

# Conveyance estimation in channels with emergent bank vegetation

**PM Hirschowitz\* and CS James**

*Centre for Water in the Environment, School of Civil & Environmental Engineering, University of the Witwatersrand,  
Private Bag 3, Wits, 2050, South Africa*

## **Abstract**

Emergent vegetation along the banks of a river channel influences its conveyance considerably. The total channel discharge can be estimated as the sum of the discharges of the vegetated and clear channel zones calculated separately. The vegetated zone discharge is often negligible, but can be estimated using established methods if necessary. The clear channel discharge can be estimated either through application of a resistance equation using a composite resistance coefficient, or by integration of the transverse distribution of the depth-averaged velocity. Recommendations are made for estimating the composite resistance coefficient, and the coefficient for the vegetation interface. An equation for the integrated velocity distribution is also presented, together with a procedure for its application. The methods reliably reproduce resistance coefficients and conveyances measured in laboratory channels

**Keywords:** flow resistance, bank vegetation, vegetated channels