

Assessment of Fault Zone Properties for Groundwater Models Abstract n°2213

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Increasingly there is a need to understand the influence of faults in basin management where energy resource development can impact groundwater resources. Faults can exhibit a wide variety of hydraulic properties and where resource development induces changes in pore pressure the effective stress and thus the permeability can be transient. We look at strategies for characterising fault zone properties that can be incorporated into regional groundwater flow models to more accurately represent stress, strain and the resulting transmissivities. This includes the effects of fault zone architecture, fault core smear or shale gouge and across fault flow, damage zone characteristics and up fault flow and fault reactivation geomechanics. We use a case study example of the Gloucester Basin of New South Wales in eastern Australia to demonstrate how some of these techniques can be applied. The Gloucester Basin has been subject to exploration of coal seam gas with some pilot testing. It also contains data from monitoring bores and surface water features. The methodologies described can be applied to other basins where faults play a key role in determining flow system characteristics, and capturing their properties in groundwater models is important for robust basin management strategy.

