



## FLOOD WARNING SYSTEM for the JOHNSTONE RIVER

This brochure describes the flood warning system operated by the Australian Government, Bureau of Meteorology for the Johnstone 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.



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(Last updated May 2011)

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*Johnstone River in flood at Innisfail  
February 1999 (Cyclone Rona)  
Photo: Brian Cassey*

### Flood Risk

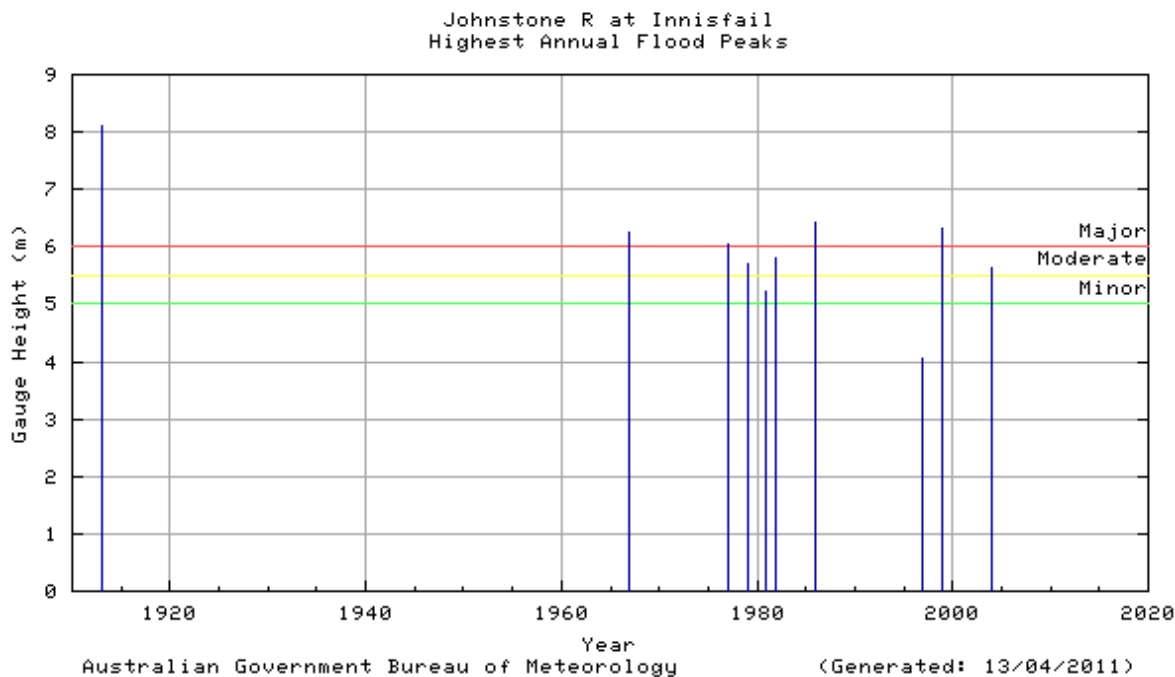
The North and South Johnstone Rivers rise in the tablelands of the north tropical coast and flow through steep narrow gorges to their junction on the coastal plain at Innisfail. The headwaters of the catchments are located in high rainfall areas and the rivers are capable of producing severe flooding, especially in the Innisfail area. The North and South Johnstone Rivers have a combined catchment area of about 1,600 square kilometres at Innisfail.

There is a strong rainfall gradient across the catchment with the heaviest rain generally falling along the eastern side of the catchment around Topaz, Crawfords Lookout and Innisfail. In the western area of the catchment, rainfall totals tend to be significantly less. Heavy localised rainfall along the coastal strip to Crawfords Lookout can cause rapid river rises in the lower Johnstone Rivers around Innisfail and Mourilyan, although larger floods tend to be associated with catchment wide heavy rainfalls.

The Johnstone River delta area can be subject to severe flooding with low lying areas being susceptible. Large areas of agricultural areas can be inundated and residential areas affected.

## Previous Flooding

Severe flooding of the Johnstone River is often associated with tropical cyclones. The two highest floods at Innisfail in recent years occurred in February 1986 and February 1999. The flood records for Innisfail indicate that the highest recorded flood occurred in 1913 and was about 1.7 metres higher than the 1999 flood. Historical evidence indicates that the floods in 1893 and 1894 were even higher.



## Flood Forecasting

The Cassowary Coast Regional Council, in conjunction with the Bureau of Meteorology operates a flood warning system for the Johnstone River catchment. The ALERT network consists of automatic rainfall and river height stations which regularly forward data via radio telemetry to a base station located at the Council office in Innisfail and the Bureau's Flood Warning Centre in Brisbane. The system provides early warning of heavy rainfall and river rises in the catchment and enables more accurate and timely flood warnings and forecasts. The balance of the network consists of volunteer rainfall and river height observers, who forward observations by telephone when the initial flood height has been exceeded at their station. The Department of Environment and Resources Management also has automatic telephone telemetry stations in the catchment.

The Bureau's Flood Warning Centre issues Flood Warnings and River Height Bulletins for the Johnstone River catchment during flood events. Quantitative flood forecasts are issued when moderate flood levels are likely to be exceeded at Innisfail, with an objective to provide between 3 and 9 hours warning of flood levels and forecasts updated every 3 hours during the flood event.

## Local Information

The Cassowary Coast and Tablelands Regional Councils are able to provide further information on flooding in your area of the Johnstone River catchment.

## Johnstone River ALERT System

The Johnstone River ALERT flood warning system was completed in 1989 as a co-operative project between the Bureau of Meteorology and the previous Johnstone Shire Council. The system comprises a network of rainfall and river height field stations located on the Tablelands as well as the coastal plain which report via VHF radio to a base station computer located in the Council office in Innisfail. The field stations send reports for every 1 millimetre of rainfall and every 50 millimetre change in river height.

The base station computer located in the Council office 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 produce river height predictions.

## Flood Warnings and Bulletins

The Bureau of Meteorology issues Flood Warnings and River Height Bulletins for the Johnstone 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 are 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.

#### [Main Directory](#)

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 Johnstone River catchment - it contains the flood gauge heights of the more significant recent floods.

River height station	Jan 1913	Mar 1967	Apr 1982	Feb 1986	Mar 1997	Feb 1999	Mar 2004	Feb 2009	Dec 2010
Nerada	-	-	-	-	10.30	11.35	8.48	7.43	9.98
Fisher Creek	-	-	-	-	-	-	-	3.36	-
Tung Oil	-	10.33	10.19	10.17	9.34	10.81	8.38	8.39	9.00
McAvoy Bridge	-	-	-	-	-	-	6.50	7.25	7.10
Saltwater Creek	-	-	-	-	-	-	3.96	4.06	3.61
Corsis	-	-	-	-	6.68	6.68	-	7.99	5.99
Central Mill	-	11.13*	8.10	10.84	9.50	9.77	-	10.48	7.95
Mourilyan Mill	-	-	-	-	-	-	-	11.32	10.57
Innisfail	8.09*	6.25*	5.81*	6.42*	5.85	6.37	5.63	5.68	5.13

All heights are in metres on flood gauges.

[\*] These heights were 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 Johnstone River Floodwarning network, as shown on the map, are available from the Bureau of Meteorology upon request.

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

Major flooding requires a large scale rainfall situation over the Johnstone River catchment. The following can be used as a rough guide to the likelihood of flooding in the catchment:

Average catchment rainfalls in excess of 200mm in 24 hours may cause stream rises with moderate to major flooding and traffic disabilities to develop, particularly in the lower reaches downstream of Nerada on the North Johnstone River and Corsis on the South Johnstone River extending to the coastal plain around the Innisfail township and the mouth of the Johnstone River.

Average catchment rainfalls in excess of 300mm in 24 hours may cause significant stream rises with major flooding and traffic disabilities to develop, particularly in the lower reaches downstream of Nerada on the North Johnstone River and Corsis on the South Johnstone River extending to the coastal plain around the Innisfail township and the mouth of the Johnstone River.

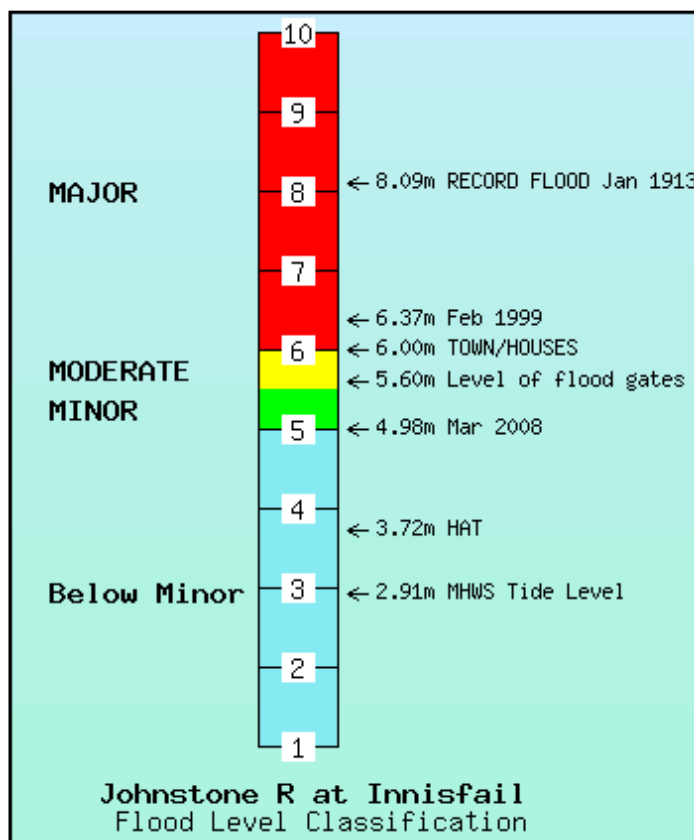
## Flood Classifications

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 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 Johnstone River catchment.

River Height Station	First Report Height	Crossing Height	Minor Flood Level	Crops & Grazing	Moderate Flood Level	Towns and Houses	Major Flood Level
Nerada	-	-	6.0	-	7.0	-	8.0
Fisher Creek	-	-	-	-	-	-	-
Tung Oil	-	-	7.0	-	8.0	-	8.5
McAvoy Bridge	-	7.10 (B)	5.0	-	6.0	-	7.1
Saltwater Creek	-	-	5.3	-	5.8	-	6.3
Corsis	-	-	5.0	-	5.5	-	6.0
Central Mill	-	3.90 (O)	7.5	-	8.0	-	8.5
Mourilyan Mill	-	-	-	-	-	-	-
Innisfail	3.5	-	5.0	-	5.5	6.0	6.0

All heights are in metres on flood gauges.

(B) = Bridge (O) = Old Bridge

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 showing the Johnstone River flood warning network

Click here to view map as: [PNG](#) [PDF](#) (386K bytes)

***For further information, contact:***

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

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