

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of applications by TrustPower Limited to Westland District Council and West Coast Regional Council for resource consents to operate and maintain the Kanieri Forks Hydro-Electric Power Scheme, and enhance, construct, operate and maintain the Mckays Creek Hydro-Electric Power Scheme

STATEMENT OF EVIDENCE OF RODNEY EDWARD CLOUGH

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1. INTRODUCTION

Qualifications and Experience

- 1.1 My name is Rodney Edward Clough. I am the Director of Clough & Associates Ltd, Heritage Consultants.
- 1.2 I have the following qualifications, experience and professional affiliations relevant to the evidence I shall give:
- (a) I hold a Doctorate in Archaeology from the University of London and a Master of Arts in Anthropology from the University of Auckland.
 - (b) I was President of the New Zealand Archaeological Association (NZAA) 2009-2011 and currently sit on the council as Immediate Past President.
 - (c) I am a member of the New Zealand Historic Places Trust (NZHPT) and the International Committee on Monuments and Sites (ICOMOS).
 - (d) I have over 40 years experience in the field of archaeology including research, survey, investigation, analysis and report preparation, covering a variety of time periods and geographic locations. Over the last 24 years this work has largely focussed on New Zealand archaeology.
 - (e) I lectured in archaeology at the University of Auckland for several years prior to establishing my consultancy (1987-1994), and have continued to carry out joint research projects with the University. One of my areas of expertise is in New Zealand's historic and industrial archaeology and I am currently preparing heritage management plans for the historic goldworking site of Union Hill at Waihi, the historic brickworks site at Hobsonville, Auckland and preparation of evidence relating to the historic gold mining remains in the Lower Nevis Valley in Central Otago. In the past I have prepared conservation plans for the historic Chelsea Sugar Works, the Riverhead Flour and Paper mill and investigated the remains of the historic Pollen Brickworks in Auckland.
 - (f) My practice carries out a range of work relating to cultural heritage management - in particular archaeological assessments relating to Resource Management Act 1991 (RMA) and Historic Places Act 1993 (HPA) requirements, conservation and management plans, survey, inventory and mitigation investigations. This has included hundreds of surveys and heritage assessments throughout New Zealand. Of particular relevance, I have been the project archaeologist for numerous hydropower schemes (Wairau River Valley HEPS, Blenheim, Matahina

HEPS on the Rangitaiki River, Bay of Plenty, Patea River HEPS, Taranaki), and for geothermal (Te Mihi, Wairakei and Tauhara in Taupo) and windfarm projects (HMR Waikato, Turitea Palmerston North, Waiatahora Dannevirke). I have also undertaken numerous other projects for road, rail, sewerage and water supply schemes. As a consequence I have a good understanding of and experience in the requirements of large infrastructural projects.

2. ROLE IN THE KANIERE RIVER HEPS

- 2.1 In August 2009 I was engaged by Trust Power Ltd (TrustPower) to undertake a heritage assessment of the proposed consenting of and upgrade to the existing Kaniere Forks and McKays Creek Hydro Electric Power Schemes (HEPS) to evaluate effects on historic heritage. As the Committee will be aware, the proposed upgrade to the Kaniere HEPS has subsequently been placed on hold, so is not addressed further in my evidence.
- 2.2 Fieldwork was carried out by Clough & Associates Ltd (myself and Kim Tatton¹) in August and November 2009 and a further study was undertaken under my supervision in August 2010 (Kim Tatton and Vanessa Tanner²).
- 2.3 In addition to the field survey and preparation of a heritage report, I also attended public open days and project team meetings, and met with NZHPT (13th October 2011) regarding its submission on the project.

3. CODE OF CONDUCT

- 3.1 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Consolidated Practice Note (2011) and I agree to comply with it. In that regard I confirm that this evidence is written within my expertise, except where I state that I am relying on the evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

4. EXECUTIVE SUMMARY

- 4.1 The key conclusions of my evidence are as follows.
- 4.2 The Kaniere and McKays HEPS incorporate a number of heritage features.

¹ Kim Tatton is an integral part of the Clough & Associates Team. She has an MA (Hons) in Archaeology from Auckland University and has in the past served as Regional Archaeologist for the Department of Conservation in Rotorua, Regional Archaeologist for NZHPT Auckland and as Archaeologist for the former Auckland Regional Council.

² Vanessa Tanner has an MA (Hons) from Otago University, has in the past worked for Clough & Associates Ltd and the Auckland Regional Council and is currently the Senior Archaeologist for Auckland Council.

- 4.3 The Kaniere Water Race is the most significant of these features. It was originally built in 1875 to supply water for gold mining claims at Kaniere Forks. It was modified, expanded and strengthened between 1907 and 1909 to supply water to produce hydroelectricity, and has been maintained, upgraded and repaired on a number of occasions in the years since.
- 4.4 I consider that the Kaniere Water Race is of moderate to high heritage significance within the region, based on historical, archaeological, technological, architectural, aesthetic, educational and other relevant values. Its historical significance derives partly from the fact that a large part of the race has been in continuous (although interrupted) use from 1875 to the present day.
- 4.5 I consider that the archaeological values of the working Race are low to moderate as the Race has been continuously modified and maintained, replacing earlier elements and abandoning other sections of the Race. Most of the archaeological value relates to earlier abandoned sections of the race.
- 4.6 The McKays HEPS does not incorporate pre-1900 elements, but I consider it to have some heritage value based on its contribution to hydro-electric power generation in the Hokitika area, dating back to the 1930s, and from a technological perspective.
- 4.7 Two archaeological sites relating to early gold working activities have been recorded in the vicinity of the McKays HEPS, and potential archaeological features relating to early gold working or logging activities were noted in some locations along the Kaniere Water Race. Vegetation cover currently inhibits detailed assessment, and it is likely that further features are present.
- 4.8 I conclude that the proposed re consenting of Kaniere HEPS will have less than minor adverse effects as they would be confined to ongoing maintenance of the existing race. The proposed enhancements of McKays HEPS will have some adverse effects on the heritage values of the McKays Water Race. I believe that the effects can be acceptably mitigated, such that overall they will be less than minor. The proposed mitigation measures include the development of a Heritage Management Plan, detailed recording of McKays HEPS and the creation of an interpretation facility at the Kaniere Intake. Recording of archaeological sites associated with the Kaniere HEPS has also been recommended as part of the HPT Authority Process.
- 4.9 I have also identified the potential for adverse effects on unrecorded or unconfirmed archaeological sites and features relating to early gold mining and logging activities that may be present. Recording and investigation of such sites prior to their removal would be acceptable, and can be managed through Accidental Discovery Protocols (ADP) and under the archaeological provisions of the HPA.

5. SCOPE OF EVIDENCE

5.1 The scope of my evidence includes the following matters:

- (a) Methodology used in the Assessment of Environmental Effects (AEE);
- (b) The historical context;
- (c) Description of archaeological and heritage values;
- (d) Effects of proposed upgrade on heritage values;
- (e) Management of effects and mitigation;
- (f) Responses to issues raised by submissions and the Officers' Report; and
- (g) Conclusions.

6. METHODOLOGY

6.1 The initial phase of assessment involved a search of the NZAA site database (ArchSite) to establish whether any archaeological sites had been recorded on or in the vicinity of the McKays and Kaniere HEPS. Relevant historical accounts, early plans and archaeological reports relevant to the area were consulted at the Department of Conservation (DOC) office in Hokitika and the Hokitika Museum.

6.2 A general site inspection of the McKays and Kaniere HEPS was undertaken on 13 August and 5 November 2009 by myself and Kim Tatton. This inspection did not include a detailed ground survey of the entire area of the HEPS, but involved the location of the sites recorded on ArchSite (NZAA Digital Site Recording Scheme) and a thorough inspection of the Kaniere Water Race. The Race was photographed and GPS readings taken.

6.3 Subsequently another site inspection of specific areas of the HEPS where enhancements are proposed was undertaken on 14-16 August 2010 as part of a detailed assessment of effects. The inspection included detailed ground survey of the Kaniere Water Race between Lake Kaniere and Wards Road, the proposed area of the Kaniere HEPS Wards Road penstock, power station and tailrace, the proposed alignment of the new section of the McKays HEPS race and proposed areas for depositing cut material associated with this new section of McKays race.

6.4 The heritage significance of the Kaniere and McKays Water Races was assessed using the relevant criteria in Heritage Policy 6 of the Regional Policy Statement for the assessment of effects of the proposal on its heritage values.

- 6.5 The AEE also included an assessment of the effects on known and potential archaeological sites adjacent to the Water Races.
- 6.6 The assessment did not include an assessment of the effects of the project on Maori cultural values. Mr Piddington's evidence describes the consultation undertaken with iwi.

7. THE HISTORICAL CONTEXT

- 7.1 The Kaniere Race has a long and interesting history focussed on the two significant elements of gold mining and power generation, with a subplot of water provision for Hokitika in the background. This history has been documented in some detail in the AEE report, some of which is repeated here as it is critical to understanding the heritage values affected by the enhancement proposals. References supporting the information below can be found in the AEE report.

Sluicing for Gold Mining

- 7.2 The Kaniere gold rush followed others around the West Coast gold rush capital of Hokitika in April 1865. Situated at the junction of the Hokitika and Kaniere Rivers, the proximity of the Kaniere diggings to Hokitika meant that the area was easily accessible and gold diggers and the associated suppliers arrived quickly. In July 1865 the estimated population of the Kaniere field was 3000 and it swelled to 4200 in October 1866. However, by 1867 miners were leaving Kaniere for other mining areas as many ventures on the field failed.
- 7.3 The first mention of a proposal to tap the water resources of Lake Kaniere was on 6 June 1868 in a report in the *West Coast Times*. After the easily recovered gold was exhausted, water races were needed to supply water for sluicing. A few months later, surveyors were pegging the proposed line of the Race, and drawing up plans, specifications and costings. After several false starts, the Race was constructed and in working order by 1875. It was able to carry 75 Government sluice heads of water, but was only registered to carry 60 sluice heads.
- 7.4 However, although a number of parties had taken up claims along the line of the race, it was not the success that had been anticipated, and it was only supplying 30 men in 1876, out of a possible 475 in the area. By 1881 the Race was no longer in use.
- 7.5 In 1889 it was reported that a group of Chinese miners had been granted use of the Race, and that the Race itself had never been completed to its planned extent. By March 1889, a group known as Owens and Party were at work on the Race, preparing the first 5km of the Race and adding a smaller 4km branch, to bring water to their claim at Kaniere Forks and Blue Bottle Creek. While sections of the Race remained in good condition, the tunnels and fluming required some work to make the Race usable again.

- 7.6 In 1890 the Kaniere Water Race and Mining Co. was registered, of which Owens and Party were shareholders, and held rights to the Lake Kaniere Water Race. This company diverted the Race from the three mile peg (Lake Kaniere) and from there carried the water to the Kaniere Forks. The necessary works on the Water Race had been completed early in September and allowed mining to commence on the company's claim at the Kaniere Forks.
- 7.7 However, by 1894 the Race had again been sold. The new owners extended the race by installing a pipeline across the Kaniere River to supply hydraulic sluicing claims working on the right hand branch of the river. The Race continued to be used throughout the 1890s, supplying hydraulic sluicing claims in the Kaniere Forks area. In 1894 water was also piped to claims up Blue Bottle Creek, where sluicing continued until 1902.

Electricity Generation for Gold Mining

- 7.8 In 1906 H.H. Smyth proposed using the Lake Kaniere Water Race (**Figure 1**) to generate electricity, its purpose being to run equipment to dewater the deep alluvial mine shafts at Jones Flat in Ross. Another scheme at the time was a proposal to use the Race to supply the Hokitika town water supply from Lake Kaniere, but this scheme was unsuccessful.
- 7.9 The Smyth proposal succeeded, however, and Ross Goldfields Ltd was formed to undertake the works. This company bought the rights to the Water Race (50 Government heads) and let the contract for installing the power scheme. In order to supply the necessary quantity of water to the power station, the size of the approximately 8 mile long Race was increased and it was strengthened. Two iron pipes were installed, dropping the final 80m to the Kaniere Power Station to provide sufficient volume and pressure to drive the two 350 kilowatt (kW) turbines. The Kaniere Forks Power Station was opened in September 1909 but by October 1910 the company was in liquidation and the Race was again unused until 1913.

Electricity Supply Extended to Other Users

- 7.10 In 1916 Woolston Tanneries, a Christchurch based firm with two gold mines in the Hokitika area at Woodstock and Back Creek, purchased the Kaniere Power Scheme and set up a subsidiary company called Kaniere Power Ltd. The Race and power scheme are believed to have been in continuous use since the time this company commenced producing power. Kaniere Electric Ltd supplied power to both the Rimu Dredge (which commenced work on 12 September 1921), to Wileys Flax Mill on the Kaniere-Longford Road, and to Hokitika township.

HEPS Expansion and the End of Gold Mining

- 7.11 The running of the Rimu Dredge caused such huge power fluctuation that in 1931 another power station was built at nearby McKays Creek. A concrete weir was constructed across

the Kaniere River below Johnsons Flume and the intake for the McKays Power Station positioned on its south bank.

- 7.12 In 1947 the New Zealand Electricity Department (NZED) constructed a transmission line from Arahura substation to the Westland Hospital, which Kaniere Electric Ltd was already supplying, to enable the NZED to purchase any surplus power. The Rimu Gold Dredging Company's venture proved one of the most successful in New Zealand. However, diminishing gold returns saw the Rimu Dredge cease operations in April 1953, although Kaniere Electric Ltd continued to produce power at its two power stations.
- 7.13 In 1959, however, the McKays and Kaniere HEPS were sold to the Westland Electric Power Board to supply electricity to Hokitika Borough and the wider Westland County. The power board (through its successors) owned the scheme until it was purchased by TrustPower in April 1999, following the deregulation of the electricity industry.
- 7.14 In 1973 a major setback occurred when the Johnsons flume on the Kaniere Water Race collapsed. However, this and many of the other timber flumes on the Race were replaced with treated timber during the remainder of the 1970s. Then two fires at the Kaniere Power Station, one in 1979 and another in 1981, caused extensive damage resulting in a total rebuild. Fortunately, the turbines and generators were able to be restored.
- 7.15 TrustPower still operates the Kaniere and McKays HEPS today, generating approximately 430 kW and 1100 kW respectively, enough to supply approximately 1500 homes.

8. DESCRIPTION OF ARCHAEOLOGICAL AND HERITAGE VALUES

- 8.1 There are a number of archaeological sites recorded in the NZAA site record file for the area east of Hokitika to Lake Kaniere. The sites recorded around Kaniere relate primarily to 19th century gold mining and industry. Only three sites are recorded within the vicinity of the McKays and Kaniere HEPS area – J33/67 is the Kaniere Water Race itself, and J33/63 and J33/64 are Gold Working sites in the general vicinity of the McKays HEPS (Figure 1 and **Figure 2**).
- 8.2 There are no recorded sites of Maori origin within or in the vicinity of the McKays and Kaniere HEPS. The potential for unidentified archaeological sites of Maori cultural association within the project area does not appear to be high, but cannot be ruled out.

Kaniere Water Race (J33/67)

- 8.3 The Kaniere Water Race is a 9km long large capacity water race for its time running from Lake Kaniere to Kennedy Creek. Originally built in 1875 to supply water for gold mining claims at Kaniere Forks, it was later modified, expanded and strengthened between 1907

and 1909 to supply water to produce hydroelectricity (as outlined previously in my evidence), and has had ongoing maintenance, upgrade and repairs. As already noted, it is the most significant heritage item identified within the Kaniere HEPS.

- 8.4 Generally most of the Kaniere Water Race is open channelled in the ground, but where it is unstable the sides have been timbered and boxed. Timber fluming allows the Water Race to cross gullies and tunnels were constructed to cross steep hillsides.
- 8.5 Associated with the Water Race is the raceman's track. Located on the berm of the Race, it would have been constructed at the same time to provide access for a raceman to repair and maintain the Water Race.
- 8.6 At the Landing on Lake Kaniere is the intake channel for the Kaniere Water Race. The banks of the intake entrance on the Lake and the channel are walled with stone boulders, a section of which (on the eastern side of the intake entrance) has collapsed (Figure 16 in AEE) and has been repaired.
- 8.7 There are two control gates on the intake that regulate the water flow into the Race and into the Kaniere River (Figure 17 in AEE). In 1916 Woolston Tanneries constructed a concrete weir at the lake outlet to the Kaniere River, to raise the lake level by half a metre to ensure a reliable water supply to the Kaniere Power Station. This weir is still in place, and there is also a line of metal posts visible immediately downstream of the concrete weir that may relate to an earlier weir (**Figure 3**).
- 8.8 Archival photos show a 'Gauge House' situated beside the intake which regulated the supply of water into the Race. This building is no longer present. On the 'island' between the Kaniere River and the intake channel there is a small terrace feature that was probably the site of the gauge house, but more recently was the location of a DOC information centre (now removed). (See **Figure 4**.)
- 8.9 Originally there were three cottages for power station operators at Kaniere. Today there is a wooden cottage standing near the power station that may have been one of the operators' accommodation cottages (Figure 20 in AEE).

Lake Kaniere to Wards Road Section

- 8.10 The section of the Water Race from the Landing at the northern end of Lake Kaniere to Wards Road initially follows the Kaniere River, and then deviates east around the hillside for approximately 2.7km to Wards Road. The Race and track pass through an area of young native re-growth where the original forest was logged in the 1920s. This section is in good condition overall and has been subject to relatively little modification over time other than routine maintenance. The Race varies from a cut channel only, to having sections

with timber retaining and boxing to hold the sides of the Race (**Figure 5**). In two places stone boulders were used to retain the sides of the Race (in one instance where a side stream flowed into the Race, and at the entrance to the tunnel before Wards Road). Stone retaining of the Race walls is probably more frequent than is visible due to modern boxing and vegetation cover concealing these areas. Six sections of timber fluming allow the Water Race to cross gullies – five over natural side streams (**Figure 6**) and one around the hillside – and there are three tunnels that were constructed to cross steep hillsides. The section also includes four sills, one weir and one modern control structure.

- 8.11 The continuous cycle of repairs to the Race is evident as older repairs remain or are added to by modern boxing (**Figure 7**). In some places, the original, durable Rimu posts and timbers can still be seen in the Race, often associated with treated pine timbers where recent repairs and maintenance continue on the Race.
- 8.12 An outer bank or wall of spoil was identified running parallel to the Kaniere Water Race, at times on both sides of the Race and track, from chainage 600m to 1200m (Figure 46 in AEE report). This bank is likely to be the result of the construction, upgrade or maintenance of the Water Race itself.
- 8.13 The raceman's track runs along the true left of the Race (except where the Race flows through a tunnel), and was built either on fill (presumably from material excavated for the Race) or directly on the ground. There are some short sections of benching and half benching on the track and three cuttings. In places this track has original stone edging and retaining on its outer edge (**Figure 8**). Modern repairs to the track are also evident as treated timber retaining and with the building of modern timber boardwalks.
- 8.14 K. Watson, who carried out a heritage assessment for DOC in 2008, noted what appears to be a historic gold mining water race between chainage 2000m and 2100m (Grid Ref 2357353 5822984) and near chainage 600m (Grid Ref 2357813 5821837), which has had a timber boardwalk constructed over it, on the section of the Kaniere Water Race between the Lake and Wards Road.³ No other definitive evidence of gold mining was found during our surveys, but in a number of places adjacent to the Race irregular ground features, such as holes and mounds, were noted that might prove to be evidence of mining and prospecting, or early logging activity. However, detailed archaeological survey of the proposed enhancement areas was hindered by the vegetation cover, making the identification of early gold mining and other activities extremely difficult.
- 8.15 The site of the Wards Road raceman's hut is located where the Race track reaches Wards Road, on its eastern side. All that remains of this hut is the concrete platform and steps

³ K. Watson, Dec 2008. Lake Kaniere Water Race Walkway Heritage Assessment and Baseline Inspection Report. Unpublished report prepared for the Hokitika Area, Office, Department of Conservation.

(Figure 9). Two huts were built on the Kaniere Race for the racemen to live in, one at Wards Road and one at Lake Kaniere. The raceman's job was to maintain the Race and control the flow of water through the Race. Neither of these huts survives on their original sites.

- 8.16 The remains of a water wheel also stand beside Wards Road near the site of the Wards Road hut (Figure 29 in AEE). However, this wheel was recently transported into this area from elsewhere and is not associated with the Kaniere Water Race.

Wards Road to Kennedy Creek Section

- 8.17 In the section of the Water Race which runs from Wards Road and finishes at Kennedy Creek, the Race and associated raceman's track are not in as good condition as in the Lake Kaniere to Wards Road section. The terrain that this section of the Race crosses is very steep in parts and there are a number of large slips and blowouts that have taken out the Race and track in the past (Figure 30 in AEE), and many modern culverts have been installed to divert water off the hillside. Other modern features include timber bridges, boardwalks, steps, rerouted track and drains. There are also four concrete sills, two modern water control structures, three tunnels and 14 sections of fluming across stream gullies. There are a number of large side creeks that are flumed either under or over the Water Race.
- 8.18 As in the previous section, the Water Race and track run beside each other, except where the Race enters a tunnel, or where the original track has been damaged by a slip and rerouted. The Race again varies from a cut channel only, to having sections with timber retaining and boxing to hold the sides of the race. The continuous cycle of repairs to the Race is also evident on this section of Race as older repairs remain or are added to by modern boxing. Again, original, durable Rimu posts and timbers can still be seen in the Race, often associated with treated pine timbers where recent repairs and maintenance continue on the Race.
- 8.19 The most significant factor on this section is that the water race used by TrustPower leaves the original Kaniere Water Race and is sent through a series of three long tunnels around Tunnel Hill. However, the original disused Water Race is still visible and the original raceman's track (now used as the walking track) continues along beside this now dry Race (Figure 33 in AEE). This original dry Race certainly pre-dates the TrustPower water race and is likely to be the original 1875 Water Race.
- 8.20 The original disused Race has deteriorated significantly and is in a poor condition. The sides have slumped and eroded and vegetation is growing within and on the sides of it (Figure 34 in AEE). There are at least six blowouts on the original Race, which have damaged the track, and modern bridges have been built over them. At one location the

original Race contains early boxing timbers, which must at least predate the construction of the new race from 1907 (**Figure 10**).

- 8.21 Overall this original Race is very narrow, only 700mm–1m wide, which may indicate the original width of the Race. There are four smaller tunnels on this Race, as well as a section where the Race had not originally flowed through a tunnel but a tunnel was built later and the Race blocked off. This would suggest an intermediate phase of reconstruction on the original Race between 1875 and the 1907 re-routing of the Water Race through Tunnel Hill.
- 8.22 Other associated historic features on this section of the Water Race include some stone edging and stone surfacing of the raceman’s track, three possible borrow pits, a metal pipe, a possible gold mining water race between Wards Road and chainage 2800m (Grid Ref 2356829 5823428), and a natural stream that may have been mined, with timbers and a drilled rock. Again, thick vegetation cover hampered survey and made it extremely difficult to identify features on the ground.

Comparison with Other Water Races in the Region

- 8.23 The Kaniere Race (J33/67) is by no means a unique feature of the region as there are some 47 water races recorded on the West Coast (within the NZAA ArchSite database). These are listed in **Table 1**. They were primarily associated with mid–late 19th century mining ventures. Many, like the Kaniere Water Race, were reused and adapted time and again by subsequent mining companies, and later developed for other functions (e.g. hydroelectric power, domestic water supplies). Some of the surviving water races also incorporate other structures such as tunnels and fluming in common with Kaniere.
- 8.24 Other water races of comparable length within the region include the Waimea Water Race (J33/33) and the Okuku Water Race (J32/86 13km long). Kaniere is unusual in that it has seen almost continual use from the 1870s to the present. While this has resulted in its constant modification and expansion it has also ensured that it has been maintained and repaired and today, is in excellent working condition. It also includes now disused but identifiable sections of its original alignment. Other water races of this extent on the West Coast are now disused and in varying states of decay. While many sections remain in good condition and clearly visible, other sections have been damaged or destroyed or are no longer visible. From an archaeological perspective many of the other races have been less impacted on and have more intact remains from the earlier periods of use.
- 8.25 Many water race sites are on Crown land making them accessible to the public. Some, for example, the Ross Water Races have established tracks with interpretation panels. The Kaniere Water Race has an established and well-known walking track along its length that relates to the historic raceman’s track along the bank of the Water Race.

- 8.26 Several other water races on the West Coast potentially have a similar level of significance, such as Waimea (J33/33), Okuku (J32/86) and Ross Water Races (J33/48, 49). In reviewing the site records for water races, it is evident that there are many elements of this type of industrial site in good condition in the general area and throughout the West Coast.

Heritage Significance of the Kaniere Water Race

- 8.27 The Water Race has historical value due to its association with the post-rush gold mining era on the West Coast and the subsequent settlement of the West Coast and Hokitika, and through its association with the development of hydro-electric power generation in the Hokitika area. Its historical significance also derives from the fact a large part of the race has been in continuous (although interrupted) use from 1875 to the present day.
- 8.28 While by no means the only water race to be found in the West Coast region discussed above (paragraphs 8.23-8.26) the Kaniere Water Race has significance as a working engineering structure and a public work with its origins in the 1870s. Technologically it has value because it retains its original, although modified, form and function. It has archaeological value because it retains early fabric (including pre-1900 fabric), and elements of the structure date from the early colonial period. It has some potential to provide knowledge of New Zealand history through archaeological investigation, as well as through extensive surviving documentary material. However, its archaeological value has been affected by ongoing maintenance and replacement of original elements.
- 8.29 Original channel retaining timbers and stone retaining are still present on sections of the Race, in places associated with modern timbers or stonework where repairs have been necessary. However, many of the current features, such as water control structures, sills, weirs and fluming, are relatively modern, although some of these would have replaced earlier features. This replacement of elements demonstrates the reality facing heritage structures which are a functioning part of the country's infrastructure and which have remained in use over a lengthy period of time.
- 8.30 Continuous modification and maintenance have been an integral part of the history of the Water Race. For example, the purchase of the Lake Kaniere Water Race by the Ross Goldfields Ltd in 1906 saw significant works undertaken on the Race to get it back into use and increase the quantity of water supplied. This involved widening and strengthening the first 5km of the Race from Lake Kaniere, the construction of a 4km branch race to Kaniere Forks, 4.5km of tunnelling and 185m of fluming (TrustPower 2009a). The longest tunnel, constructed in 1907 through 'Tunnel Hill', is 2km long. It was clear from the field inspection that most elements relating to the 19th century race will have either been abandoned or extensively modified, if not destroyed by upgrading the facility in the early 20th century. There are, however, disused sections of the Race which are relatively unmodified and these have greater archaeological value.

- 8.31 In addition to the visual amenity and landscape issues addressed by Ms Buckland, from a heritage perspective (and as relevant to the criteria for assessing heritage value from the RPS), the race has obvious aesthetic value because of its visible structural elements and its natural setting within public conservation land. It is also well known to and valued by the local community, and has considerable potential for public education about early colonial technological achievements, the post-rush gold mining era locally and on the West Coast, gold mining techniques, such as sluicing, and the development of the hydroelectric power industry. The Race forms part of the wider goldmining and hydroelectric generation landscape of the Hokitika area and the West Coast generally, that incorporates other surviving elements, such as the Kaniere Tramline, mining evidence at Kaniere Forks and Blue Bottle Creek and the historic town of Kaniere. The features of the race are not rare within the region and are found in good condition at other sites around Hokitika, such as Humphrey's Gully Water Race on the Arahura River. Similar features (many less modified by almost continuous use) are found throughout the region.
- 8.32 The associated track on the berm along the length of the original Race is contemporary with it, and the Race and the track are integral to each other. Like the Race, this track has value because it retains its original, although modified, form and function, and it continues to be used as a popular DOC walking track.
- 8.33 Overall, I consider the Kaniere Water Race and associated features to have moderate to high heritage significance within the region, although the archaeological values of the Water Race itself are low to moderate due to the modifications that have been made to the original structures in sections still in use. The parts of the Race that have the most archaeological value are those which are currently disused and remain relatively unmodified. Other races such as those at Ross, Waimea and Okuku have higher significance as they are closer to their original state than the sections of the Kaniere Race still in use.

Kaniere Forks Power Station

- 8.34 The Kaniere Forks Power Station was opened on 8 September 1909 and generated 750 kW of power by two Pelton Wheels, supplying power to pumps and winches on Jones Flat, as well as for electric lighting in Ross (**Figure 11**). Two fires at the Kaniere Power Station, one in 1979 and another in 1981, caused extensive damage resulting in a total rebuild of the power station building.
- 8.35 However, the turbines and generators in the Power Station are the oldest commercially operating equipment of this kind in New Zealand, and therefore of some limited heritage significance (**Figure 12**).

McKays Creek HEPS

- 8.36 The McKays HEPS dates from the early 1930s. A concrete weir was constructed across the Kaniere River below Johnsons Flume (Figure 39 in AEE) and the intake for the McKays Power Station positioned on its south bank (Figure 40 in AEE). From there the water was transported down an open 3.3km race (No. 2 Race), 300m of fluming and a 500m tunnel to the power station (**Figure 14**).
- 8.37 During the field inspection a concrete and boulder foundation was identified beside the McKays intake on the Kaniere River (Figure 42 in AEE). An early photo taken during the construction of the McKays weir and intake (1930) shows a building standing in this approximate area (Figure 11 in AEE). **Figure 15**. Weir at McKays shows the weir as it is today.
- 8.38 The Armco flume constructed across Blue Bottle Creek in 1930 was dismantled in recent years and now two large pipelines transport the water supply across the Blue Bottle Creek.
- 8.39 The McKays HEPS does not incorporate pre-1900 elements and is therefore not an archaeological site in terms of the HPA, but has some heritage value based on its contribution to hydro-electric power generation in the Hokitika area, dating back to the 1930s.
- 8.40 In the vicinity, however, are two recorded archaeological sites comprising the remains of gold workings recorded on either side of Blue Bottle Creek, up to 1km upstream from Lake Kaniere Road. The remains relate to the Bluebottle goldfield which was discovered in 1866 and worked to the turn of the century, using high pressure hydraulic sluicing, and have archaeological value in terms of the information they can provide relating to this early industry.
- 8.41 The first site (J33/63) site is located on the eastern side of Blue Bottle Creek, extending 750m upstream from the McKays HEPS pipeline, and it consists of an almost continuous sluice face up to 10m high with associated tail races, stacked stone walls and bridges and tailing fans (see **Figures 1 and 2** for its location). About 5ha of the site (which is approximately 15ha in total) was destroyed by mining during 1987-1988, but a significant portion remains in regenerating bush.⁴
- 8.42 Archaeological site J33/64 (shown in **Figure 1 and Figure 2**) is located on two low terraces on the western side of Blue Bottle Creek: (1) extending some 300m above the pipeline and back from the creek some 100m; and (2) commencing some 500m upstream from the pipeline and extending some 250m further at a width of 100m. The site consists of sluice faces, tail races, stacked tailings and tailing fans. Most of the first area has been

⁴ R. Hooker, 1993. Report on Gold Mining Remains: Blue Bottle Creek, Kaniere. Internal DOC report.

destroyed and levelled by modern gold mining. However, much of Area C was still intact in 1993.⁵

- 8.43 As within the Kaniere HEPS, there is some potential for additional unrecorded archaeological sites relating to early gold mining activities within the project area.

9. EFFECTS OF PROPOSED UPGRADE ON HERITAGE VALUES

Kaniere Forks HEPS

- 9.1 Extensive enhancements to the Kaniere Water Race given consideration in the AEE are no longer proposed. It is now intended to re-consent the existing HEPS regime with the attendant maintenance.
- 9.2 As a consequence there will be no effects on the raceman's track or the water race, with the exception of ongoing maintenance, which will involve continued replacement of failing elements, most of which are no longer the original fabric.
- 9.3 Effects on unrecorded or unidentified sites related to early gold mining is unlikely. However, any remains exposed during maintenance or repair (from slips etc) could be dealt with under ADP which could be included as a requirement of any ongoing maintenance HPT Authority.
- 9.4 The site of the former Wards Road raceman's hut, where the Kaniere Water Race and track reaches Wards Road on its eastern side (**Figure 9**), will not be affected.

McKays Creek HEPS

- 9.5 The McKays HEPS dates from the 1930s, and the enhancements planned will mostly have little effect on existing structures, involving raising the height of the weir and generally only minor repairs and improvements to the Water Race. However, the Coal Creek Flume (**Figure 13**), will be replaced with a new two or three pipe bridge.
- 9.6 No archaeological sites were identified in areas that will be affected by proposed new works, but dense vegetation cover made survey difficult, and effects on unrecorded archaeological sites related to early gold mining and logging activities cannot be ruled out. Such effects will be covered by an ADP.
- 9.7 Part of the recorded location of the gold working site J33/64, on private land on the western side of Blue Bottle Creek has been proposed as a spoil disposal site. This part of the site, however, was reported in 1993⁶ to have been destroyed and levelled by modern gold

⁵ Ibid.

⁶ R. Hooker, 1993. Report on Gold Mining Remains: Blue Bottle Creek, Kaniere. Internal DOC report.

mining, and recent inspection confirmed that the area has been cleared and modified, with no archaeological evidence surviving in the disposal area.

10. EFFECTS OVERALL

- 10.1 Overall, I consider that, before taking into account any proposed mitigation measures, the adverse effects of the reconsenting of the Kaniere HEPS on the heritage values of the Kaniere Water Race will be less than minor. However, I recognise that the heritage values of the race relate partly to its continued use as a functioning part of the region's infrastructure and that this has involved a continual process of maintenance, upgrade and replacement of elements, a process which under the current proposals would continue, with adverse effects on heritage values through the ongoing replacement of any original elements. I note that most elements of the functioning part of the race water race are no longer the original fabric. The McKays HEPS is of more recent date, but the proposal will have minor adverse effects on heritage values, mainly from the replacement of Coal Creek Flume (**Figure 13**) and the raising of the weir (**Figure 15**).
- 10.2 I consider that the effects of the reconsenting of Kaniere HEPS and enhancement of McKays proposals can be appropriately mitigated and minimised, such that overall they will be less than minor.
- 10.3 Potential effects on unrecorded archaeological sites are recognised, and can be appropriately managed under the archaeological provisions of the HPA and through the development of an ADP. Effects on pre-1900 elements of the Kaniere Water Race are also subject to the provisions of the HPA, in addition to any requirements under the RMA.
- 10.4 The project will not affect any known archaeological sites of Maori cultural association. Mr Piddington describes the consultation undertaken with tangata whenua. I understand that no sites were identified by iwi and that they support an ADP to ensure that if any remains are exposed during earthworks they will be dealt with appropriately.

11. MANAGEMENT OF EFFECTS AND MITIGATION

- 11.1 As previously stated, I consider that any effects associated with the reconsenting of the Kaniere HEPS to be less than minor. Any potential adverse effects in the archaeological values of the race would be confined to ongoing maintenance of the existing race. Therefore I do not believe any mitigation for the reconsenting of the scheme is necessary. However, I would recommend the following to be included as conditions of any HPT Authority sought for any earthworks activities associated with the ongoing maintenance of the race:

- a) The Kaniere race and raceman's should be recorded in detail including a geo-referenced photographic record.
- 11.2 I consider that the following measures will adequately mitigate the adverse heritage effects of the proposed enhancements to the McKays HEPS:
- 11.3 If the 1931 McKays Creek Power Station is decommissioned, it is recommended that this building will be preserved and adaptively reused (**Figure 14**).
- 11.4 A photographic record of heritage features of the McKays HEPS that are to be removed or modified should be made prior to the start of any enhancement works and the records placed in a suitable archive. This includes photographic and general recording of the Coal Creek Flume and the tunnel.
- 11.5 Information panels relating to the structure, history and use of McKays HEPS should be provided in a suitable location at the Lake Kaniere Intake. As I understand it, TrustPower has agreed through consultation with NZHPT to include information relating to the Kaniere Water Race and raceman's track at this interpretation site. The form and content of the interpretation panels would be finalised in consultation with DOC and NZHPT. A simulation of two possible interpretation panels can be seen in **Figure 16 and Figure 17**.
- 11.6 The materials from the Coal Creek Flume could be reused in the interpretation facilities at Lake Kaniere, as recently suggested by NZHPT.
- 11.7 The Environmental Management Plan for the McKays upgrade should include a Heritage Management Plan providing for the avoidance and protection of identified heritage sites and remains and provision for the accidental discovery of heritage remains during construction. The plan should include:
- (a) An ADP setting out procedures to be followed in the event that human remains, archaeological or heritage sites, taonga or other artefacts are discovered during construction.
 - (b) Instructions for the avoidance of identified heritage sites and for recording features uncovered during construction (excluding those that are to be modified in accordance with the application).
 - (c) Provision for the training of staff and contractors in heritage matters.
 - (d) Details of the statutory requirements relating to the project, including those required under the HPA.

11.8 I have read the proposed conditions (WDC 1.6.2, 16a-b, 17a-f and Notes to Consent Holder - Accidental Discovery Protocols, and WCRC Consent Conditions, Notes to Consent Holder – Accidental Discovery Protocols), and consider that they are sufficient to ensure the recommended management and mitigation of effects.

12. RESPONSE TO ISSUES RAISED BY SUBMITTERS

12.1 A detailed submission relating to the historic heritage aspects of the project was made by the NZHPT.

12.2 While the NZHPT submission seeks that consent be declined as it considers the effects on heritage matters to be more than minor (paragraph 13 of submission), their submission related to the enhancement to the Kaniere HEPS which has now been placed on hold. Consequently, it is no longer relevant to this hearing.

12.3 I understand the NZHPT are comfortable with the re consenting of the existing Kaniere Race and McKays HEPS enhancements but would wish to see:

- (a) retention of the Heritage Management Plan for McKays (including ADP) and that NZHPT is party to the development of this Plan;
- (b) retention of a level of recording (GPS/photographic) of the heritage features of the McKays HEPS prior to construction works;
- (c) the McKays Power Station building to be retained, preferably with adaptive reuse;
- (d) reuse of the Coal Creek Flume materials for interpretation purposes; and
- (e) a precautionary Authority applied for under s12 of the HPA in the event of unrecorded sites being exposed during the upgrade work.

12.4 I note that conditions 16-17 (WDC Conditions) do provide for consultation with NZHPT in the development of the Heritage Management Plan, and that the Temporary Protection Plans would be addressed within the Heritage Management Plan. Both the WDC and the WCRC provide advice notes for an ADP in the event that archaeological features, wahi tapu, koiwi or taonga are uncovered during construction.

12.5 Recording of elements of the McKays HEPS prior to modifications being carried out was one of my original recommendations (see paragraph 11.4 of my evidence), and is covered in 17b of the WDC conditions. Recording of the Kaniere Water Race can be addressed in consultation with NZHPT and HPA processes.

12.6 The NZHPT submission (paragraph 45) that an Authority would be required for any earthworks related with the proposal, as an archaeological site will be affected. I note that

this applied to the Kaniere Water Race, rather than to 20th century elements of the Kaniere and McKays HEPS, which are not archaeological sites under the HPA. The Kaniere upgrade is not being pursued at this time, but NZHPT should be consulted with regard to any authority requirements relating to future maintenance. However, as there is potential for unrecorded sites being exposed during upgrades to the McKays HEPS it would be prudent for TrustPower to apply for an Authority for the project, in case nearby archaeological sites or features are affected, as recommended on page 63 of my AEE report. While this cannot be made a condition of consent, I support the inclusion of the advice note proposed in paragraphs 47-48 of the NZHPT submission. I note that appropriate advice notes have been appended to the WDC and WCRC Consent Conditions.

- 12.7 A number of other submitters expressed more general concerns about the loss of heritage features, notably the Kaniere Water Race. As I have already discussed in my evidence, the proposal no longer has any adverse effects on the historic Kaniere water race, and I consider that the proposed conditions (as now amended), will ensure that the adverse effects on the McKays HEPS are adequately mitigated, such that overall they will be no more than minor.

13. OFFICERS' REPORT

- 13.1 I have reviewed the Officers' Report as it relates to Cultural and Heritage Effects (5.3.8).
- 13.2 The report reviews both cultural and heritage issues, including relevant reports and submissions.
- 13.3 It notes that Te Runanga o Ngati Waewae, Te Runanga o Makaawhio and Te Runanga o Ngai Tahu were involved in consultation and that as no submissions were received from any of those parties, concludes that there are no outstanding cultural issues.
- 13.4 With regard to effects on heritage sites the report notes that no archaeological or other heritage sites were identified in the areas of proposed enhancements, although it notes the difficulty of survey in some areas due to vegetation cover.
- 13.5 Overall, after consideration of the relevant information and requirements of the District Plan, the report concludes 'that there will not be a major effect on heritage items as a result of the proposed enhancement works. There are no sites listed in the District Plan requiring consent for their modification or removal associated with this application' (p33).
- 13.6 In summary (5.4) the report comments that 'There are limited effects on heritage matters, and no proposals to remove any sites listed in the District Plan. Any potential effects can be mitigated through the imposition of appropriate conditions' and that 'No historic sites will be

destroyed so the application meets Objective 6 and Policy 6.1' (of the West Coast Regional Policy Statement 2000).

13.7 I agree with the analysis and conclusions presented in the Officers' Report

14. CONCLUSIONS

14.1 In my opinion, based on a review of the archaeology and history of the general area and the archaeological and other heritage remains evident today, the Kaniere Water Race and associated features such as the raceman's track, which date back to the 1870s, have moderate to high heritage significance at a regional level. However, the archaeological values are low to moderate due to the modifications that have been made to the original structures in sections still in use, and I note that there are other water races in the region that have greater integrity.

14.2 Reconsenting of the existing Kaniere HEPS will have less than minor adverse effects on the heritage values of the Kaniere Water Race other than continued repair and maintenance. I consider that the proposed photographic/GPS recording and interpretation are appropriate mitigation for these effects and can be managed through the HPT Authority Process.

14.3 I consider that the adverse effects of the proposed enhancements to the McKays HEPS are minor, and can be reduced to less than minor through the proposed mitigation involving photographic/GPS recording and reuse of the Coal Creek Flume materials for interpretation purposes. There are also potential adverse effects on unconfirmed archaeological sites relating to early gold mining and logging activities in the area of McKays, and an ADP has been proposed accordingly.

Rodney Edward Clough PhD

Clough & Associates Ltd, Heritage Consultants

June 2012

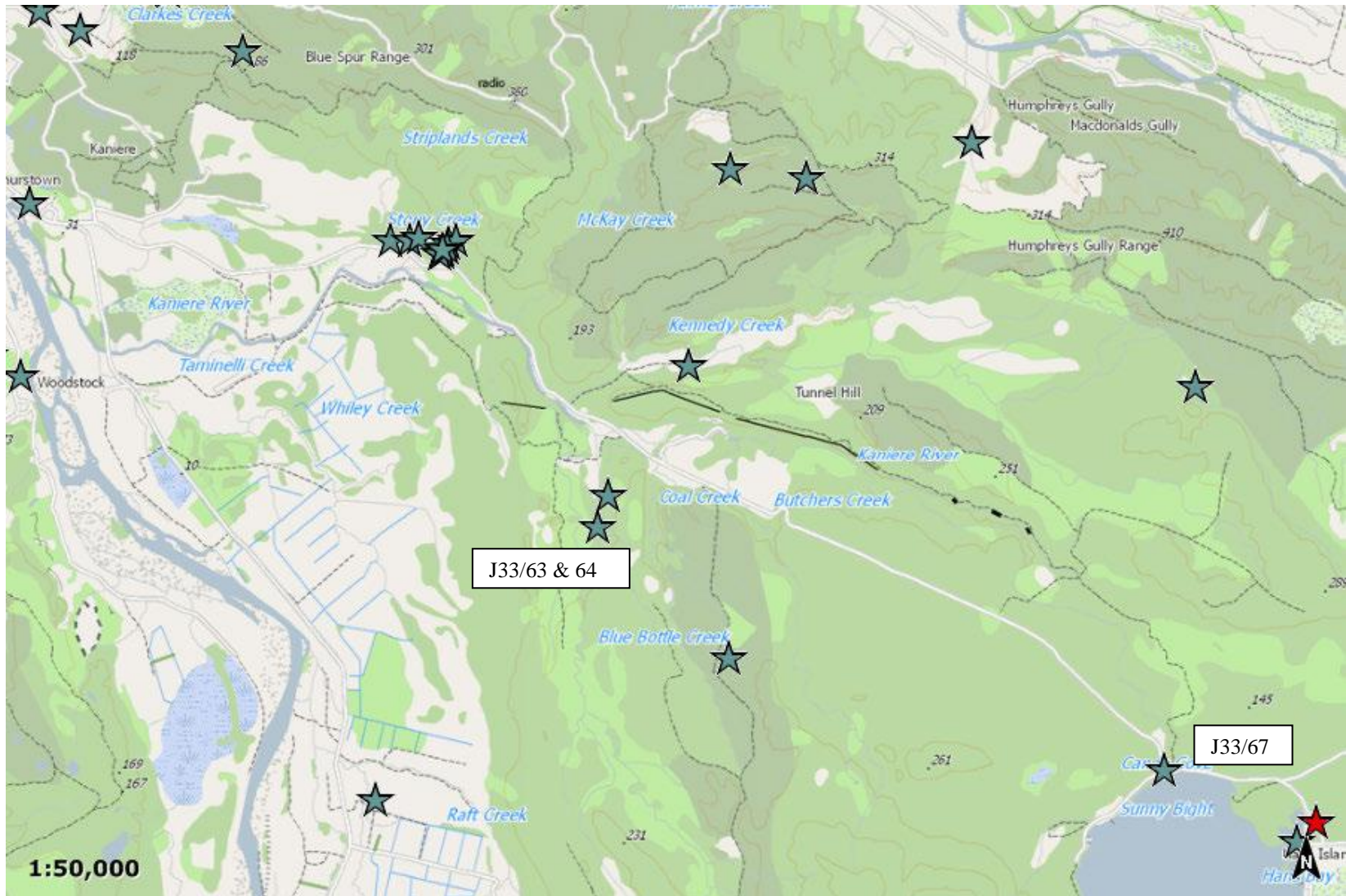


Figure 1. Archaeological Sites recorded in the vicinity of the McKays and Kanierre HEPS. Kanierre Race (J33/67), Gold mining remains at Bluebottle Ck (J33/63 and 64)

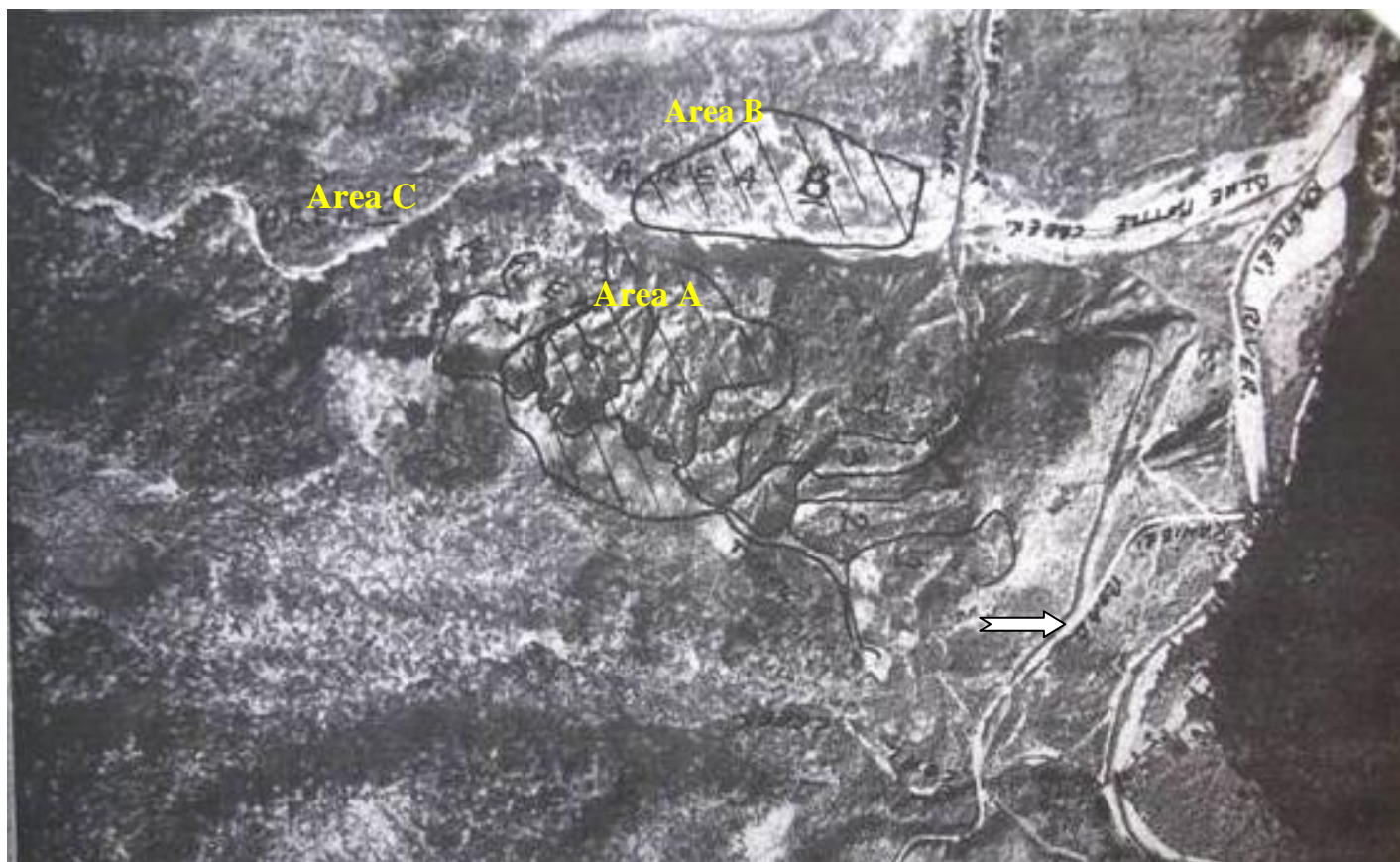


Figure 2. Showing the location of the recorded archaeological sites two gold working sites (J33/63 and J33/64) adjacent to Bluebottle Creek



Figure 3. The 1916 concrete weir on Lake Kaniere with the possible remains of an earlier weir immediately downstream



Figure 4. Above, the 'Gauge House which regulates the water flowing in the Race' and other buildings at the Lake Kanieri intake (from Mort 1978), and below, the possible site of the Gauge House today, which was later the site of a DOC visitor centre (now removed)



Figure 5. A typical section of the Kaniere Water Race and race man's track near the Lake Kaniere intake



Figure 6. Fluming of Kaniere Water Race over a side stream



Figure 7. An example of successive repairs to the race with earlier posts holding timber retaining and subsequent timber boxing to hold that retaining



Figure 8. Left: stone edging along the race man's track and a boxed section of the race near Wards Road. Right: old timber retaining on the outside edge of the track



Figure 9. The remains of Wards Road race man's hut, and a photograph of the hut when still standing (DOC West Coast Conservancy Photo Collection)



Figure 10. Original disused water race in the Wards Road to Kennedy Creek section, with old boxing timbers

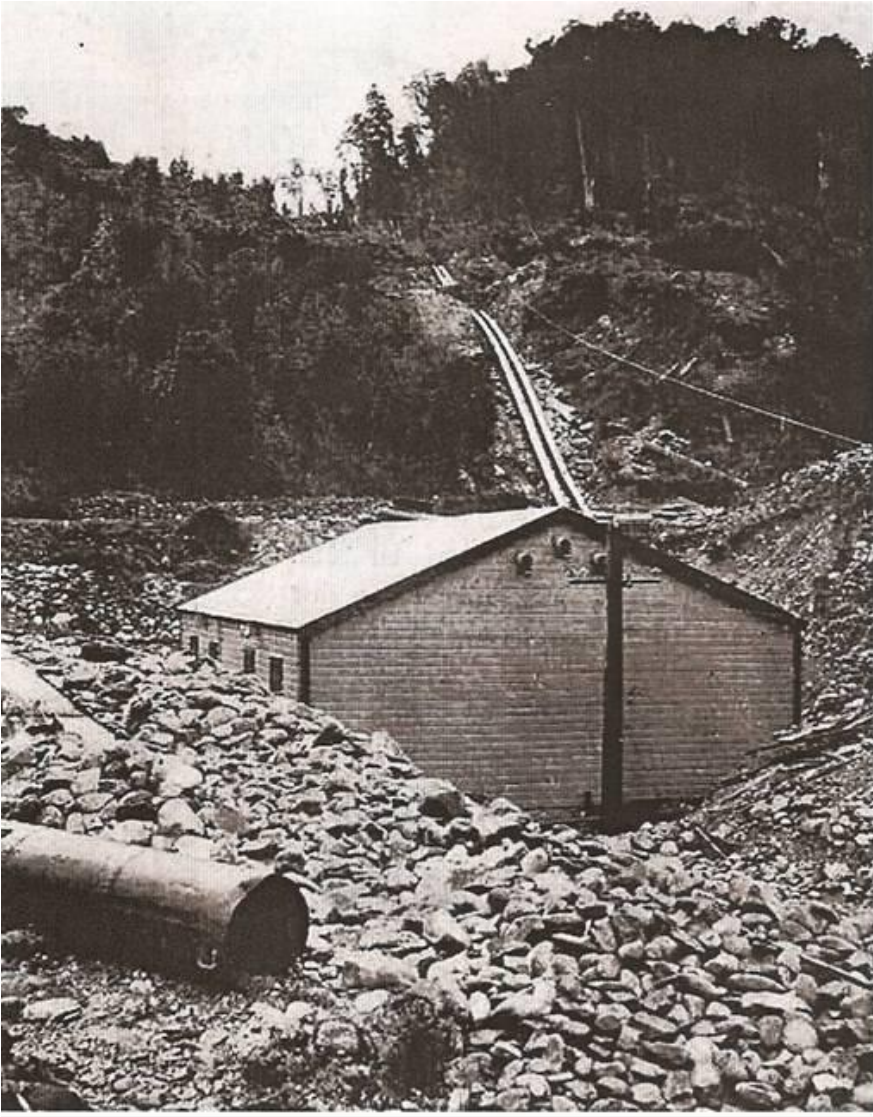


Figure 11. The original Kanierie Power Station and intake pipes (DOC West Coast Conservancy Photo Collection), and the rebuilt Kanierie Power Station today



Figure 12. The original turbine and generator in the Kaniere Power Station



Figure 13. Fluming of the McKays water race over Coal Creek



Figure 14. McKays Power Station



Figure 15. Weir at McKays

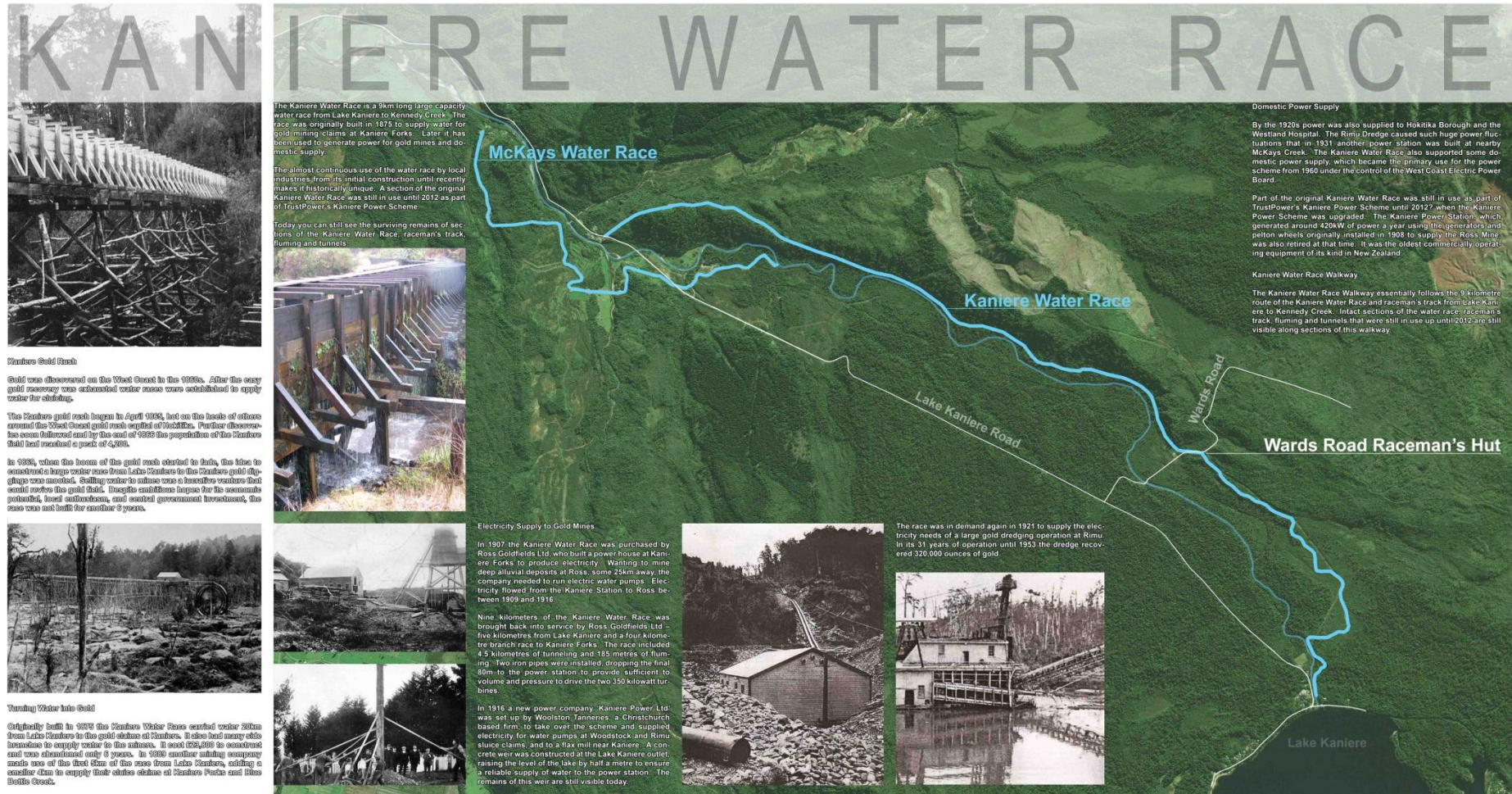


Figure 16. Example of Interpretation Panel at Lake Shelter



WATER

When the Kaniere Water Race was first constructed in 1875 a track was also built along the berm of the race. This track was called 'the raceman's track' as it provided access for a 'raceman', whose job was to control the flow of water through the water race and to repair and maintain the race.

Water races were maintained in the same way as roads used to be - a raceman was positioned every few miles to look after a section of race.

The raceman constantly checked his section of race for any blockages by debris such as fallen trees, and to ensure the embankment and timber supports hadn't collapsed. Sometimes they would work through the night to keep the race open as they could not afford to have the power station out of operation for long. Often the racemen would also float down the race on a raft carrying timber for race repairs.



The following men lived at the hut at Wards Road:
 + Frank Radomski (gold mining days)
 + Jim Milner (first raceman when power station built)
 + Scotty Ridland
 + Doc Andrews
 + Sam Hyndman
 + Jim Howat Snr

The racemen worked from the hut at Lake Kaniere:
 + Jimmy Roxborough
 + Herbie Winter
 + Jim Howat Jnr.
 Colin Howat Snr was head raceman until about 1967.

RACEMEN'S HUTS:
 Two huts were built for the racemen to live in - one on this site at Wards Road, and the other at the Lake Kaniere intake. The hut at Wards Road was built before the access road was built. The only way to get to the hut was to follow the race along the raceman's track.

RACEMEN

Figure 17. Example of Interpretation Panel at Raceman's Hut, Wards Rd.

Table 1. West Coast Water Races Recorded in NZAA ArchSite

MAP #	SITE #	EASTING	NORTHING	DESCRIPTION	Comment	TLA
K29	39	2384000	5923900	WATER RACE	X	Buller DC
K30	33	2381200	5913600	WATER RACE/DAM	?	Buller DC
K30	88	2376300	5904000	DAM/WATER RACES	* 3 Km long	Buller DC
L30	13	2419800	5903100	WATER RACE	X c. 1932-1951	Buller DC
L30	22	2418900	5894700	WATER RACE	?	Buller DC
L30	43	2419100	5895100	WATER RACE	?	Buller DC
L30	44	2419900	5894000	WATER RACE	? Probably not	Buller DC
L31	24	2410600	5888300	WATER RACE	Good but small	Buller DC
L31	31	2414150	5882700	WATER RACE	X 1930s 6-7km long	Buller DC
L31	34	2423800	5889500	WATER RACE	?	Buller DC
L31	44	2413100	5877600	WATER RACE	* Hydro, some decay	Buller DC
L31	45	2413100	5877600	WATER RACE	?X	Buller DC
L31	46	2413100	5877600	WATER RACE	c1915	Buller DC
L31	48	2413400	5879200	PIPELINE	n/a	Buller DC
L31	53	2411500	5877900	WATER RACE	*Lower Snowy River, Blackwater Goldfield	Buller DC
M27	11	2477900	6004500	WATER RACE	?	Buller DC
K30	66	2371900	5895600	WATER RACES	?	Grey DC
K30	67	2371900	5895500	WATER RACE	X	Grey DC
K30	68	2371900	5895400	WATER RACE	X	Grey DC
K30	69	2372000	5894800	WATER RACE	X	Grey DC
K30	70	2371700	5894500	WATER RACE	X	Grey DC
K30	73	2371300	5893300	WATER RACE	X	Grey DC
K30	77	2371200	5892300	WATER RACE	X	Grey DC
K30	85	2372900	5895000	WATER RACE	X	Grey DC
K31	86	2391900	5864200	WATER RACE	?	Grey DC
K31	95	2379100	5871400	WATER SUPPLY	?	Grey DC
K31	96	2379500	5870900	WATER SUPPLY	Blackball Domestic water supply	Grey DC

K32	22	2374800	5838800	WATER RACES	*	Grey DC
K32	23	2370300	5836300	WATER RACE	*	Grey DC
E37	11	2163800	5681100	GOLD WORKINGS	X	Westland DC
F37	11	2192800	5701300	GOLD RACES	X	Westland DC
G36	13	2235440	5728810	WATER RACE	X	Westland DC
H35	3	2278000	5765400	ALPINE WATER RACE	*	Westland DC
H35	4	2278000	5765400	WATER PIPELINE	X	Westland DC
H35	9	2273200	5765800	WATER RACE/DAM	*? Okarito WR	Westland DC
I33	4	2327400	5804500	WATER RACE ETC	?	Westland DC
I34	15	2319300	5792600	WATER RACE	X	Westland DC
I34	30	2298500	5785000	WATER RACE	?	Westland DC
J32	55	2357800	5833600	WATER RACE	X	Westland DC
J32	75	2360290	5831140	WATER RACE	*Waimea WR	Westland DC
J32	86	2364700	5832400	WATER RACE	*Okuku WR	Westland DC
J32	106	2361022	5838005	WATER RACE	?	Westland DC
J33	15	2353000	5825500	WATER RACE	Pioneer WR	Westland DC
J33	33	2365900	5825800	WATER-RACE/DAM	*Waimea WR	Westland DC
J33	34	2364800	5826200	WATER-RACE/DAM	Kawhaka-Kumara	Westland DC
J33	40	2331800	5809100	SLUICE PIPELINE	X	Westland DC
J33	42	2331600	5809000	TAIL RACE	X	Westland DC
J33	48	2331500	5806300	WATER RACE	Ross WR	Westland DC
J33	49	2331700	5807800	WATER RACE	Ross No. 2 WR	Westland DC
J33	50	2332900	5808000	WATER RACE	X	Westland DC
J33	51	2332200	5808400	IRON FLUMIMG	X	Westland DC
J33	52	2331500	5806300	WATER RACE TUNNEL	X	Westland DC
J33	60	2369300	5814800	WATER RACE	?	Westland DC
J33	67	2357700	5821500	WATER RACE	*Kaniere	Westland DC