9 March 2011

Brian Hesse
[redacted]

To
Queensland Floods Commission of Inquiry
PO Box 1738
BRISBANE QLD 4001

Lessons from the floods should not be ignored this time

The adverse impact of previous floods in South East Queensland has been all but forgotten or ignored in urban planning and construction in the 37 years since the 1974 floods. This has been the major cause of flood damage in the 2011 floods for the Ipswich and Brisbane areas. The 2011 floods have demonstrated that the flood levels set for building approvals have been set too low and approvals freely given for development and construction on flood prone land. Both the 1974 and 2011 floods should be taken into account when considering the way forward together with future planned development that will alter stream flows.

Some aspects of the 1974 floods in particular appear to have been forgotten or not observed and recorded at the time. One of the lessons from the 1974 floods was that the flood level observed at a particular point such as the David Trumpy Bridge in the Ipswich CBD is not a reliable indication of flood levels at other locations along the river in any particular flood.

In 1974, I worked for the Southern Electric Authority of Queensland at Ipswich and was heavily involved in organising the reconnection of electricity supply to flood damaged houses and businesses in the area. We made extensive use of the then available flood maps which while not entirely accurate served as a useful guide. Some of my observations in 1974 may be of interest to you. I will restrict my remarks to the Ipswich area as my knowledge of the 1974 floods in particular is more detailed in this area.

The 1974 flood was vastly different from the 2011 flood in the Ipswich area. In 1974 Ipswich and surrounding river and creek catchments had massive rainfall of 750mm in 48 hours compared with around 170mm of rain spread over a 72 hour period in 2011. As a result Ipswich in 1974 was subjected to massive flash floods in the Bremer River and the Warrill, Bundamba and other creeks. Goodna suffered a flash flood from Woogaroo creek. These flash floods occurred 24 to 36 hours before significant flood flows in the Brisbane River at the Bremer/Brisbane river junction. Subsequent increases in Brisbane River flows and flood levels maintained flood levels in the lower parts of the Bremer River upstream to the David Trumpy bridge at Ipswich CBD for several days after peak flows in the Bremer River had fallen.

My own observations during the 1974 flood were as follows. At peak flow in the Bremer River the flood height at the David Trumpy Bridge was 20 metres. At the same

time 9 km upstream only around 150mm of the roof of the Sandy Gallop Golf Clubhouse was visible above the fast flowing floodwaters. The next day (24 to 36 hours later) the flood water was down to the floor level of the Golf Clubhouse, a drop of around 4 metres while the flood level at the David Trumpy Bridge remained at 20 metres.

In comparison the 2011 floods peaked at 19.4 metres at the David Trumpy Bridge and at floor level at the Sandy Gallop Golf Clubhouse, 0.6 metres lower at the David Trumpy Bridge but 3 to 4 metres lower at the Sandy Gallop Golf Club than the 1974 flood.

The conclusions from these observations are:-

- ***Flood heights estimated and flood maps drawn using a single flood height reference point such as the David Trumpy bridge in Ipswich are not a reliable indication of flood heights at other locations along the river. Multiple points along the river must be used to get an accurate picture of a particular flood.***
- ***Different types of floods occur and the highest level flood levels on record should be used in urban planning and development.***
- ***The Wivenhoe dam does not provide flood protection from a Bremer River flood in the Ipswich area.***
- ***The 1974 flood levels in the Ipswich area have been largely ignored in urban planning and development approval in the Ipswich area.***

Development and Construction Policy 1974 to 2011

The 1974 flood levels have been largely forgotten or ignored by town planners, local authorities and developers with approvals freely given for development and construction on flood prone land. Examples of this in the Ipswich area include but are not limited to Moores Pocket, North Booval, Bundamba and Brasall. A large number of properties in these areas developed and built since 1974 were flooded in 2011 and severely damaged. My own estimate of the number of houses and businesses flooded in 1974 was approximately 1,000. This was estimated from the replacement of approximately 2,000 electricity meters that had been damaged by flood water. In comparison the lower 2011 flood has been quoted as having flooded 3,000 properties however this figure needs further verification. The fact remains that a large number of properties built since 1974, some of them in very recent years, were flooded in 2011 some of them up to the roof and this in a lower level flood than 1974.

Structural Integrity of Buildings

Structural integrity of houses built on high stumps needs to be improved for them to survive under flood or high wind conditions. During the 1974 flood I witnessed the destruction of a house at the lower end of Woodend Road in Ipswich. The house only a few years old was on high square steel tube stumps, a recent method of construction at that time. The flood waters had just reached floor level of the house with surges from the fast flowing flood water battering the side of the house. The house was vibrating violently back and forth on the

supporting steel stumps and the influence of the surging flood waters appeared to match the resonant frequency of the supports. The result was catastrophic collapse of the house into the flood water. It was evident that the bracing of the 2.5 metre high steel supporting stumps was inadequate and the steel stumps themselves of inadequate size to withstand the flood conditions.

Flood Maps and Real Estate Contracts of Sale

Flood maps showing both the 1974 and 2011 flood levels should be prepared and freely available online and for viewing at local government offices, libraries and all real estate offices. These maps should show the contours as a guide to the levels of inundation and height of areas above known flood levels. Contours should be at close intervals (e.g. 2 metres) for at least 10 metres above and below the maximum flood level lines. Current flood maps available on the Ipswich City Council website do not provide contour, inundation level or level above flood information and the accuracy of the Q100 flood levels shown are open to question. It should be made obligatory for real estate agents, developers and others selling properties to disclose to buyers the extent to which properties are threatened by flooding and to include this information in all contracts of sale. The practice "of pass a dud" by failure to disclose flood threats to a property and secure a sale to an unsuspecting buyer should be stamped out. Laws should be introduced to make full disclosure of such problems with property mandatory with severe penalties for failure to do so.

Future Threats:- There are threats of increased flash flooding in the Ipswich area as a result of planned urban development. The massive Ripley valley development for example poses a particular threat to people and properties along the lower reaches of Bundamba creek. Rainfall runoff is greatly increased by urban development with runoff of one litre of water per square metre for every millimetre of rain that falls on a hard surface such as roads, house roofs and concrete driveways and paths. A typical house has 350 square metres of hard surfaces associated with it when roof, driveways, paths and half of the roadway along the frontage of the property is taken into account. Thus for a heavy rainstorm of 100mm, runoff from hard surfaces on each house will be 35,000 litres. For an urban development of 30,000 houses this equates to runoff of 1050 megalitres in what can be a short time period. Large single event rainfalls in Ipswich in recent years include approximately 300mm overnight on 19 November 2008 and 194mm on 20 May 2009. Work has been carried out on Bundamba creek for some distance both upstream and downstream of Brisbane road to improve flow rates in the creek. Much more needs to be done however in other areas including between the railway line and the junction of Bundamba Creek and the Bremer river.

Recommendations

The following recommendations are presented for the consideration of the Queensland Floods Commission of Inquiry:-

- **Existing flood maps should be checked for accuracy with both the 1974 and 2011 flood heights taken into account.**

- **New flood maps showing both the 1974 and 2011 flood levels should be prepared and freely available online and for viewing at local government offices, libraries and all real estate offices. These maps should show the contours as a guide to the levels of inundation and height of areas above known flood levels.**
- **Contours on flood maps should be at close intervals (e.g. 2 metres) for at least 10 metres above and below the maximum flood level lines.**
- **It should be made obligatory for real estate agents, developers and others selling properties to disclose to buyers the extent to which properties are threatened by flooding and to include this information in all contracts of sale.**
- **Development and building approvals should not be given for areas that were flooded in either the 1974 or 2011 floods.**
- **Floor levels of buildings and electrical services such as switchboards and transformers for those buildings should be at least one metre above the highest of the 1974 and 2011 flood levels.**

What must always be kept in mind is that every sale of flood prone land or a flood prone house to an unsuspecting buyer represents a future tragedy for a family that will affect them for the rest of their lives.

Yours sincerely,

[redacted]

Brian Hesse MieAust, CPEng(Ret)