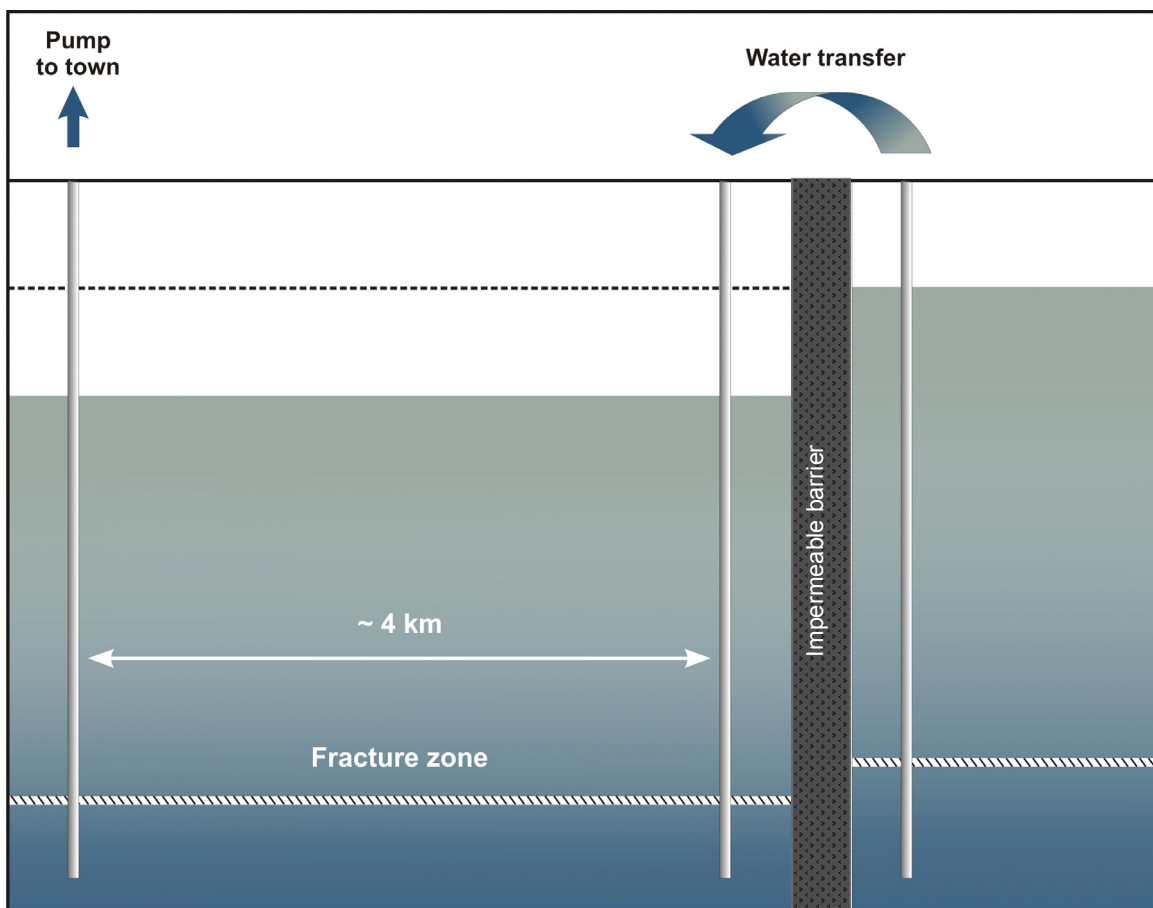


WILLISTON GROUNDWATER TRANSFER SCHEME

Williston is a small town in the western Karoo and it relies on groundwater for its domestic supplies. Abstraction over the years has been in excess of natural recharge, and since intensive water level monitoring began in 1983, the water levels have steadily declined. The aquifer is however divided by an impermeable barrier, and the water levels in the adjacent “compartment” have not shown the decline that is evident in the pumped compartment. A groundwater transfer scheme has been constructed whereby water is pumped from the one compartment to the other.

An interesting feature of this scheme is that the compartmentalising barrier is a narrow geological structure that allows for the abstraction and injection boreholes to be located relatively close to one another (about 170 m apart), while the town’s production boreholes are located about 4 km from the injection borehole. This is because there is perfect hydraulic connection between the injection borehole and the town’s production boreholes, but no (or very little) hydraulic connection across the horizontal fracture pattern which resulted from doleritic sill intrusions into Karoo sedimentary rocks. The compartmentalization, which is either a dyke or an impermeable fault, occurred after the horizontal fracturing and effectively divided the aquifer in half.

Water can now be transferred at 3 L/s or 260 m³/day from the one compartment to the other and this has had the effect of doubling the yield of the town’s wellfield.



Adapted from: **Murray EC and Tredoux G, 1998.** Artificial Recharge: A Technology For Sustainable Water Resource Development. Water Research Commission Report No. 842/1/98, Pretoria. ISBN 1 86845 450 9. Input from Chris Esterhuysen, SRK Consulting Western Cape.