

## **Hawksbury Lagoon update August 2019**

Estuary or Lagoon, I have often been asked what is the difference? So thought I would take the time to explain.

An 'estuary' is defined by Kirk & Lauder (2000) as "an inland river valley or section of the coastal plain, drowned as the sea invaded the lower course of a river during the Holocene sea-level rise, containing sea water measurably diluted by land drainage, affected by the tides and usually shallower than 20 m". It is only this type of system that should be referred to as an estuary.

Whereas the term 'lagoon' is commonly applied to bodies of ocean water surrounding tropical islands (which in case you hadn't noticed Waikouaiti is NOT a tropical island).

In marked contrast, the term lagoon is also commonly applied to elongated bodies of water, more or less parallel to the coast, occurring at river mouths in temperate and high latitudes. However, to make a clear distinction this second form of lagoon is termed a 'Coastal Lagoon'. "A coastal lagoon is separated from the ocean by a barrier, connected to the ocean by one or more restricted inlets, and having depths which seldom exceed a couple of metres. A lagoon may or may not be subject to tidal mixing, and salinity can vary from that of a coastal fresh water lake to a hypersaline lagoon, depending on the hydrologic balance" Kirk & Lauder (2000).

Kirk & Lauder go on to define coastal lagoons into three subtypes: choked, leaky and restrictive. The Hawksbury Lagoon meets the definition of a choked lagoon ie choked lagoons usually have a single long, narrow entrance channel and occur on coasts with high wave energy. Although these lagoons may be affected by high tides, the entrance channel serves as a filter that largely eliminates tidal currents and water level fluctuations inside the lagoon. Choked lagoons may have long flushing times, dominant wind forcing or river runoff events. The water body is typically fresh or brackish, and the lagoon is more usually closed from the sea than open to it. Coastal choked lagoons are significantly vulnerable to human use of the surrounding lands and contributing catchments through changes to hydrological (irrigation, ditches etc) regimes, their sediment and chemical input loads. They are also more vulnerable to global climate change through the possibility of accelerated sea level rise that may increase rates of coastal erosion.

Imagine the Hawksbury Lagoon without the causeways, what difference do you think they make?

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