

# Groundwater dependent ecosystem pictorial conceptual model 'spring ecosystems of the Surat and southern Bowen Basins'

Version 1.5

## Spring ecosystems of the Surat and southern Bowen Basins

Springs in the Surat and southern Bowen basins are predominantly fed by Triassic and Jurassic aquifers including the Clematis Sandstone, Precipice Sandstone, Boxvale Sandstone Member of the Evergreen Formation, Hutton Sandstone, Gubberamunda Sandstone and Bungil Formation. In addition to these sedimentary aquifers, springs are also associated with unconsolidated Cenozoic sediments and the fractured rock aquifers of the Tertiary Volcanics. Individual springs can occur due to one or more of three basic mechanisms:

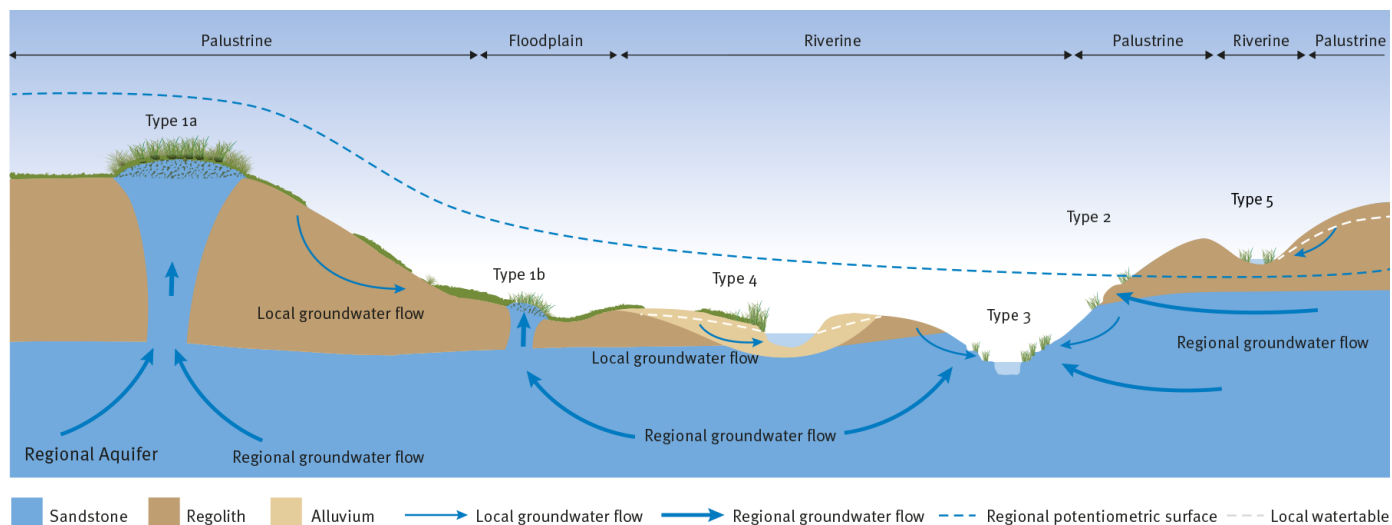
- fractures and faulting;
- changes in permeability both between and within individual formations; and
- erosion and dissection of the landscape by surface water processes.

The wetlands supported by spring discharge vary considerably. Although it is important to understand the mechanism and source aquifer supporting a wetland, it is the receiving environment which will influence the way a wetland will respond to a change in the groundwater regime. For this reason, a wetland typology has been developed for spring ecosystems of the Surat and southern Bowen Basins which identifies four types of wetlands. The key attributes used to differentiate the wetland types are their landscape setting, geomorphology, the nature of the groundwater flow system, the regolith and water regime.

The four wetland types are:

- Type 1: Permanent fresh-to-brackish, palustrine wetlands with well-developed peat wetland soils, dense vegetation coverage, mainly connected to regional and local groundwater systems.
  - Type 1a: Wetlands located in off-stream environments, on floodplains.
  - Type 1b: Wetlands located at the interface between floodplain and riverine environments and influenced by surface water flows.
- Type 2: Semi-permanent brackish, palustrine wetlands with minor wetland soils and minor vegetation cover, mainly connected to regional groundwater systems.
- Type 3: Permanent to semi-permanent riverine wetlands with minor wetland soils and moderate vegetation cover, sourced from local and regional groundwater systems and significantly influenced by surface water flows.
- Type 4: Semi-permanent fresh riverine-to-palustrine wetlands with minor wetland soils and moderate vegetation cover, mainly connected to local groundwater systems, located within riverine environments with deep, sandy, alluvial deposits.

- Type 5: Wetlands located within riverine-to-palustrine environments with shallow-to-nil unconsolidated material. These wetlands can form in areas of where there is significant topographic variation, such as the recharge areas of the Great Artesian Basin.



## Citation

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