



Figure 2. General location of some of the known archaeological features in the Bannockburn area.

Archaeological sites are defined in the Historic Places Act 1993 as ‘any place in New Zealand that ... was associated with human activity that occurred before 1900.... ; and is or may be able through investigation by archaeological methods to provide evidence relating to the history of New Zealand.’ Under the Act all pre-1900 archaeological sites are automatically protected. An approval must be gained from the NZ Historic Places Trust prior to any modification, damage, or destruction of a site.

This applies to all archaeological sites, whether recorded or not.

2.8 HISTORIOGRAPHY

It is not easy to gain a sense of the landscape of the past using only historical writing as a source. The common portrayal of Bannockburn is that it is solely a gold mining landscape, and although there is greater depth to the area’s history, it is the golden story that shines above all and is most often told.

In general, the histories and portrayals of the Bannockburn area paint a picture of the European mining and pastoral community. There are other narratives more difficult to trace; for example those of the Chinese miners, and of women and families. Recording these lives requires following the trail of intricate connections in community life through scattered records. A local genealogist has teased the strands of an infamous woman’s life to reveal the measures she went to, to support her family when largely abandoned by her drunken blacksmith husband. The full story provides depth to the more commonly known facts of her conviction for theft (see Box 13: Jockey Jones).

The Chinese miners are even more difficult to trace, with only isolated mentions of their lives (Ng 1993:218). That the Chinese miners were not part of the broader community was clear; histories mention the formation of anti-Chinese petitions in both Bannockburn and Nevis, even before their arrival—in 1864, miners from these areas protested against provincial government support for Chinese miners coming to the goldfields. In the early 1870s there were equal numbers of Chinese and European miners on the Bannockburn field (Salmon 1963:111-113), but their activities have proved difficult to trace through both written history and the physical remains in the landscape.

Researching the historical section of this study has been both a feast and a famine—on some topics there was too little local information, and on other areas far too much. The lack of specific published material directly relating to Bannockburn meant that, in order to provide some insight into the area, it was necessary to look at what was happening on a broader scale and seek evidence that also applied in Bannockburn. All of the broad themes in the larger Otago history can be found in the Bannockburn landscape, expressed in the physical environment, structures, and personal memories. Current historical writing alone does not provide sufficient insight into these local themes, and detailed research was needed to understand the larger physical landscape, such as in seeking to understand land tenure patterns and the changing occupations of Bannockburn people. On some topics, such as the Chinese presence, there was found to be virtually no historical information.

On other topics, local information did exist but was so complex—a wildly fluctuating transient population; mining overlaying mining; local genealogies—that the larger picture was difficult to read. Local historians and genealogists have done a masterly job teasing out the lives of Bannockburn residents and detailing abodes, farms, occupations and stories. However, for the requirements of this study, the inclusion of this kind of detail was necessarily largely avoided, the focus being on the larger picture of change on a landscape scale.

3. Physical landscape

Information on the physical landscape and environmental history was derived from Anderson (1998), Brumley (1986), Department of Conservation (1998), Hamel (1978, 2001), Pawson (2002), Peat (1999), and Alex Wearing (pers. comm.)

The study area (Fig. 1) lies within a distinctive and spectacular landscape, dominated visually by mountain ranges covered in tussock and scattered schist rock outcrops. The Cairnmuir Mountains, Old Woman Range, Carrick Range, and Mt Difficulty encircle the Bannockburn Basin to the west, south, and east. To the north, on the opposite side of the Kawarau River, stretches a long view of the Cromwell Basin and Lake Dunstan, bordered to the west by the Pisa Range and to the east by the Dunstan Mountains.

The climate is arid, created by the rainshadow effect of the Southern Alps. The Cromwell-Alexandra area is the driest part of New Zealand, with annual rainfall of 300-400 mm per year. Hot dry summers and very cold dry winters create an environment which is harsh on plants, animals and humans. Clear skies enhance evapo-transpiration so the soils are predominantly in moisture deficit.

The study area, and in fact most of Central Otago, is underlain by schist formed from mudstone and sandstone by heat generated by tectonic forces during the Jurassic period. At the same time, the high temperatures turned gold soluble and it moved through fractures in the rock, settling into veins of quartz. Around 130 million years ago the schist was uplifted, tilted and folded. Subsequent aeons smoothed the mountains to form a gently undulating peneplain across most of what is now Central Otago. Then, for about 60 million years, the sea flooded this area. As the sea receded about 20 million years ago a huge freshwater complex (called Lake Manuherikia) evolved on the peneplain. At its margins were peat-rich swamps which created coal and shale deposits - the origin of Bannockburn's coal. About 3 million years ago, pressures from the Alpine Fault acting on a series of fault lines transformed the peneplain into the mountain ranges of Central Otago. One of these faults lies along the east side of the Pisa Range and the other along the west side of the Dunstan Range through Northburn. Differential lift along these faults created the Cromwell Basin.

Today, the Clutha River runs along the length of the Cromwell Basin, joined at the south end by the Kawarau River. The Cromwell Basin is broadest at its

north-east end, maintaining a uniform width from Bendigo to Bannockburn, then becomes narrower and ends at the Obelisk Range.

The study area lies at the south end of the Cromwell Basin, separated from the main part of Basin by the Kawarau River. Within the study area, the generally north- and east-facing slopes of the Carrick Range drop relatively steeply from Duffers Saddle, and then ease off to a series of generally north-facing terraces dropping to the Kawarau River. Alluvial flats run up the Bannockburn Valley in the south of the study area, but the streams which have created them become more steeply gorged towards the Kawarau River. A number of other steep-sided gullies dissect the terraces. These either discharge into the Kawarau or are tributaries of Bannockburn Creek—these include Pipeclay Gully, Smiths Gully, and Adams Gully (Fig. 2).

One legacy of the geological past was a variety of minerals. The schist of the Carrick Range has a number of gold-containing quartz lodes. Weathering of these lodes over millions of years created the gold-enriched gravels in the streams and alluvial fans below. The quartz lodes are localised rather than universally spread across the mountain; hence some streams carried gold and others (e.g. Long Gully) did not. Antimony ore is also present on the Carrick Range in small quantities. Seams of lignite coal crop out along the banks of the Kawarau River between Cromwell and Bannockburn, and some distance up Shepherds Creek. These originated from the carbon-rich swamps of Lake Manuherikia.

Forest was once widespread across Otago. Extensive tracts of forest on the plains were probably dominated by matai, totara and other podocarps. Mid-altitude areas were occupied by both forest and shrubland (matagouri, *Coprosma*, *Olearia*, kanuka, kowhai) and at higher altitudes (600–1000 m) the forest was dominated by Hall's totara, bog pine and celery pine. From about 2000 years ago, a warming climate and periodic natural fires created gaps in the forest which were filled by tussock, creating a mosaic of forest and open country. The arrival of humans wrought further changes. Radiocarbon dating indicates a spate of burning between 700 and 750 years ago, some of which may have been accidental, but some of which was also likely to have been a tool used by the moa hunters to clear routes and flush out game. Following destruction of the forest, snow tussock extended downslope into the zone now occupied by montane fescue tussocklands, and the forest did not re-grow. It is possible that drier conditions were also less suitable for the regrowth of forest. By the time of European occupation from the 1850s, the forest remnants were small and the few remaining areas were probably used for firewood and building within a few years. Pastoral farming maintained and further modified the pattern of tussock grasslands through further burning, grazing and the introduction of new plants.

Parcell describes the vegetation of the Bannockburn area at the time of the first European arrivals:

All the gullies and creek bottoms of the low country, consisting of considerable areas of flat land, watered by pleasant streams, were covered with scrub, matagouri, tea-tree, ribbonwood. Lawyers, toe-toe grass, speargrass and flax, with masses of native fodder grasses and flowers growing on deep rich loam... The drier, flat-topped terraces also carried

good soil densely clothed with tall native blue-grass and tussock with great masses of scrub and speargrass. In some places the native grass was six feet high... (Parcell 1976: 7)

Since European settlement, tussock grasslands have been the dominant vegetation cover of the higher country. Cushion and herbfield communities extend across the exposed ridgetops (e.g. at Duffers Saddle), while lower down is alpine tussock with patches of *Hebe* and *Dracophyllum* scrub. Lower slopes are dominated by montane fescue with scattered patches of matagouri, *Coprosma* and *Olearia* scrub particularly around bluffs, gorges and rock outcrops. Below about 1000 m, exotic pasture species dominate the understorey of tussockland communities or replace the native vegetation completely. On the driest slopes of the Carrick and Cairnmuir Ranges semi-deserts have been created following the loss of tussock cover from heavy grazing by sheep, goats, rabbits and hares. Scabweed, golden spaniard, sorrel, thyme and stonecrop are major recolonisers in depleted areas. On the terrace lands closer to Kawarau River are orchards and vineyards. Matagouri and weed species (e.g. gorse, broom and briar) grow in abandoned pasturelands and sluiced shingle fans.

While natural forces shaped the underlying structure of the landscape, its surface has been changed by humans to an extraordinary extent. As mentioned above, fires during the moa-hunter period of Maori occupation altered the vegetation cover. Apart from this, Maori touched lightly on the land, leaving only slight traces of occupation and use. From the late 1850s, the study area was part of the huge Kawarau Station, a high-country sheep station which was not divided until 1910. Tussock was retained as grazing fodder in the upper country, but in lower areas it was gradually replaced by introduced pastures.

The most extensive physical change was by the miners from the early 1860s, who scraped, dug, sluiced, tunnelled, crushed and churned vast areas of the land in their search for wealth. It is difficult, looking at the landscape today, to visualise just how much it was altered during the latter part of the 19th century and early 20th century. Virtually all of the terraces between the Kawarau River and the foot of the Carrick Range were mined, mostly by sluicing, which changed landforms out of all recognition. Sluicing continued up all of the gold-bearing streams. Gold dredges worked along the edges of the Kawarau River and up Bannockburn and Shepherds Creeks, lifting and re-laying river beds and river margins. Coal mines were more localised but also involved large amounts of earthworks. The slopes of the Carrick Range, where quartz mines were established, were scarred by mines and scored by tracks and water races. Photographs from the mid- to late 19th century show a devastated and barren landscape (Fig. 3). Today, vegetation has largely masked the damage and it is often difficult to differentiate between 'natural' and 'cultural' features except where vegetation has refused to grow, as with sluice faces (Fig. 4).

Another major human-induced landscape change was the creation of Lake Dunstan in 1994 through the damming of the Clutha River at Clyde. The Kawarau River, previously deeply gorged and fast-flowing, was changed into a broad slow-moving stretch of water some tens of metres higher than the previous water level. The lower reaches of the Bannockburn Creek became an arm of Lake Dunstan. The new lake not only changed the landscape visually, but

Figure 3. Carrick Battery,
Carrick Gold Mining
Company, Smiths Creek,
c. 1911.
Source: R. Murray,
Cromwell, *P. Crump*
Collection



it also provided opportunities for different activities both in making irrigation more accessible and providing new recreational possibilities.

Prior to the 1990s, other human modifications to the landscape were relatively minor. A number of small settlements associated with the mining were deserted and gradually eroded. Orcharding was established from around the 1920s but was always at a small scale. The pattern of settlement at Bannockburn remained virtually unchanged over most of the 20th century. But from the late 1980s, the growing popularity of the area for living and (increasingly) for viticulture led to another surge of change. Demand for housing led to new subdivisions (both urban and ‘lifestyle’) as well as new houses being built on existing sections. The village of Bannockburn began to thicken and spread, and the terraces saw a rash of new houses. An even greater change was the viticulture boom. Since 1991, when the first vineyard was planted, the terrace country at the north end of the study area has become dominated by viticulture. The visual change has been dramatic—from pasture or briar-infested paddocks (or at times, orchards) to close-set rows of vines with neat edges and lively seasonal colour changes.

The climate, geology and topography, together with the shortage of water for irrigation, create the factors which have largely directed the fortunes of