

Peer Review of Report “Lower Balonne Hydrology Checks” written by Dr John Porter

Background

This review is in response to a request by Dr Lee Benson of Ecology Management. We were asked to examine the logic of Dr Porter’s approach and the likelihood of his conclusions being correct. We were advised by Dr Benson (20 August, 2002) that the “...local irrigators are concerned that the various models of the system estimate the proportion of flow that they extract based upon an under-estimate of actual flood flow...”.

The primary objective of Dr Porter’s study was to investigate the potential inaccuracy in flood estimate that may arise through the neglect of over-bank flows in the extrapolation of discharge rating curves.

Review Comments

Subject to the comments listed below, we are of the opinion that methodology Dr Porter used is sound. Throughout, in providing data and results which lead to and support his conclusions, his approach has been a conservative one such as to minimise the effects he has sought to demonstrate, that the flood and annual flows in the Lower Balonne River near the NSW border have been underestimated.

1. page 9, para 2, 3rd sentence: This sentence would be clearer if the words ‘as estimated’ were added after “exceeding bank full”.
2. page 10, 2nd para, 2nd sentence: It is highly unlikely that the satellite imagery would be available exactly at the time of peak discharge, and as a consequence the estimated peak discharge is probably under-estimated.
3. page 11, para 1 and Appendix B: We question the accuracy of the velocity estimate of 0.2 m/s observed on Cubbie Station. Some detail is given in Appendix B but more is required before one could assess whether or not the approach is correct and the accuracy of the computed velocities. Nevertheless, the value of 0.2 m/s is not important in the context of the report as Dr Porter adopts a maximum value of 0.15m/s.
4. Table 2.4: The volumes estimated for the two years 1971 and 1976 seem to be inconsistent. Both are for essentially the same volume of flow determined by DNR and hence the same stage yet the volumes estimated by the alternative ratings are at least 21% different. If this is correct, an explanation for the difference should be provided.

Overall, we advise that the approach taken by Dr Porter in assessing the rating curves is scientifically credible and that the DNMR rating curves require amending to take account of overbank flow.

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