



## FLOOD WARNING SYSTEM for the BARRON RIVER

This brochure describes the flood warning system operated by the Australian Government, Bureau of Meteorology for the Barron River. It includes reference information which will be useful for understanding Flood Warnings and River Height Bulletins issued by the Bureau's Flood Warning Centre during periods of high rainfall and flooding.



*Automatic rainfall station at Brinsmead*

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(Last updated May 2011)

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### Flood Risk

The Barron River has a catchment area of about 2100 square kilometres above Kamerunga at the mouth of the delta and has its headwaters in the area immediately east of Atherton. From this area, the river flows north to Tinaroo Falls Dam which has a catchment area of 550 square kilometres which is only about 25% of the total catchment area. The Barron River continues in a northerly direction through Mareeba before it takes an easterly turn near Bilwon and flows generally eastward to the Barron River delta.

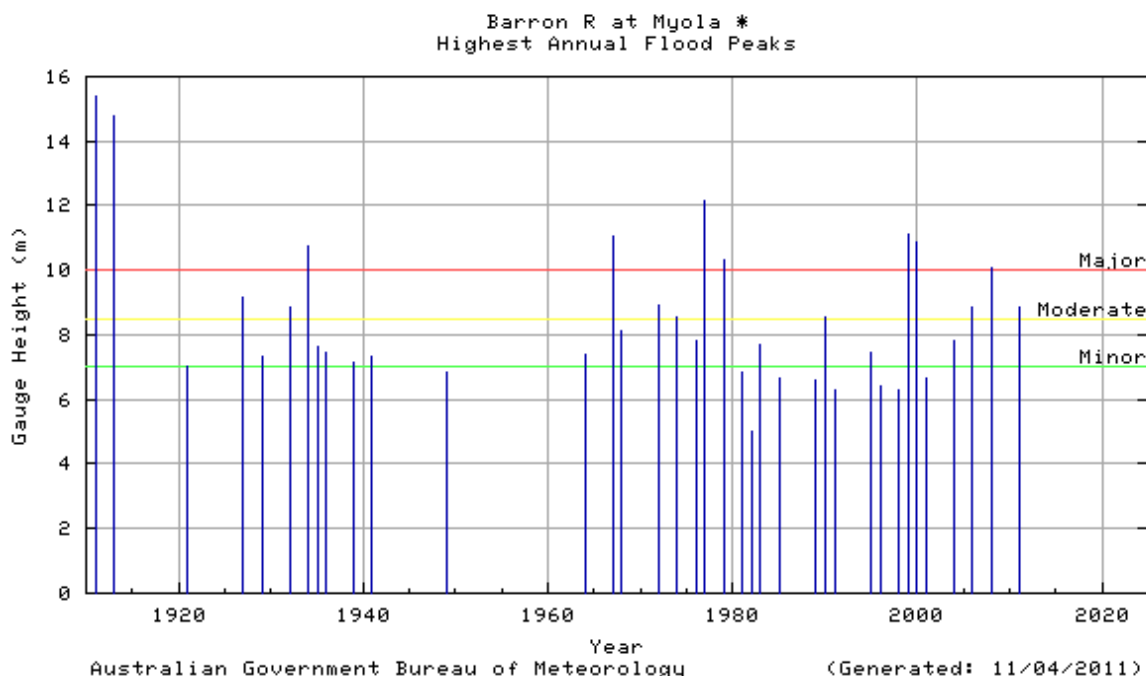
There is a strong rainfall gradient across the catchment with the heaviest rain typically falling along the coastal strip around Cairns and Kuranda. In the western area of the catchment, rainfall totals tend to be significantly less. Heavy localised rainfall along the coastal strip up to Kuranda can cause rapid river rises in the lower Barron River around Kamerunga although larger floods tend to be associated with catchment wide heavy rainfalls.

The Barron River delta area can be subject to major flooding with low lying areas being susceptible. Large areas of agricultural areas can be inundated and residential areas affected. Tides can have a significant impact on the smaller floods near the river mouth but little effect in larger floods.

## Previous Flooding

The Barron River has a quite well recorded flood history with documented evidence of flooding as far back as the early 1900's. Records at the key reference gauge at Myola show that the largest flood occurred in early 1911 and significant floods have occurred in the late 1970's and in 1999.

Tinaroo Falls Dams, constructed in 1958, has little effect on large floods in the Barron River.



## Flood Forecasting

The Bureau of Meteorology operates a flood warning system for the Barron River catchment based on a rainfall and river height observations network shown on the map. In consultation with the Cairns Regional Council, the Bureau issues flood warnings whenever the Barron River at Kamerunga is expected to exceed 5 metres. The objective is to provide between 3 to 9 hours warning of flood heights exceeding this level. These warnings are updated every three hours.

The real time ALERT flood reporting network in the Barron River enables flood predictions to be made earlier and with more accuracy.

The Bureau's Flood Warning Centre issues Flood Warnings and River Height Bulletins for the Barron River catchment during flood events. River height predictions are given when moderate flood levels are likely to be exceeded.

## Local Information

The Cairns Regional Council is able to provide further information on flooding in the area of the Barron River catchment.

## Barron ALERT System

The Barron River ALERT flood warning system was installed in 1995 as a cooperative project between the Bureau of Meteorology, the City of Cairns and Cairns Port Authority. The system comprises a network of rainfall and river height field stations which report via VHF radio to base station computers in Cairns.

The field stations send reports for every one millimetre of rainfall and every 50 millimetre change in river height. The Barron network has a total of 13 field stations of which six measure rainfall and river height, seven measure rainfall only and one monitors the water level at Lake Placid.

The base station computer in the Cairns City Council offices collects the data and has software that displays it in graphical and tabular form. The data is also received by the Bureau's Flood Warning Centre where it is used in hydrologic models to assist in formulating river height predictions.

## Flood Warnings and Bulletins

The Bureau of Meteorology issues Flood Warnings and River Height Bulletins for the Barron River catchment regularly during floods. They are sent to radio stations for broadcast, and to local Councils, emergency services and a large number of other agencies involved in managing flood response activities.

Flood Warnings and River Height Bulletins are available via :

### Radio

Radio stations, particularly the local ABC, and local commercial stations, broadcast Flood Warnings and River Height Bulletins soon after issue.

### Local response organisations

These include the Councils, Police, and State Emergency Services in the local area.

### Internet/World Wide Web

Flood Warnings, River Height Bulletins and other weather related data is available on the Bureau's Web page at <http://www.bom.gov.au> . The Queensland Flood Warning Centre website is <http://www.bom.gov.au/qld/flood> .

### Telephone Weather

Flood Warnings are available through a recorded voice retrieval system, along with a wide range of other weather related and climate information.

|                                |       |              |
|--------------------------------|-------|--------------|
| <a href="#">Main Directory</a> | Phone | 1900 955 360 |
| Flood Warnings                 | Phone | 1300 659 219 |

### Telephone Weather Services Call Charges:

1900 numbers: 77c per minute incl. GST; 1300 numbers: Low call cost - around 27.5c incl. GST.  
(More from international, satellite, mobile or public phones)

## Interpreting Flood Warnings and River Height Bulletins

Flood Warnings and River Height Bulletins contain observed river heights for a selection of the river height monitoring locations. The time at which the river reading has been taken is given together with its tendency (e.g. rising, falling, steady or at its peak). The Flood Warnings may also contain predictions in the form of minor, moderate or major flooding for a period in the future. River Height Bulletins also give the height above or below the road bridge or causeway for each river station located near a road crossing.

One of the simplest ways of understanding what the actual or predicted river height means is to compare the height given in the Warning or Bulletin with the height of previous floods at that location.

The table below summarises the flood history of the Barron River catchment - it contains the flood gauge heights of the more significant recent floods.

| River height station | Mar 1911 | Mar 1967 | Mar 1977 | Feb 1999 | Feb 2000 | Mar 2008 | Mar 2011 |
|----------------------|----------|----------|----------|----------|----------|----------|----------|
| Gwynne Creek         | -        | -        | -        | -        | -        | -        | -        |
| Leslie Creek         | -        | -        | -        | -        | -        | -        | -        |
| Goonara Junction     | -        | -        | -        | 10.13    | -        | -        | -        |
| Picnic Crossing      | -        | 5.87     | 3.70     | 4.48     | -        | -        | -        |
| Mazlin Creek         | -        | -        | -        | 6.57     | -        | -        | -        |
| Tinaroo Falls Dam    | -        | 0.59     | 2.29     | 2.33     | 1.97     | -        | -        |
| Mareeba              | -        | 8.51     | 11.10    | 10.70    | 12.40    | 9.93     | 6.68     |
| Bilwon               | -        | -        | -        | 12.71    | 14.89    | 12.43    | 10.71    |
| Bolton Road          | -        | -        | -        | 11.57    | 11.80    | 9.63     | 10.13    |
| Flaggy Creek         | -        | 6.10     | 4.56     | 5.95     | -        | -        | -        |
| Myola                | 15.37*   | 11.12*   | 12.29*   | 11.40    | 10.90    | 10.06    | 8.81     |
| Barron Falls         | -        | -        | -        | -        | -        | -        | -        |
| Lake Placid          | -        | 12.80    | 13.00    | 12.75    | 12.35    | -        | 11.27    |
| Kamerunga Bridge     | -        | 9.50*    | 9.80*    | 8.65     | 8.30     | 7.94     | 6.34     |
| Copperlode Dam       | -        | -        | -        | -        | -        | -        | -        |
| Redlynch             | -        | -        | -        | -        | -        | 4.67     | -        |
| Carins Airport       | -        | 3.10     | 3.80     | 3.50     | 3.40     | 3.08     | 2.58     |
| Cairns Harbour Tide  | -        | -        | -        | 3.13     | -        | -        | -        |

All heights are in metres on flood gauges.

[\*] These heights are taken at old gauge sites and may not relate to flood levels from existing gauges sites.

Historical flood heights for all river stations in the Barron River Floodwarning network, as shown on the map, are available from the Bureau of Meteorology upon request.

### BARRON RIVER CATCHMENT - ASSESSMENT OF THE FLOOD POTENTIAL

Major flooding requires a large scale rainfall situation over the Barron River catchment. The following can be used as a rough guide to the likelihood of flooding in the catchment, but refer to the Flood Warnings for predictions during a flood event.

Average catchment rainfalls of in excess of 200mm in 24 hours may cause significant moderate to major flooding and traffic disabilities to develop, particularly in the lower reaches downstream of Myola extending to the

Barron River delta area.

Average catchment rainfalls of in excess of 300mm in 24 hours may cause significant major flooding and traffic disabilities to develop, particularly in the lower reaches downstream of Myola extending to the Barron River delta area.

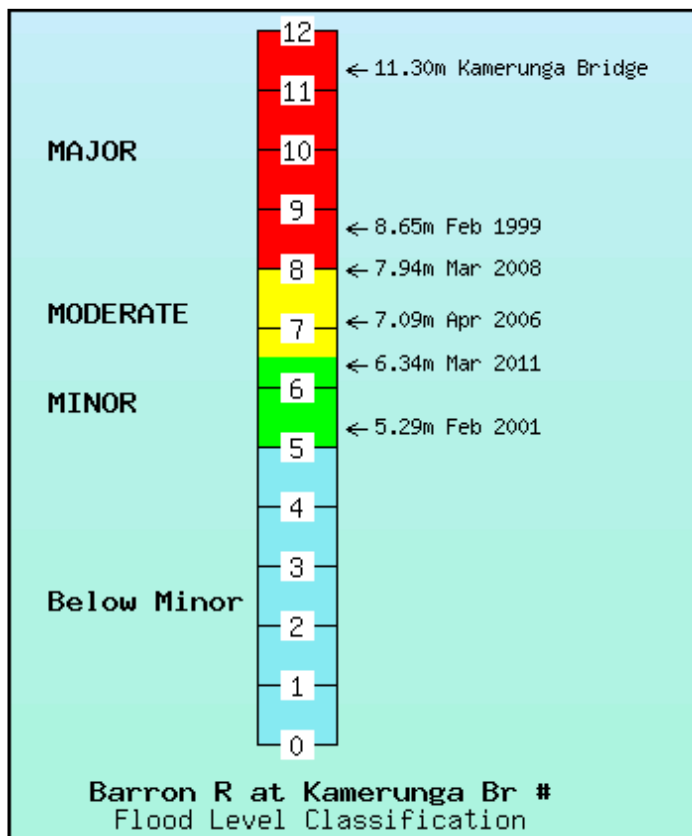
### Flood Classifications

At each flood warning river height station, the severity of flooding is described as minor, moderate or major according to the effects caused in the local area or in nearby downstream areas. Terms used in Flood Warnings are based on the following definitions.

**Major Flooding :** This causes inundation of large areas, isolating towns and cities. Major disruptions occur to road and rail links. Evacuation of many houses and business premises may be required. In rural areas widespread flooding of farmland is likely.

**Moderate Flooding :** This causes the inundation of low lying areas requiring the removal of stock and/or the evacuation of some houses. Main traffic bridges may be closed by floodwaters.

**Minor Flooding :** This causes inconvenience such as closing of minor roads and the submergence of low level bridges and makes the removal of pumps located adjacent to the river necessary.



Each flood warning river height station, the severity of flooding is described as minor, moderate or major according to the effects caused in the local area or in nearby downstream areas. Terms used in Flood Warnings are based on the following definitions.

Each river height station has a pre-determined flood classification which details heights on gauges at which minor, moderate and major flooding commences. Other flood heights may also be defined which indicate at what height the local road crossing or town becomes affected by floodwaters.

The table below shows the flood classifications for selected river height stations in the Barron River catchment.

| River Height Station | First Report Height | Crossing Height | Minor Flood Level | Crops & Grazing | Moderate Flood Level | Towns and Houses | Major Flood Level |
|----------------------|---------------------|-----------------|-------------------|-----------------|----------------------|------------------|-------------------|
| Gwynne Creek         | -                   | -               | -                 | -               | -                    | -                | -                 |
| Leslie Creek         | -                   | -               | -                 | -               | -                    | -                | -                 |
| Goonara Junction     | -                   | -               | -                 | -               | -                    | -                | -                 |
| Picnic Crossing      | -                   | -               | -                 | -               | -                    | -                | -                 |

|                   |     |          |      |     |      |     |      |
|-------------------|-----|----------|------|-----|------|-----|------|
| Mazlin Creek      | -   | -        | -    | -   | -    | -   | -    |
| Tinaroo Falls Dam | 0.5 | 0.0 (S)  | 1.0  | -   | 1.5  | 2.5 | 2.0  |
| Mareeba           | -   | 4.8 (B)  | 5.0  | -   | 8.0  | -   | 9.0  |
| Bilwon            | -   | -        | 6.0  | -   | 9.0  | -   | 10.0 |
| Bolton Road       | -   | 1.5 (B)  | 4.0  | -   | 6.0  | -   | 8.0  |
| Flaggy Creek      | -   | -        | 4.5  | -   | 6.0  | -   | 7.0  |
| Myola             | -   | 5.0 (B)  | 7.0  | -   | 8.5  | -   | 10.0 |
| Barron Falls      | -   | -        | 9.0  | -   | 10.0 | -   | 11.0 |
| Lake Placid       | -   | -        | 10.3 | -   | 11.2 | -   | 12.0 |
| Kamerunga Bridge  | 4.0 | 11.3 (B) | 5.0  | 6.0 | 6.5  | 8.0 | 8.0  |
| Copperlode Dam    | -   | 0.0 (S)  | -    | -   | -    | -   | -    |
| Redlynch          | -   | -        | -    | -   | -    | -   | -    |
| Cairns Airport    | -   | -        | 2.5  | -   | 3.0  | -   | 3.5  |
| Cairns Harbour    | -   | -        | -    | -   | -    | -   | -    |

All heights are in metres on flood gauges.

(B) = Bridge (S) = Spillway

The above details are correct at the time of preparing this document. Up-to-date flood classifications and other details for all flood warning stations in the network are at:

<http://www.bom.gov.au/hydro/flood/qld/networks/index.shtml>

### Catchment Map - Barron River flood warning network

Click here to view map as: [PNG](#) [PDF](#) (364K bytes)

**For further information, contact:**

**The Regional Director, Bureau of Meteorology, GPO Box 413, Brisbane Q 4001**

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