Submission to
Queensland Floods Commission of Inquiry

by
Dr Ken Smith

Qualifications and background

Since I will be making some personal comments and referring to various technical issues is is appropriate that the Commission be aware of my background and experience.
I graduated with a Master of Science from the University of Sydney in 1955.
I then worked from 1956 to 1965 as a Scientific Officer and later Senior Scientific Officer at the Royal Aircraft Establishment in Britain on various problems involving turbulent flow of air, including low speed air flows, which are, in many cases, little different to flows of liquids.
I joined the staff of the Department of Mathematics at the University of Queensland in 1965 as a Lecturer, and was promoted to Senior Lecturer in 1975. I retired from that position in 1997. For most of those years I lectured on flows of liquids and gases, and also supervised a number of student projects in these areas.

I have personal experience of both the 1974 and 2011 floods. In 1974 our house at Graceville was inundated to a depth of about 1.6 metres in the upper level. In 2011 we were living at The Village at Yeronga in retirement. This was inundated to a level of about a metre on the ground floor, and the basement, including the electrical switchboard and various essential services which were put out of action. It is expected that we will be able to return, with limited access, on 14 March 2011.

This submission covers just dam operations and warning systems. I intend to make a further submission about preparation for floods (and other natural disasters), predictions of rare events, forecasting and some other matters.

Wivenhoe Dam

In 1974 the main phenomenon responsible for the flood was about 600 millimetres of rain in the Brisbane-Ipswich area in the short space of two days, with significant rain in catchment areas further upstream.
As common with other people who were affected severely by the 1974 flood, we were relieved when the Wivenhoe Dam was proposed so that, according to publicity at the time, Brisbane would never again experience such a devastating flood. It is not unreasonable for all these people to feel somewhat aggrieved at the events of January 2011.

In the days leading up to the flood there were various references to the "flood compartment" of the dam. This phraseology puzzled me for some time, until I eventually discovered that the water held in the dam had been artificially divided into a section for supplying water and a section for flood control. This division simply does not make sense. The water is not divided into one section for drinking and a mainly empty section where flood water can be stored.
Even with hindsight it is not possible to predict with reasonable certainty what would have happened had there not been a massive release of water on the Tuesday preceding the peak of the flood. But there can be no doubt that this release contributed in a significant way to the height of the peak of the flood, and the ensuing damage.

This artificial division of one body of water should be removed from any future operation manual for the dam. It is inconsistent to use the same dam both for the regular supply of water, for which it needs to be kept as full as possible, and for control of large, though infrequent, floods, for which the dam should be kept as empty as possible. For this dam, and any subsequent dam built for flood control, it should be ensured that no future changes in the primary purpose of the dam can be made, without lengthy advertisement and community discussion among those who may be affected by future floods.

Early Warning Syatems

One of the first casualties of a flood, even in the early stages, is loss of mains electricity, which needs to be turned off for safety reasons. Thus any communication device which relies on being able to recharge its batteries should not be relied on for more than a few hours. This excludes using TV, desktop computers, laptop computers, various smaller computers and mobile phones, and hence using websites to provide information. And until mobile phone coverage is extended to various remote communities, mobile phones will not be useful even for initial warnings for everyone likely to be affected.
Medium waveband radios (transistors) will, by default, be the main means of communication, but only if people have these and a stock of batteries for them, as well as for torches. And this alsa assumes that medium waveband radio stations have backup power supplies.

There will always be some places in which a sudden downpour can cause a catastrophic flood with very little or no warning, such as the Lockyer Valley. However for most people sufficient warning can be given over the local AM radio station. However the current warnings, which are given in metres above some datum, which differs from place to place, can be confusing, with some given as 6 metres and others as 20 metres. Would it be possible to reword these as heights relative to a familiar landmark, such as "within 1 metre of the Walter Taylor Bridge at Indooroopilly", or "0.5 metres over the railway bridge at Black Stump" ?

Would it be possible for legislation to be passed which required radio stations in areas likely to be affected to (a) be situated above any foreseeable flood line, say 5 or 10 metres above any recorded previous flood level, (b) have some emergency power backup, sufficient to keep them running for a couple of days, and (c) be connected to an emergency network for transmission of information from some central agency?

Special consideration should be given to hospitals and evacuation procedures for people with limited mobility, such as babies in arms, very young children, and the aged who have various special needs. A register should be readily available to emergency services of aged care facilities, and, as far as possible, of elderly people living in there own homes. School halls should be able to be requisitioned, on a temporary basis, for immediate emergency accommodation, and preferably with some communication facilities for people to be able to contact relatives and/or friends.

It may be possible to implement some of the above with little disruption to existing practices, apart from regular emergency driills, but others may take longer and require changes to current planning procedures. However they should all at least be given some consideration now, and not left until the next major flood occurs.

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(Dr Ken Smith)
8 March 2011