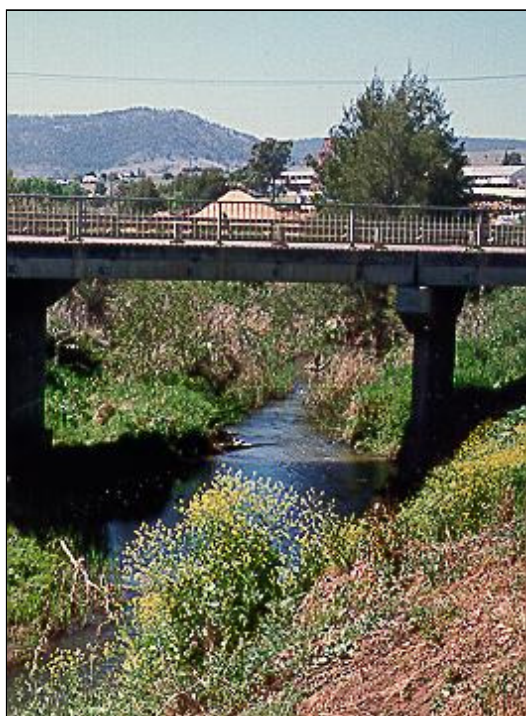




FLOOD WARNING SYSTEM for the CONDAMINE RIVER TO WARWICK

This brochure describes the flood warning system operated by the Australian Government, Bureau of Meteorology for the Condamine River to Warwick. 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.



Contained in this document is information about:
(Last updated September 2009)

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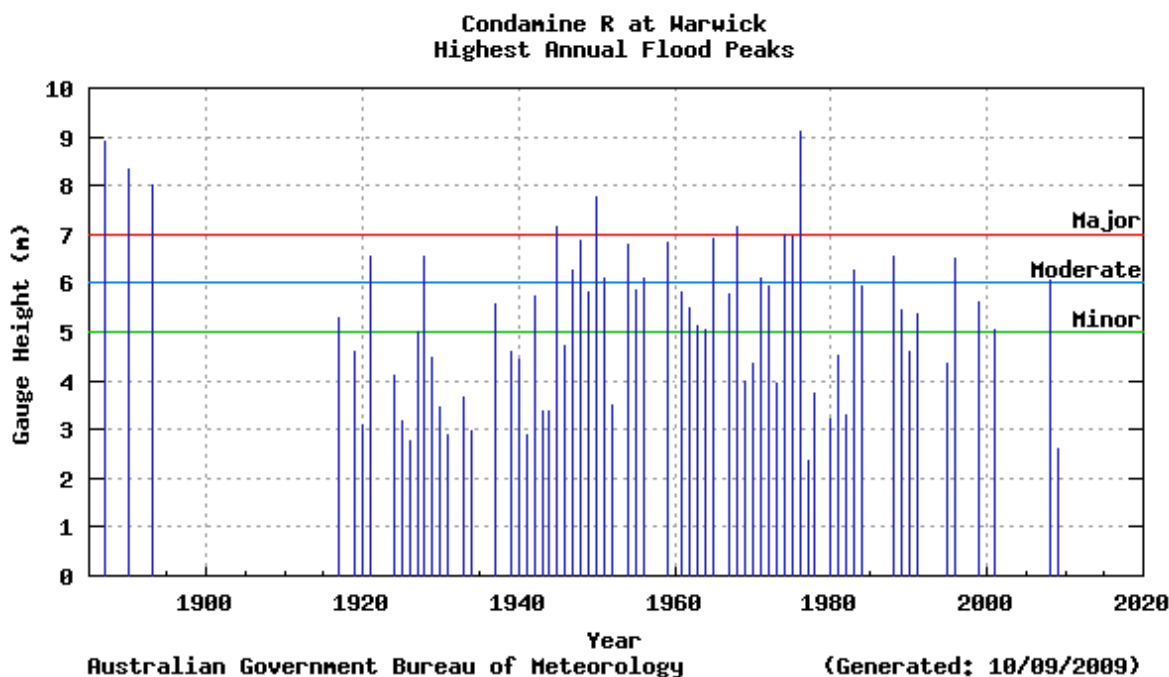
Condamine River at Killarney

Flood Risk

The Condamine River catchment to Warwick covers an area of approximately 1300 square kilometers and includes the major tributaries Swan Creek, Emu Creek and Rosenthal Creek which join the Condamine River just upstream of Warwick. The headwaters of these tributaries rise in the Dividing Ranges. Due to the fan like shape of the catchment, heavy rainfalls over the catchment are capable of causing major flooding of agricultural areas adjacent to the waterways, and major flooding of residential and commercial areas of Killarney and Warwick.

Previous Flooding

Flood records for Warwick extend back as far as 1887 and indicate that the city has a long history of flooding from the Condamine River. The highest recorded flood occurred in February 1976 when the river rose to a height of 9.10 metres on the Warwick flood gauge located at McCahon Bridge. The flood caused widespread flooding in the Warwick area with newspapers at the time reporting damage to over 100 homes and over 1000 people left homeless during the flood.



Flood Forecasting

The Bureau of Meteorology and the Southern Downs Regional Council jointly operate a flood warning system for the Condamine River catchment to Warwick using data from the rainfall and river height observations network shown on the map. The network consists of automated radio telemetry stations (ALERT) as well as telephone telemetry and volunteer manual rainfall and river height observers.

The ALERT stations send data directly to a base station located in Warwick Shire offices and to the Bureau's Flood Warning Centre in Brisbane. Data from the system is analysed by computer models to provide early indication of possible river rises throughout the catchment and to enable accurate and timely flood warnings and forecasts.

Local Information

The Southern Downs Regional Council is able to provide further details on local flooding in the rural areas of the Condamine River catchment to Warwick and also in the residential areas of Killarney and Warwick.

Warwick ALERT System

The Condamine River catchment to Warwick ALERT flood warning system was completed in the mid 1990's as a co-operative project between the Bureau of Meteorology and the then Warwick City Council. The system comprises a network of rainfall and river height field stations located in the catchment which report via VHF radio to base station computers located in Council offices at Warwick and the Bureau of Meteorology in Brisbane. The field stations send reports for every 1 millimetre of rainfall and every 50 millimetre change in river height.

The base station computers located in the Warwick Shire Council offices collect the data and have 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 Condamine River catchment to Warwick 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/hydro/flood/qld>

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 Condamine River catchment to Warwick - it contains the flood gauge heights of the more significant recent floods.

River height station	Jan 1974	Feb 1976	May 1983	Apr 1989	Feb 1991	May 1996	Feb 2001	Jan 2008
Killarney	5.61	6.13	3.45	4.90	-	6.15	4.15	6.60
Elbow Valley	5.40	6.68	4.23	5.32	3.30	5.04	4.07	6.24
Emu Vale	4.49	5.23	5.24	4.79	3.98	8.03	5.33	7.03*
Yangan	5.87	6.65	5.25	-	-	6.60	6.55	5.05
Warwick (McCahon Bridge)	7.01	9.10	6.25	5.45	5.35	6.50	5.03	6.04

All heights are in metres on flood gauges.

[*] Estimated Peak Flood Heights from flood marks and other information.

Historical flood heights for all river stations in the Condamine River catchment to Warwick as shown on the map, are available from the Bureau of Meteorology upon request.

**CONDAMINE RIVER CATCHMENT TO WARWICK
ASSESSMENT OF THE FLOOD POTENTIAL**

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

Average catchment rainfalls in excess of 25mm, with isolated 50mm falls, in 24 hours may result in stream rises and the possibility of minor flooding and local traffic disabilities and extending downstream.

Average catchment rainfalls in excess of 50mm, with isolated 75 to 100mm falls, in 24 hours may result in significant stream rises with the possibility of moderate to major flooding developing with local traffic disabilities and extending downstream.

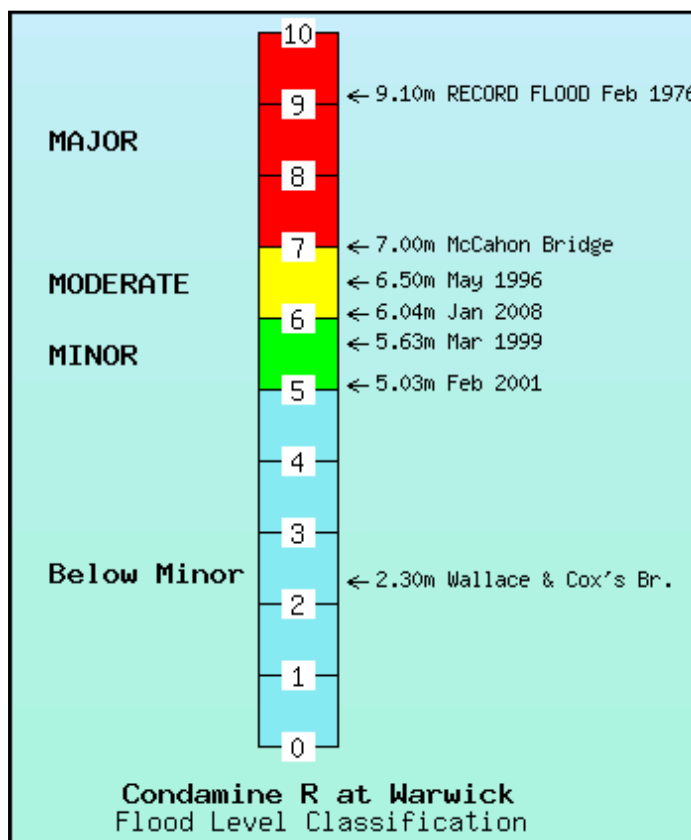
Flood Classifications

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 Condamine River catchment to Warwick.

River Height Station	First Report Height	Crossing Height	Minor Flood Level	Crops & Grazing	Moderate Flood Level	Towns and Houses	Major Flood Level
Killarney	2.0	6.70 (B)	4.0	4.0	5.0 (d/s)	6.5	6.0 (d/s)
Elbow Valley	-	-	2.0	-	4.0	-	6.0
Emu Vale	-	7.10 (B)	5.0	7.0	6.0 (d/s)	-	7.0 (d/s)
Yangan	2.0	6.10 (B)	6.0	6.0	9.0	12.2	12.0
Warwick (McCahon Bridge)	2.0	7.00 (B)	5.0	6.0	6.0	6.2	7.0

All heights are in metres on flood gauges.
(B) = Bridge (d/s) = Downstream

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 Condamine River to Warwick flood warning network.

Click here to view map as: [PNG](#) [PDF](#) (271K bytes)

For further information, contact:

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

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