



Statewide seawater interface - Esperance groundwater area

Bandy subarea

In the Bandy subarea the freshwater lens is thinner than the other parts of the Esperance groundwater area. In the east, saline to hypersaline waters from the central suite of the Lake Warden wetland system extend into the Superficial aquifer flowing south across the subarea and out into the ocean (Figure 1). Along the eastern boundary where the Superficial aquifer is in contact with Bandy Creek, the freshwater lens is absent, and groundwater is saline through the entire saturated thickness of the aquifer.

In the western half of the Bandy sub area, hypersaline waters originating from Lake Warden extend up to 1500 metres from the northern boundary into the Superficial aquifer (Figure 2). Along the southern boundary the seawater interface from the Indian Ocean extends up to 200 metres into the Superficial aquifer. Saline water is absent in the central area under the recharge mound.

In the east, the freshwater lens is typically less than 5 metres thick near the Lake Warden wetland system and Bandy Creek. It thickens up to 13 metres in the southern central area, however saline upconing from abstraction remains a high risk due to the saline water at the base of the Superficial aquifer.

In the west, saline water at the base of the Superficial aquifer is present along the north and south boundaries and the thickness of the freshwater lens ranges up to around 15 metres. Elsewhere, the saturated thickness of the aquifer is fresh and is estimated to range from 10 to nearly 20 metres thick. Due to the thinness of the aquifer and the high level of saline intrusion across much of the subarea, abstraction remains a high risk to both incursions of the saltwater and seawater interface as well as saline upconing.

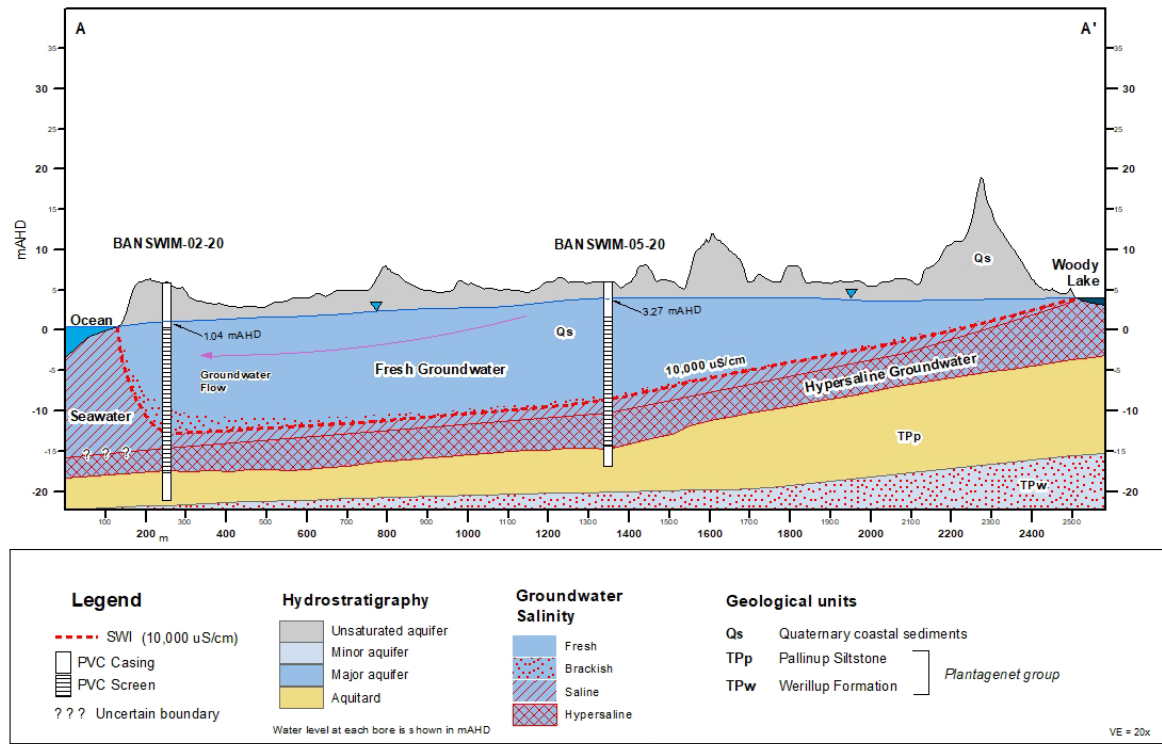


Figure 1 Cross section A-A' in Bandy subarea showing hypersaline groundwater flows from the lakes to the ocean at the bottom of the aquifer

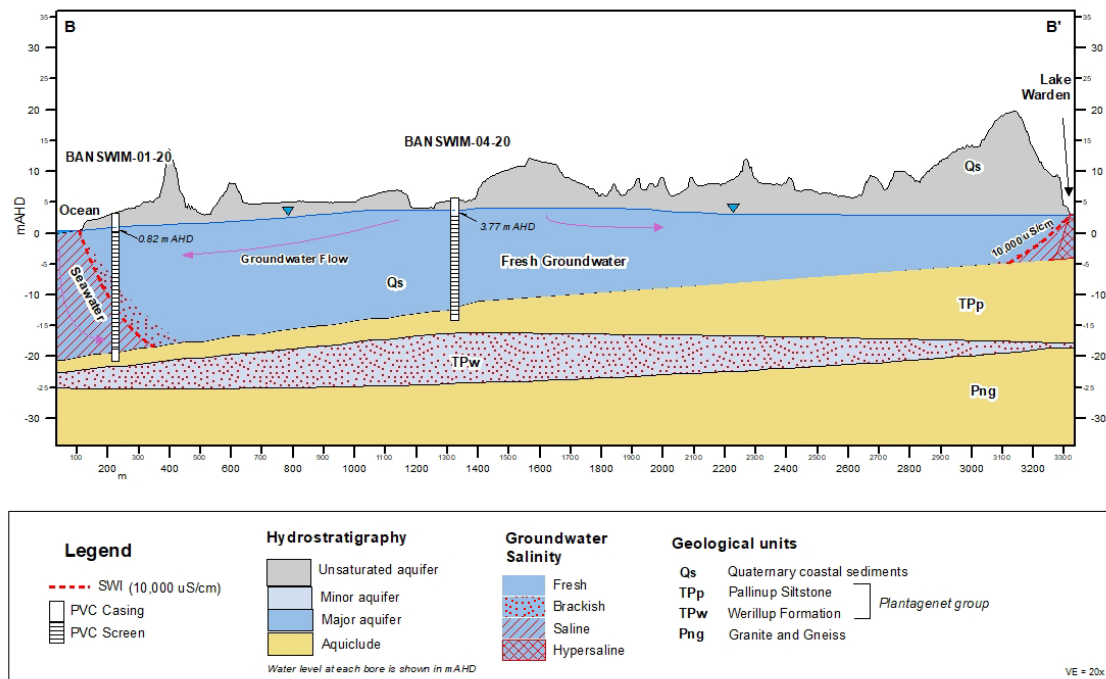


Figure 2 Cross section B-B' in Bandy subarea showing the fresh groundwater mound separating the two sources of salinity