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March 30, 2011

Submission addressing Term of Reference (f): "suitability of the operational procedures relating to flood mitigation and dam safety"

1. South East Queensland relies on Wivenhoe and Somerset dams and related infrastructure (henceforth referred to as "the dams") for two main types of service: water supply and flood protection. For a given level of infrastructure, provision of these two services is in conflict: more security of water supply means a lower level of flood protection and vice versa. An increase in the amount of infrastructure (eg. by raising the dam levels) would provide a higher level of both services and this is an issue which should be considered through a cost-benefit analysis. However my submission is concerned with the operational procedures of the existing infrastructure.

2. The existing infrastructure should, in principle, be managed so as to minimize the combined cost associated with water supply (including the costs of water rationing in the event of demand being unable to be met) and flood damage. A greater level of flood protection through maintaining a lower storage level in the dams potentially involves higher cost of water supply in the future; a greater level of water supply through maintaining a higher storage level in the dams potentially involves higher flooding costs. Total cost is minimized when the marginal cost of flood damage is equated with the marginal cost of water supply. It is likely that the marginal cost of the recent floods has been significantly higher than any benefits in terms of lower marginal costs of water supply in the future.

3. The costs of water supply and flood damage are expected values conditional on the rainfall that occurs in the future and so the appropriate balance between the two objectives depends on weather forecasts. Short-term weather forecasts are useful for making marginal adjustments to water levels in the dams but are not appropriate for determining strategy. The Manual of Operating Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam (Revision 7, November 2009) describes "strategies" for dealing with flood events, but these are focused on short-term events and should really be termed "tactics". For example, the requirement specified in the Manual that storage should be returned to Full Supply Level (FSL) at the conclusion of a flood event (p. 6), where a flood event is defined as a situation where the water level in the dams is expected to exceed FSL (p. 7), besides being ill-defined, can only be interpreted as a short-term tactic.

4. Strategy needs to be driven by long-term forecasts such as those based on the level of the Southern Oscillation Index (SOI). It cannot be the case that using the current FSL as a

target for the operators of the dam achieves the appropriate balance between water supply and flood damage costs in both El Nino and La Nina seasonal weather events. If the SOI is high, predicting significantly higher than normal rainfall, as was the case in the latter part of 2010, the risk of flood damage has risen, and the risk of water shortage has fallen. These changed levels of risk should be reflected in an adjustment of strategy. The target level of water in the dams (currently the so-called Full Supply Level) should be adjusted downwards during a La Nina event in order to get the right balance between the likely flood damage and water supply costs.

5. A manual is a useful tactical guide to the operators of a facility but there should be overall political accountability. The relevant Minister should be responsible for determining strategy.