

Keynote: Multi-objective storages for flood mitigation and water resources development in small catchments

PEDRO SIMONE¹ & TREVOR M. DANIELL²

¹ *Shared Watercourses Support Project, Administração Regional de Águas do Centro, 67 Sancho de Toar St. Beira, Mozambique*

simonepsimone@yahoo.com

² *School of Civil, Environmental and Mining Engineering, The University of Adelaide, Adelaide, South Australia 5005, Australia*

Abstract In order to alleviate the continual increase in water demand over the available water resources, non-traditional water sources should be brought into the water supply cycle. Detention basins primarily designed for flood control have the potential to become part of this solution by delineating particular operational aspects. This paper proposes a framework for conjunctive use of detention basins for water supply purposes. An operational rule to ensure water supply without affecting the ability to control floods is developed. A study carried out found that this objective can be achieved through adopting a system of two levels of spills, where the first spill is aimed at ensuring continual release of inflows before the reservoir achieves full storage. The proposed approach was simulated using Monte Carlo analysis for Brown Hill Creek detention basins in Adelaide, South Australia, and satisfactory results were achieved.

Key words water; detention basins; flood control; sustainable yield; first spill level; risk management of water resources