

Queensland Floods Commission of Enquiry
PO Box 1738
Brisbane 4001

9 March, 2011

Dear Sir/Madam,

Having been directly impacted by the flooding, both personally (flooding of our home) and professionally (flooding of a major development site of ours), and having fully read SEQWater's report ("**the Report**") on Somerset and Wivenhoe dam management during the 2011 flood, we submit the following points for the Commission to consider on behalf of our development company Eastbank Developments Pty Ltd and real estate agency Phil Hassid Flats Sales (please note that whilst we are not engineers or hydrologists, Phil has degrees in mathematics and is absolutely qualified to make observations of a general quantitative / probabilistic / mathematical modelling nature):-

1. REACTIVE RELEASES ARE MORE IMPORTANT THAN PRE-RELEASES (ie WATER STORAGE AND FLOOD MITIGATION ARE **NOT** INCOMPATIBLE).

Public discussion seems to have focussed on reduction of dam storage levels in anticipation of wet seasons at the expense of releases at the time of inflows. This is completely misguided. An appropriate set of dam management rules would permit the retention of the current level for water storage **and** provide excellent protection from flooding (see below).

2. CURRENT DAM OPERATION RULES ARE INAPPROPRIATE AND TOO OPEN TO INFLUENCE

Current rules are grossly deficient, as evidenced best by Figure 9.1.2 of the Report in which it is immediately obvious that, when faced with the sudden jump in Wivenhoe inflows on Sunday the 9th, a fast response (within a few hours, to permit appropriate warnings and closures) taking releases to a level of somewhere in the vicinity of 3,000 m³/s and then ratcheting up (as was done but from a lower level) would have eliminated the need for the release spike on Tuesday the 11th and almost certainly kept maximum release flow to under 4,500 m³/s. (Also I would argue that the release response to the increase in inflows late on the 6th / early on the 7th was too slow. Rectifying that would have further reduced maximum flow).

Secondly, the event log suggests that pressure *may* have (understandably) been applied from several parties (eg BCC, ICC, SEQW CEO) to restrain releases that otherwise would have been made using best judgment. For example advice from FOC at 7.15pm on Sunday the 9th shown in the Event Log of the Report states that releases would be ramped up to 3,000 m³/s by midnight (exactly as I suggested above if slightly later) but they weren't; and advice by engineer 3 at 12.55am on Monday the 10th shown in the Event Log states that a fuse plug would be triggered if flows in urban areas of Brisbane were confined to 3,500 m³/s, but they were.

Finally, the operation rules allow too much leeway for interpretation as regards to triggering of the W4 strategy. Firstly the manual contradicts itself, referring to **projected** Wivenhoe Dam Lake Level exceeding 74m being a W4 trigger in some places, and appearing to refer to **actual** WDLL exceeding 74m being the W4 trigger in other places. Secondly, as evidenced by the WDLL modelling in Run 21 at 7pm on Sunday 9th which shows projected WDLL peaking very very close to 74m, failure to provoke W4 then implies that modelling outputs are being used arbitrarily and/or accorded greater accuracy than they can possibly have.

3. OVERCOMING DEFICIENCY IN CURRENT DAM OPERATION RULES IS SIMPLE

Rectifying the above three problems requires one simple modification which overrides all the existing strategies (ie they can be applied subject to first complying with this modification):-

"If WDLL exceeds 67m, then for every episode where inflow rate exceeds 1,000 m³/s a release rate equal to one third of the inflow rate must be instigated within 3 hours of inflow rate exceeding 1,000 m³/s and maintained and recalibrated hourly until inflows are below 1,000 m³/s. If WDLL exceeds 71m the inflow threshold of 1,000 m³/s is reduced to zero. No exceptions are to be made to this rule".

One could also add a provision that up to an additional one sixth of the inflow rate could be added to the release rate (taking it to half the inflow rate) at the discretion of engineers subject to other factors. In fact applying this approach might obviate the current four strategies altogether, but for the sake of minimum bureaucratic angst it may be simpler to just make this an addition.

It is important to note that this suggested modification is *NOT* simply a “reverse engineered” solution using the benefit of hindsight to optimise outcomes for just this one particular case. There is a systemic problem with the current approach. Yes, as the manual and the Report state, there are infinite possibilities to deal with, BUT that infiniteness derives from a limited number of sources and can easily be grouped into a small number of categories, and this approach deals reasonably well with them all. More importantly it eliminates the virtual certainty of major rain events leading to late panicky reactions instead of optimal actions (partly because it greatly reduces the impact of unavoidable external pressures hindering optimal decision making).

Introduction of such a modification would mean that in years where dam levels were very high there would possibly be slightly more low level flood episodes induced by releases. But major flooding would become effectively eliminated. The amortised cost of necessary infrastructure improvement (low bridges etc) would surely be easily offset by that of avoided major flooding.

Finally it is important to be prepared for very strong resistance to such a change as it has the effect of undermining to a degree the importance of discretion by professionals and technocrats. The reality is that no amount of outrage, dismissal, obfuscation or burying can alter the obvious facts borne by figure 9.1.2.

4. THE 2011 FLOOD SHOULD BE MODELLED FOR APPLICATION OF IMPROVED DAM RULES

SEQ Water should be required to model 2011 Flood flood levels for both the Brisbane River at the Brisbane CBD and the Bremer River at the Ipswich CBD for the case where the above suggested approach was implemented throughout (from January 6th say). Clearly in the case of Brisbane, flood levels will lie somewhere between case 1 (existing recorded) and case 2 (no release from Wivenhoe) shown in Figure 8.10.3 of the Report. No graph for the Bremer at Ipswich CBD equivalent to Figure 8.10.3 was included in the Report and SEQ Water should be directed to provide that. Also SEQ Water should be required to model this suggested approach for each category of major flood (per above) and minor flood, and to provide that.

5. EFFECTS OF POOR DAM MANAGEMENT RULES MUST NOT BE ALLOWED TO COMPOUND

Focus is to this time rightly centred on the direct impacts of the flood. However there are many potential far longer lasting impacts. Insurance, finance, property values and development come to mind. Our interest is development but comments here apply in the same way to the other areas. If the impacts of substandard dam management rules are not identified and isolated from the unavoidable impact of major flooding in the 2011 event, developers directly, and society indirectly, will wear unnecessary ongoing costs as a result of this flood. These ongoing costs may eventually dwarf the direct costs.

Riverfront development will always be a prime driver of the Brisbane property market and will, we believe, come to assume a similar role eventually in Ipswich (our greater focus of interest). The most important parameter impacted by flooding is the deemed Q100 level (AEP 1 in 100 flood line), below which development can not generally take place. Even though adoption of Q100 levels is a planning matter for local councils, the actions of, and conclusions drawn by, the Commission could have diametrically opposite effects on outcomes of the inevitable revisitation by councils of the Q100 and flood models generally.

The “low road” where impacts of substandard dam management rules are not isolated could lead to councils raising the Q100 and thereby reducing prime development potential. The “high road” would see councils able to exclude the impacts of substandard dam management rules and actually reduce Q100 levels because:

- a. the Report deems the 2011 flood to be AEP 1 in 200 to AEP 1 in 2,000 (the Executive Summary has 1 in 100 as the lower limit but the Report body contradicts this);
- b. the 2011 flood had nearly double the water volume of the 1974 flood and about the same water volume as the 1893 flood;
- c. the 2011 flood event consisted of two separate major events separated by 30 hours, each having double the flow rates (at Wivenhoe) as 1974; and
- d. Modelling of the 2011 flood with suggested amended dam management rules would most probably show maximum flood levels below the current Q100.

Best Regards,

Phil and Koula HASSID