Statewide seawater interface – Myalup groundwater area

Myalup subarea

In the Myalup subarea, groundwater salinity is influenced by seawater from the Indian Ocean and, in the north, by local saline water associated with Lake Josephine. The subarea is represented by the Myalup transect in the north (Figure 1), Binningup transect in the central (Figure 2), and Parkfield transect in the south (Figure 3).

Groundwater conditions vary along the coast as hydraulic parameters change due to differences in the underlying geology. In the north (Myalup), the Osborne Formation and Pinjar Member are relatively thick; however, these units thin southward and are absent across the central part of the subarea at Binningup. South of Binningup, the Mowen Member is present and increases in thickness towards Parkfield, resulting in a comparatively thick sequence in the Parkfield transect. These variations affect the vertical and lateral distribution of groundwater salinity.

In the north (Myalup), groundwater salinity is influenced by both seawater intrusion and lake salinity. In the Superficial aquifer, the saltwater interface extends to about 3.5 km inland and into the underlying Osborne Formation and Pinjar Member. Within these units, clay-rich layers restrict vertical migration of salinity into the deeper Leederville aquifer and instead promote lateral spreading of salinity inland.

In the central and southern areas (Binningup and Parkfield), where saline coastal lakes are absent, the seawater interface forms a wedge-shape and extends to about 2 km inland. The seawater interface also extends into the Leederville aquifer where the Mowen Member is absent or there is a direct hydraulic connection to the Superficial aquifer. At Parkfield, elevated salinity extends from the base of the Superficial aquifer into the upper part of the Mowen Member. The seawater interface geometry is influenced by local clay-rich layers within the Mowen Member.

Groundwater abstraction in coastal areas may steepen the hydraulic gradient and promote inland movement of the SWI. Where the aquifers are directly connected, salinity movement in one aquifer will influence the other. Where the Osborne Formation and Pinjar or Mowen Member are saline, abstraction may result in upconing.

Figure 1 to Figure 3 show representative cross-sections of the saltwater interface in the Myalup subarea. Full details of the investigation methods and analysis are provided in report *HR449: Myalup saltwater interface assessment.*

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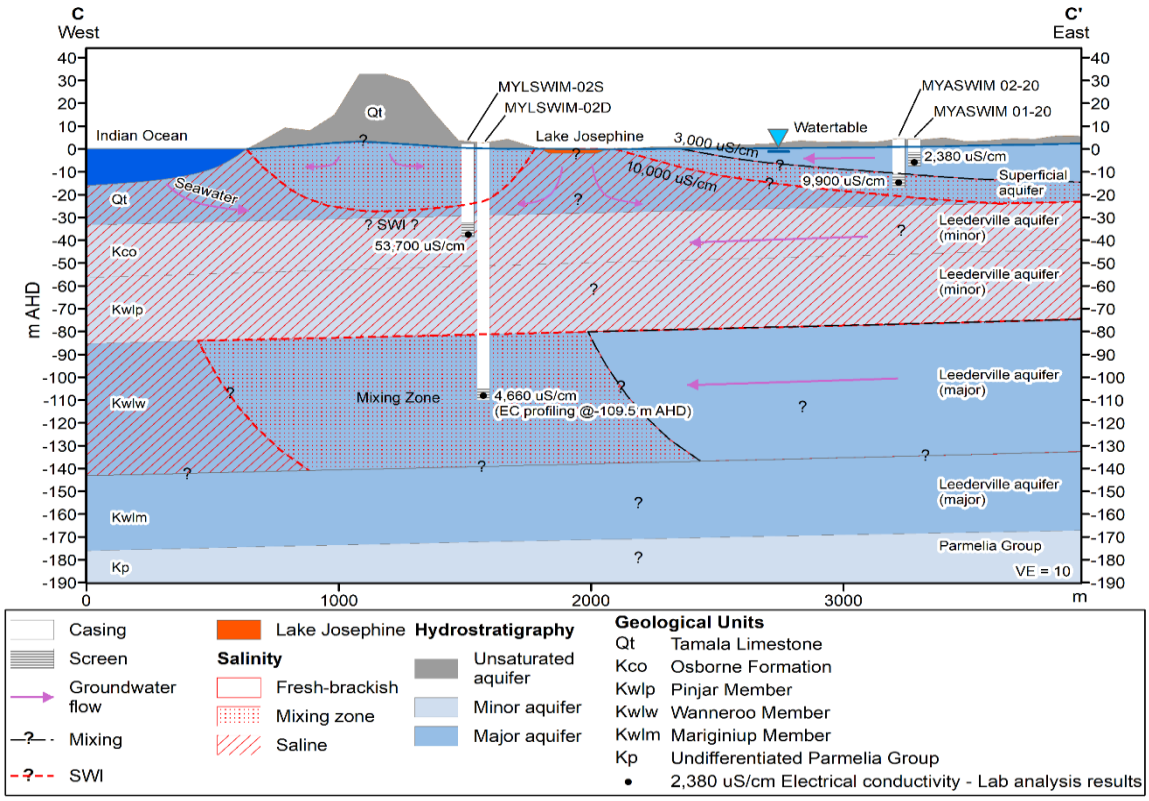

Figure 1 *Myalup subarea – Myalup transect, cross section C-C'*

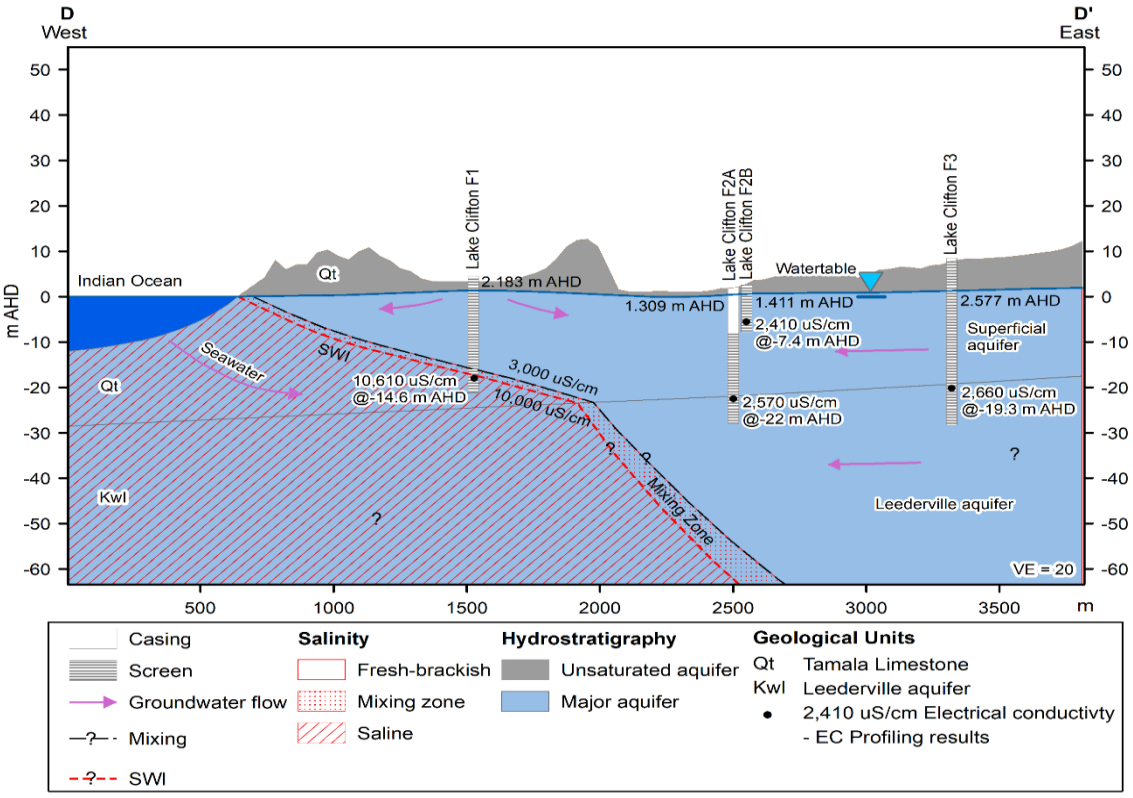

Figure 2 *Myalup subarea – Binningup transect, cross section D-D'*

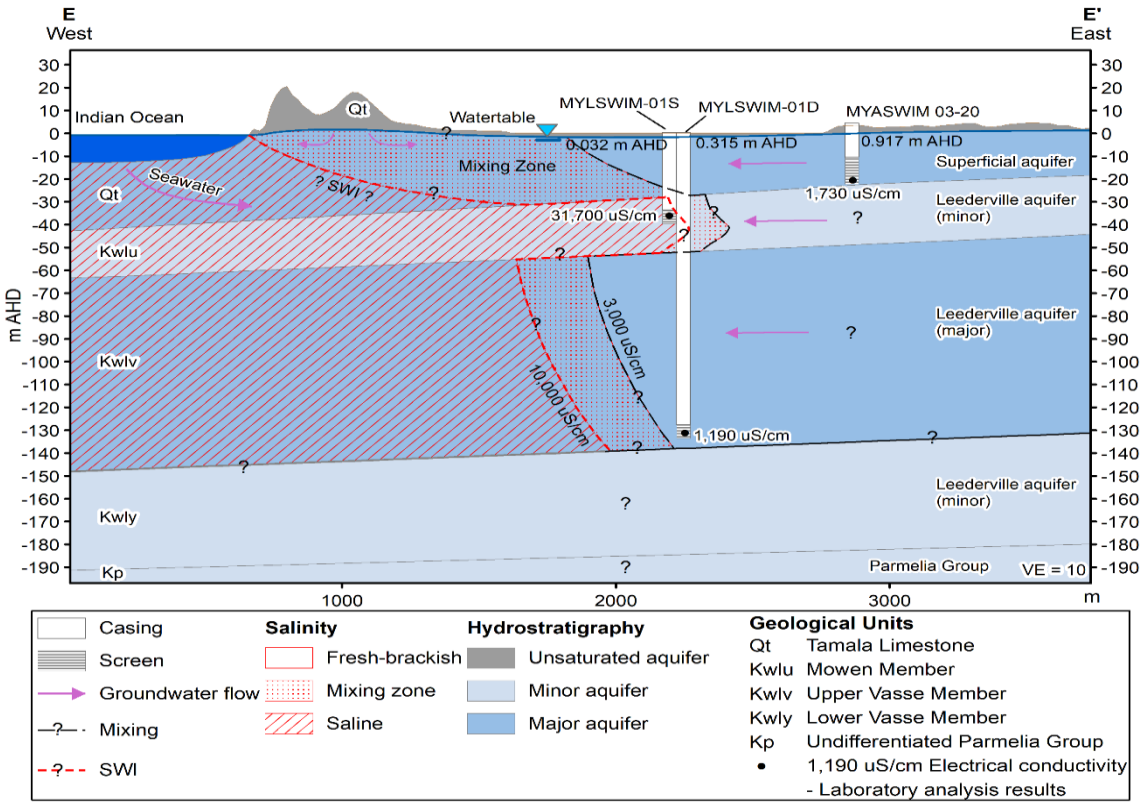

Figure 3 *Myalup subarea – Parkfield transect, cross section E-E'*