



# Natural history and values of the kanamaluka/Tamar estuary

## *Formation, function and ecology*

The kanamaluka/Tamar estuary is unique in many ways. Fed by five major river systems, it drains the largest catchment in Tasmania, and the estuary itself is the longest navigable estuary in Australia. Home to many unique and sometimes threatened plant and animal species, it is truly a special place.

### **HOW WAS IT FORMED?**

In the early geological history of Tasmania, the Tamar Valley didn't exist and was instead a large peneplain, or dolerite capped lowland area, that had been worn down by millions of years of erosion. From 95 to 65 million years ago, stretching of the earth's crust created earthquakes that split this peneplain apart, creating the highland areas of Mt Arthur, Mt Barrow and Ben Lomond to the east and the Western Tiers to the west. Between them a deep trough extended from the Bass Basin, which is now Bass Strait, to the midlands plains. Rivers flowed into the trough creating a lake which later became the Tamar Valley. It filled up with unconsolidated gravels, clay and sands and boulders and about 55 million years ago the lake was breached and drained.

Over a long time period (25 million years) the South Esk River wandered through the old lake sediments. Being unconsolidated, they were easily eroded and carried out into the Bass Basin. This has created the Tamar Valley – a low trough 10 kilometres wide, bordered on each side by dolerite hills. It stretched beyond present day Launceston as far as Evandale. Forty-seven million years ago the

South and North Esk rivers met at the mouth of Corra Lynn Gorge.

Between 35 and 47 million years ago, several large lava flows occurred in the north, middle and southern parts of the valley. The lava cooled to form basalt. In the middle sections the basalt capped the old lake sediments, preserving them from further erosion. This can be seen at Grindelwald, Windermere, and north of Hillwood.

Basalt at Rowella and Bell Bay forced the river to keep to its channel, preventing it from eating sideways into the old sediments and blocking the river for some time at Whirlpool Reach and Bell Bay, creating new lakes in the valley again, which were eventually breached and the Tamar resumed its old course.

About 32 million years ago, a lava flow from the Cocked Hat Hill, near Breadalbane, blocked the South Esk River at Evandale, diverting it west to join the Macquarie, Lake and Meander Rivers. They overflowed the dolerite barrier at Hadspen, carving out the Cataract Gorge, through which they flowed into the Tamar Valley.



Photo taken by local historian and geomorphologist, Peter Cox.

## DROWNED RIVER VALLEY

About 5 million years ago seawater invaded the Tamar Valley, drowning the lower parts of the valley and turning the Tamar from a river into an estuary. Changes in sea level occurred frequently, especially over the past 2 million years with the Ice Ages. In times of lower sea level, the Tamar continued to erode down into the sediments, forming what would later become a shipping channel.

With high sea levels it became an estuary and began to fill with more sediments as the rivers eroding the sides of the valley deposited their silt in the estuary. The most recent major change is the sea level rise that occurred between 13,000 and 6,500 years ago.

Drowned river valleys exist in many other locations around the world, and the natural process of drowned river valleys is to infill with sediment. Tidal influences cause sediment input from various sources to accumulate on the edges of the estuary, creating mudflats. As they consolidate, these mudflats create space for reeds and other vegetation to establish, which in turn creates habitat for various animal species.

The consolidation of mudflats on the edges of the estuary also allows for distinct channels to form, with flows directed through these channels. This process establishes the banks of the estuary and stabilises the system.

### Biodiversity and natural values

The kanamaluka/Tamar estuary is home to a diverse range of plants and animals.

The upper estuary is part of the Tamar River Conservation Area, and the mud flats and shoals of the upper estuary provide an

important space for migratory birds, such as herons, oystercatchers and chestnut teals to forage for food. Many of these birds are protected by international agreements and BirdLife International has recognised the area as an Important Bird Area.

The Tamar Island Wetlands Reserve is within the upper estuary conservation area and provides important habitat for a wide variety of species, including plants, birds, mammals, reptiles, frogs, fish and invertebrates. It is an important breeding area for the nationally vulnerable green and gold frog (*Litoria aurea*), and home to the rare striped marsh frog.

Reptiles also make their home in the reserve including the rare glossy grass skink, with the most commonly seen reptiles being the metallic skink and lowland copperhead.

The common rush (*Phragmites australis*) dominates the landscape creating one of the last native grass wetlands in the Tamar estuary. In summer the rare great bindweed (*Calystegia sepium*) twines up the Phragmites stems.

The swamp paperbark (*Melaleuca ericifolia*) threatened vegetation community is found in several places along the kanamaluka/Tamar estuary, along with nationally threatened saltmarsh communities.

The lower end of the estuary has more of a marine influence and is home to large numbers of endemic species that are not found anywhere else, including seahorses, sponges and soft corals. Highly productive kelp forests and seagrass habitats are also found near the mouth of the estuary and provide important habitat for these special marine species.



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