

Tamar Valley Geology Determining the First People's Occupation of Northern Van Diemen's Land

Ian Pattie, November 2020

When William Collins sailed down the waterway now known as the Tamar, but which he called the Main Head in January 1804, he eventually reached and entered an Arm to the East, the North Esk, and wrote in his logbook¹ that “the water is perfectly fresh and good”, it flowed over a flood plain and “the Soil on its banks is very good and there is a great extent of it.”

He was describing the delta of the North Esk and the conditions the First People had known about for 40,000 years², as water source, food source and pathway.

On his return to the Main Head he examined the South-west arm, observing a cascade “between perpendicular Rocks about one hundred and fifty feet high; the beauty of the Scene is probably not surpass'd in the World.”³ He also noted that the Main Arm “abounded with Swans, Ducks, and other kinds of Wildfowl.

Collins was awestruck.

His vivid description of the majesty of Cataract Gorge would not have surprised the First People. Natural beauty creates a sense of wonder that is not diminished by an understanding of the forces that created it.

Traversing the Cataract Gorge does not lessen the wonder.

Moving upstream from the entrance to The Gorge, explorers of all eras scramble over narrow, rock-walled, short valleys, four natural basins and impressive rock platforms. The Gorge is, and was, a place of wonder and, for the First People, the wonder translated into a place of ceremony.

Aboriginal Elder Patsy Cameron said that The Gorge was a meeting place for storytelling, song, and dance in the way that all landscape tells a story and the phases of the moon “tell us when we're going to meet somewhere at a certain place, for instance here at the Gorge to dance and conduct ceremonies and exchange information,” she said.⁴

Eleven months after Collin's encounter with this natural phenomenon, Lieutenant-Colonel William Paterson repeated the trip.

Paterson was despatched from Sydney to establish a gaol-colony at Port Dalrymple and become Lieutenant-Governor of Northern Van Diemen's Land (VDL), following Matthew Flinders' revelation to the British that VDL was an island separated from mainland Australia. David Collins had become Lieutenant-Governor of the Southern part of the colony and there was a fear that the French might establish a colony on the Northern shore of VDL.

Within days of Paterson's arrival, on 6 December 1804, he explored what William Collins had called the Main Head and entered the North Esk. He described 48 reaches and passed over four sets of rapids before he abandoned the boats to explore the agricultural potential of the area.

He wrote:

From my Tent there is an extent, which is seen in one View, of nearly three Miles in length, where Thousands of Acres may be ploughed without falling a tree. These Plains extend upwards of ten Miles along the winding Banks, and everywhere equally fertile.⁵

Had he known of the First People of VDL he would have understood that the treeless plain was a clue to a fired landscape.

When he returned to the Tamar, he ventured into the South Esk and reported that “the Entrance into the first fall is picturesque beyond description: the Stupendous Columns of Basaltes on both Sides together with the narrow entrance up to the Cataract, has a very grand appearance.”⁶ He, like Collins, also reported on the large number of black swan fledglings as a food source.

Whether Paterson knew of Collin’s superlatives or not, his realization of the grandeur of the scene was enhanced by his understanding and appreciation of the geology since he was an enthusiastic scientist and, eventually, a member of the Royal Society. The First People, William Collins and William Paterson shared a sense of awe. Collins and Paterson viewed this natural edifice from a small boat whereas the First People most probably stood on rocks in the rapids which extended from the mouth of the North Esk into the South Esk. In the right conditions - low tide in a dry season - the First People could have scrambled across the rapids to the base of the cliffs to gaze in wonder at the huge rocky masses almost overhead. The rocks of the rapids, so prominent in the early years of the gaol-colony, were removed in successive dredges of the estuary’s channel when Launceston was developed into an inland port.⁷

Paterson’s identification of the “Stupendous Columns” as “Basaltes” was a mistake for the material is dolerite. The mistake appears to have started an almost irresistible and unretractable myth that The Gorge was created by volcanic action. Geologist, Doug Ewington, said that confusing dolerite with basalt was an easy enough mistake to make but basalt is the result of volcanic action and the myth, that The Gorge was created by volcanic action⁸ and the First Basin was a volcanic crater, has persisted.

Both Collins and Paterson, and other European intruders and surveyors, commented on the abundance of wildlife, and in all cases, this abundance would have been a welcome diet breaker for ships’ crews. This bounty was already known by the First People for whom, in season, collecting wildfowl eggs, meat and feathers would have been a natural consequence of the rhythm of complex hunter-gathering.

Seasonal food, coupled with a place of ceremony, were conditions for bringing people together on a regular basis. Seasonal bounty and gathering to experience the bounty, combined with ceremony, shows that hunter-gathering was not a serendipitous lifestyle but one of some complexity that the First People created over 40 000 years of occupation.

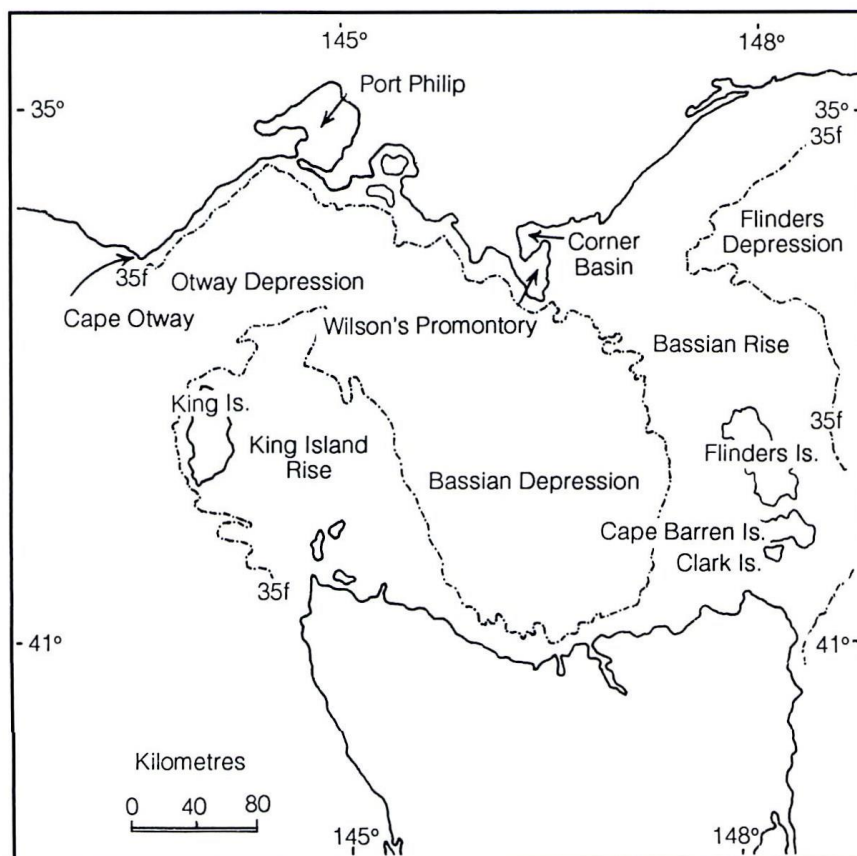
Paterson, of necessity, had to have a different view of the country from Collins. Like Collins, he saw beauty, grandeur and roundabout, an abundant food source for the gaol builders he needed to feed, while they erected their accommodation and tried to establish a foothold in a new territory. However, his observations from his trip up the North Esk, that there was open, ploughable country with plenty of water, gave no hint that he understood how it was that the land appeared this way.

Sculpting the land and managing it

Matthew Flinders' 1798 revelation that Van Diemen's Land's was an island and that there was an extraordinary estuary which had Port Dalrymple at its head, were but two outcomes of geological sculpting over millions of years of volcanic action, glaciation, huge lake development and the laying down of scores of metres of sediment. The First People entered the land some 40 000 years ago, consistently inhabited it for 23 000 years and utilized what nature had gifted them using their evolved technologies.

Volcanic action in the Hillwood area determined the nature of much of the valley and when the First People arrived they came upon the wholly estuarine "Main Head" fed, principally, by two large rivers but several smaller rivers and creeks. They also discovered the majestic rock formations in the South Esk and the rapids which were features of the waterways in what is now the Launceston Basin.

The First People were observers of the loss of the land-bridge and the creation of island Tasmania about 12 000 years ago and were developers of the significant grasslands with few trees along the whole estuary and the tributaries.

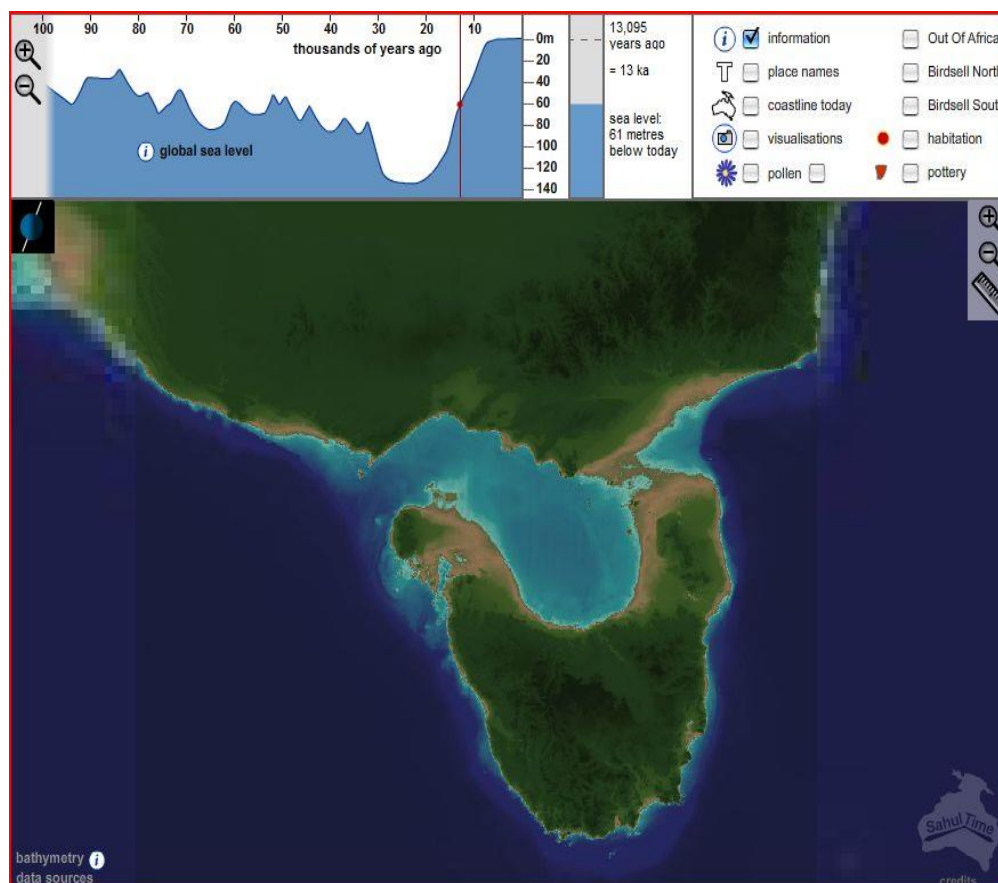


The major features of Bass Strait, oriented along NW-SE and NE-SW lines Eocene, Miocene and Pleistocene Epochs⁹

The tectonic map above, shows the Bassian Rise wherein lay the land bridge and the future islands - Flinders, Cape Barren, Clark and others - and on the opposite side of the Bassian Depression, in the King Island Rise, future islands - King, Three Hummock and others.

The Bassian Rise, the land-bridge from Tasmania to mainland Australia, has the peak, Mt Strezlecki, 756m above the ocean, the deepest point of which is 70m meaning that the First People, 40,000 years ago, had the prospect of an 800+ metre trek from the highest to the lowest point. The decision to take the trek from the land-bridge to the floor of the Bassian Depression, would have depended on what was hoped to be gained in food, water, and ceremony.

The creation of the island occurred during the last of three great episodes of glaciation, 75,000 – 12,000 years ago,¹⁰ but the major upheavals that gave the land its significant and determining features occurred about 70-80 million years ago.



The map indicates that it took about 1000 years to complete the isolation of Tasmania; 13000 years ago, a tiny land-bridge remained: Monash University Sahul Time Project, 2007.

Launceston geologist Doug Ewington wrote that "the later stages of faulting, about 70-80 million years ago ... gave us a recognisable landscape, with the Western Tiers to the south-west of Launceston and the range of dolerite-capped hills and mountains from Mt George to

the Ben Lomond massif East of the Tamar graben (fault valleys).¹¹

This gave us the foundations of today's topography and landscape, developed by the Tamar-Esk river system.¹²

"The final melting of the ice on Tasmania's mountains began about 20 000 years ago, and sea level was finally established at its current level, somewhere between ten thousand and seven thousand years before [the] present. ¹³ Over thousands of years, descendants of the First People were increasingly constrained by the geological evolution of Tasmania and witnessed episodes of the transformation.

The feature which dominates the Launceston landscape is the opposing Esk river systems, almost at right angles, that, in flood time, crash into each other and which, through their power, have created a large, fertile floodplain. It was not always thus.

The North and South Esks originate within 10km of each other on Mt Ben Lomond and taking northerly and southerly routes, drain about 25% of the Tasmanian landmass and deliver the waters into the Tamar Valley.

A volcano in the Hillwood - Batman Bridge area, about 30 million years ago, dammed the Tamar and created a freshwater lake stretching from Whirlpool Reach to Longford, and up to 5km wide in places.

Ewington said, "After some ten million years or so, the Tamar managed to cut through the volcanic barrier which had formed the lake, and it drained away. The river system rapidly eroded the lake sediments, carving out a new landscape."¹⁴

The North Esk is still in the same location but the South Esk ran, more-or-less, down where Wellington Street is today and the erosive power of the combined waterways, coupled with the lower sea level, meant that 30 million-years ago the Tamar had huge potential to transform the land as it flowed through the former lake, across the Bassian Plain and into the sea as far west as Kangaroo Island, South Australia,¹⁵ but increasingly nearer King Island.

(NB: This route of the South Esk River is contested. An alternative explanation may be found in: **Corbett, K.D.** 2021 (2:vi): Channel to the Strait: the geological history of the Tamar Valley-Launceston area. *Papers and Proceedings of the Royal Society of Tasmania* 155(1): xx-xx. ISSN: 0080-4703)

Millions of years later, remnants of the South Esk's Wellington Street route would have been seen by the First People and the English soldiers, convicts and settlers in Glen Dhu Creek which flowed to the Tamar and the Kings Meadows Rivulet, and thereafter into the North Esk. Glen Dhu Creek, flowing approximately down Margaret Street, and entering the Tamar Basin in any spot east of the Ritchies Mill rock outcrop, accommodated enough tidal water to float barges up to the Margaret Street Brickfields. The huge clay resource of the Margaret-Wellington Street ridge, used by early brickmakers, was laid down by the huge Lake Tamar.

The debate about how the South Esk finally flowed through Cataract Gorge, creating today's well-known spectacle, is a debate about which is the major river, and which is the tributary.

Ewington hypothesised:

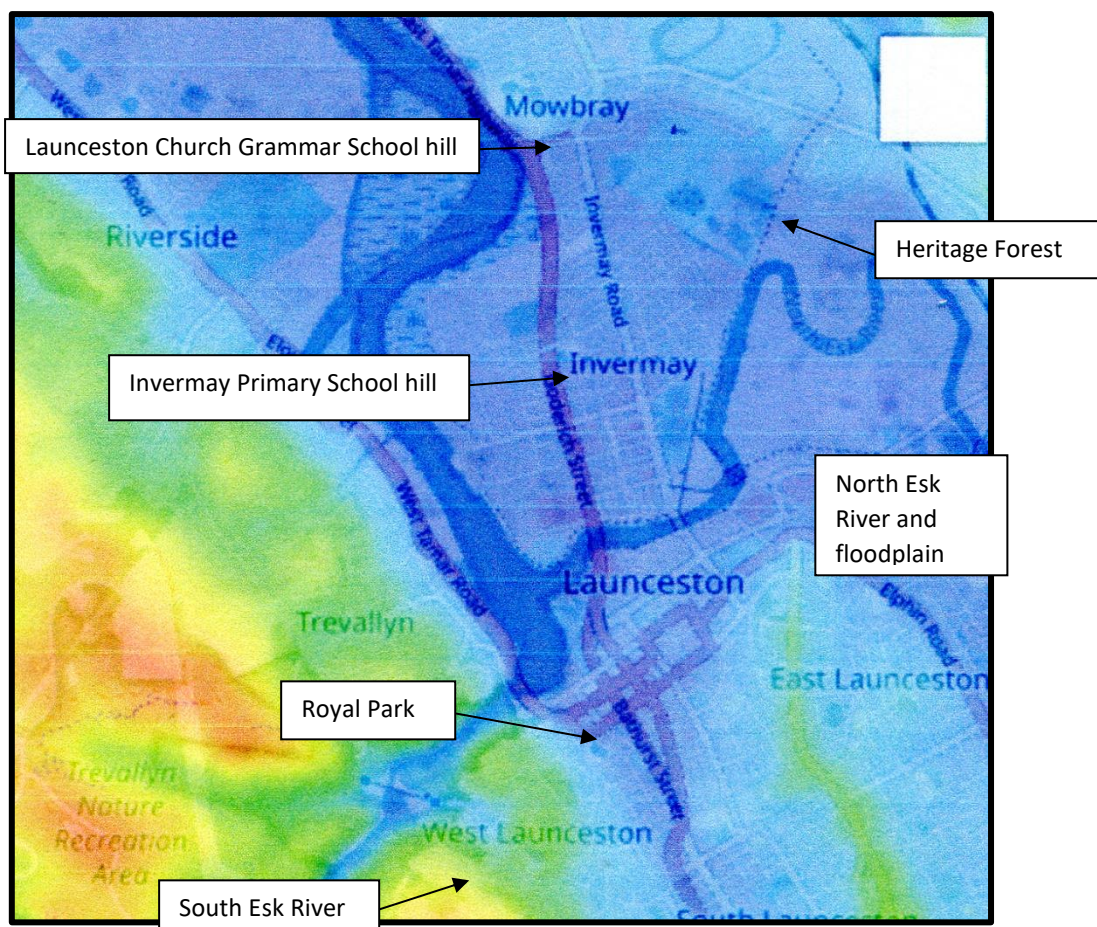
I believe that approximately 15 million years ago the South Esk, somewhere between Western Junction and Evandale, struck solid rock in the form of the lava flow which underlays the runway of Launceston Airport and is exposed in the quarries south and southwest of there, and changed course.

Rivers are 'lazy' and seek the easiest way to the sea. To avoid the basalt and dolerite north of Evandale, the South Esk swung westward and flowed across the flat ground, underlain by relatively soft rocks, until it encountered the Lake River near today's Longford.

This greatly enlarged stream then flowed into the Meander and thus down the Gorge. Today we see the Meander and Lake as tributaries of the South Esk, but this wasn't always the case.¹⁶

The nature of river action through basalt is to dig deep and create steep-sided gorges, hence, Cataract Gorge.

Also, according to Ewington, and often stated in discussions on siltation of the Tamar Basin, the North Esk's conjunction with the Tamar is about as far South now as it has ever been in the last 12,000 years.



Launceston topographic map, elevation, relief: [topographic-map.com; https://en-au.topographic-map.com/maps/jvw8/Launceston](https://en-au.topographic-map.com/maps/jvw8/Launceston); accessed 29 Nov. 2020

This means that different generations of the First People would have been able to watch the North Esk charge its way into the Tamar at points as far North as the Mowbray Hill and its present outfall. The people would have watched as frequent floods flowed over and through the North Esk delta and, at different times, break through the sedimentation at several spots but never eroding the hill on which sits the Invermay Primary School.



Part of the North Esk delta from Ravenswood

This one-time part of the Church of England Glebe was the location of some of Launceston's first farms, Ian Pattie photograph, 2020

Therefore, when Flinders, Collins, Paterson et al sailed into the estuary they sighted land on both sides that had, over millions of years, been sculpted by upheavals and a great lake laying down sediments and, eventually, productive soils that had, for thousands of years been the material resource of an ancient people.

Further, William Paterson did not know, or had not yet realized, despite the time he had already spent in New South Wales, that the North Esk land, with its “thousands of acres [that may] be ploughed without falling a tree”, were further changed by the combined result of First People land management and “the biological attributes of the eucalypt forests, and the natural successional processes within them.”¹⁷

This two-barrel explanation:

- Firestick land management; and

- The natural attributes of eucalypts

would have been contested by Prof. Bill Jackson, who, according to Prof. Rhys Jones, said that you could only explain the floristic diversity of Western Tasmania through one factor, the frequency and intensity of fire.¹⁸ Jackson also said that in his opinion this was not just a natural regime, but that what we were looking at in Western Tasmania, was a legacy of a major impact of fire-induced vegetational diversity.¹⁹

Rhys Jones cited the George Augustus Robinson journals of 1829 -1932. Robinson revealed that the landscape of Western and North-western Tasmania was composed of areas of “open sedge-lands” and “little groves separated by open country [and the Aborigines] not only applied the fire to open country but they also tried to put the fire out as it got close to the groves.”²⁰

By extension of both Robinson and Jackson’s words, and because of interaction between First People clans, the same effect would have been seen in the huge Tamar Valley and its hinterlands to the West and East just as Paterson observed.

The records of other settlers revealed that the firestick practice had to be regular and consistent, because the Tasmania flora rapidly reclaimed its position. In 1840-1850, wrote Rhys Jones, “poet and ecologist” Mrs Louise Meredith²¹ said that the Aborigines had ceased burning in Eastern Tasmania and in 30 years a great change had come about in the countryside. Of the former open parkland appearance of the area, she said to her husband Charles:

This looked like a great romantic English scene, like a great park with these trees and open country. Terrific! And now look at it! Terrible bloody stuff! Thick bush everywhere and these terrible fires coming through every now and then.²²

The 30-year observation of the rapid return to thicket from open grassland, not only showed the need for consistent burning to achieve the parkland appearance, but also indicated the need for a burning regime if the First People were to manage the flora and fauna resource they inherited.

Firestick land management was customary amongst the Australia’s First People and evolved into burning with ceremony.

John J. Bradley, said, “Fire is but one event which is related to many others,”²³ and here he was talking about the ceremony and regulations that accompanied the firing of different parts of the country. His is a Northern Australia experience, but relevant, and he adds that burning the country “is a social and cultural power as well as a biological and physical power” unlike the “European-origin culture where smoke seen in the distance or the lighting of fire is seen as a signal of distress.” To the First People “smoke from the country that is burning tells the observer that everything is good, the people on the land are well, and doing what is required of them.”²⁴

The emotion of which he speaks relates to the 10 Yanyuwa words for fire and smoke, a demonstration of continuity with the ancestors and practice that does not offend the spirits. It also relates to land rights through utilisation, respect for traditional elders in seeking permission to burn and respect for the country of ancestral spirits.

William Collins and William Paterson, without having the luxury of Robinson's years of residence with observation, recorded what the First People already knew: the Tamar Valley was a beautiful area with an abundant food source, but what was more disconcerting for the First People, it was an area able to support Northern Hemisphere farming practices.

From Robinson's observations of firestick practice it is inferred that at some time in the 40 000 years of human habitation in Tasmania and the 23 000 years of consistent habitation, the First People would have looked down from the higher levels of the land onto the Bassian Depression and seen a cold desert with a sparse cold-climate flora.

The people would also have been able to see the combined waters of the North and South Esks winding its way across the Bassian Plain to flow into the ocean near King Island.

With the rise of Bass Strait, the waterways, more and more affected by estuarine water, entered the long-term flocculation process which continues today. Salty water causes silt particles to clump and settle creating the huge resource known as the North Esk delta and the Tamar mud flats.

Plants regrowing in rich silt, attracting bird and other animal life, would have created a pattern of lifestyle with ceremony for the First People as they followed paths from wetlands to drylands for the seasonal bounty.

The North Esk is not the only waterway in the Tamar region to create a delta, but it is the most significant.

In this region, where three First People Clans intersected, the forces of nature sculpted the land, organic elements created the living diversity, the First People evolved a relationship with the environment and the First Europeans exploited their happenstance.



The North Esk confluence with the Tamar shows Royal Park, unformed, and still part of the flood plain long after Launceston was a thriving settlement.

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