

## Generalised equations for rainwater tank outcomes under different climate conditions: a case study for Adelaide

### ABSTRACT

Most of the studies on rainwater tanks focused on sizing and/or optimum design. Some studies proposed different methods of estimating rainwater tank outcomes. Several studies used monthly rainfall data to estimate rainwater tank outcomes. However, quantification using daily rainfall data will be much more realistic than using monthly rainfall data. This paper presents development of generalised equations for domestic rainwater tank outcomes for an Australian city, Adelaide, using a daily water balance model, which incorporates measured daily rainfall data. To investigate the climate variabilities of rainwater tank outcomes, 15 representative years (five for each dry, average and wet condition) are selected from historical rainfall data. For the three climate conditions, rainwater tank outcomes such as water savings and town water augmentation amounts are presented in relation to tank volume, roof area and rainwater demand. Eventually, six equations, one for each climate condition and one for each outcome, are proposed.

**Keyword:** Rainwater tanks; Daily water balance; Water savings; Town water augmentation; Climate conditions; Case study; Adelaide; Australia; Daily rainfall; Daily precipitation; Tank volume; Roof area; Rainwater demand; Generalised equations