



Burdekin River Floods

February 2009



1	2
3	4
5	6

1. Rail Bridge at Sellheim 03/02/2009.
 2. Inkerman Bridge between Ayr and Home Hill.
 3. Charters Towers Weir washed out.
 4. Cut-off residents at the McAvoy Bridge at Sellheim. 02/02/2009
 5. Burdekin Falls Dam 02/02/2009.
 6. Burdekin Falls Dam 02/02/2009.
- Photography courtesy of the Burdekin Shire Council and the Courier Mail website <http://www.news.com.au/couriermail/> .

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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1. Introduction

The Burdekin River basin drains an area of about 130,000 square kilometres. Two main tributaries drain the catchment, the Burdekin River flowing from the north and the Belyando from the south, which join at the Burdekin Falls Dam. Downstream of the Dam, the Bowen and Bogie Rivers join the Burdekin River before it flows into the sea near Ayr/Home Hill.

The Burdekin River catchment received greater than average rainfall in January 2009. Though no river flooding occurred in this period, the catchment became saturated. As a result, further heavy rainfall between the 31st January and the 4th February then led to moderate to major flooding in the Upper and Lower Burdekin River. Further localised falls of between 100mm and 200mm between Broadleigh Downs and Taemas on the 11th February caused further rises to existing high river levels at Taemas.

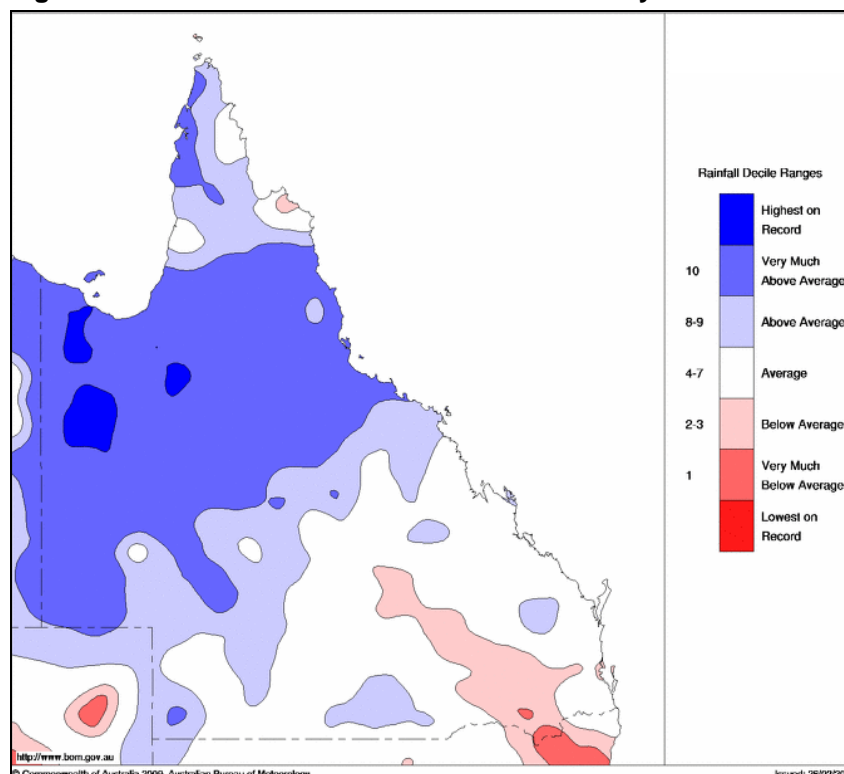
This report provides a technical summary and analysis of the hydrology of the Burdekin River Floods of February 2009. For a full meteorological analysis of the rainfall events discussed in this report refer to the [Queensland Floods: January and February 2009](#).

A [Flood Warning Network Map of the Burdekin River catchment](#) shows the location of flood warning stations referred to in this report.

2. Meteorological Summary

An active monsoon trough and series of low pressure systems caused very much above average rainfall across the northern half of the state for the month January 2009. The January 2009 rainfall decile map is shown in Figure 2.1.

Figure 2.1 Queensland Rainfall Deciles for January 2009.



The first heavy rainfall event over the Burdekin River catchment can be attributed to Tropical Cyclone Charlotte.

A low pressure system identified on the monsoon trough over the Northern Territory moved into the Gulf of Carpentaria where it intensified to become Tropical Cyclone Charlotte on the 11th January. Charlotte tracked east-southeast through the Gulf of Carpentaria and crossed the Queensland coast near the Gilbert River Mouth on the 12th January. Charlotte in combination with the onshore winds along the north Queensland coast produced heavy rainfall over the Upper Burdekin River catchment.

The heaviest falls in 48 hours to 9am on the 14th January included 628mm at Paluma Dam AL, 565mm at Paluma and 558mm at Paluma AL. However, these heavy falls were very isolated and average rainfall across the Upper Burdekin catchment for this period was around 44mm. As a result, this rainfall caused only small rises in the Upper Burdekin River.

Widespread showers and thunderstorms developing about the monsoon trough brought further moderate falls to the region through the remainder January and, by the end of the month, many sites in the catchment had recorded more than 500mm of rainfall, with Paluma Dam AL recording more than 1500mm.

Tropical Cyclone Ellie then crossed the coast to the north of Cardwell on the 2nd February and produced further heavy rainfall over the north and central Queensland coasts including the Upper Burdekin River catchment. Highest falls once again occurred at Paluma Dam AL where 551mm fell in the 72 hours to 9am on the 4th February. However, rainfall across the catchment was generally more widespread with several locations recording between 100 and 250mm in the 48 hours to 9am on the 3rd February.

This rainfall fell over an already saturated catchment and led to moderate to major flooding in the Upper and Lower Burdekin River with Sellheim AL recording its equal 3rd highest river level of 20.5 metres in more than 130 years of record.

Further localised heavy rainfall of between 100mm to 200mm fell in a small area between Taemas and Broadleigh Downs in the 24 hours to 9am on the 12th February and caused a further rise and the highest flood peak at Taemas for the event.

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 2008-2009 Wet Season Flood Report.

3. Hydrology

As discussed in the meteorological summary, several moderate to heavy rainfall events contributed to producing very much above average rainfall over the northern half of Queensland in January 2009. None of these rainfall events was sufficiently widespread to produce large river rises in the Burdekin River catchment during this period. However, rainfall saturated the catchment, and was also sufficient to cause the Burdekin Dam to over spill early in the month. So on a saturated catchment, with the Burdekin Falls Dam already spilling, the first heavy rainfall event in February 2009, caused by the passage inland of Tropical Cyclone Ellie, produced large river rises and moderate to major flooding in both the Upper and Lower Burdekin River catchment.

No record flood heights were recorded in this event, however Sellheim, which has over 130 years of record, recorded its equal 3rd highest river level of 20.5 metres. See Table 3.1 for a list of peak heights that occurred in the Burdekin River catchment between the 3rd and 12th February and how they compared to records of previous flood events.

Peak height maps for the Upper and Lower Burdekin River are shown in Figures 3.2 and 3.3

The abbreviations used in the following table include:

AL - ALERT Radio Telemetry

TM - Telephone Telemetry

Table 3.1 Burdekin River catchment - Peak Height Comparison to Records.

Gauging Station	Jan - Feb 2009 Peak (metres)	Start of Record	Ranking	Highest Since	Highest on Record (metres)
Blue Range TM	15.85 04/02/2009	1986	3 rd	Feb 1991 (18 years)	16.76 Feb 1991
Mt Fullstop TM	17.39 03/02/2009	1974	3 rd	Feb 1991 (18 years)	18.28 Feb 1991
Sellheim	20.50 03/02/2009	1870	Equal 3 rd	Jan 1998 (11 years)	21.79 Mar 1946
Taemas AL	8.74 12/02/2009	2002	4 th	Jan 2008 (1 year)	9.39 Jan 2008
Taemas AL	8.04m 05/02/2009	2002	7 th	Feb 2008 (1 Year)	9.39 Jan 2008
Burdekin Dam TM	5.18 15/02/2009	1989	3 rd	Feb 1991 (18 years)	6.85 Feb 1991
Burdekin Dam TM	6.69m 05/02/2009	1989	2 nd	Feb 1991 (18 years)	6.85 Feb 1991
Inkerman Bridge AL	11.55 05/02/2009	1991	3 rd	Feb 2008 (1 year)	12.53 Feb 1991
Rita Island AL	3.10 05/02/2009	2002	2 nd	Feb 2008 (1 year)	3.70 Feb 2008
Groper Creek AL	4.44 05/02/2009	2002	2 nd	Feb 2008 (1 year)	4.54 Feb 2008

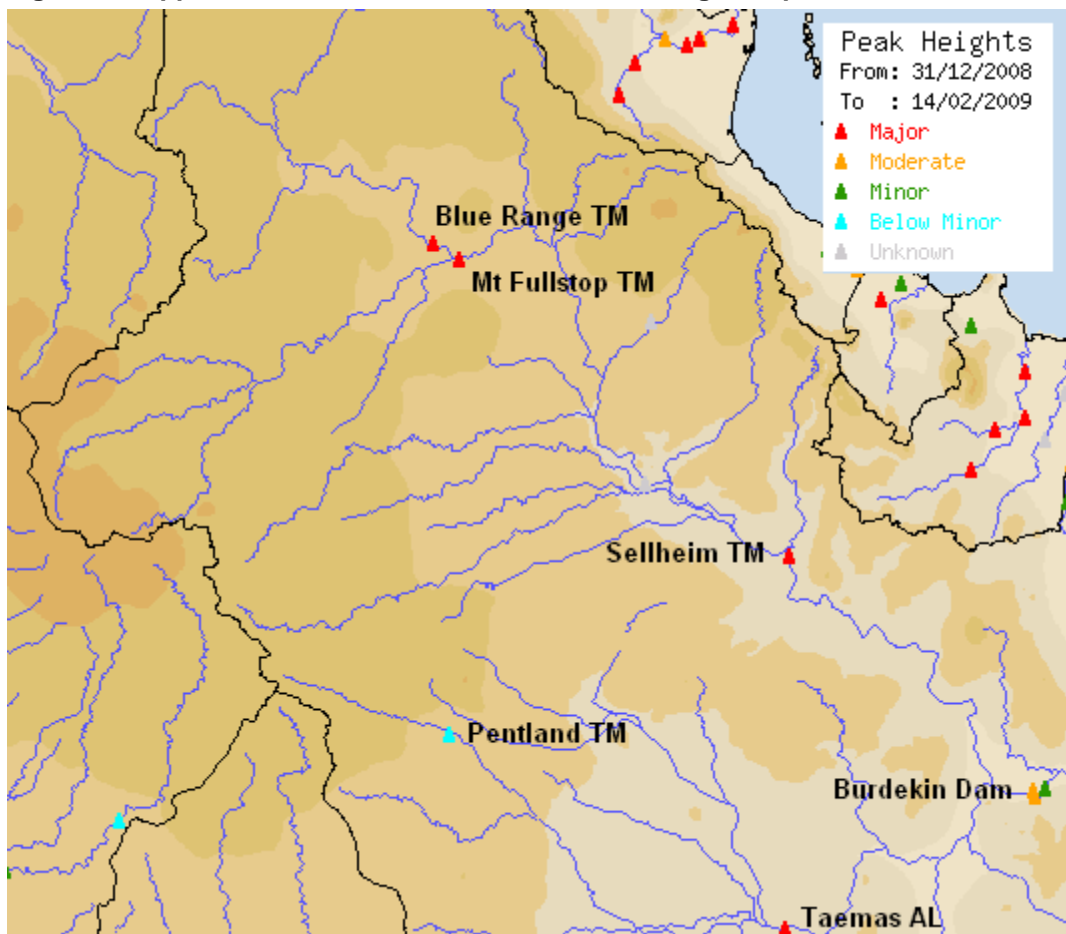
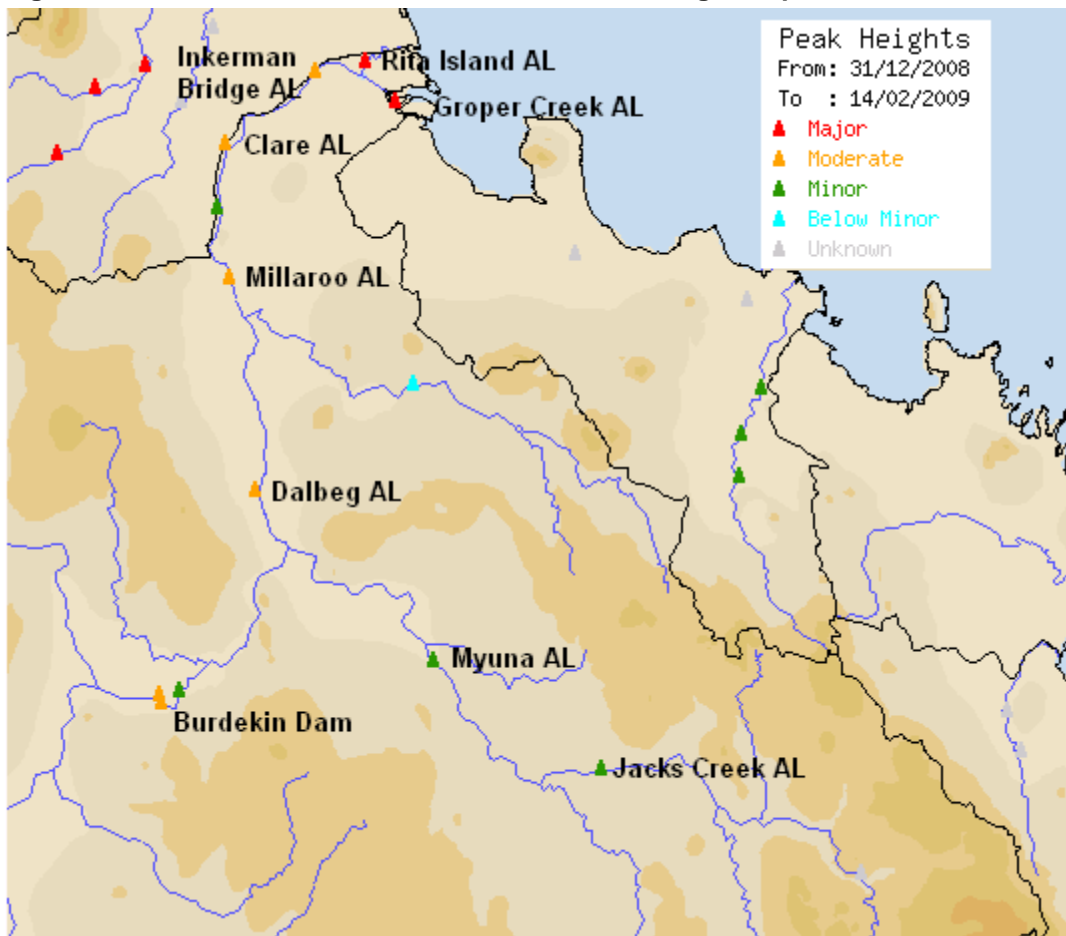
Figure 3.1 Upper Burdekin River catchment – Peak Height Map


Figure 3.2 Lower Burdekin River catchment – Peak Height Map



3.1. Rainfall Maps

Rainfall over the Upper and Lower Burdekin River catchment for the period from the 1st January to the 15th February are shown in Figures 3.1.1 and 3.1.2. The highest rainfalls recorded over the catchment for the period were 2,763mm at Paluma Dam AL and 2,619mm at Paluma AL. Other falls in excess of 1000mm were recorded close to the coast in the Lower Burdekin River catchment.

Figure 3.1.1 Rainfall Map from 9am on the 01/01/09 to 9am on the 15/02/09.

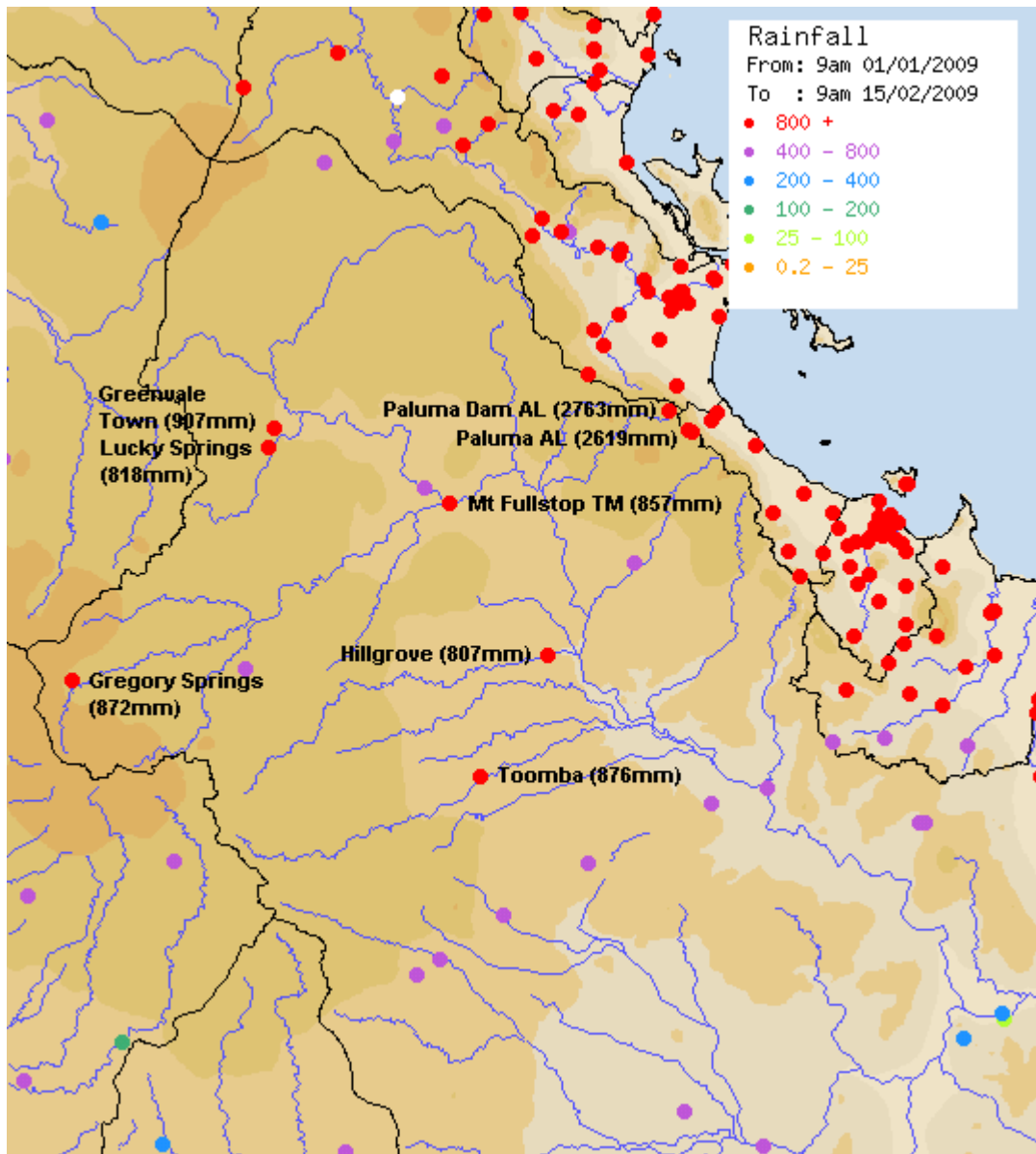
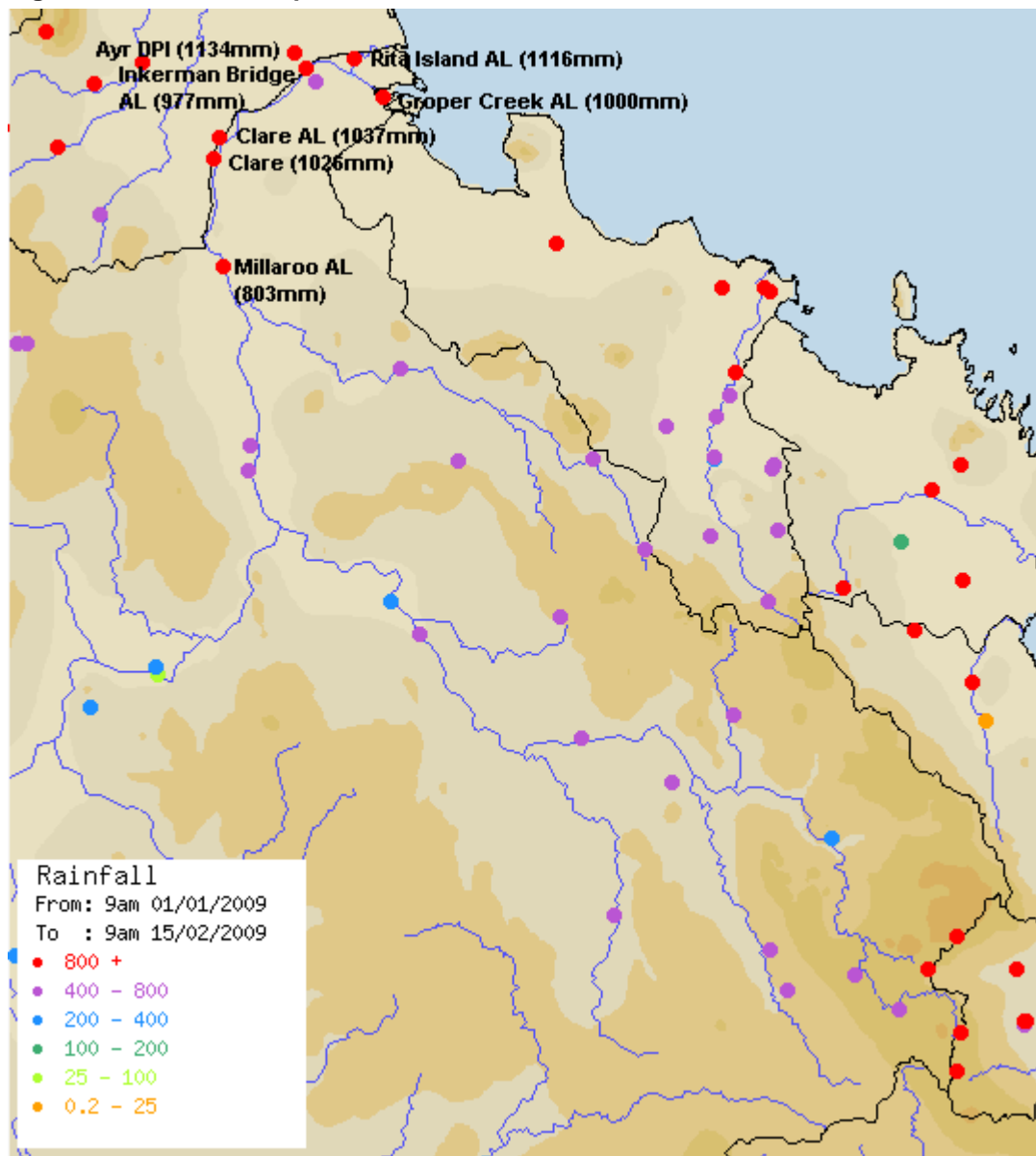


Figure 3.1.2 Rainfall Map from 9am on the 01/01/09 to 9am on the 15/02/09.



Rainfall that contributed to moderate to major flooding through the Upper and Lower Burdekin River is shown in Figures 3.1.3 and 3.1.4. Once again, heaviest falls in the Burdekin catchment occurred around Paluma, with Paluma Dam AL recording 551mm of rainfall in the 72 hours to 9am on the 4th February 2009. Over the remainder of the Upper Burdekin River catchment, many rainfall totals in excess of 150mm were recorded.

Heaviest period of rainfall in the Lower Burdekin River catchment occurred in the 72 hours to 9am on the 3rd February. The largest falls occurred closer to the coast and were generally between 160mm and 200mm. The highest recorded rainfall of 232 mm occurred at Rita Island AL.

Further heavy rainfall occurred on the 11th February between Taemas and St Anns in the Upper Burdekin River catchment including 178mm at Broadleigh Downs and 129 mm at Taemas AL. This caused river levels at Taemas to rise to 8.74 metres, exceeding the 5th February 2009 peak of 8.04 metres.

Figure 3.1.3 Rainfall Map from 9am on the 01/01/09 to 9am on the 04/02/09.

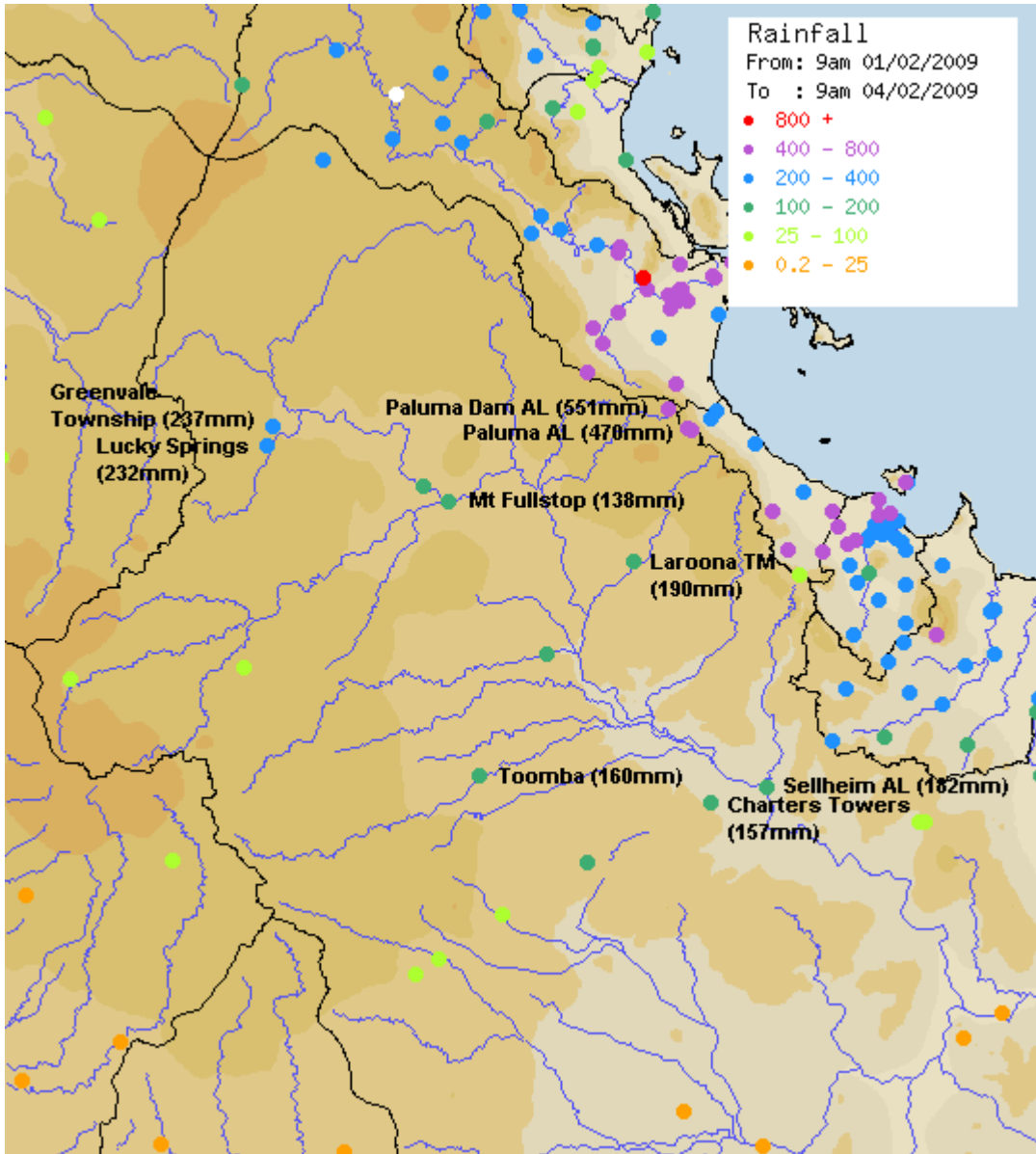


Figure 3.1.4 Rainfall for the 72 hour period to 9am on the 03/02/09.



3.2. Rainfall Intensity

Paluma Dam AL and Sellheim AL in the Upper Burdekin River catchment and Rita Island AL and Clare AL in the Lower Burdekin River catchment have been selected for Intensity Frequency Duration (IFD) analysis and the results can be found in Figures 3.2.3 and 3.2.4. Hourly hyetographs, displaying the distribution of rainfall for the same period, for Paluma Dam AL and Sellheim AL in the Upper Burdekin River catchment and Rita Island AL and Dalbeg in the Lower Burdekin River catchment have also been shown in Figures 3.2.1 and 3.2.2.

The observed rainfall intensities for the Burdekin River catchment for January and February were not remarkable or rare. The most statistically significant observed rainfall intensities were only around the 2 - 5 year Average Recurrence Interval design rainfall intensities and usually for longer durations between 24 and 72 hours. The shorter duration intensities were less than the 2-5 year ARI design intensities. The reason why such rainfall intensities led to moderate to major flooding in the catchment was due to the fact that rainfall fell over a significant number of days throughout January, so by the beginning February the catchment was close to saturated.

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 3.2.1 Hyetographs for Paluma Dam AL and Sellheim AL from 01/02/09 to 04/02/09.

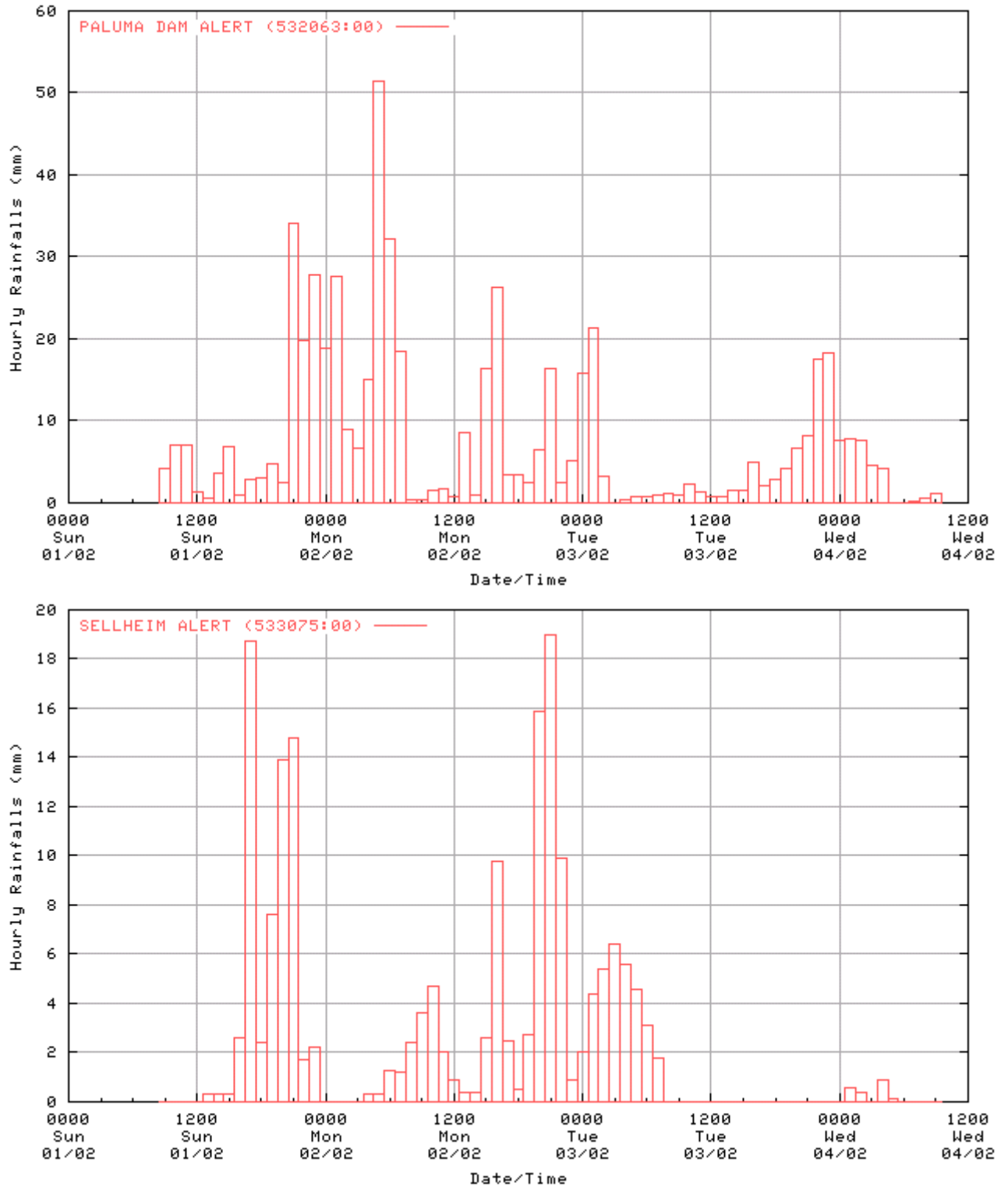


Figure 3.2.2 Hyetographs for Rita Island AL and Clare AL from 31/01/09 03/02/09.

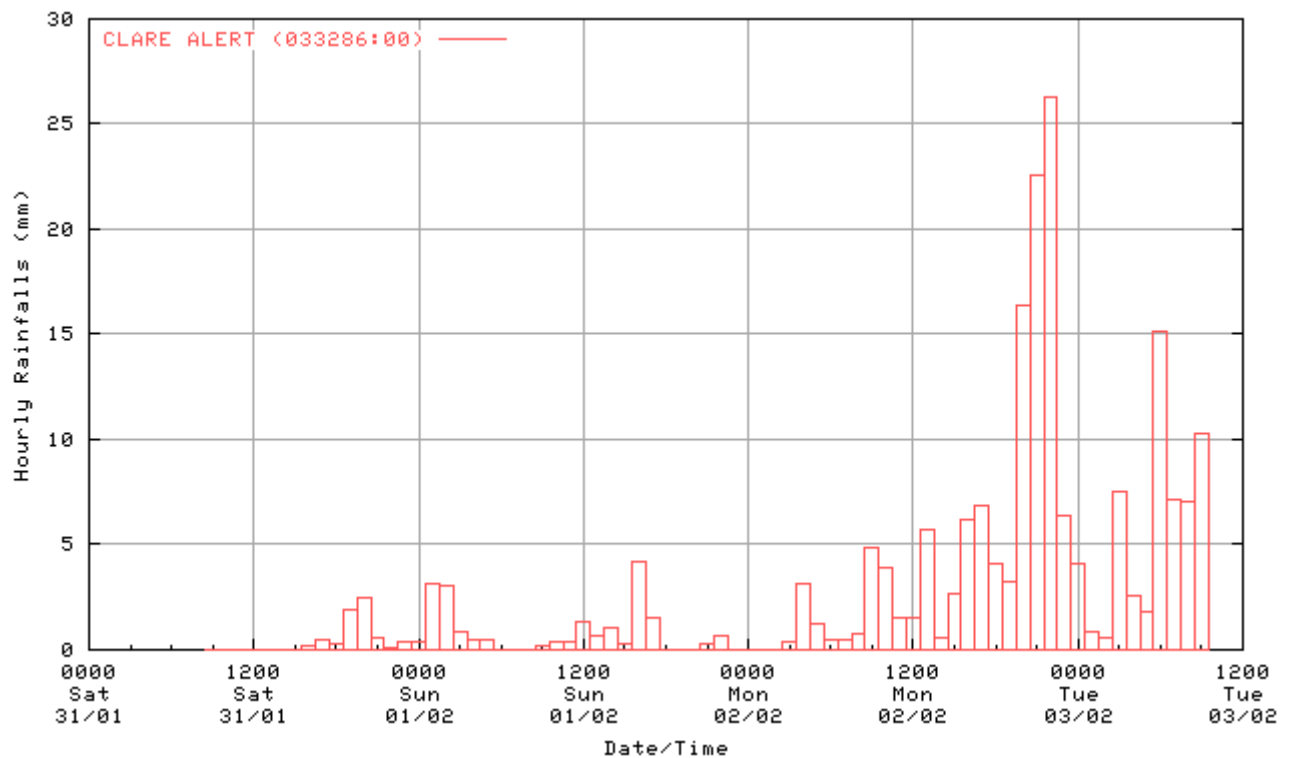
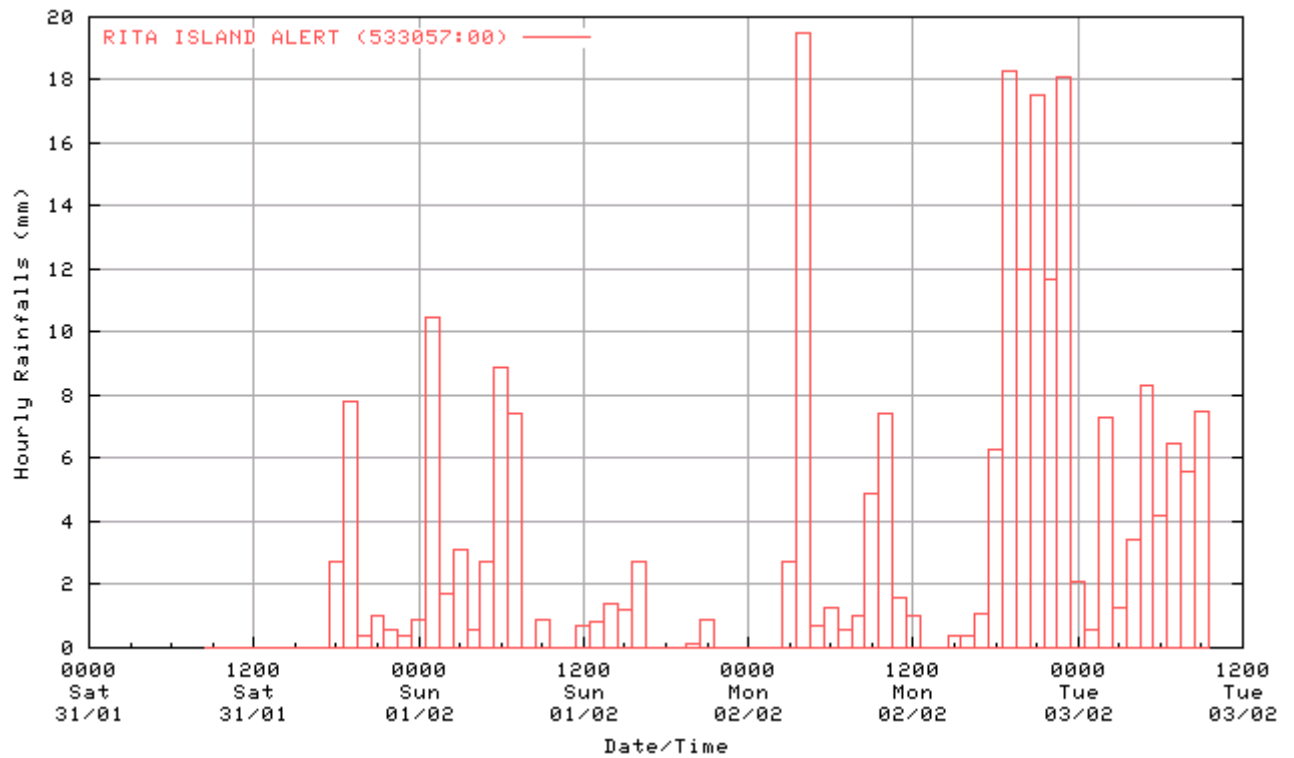
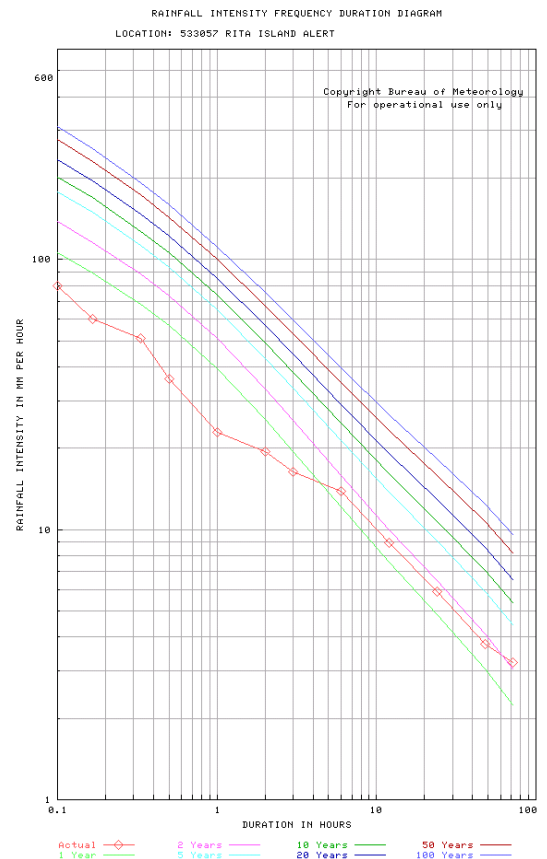


Figure 3.2.3 IFD Analysis for Rita Island AL and Clare AL.

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS
LOCATION: Station No. 533057 Station Name Rita Island AL
Analysis of the rainfall for the 72 hours to Tue Feb 3 09:00:00 2009

Rain (mm)	Period Ending	ARI (years)
7	5 mins ending at 03:10:00 02/02/2009	<1
8	6 mins ending at 03:11:00 02/02/2009	<1
10	10 mins ending at 3:10:00 02/02/2009	<1
17	20 mins ending at 03:20:00 02/02/2009	<1
18	30 mins ending at 03:25:00 02/02/2009	<1
23	60 mins ending at 19:20:00 02/02/2009	<1
39	2 hours ending at 20:20:00 02/02/2009	<1
49	3 hours ending at 21:20:00 02/02/2009	<1
83	6 hours ending at 23:10:00 02/02/2009	1-2
107	12 hours ending at 05:30:00 03/02/2009	1-2
142	24 hours ending at 08:55:00 03/02/2009	1-2
181	48 hours ending at 08:55:00 03/02/2009	1-2
231	72 hours ending at 09:00:00 03/02/2009	2-5



RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS
LOCATION: Station No. 033286 Station Name Clare AL
Analysis of the rainfall for the 72 hours to Tue Feb 3 09:00:00 2009

Rain (mm)	Period Ending	ARI (years)
4	5 mins ending at 21:05:00 02/02/2009	<1
5	6 mins ending at 21:06:00 02/02/2009	<1
8	10 mins ending at 21:05:00 02/02/2009	<1
12	20 mins ending at 21:15:00 02/02/2009	<1
17	30 mins ending at 20:10:00 02/02/2009	<1
29	60 mins ending at 20:35:00 02/02/2009	<1
56	2 hours ending at 21:35:00 02/02/2009	1-2
70	3 hours ending at 22:25:00 02/02/2009	1-2
79	6 hours ending at 23:40:00 02/02/2009	1-2
113	12 hours ending at 07:30:00 03/02/2009	1-2
164	24 hours ending at 09:00:00 03/02/2009	2-5
186	48 hours ending at 09:00:00 03/02/2009	1-2
201	72 hours ending at 09:00:00 03/02/2009	1-2

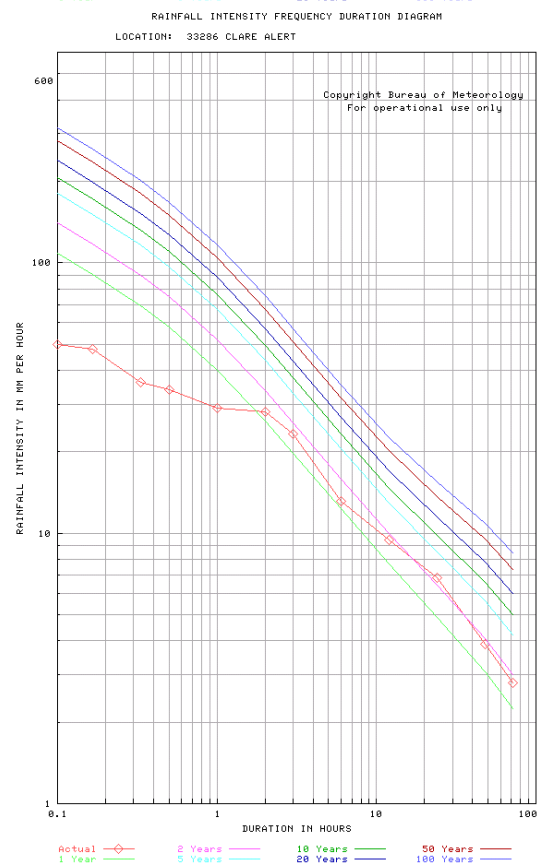
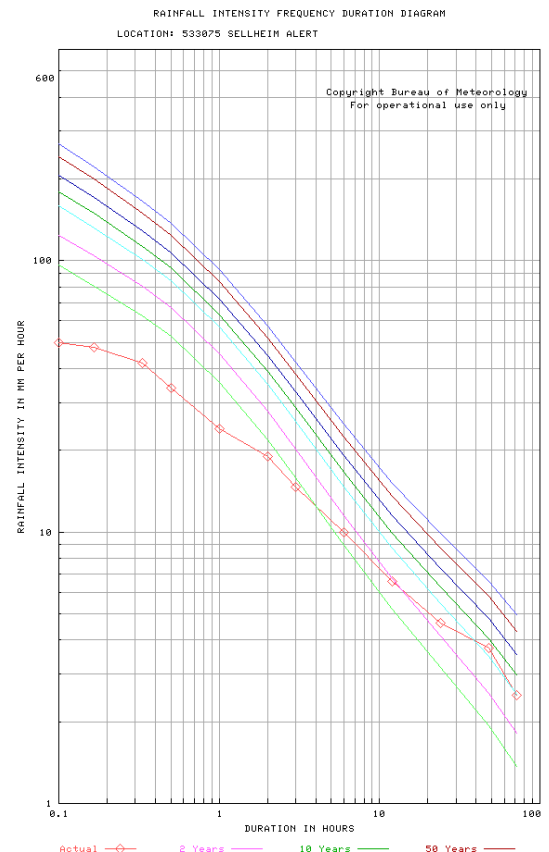
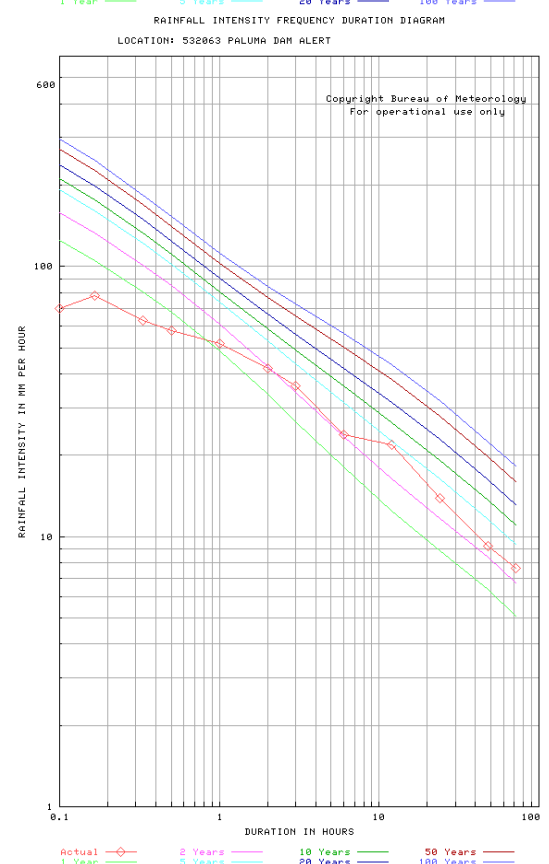


Figure 3.2.4 IFD Analysis for Sellheim AL and Paluma Dam AL.

RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS		
LOCATION: Station No. 533075 Station Name Sellheim AL		
Analysis of the rainfall for the 72 hours to Wed Feb 4 09:00:00 2009		
Rain (mm)	Period Ending	ARI (years)
5	5 mins ending at 16:40:00 01/02/2009	<1
5	6 mins ending at 16:41:00 01/02/2009	<1
8	10 mins ending at 16:45:00 01/02/2009	<1
14	20 mins ending at 16:50:00 01/02/2009	<1
17	30 mins ending at 16:55:00 01/02/2009	<1
24	60 mins ending at 20:30:00 02/02/2009	<1
38	2 hours ending at 21:25:00 02/02/2009	<1
44	3 hours ending at 22:05:00 02/02/2009	<1
60	6 hours ending at 22:25:00 01/02/2009	1-2
79	12 hours ending at 05:55:00 03/02/2009	1-2
111	24 hours ending at 06:50:00 03/02/2009	2-5
179	48 hours ending at 06:55:00 03/02/2009	5-10
181	72 hours ending at 09:00:00 03/02/2009	5



RAINFALL INTENSITY FREQUENCY DURATION ANALYSIS		
LOCATION: Station No. 532063 Station Name Paluma Dam AL		
Analysis of the rainfall for the 72 hours to Wed Feb 4 09:00:00 2009		
Rain (mm)	Period Ending	ARI (years)
7	5 mins ending at 00:10:00 03/02/2009	<1
7	6 mins ending at 00:06:00 03/02/2009	<1
13	10 mins ending at 00:10:00 03/02/2009	<1
21	20 mins ending at 04:55:00 02/02/2009	<1
29	30 mins ending at 05:10:00 02/02/2009	<1
52	60 mins ending at 05:05:00 02/02/2009	1-2
84	2 hours ending at 05:55:00 02/02/2009	1-2
108	3 hours ending at 06:30:00 02/02/2009	2-5
143	6 hours ending at 05:55:00 02/02/2009	2-5
263	12 hours ending at 07:00:00 02/02/2009	2-5
334	24 hours ending at 20:10:00 02/02/2009	2-5
443	48 hours ending at 09:30:00 03/02/2009	2-5
549	72 hours ending at 09:00:00 04/02/2009	2-5



3.3. Rainfall Totals

The highest rainfall over the Burdekin River catchment occurred at Paluma Dam AL, where 357mm fell in the 24 hours to 9am on the 14th January 2009 and 628mm in the 48 hours to 9am on the 14th January 2009. Paluma recorded 565mm and Paluma AL, 558mm in the same 48 hour period. However, recorded rainfalls over the remainder of the catchment for this period were generally less than 50mm.

The second period of heaviest rainfall occurred in the 72 hours to 9am on the 3rd February 2009 in the Lower Burdekin River catchment and in the 72 hours to 9am on the 4th February in the Upper Burdekin River catchment. This data is displayed in tables 3.3.1 and 3.3.2 below.

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.

Table 3.3.1 Rainfall Totals for the Upper Burdekin River from the 02/02/09 to the 04/02/09.

Station Name	24hr Rainfall to 9am on the			Total (mm)
	2	3	4	
Upper Burdekin				
Glen Harding	202	13	56	271
Lucky Springs	57	116	59	232
Greenvale Township	65	100	72	237
Blue Range TM *	64	60	18	142
Gregory Springs	4	55	18	77
Wando Vale	10	58	6	73
Mt Fullstop TM *	59	60	19	138
Laroonia TM *	45	124	21	190
Paluma AL *	199	172	99	470
Paluma	208	197		405
Paluma Dam AL *	303	141	107	551
Hillgrove	41	109	6	156
Toomba	11	141	8	160
Charters Towers SYN	62	94	1	157
Sellheim	78	115	2	195
Sellheim AL *	74	106	2	182
Ravenswood AL *	21	59	7	87
Ravenswood	22	56	2	80
Twin Hills TM *	2	5	10	17
Eaglefield TM *	15	4	5	24
Bowen Development Rd TM *	5	6	2	13
St Anns TM *	7	6	1	14
St Anns AL *	8	7	0	15
Scartwater AL *	2	4	3	9
Mount Mcconnell	1	12	6	19
Pentland TM *	1	26	7	34
Balfes Creek	8	90	4	102
Taemas AL *	2	7	3	12
Taemas TM *	2	7	4	13
Burdekin Dam	2	12	4	17
Numerical Average	53	65	19	136
Maximum	303	197	107	551

Table 3.3.2 Rainfall Totals for the Lower Burdekin River from the 01/02/09 to the 03/02/09.

Station Name	24hr Rainfall to 9am on the			Total
	1	2	3	
Lower Burdekin				
Turrawalla	12	55	10	77
Blenheim AL *	11	51	11	73
Eungella Dam AL *	35	73	17	125
Urannah TM *	13	73	12	98
Sutherland AL *	30	58	5	93
The Stonewall AL *	13	69	3	85
Jacks Creek AL *	15	37	4	56
Weetalaba AL *	10	20	6	36
Collinsville SYN	22	25	12	59
Myuna AL *	21	13	12	46
Red Hill Creek TM *	31	9	19	59
Dalbeg AL *	45	2	29	76
Dalbeg	49	10	31	90
Upper Bogie AL *	51	32	22	105
Mt Pleasant AL *	52	8	30	90
Eton Vale AL *	59	5	35	99
Strathbogie AL *	42	7	48	97
Millaroo AL *	16	36	73	125
Clare	17	13	150	180
Clare AL *	15	22	165	202
Inkerman Bridge AL *	32	25	138	195
Rita Island AL *	50	39	143	232
Groper Creek AL *	38	17	88	143
Ayr AWS *	36	34	197	267
Alva Beach AWS *	70	66	73	209
Numerical Average	31	32	53	117
Maximum	70	73	197	267

3.4. Peak Heights

Table 3.4.1 Peak Flood Heights between the 01/02/09 and the 15/02/09.

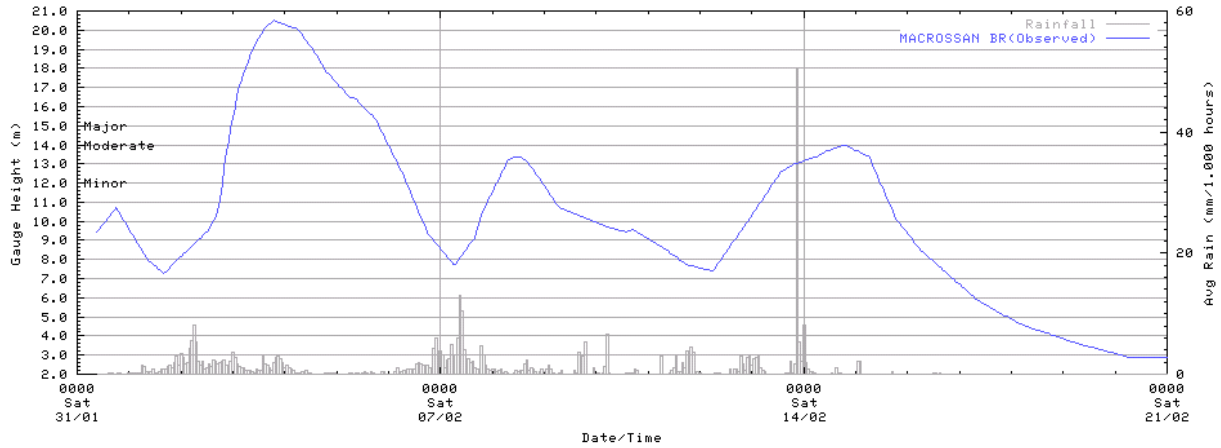
Station No.	Station Name	Date	Height (metres)	Flood Class
BURDEKIN				
<i>Upper Burdekin R to Burdekin Falls Dam</i>				
532017	BLUE RANGE TM	2/02/2009 17:12	12.84	Moderate
532017	BLUE RANGE TM	4/02/2009 18:50	15.85	Major
532017	BLUE RANGE TM	7/02/2009 13:50	10.34	Minor
532017	BLUE RANGE TM	14/02/2009 6:30	10.44	Minor
532016	MT FULLSTOP TM	3/02/2009 12:20	17.39	Major
532016	MT FULLSTOP TM	7/02/2009 15:20	12.05	Moderate
532016	MT FULLSTOP TM	14/02/2009 7:00	13.86	Moderate
533107	LAROONA TM	3/02/2009 6:00	13.3	Unknown
533107	LAROONA TM	8/02/2009 18:10	8.94	Unknown
533107	LAROONA TM	14/02/2009 10:20	9.45	Unknown
034085	SELLHEIM	3/02/2009 19:00	20.5	Major
034085	SELLHEIM	8/02/2009 10:30	13.4	Minor

<i>Suttor R to Burdekin Falls Dam</i>				
534016	EAGLEFIELD TM	12/02/2009 3:50	8.45	Unknown
534012	ST ANNS ALERT	13/02/2009 17:00	4.63	Minor
<i>Cape R to Burdekin Falls Dam</i>				
530003	PENTLAND TM	3/02/2009 6:10	3.84	Below Minor
534010	TAEMAS ALERT	5/02/2009 18:59	8.04	Major
534010	TAEMAS ALERT	12/02/2009 5:30	8.74	Major
<i>Lower Burdekin R downstream from Burdekin Falls Dam</i>				
034029	BURDEKIN DAM	5/02/2009 9:00	6.66	Moderate
534001	BURDEKIN DAM TM	5/02/2009 10:30	6.69	Moderate
533032	OLD RACECOURSE TM	12/02/2009 21:30	4.4	Unknown
533094	URANNAH TM	12/02/2009 23:59	4.54	Unknown
533102	JACKS CREEK TM	13/02/2009 10:50	9.97	Minor
533015	JACKS CREEK ALERT	2/02/2009 9:48	10.12	Minor
533015	JACKS CREEK ALERT	10/02/2009 12:40	8.27	Below Minor
033292	MYUNA ALERT	2/02/2009 18:40	5.03	Minor
033291	DALBEG ALERT	5/02/2009 12:25	19.15	Moderate
033289	STRATHBOGIE ALERT	8/02/2009 13:10	5.71	Below Minor
033289	STRATHBOGIE ALERT	13/02/2009 7:40	6.71	Below Minor
033287	MILLAROO ALERT	5/02/2009 16:59	15.7	Moderate
033286	CLARE ALERT	5/02/2009 23:58	15.17	Moderate
033204	INKERMAN BRIDGE	13/02/2009 15:00	9.6	Minor
033288	INKERMAN BRIDGE ALERT	5/02/2009 23:05	11.55	Moderate
533057	RITA ISLAND ALERT	5/02/2009 15:07	3.1	Major
533057	RITA ISLAND ALERT	13/02/2009 16:00	1.95	Minor
533049	GROPER CREEK ALERT	5/02/2009 19:47	4.44	Major

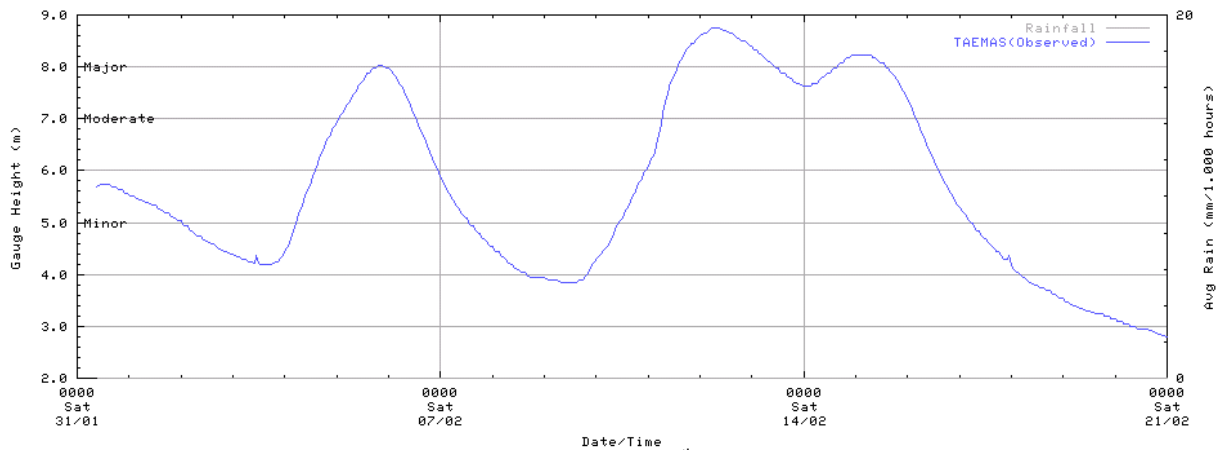
3.5. Flood Hydrographs for the Burdekin River

Figure 3.5.1 River Heights - Upper Burdekin

Burdekin River - Macrossan Bridge

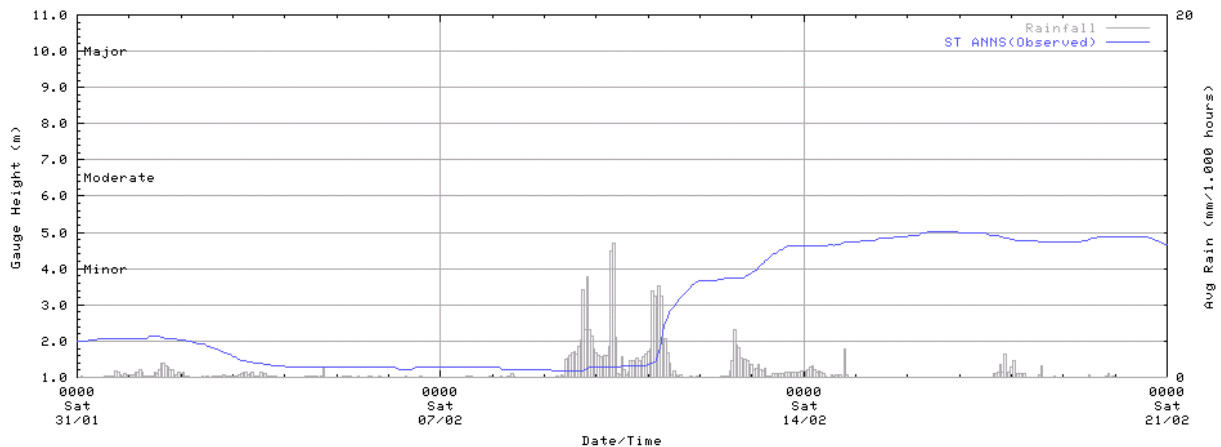


Cape River - Taemas



The highest peak at Taemas of 8.74m occurred on the 12th February and followed rainfall totals of 60mm to 80mm between Pentland and Taemas to 9am on the 10th February and between 100mm and 180mm between Taemas and Broadleigh Downs to 9am on the 11th February.

Suttor River - St Anns



Brudekin River - Burdekin Falls Dam HW

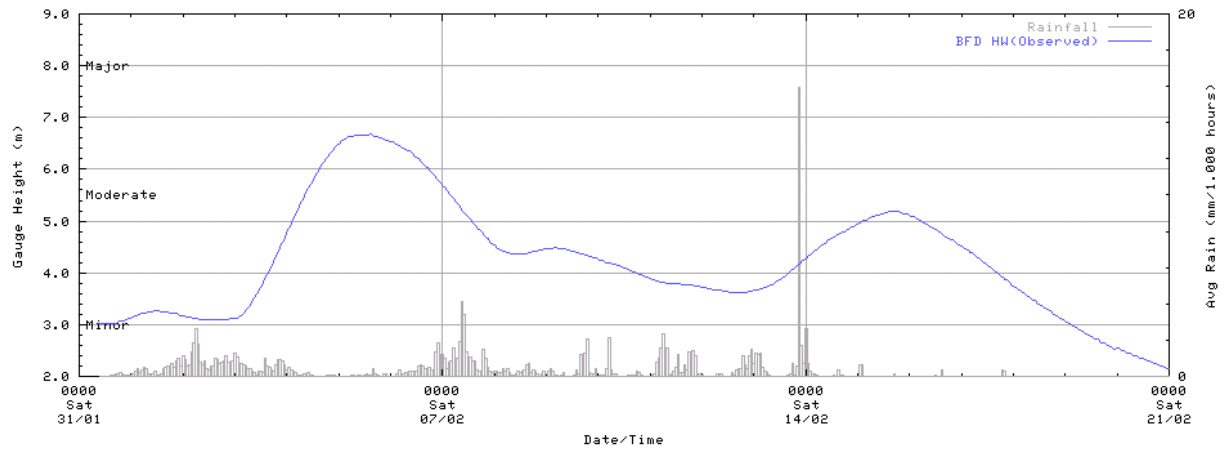
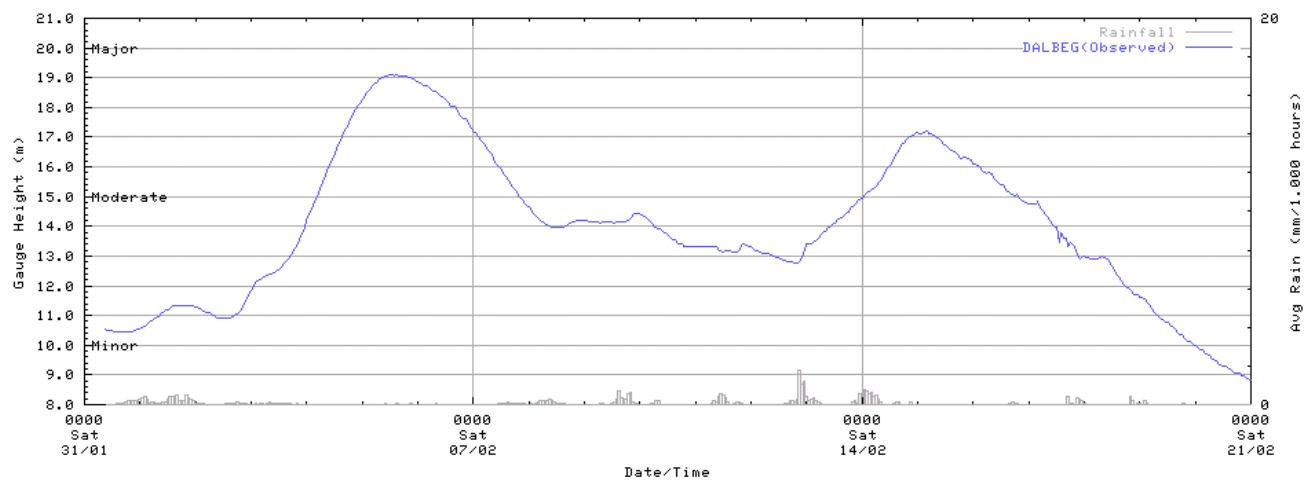
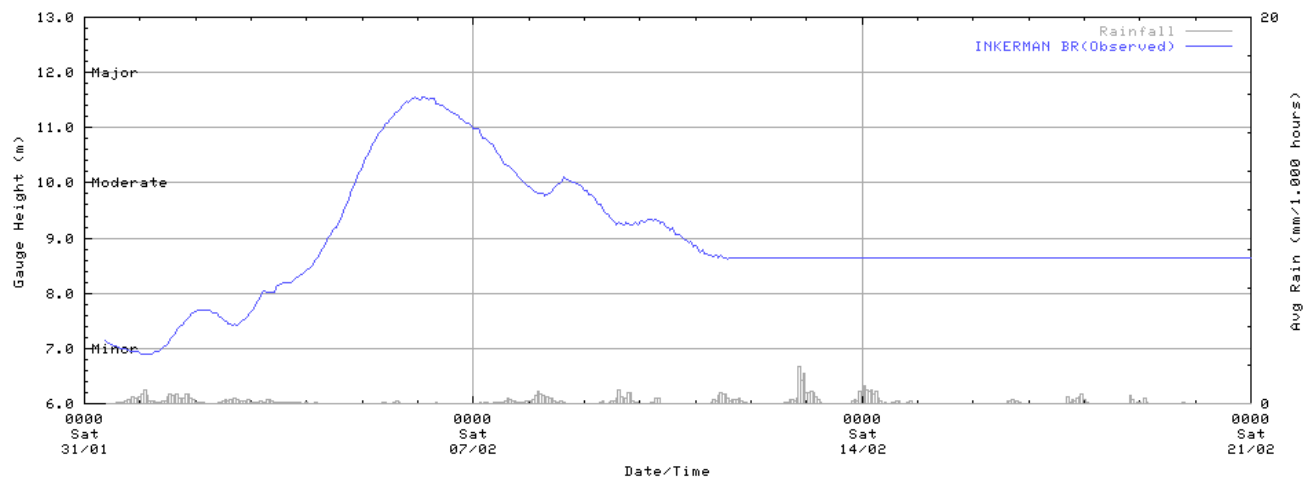


Figure 3.5.2 River Heights - Lower Burdekin

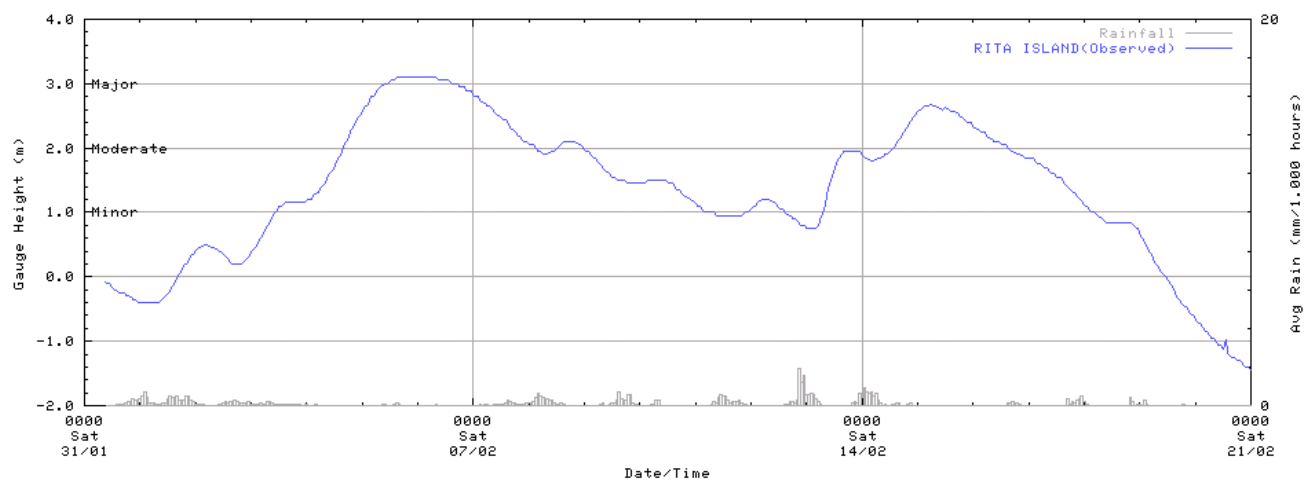
Burdekin River - Dalbeg



Burdekin River - Inkerman Bridge



Burdekin River - Rita Island



3.6. Warning Services for the Burdekin River

Table 3.6.1 Flood Warnings and Predictions issued between the 02/02/09 and the 18/02/09.

Number of Warnings	Number of Major Warnings	Number of Predictions	Number of Locations	First Warning	Last Warning
41	15	29	4	12:15pm Mon 02/02/2009	9:31 am Wed 18/02/2009

Table 3.6.2 River Height Predictions issued for the Burdekin River catchment.

Location	Warning Issue Time	Prediction		Actual	
		Height (m)	Time	Height (m)	Time
Burdekin Dam	4:46am 03/02/2009	5.5	Next 2 days	5.53	8:30am 04/02/2009
	8:40am 03/02/2009	5.5	Late 04/02		
	3:50pm 03/02/2009	5 – 5.5	Night 04/02 – Early 05/02		
	9:04pm 03/02/2009	5.5	Early 05/02		
	6:32am 04/02/2009	5.5	Midday 04/02	6.5	12:30am 05/02/2009
	2:21pm 04/02/2009	6.5	Early 05/02		
	7:33pm 04/02/2009	6.5	Morning 05/02	6.69	10:30am 05/02/2009
	6:03am 09/02/2009	4.5	09/02	4.48	5:30am on 09/02/2009
	10:08am 14/02/2009	5	Overnight 15/02	5.18	3:00pm 15/02/2009
	4:01pm 14/02/2009	5	Overnight 15/02		
	10:00am 15/02/2009	5.2	Late 15/02		
11:11am 15/02/2009	5.2	Late 15/02			
Inkerman Bridge	8:40am 03/02/2009	10	Midday 05/02	10.95	9:30am 05/02/2009
	3:50pm 03/02/2009	10	Midday 05/02		
	9:04pm 03/02/2009	10	Midday 05/02		
	6:32am 04/02/2009	10.3	Midday 05/02		
	2:21pm 04/02/2009	11	Midnight 04/02	11.5	7:15am 06/02/2009
	7:33pm 04/02/2009	11.3	Morning 05/02		
	7:02am 05/02/2009	11.5	9pm 05/02		
	11:11am 05/02/2009	11.5	Evening 05/02		
	4:13pm 05/02/2009	11.5	Night 05/02	10.65	1:00am 15/02/2009
	7:06pm 05/02/2009	11.5	Night 05/02		
	8:46am 06/02/2009	11	Afternoon 06/02		
	10:08am 14/02/2009	10.5	Late 14/02		
	4:01pm 14/02/2009	10.5	Late 14/02	10.65	1:00am 15/02/2009
	10:00am 15/02/2009	10.8	Late 15/02		
					Nil data

Table 3.6.3 Severe Weather Warnings issued between the 02/02/09 and the 08/02/09.

Severe Weather Warning Title	Number of warnings issued
Severe Weather Warning for heavy rainfall and flash flooding	12
Heavy rainfall worsening an existing major flood	12
Flash flooding	3
Cancellation	1

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