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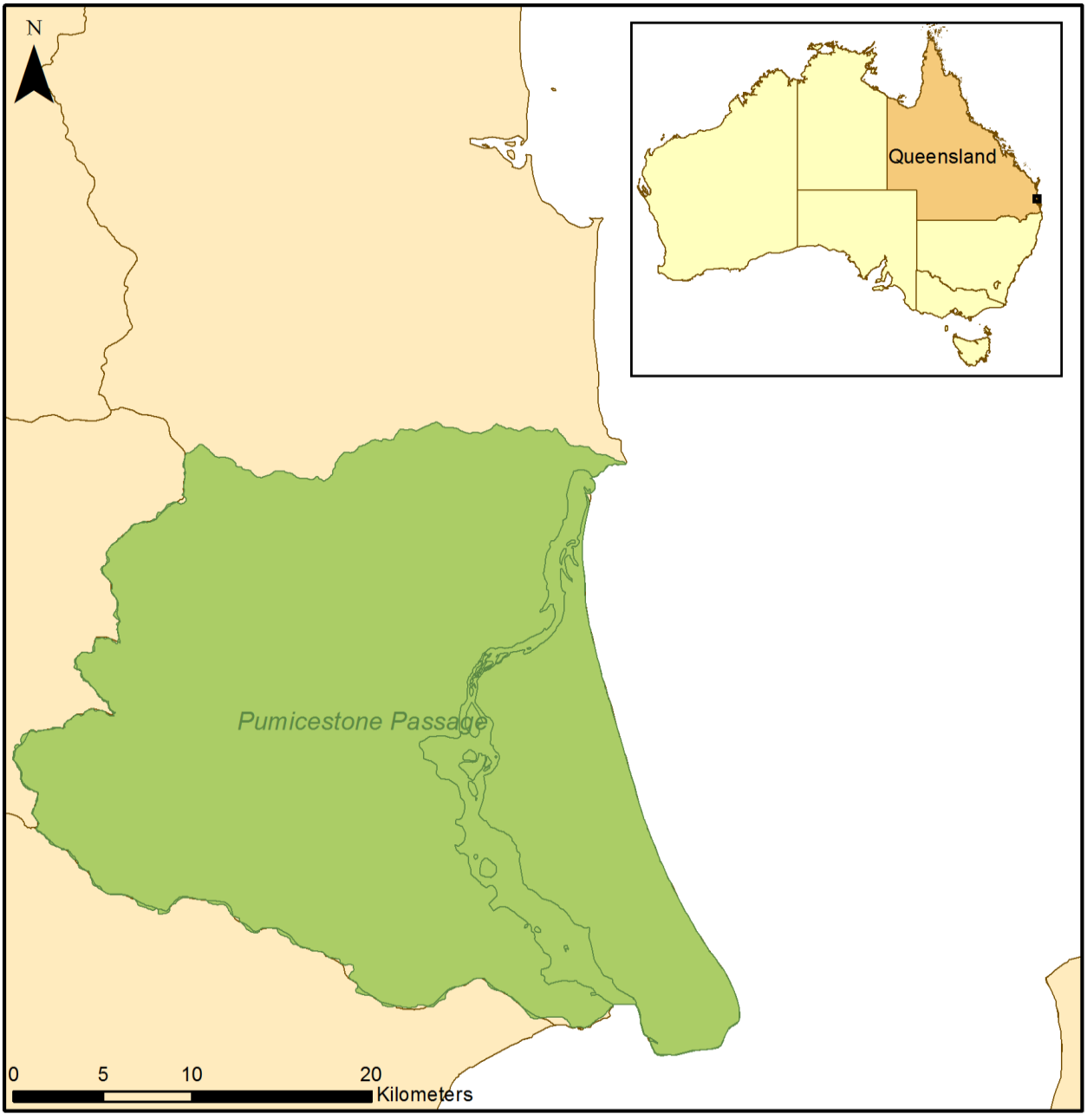
# Groundwater dependent ecosystem mapping rule-sets for Pumicestone Passage

Version 1.5

## Pumicestone Passage




Queensland Government

# Groundwater dependent ecosystem mapping rule-sets

Groundwater dependent ecosystem mapping rule-sets are a combination of attributes (e.g. geology, rainfall, vegetation community, etc.) that describe the drivers, processes and interrelationships occurring between ecosystems and groundwater in a landscape based on local, expert knowledge. When applied to spatial data sets, these mapping rule-sets identify where ecosystems are, or are potentially, dependent on groundwater in a landscape.

## PUM_RS_01 (High rainfall permeable rocks [basalts]–PUM)

Basalt weathers and oxidises relatively quickly in comparison to other rock types. Basalt is permeable and may form aquifers which store and transmit groundwater through the vesicles, fractures and weathered zones of the basalt. Discharge of groundwater is common around the contact between basalt and less permeable underlying geologies. High rainfall (>800 millimetre average annual rainfall) basalt uplands and basalt colluvium associated with the Maleny plateau are included in this mapping rule–set.

- Within 50 metres of the contact between basalt and other less permeable underlying geologies in high rainfall areas, the area may contain surface and/or terrestrial GDEs including lacustrine and palustrine wetlands or remnant regional ecosystems.
- Channels both on high rainfall basalt and associated basalt colluvium, and flowing up to 100 metres from these geologies are potential surface GDEs.
- Potential terrestrial GDEs on colluvium derived from high rainfall permeable basalt include treed regional ecosystems.

## PUM_RS_02 (Coastal deeply weathered geology–PUM)

Deeply weathered sandstones are usually permeable and may therefore store and transmit groundwater. A deeply weathered surface overlies Landsborough Sandstone near Landsborough. The soils are typically well–structured and well–drained permeable soils that readily store and transmit groundwater.

- This mapping rule–set identifies potential surface GDEs on deeply weathered Landsborough Sandstone including lacustrine wetlands, palustrine wetlands, riverine water bodies and channels (represented by drainage lines). Potential terrestrial GDEs on the deeply weathered Landsborough Sandstone include riverine wetlands and regional ecosystems containing deep rooted species. Shallow rooted ecosystems such as grasslands, herblands, forblands or shrublands are excluded.

## PUM_RS_03 (Alluvia_1–PUM)

Alluvial aquifers form from particles such as gravel, sand, silt and/or clay deposited by fluvial processes in river channels or on floodplains. These deposits store and transmit water to varying degrees through intergranular voids. This rule–set identifies potential GDEs associated with episodically saturated alluvial aquifers.

- Potential surface GDEs on alluvial aquifers include lacustrine wetlands, palustrine wetlands, riverine water bodies and channels (represented by drainage lines).
- Potential terrestrial GDEs on alluvial aquifers include riverine wetlands and regional ecosystems containing deep rooted species. Shallow rooted ecosystems such as grasslands, herblands, forblands or shrublands are excluded.

## PUM_RS_04 (Alluvia_2–PUM)

Alluvial aquifers form from particles such as gravel, sand, silt and/or clay deposited by fluvial processes in river channels or on floodplains. These deposits store and transmit water to varying degrees through inter–granular voids. This rule–set identifies potential GDEs associated with intermittently saturated alluvial aquifers.

- Potential surface GDEs on alluvial aquifers include lacustrine wetlands, palustrine wetlands, riverine water bodies and channels (represented by drainage lines).
- Potential terrestrial GDEs on alluvial aquifers include riverine wetlands and regional ecosystems containing deep rooted species. Shallow rooted ecosystems such as grasslands, herblands, forblands or shrublands are excluded.

## PUM_RS_05 (Sandstones–PUM)

Sedimentary rocks (e.g. sandstone, siltstone, shale, conglomerate and coal) may include both confined and unconfined sandstone aquifers. In the Pumicestone Passage catchment this mapping rule–set includes all of the Woogaroo subgroup and a minor area of Landsborough Sandstone near Caloundra.

- Potential surface GDEs on sandstones include lacustrine wetlands, palustrine wetlands and channels represented by drainage lines and riverine water bodies.
- Potential terrestrial GDEs on unweathered sandstones include riverine wetlands and regional ecosystems containing deep rooted species occurring in low parts of the landscape adjacent streams. Shallow rooted ecosystems such as grasslands, herblands, forblands or shrublands are excluded.

## PUM_RS_06a (Alluvia_3–PUM)

Alluvial aquifers form from particles such as gravel, sand, silt and/or clay deposited by fluvial processes in river channels or on floodplains. These deposits store and transmit water to varying degrees through inter–granular voids. This rule–set identifies potential GDEs associated with seasonally saturated alluvial aquifers.

- Potential surface GDEs on alluvial aquifers include lacustrine wetlands, palustrine wetlands, riverine water bodies and channels (represented by drainage lines).
- Potential terrestrial GDEs on alluvial aquifers include riverine wetlands and regional ecosystems containing deep rooted species. Shallow rooted ecosystems such as grasslands, herblands, forblands or shrublands are excluded.

## PUM_RS_06b (Alluvia_4–PUM)

Alluvial aquifers form from particles such as gravel, sand, silt and/or clay deposited by fluvial processes in river channels or on floodplains. These deposits store and transmit water to varying degrees through inter–granular voids. This rule–set identifies potential GDEs associated with near–permanently saturated alluvial aquifers.

- Potential surface GDEs on alluvial aquifers include lacustrine wetlands, palustrine wetlands, riverine water bodies and channels (represented by drainage lines).
- Potential terrestrial GDEs on alluvial aquifers include riverine wetlands and regional ecosystems containing deep rooted species. Shallow rooted ecosystems such as grasslands, herblands, forblands or shrublands are excluded.

### PUM_RS_06c (Low–lying coastal swamps–PUM)

Aquifers associated with low–lying coastal swamps form from particles such as gravel, sand, silt and/or clay deposited by fluvial processes in river channels, floodplains, estuarine, delta and other near–shore environments. These deposits store and transmit water to varying degrees through inter–granular voids and are nearly permanently saturated.

- Potential surface GDEs on aquifers associated with low–lying coastal swamps include lacustrine wetlands, palustrine wetlands, riverine water bodies and channels (represented by drainage lines).
- Potential terrestrial GDEs on aquifers associated with low–lying coastal swamps include riverine wetlands and regional ecosystems containing deep rooted species. Shallow rooted ecosystems such as grasslands, herblands, forblands or shrublands are excluded.

### PUM_RS_08 (Fractured rocks–PUM)

Groundwater is stored and transmitted in the fractures and weathered zones of otherwise relatively impermeable rocks. Groundwater may discharge from fractured rock aquifers typically along foot slopes and drainage lines. In the Pumicestone Passage catchment this mapping rule–set includes all of the North Arm Volcanic Group.

- Potential surface GDEs on fractured rocks include lacustrine wetlands, palustrine wetlands and channels represented by drainage lines and riverine water bodies.
- Potential terrestrial GDEs on fractured rocks include riverine wetlands and regional ecosystems containing deep rooted species occurring in low parts of the landscape adjacent streams. Shallow rooted ecosystems such as grasslands, herblands, forblands or shrublands are excluded.

### PUM_RS_09 (Coastal sand masses–PUM)

Coastal sand masses including sand islands often have one or more sand mass aquifers where groundwater has formed a freshwater lens in the intergranular voids of the unconsolidated sand. Perched aquifers may occur above low–permeability strata within the sand mass.

- Potential surface GDEs on coastal sand masses include lacustrine wetlands, palustrine wetlands, riverine water bodies and channels (represented by drainage lines).
- Potential terrestrial GDEs on coastal sand masses include regional ecosystems containing deep rooted species occurring below 50 metres in elevation. Shallow rooted ecosystems such as grasslands, herblands, forblands or shrublands are excluded.

## Citation

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