

# PINJARRA PUMP STATION NO. 9

## SECANT PILING & JET GROUTING



**Owner: Water Corporation**  
**Main Contractor: Georgiou**

**Specialist Contractor: GFWA**

### THE PROJECT

As part of meeting the demands and requirements for Western Australia's growing population Water Corp has commissioned the construction of Pinjarra Wastewater Pump Station No. 9.

The geotechnical investigation indicated that the soil was composed of several layers of fill, sandy clay, sand and silty sand. Groundwater level was observed to be shallow and about 2 m below ground surface level.

As it was required to perform deep excavations for the works it was initially decided to dewater the site; however practical issues encouraged the construction team to utilize a different solution that would allow the works to proceed in a contained dry environment without the need of dewatering.

### THE ROLE OF GFWA

GFWA was awarded the design and construct contract for building a water tight retaining wall at the periphery of the excavation and a bottom plug to prevent the ingress of water into the work zone.

The retaining structure was constructed using hard-soft secant piles to form a circular shaft with an internal diameter of 6.5 m. In this technique only every other pile is reinforced with steel bars. Initially the "soft" piles that do not have reinforcement are installed. Then the "hard" piles are installed in between the soft piles. The overlapping in between the piles prevents water penetration.

The bottom plug of the excavation was constructed using jet grouting technology. In this technique cement grout is mixed with the in-situ soil at very high pressures to create impermeable columns. The overlapping of the columns prevents water ingress. Column diameters, length and strength are part of the design process.