

Submission to the Commissioner February 10th 2011

The Commission of Inquiry into the Brisbane floods January 2011.

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Lockyer Valley Flash Flood Event.

The majority of the death toll was in the Lockyer Valley environs and from reports, generally occurred in or near the railway corridor for the rail line between Gatton and Toowoomba. This railway was first constructed beginning in 1867 At the time of construction there were no permanent habitations between Grandchester and Toowoomba and the initial construction in crossing the Little Liverpool Range to the rich alluvial valley flats of the Lockyer was through rough country with tunnels, embankments and creek crossings. The continuation of the line to Toowoomba was again a considerable feat for the engineers of the time. Some minor changes to the lines construction must have occurred in the last 147 years and no doubt up to date reports as the the soundness of the line and its accompanying infrastructure for its present rail traffic would be available to the Commissioner.

The rail corridor in some sections follows closely along lines of the main creek drainage from the surrounding heights of rough and hilly country whilst in others it cuts across the lines of such drainage. The line contains embankments, cuttings and tunnels all containing the potential for redirection and or constraint with subsequent momentary release, of floodwaters.

As the Commissioner would expect, current engineering design standards for such rail corridors are comprehensive in the inclusion of protection against effects of flooding rains. The current ability of engineers to draw upon the predictive ability of the Bureau of Meteorology is well known in this matter.

In 2000 Qld Rail launched a comprehensive study, entitled Gowrie Park to Grandchester Rail Corridor Study with a final report issued in 2003. The purpose of the study was to identify and design a new corridor for the railway to be built to modern standards. The cost at that time of \$140million was mentioned. The project was shelved.

The Commissioner needs to be satisfied that following the shelving of the replacement line, a comprehensive assessment of the existing line and its ability to withstand Probable Maximum Precipitation (PMP) events in difficult and rough country was carried out with adequate risk assessment and subsequent risk management protocols.

This an urgent matter for the Commission as the rail line suffered extensive damage and is currently under emergency repair replacement works. It must be considered that if any of the fatalities were the result of the railways inability to handle flash flooding, it would be most sad if a repeat occurred due to hasty work.

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Wivenhoe and Somerset Dams and Flood Mitigation.

The Brisbane River catchment contains the vast majority of the urban population of Queensland, and is a significant element in the state's social and economic activity. It also contains the most significant assets yet built to mitigate flood prevention in the Cities of Brisbane and Ipswich, as well as providing potable water supplies for these areas, including the other cities in the catchment. These mitigation measures, comprising initially a water storage compartment and a flood water storage compartment in the Somerset Dam, and then a much larger water storage compartment and even larger flood storage compartment in the Wivenhoe Dam, were built over a 30 year period with the Wivenhoe Dam built following the Brisbane Flood event of 1974.

Dam Flood Compartments.

The design of the above dams was such that the normal operation was for the dual purpose of flood mitigation and water supply. The water supply function was to always have sufficient fresh water at Mt Crosby tidal weir in the Brisbane River. Flood mitigation was to always have the ability for both dams to increase their water holding capacity during a significant flood rainfall event, and then to release this excess holding gradually within the river capacity draining to the sea. Both dams have a flood compartment capacity greater than the water supply storage capacity. Although the writer has not had access to the design philosophy employed in the flood mitigation, the common public expectation was that in the event of a similar rainfall event in the dams catchments to that which occurred in 1974, the level of the flood peak at the Brisbane River City gauge would be at least 2 metres lower than that reached in 1974. The comment must be made that even with such a reduction, the resulting river level would still place Brisbane and its environs under a major flood condition with significant damage.

The Bureau of Meteorology (BOM) in its climate change paper No. 24 from late January 2011 indicates that at first analysis, the rainfall events leading up to the Jan 2011 flood were within or less than those experienced in 1974. BOM has had a significant increase in the quantity and scale of data available over that of 1974.

The degree of flooding as measured at the Brisbane City gauge in 2011 seemed to indicate that the reduction in flood peak was considerably less than design expectation. Some expert opinion has already indicated the contribution from the river catchment not subject to mitigation control was not the major contributor to the flood peak reached in 2011 but that the operation of the Wivenhoe and Somerset Flood discharges were.

Hazard Avoidance and Asset Protection

This can be viewed in the two areas, such as loss of life and secondly damage to property. There are methods available for an appreciation of the degree of damage to property as this can be predicted and thus measured directly in economic terms especially in regard to Riverine flooding.

Current expectations are that in relation to privately owned and operated capital assets, responsibility lies with the private owner through the medium of private insurance, covering for whatever risks are insurable.

Expectations with regard to publicly owned assets, is that responsibility lies firmly with whatever level of Government claims ownership.

However, with regard to risks of extreme weather events, such as fire and floods, their scale demands expectations that Governments have been empowered to direct firstly the immediate reduction of personal hazard, providing relief from individual trauma and secondly to provide, organise and enable recovery from public asset loss.

With regard to the Brisbane River flood hazard, this second responsibility has been firmly accepted by the State Government and in particular the State Treasurer for the public asset loss, in the provision of the Somerset and Wivenhoe Flood mitigation dams.

Risk assessment is always an ongoing process and, as indicated, the methods generally used are always to determine the frequency and scale of such disaster events likely to occur and the monetary asset losses arising. The responsibility of seeking the event prediction and the estimation of the measurement of the resulting monetary loss assessment thus lies firmly with the Treasurer of Queensland.

The Commission is requested therefore to consider the actions over time, of the Queensland Treasurer in this matter. In particular the commission should ascertain as to whether or not the Treasurer had in fact the ability to meet his responsibility and whether the Treasurer adequately performed reasonably in his duty of public asset protection in the Brisbane Valley.

Flood Event Prediction and Mitigation

Recently, the drought and its effect on the SEQ potable water supplies, necessitated the largest single short term capital investment by the Queensland Government in its history. In practical terms, this investment in the provisions of the Tugun desalination plant and the three Brisbane River ATP's, together with the water transmission system, enabled the use of the existing dams of Somerset and Wivenhoe to be discounted as the primary water supplies for Brisbane. The effective change therefore, was that the flood mitigation capacity of these dams, could now effectively be doubled by such change of operation.

This consequently could be used to handle more extreme rainfall events in the Dam catchments or alternatively significantly reduce the flood peak of such events through more controlled discharges.

Recent upgrades to Wivenhoe spillways and structures resulted in more confidence in the Dam's structural ability, albeit at the loss of some overall water holding capacity.

The improvement in flood mitigation by the use of these drought proofing assets appears not to have been considered. Hazard reduction economic studies enabling or disproving economic and social justification are not known but appears not to have been considered.

BOM modelling of river flows and characteristics in the Brisbane River catchments has over the past two decades resulted in much more confidence in prediction of rates of dam filling etc.

Monetary loss estimates for both public and private asset losses for various levels of river flood peaks has also improved immeasurably over the past four decades the dams have been in existence.

The Commission must enquire as to the involvement or otherwise of the Queensland Treasurer into the provision of such data and its role in decision making.

