

# Restoration of the Buckley Swamp, formerly known as The Great Swamp (*Ko.nung.i.yoke*) at Yatchaw, Hamilton, SW Victoria



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***Front cover wetland location map***

This map is an extract from the Fire Map 2003 Edition West for Hamilton region (T7322 - 1:100,000), Victoria (Spatial Information Section of the Department of Sustainability and Environment).

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# **Proposal for the restoration of Buckley Swamp, formerly known as The Great Swamp (*Ko.nung.i.yoke*) at Yatchaw, Hamilton, SW Victoria**

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## **Background to the drainage scheme**

The *Great Swamp* (later called Buckley Swamp) and the land upstream through McIntyres Ck to Cox's Creek once covered an area of 3,000 ha of volcanic plain in SW Victoria, 12 km south of Hamilton. It formed after the volcanic eruption at *Tappoc* blocked the river valley SW. One motivation for drainage was the increased demand for arable land when the alluvial gold ran out and miners turned to the land to earn a living. Drainage was one way to acquire rich soil. In 1888, after several uncoordinated efforts in the 1870s (Bruni 1903), farmers in the Buckley Swamp area had the Yatchaw Drainage Trust gazetted, on 2428 ha of land (Anon. 1993a). Water from Cox's Creek, rising near Penshurst, feeds this swamp. The aim was to drain water into Muddy Creek by digging a channel at the NW end, and providing a drain along the centre of the swamp to the SE end. This enabled the land to be cultivated and grazed, although the peat soil can cause a molybdenum-induced copper deficiency in cattle.

After 1888 the main drain was progressively deepened and widened to the present depth of approximately 5 m and a width of 3-4 m at the base. That was largely accomplished by 1949, after the fires of 1944 had burned much of the peat (the fire burned until extinguished by the floods of 1946) and erosion by wind and water allowed the drains to silt up (PBRC 1980). The 1983 fire burned peat too.

Since 1888 landholders have contributed a little towards the maintenance costs of draining Buckley Swamp, with the major part (of the order of 80%) paid for by the general taxpayer. Some 28 or 30 landholders contributed to the scheme in 1980, claimed to cover a catchment of 24,000 ha, when the operations of Drainage Trusts were reviewed by the State Government (PBRC 1980). The engineer retained by the Trust expressed the view that barriers should be put in the drain to hold moisture in the soil through summer, so effective had the drains been in disposing of water from the catchment (see also Bruni 1903). This Drainage Trust was transferred to the former Dundas Shire in 1993 (Anon. 1993a).

In a wet winter the Great Swamp floods (Figs. 2-5) and waterbirds flock in thousands to the partially and temporally restored wetland, as they did in the spring of 2004.

## **Restoration of the wetland**

With the provision of a weir on the outflow drain (see map on front page), this wetland could be restored to its condition of the 1800s. Wetland restoration is simple and, with the size and characteristics of this 2,500-ha wetland, it would have a profound impact on regional, national and international waterbird ecology. The land is only used now for grazing at times in the year when it is sufficiently dry. Some 300 ha is Crown land, occupied by DPI, but the remainder would need to be acquired over time.

The restoration of Buckley Swamp would add enormously to the diversity of habitat and species protected, with the prospect of increased breeding success for Brolga, Magpie Geese, Ibis, and a host of other species, including the Australian Bustard and the Eastern Barred Bandicoot. Research by Birds Australia and other organisations confirm observations that species once common, but now rare or of restricted distribution, need large areas to survive. For example, predation by foxes limits Brolga breeding on small swamps and dams.

The tourist potential of a re-flooded and properly interpreted Buckley Swamp could be much more significant to the local economy than the agricultural return from that land. The wildfowl spectacle – with Brolga, Black Swan, Magpie Geese, Ibis, Snipe and many species of duck as key features – would be a major attraction for visitors on the "Volcanic Trail".

Another prospect, in an era when water storage both surface and underground is now widely recognized to be severely limited, is the ability of The Great Swamp, which has no natural outlet, to function as it once did in replenishing underground reserves of fresh water for the southern district. It could also be used to supplement Hamilton's water needs for the future.



Photo 1.

Discharge drain, passing beneath Forans Rd bridge and flowing downhill into Muddy Creek, some 400 m distant.

This drain created considerable erosion at this end when first constructed.

Photo in Feb. 2007.



Photo 2.

The drain from Buckley Swamp at the Yatchaw Rd Bridge in Feb. 2007, looking upstream, SE. The drain is some 5 m deep and 3-4 m wide at the base.

This is near the original N “edge” of the swamp. The drain extends through to the centre of the swamp and to the far south. A branch also extends east s up towards Cox’s Creek, Tabor.



Photo 3.

The drain from Buckley Swamp at the Yatchaw Rd Bridge in Aug. 2004, looking upstream, SE.

An enormous volume of water was discharged through this drain at this time, flooding Muddy Creek.

This was a wet month, when part of Buckley Swamp flooded and stayed wet for many weeks.



Photo 4.

Off Research Station Rd, looking east from the old AI shed that sits on a spur of land that projects into the swamp.

The bank of the swamp can be seen to the right (south) in this photo. The distant part of the bank is the position of the next photo (Photo 5).

Photo taken in Aug. 2004.



Photo 5.

Further south along Research Station Rd, looking north across the swamp from another vantage point on the bank of the swamp.

This is a public road and would provide access to excellent viewing points when the swamp is restored.

Photo taken in Feb. 2007.



Photo 6.

Photo from the same stop as in Photo 5, but in the wet August of 2004.

A good deal of the swamp was flooded at this time.



Photo 7.

Photo looking east across the swamp from the same stop as in Photo 5, but in the wet August of 2004.

The line of the N-S central drain can be seen, in the middle of the flooded section, running left to right across the picture.

The high watermark in the swamp is at the front edge of this scene.

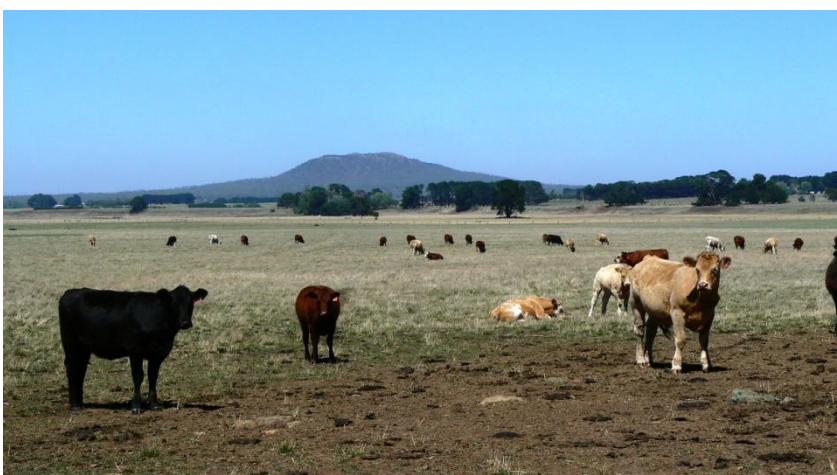


Photo 8.

Photo looking SW across the swamp from an elevated point at the south end of Research Station Rd, some 400 m from Photo 7.

The western bank can be seen, with Mount Napier (Tappoc) beyond. The swamp extends another 2 km to the south.

Photo in Feb. 2007.

The swamp also has enormous Aborigine heritage significance. In the 1960s, Lionel Elmore recorded 25 midden areas there and deposited artefacts with the Museum of Victoria. Robinson noted substantial Aborigine huts on the banks when, in 1841, he visited the Tappoc clan of the *Gunditjmara* tribe who occupied this country (Presland 1977).

## **Historical accounts of the area**

An appreciation of the original nature of this wet landscape before European settlement is best gained through a reading of the early historical texts, particularly those of Tyers (1840), Robinson and Bruni.

### **Surveyor CJ Tyers**

*“3<sup>rd</sup> November, A.M. - resumed our journey in hopes of finding a passage between the great swamp (mentioned by Sir Thomas Mitchell) and Mount Napier, or, should that be found impracticable, to the southward of Mount Napier, heading the numerous swamps, the waters of which run into the long swamp. When, having discovered that we were hemmed in on all sides by swamps and stony ranges we reluctantly returned to our old encampment under Mount Rouse, where we arrived in the afternoon of the 5<sup>th</sup>. From a small hill two miles to the northward of Mount Rouse, we perceived, extending from NW to the eastward of South, distant from one to six miles, innumerable swampy flats, all trending towards the great swamp. The only opening appeared to be between N and NE.*

*On the morning of the 6<sup>th</sup> we proceeded about 10 miles in a northerly directions, towards Mount Abrupt, then altered our course to west; by which we skirted Lake Linlithgow, and avoided the swamps. Encamped on the Grange Burn, near the Messrs. Wedge's station. November 8th, after crossing an arm of the Grange Burn [Muddy Creek] we proceeded SW, and afterwards west, through a thick forest intersected by numerous swamps, and arrived at Mr Henty's road (leading from his station on the Wannan to Portland Bay) on the 11th.”*

*Between Mounts Rouse and Napier is some fine country but the greater portion consists of swamps...an open forest of stunted banksia extends 6 miles to the northward of Mt Rouse. Open downs, for 2 or 3 miles in width, divide this from an open forest (chiefly of eucalypti) extending some distance east and west of Mount Sturgeon”.*

### **George Augustus Robinson**

Robinson was Chief Protector of Aborigines from 1839-1849 (Presland 1977). He had been instructed by Governor Latrobe to meet with the Aborigines, in order to contain the disputes with the settlers. He rode from the Grange to meet the reputedly savage Tappoc Conedeet clan at The Great Swamp, near Mount Napier, on 10 May 1841 (Presland 1977).

*“At 4 miles came to an arm of the crater swamp and at 5 miles my natives discovered 3 native near the edge of the swamp.*

*The ground on the swamp was pulpy and soft like a sponge but at the present could not be said to be a swamp as it was dry. At a clump or copse of tea tree saw a native well...*

*Saw a fine double hut, 10 feet diameter with two entrances and 4 ft high in centre. I went in at one door and came out the other. In the swamp abound several copses of tea tree...”*

*I rode along the swamp and on the top of the highest ground the swamp extended further than I could see and I observed many large arms or inlets branching off...I scarcely think Mitchell saw this swamp”.*

*The face of the whole country had been burnt and the rushes of the swamp and the young grass, anthistiria [Themeda triandra, Kangaroo Grass] had attained to a growth of 7 or 8 inches and a most verdant appearance. The land around the swamp is elevated and undulating, of good quality .and lightly timbered. It is a very fine country and the scenery beautiful...wattle trees in this are large, some trunks 2 feet through, and the eucalyptus of much closer growth than generally met with. Turkey frequent this country, saw them occasionally.*

*I encountered a party of women and children collecting food myrrnong [yam daisy] and grubs.*

*The great swamp abounds in rushes, the roots of which are edible and afford the natives an ample supply and is one of their chief supports. When roasted in the fire is mealy and white, like flour. There is another root also they get from the swamp called tar.roke.*

*It was an interesting sight to see all these people grouped around me, under the umbrageous branches of two fine banksias..."*

### **Bruni (TA Brown)**

The wildlife of Buckley Swamp – The Great Swamp – and early efforts to drain it in the 1880s, has been alluded to by Bruni (1903, Anon 1993b):

*"The most remarkable feature in the district around Hamilton is the great morass some miles to the south of the town, known as Buckley's Swamp. It was named after an old settler who had a small sheep station in its south-eastern corner...The bushmen used often to talk of crossing the morass but I never heard of anyone doing it. The natives on the first settlement of whites used at times to hide in the thick border of reeds that fringed it round. There they had a safe retreat when they had been stealing sheep, but they were too afraid of the "bunyip" to go far into the morass. It was the home of myriads of waterfowl, who, in the large space in the centre, were safe from the weapons of the natives and the guns of the whites. Snipe were in countless numbers round the edges but a days shooting was then a very risky affair, for the edge of the morass was, I might almost say, carpeted with snakes of many varieties.*

*When the farmers came into this part of the state the morass attracted much attention and several schemes were put forward to drain off the superfluous moisture. However, sufficient work was done to carry out the main body of water and with this a series of very dry years, has rendered the swamp fairly dry. Indeed there were outcries a few years back that the swamp was too dry...there is a great change in the swamp; waterfowl are never seen and one person said that even the snakes had disappeared."*

## **Wetlands and drainage**

Mitchell (1838) travelled this region in a wet spring and commented on the swamps and lakes. Thus, some 20 km north of Portland "swamps, entirely clear of timber, appeared in so many places that I could scarcely hope to get through". Staplyton (Douglas & O'Brien 1971), who had to organise the transport, was not impressed by this landscape through which they struggled! Boldrewood (1884) wrote of "large marshes, with heathy flats and more thickly timbered forests" at Squattlesea Mere, on the Eumeralla River. James Bonwick (1858) wrote: "*The Smokey River rises from the Branxholme swamps...Great numbers of native companions, cranes, ducks and geese frequent these swamps"*.

Wetlands now occupy 2% of the State (DNRE 1997) and 2.8% of the GHCMA region. In total, 60% of the regions' wetlands (mostly shallow freshwater) were drained between 1788 and 1994.

Wetlands can be broadly classified as follows:

1. Freshwater Meadow – shallow depressions flooded for <4 months each year;
2. Shallow Freshwater Marsh – wetlands that dry out in mid-summer;
3. Deep Freshwater Marsh – usually flooded throughout the year;
4. Permanent Open Freshwater – deep wetlands (incl. reservoirs) that do not dry out;
5. Semi-permanent Saline – wetlands flooded for <8 months, incl. salt pans/salt meadows;
6. Permanent Saline – tidal areas or inland saline lakes that rarely dry out.

Of the wetlands that remain, the Hamilton region has a majority of Freshwater Meadows (1), together with some Shallow Freshwater Marshes (2), such as Krause's Swamp, and Deep Freshwater Marshes (3), such as Lake Linlithgow and Lake Bolac. Some of those wetlands, including Buckley Swamp, would have once (before draining) been classified as either Deep Freshwater Marsh or Shallow Freshwater Marsh but now would rate (if at all) as Freshwater Meadows. The lakes dry out periodically; e.g. Lake Linlithgow was dry in 1882 (Anon. 1999a), 1983, 2000-01 and 2006-07. Robinson recorded Lake Boloke (now Bolac) and Linlithgow being dry in 1843 (Clark 1988). Saline wetlands (5) also occur frequently, as at Lake Kennedy.

In western Victoria, 78% of the Shallow Freshwater Meadows and 66% of Deep Freshwater Meadows have been lost though drainage (Anon. 1999c). Over 95% of GHCMA wetlands are small (<50 ha), comprising >50% of the total area of wetlands. Over 90% of the wetlands are on freehold land, with no certainty of not being drained, or drying up as a result of raised-bed cropping or blue gum plantations.

On the volcanic plains over 75% of the Shallow Freshwater Marshes have been lost or severely modified by drainage works (DNRE 1997). Brolga numbers in Victoria now are less than 650 and not increasing. Most artificial wetlands are farm dams less than 1 ha extent and of poor habitat diversity. There is little hope for Brolga to breed successfully and raise chicks to adulthood on or near those areas. Sightings of flocks of Magpie Geese are a rarity, at Tower Hill or Hotspur River flats when flooded. Suitable nesting conditions for Brolga, Ibis, Spoonbills and other waterbirds are in short supply.

The Linlithgow lake system 10 km to the NE is frequented by 12 species listed by either the Japan Migratory Bird Agreement (JAMBA) or China Migratory Bird Agreement (CAMBA): Red-necked Stint, Latham's Snipe, Cattle Egret, Great Egret, Greenshank, Marsh Sandpiper, Sharp-tailed Sandpiper, Common Sandpiper, Curlew Sandpiper, Bar-tailed Godwit, Pectoral Sandpiper and Glossy Ibis (DCNR 1993). These – and other species on those lists – would be expected on Buckley Swamp. There is no doubt that the restored swamp would qualify under the Ramsar Convention on Wetlands of International Importance (RAMSAR) – Victoria currently has 10 wetland sites listed (DCNR 1993).

The major environmental negative in this region is the loss of wetlands. Yet, of all the environmental deficiencies that we have, this is the easiest problem to solve – simply add water! If we want to make a significant and substantial biodiversity gain then this is the one area where that can be done quickly.

The only effective option to restore wetland biodiversity in the region is to re-create and manage a few large wetlands, such as the former 2,500 ha Buckley Swamp and the former 1900 ha Mt. William Swamp. These would provide Shallow Freshwater Marsh and parts that are Deep Freshwater Marsh. These will be required just to offset the continuing loss of our smaller wetlands. Without this there can be no return of the Brolga, Magpie Geese, Ibis, Snipe and other waterbirds in the numbers reported before the wetlands were drained. The same area of wetland comprising dozens of small areas might produce more of the common species (Lapwings, Herons, Swampheens, Coots, etc.) but would achieve little for the rarer birds that must have larger areas in which there are a range of conditions for feeding, nesting and successful raising of young. The latter event is mainly influenced by predation by foxes. Moreover, it would be economically prohibitive to acquire, fence and manage a host of small areas.

We need to recognize the folly of our present reliance on funding of minuscule projects that achieve little measurable improvement in biodiversity or in economic return (e.g. in terms of tourism). It is time we adopted a more enlightened and pragmatic approach, but on a grander scale.

The wildfowl spectacle would exceed that offered at Bool Lagoon in South Australia as a tourist spectacle and complement it in terms of habitat for feeding and breeding. Its tourist potential would be more significant to the local economy than the current agricultural return from the area. Moreover, Ibis attracted to the swamp may eventually establish breeding rookeries there, as happened for a time at Lanark when a wetland was re-established there (O'Neill 1999), and these birds would make a substantial impact upon pasture pests (e.g. Field Crickets and Wingless Grasshoppers) on farms in the region.

How could the Buckley Swamp restoration project be financed? The scheme would require land purchase from current owners – on generous terms, so that they could purchase land elsewhere. Some 10% of the land, in a central location, is presently Crown Land and that would give a good start to the project. The cost of such a major project might be paid for by the following means:

- Commonwealth funding for major projects of relevance to international conventions.
- State Government funding through CMA or Shires for major regional initiatives.
- Private funding through bodies such as Birds Australia and other organisations.

## **Conclusion**

A review of GHGMA strategy will enable it to make a substantial gain in at least one area of biodiversity – that of wetlands. The major environmental negative in this region is the loss of wetlands, yet this is the easiest problem to solve – simply add water! That can be achieved here by installing a weir on the outlet drain. The restored Great Swamp (*Ko-nung-i-yoke*) would provide a wetland of regional, national and international significance, with substantial benefits to migratory birds and RAMSAR conventions.

The benefits of restoring the swamp would include a major boost in regional tourism and the local economy. Ibis would provide better biological control of pasture pests on district farms and the swamp would also assist in recharging the regional aquifers in the southern area.



A decision made by local landholders 100 years ago to commit land to agriculture should not be binding today, when circumstances and understanding have changed. Indeed, the country has changed in the last 10 years by the presence of 140,000 ha of Tasmanian Blue Gums and an additional 200,000 ha of land that is cropped each year in SW Victoria. Our approach to land use has become more flexible. We need to continue to adjust our thinking and actions to changing time and circumstances.

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## Appendix

### Geology of the area

The Great Swamp is situated on the volcanic plains which comprise:

- Older basalt, a crust of basic lava from 4-40 m thick resulting from lava flows 4.6 million years ago (Phase 1 basalts), overlying Tertiary sediments (limestone, sandstone and shales) – and basaltic hills (e.g. *Al.low.ween*, Mt Pierrepoint) and other flows (Phase 2 basalts) around 2 million years old that overly parts of the older basalt (Bennetts and Webb 2004, Bennetts *et al.* 2003).
- Young soils of the stony rises and scoria cones (e.g. *Tappoc*, Mt Napier), arising from eruptions from 30,000 years BP (*Tappoc*) to ~330,000 years BP (*Kolor*, Mt Rouse)(Bennetts *et al.* 2003).
- Lakes formed when Phase 2 lava flows flowed over or around Phase 1 basalt, blocking drainage lines or leaving 'islands' of Phase 1 basalt uncovered (e.g. *Jenawarra*, Lake Linlithgow),
- Peat swamp (e.g. *Ko.nung.i.yoke*, Buckley Swamp) formed when lava flow from *Tappoc* dammed Cox's Creek with, at that time, no regular surface outlet for the water.

### Fauna of the area

Robinson frequently mentioned "turkeys" on his travels, particularly in the Grange country (Presland 1980), with a flock of 100 birds at Lake Linlithgow in 1841. That species is now extremely rare in Victoria, with a few birds possibly surviving in the Wimmera, and several being seen near Bryans Swamp, Hamilton, in 2001 (one was seen there by Hamilton FNC on 24 Nov 2002). Robinson also mentioned native cats: "The natives killed 2 *cuppong* or native cats on the banks of the Grange". This little marsupial omnivore was common at the Wannon in the early days but has now vanished from eastern Australia. Apparently the animals were particularly fond of stone fences and could often be dislodged from the crevices by grasping a protruding tail.

Bonwick (1857) and others pointed out the wealth of waterbirds that frequented the lakes and swamps of the region in the early days. The wildlife of Buckley Swamp (*Ko.nung.i.yoke*) – "*The Great Swamp*" – has been alluded to by Bruni (1903), alias TA Brown (*see* Anon. 1993b).

Locally, the most significant mammal is the eastern barred bandicoot (*Perameles gunnii*). This was once a very widespread animal, extending across the basalt plains from Melbourne to near the SA border. The late Lionel Elmore, thought that this decline was primarily due to six factors, including organo-phosphate pesticides, rabbits, and predators, but the following three are relevant to this discussion:

- loss of swamplands in the region - this removed cover and feeding opportunities, particularly along the wet margins in summer, where insects and arthropods were more prolific;
- loss of tussock grasslands, which provided essential cover from predators and breeding sites;
- compaction of the ground due to intensive grazing - this reduced their access to invertebrates that are their main food.

### Flora of the area

The predominant grasses in the better-drained parts of the Grange catchment were Kangaroo Grass (*Themeda triandra*), Spear grass (*Austrostipa spp.*), Wallaby Grass (*Austrodanthonia spp.*), Red-leg Grass (*Bothriochloa macra*), Common Wheatgrass (*Elymus scabrum*) and Weeping Grass (*Microlena stipoides*). In the wetter parts, White Tussock (*Poa labillardiera*) and Blown Grass (*Agrostis avenaceae*) were dominant. Today, White Tussock occurs only in wet areas that have not been cultivated or heavily supered. These "unimproved" paddocks may be seen in the Hamilton area but the tussocks are sparse, a shadow of their former splendour. Many swamps have been invaded by Spiny Rush (*Juncus acutus*).

Kangaroo Grass could not withstand constant grazing by livestock and soon disappeared from heavily stocked paddocks. The remnants may still be seen on roadsides where the verge has been only lightly grazed and not cultivated or sprayed with herbicide. It has flourished there, particularly where it has been burned annually for fire control purposes, reducing the competition from weedy annuals.

Regrettably, little of the original vegetation of any sort is preserved on the basalt plains, of which the Grange Catchment is part. In terms of grasslands, the grassland complex has only 0.4% of the pre-European level in Victoria. For Plains Grassy Woodlands, the figure is 3% (Poussard *et al.* 1997).

It is often stated that no trees grew on the basalt plains, and some of the grassland areas, such as Cressy, did contain few trees (Willis 1964). Even so, most of the early writers considered a tree to be a eucalypt! This would have excluded Blackwood, Black Wattle, Silver Banksia, *etc.*

Stuwe (1986) provides an interesting document on the extent of tree cover in Victoria, from a map by Arrowsmith (1853), based on surveys by Surveyor General Hoddle and Everett (1869). This was based on 'records maps in the office of the Surveyor General, and other authentic sources'. In the Hamilton area there are some discrepancies, with no trees being shown where there are trees or large stumps of great age around Tarrington, Yatchaw, Linlithgow, Tabor and Peshurst, and west and south of Dunkeld. South and east from Tarrington are the remnants of Swamp Gum-Manna Gum woodlands. There remain some healthy trees but most are scarecrows or stumps.

At Twombly's Bridge Rd, Yatchaw (near Buckley Swamp) is a remnant of the plains form of Silver Banksia (*Banksia marginata*) that was so common in the early days. Bruni (1903) remarked of the district south of Hamilton that by 1903 "*the Monivae and Murroa estates were lightly timbered country, where of old I recollect a thick forest, mostly composed of honeysuckle [banksia]...of which scarcely one remains...the country is becoming so open that ere long the landholders will have to set about establishing shelter plantations...since the squatting days fully three quarters of the timber has disappeared*".

Other species include Sweet Bursaria (*Bursaria spinosa*), Drooping Sheoak (*Allocasuarina verticillata*), Black Wattle (*A. mearnsii*) and Blackwood (*A. melanoxylon*), and a few other species such as Woolly Tea-tree (*Leptospermum lanigerum*). All have declined greatly in the region. The odd Woolly Tea-tree tree occurs along the Grange Burn in Hamilton and at the Robson's Rd crossing east of Hamilton, where it has access to water. Thickets of Woolly Tea-tree survive in swampy areas in the Condah-Wallacedale-Branxholme-Hotspur district, together with some *Melaleuca squarrosa*. These species would have occupied various parts of the surrounds of Buckley Swamp.

A small remnant of Prickly Tea-tree (*Leptospermum continentale*) occurs at Dolling Dolling Swamp, on the Kanawalla Rail Reserve and (in a seemingly most unlikely place) on the western mid-slope of Mt. Napier. Small numbers of Tree Everlasting (*Ozothamnus ferrugineus*) occurs on the Tabor Swamp (an upstream part of the former extent of Buckley Swamp), at Lake Bullrush, Mt Napier State Park and at odd places on the plains. These species most certainly would also have been present around the original Buckley Swamp.

The eucalypts that border Buckley Swamp are Swamp Gum (*E. ovata*) and Manna Gum (*E. viminalis*). The Swamp Gum are sparse in numbers but Manna Gums abound, as the sole eucalypt species among Blackwood, Sweet Bursaria and Tree Everlasting, on the stoney rise of the western flank.