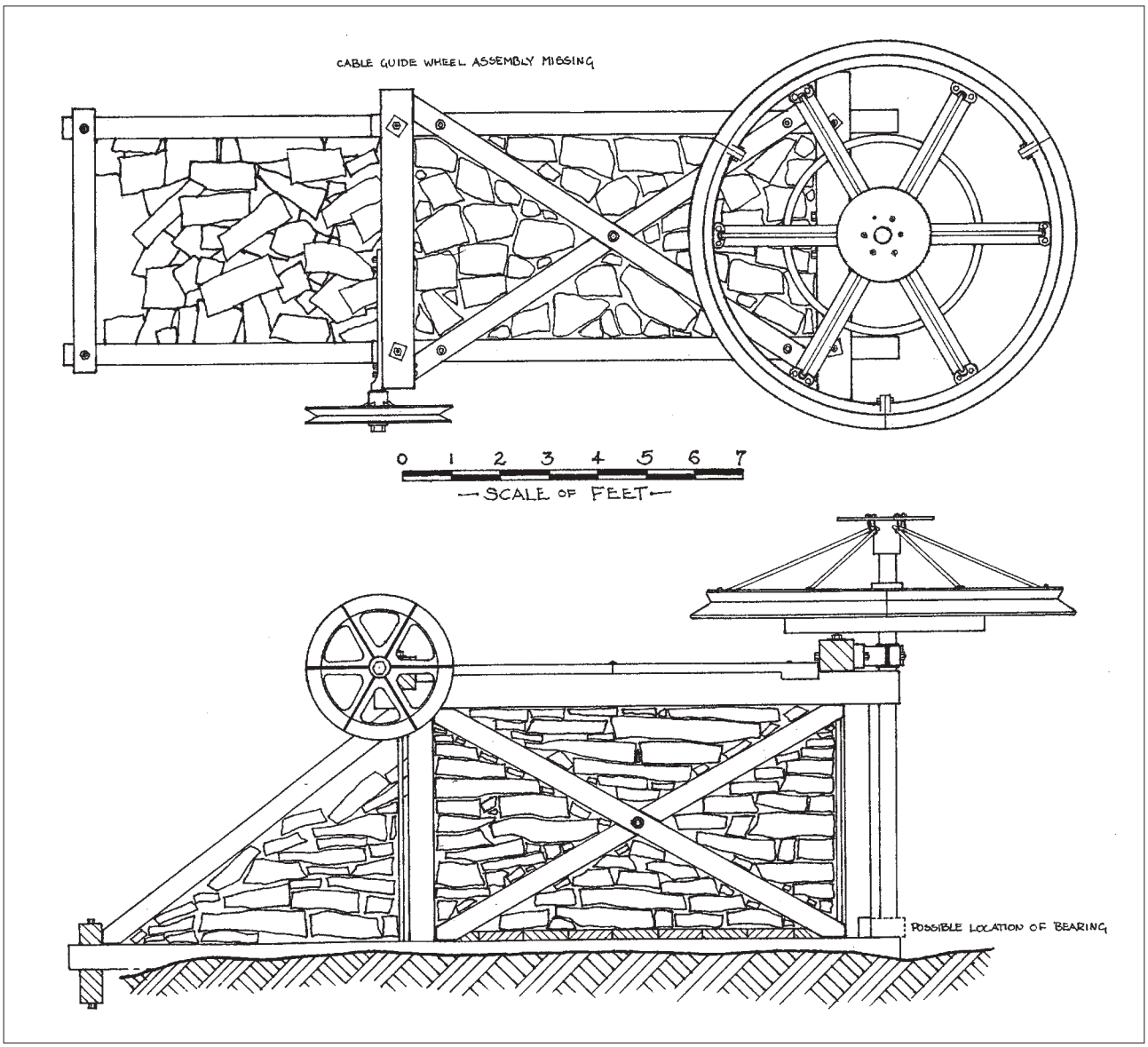
Return to previous file: Part 3

Figure 33. The All Nations aerial cableway top return wheel. Note the similarity to the Homeward Bound wheel (Fig. 20). *Photo: P. Petchey.*

Figure 34. All Nations cableway top return wheel. Drawn by P. Petchey from sketch and measurements made in the field by K. Jones and from photographs. This structure is very similar to the Homeward Bound return wheel, which was built by the same company at the same time. Note that one guide wheel is missing.



It is very similar to the Homeward Bound top return wheel (see Fig. 20), which was built at the same time by the same company, New Zealand Consolidated Mines (Limited), presumably using the same plans and parts.

Nearby are the mines and the site of Skytown. Several hut sites can be easily found, set out in a row beneath a bluff. These huts are shown in one of the only contemporary photographs of Skytown (Fig. 32). Below the huts there is a tramway or track bench, which ran between the ore hopper and the bottom of the short Garibaldi Mine cableway. Other tracks link the various mine workings in the area, of which the main two were the All Nations and Garibaldi.

On the hillside above the hut sites is an open adit and the top return wheel for a small cableway. This is probably part of the Garibaldi Mine complex.

10. Sawyer's Gully: Maryborough/Premier Mine (Maps 4 and 5)

Sawyer's Gully (also called Sawyers Gully and Sawyer's or Sawyers Creek) (Fig. 35) was the location of several mining operations, the largest and most enduring of which was the Maryborough/Premier mine. Other companies and mines included the Gladstone and General Havelock.

10.1 THE MARYBOROUGH MINE

The Maryborough Company was registered in 1876, working on the Tipperary lode line (Powell 1976: 32). The 1876 Warden's Report stated that the company was 'engaged in sinking a shaft on the line of the reef, or rather following the lode down' (A.J.H.R. 1876 H3: 4). In 1878 the company erected a crushing mill at Sawyer's Gully, of five stamps driven by a 30 ft water wheel. It did not start operation until late 1879, because of damage by floods in September, 1878 (A.J.H.R. 1879 H11: 24).

Figure 35. Sawyer's Gully. Note the small buildings along the stream. *Photo: Museum of New Zealand Te Papa Tongarewa (c.014901).*

In 1882 the company was reported to have averaged some 4 oz of gold per ton from some 300 tons of ore, but these good returns cannot have continued as by 1886 it had passed into liquidation. The plant was purchased by the neighbouring Premier Company for £792/3/- (Powell 1976: 29). By this time the battery had been extended to ten stamps, each weighing 7 cwt, and was equipped with one berdan. The 30 ft overshot water wheel (Fig. 36) still provided the power (A.J.H.R. 1886 C4: 21).

10.2 THE PREMIER MINE

The Premier Company also started work in the late 1870s. It did not erect a battery, instead doing its crushing at the Maryborough Battery until it bought that plant. In 1890 the Premier Company went into liquidation and was floated on the London market. It was taken up by the Glenrock Company, and was

Figure 36. The Maryborough Battery during construction (c. 1879). *Photo: Museum of New Zealand Te Papa Tongarewa (c.016028).*

Figure 37. A group of miners at the Premier Mine c. 1890.
Photo: Lakes District Museum, Arrowtown.

reconstructed as the Premier Consolidated Company. A new low-level drive was constructed from the level of the creek to improve the operation of the mine (A.J.H.R. 1891 C4: 52) (Fig. 37).

In late 1891 the water wheel was replaced by a 6 ft Pelton wheel (A.J.H.R. 1892 C3: 60). In 1893 a further ten heads of stamps were added to the mill, and a cyanide plant was erected, consisting of 'two circular solution vats, one sump, and a tank for making the solution up to the required strength' (A.J.H.R. 1894 C3: 83). The extra stamps possibly came from the nearby Sunrise Battery, which was purchased in 1893 for £750 (Powell 1976: 55). During 1892 and 1893 a tramway was constructed from the Premier Mine down the gully to an ore hopper, and then from the bottom of the ore hopper a second line ran to the top of the battery (see Fig. 38) (A.J.H.R. 1893 C3: xv). These features are still obvious (see discussion below).

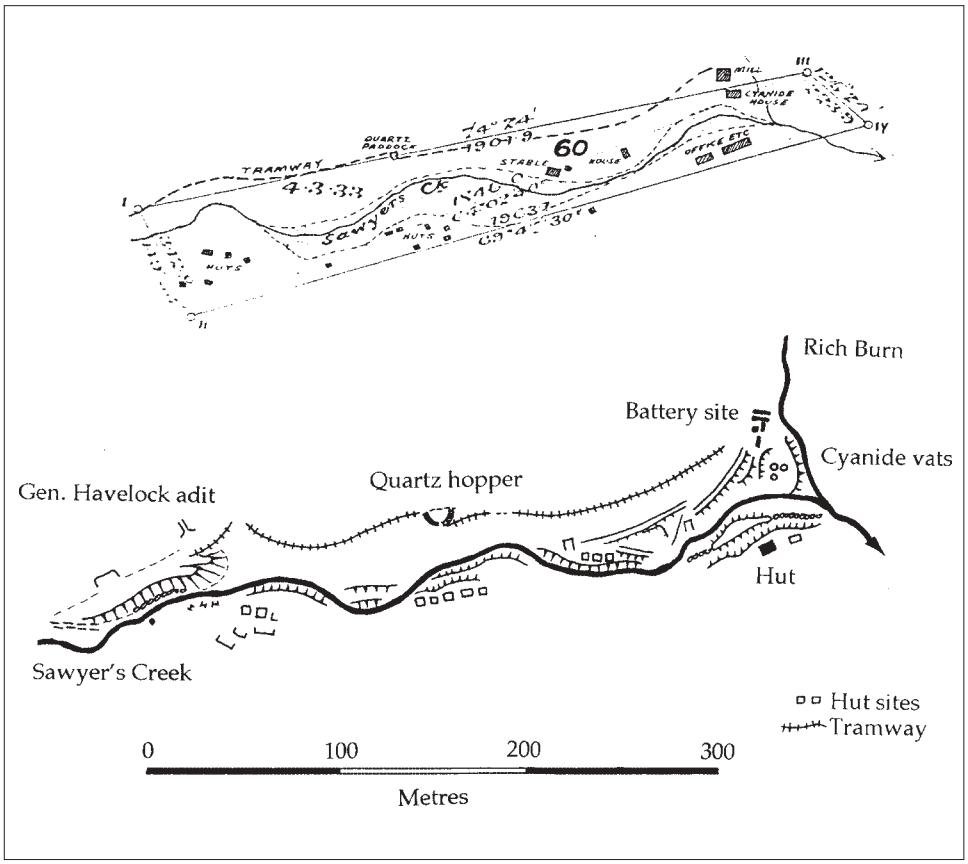


Figure 38. Comparison of 1898 plan of Sawyer's Creek (surveyed for Glenrock Consolidated Ltd with an enlargement of part of Map 4, showing archaeological features in Sawyer's Gully. The plans are produced to the same scale.
Plan S.O. 7056: Land Information New Zealand.

By late 1894, another new low-level drive was completed, and all outside works finished, but the parent company, the Glenrock Company Limited, stopped all payments. Work in the mine ceased in November 1894, and it was sold in February 1895 at auction. After a failed attempt by Farrell (of New Zealand Consolidated Goldmines) to buy the mine, it was sold to the Glenrock Company, who now had sole ownership (A.J.H.R. 1895 C3: 90). Work recommenced.

In October 1895 an electric winch was installed at the mine for hauling ore, powered by a generator running off the mill shaft. By 1897, the battery consisted of 30 stampers, arranged in two separate mills but apparently all running off the same Pelton wheel. Periodic water shortages meant that the crushers and hauling equipment could not always be run at the same time, so in 1903 a separate power house was built. This measured 30 ft by 10 ft and housed a turbine working under 200 ft of vertical pressure, driving a dynamo (A.J.H.R. 1903 C3: 108).

By this time the mine was beginning to face other problems. The depth of the workings—some 3100 feet from the surface—combined with the age of some of the timbering, was causing difficulties with tunnel stability. Two men were employed repairing and renewing timbering. There were also problems with ventilation and the power supply.

The company underwent a series of restructurings under Glenrock ownership, until in 1903 the Premier-Sunrise (N.Z.) Gold Mining Company (Ltd) purchased the mine (A.J.H.R. 1904 C3: 65). Near the end of 1904 the good run of stone that the deep workings were following cut out, and despite attempts to relocate more good stone, it was not found. In June 1905 the lower workings were abandoned, and in July the entire mine was closed (Veitch 1972). The claim was bought by the Sligo brothers, who intended to sluice the Premier Gully using the available water power (A.J.H.R. 1907 C3: 35; Powell 1976: 55), but the bed of the gully was found to be deep and rough (A.J.H.R. 1909 C3: 35).

10.3 THE GLADSTONE MINE

The Gladstone mine produced some fantastically rich returns for a short time, but the rich stone was quite rapidly worked out. A shaft was sunk 70 ft by January 1878, and a crushing of the reef that was encountered gave 3.75 oz to the ton. Excellent returns continued until the end of 1883, but by February 1884 work was suspended as the stone was exhausted (Veitch 1972).

10.4 THE LADY FAYRE MINE

The Lady Fayre Company pegged out its ground in 1876 and sank a shaft which struck good stone. The company then dug a horizontal drive in from the mountainside, and encountered three shoots of stone. Initial crushings were carried out at the Public Battery, but all later work was done at the Maryborough Battery (Veitch 1972).

In 1881 a double gravitational tramway was constructed from the tunnel to the road in Sawyer's Gully, where it was then drayed to the mill (Veitch 1972). It was abandoned when the easily accessible quartz was worked out.

10.5 ARCHAEOLOGICAL EVIDENCE IN SAWYER'S GULLY

The archaeological evidence of the Maryborough and Premier Mines are the main features in Sawyer's Gully. The battery site, cyanide tanks and an intact miner's hut are located close to the confluence of Sawyer's Creek and the Rich Burn. The Premier Mine was located further upstream, in a side gully, while the Maryborough Mine was high on the hillside at the head of the gully.

At the battery site (Figs 39, 40 and 41 and 'T' on Map 4, p. 25, and Map 5, p. 53) the 1878 support frame for the water wheel is still standing in situ, despite the wheel itself having been removed in the 1890s. Beside it are the remains of the twenty-stamp battery that stood here. One mortar box and a portion of another are all that now survive. Just behind them stands a masonry support. In front of the stamper foundations there is a building terrace, originally occupied by a corrugated iron battery shed. To the south of this terrace there are the cyanide vats constructed in 1893.

On the true right of Sawyer's Creek there is a collection of mining equipment (probably gathered there by visitors to the site) and an iron musterer's hut in sound condition ('U' on Map 4, p. 25). The interior is lined with 1930s Otago newspapers, which suggests that it was utilised by miners during the Depression. It is on the site of the old mine offices (see Fig. 38), and may date to the later part of the 1876–1906 life of the mine. Immediately beside it is a hut site, with the remains of a stone chimney.

Numerous hut and building sites are scattered up the gully, while others are known to have existed (present in contemporary photographs), but are not now visible. Seventy-five metres upstream from the standing hut, on the opposite side of the creek, there are five further building sites (including the stables and house shown on Fig. 38), while another 100 m upstream (back on the true right) there is a row of five ruined huts. A cluster of five more hut sites is located another 100 m up the gully, opposite a very large mullock heap. This makes at least 17 hut or building sites that are still easily found in the gully, with more sites certainly destroyed by the post-closure sluicing or simply not now visible on the surface.

There are also a large number of mine infrastructure remains. From the battery, a tramway formation runs up the true left of the gully to the remains of the ore hopper. From the top of the ore hopper an upper tramway runs across the top of a very large mullock heap towards the Premier Mine adit ('X' on Map 4). The mullock heap has a flattened top, and was obviously an important industrial activity area. Various items of ironwork are still scattered about, including a cast iron generator bed. On the gully floor below the heap there are numerous iron trolley wheel sets, an iron winding drum, and a variable resistance controller for the mine generator (Fig. 42).

The mouth of the General Havelock Mine (caved in) is located at the downstream end of the mullock heap ('Y' on Map 4).

Continuing upstream, a small gully on the true left of the main creek is the site of the Premier Mine low-level drive. This is still open, and there is a small collection of mining equipment in the mouth of the drive. A shaft (now

Figure 39. Maryborough/ Premier Battery site from the northeast. On the left are the cyanide tanks, and to the right the remains of the stamper frames and the water wheel frame. The Rich Burn runs in from the right, and Sawyers Creek is on the left. *Photo: P. Petchey.*

Figure 40. Maryborough/ Premier Battery stand and water wheel race supporting structure from the southeast. *Photo: K. Jones, Department of Conservation, Wellington.*

Figure 41. Maryborough/ Premier Battery cyanide vats from the west. *Photo: K. Jones, Department of Conservation, Wellington.*

collapsed) was located further up the hillside directly above the drive mouth. The Gladstone claim was also located in this small gully, running between the entrance of the Premier mine and the main gully. The entrance of the Gladstone mine was not located during the survey.

Back in the main gully, the tram formation leads around to the base of the incline tramway ('W' on Map 4), which brought ore down from the Maryborough mines high on the mountainside ('V' on Map 4). A short lower section of the incline has been damaged by a slip, but the majority of the formation can easily be followed. At the head of the incline some stone revetment and pieces of the top return equipment are visible, but the site has been damaged by earth movement.

The Maryborough mines themselves were in very steep country, and all appear to have fallen in, although some mullock heaps can still be identified. Some sections of the tracks which linked the mine drives can be followed, although once again much has slipped away.

From the top of the incline tramway a track leads back down to the bottom, crossing the incline near the top and then leading away down the hillside on the west side of the formation. Three hut sites were found in the tussock, placed to take best advantage of the sun.

Figure 42. Variable resistance controller for the Premier Mine generator.
Photo: P. Petchey.

11. Advance Peak: Sunrise, Germania mines (Map 5)

A number of small lodes were located on Advance Peak. While some of them gave good returns, operating costs were high in this elevated and exposed location. The Sunrise Mine, near the peak, was the highest gold mine in the Colony (Veitch 1972). Other mines were the Katherine, first worked by the Katherine Quartz Mining Company, and the Germania. The Keep-it-Dark Company was formed in 1878 or 1879, and was one of the main companies in the early years on Advance Peak, carting their ore down a track to the Maryborough Battery (Veitch 1972). In 1882 there was much interest in the Advance Peak ground, and a number of claims were pegged out. These included the Golden Fleece, the Golden Shoe, the Just-in-Time and the El Dorado (Veitch 1972).

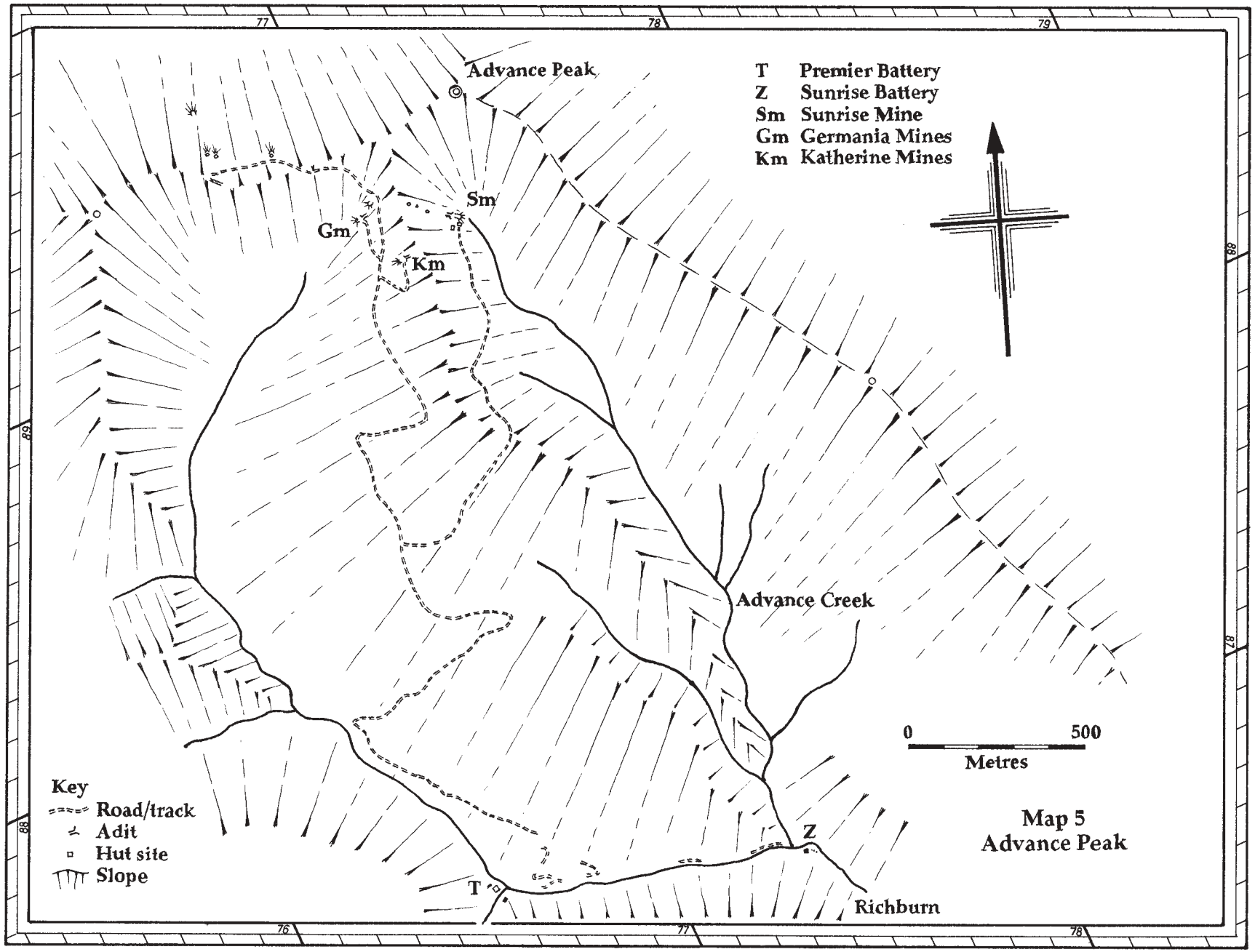
By 1883 most of the claims had been allowed to lapse, and in 1887 a new company, the Sunrise Company, took over much of the ground. In 1890 a large shed was built at the mouth of the tunnel, with a hut nearby that could house four men. The following year the company erected a ten head battery in the Twelve Mile Creek (Rich Burn), about a quarter of a mile below the Premier Battery (see Section 7.10 above). Ore was brought down the mountain in 30 cwt boxes mounted on a sled at the rear and low wheels at the front (A.J.H.R. 1891 C4: 52; Veitch 1972).

In 1892 the property was bought by the Premier Consolidated Company (A.J.H.R. 1893 C3a: 86), and a new low-level drive was planned but never built. The mine was abandoned in 1905, when the Premier Mine failed (Veitch 1972).

Between 1935 and 1938 the Ballarat Mine on Advance peak was opened, with several drives being cut on the Shotover side of the hill. The track up the Rich Burn and Advance Peak was repaired, and a small mechanical two-stamp battery driven by a 4 hp petrol engine was transported to the mine to test the ore (A.J.H.R. 1935 C2: 41; 1936 C2: 46; 1938 C2: 44). Of note was the fact that this was the highest gold battery in New Zealand, and it remained on site until illegally removed a number of years ago.

11.1 ARCHAEOLOGICAL EVIDENCE OF THE ADVANCE PEAK MINES

Advance Peak can be climbed from Macetown by two routes. A pack track climbs up from Cemetery Terrace, and follows a leading ridge to the summit. The other (and much easier) route is via the track up the Rich Burn, taking the uphill branch just before Sawyer's Gully. This route is steep but well constructed, and the track is in good condition. It is the track down which ore was sledded from the mine to the batteries for processing.


77
78
79
88
89
87
76
Advance Peak
T Premier Battery
Z Sunrise Battery
Sm Sunrise Mine
Gm Germania Mines
Km Katherine Mines
Sm
Gm
Km
Advance Creek
0
500
Metres
Key
Road/track
Adit
Hut site
Slope
T
Z
Richburn
Map 5
Advance Peak

About half way up the mountain the track again branches. The right-hand branch goes around to the Sunrise Mine, where the mullock heap and two hut sites are located (Figs 43 and 45 and 'Sm' on Map 5). Above the adit mouth (caved in) are several prospect pits. To reach the other mines on the Peak one can either follow these pits over the ridge, or one can go back down the track and then up to the mines. The former is much quicker.

The Katherine and Germania mines are easily found, with benched tracks branching off the main track lading to them ('Km' and 'Gm' on Map 5). Both have obvious mullock heaps although in both cases the drives have collapsed.

Following the main track to the top ridge, it is easy to turn to the east (right) and climb to the summit of Advance Peak. To the west the track passes close to several large pits and mullock heaps and a prospect trench (Fig. 44) right on the ridge top. From the ridge one can look down into the Shotover Valley, another important historic goldmining area.

Figure 43. The Sunrise Mine on Advance Peak, nearly a mile high. The mullock heap and steep benched track are clear. The shadow of Advance Peak is thrown across the slope in the autumn sun. *Photo: P. Petchey.*

Figure 44. Prospect trench on the ridge top of Advance Peak. *Photo: K. Jones, Department of Conservation, Wellington.*

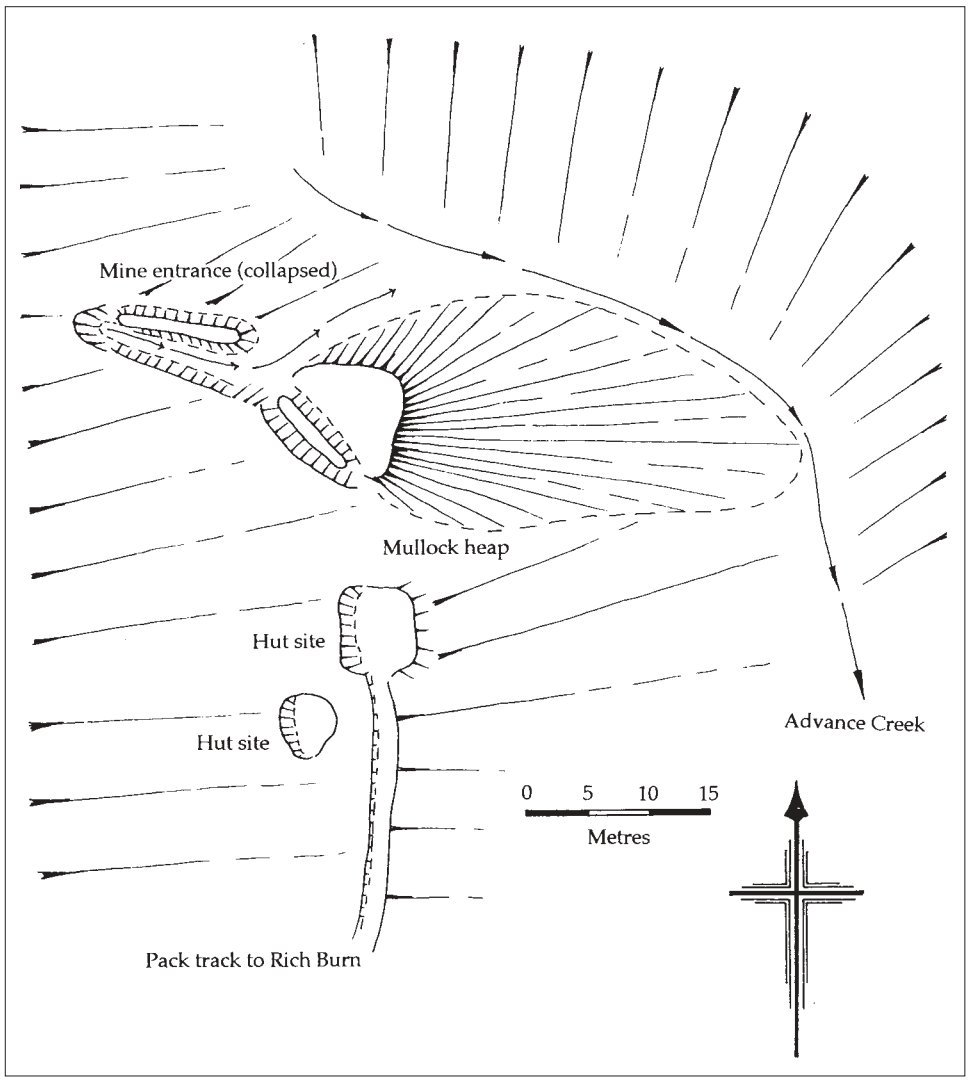


Figure 45. Plan of of Sunrise Mine site, Advance Peak.

12. Discussion

This report and survey has covered the location, layout and nature of the main mining features around Macetown, between the Eight Mile Creek and Advance Peak. As it would be possible to produce a large report on any one of the main mines or the township itself, it must be appreciated that this is an overview of the local archaeology rather than a definitive account. The five main maps in this report locate the Macetown archaeological landscape with reasonable accuracy, and show the layout of that landscape and some of its inter-relationships. What the maps cannot do is show how steep and difficult much of the country is, and how much of a challenge it would have been to establish the mining operations. For example, the map of the Skytown area (off Sylvia Creek) in no way shows how the pylons for the aerial cableway are situated on virtually inaccessible spurs and bluffs on the side of a mountain.

Macetown itself is archaeologically very rich. As well as the sites of numerous dwellings, commercial premises and other buildings, there are also surviving elements of Victorian gardens, with daffodils blooming in the spring still confined to their original garden plots. Surrounding, and in places cutting through, the township are alluvial gold workings, a constant reminder of the reason for the township's existence.

The extensive alluvial workings along the hillside above the township contain some excellent examples of both ground sluicing and hydraulic sluicing and, even more importantly, a number of examples of the later technology replacing the older methods, with this progression readily visible in the archaeology.

The hard-rock mines in the valleys branching off the Rich Burn and up Advance Peak are good examples of remote underground mining systems, with mines, tramways, batteries and small settlements showing how miners in the valleys lived and worked. Some of the engineering works employed to link the mines with the batteries in the valley floors are extremely impressive. The All Nations cableway has to be viewed to be appreciated; the pylons marching into the mountains look completely inaccessible when viewed from below. Similarly, mines and huts nearly a mile high on Advance Peak illustrate the determination that was present to find gold at any cost.

Similarities in the technical details of some sites, such as the almost identical Homeward Bound and All Nations cableway structures, provide archaeological evidence of how many of the Macetown mines were run by only a few large companies by the end of the nineteenth and beginning of the twentieth centuries. The two cableways were built at the same time, to almost identical specifications, by the same company. Both only saw a few years' use.

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MAPS AND PLANS

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Plan of Macetown. E. H. Wilmot, Jan. 1878. (Hocken Library)

Plan of Macetown Reefs. R. & A.J. Park, Nov. 1880. (Hocken Library)

S.O. 7056, 1896 plan of L.H. Appn. for Glenrock Consolidated Ltd. Land Information New Zealand.

14. Glossary

Adit: A nearly horizontal excavation (tunnel) for access, drainage or ventilation of a mine (see drive, shaft, tunnel).

Alluvial mining: Alluvium is rock eroded and deposited by rivers and streams. It is usually unconsolidated or not lithified (i.e. composed of loose matter rather than solid or hard). Alluvial mining is, therefore, the mining of these deposits. Because they are generally relatively soft, water can often be used to mine them.

Battery: A name for a set of stampers or stamping mill. A mechanical device used to crush rocks so that the ore contained in them can be extracted (see mill, stamping battery).

Berdan: Large cast iron dish into which fine gravels (often crushed rock from the stampers or battery) are ground very finely prior to ore recovery. The dish has a slightly offset vertical axis which causes the dish to rotate on a slight angle to the horizontal. A steel weight in the dish (anchored by a chain) crushes the fine gravels as the dish rotates.

Buddle: A device for concentrating ore that uses a circular arrangement from which the finely crushed ore is delivered in water from a central point; the heavier particles (metal) sinking and the lighter particles (rock) over-flowing.

Concentrating table (Wilfley table): A device for separating gold from rock. It consists of a riffled deck to which a reciprocating motion in a horizontal direction is applied. The material to be separated is fed onto the table in a stream of water; the heavy particles (gold) collect between the riffles and are conveyed in the direction of the reciprocating motion, and the lighter particles (rock) are carried by the water over the riffles and discharged laterally from the table.

Crushing battery: See battery.

Cyanide tanks: Tanks used to contain cyanide and water solution. Finely crushed ore particles are added to the solution. The gold forms an amalgam with the cyanide. This amalgam is heavy and can be separated from the solution for further processing to extract the gold.

Drive: A horizontal or inclined excavation along or parallel to a lode, vein, reef or ore body (see adit, shaft, tunnel).

Ground sluicing: Washing gold-bearing earth through sluices provided with riffles and other gold-saving appliances. Also used to mean moving non gold-bearing earth (over-burden) by water to get to the gold-bearing material. In this case the material is washed away without going through the gold-saving appliances.

Hard rock, hard-rock mining/mines: Very hard rock which requires drilling and blasting to mine. Hard-rock mines commonly use tunnels, shafts etc. to gain access to underground minerals. Lodes, veins, reefs etc. are usually hard rock. These are often the source rocks for alluvial deposits.

Head: Can refer to either the pressure of a water supply (the vertical distance between the head of the pipes and the outlet); or a measured amount of water (the 'sluice-head', equal to 60 cubic feet per minute).

Hopper: (1) A funnel-shaped reservoir from which solid materials can be discharged into a receptacle below, especially for feeding a furnace, loading a truck etc. (2) An open-mouthed railway truck for loose minerals etc. unloaded through doors on the underside.

Hydraulic sluicing/mining: A method of mining in which a bank of gold-bearing earth or gravel is washed away by a powerful jet of water and flows through sluices, where the heavier gold separates from the lighter earth. The sluices are provided with riffles and other gold-saving devices.

Lode/reef: A fissure in hard rock filled with mineral—usually applied to metalliferous deposits. Lodes/reefs are usually confined between definite boundaries and are usually limited in extent compared with the surrounding non-mineralised rock. The most common mineral of lodes/reefs is quartz, which may or may not contain gold and other metals and minerals, especially at the interface with schist. Gold, if present, may have a patchy distribution through the lode/reef. See vein.

Mill/milling: preparing the ore—particularly that mined from hard rock—for further processing to extract the gold. This usually involves fine grinding, then processing with various chemicals.

Mullock heap: Waste rock heap. Valueless rock that has been fractured and removed in order to gain access to ore, or in the process of extracting the ore.

Pelton wheel/turbine: An impulse water-turbine in which specially shaped buckets attached to the periphery of a wheel are struck by a jet or jets of water from one or more stationary nozzles. Requires a pressurised water supply.

Quartz-reef mining: Hard-rock mining of quartz reefs that contain gold. See hard rock, lode.

Reef/reefing companies: Companies set up to mine quartz reefs for gold.

Revetment/revetted: A facing or retaining wall made on a soil or rock embankment to prevent scour by weather or water; commonly made with rock or stones.

Shaft: A passage or excavation, usually vertical, leading from ground level into an underground excavation or mine for the purposes of ventilation, access etc. (see also tunnel, adit, drive).

Stone: Another (colloquial) term for the rock of a reef, lode or vein.

Tunnel: A long, narrow horizontal or nearly horizontal underground excavation, commonly (but not always) open to the atmosphere at both ends (see also adit, drive, shaft).

Stamping battery/mill: A machine for crushing hard ores or rocks. Consists essentially of a crushing member (gravity stamp) which is dropped on a die, the ore being crushed in water between the shoe (head) and the die. The stamp shoe/head is a heavy and nearly cylindrical cast-iron head fixed on the lower end of the stamp rod, shank or lifter to give weight in stamping the ore. The crushed ore can then be further processed to extract the gold. See mill/milling.

Vein: An occurrence of ore, usually disseminated through a gangue or veinstone (commonly quartz) and having a generally regular development in length, width and depth. See also lode/reef.

Water race: A narrow constructed channel for bringing water from elsewhere to a place where it is needed for some purpose such as irrigation, power generation or sluicing. A supply race takes water to the workings (often from a dam or swamp), a head race leads into the workings and a tailrace takes water and fine tailings away from the workings.

An aerial cableway pylon, Homeward Bound cableway (see Section 7.9.1). *Photograph: P. Petchey.*