

# Groundwater dependent ecosystem pictorial conceptual model 'canal estates (brackish)'

Version 1.5

## Canal estates (brackish)

Brackish canal estates are man-made canals with locks or weirs that restrict connection to estuaries and therefore have limited tidal influence. The canals are usually dug into unconsolidated sedimentary aquifers including coastal sand masses (see coastal sand masses – beach ridges) or alluvia deposited during periods of higher sea level by fluvial processes in current river channels, floodplains, estuaries, deltas and other near-shore environments (see low-lying coastal swamps). These unconsolidated sedimentary aquifers store and transmit groundwater through intergranular voids between gravel and sand particles. Groundwater within the unconsolidated sedimentary aquifers is predominantly fresh and may discharge into the canal. To prevent stagnation of water within the canal, marine water may be allowed to leak through the locks or in some cases is actively pumped into the canal resulting in brackish waters. These areas may support flora and fauna communities, ecological processes and delivery of ecosystem services.

- Brackish canal estates may depend on the surface expression of groundwater from the underlying unconsolidated sedimentary aquifers.
- Unconsolidated sedimentary aquifers associated with brackish canal estates may also support aquifer ecosystems which can be indicated by the presence of stygofauna.



## Geology legend



Sand



Basement of the model



Low permeability rock

## Groundwater hydrology legend



Sand (unsaturated)



Sand (saturated with marine water)



Sand (saturated with groundwater)



Low permeability rock (unsaturated)



Basement of the model (unsaturated)



Infiltration and percolation  
Rain infiltrates through the soil to recharge the aquifer below



Groundwater table



Direction of groundwater movement



Negligible groundwater movement



Direction of marine water movement



Groundwater and marine water interface  
The position of the interface will vary temporally



Tidal range

## Flora legend



*Corymbia* spp.



*Melaleuca* spp.

## Focal elements legend



Canal lock  
The presence of locks restrict the movement of tides from the estuarine river environment into canal systems.



Pumping station  
Pumping stations are used to maintain the level and quality of water in canal systems. These canal systems often contain brackish water.



Weir  
The presence of weirs restrict the movement of tides from the estuarine river environment into canal systems.

## Groundwater dependent ecosystem legend



Surface expression GDEs  
Lacustrine wetlands, palustrine wetlands and riverine water bodies may depend on the surface expression of groundwater for some or all of their water requirements.



Subterranean GDEs  
Aquifer and cave subterranean wetlands may depend on the subterranean presence or expression of groundwater for some or all of their water requirements.

## Citation

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