


Figure 11 Selected Hydrographs - Paroo River

Bulloo River:

Heavy rain extended from Idalia in the north to Quilpie during the 36 hours to 3pm Friday 16th January with 173mm recorded at Quilpie in the 12 hours ending 3pm Friday 16th. This resulted in rapid river rises from Adavale to Quilpie during the Friday and Saturday 17th January. The peaks recorded at Quilpie on the Saturday and at Thargomindah on Friday January 23rd were the highest since the early 1970s.

Station Number	Name	Date/Time	Peak Height (m)	Classification
45043	ADAVALE	16/01/2004 15:00	5.55	Major
45066	MILROY	16/01/2004 17:00	5.95	Major
45044	QUILPIE	17/01/2004 06:00	6.25	Major
45062	QUILPIE TM	16/01/2004 20:10	6.37	Major
45003	SOUTH COMOGIN	17/01/2004 09:00	5.40	Major
545001	AUTUMNVALE TM	22/01/2004 08:45	7.84	Major
45045	THARGOMINDAH	23/01/2004 21:00	6.08	Major

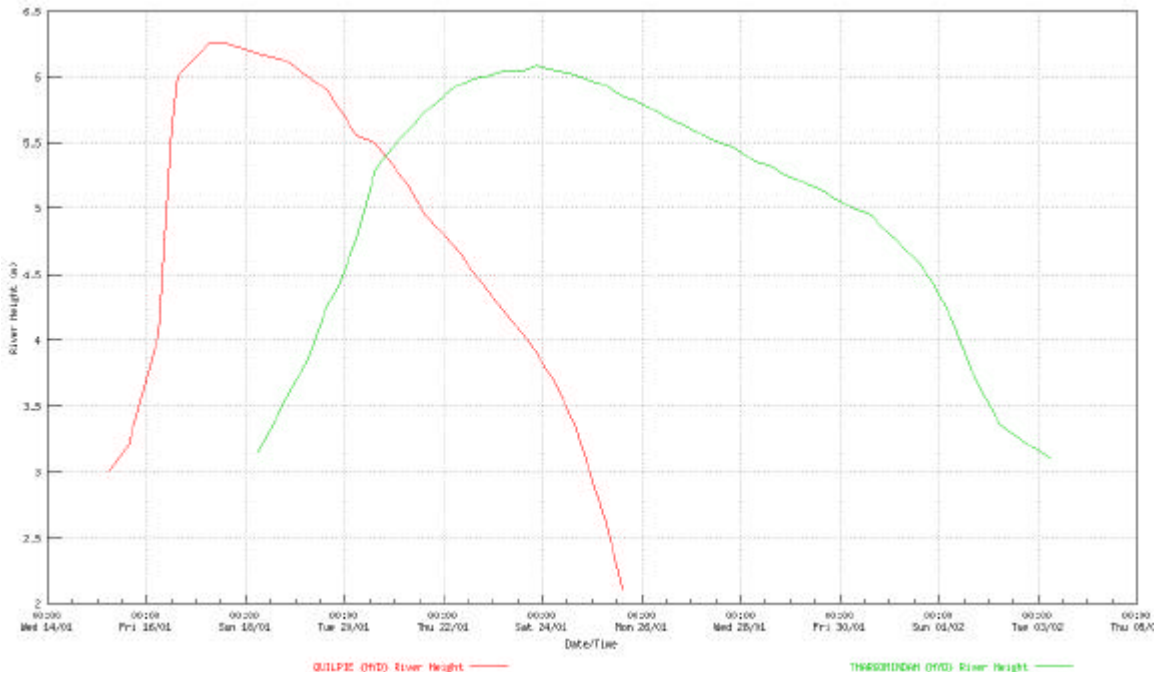


Figure 12 Selected Hydrographs - Bulloo River

Figure 13 IFD Curve - Quilpie Telemeter

Cooper Creek:

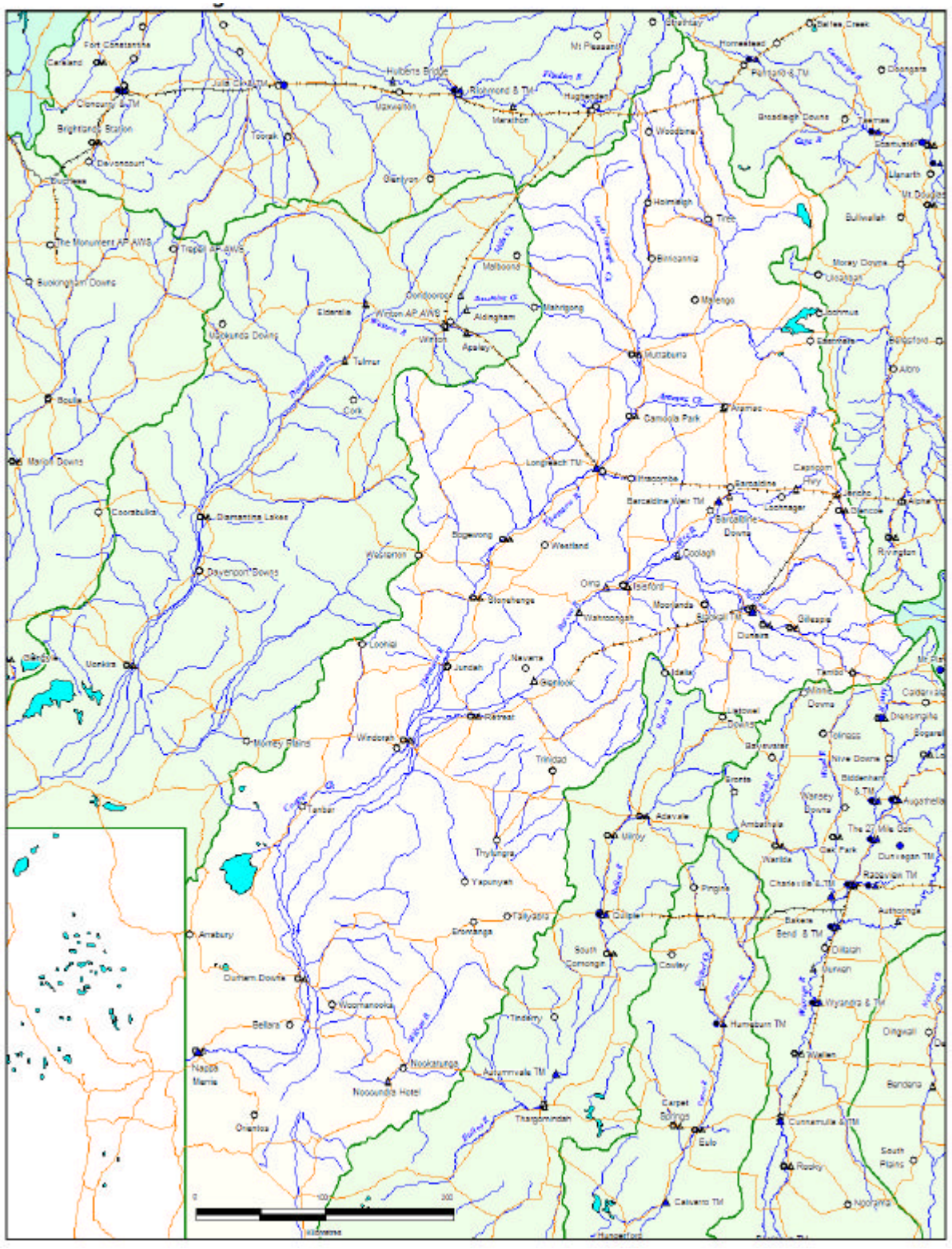


Figure 14 Cooper Creek Basin

Flooding commenced in the upper Barcoo River on Sunday 11th January following heavy localised rain around Tambo in the 24hours to 9am Sunday. Moderate flooding resulted at Blackall on Monday 12th January. By Tuesday 13th January, the rainfall had become more widespread, extending throughout the Thomson and Barcoo systems.

Station Number	Name	Date/Time	Peak Height (m)	Classification
36037	MUTTABURRA	17/01/2004 15:00	5.66	Moderate
36162	ARAMAC	14/01/2004 17:00	3.00	Moderate
36013	CAMOOLA PARK	17/01/2004 12:00	4.60	Moderate
36107	LONGREACH	18/01/2004 17:00	3.70	Moderate
36161	LONGREACH TM	18/01/2004 14:40	5.05	Moderate
36116	BOGEWONG	21/01/2004 08:30	5.65	Moderate
37040	STONEHENGE	17/01/2004 06:00	5.16	Major
38037	JUNDAH	18/01/2004 06:00	6.68	Major
35284	TAMBO	11/01/2004 06:00	3.80	Minor
35049	GILLESPIE	04/02/2004 09:00	6.25	Minor
35259	DUNEIRA	11/01/2004 21:30	2.70	Minor
36155	BLACKALL	13/01/2004 15:00	4.25	Moderate
536003	BLACKALL TM	13/01/2004 17:30	5.16	Moderate
36169	COOLAGH	16/01/2004 06:00	6.80	Major
35286	GLENCOE	16/01/2004 06:00	2.00	Minor
536002	BARCALDINE WEIR TM	17/01/2004 05:35	0.99	Below Minor
36026	ISISFORD	17/01/2004 08:00	7.39	Major
36104	OMA	17/01/2004 06:00	6.78	Major
36094	WAHROONGHA	18/01/2004 06:00	5.70	Major
38034	GLENLOCK	17/01/2004 14:45	6.50	Major
38018	RETREAT	18/01/2004 06:00	10.90	Major
38038	WINDORAH	19/01/2004 15:00	7.08	Major
45005	DURHAM DOWNS	30/01/2004 18:00	3.25	Major
545002	NAPPA MERRIE TM	16/02/2004 05:00	4.17	Minor

While only moderate flooding resulted in the Barcoo River at Blackall from 12th to 14th January, downstream flooding was more severe due to high local rainfalls on 12 and 13th January with major flooding occurring along the Barcoo River from Coolagh, near the junction of the Barcoo and Alice Rivers, to Retreat on the lower Barcoo River.

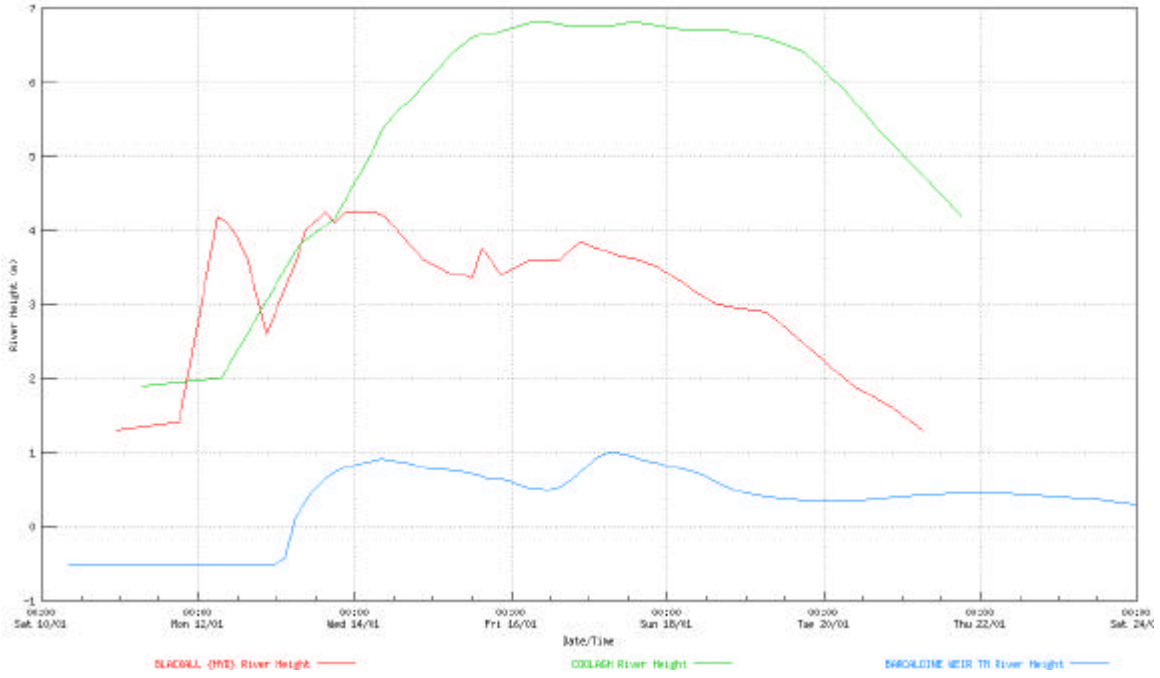
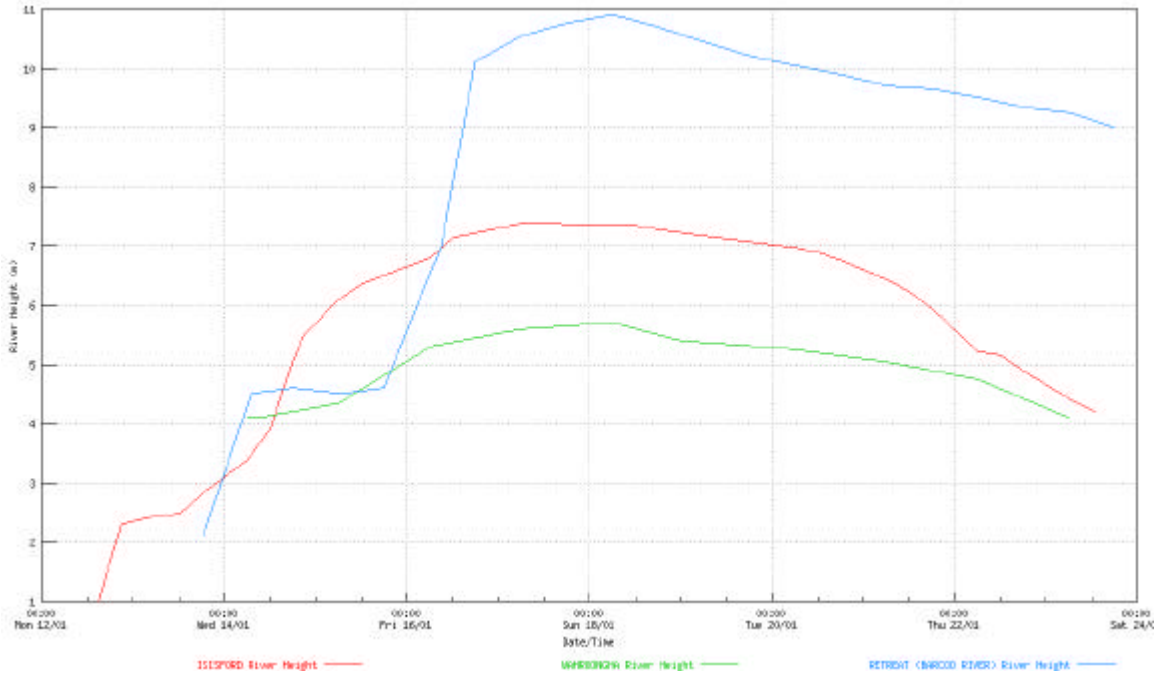


Figure 15 Selected Hydrographs - Barcoo River



In the Thomson River, river levels commenced to rise on Wednesday 14th from Muttaburra to Jundah. Moderate flooding developed in the Thomson River with the main floodwaters arriving in Longreach on Sunday 18th January. Downstream of Longreach, heavy local rain caused major flooding to develop at Jundah also on Sunday 18th January. High river levels and moderate flooding continued along the Thomson River from Longreach to Jundah until late January.

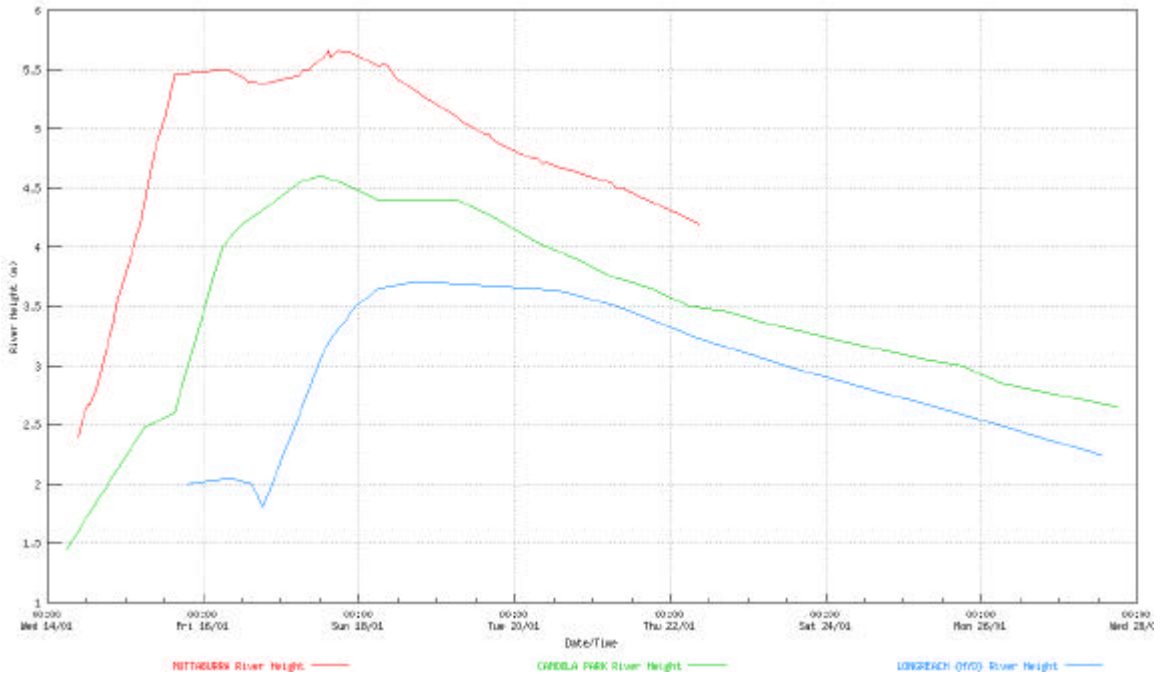
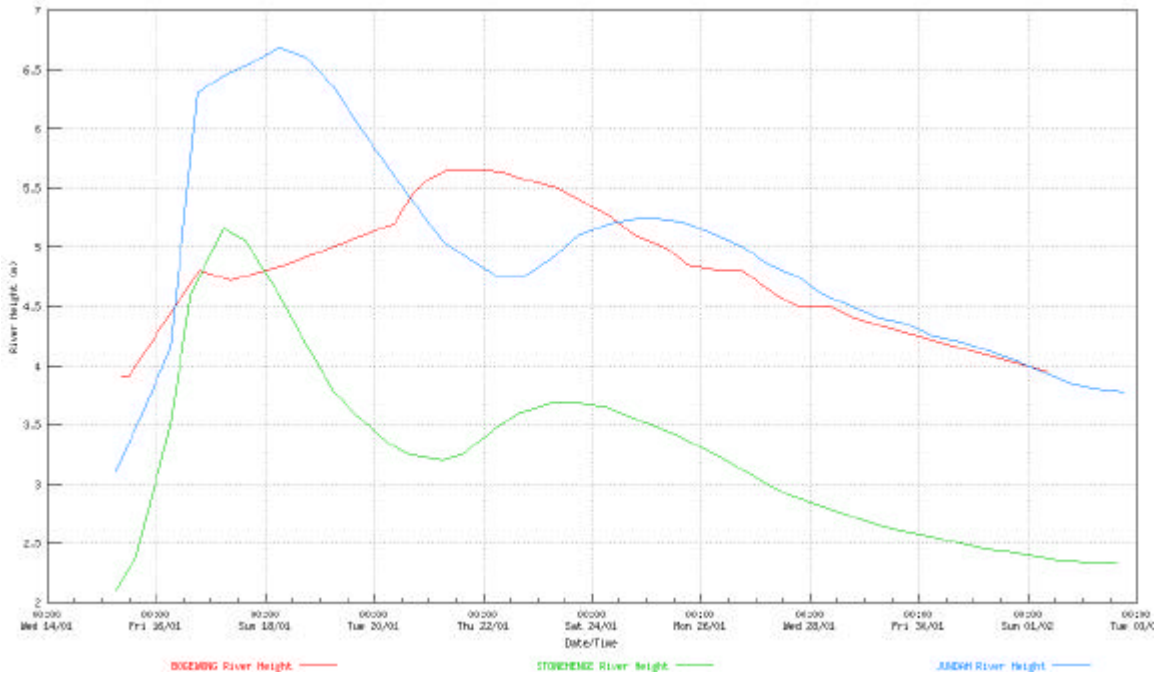
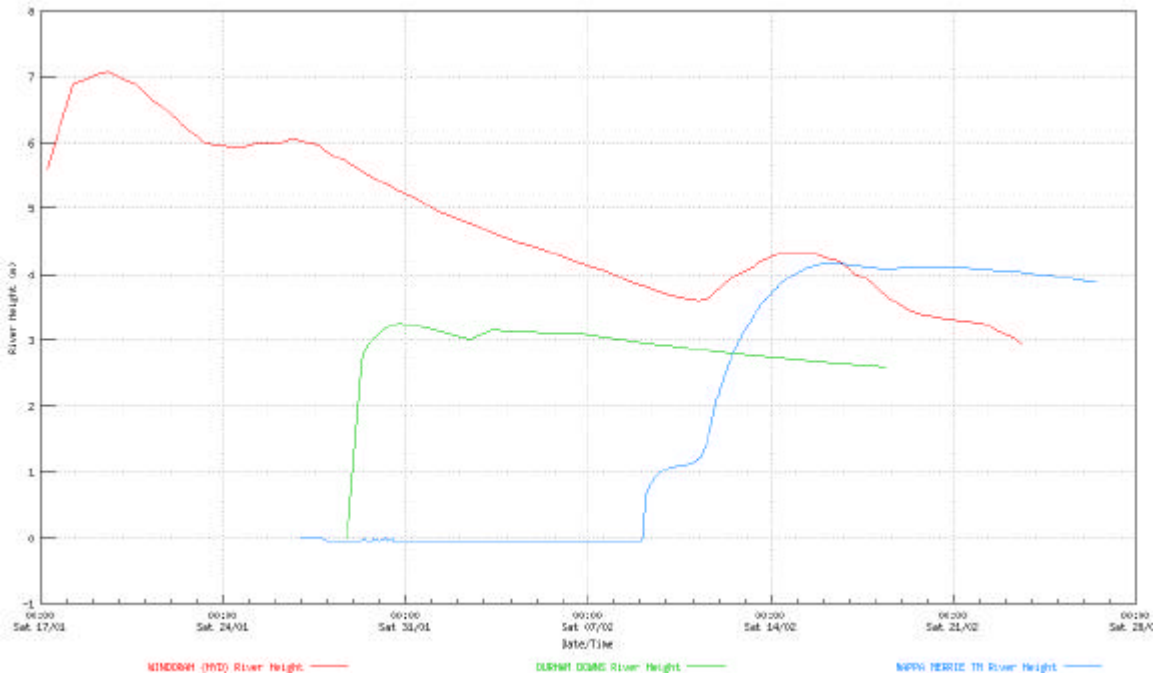


Figure 16 Selected Hydrographs– Upper Thomson River



The main floodwaters reached Windorah on the 19th January causing major flooding in the area and at the end of January, flooding was continuing in the lower Thomson and Barcoo Rivers and in Cooper Creek.


River Height (m)
8
7
6
5
4
3
2
1
0
-1
Sat 17/01
Sat 24/01
Sat 31/01
Sat 07/02
Sat 14/02
Sat 21/02
Date/Time
WINDSOR (HYD) River Height
DURHAM DOWNS River Height
WAPPA MERRIE TM River Height

Diamantina River:

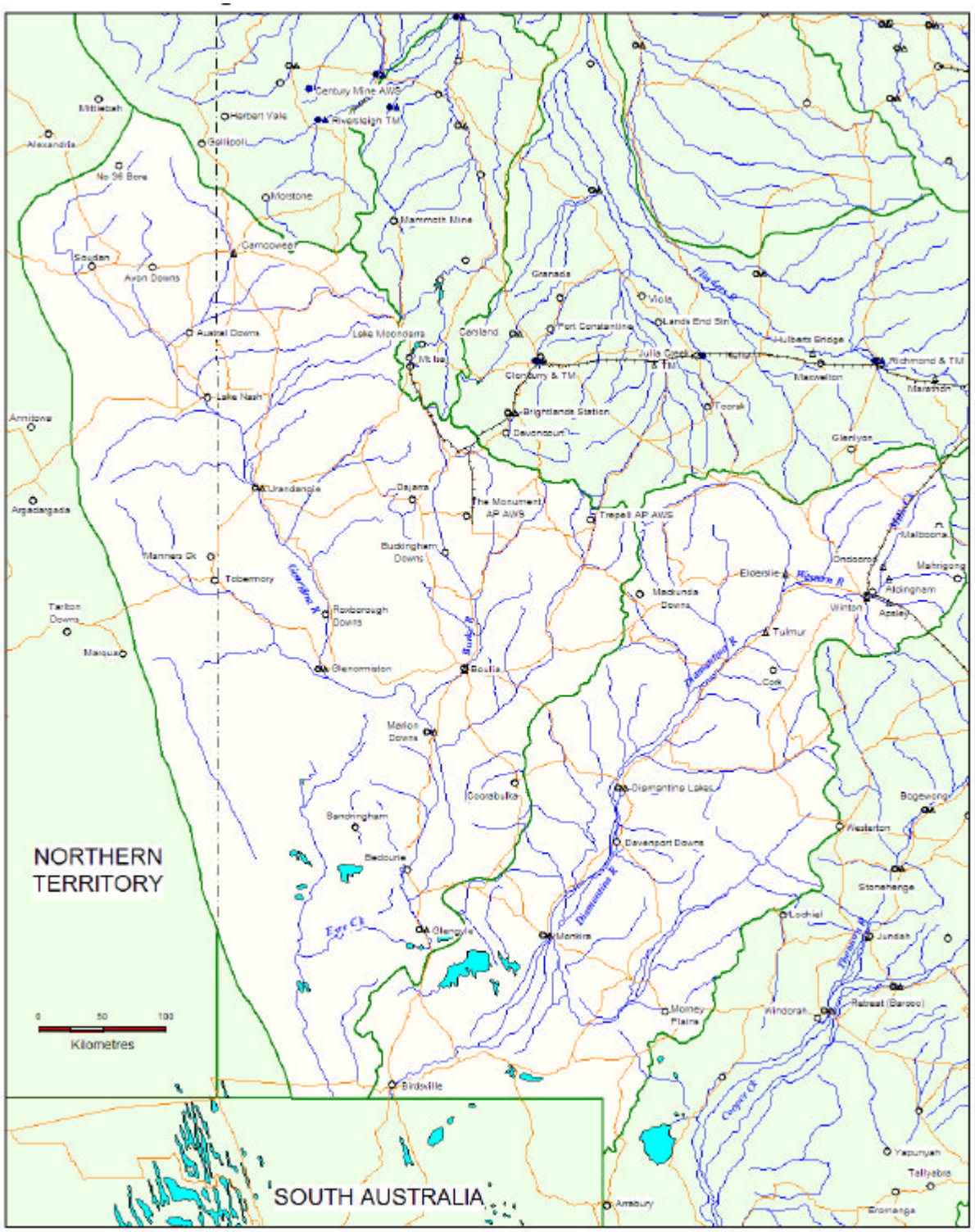
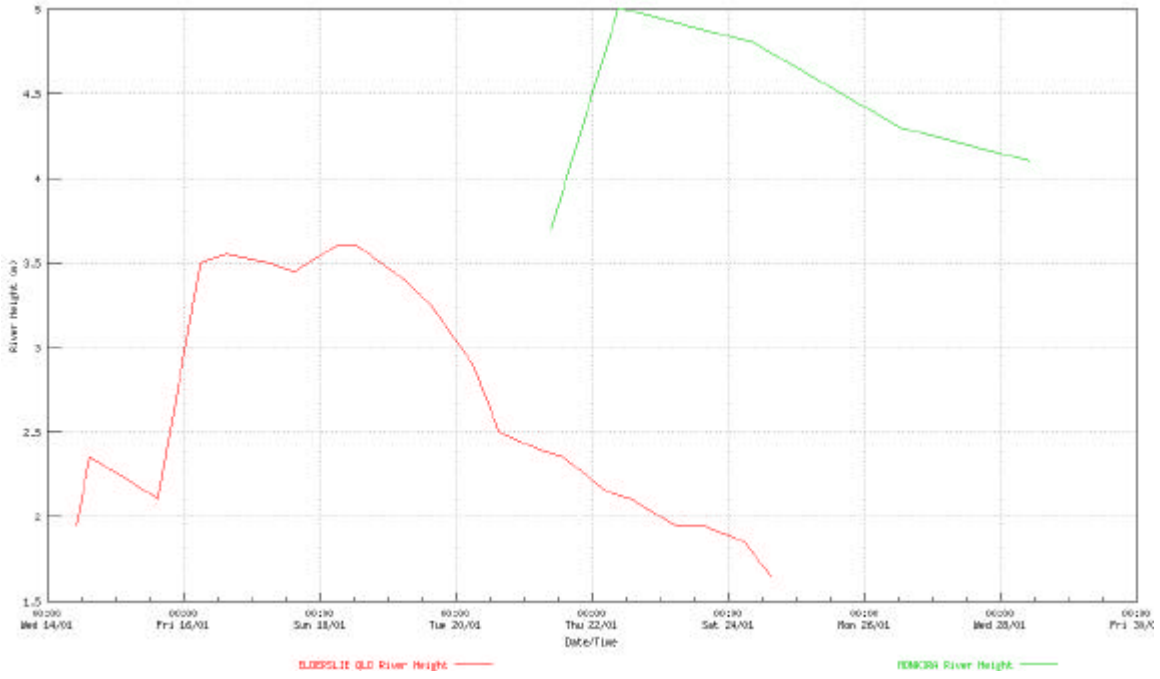


Figure 17 Diamantina and Georgina Rivers

Diamantina River:

The rain, which fell in the 3 days ending 16th January, caused major flooding in the upper reaches of the Diamantina River around Elderslie. Moderate to major flooding occurred along the Diamantina River from Tulmur to Monkira during the following weeks and the floodwaters had only commenced to arrive at Birdsville by the end of the month.

Station Number	Name	Date/Time	Peak Height (m)	Classification
37043	URANDANGIE	23/01/2004 06:00	4.90	Minor
38010	GLENORMISTON	29/01/2004 06:30	5.55	Moderate
38055	BOULIA	17/01/2004 18:00	5.60	Moderate
38014	MARION DOWNS	05/02/2004 06:30	5.14	Major
38005	CLUNY	29/01/2004 18:00	3.75	Moderate
38009	GLENGYLE	19/02/2004 07:00	3.40	Moderate
37046	ELDERSLIE	18/01/2004 09:00	3.65	Major
37029	APSLEY	16/01/2004 08:00	0.80	Below Minor
37026	ALDINGHAM	16/01/2004 07:00	1.45	Below Minor
37082	OONDOOROO	16/01/2004 06:30	2.80	Minor
37018	WINTON	16/01/2004 17:15	2.90	Moderate
37122	TULMUR	18/01/2004 18:00	6.25	Minor
38015	MONKIRA	22/01/2004 09:00	5.00	Major
38002	BIRDSVILLE	02/02/2004 15:00	8.20	Major



The Diamantina River floodwaters moved slowly over the next two months from the Birdsville area in early February to Lake Eyre during March. On 11 March, the Bureau advised that reports from recent flights over Lake Eyre area indicated that the leading edge of flood waters had reached the end of Warburton Groove and was expected to flow out into Lake Eyre North proper in the coming days. At this time, water levels were beginning to reach a peak at Kalamurina Station, north of Lake Eyre.

Georgina River:

The highest rainfall in the Georgina River was concentrated in the area from Camooweal to Trepell with totals up to 150mm in the 3 days to 16th January. Minor flooding first developed at Urandangie on 15th January and was continuing at the end of January. Downstream from Glenormiston to Glengyle on Eyre Creek, moderate flooding developed in the middle of January and was still continuing at the end of the month.

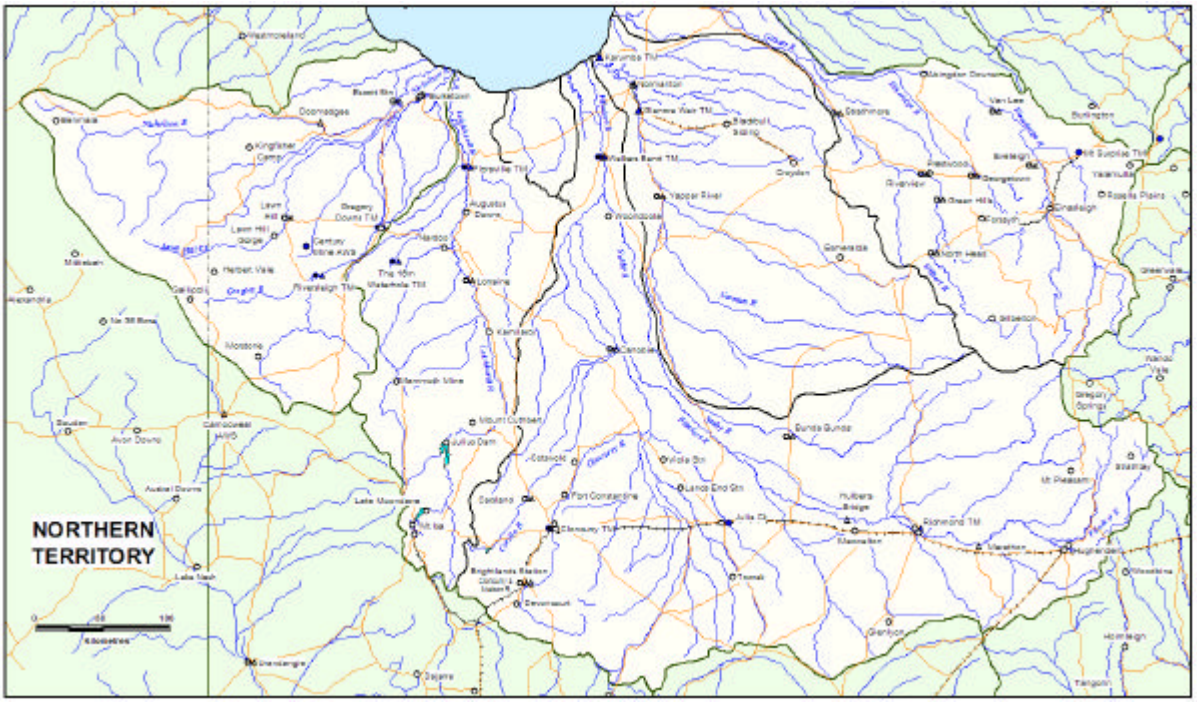
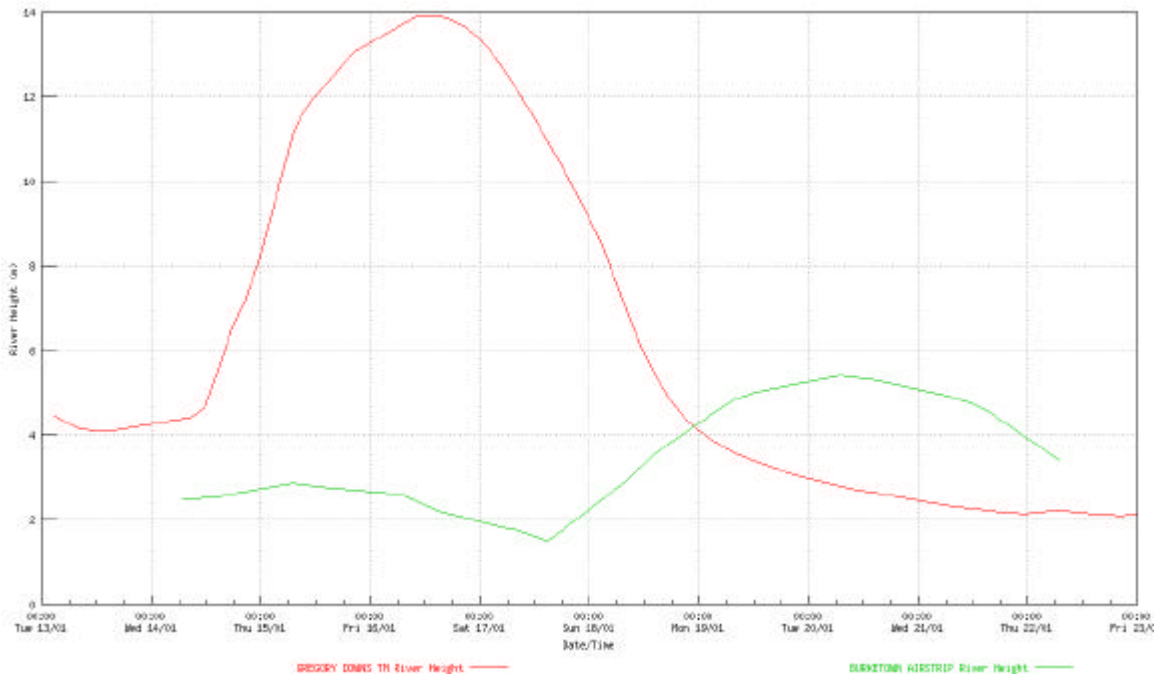


Figure 18 Gulf Rivers

Station Number	Name	Date/Time	Peak Height (m)	Classification
29158	DOOMADGEE TOWNSHIP	16/01/2004 12:00	3.30	Minor
29031	LAWN HILL	14/01/2004 21:00	5.00	Major
29166	RIVERSLEIGH TM	15/01/2004 05:00	7.94	Major
529009	GREGORY DOWNS TM	16/01/2004 11:45	13.91	Major
29157	BURKETOWN AIRSTRIP	20/01/2004 07:00	5.40	Minor
529013	GUNPOWDER TM	14/01/2004 20:10	8.82	
29032	LORRAINE	16/01/2004 22:00	16.20	Major
529008	THE 16 MILE WATERHOLE TM	14/01/2004 20:40	4.70	Moderate
529010	FLORAVILLE TM	19/01/2004 10:00	7.78	Major
30045	RICHMOND	15/01/2004 21:00	7.20	Moderate
530009	RICHMOND TM	15/01/2004 23:40	7.72	Moderate
29143	CLONCURRY	16/01/2004 06:00	8.05	Major
529011	CLONCURRY TM	15/01/2004 20:40	7.69	Major
529006	JULIA CREEK	03/02/2004 09:00	4.05	Moderate
29105	CARSLAND	15/01/2004 12:00	5.00	Major
529007	WALKERS BEND TM	25/01/2004 08:42	11.91	Moderate

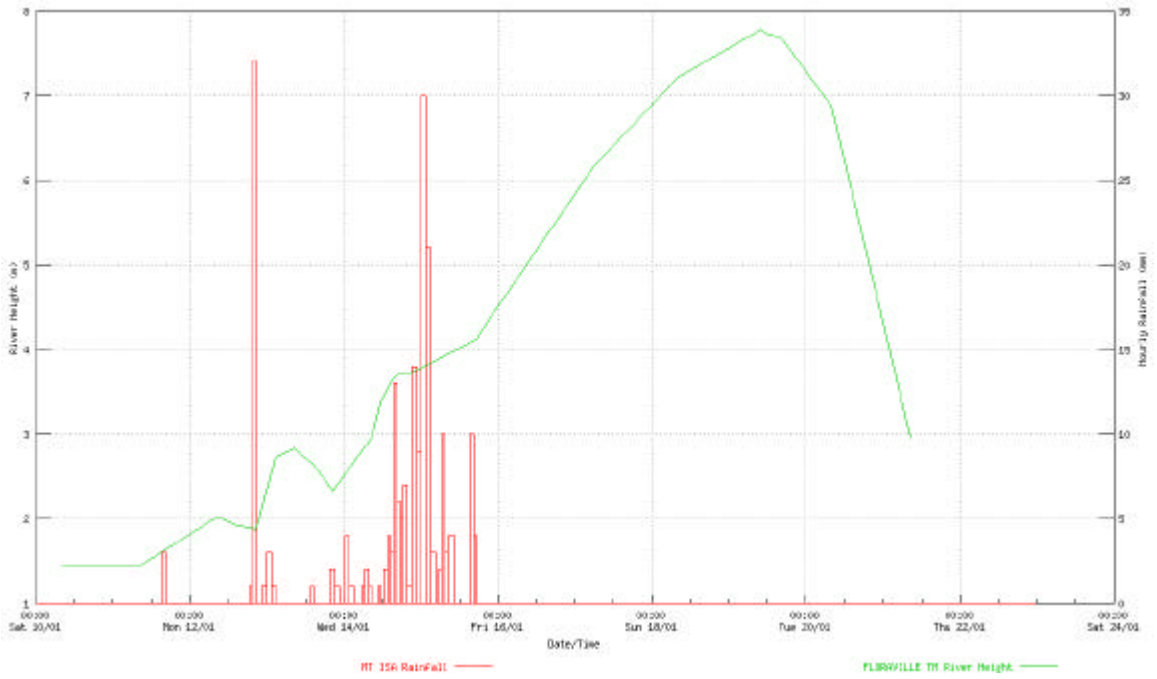
Nicholson River:

During the period 11th to 15th January rainfall totals of up to 300mm were recorded in the Gregory River system with the lower totals recorded in the Nicholson River. The Gregory River at Gregory Downs reached the highest peak on record at the station with major flooding occurring in the area on 16th/17th January. At Burketown, the Albert River just exceeded the minor flood level some 4 days later.



Leichhardt River:

Rainfall totals up to 350mm were recorded throughout the Leichhardt River in the period between Tuesday evening 13th January to Thursday evening 15th January. This resulted in flash flooding in Mt Isa and major flooding along the Leichhardt River with the main floodwaters reaching Floraville on Monday 19th January.



Flinders River:

Rapid river rises and major were recorded in the Cloncurry River at Cloncurry during Thursday 15th January. Major flooding extended along the Cloncurry River and into the Flinders River with the main floodwaters reaching Walkers Bend around 25th January. Some moderate flooding also occurred in the eastern part of the Flinders system downstream of Richmond.