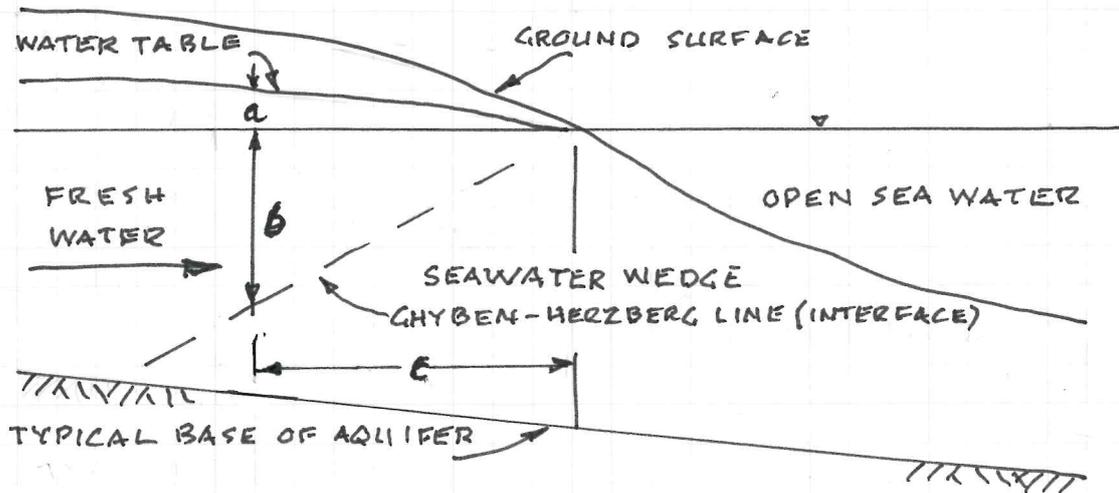


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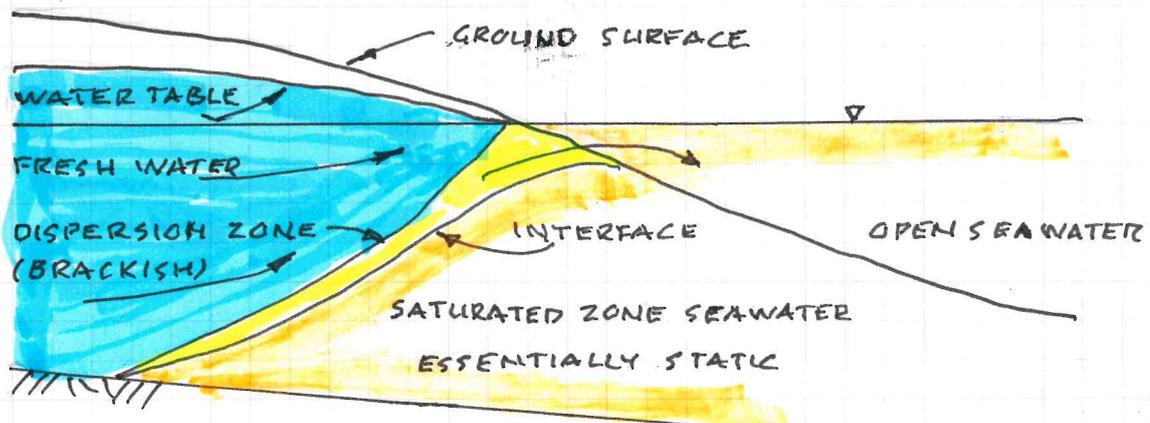
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### Seawater intrusion Ghyben- Herzberg impacts



**Figure 1** Theoretical diagram of a sea water wedge (intrusion) into a coastal aquifer and tidal inlets. If there is a gradient of the water table towards the sea, as indicated, there will be a fresh water flow to the sea as indicated in Figure 2. Intrusion is a common occurrence along the coast and the shorelines of tidal inlets in Western Australia. The vertical dimensions of the above diagram are exaggerated, by a factor of about 30, to emphasise the impacts of intrusion.

- a Indicates the height of a water table, above mean sea level, near a shore location
- b The depth from sea level to sea water interface (Ghyben-Herzberg line) near a shoreline, is equivalent to  $a \times 40$ , if the sea water density is 1.025 and aquifer depth exceeds b.
- c Is equivalent to  $40 \times b$ , if sea water density is 1.025.



**Figure 2** Impacts of fresh water flows from a coastal aquifer. The shape of the seawater wedge will vary marginally due to tidal action and seasonal impacts. Sea water in the wedge is essentially static. There will be no sustained inland flows unless inland water use exceeds the adjacent groundwater basin yield. Mixing will occur along the sea water interface. A brackish dispersion zone will form as indicated.