

Submission to the Queensland Floods Commission of Inquiry on Brisbane City Flood Warning Preparedness

Introduction

The Brisbane City Council, Emergency Management Queensland and the Queensland Police Force lacked a coherent and articulated plan for advising Brisbane City residents of the emerging 2011 flood event.

Significant personal property losses occurred due to their failure to provide adequate, timely and detailed flood warning information to residents.

The Brisbane City Council, Emergency Management Queensland and the Queensland Police Force have had the technical capacity to prepare and articulate a detailed flood warning system from a time well before 1974. The Brisbane City Council, Emergency Management Queensland and the Queensland Police Force lacked a flood warning advisory plan in 1974 and despite the lessons learned in 1974, failed to develop an enduring, effective advisory plan for future flooding events

The Brisbane City Council, Emergency Management Queensland and the Queensland Police Force failed to empower Brisbane residents to understand the potential for flood events and their need to develop individual flood management plans.

The Brisbane City Council through its Flood Flag Maps and flood zoning has been complicit with the property development industry in supporting a public perception that the Wivenhoe and Sommerset Dams would limit flooding, through mitigation, to the flood plain development levels. The potential for larger floods and the limited ability of the Wivenhoe and Sommerset Dams to mitigate the impact of those larger floods, has rarely been articulated. It is probable that fifty percent of the residents in the flood plain of the 1893 floods do not understand that their homes and businesses could be subject to flooding.

Available Data to Support a Flood Warnings System for Brisbane City

There are existing adequate data and systems for the Brisbane City Council, Emergency Management Queensland and the Queensland Police Force to develop and manage a flood warning system.

Bureau of Meteorology Flood Predictions

During a flood event the Bureau of Meteorology collects data within the flood plains feeding the Lower Brisbane River, as well as data from the operation of the Wivenhoe and Sommerset Dams. On the basis of that inflow information the Bureau of Meteorology issues predictive flood warnings for the Lower Brisbane River. The flood warnings are provided as a flood level and time of arrival of that flood level for both Moggill and Brisbane City.

Flood levels in the Lower Brisbane River

A flood event in the Lower Brisbane River takes the form of a floodwave where the peak at Moggill precedes the peak in Brisbane by about twelve hours. The levels at Moggill are always much higher than the levels at Brisbane due to energy (friction) losses in the river system. A five metre flood in Brisbane City is a twenty two metre flood at Moggill.

The depth of flooding and the time of arrival of that depth in any given location or suburb, is predictable using an hydraulic calculation called a backwater curve. The Brisbane City Council holds historical records of previous flood events back to the 19th century. Modern computer modeling techniques enables this data to be projected in predictive models.

Within minutes of the Bureau of Meteorology issuing flood predictions for Brisbane City and Moggill, the Brisbane City Council has the capacity to project those flood predictions into flood levels and times of arrival of that flood level for every suburb between the Brisbane River mouth and Karana (Brisbane City's most upstream suburb)

Property Levels.

The Brisbane City Council has digitized Australian Height Datum (AHD) level data for the whole of the Brisbane City flood plain. The levels are available on the Brisbane City Council website PDOnline mapping.

A Basic Flood Warning System

For a resident of the Brisbane City flood plain to be empowered to make an informed individual decision on action during a flood event, the resident requires the following

- a knowledge of the AHD level of the street adjacent to the property
- the AHD floor level of the property
- timely advice on the predicted AHD flood level and time of its arrival in the resident's suburb

All this data is currently available, or predictable, and has been since well before 1974. Timely access to this advice should provide every resident twelve hours of flood free time in which to undertake their individual flood management plan

Communicating a Flood Warning Strategy

The residents of the Brisbane City flood plain do not know the extent of the flood plain, they have not been encouraged to understand their location within the flood plain, the level of the street adjacent to their properties or the level of the floor of their residence.

The Brisbane City Council, Emergency Management Queensland and the Queensland Police Force have never provided residents of Brisbane City with information on how, or by whom, they will be advised of a potential flood event.

Factual information on historical flood events, and the extent of the historical flood plain, is difficult to secure and unavailable on the Brisbane City Council website, despite its availability to Council.

The residents of the Brisbane flood plain have never been encouraged to develop an individual flood management plan in the manner that cyclone and fire management plans have been encouraged.

The role of the SES and the Queensland Police Force in providing residents with timely flood warnings is as confusing now as it was in 1974. It is unclear as to whether or not the SES and the Queensland Police Force actually have a flood warning role.

To the extent that flood warnings were issued during the 2011 flood, there appears to have been a significant reliance on the internet and on general broadcast information about flood levels at the Brisbane City. In the upper reaches of the Lower Brisbane River at Karana, Moggill and Bellbowrie, where the flood peak occurred approximately twelve hours prior to the peak in the Brisbane CBD, the Brisbane City Council website was initially offline and subsequently displayed at such low resolution as to obscure whatever information was meant to be transmitted. By the time the website was operational, the electricity and phone connections to those suburbs had, in major part, failed.

Regrettably the authorities who should have been communicating detailed flood warning information, seemed incapable of doing so and in the end the ill informed flood plain residents were left with the political rhetoric of 'bearing the unbearable' instead of timely encouragement to act in their own informed self interest in undertaking a well thought out flood management plan.

Recommendations

It is recommended that the Brisbane City Council, Emergency Management Queensland and the Queensland Police Force develop a flood advisory warning plan for the Lower Brisbane River which incorporates the following elements:

- a) Advice to flood plain ratepayers, of the Australian Height Datum (AHD) level of the centerline of the road adjacent to their property. This information should be included on all Brisbane City Rate Notices on a continuing basis.

- b) The Brisbane City Council develop and maintain a flood warning system which translates Bureau of Meteorology flood forecast data at Moggill and Brisbane City, into suburb by suburb flood data (level and time of arrival of that level).
- c) The Brisbane City Council publish the peak level contours of historical floods, as an overlay, on the Council's PDOnline maps.
- d) Brisbane City Council, Emergency Management Queensland and the Queensland Police Force develop a flood warning communication strategy system which
 - i. empowers Brisbane City flood plain residents to understand their flood risk.
 - ii. encourages flood plain residents to develop individual flood management plans
 - iii. clarifies and articulates the responsibilities of individual authorities in issuing and managing flood warnings
 - iv. provides for ongoing training for individuals in each authority in the operation and management of an effective flood warning communication strategy
 - v. develops multiple communication methodologies to ensure vital information is transmitted despite the loss of electrical power and internet connectivity

The roles and responsibilities of individual authorities in the development and communication of a Brisbane City Flood Warning Strategy should be incorporated in appropriate legislation so as to ensure an enduring continuity for the flood warning process.

The Author

This paper is submitted by Ian Clague. Bachelor of Civil Engineering (UNSW)

I joined the Queensland Government, Department of Harbours and Marines in 1971 where I was involved in flood and tidal studies of the Nerang and Mooloolah Rivers. In 1978 I transferred to the Coordinator General's Department where I undertook various roles including the chairmanship of the original Wivenhoe and Sommerset Dams Flood Manual Committee.

In 1974 I was a resident of the newly developed suburb of Bellbowrie where I witnessed the first flood inundation of homes and the Bellbowrie Shopping Centre. I remain a resident of Bellbowrie where I witnessed the second inundation of the same homes and shopping centre.

In both 1974 and 2011 these events occurred without adequate and meaningful warning to the residents and shopkeepers despite the necessary information being available.