

# South East Queensland Flooding, January 2011

Supplementary submission

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## 1.0 Synopsis

This supplementary submission should be read in conjunction with the main submission made by Pine Mountain Botanics Pty Ltd dated 11 March 2011 and entitled “South East Queensland Flooding, January 2011”.

This supplementary submission is considered relevant to the Queensland Floods Commission of Inquiry under Section 2(f) of the Terms of Reference – *Implementation of systems operation plans for dams across the state and in particular the Wivenhoe and Somerset release strategy and an assessment of compliance with, and the suitability of the operational procedures relating to flood mitigation and dam safety.*

And under section 2(g) of the Terms of Reference – *all aspects of land use planning through local and regional planning systems to minimise infrastructure and property impacts from floods.*

## 2.0 Summary and Conclusions

If the Commission of Inquiry considers that the current mitigation capabilities of Wivenhoe and Somerset Dams are different to that which is generally published and understood within the community then it may be appropriate to understand more fully the impact of any changed mitigation capabilities on the Q100 levels for Brisbane as determined in 2003. This may be important from a number of aspects, including:

- It may lend support for implementing the series of interim measures outlined in the report “South East Queensland Flooding January 2011” to protect urban areas to the maximum extent feasibly possible prior to the 2012 wet season;
- It may assist in making recommendations relating to longer term planning changes in urban areas in conjunction with any recommendations for restoring/enhancing the flood mitigation capabilities of Wivenhoe and Somerset dams.

### 3.0 Public perception about mitigating capabilities

One of the conclusions drawn from that earlier submission was as follows:

*The public in general may not have a good appreciation about the extent to which the mitigation capabilities of Somerset and Wivenhoe Dams have changed over the years and this should be address. This level of appreciation may also extend to businesses and local authorities who may not have considered revising their policies post those changes.*

It is noted that the Joint Flood Taskforce Report to the Brisbane City Council was recently issued and it provides some insights into assumptions surrounding the flood studies that were carried out in 2003 to produce the current estimate of the Q100. The report to the Brisbane City Council by the joint Flood Taskforce (2011) states:

*For the post-dam situation it was assumed that Wivenhoe dam was at Full Supply Level (RL 67.0 m AHD) at the start of the flood event and that the dam was operated according to operational rules incorporated into the WIVOPS simulation program, provided at that time by DNRM.<sup>1</sup>*

It appears that these studies may have taken into consideration the mitigating capabilities of Wivenhoe dam prior to the installation of the secondary auxiliary spillway and fuse plugs. This is because the preferred option for upgrading the dam with a secondary spillway involving three fuse plug installations was not selected until December 2003 with the detailed design completed by the end of February 2004.<sup>2</sup> Also the 2002 version of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam may not have reflected the use of a secondary spillway that

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<sup>1</sup> Joint Flood Taskforce Report, March 2011

<sup>2</sup> Gill, D, Cooper, B, Maher, B., Macnish, S. and Roads, G. "Wivenhoe Dam Flood Security Upgrade, ANCOLD/NZSOLD Conference 2004 at page 1.

had not been designed until February 2004.

With respect to the flood routing effects of the storages, the Joint Taskforce Report states:

*The 2003 review of Q100 estimated that there was a reduction of about 50% in peak flows between pre-dam and post-dam estimates of Q100 in Brisbane. This reduction arose from the attenuation effect of the estimated available flood storage in the dams. A comparison of the magnitude and effectiveness (attenuation capacity) of the available flood storage between the Q100 and the January 2011 event needs to be assessed in future work.*

*Currently the mitigating effect of the dams in the 2011 flood is not available. The operation of Wivenhoe dam is outside the Terms of Reference of the JFTF and it is expected that it will be one of the matters examined by the State Commission of Inquiry. It is necessary that this mitigating effect is assessed in future work.<sup>3</sup>*

It is not known whether the Q100 assessment was reviewed and modified post the installation of the secondary spillway and the three fuse plugs. However, it is also noted that the Joint Taskforce Report makes references to the two dams that provide temporary flood storage capacity and their impact upon catchment characteristics. The Joint Taskforce notes the available flood storage in Wivenhoe Dam as being 1,450 GL and Somerset as being 524 GL.<sup>4</sup>

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<sup>3</sup> Ibid, at page 19.

<sup>4</sup> ibid. at pages 15 and 19.

## 4.0 Changed Mitigation Capability – Wivenhoe Dam

Some differences pre and post the installation of the 2<sup>nd</sup> spillway are detailed below when the full flood storage capacity of 1,450,000ML is used:

<b>Flood peak of 77m</b>	<b>Pre 2<sup>nd</sup> spillway</b>	<b>Post 2<sup>nd</sup> spillway</b>
Flood peak contained	Yes fully contained	Yes fully contained
Regulated discharge up to flood peak	Yes but water may flow under and over the top of radial gates of the gated spillway	As per pre situation but uncontrolled discharge from 2 <sup>nd</sup> spillway occurs as fuse plugs initiate
Regulated discharge post flood peak	Yes, can regulate outflows through the gated spillway	Uncontrolled discharge from 2 <sup>nd</sup> spillway quickly drains dam back to EL 67m
Mitigation capability post flood peak	Yes, can store flood waters completely up to EL 73m or regulate outflows above that level to EL 77m to seek to manage total river volumes and mitigate any Lockyer and Bremer peak impacts	No, discharges from 2 <sup>nd</sup> spillway above EL 67m are uncontrolled
Mitigation capability for a 2 <sup>nd</sup> closely followed flood event	Yes	No, as fuse plugs need to be reinstated to have a mitigation capability