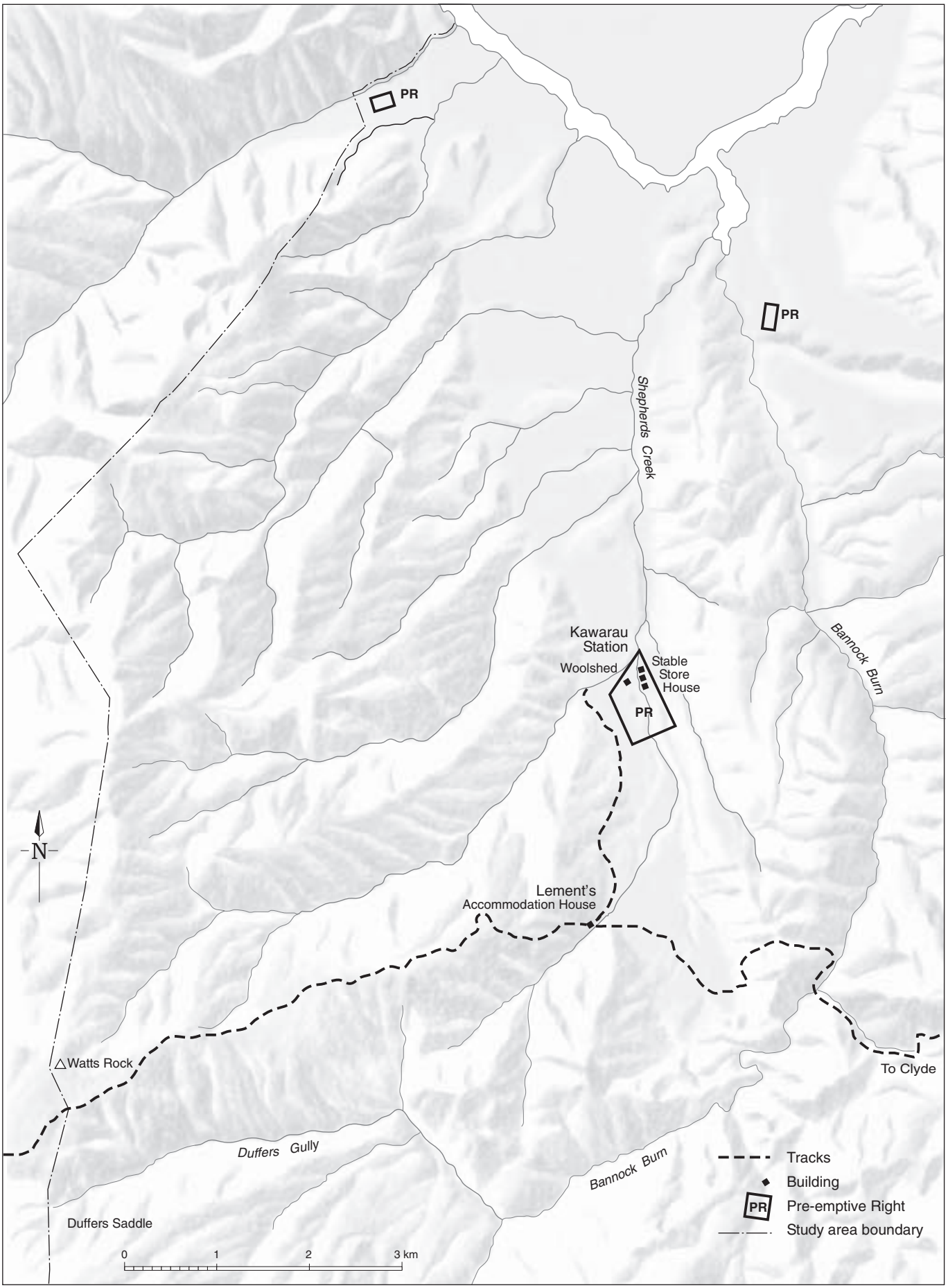

Figure 9. Kawarau Station and early gold rush, 1862/63.

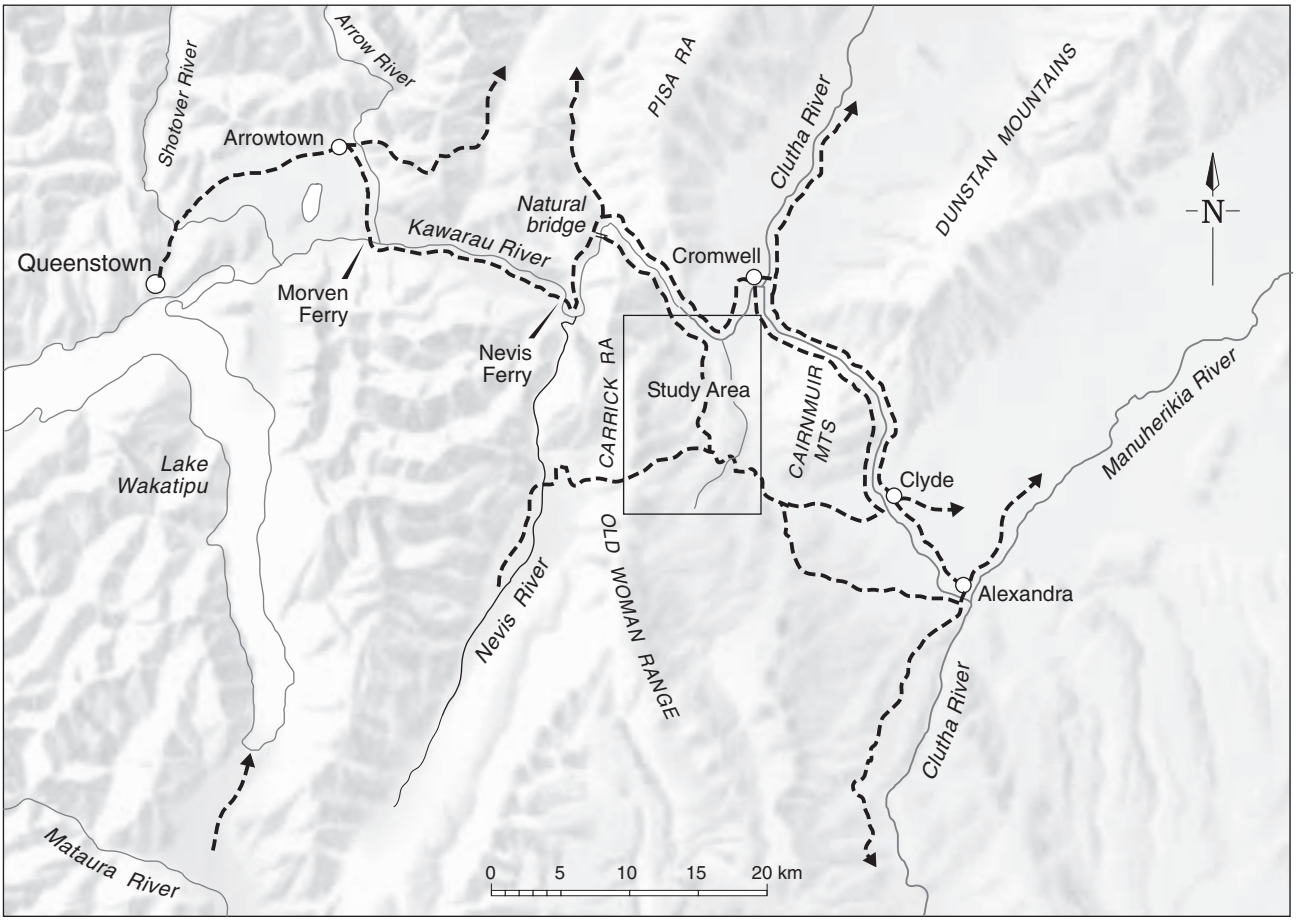

Figure 10. Routes prior to 1864 (dashed lines) in the Bannockburn region.

packers and storekeepers on the fields, and for meat and other provisions from the stations.

In late 1862, miners flocked to the Dunstan fields following the rich discoveries in the Cromwell Gorge by Hartley and Reilly. From here they rapidly fanned out into the Cromwell Basin and surrounding hills seeking new fields, and were not disappointed. Discoveries were quickly made at Cornish Point and in Bannockburn Creek and its tributaries. The miners rapidly scouted up the Bannockburn Valley, and also over to the Nevis Valley. By the end of 1862, a significant mining population was already spread over the Bannockburn area.

Goldmining wrought huge changes on the Bannockburn landscape. Alluvial areas were mined first, with miners working the river flats around the Bannockburn and Shepherds Creeks. As miners followed the creeks upstream, they moved into the tributary gullies, building huts close to their workings. The riverine terraces were then worked. With the discovery of gold-bearing quartz reefs on the Carrick Range, settlements followed the mines into the harsh uplands as stamping batteries were built to crush the ore. The peak goldfields population in Otago was reached around 1864, but owing to the rich finds in the Bannockburn area, goldmining there continued in various forms for many decades.

The ever-evolving technologies used to win gold from the ground were an important part of the gold mining story, and many are represented in the

Bannockburn landscape. Beginning with hand panning, miners would have moved to cradles and other more sophisticated methods of washing gravels. The limiting factor of water supply was addressed by constructing lengthy water races, and the resulting ability to sluice with high-pressure water gave much faster returns. Underground mining was used in the Miners Terrace area to gain access to deep leads of gold. Quartz from the Carrick slopes was crushed in batteries to release the gold particles. Dredges chewed through river gravels in the Bannockburn and Shepherds Creeks, and along the Kawarau River. The various technologies prolonged the viability of gold mining. Each also contributed to the form of settlement and left its own particular signature on the landscape.

4.4.1 Early mining in Bannockburn area

Gold was discovered in the Bannockburn area in the spring of 1862. Miners had been working the Clutha and Kawarau River beaches for gold, but rising water levels forced them up into the surrounding country, where they found gold in many streams. The first miners known in the Bannockburn area were Cornish and Pope who worked the alluvial gravels at Pipeclay Gully in October 1862 (Parcell 1976: 27). By November there were approximately 2000 miners active in the Carrick Range, but two months later they were virtually all gone, seduced by the rushes to the Shotover and Arrow Rivers (Bristow 1998: 1). Some remained or returned, and Warden Coates reported that, by late 1863,

> *between the Nevis and Clutha Rivers the vast extent of rude and elevated country known as the Carrick Range has received good prospecting, from which it has been ascertained that many spurs and saddles as well as a considerable number of gullies in the area of mountains are auriferous* (Coates *in* McPherson 1986: 13).

The rich finds encouraged more miners to flow into the area. One hundred and seventy-eight miners were reported to be mining in the Bannockburn basin in 1864/65: fifteen cradling, 75 sluicing, 70 ground sluicing, and 18 working with hydraulic hoses. Some 41 km of water race had already been built to supply the Bannockburn field (McPherson 1986:13). But by 1865, gold returns from the alluvial workings were falling, with the result that the population also dropped, with an estimated mining population of 30 at Bannockburn and 90 in the Bannockburn district (Parcell 1976: 25). The easily mined areas with shallow gold had been worked out, and greater effort and investment would be required to recover more gold. In particular, the problems of water supply, access and the disposal of sludge-filled water and tailings needed to be addressed.

Box 3: SCATTERED MINERS' HUTS

There are a number of single huts or clusters of huts in the landscape which date from the mining era, and anecdotal evidence of others. Many are in very isolated gullies up on the Carrick range, seldom visited. These probably represent only a portion of the ephemeral settlements which followed mining activity – most probably only a few huts occupied for a few years. There is even less evidence of the tents in which many probably lived. It is not possible to reconstruct the chronology, spread or exact existence of these scattered and ephemeral settlements. Their remains and their stories are, however, important echoes of the past, when the hills teemed with men intent on finding gold.

4.4.2 Water

Water was an absolutely pivotal resource, not for only gold mining but for all activities in Bannockburn. Miners were unable to use water from the Kawarau River as it was too far below the land level in its steep gorge. In order to gain water for mining purposes, water races needed to be constructed to convey water from distant points and channel it to where it was needed, and dams were required to store the water. See Box 4: Water Races.

4.4.3 Routes

Access difficulties not only hindered the movement of people and stores, but also limited the mining of the gold-bearing quartz reefs on the slopes of the Carrick Range (Parcell 1976: 27 and 81). Efforts to resolve these difficulties were made in the later 1860s (see Fig. 10); in 1867, the dray road to Nevis opened, and during the same year, a cart road was constructed to Smiths and Pipeclay Gullies (Parcell 1976: 83). A partial reorientation from the Cairnmuir route to the Cromwell junction occurred after a pack track through the Cromwell Gorge opened in October 1863. The first route was on the steep, gully-scarred west bank of the Clutha, but heavy rains washed parts of it away. A new road was formed on the east side and was sufficiently completed by April 1864 for the mail contractor to start a coach service to Queenstown (Moore 1953: 74–75). Both routes remained in use for some years until the east bank became the preferred route. River crossings were provided for many years by punt or ferry, the first being set up by James Stuart, who ran a ferry across the Kawarau about 200 m below the current Bannockburn Bridge.

4.4.4 Sludge

Another limitation to alluvial workings was the need to dispose of the growing mass of tailings and debris. Sludge was the name given to these 'vast quantities of tailings and mining debris' which led to 'the destruction of land, the choking of water courses and the fouling of water' (Hearn 1981: 83). It was a particular problem on flats that had little fall to naturally channel waste away. If sludge could not be disposed of it could effectively prevent further mining in that area. The discharge and disposal of sludge was a fundamental part of managing the mining landscape in Bannockburn. Some watercourses became official sludge channels—for example, Pipeclay Gully was declared a sludge channel in 1873 (Parcell 1976: 37).

4.4.5 Quartz mining

Relatively soon after the start of alluvial mining, miners discovered a rich source of gold in the quartz reefs on the Carrick Range. The first small mine was started in 1864 on the Caledonian Spur, about half-way up the Carrick Range, named the Elizabeth reef. Early quartz mining was confined to surface quarrying and initially yielded good returns (Parcell 1976: 80). Other reefs were discovered at the heads of Pipeclay and Adams Gullies but little progress was made until the development of the reefs at Bendigo, north of Cromwell, showed how valuable quartz mining could be. Enthusiasm was infectious, and by the end of 1869, five quartz-mining parties were operating on the Carrick. The quartz-mining rush had begun.

Box 4: WATER RACES

The remains of water races are everywhere in the Bannockburn landscape, from high on the Carrick Range to the lower terraces. During the mining era they supplied the essential resource of water, which was required in vast quantities for sluicing (Fig. 11). Water was also used for motive power (the Young Australian water wheel being the best surviving example) and increasingly for irrigation of the parched land.

In goldfield areas, water use for mining took priority over other uses, and goldfields regulations prescribed a system of water measurement. Water became a commodity, and entrepreneurs, companies, and groups of miners found a new source of income generation (Offer 1997: 107-8).

The water supply in the Bannockburn area largely came from small streams with their sources in the mountains. Larger streams supplied lower-level races, and sometimes water was diverted from one stream and dropped into another to boost the water supply further down. Races required a shallow and steady downhill gradient, so had to follow the contours of the hills to reach their destination—a tricky task for the rudimentary surveying equipment of the day. Dams (technically reservoirs) were built lower down to store the water until it was needed.

Water races had begun to snake across the land by the mid 1860s. Two races were built in the vicinity of Cornish Point in 1865, extending nine miles into Bannockburn Creek. The lower one, known as Harrigan's race, was completed in January 1866. The larger Irresistible Race, built by Thomas Tippet and party, carried eight heads from Bannockburn Creek and was completed in March 1866 (Parcell 1976: 26). In early 1866, Kelly and party had brought a race 12 miles from the upper reaches of Shepherds Creek into Bannockburn; by July the race had reached Adams Gully (Parcell 1976: 26). In 1867, the first proposal to build Carrick Race was put forward although it was not begun until 1872 (Parcell 1976:30). In 1868, the Stuart & Menzies Race was built at Long Gully, round to the lower end of Pipeclay Gully, and was later carried around to Slaughteryard Hill. By 1877, there were fifteen substantial water races in the Bannockburn district (Parcell 1976: 38).

The largest of the races was the Carrick Race, which runs some 22 miles (35 km), picking up water from two tributaries of Coal Creek in the Nevis catchment and conveying the water over the watershed into the Bannockburn catchment and down to the vicinity of Bannockburn settlement. The first sod was turned on the Carrick Water Race on 20 April 1872. The race-building work was done on contract, with major financial troubles, and organisational difficulties. By 1875 the race had advanced to the Young Australian mine site, where the water was used to run the water wheel which powered the battery. To assist its progress, the government stepped in and subsidised the Carrick Range Water Supply Company, who were running the project. The Race was finally completed in 1877. Its commissioning in 1878 led to an increase in the gold returns for the district (McPherson 1986: 13). One water right from the race took water as far as Menzies Dam. The Carrick race is still in use today, owned and operated by the Carrick Irrigation Company, which consists of local users. The water is mainly used for irrigation.

Local historian Paul Crump estimates that, by 1890, there were around 29 dams in use in the Bannockburn area, 24 of these within 3 square kilometres, close to Bannockburn township. The majority were used to hold water fed from water races, and a smaller number were used to hold water for quartz-crushing batteries on the Carrick field. He estimates that only five of those near the township still existed in 1997: Shorts, Carricktown, Tippets, Tippets & Ritchie, and Menzies Dams (Crump, undated), although more may be extant in the Carrick quartz field.

Because of their complexity, it has not been possible to map the historic pattern of water races and dams. However, some races are still in use today for the irrigation of farmland, orchards, and vineyards (Fig. 12).

Figure 11. Sluicing, Hancock & Lawrence's Claim, Bannockburn (no date).
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4.4.6 Alluvial mining continued

Another surge of alluvial mining occurred from 1866, when the bulk of the terraces fronting the Kawarau River were worked, as well as various river flats and gullies. A scattering of settlement and services began to form in the wider Bannockburn area. There were corrugated iron houses, two stores, and a butchers shop at Bannockburn, although it is not known if these were at the early site of the settlement or elsewhere. Another store was located at the foot of Smiths Gully, and a hotel near the ferry crossing. See Box 5: The township of Bannockburn.

By 1867, alluvial mining was extending up the mountain sides, with small alluvial benches being sluiced. Miners were taking up claims as far up as Duffers Gully at the upper reaches of Bannockburn Creek, but with patchy returns. A major flood in 1868 allowed previously mined river claims to be reworked.

In 1868, the population of Bannockburn (including Carrick) reached its peak, estimated to be over 2000 people. From 1871, the population began to decline as the mining returns gradually decreased (Parcell 1976:106).

Alluvial mining continued to depend on the availability of water. A frenzy of race-building from the mid-1860s through the 1870s saw numerous water races built (see Box 4: Water races). The large quantities of water allowed for vast

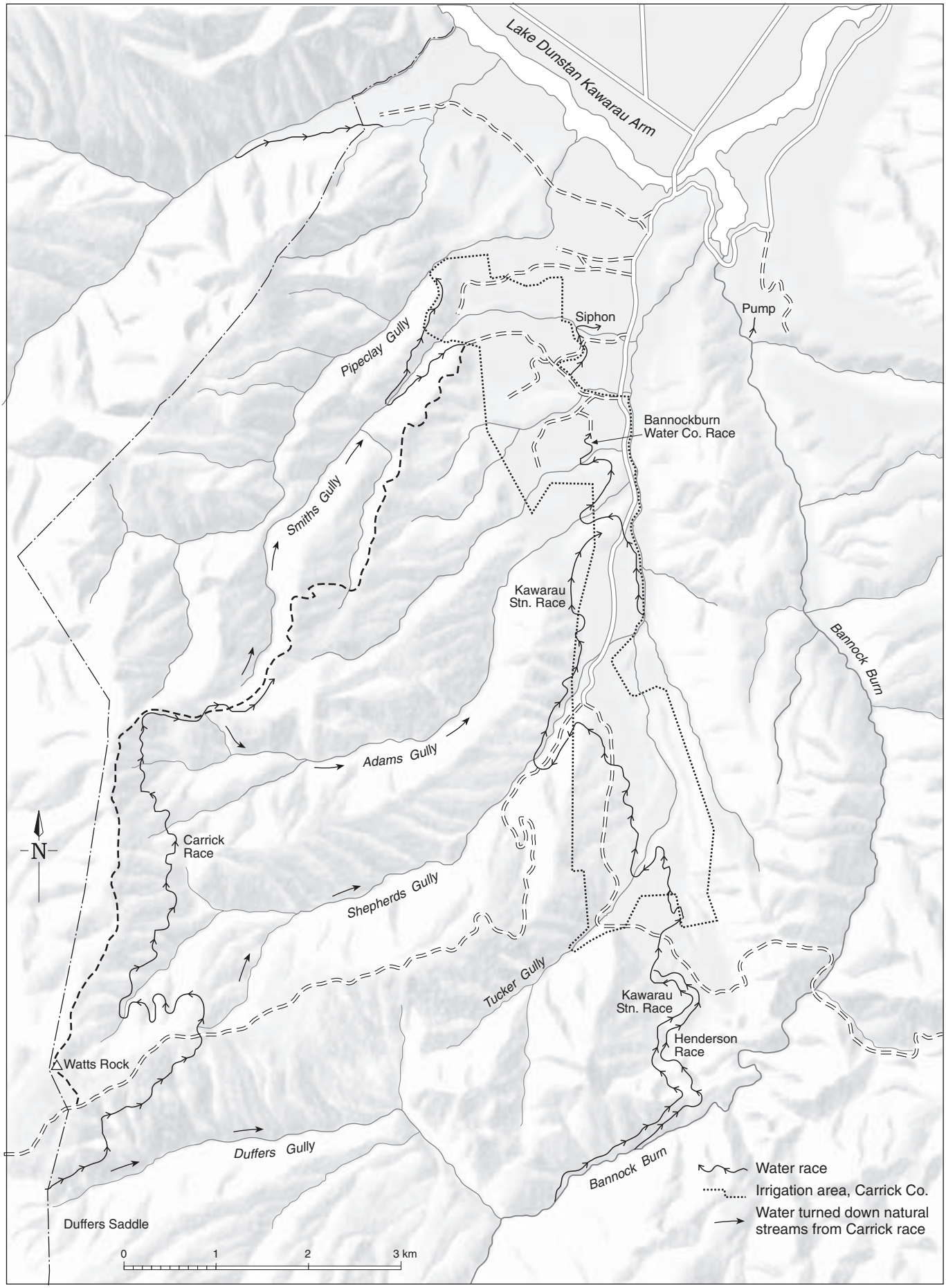

Figure 12. Water races still in use around Bannockburn district, 2003.