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Groundwater dependent ecosystem pictorial conceptual model ‘Silkstone Formation’

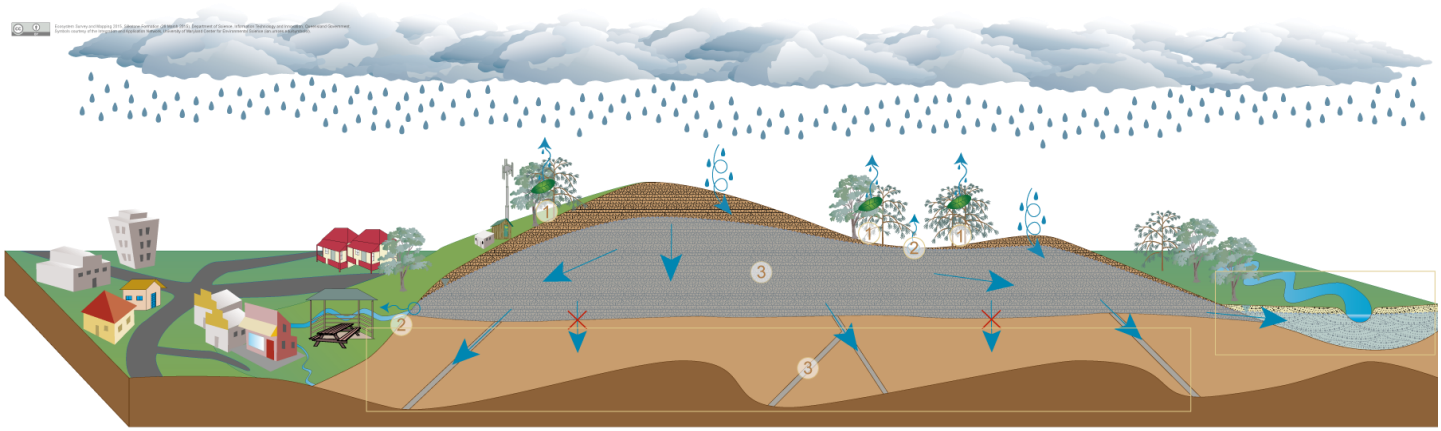
Version 1.5

Silkstone Formation

The Silkstone Formation is mostly comprised of limestone and basalt, both of which may store and transmit groundwater through intergranular pore space, fractures and weathered zones. Groundwater may discharge typically along foot slopes and drainage lines from these permeable rock aquifers. In South East Queensland the Silkstone Formation is restricted to the Ipswich and Redbank Plains areas and one other small occurrence of limestone occurs south of Peak Crossing. In the conceptual model above, the Silkstone Formation is shown as limestone with inter-bedded basalt flows throughout the Silkstone Formation.

The permeable rock aquifers of the Silkstone Formation may provide a range of ecosystems with water required to support their plant and animal communities, ecological processes and delivery of ecosystem services.

- Palustrine (e.g. swamps) and lacustrine (e.g. lakes) wetlands and riverine (e.g. streams and rivers) water bodies located on Silkstone Formation may depend on the surface expression of groundwater from these permeable rock aquifers.
- Terrestrial vegetation along foot slopes and drainage lines on Silkstone Formation may depend on the subsurface presence of groundwater in these permeable rock aquifers where groundwater is typically accessed through the capillary zone above the water table.
- Weathered rock aquifers in permeable rocks may also support ecosystems within the aquifer itself, which sometimes is indicated by the presence of stygofauna.
- This discharge of groundwater from permeable rock aquifers may also support nearby channels, alluvium and associated aquatic ecosystems through prolonged flow or groundwater recharge.



Geology legend

Limestone
With extensive secondary porosity

Moderate to high permeability rock
Stores and transmits groundwater through void spaces in the rock

Alluvia
Unconsolidated sand, clay and gravel

Fracture
Stores and transmits groundwater through void spaces created by fractures in the rock

Basement of the model

Groundwater hydrology legend

Limestone (unsaturated)

Limestone (saturated)

Alluvia (unsaturated)

Alluvia (saturated)

Moderate to high permeability rock (unsaturated)

Moderate to high permeability rock (saturated)

Basement of the model (unsaturated)

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

Direction of groundwater movement

Negligible groundwater movement

Groundwater table

Spring
A hydrogeological feature by which groundwater discharges naturally to the land surface or cave

Flora legend

Casuarina spp.

Eucalyptus spp.

Evapotranspiration
Process whereby plants draw water up through their roots and move it out through their leaf pores

Groundwater dependent ecosystem legend

Terrestrial GDEs
Regional ecosystems and riverine wetlands may depend on the subsurface presence of groundwater within the capillary zone for some or all of their water requirements.

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

Queensland Government (2017) *Groundwater dependent ecosystem pictorial conceptual model 'Silkstone Formation': version 1.5*, Queensland Government, Brisbane.