

Two geothermal wells have been drilled in or near Southampton since 1979. One is at Marchwood, just outside Southampton, and the other is in the centre of the city; the wells are 1.85 km apart. They proved a geothermal reservoir in the upper 25 to 40 m of the Triassic Sherwood Sandstone at a depth of about 1700 m. The reasons for siting the wells in Southampton are discussed and the nature of the reservoir described. The wells have been extensively tested. The Marchwood well yielded 30 l/s for a pressure reduction of 3.7 MN/m² after a test of 33 days, while the Western Esplanade well gave 20 l/s for about 3.0 MN/m². Both yielded brine with a salinity of over 100 g/l at a well-head temperature of between 70 and 74°C. The transmissivity of the reservoir is 6 m²/d (3.5 D.m) and the storage-coefficient 4 x 10⁻¹. Computer modelling of changes in reservoir pressure suggests that near the wells there is a region of relatively high permeability but the permeability declines at distances of more than a few kilometres from the wells. This could take one of several forms including a bounded reservoir or a narrow wedge-shaped reservoir. The thermal yield from either well at an abstraction rate of 20 l/s would be about 3 MW.