

Groundwater dependent ecosystem pictorial conceptual model 'sedimentary rocks (Great Artesian Basin)'

Version 1.5

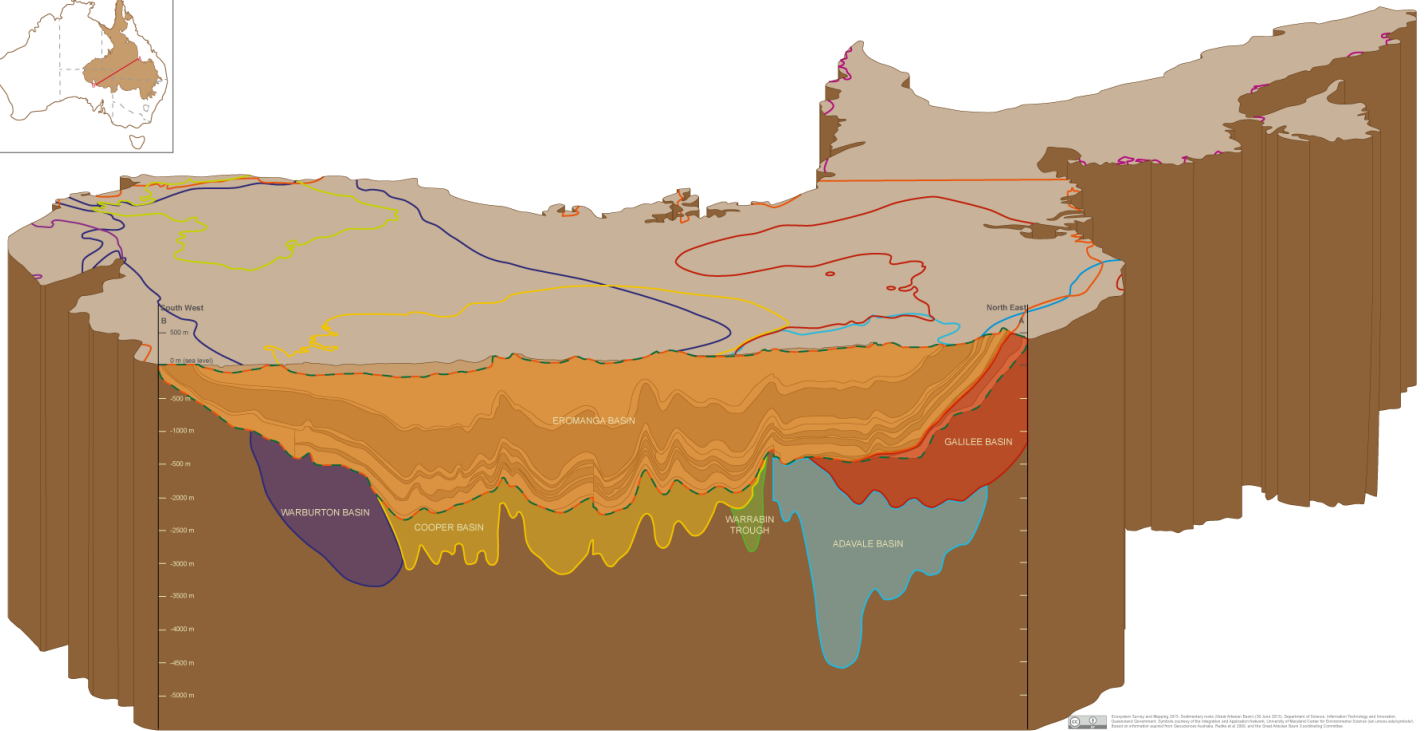
Sedimentary rocks (Great Artesian Basin)

The Great Artesian Basin is a hydrogeological basin containing layered formations of Cretaceous, Jurassic and Triassic sedimentary rocks of variable grain size and permeability. The Great Artesian Basin is composed of various geological basins and sub-basins. Sedimentary rocks may store and transmit groundwater through intergranular pore space, fractures and weathered zones. The geological formations shown in the cross-section of this model will apply to the Queensland Lake Eyre Basin (drainage basin) footprint.












Sedimentary rocks with coarser grain size (for example, the Precipice Sandstone) are generally more permeable than those with finer grain size (such as the Wallumbilla Formation). Groundwater can discharge locally (e.g. springs) at the surface from the sedimentary rock aquifers typically along footslopes, fault or fractures. Younger geological material such as those that comprise the Lake Eyre Basin (drainage basin) may overlie the sedimentary rocks of the Great Artesian Basin and these landscapes are depicted in other conceptual models.

- Sedimentary rock aquifers may provide a range of ecosystems with water required to support their fauna and flora communities, ecological processes and delivery of ecosystem services.
- Palustrine (e.g. swamps), lacustrine (e.g. lakes) and riverine (e.g. streams and rivers) wetlands may depend on the surface expression of groundwater from the underlying sedimentary rock aquifers.
- Terrestrial vegetation may depend on the subsurface presence of groundwater, typically using deep roots to access groundwater in the capillary zone above the water table.
- Unconfined sedimentary rock aquifers may support aquifer ecosystems which can be indicated by the presence of stygofauna.

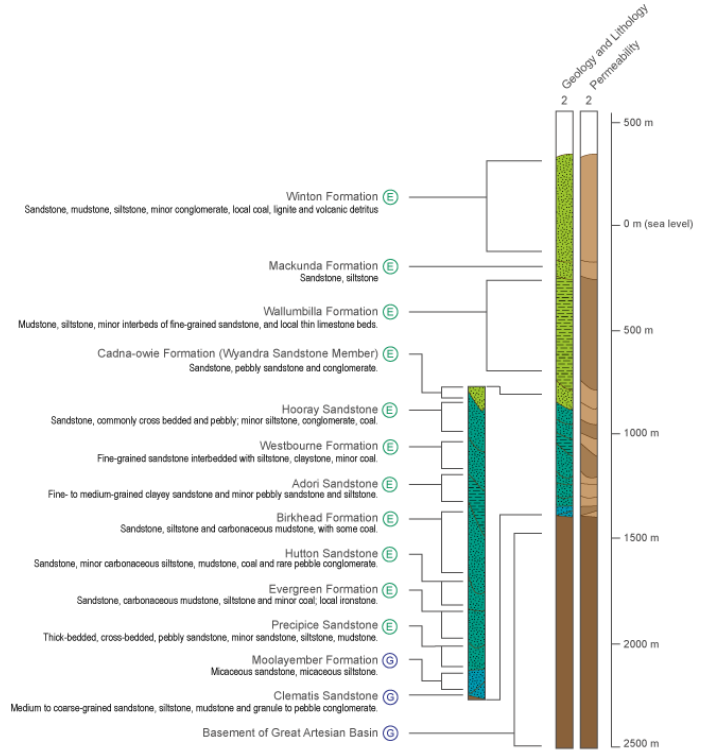
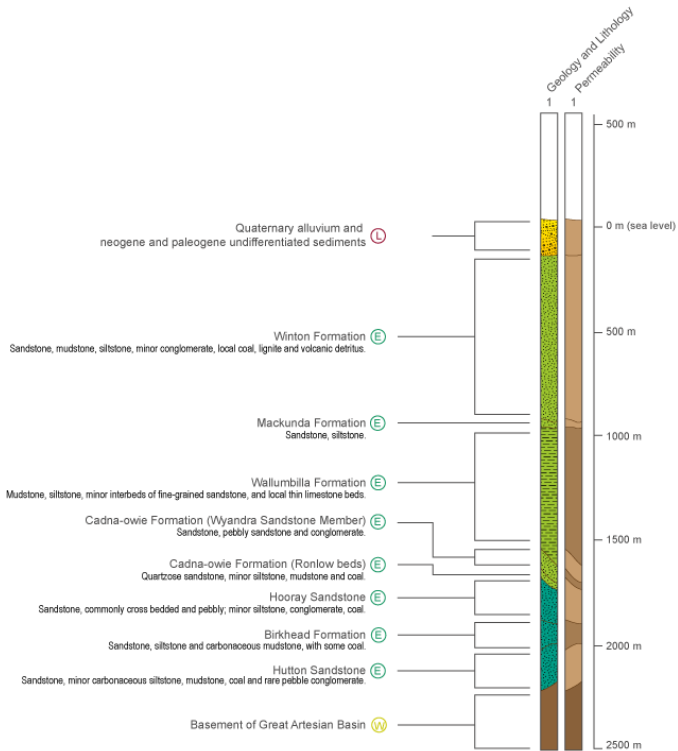
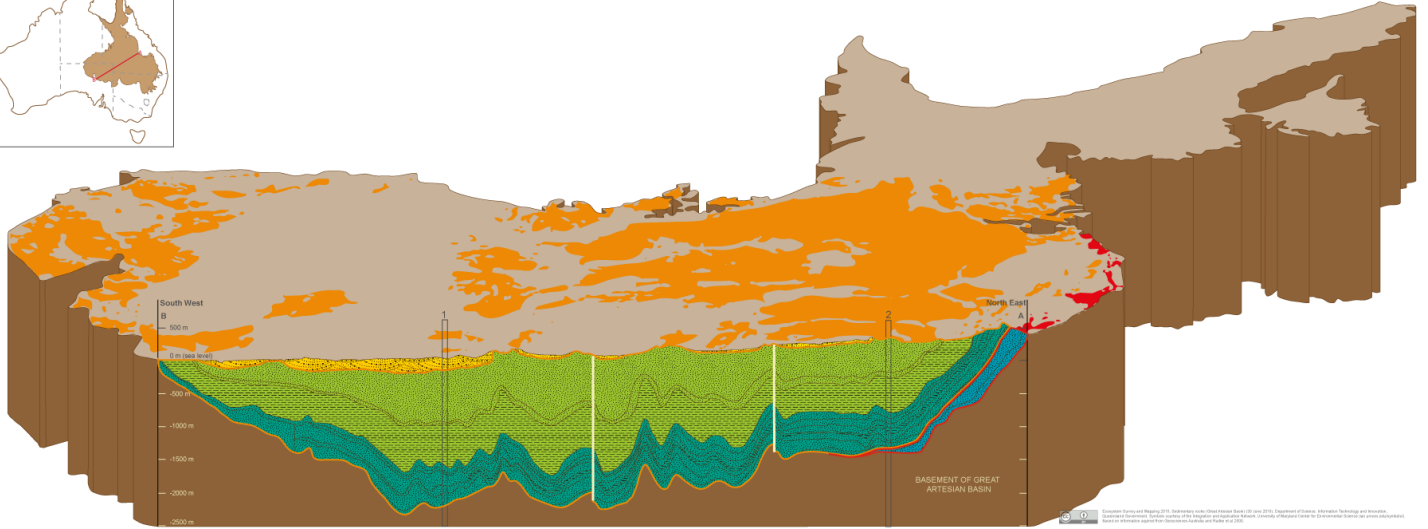
Sedimentary rocks of the Great Artesian Basin and overlying and underlying basins



Geological and hydrogeological basins legend

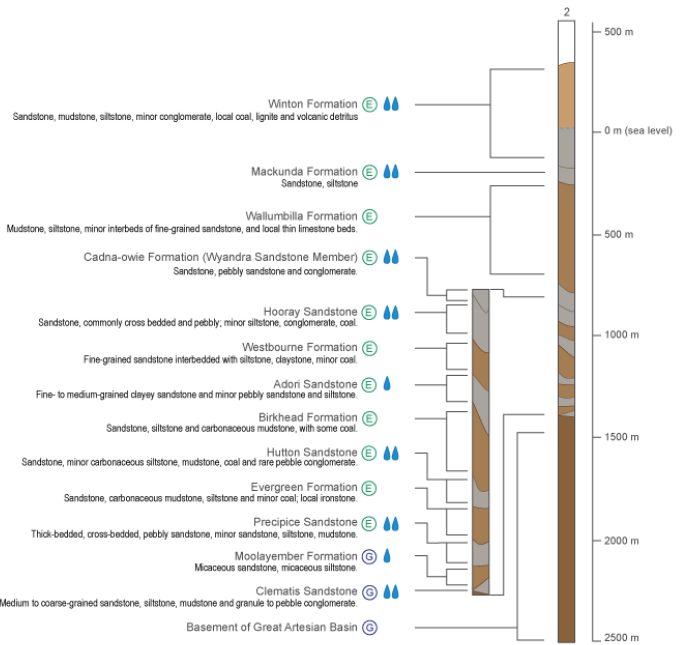
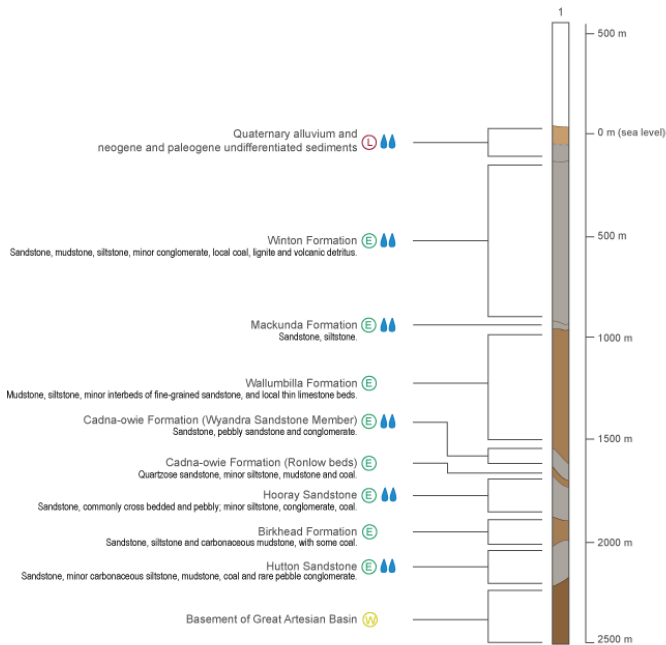
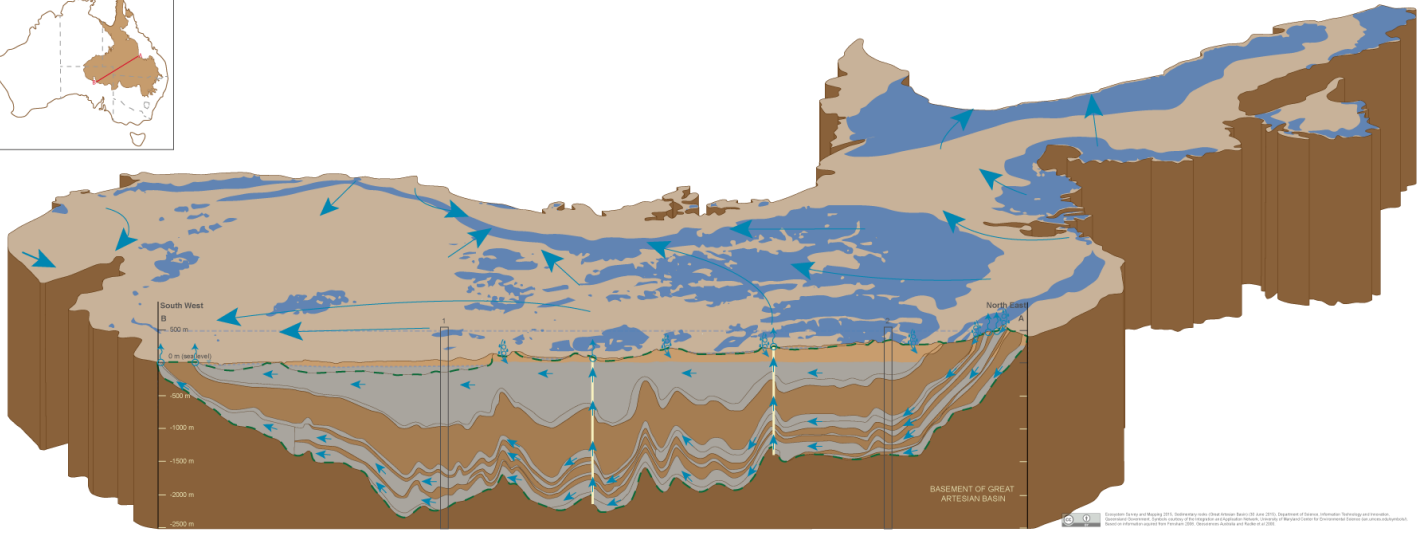
	Adavale Basin Cross-section of geological basin		Eromanga Basin Surface extent of geological basin
	Adavale Basin Surface extent of geological basin		Galilee Basin Cross-section of geological basin
	Arckaringa Basin Surface extent of geological basin		Galilee Basin Surface extent of geological basin
	Carpentaria Basin Surface extent of geological basin		Great Artesian Basin Cross-section of hydrogeological basin
	Cooper Basin Cross-section of geological basin		Pedirka Basin Surface extent of geological basin
	Cooper Basin Surface extent of geological basin		Warburton Basin Cross-section of geological basin
	Drummond Basin Surface extent of geological basin		Warburton Basin Surface extent of geological basin
	Eromanga Basin Cross-section of geological basin		Warrabin Trough Cross-section

Geology of the Great Artesian Basin



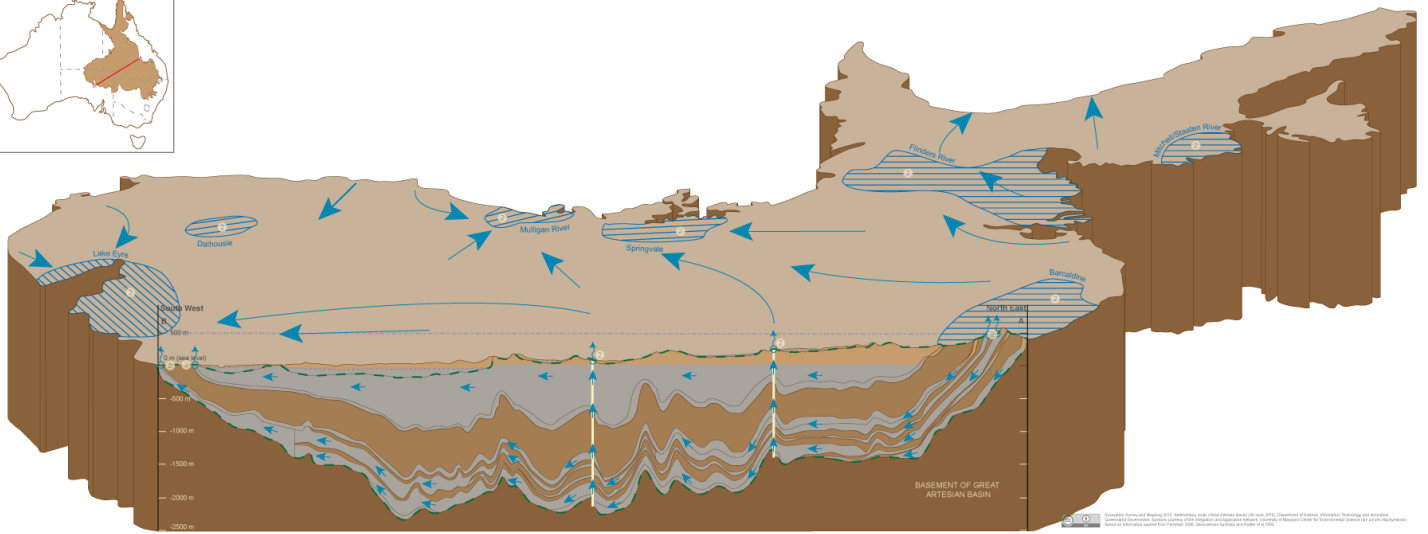
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Groundwater hydrology of the Great Artesian Basin























Geological Survey and Mapping 2011. Sedimentary rocks (Great Artesian Basin) Version 1.0. Department of Science, Information Technology and Innovation, Queensland Government. Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. Based on information acquired from Radde et al. 2001.














Groundwater dependent ecosystems of the Great Artesian Basin




Geology legend

	Quaternary 0 - 2.6 million years ago		Basement
	Neogene and Paleogene 2.6 - 66 million years ago		Eromanga Basin Cross-section of geological basin
	Cretaceous 66 - 145 million years ago		Eromanga Basin Surface extent of geological basin outcrops
	Jurassic 145 - 201 million years ago		Galilee Basin Cross-section of geological basin within the Great Artesian Basin
	Triassic 201 - 252 million years ago		Galilee Basin Surface extent of geological basin outcrops
	Alluvia Unconsolidated sand, clay and gravel		Fault
	Basalt		Eromanga Basin Geological basin of stratigraphic layer in column
	Clay		Galilee Basin Geological basin of stratigraphic layer in column
	Sandstone		Warburton Basin Geological basin of stratigraphic layer in column
	Moderate to high permeability rock Stores and transmits groundwater through void spaces in the rock		Lake Eyre Basin River basin of stratigraphic layer in column
	Low permeability rock		

Groundwater hydrology legend

	Moderate to high permeability rock (unsaturated)		Groundwater table
	Moderate to high permeability rock (saturated) Stores and transmits groundwater through void spaces in the rock		Potentiometric surface
	Low permeability rock (unsaturated)		Infiltration Rain collects on the land surface and infiltrates through the soil recharging the aquifer below
	Basement (unsaturated)		Direction of groundwater movement
	Recharge areas Surface extent of recharge zones for the Great Artesian Basin		Spring A hydrogeological feature by which groundwater discharges naturally to the land or cave surface
	Locally significant source of groundwater		Spring clusters
	Regionally significant source of groundwater		

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.
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Citation

Queensland Government (2017) *Groundwater dependent ecosystem pictorial conceptual model 'sedimentary rocks (Great Artesian Basin)'*: version 1.5, Queensland Government, Brisbane.