

McKays Creek/Kaniere Forks  
Hydro Electric Power Scheme Reconsenting  
**Landscape and Natural  
Character Assessment**

NOVEMBER 2010



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## INTRODUCTION

1. As instructed by TrustPower Limited (TPL) I visited McKays Creek/Kaniere Forks in August 2009, and April and May 2010 and was briefed regarding the project by Ryan Piddington (TPL's Project Manager) and Jim McDermott (TPL's West Coast Production Coordinator). I examined the area including Lake Kaniere, the intake structure at the north end of Lake Kaniere, Kaniere River, Kaniere Race, McKays Race and weir, Kaniere Forks Power Station, Blue Bottle Creek intake and siphon, and McKays Power station. I took photos on each visit.
2. In carrying out this assessment I have referenced the following documents:
  - Riley Consultants - Draft plans for Kaniere Forks Hydro Scheme - 8 cumec enhancement. Rev 3. Drawing numbers 10KNF/RUG -00; 10KNF/RUG -100; 10KNF/RUG -110; 10KNF/RUG -111; 10KNF/RUG -112; 10KNF/RUG -113. July 2010.
  - McKays Creek Hydro Electric Power Scheme Enhancement. Feasibility Study report prepared for scheme consenting. June 2010
  - Kaniere Hydro Electric Power Scheme Wards Road Enhancement – Feasibility and Scoping Report for Scheme Consenting. TrustPower. August 2010.
  - Kaniere Forks and McKays Creek Power Schemes Reconsenting Hydrological Study. TrustPower. August 2010. Draft.
  - Riverscape and Flow - Assessment Guidelines. Boffa Miskell. July 2009.
3. Part 1 of this report describes the existing Kaniere Forks/McKays Creek Hydro Scheme, the proposed reconsenting option, the existing landscape context, and the landscape and natural character effects of the existing hydro electric power scheme.
4. Part 2 describes the landscape assessment methodology used in this report and assesses the landscape and natural character effects of the reconsenting option.

# PART 1 – BACKGROUND/CONTEXT

## 1. THE EXISTING KANIERE FORKS/MCKAYS CREEK HYDRO SCHEME

*Refer to small Location Plan on Plan 1- Landscape Areas around Lake Kaniere attached as Appendix C.*

5. The Kaniere Forks/McKays Creek Power Scheme is located on Kaniere River, drawing water from Lake Kaniere to the south east. It stretches from Lake Kaniere to McKays Forks power station over a distance of approximately 9km. The Kaniere Forks Power Scheme was originally commissioned in 1909, with a 60Hz output. In 1931 the output was reduced to 50Hz to allow synchronisation with the nearby McKays Creek Station. It now has a rated capacity of 430kW with an average annual output of 3.75GWh. The McKays Creek Power Scheme is supplied via a weir and race from the Kaniere River. Commissioned in 1931 to supply local gold mining operations, it has a head of 33m, with a rated capacity of 1.1MW and an average annual output of 8GWh.<sup>1</sup>
6. There is an existing historic walkway alongside the Kaniere Race, which links Lake Kaniere with Kaniere Forks Power Station. The race has been operating since 1875 supplying water initially for gold sluicing operations and later to turn the turbines at the power house generating electricity for both gold mines and domestic supply. The race has been in operation for 135 years.<sup>2</sup> The walkway is shared with the public and the Department of Conservation (DoC). The hydro electric scheme is located primarily on DoC land. Kaniere Race runs parallel to the Kaniere River for approximately 9km to Kaniere Forks Power Station.
7. In September 2009 Kaniere Forks Power Scheme had its centenary and TPL produced a brochure that tells the story of the power scheme.<sup>3</sup>
8. The existing resource consents for Kaniere Forks/McKays Creek Power Scheme expire in May 2011.
9. The various elements that make up the Kaniere Forks/McKays Creek Power Scheme are described below:

### 1. Lake Kaniere

TrustPower is authorised to draw down 1.2m from the lake. On 10/11 April 2010, the lake level was slightly lower than average (because of the recent sustained period of low rainfall). Approximately 3 - 6m width of stones and gravels were exposed around the lake edge at Hans Bay and Sunny Bight picnic area.

At the Kaniere River outlet, there is a concrete weir and gate, and to the north of this the river bed comprises glacial rocks and boulders with a scattering of weed species. The banks are covered in native bush down to the water's edge.

### 2. The Kaniere Race and River

At its northern end, Lake Kaniere narrows from a fairly standard width of 2km to 1km wide between Canoe Cove and Sunny Bight. Kaniere River exits the lake at its northern tip, and meanders for about 15km north west to meet up with the Hokitika River at Kaniere. The weir across the river acts as a dam, and is comprised of a convex concrete structure. There are control gates that regulate the flows into both Kaniere River and Kaniere Race. The weir acts as a spillway when the lake water level is high. On these occasions the water spills into Kaniere River. There are two gates, pipes, and a tunnel, which guide water into the Kaniere Race. Approximately 1 cumec

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<sup>1</sup> [www.trustpower.co.nz](http://www.trustpower.co.nz), *Kaniere Forks Hydro Power Station*.

<sup>2</sup> *Kaniere Water Race Walkway brochure 1909 – 2009*. Department of Conservation.

<sup>3</sup> *Kaniere Forks 1909 – 2009 Celebrating 100 years*. TrustPower.

(cubic metres per second or 1,000 litres per second) is drawn off and directed down the race, and the balance water is directed down the river. Depending on the weather conditions this is usually at a flow of 5 cumecs.

The Kaniere Race is a man made structure and over the years it has become integrated into its surroundings as native mosses, tiny ferns, indigenous shrubs and trees have regenerated alongside the path and the race. This southern portion of the race close to Lake Kaniere has very high natural character values because of the maturity of the native bush that surrounds it. Further north the bush opens out to an area, which was logged and burned in the 1920s, where native regeneration is happening slowly because the ground is very wet and infertile. Typically, native regrowth in this area is slow. Further north again the dense stands of manuka are being gradually replaced with kamahi, rimu, celery pine, silver pine, and the New Zealand cedar.<sup>4</sup>

The public footpath, managed by DoC, follows the race from Lake Kaniere to just north of Kaniere Forks Power Station. It covers a distance of about 10km, but shorter sections can be walked. There are small tunnels, and in places small side streams are flumed either over or under the water race.

At about 120m above sea level the water in the race drops into the penstocks of Kaniere Forks Power Station, which is located on Kaniere River close to Lake Kaniere Road about 5.5km north west of the lake. There is an overall fall of 76m from the lake to the power station.

Kaniere River varies in character and width along its length from Lake Kaniere to north of McKays Power Station. At the Lake Kaniere end it is located in a narrow channel, approximately 3 – 4m wide. Further north, it widens until at Wards Road it is about 6-7m wide. North of McKays Weir and canal the water level in the river is reduced because of the diversion of part of the flow into the McKays canal. Further north again, the water depth is increased by in-flow from Butchers Creek and Coal Creek. At the road bridge across the Kaniere River just north of McKays Weir the river is approximately 15m wide. Blue Bottle Creek joins the river just south (upstream) of Kaniere Forks Power Station. The river gradually increases in width until at the ford just south of McKays Power Station it is 20 – 25m wide. South of McKays Power Station the river flows through areas of high value native bush, regenerating bush and commercial forestry, and grassed areas associated with the hydro electric scheme.

Rocks and boulders are a feature of the river along its length, becoming more visible where the flow is shallow.

### **3. Kaniere Forks Power Station**

The Kaniere Forks Power Station comprises a large corrugated iron shed containing the generator and storage facilities. The penstocks run down the hill behind the power station under the road to connect with the power station. The outfall is located below the car park between the power station and the river. Just upstream from the power station Blue Bottle Creek joins Kaniere River – this is the “forks” referred to in its title. There are two houses close to the power station and one across Lake Kaniere Road. The power station is quite well screened from the road by the landform.

### **4 McKays Weir**

Upstream of Kaniere Forks Power Station, approximately 1km north west of the Lake Kaniere Scenic Reserve is McKays Weir. This is a concrete structure across the river, which diverts water into a wide race. The water is then carried by a series of races, flumes and tunnels west to be diverted into a syphon across Green Creek valley above the Kaniere Forks Power Station. Further tunnels, pipes and races then carry the water to McKays Power Station further down stream. Some water from Blue Bottle Creek and Greens Creek is also diverted into this race.

### **5. Blue Bottle Creek / Greens Creek**

South of Kaniere Forks Power Station Blue Bottle Creek carries run off from Reef Knob and Blue Bottle Terrace, which are located west of Lake Kaniere. Some of the water from Blue Bottle Creek is channeled into a syphon that crosses Greens Valley and is directed west through a series of

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<sup>4</sup> *Kaniere Water Race Walkway brochure. 1909 – 2009. TPL.*



raceways, pipelines and tunnel to the McKays Power Station, 1km north west of Kaniere Power Station. The water from Greens Creek is also channeled into this race.

## **6. McKays Power Station**

The McKays Power Station is located on the south west side of the river, on the far side of the river from Lake Kaniere Road. The power station comprises a small concrete building tucked under the hill, plus a small caretaker's cottage. The penstocks run down the slope behind the power station and the outfall is channeled back into Kaniere River by a deep channel. Access to the power station from Lake Kaniere Road is via a flying fox.

## **2. THE RECONSENTING PROPOSAL**

10. The proposed re consenting proposal is as follows:

- To increase abstraction to Kaniere Race from 1 cumec to 8 cumecs from Lake Kaniere. This will involve the construction of new intake gates at the north end of the lake at roughly the same location as the existing ones. This will involve increasing the size of Kaniere Race so that it can accommodate an 8 cumec flow as far as Wards Road, about 3km south of the lake. There will be a residual flow left in Kaniere River of 300L/s as it leaves Lake Kaniere, and 400L/s at the Wards Road bridge.
- The existing tunnel from the lake will be opened up and then boxed and back filled and the vegetation rehabilitated. There will be a picnic/amenity area provided at the Landing or at the point where the track meets Hans Bay Road.
- A new race will be constructed that will be larger than the existing race. It would be trapezoidal in shape, with a bottom width of 4m, and a top width of 7m. The race would be 2.2m deep. The existing narrow track will be replaced by a 3.5m wide access track for vehicles along one side of the race, and a walking path along the other. The overall width of the development could be 25m. But the construction corridor may need to be as wide as 30m in places where larger cut and fill volumes are required. This section of the race will be 480m long.
- At the 480m mark the existing race meets the existing transmission line, and from there on for a significant distance the new race follows the transmission line. For a short distance between chainage 900m and 1100m the new race follows the alignment of the old race. At chainage 1100m the new race reverts to following the existing transmission line to approximately chainage 1600m where it once again joins the old race alignment. From approximately chainage 1900m the canal returns to following the transmission line to just south of chainage 2400m. It then follows the existing race to Wards Road. The new race will follow the contour with a fall of 1:1000. Existing side streams would be either culverted under or flumed over the race.
- A new power station will be constructed about 600m downstream (north) of Wards Road Bridge and the water used to generate about 10GWhr/annum of electricity. The water from this station is then captured at McKays Weir enabling additional power generation from McKays scheme.
- The part of the existing Kaniere race from Wards Road north would become redundant, as would the existing Kaniere Station, which would continue operation until it is decommissioned. Once decommissioned, it is recommended that the Station be retained as an integral part of the enhanced visitor recreational and interpretation experience.
- At McKays impoundment and weir, the weir will be increased in height by 5cm. Below McKays Weir there will be a residual flow of 300L/s, with 500L/s at the ford near McKays Power Station. Minor repairs and local improvements will be carried out on the canal, and the old inefficient leaking timber Coal Creek flume will be replaced with a new two or three pipe bridge. As part of this proposal, McKays Tunnel (above McKays Power Station) may be

refurbished or replaced with a new race along a new alignment. Approximately, 550,000 cubic metres of earthworks will need to be removed to create the new canal. The fill areas will be grassed.

- A new head pond will be constructed above the McKays Station on the top of the bank. The pond will be approximately 100m long, and will involve the removal of approximately 30 – 40,000 cubic metres of earth. This area has already been cleared of vegetation and is owned by TPL.
- A new penstock and small power station will be located immediately adjacent to the existing facilities at McKays Station. The penstock will be undergrounded.
- The capacity of the existing McKays Station would be increased from 6 cumecs to discharge up to 9 cumecs (to account for the existing additional 1 cumec from Blue Bottle Creek).
- A landscape rehabilitation plan will be prepared for the whole length of the proposed scheme.

11. The main infrastructural components of the project that will have effects on the landscape are:

- The reduction in water levels in Kaniere River;
- The construction of a new Kaniere race from Lake Kaniere to Wards Road;
- The new power station and penstocks at Wards Road;
- The repairs and local improvement at McKays weir and canal;
- The possible canal bypass to McKays tunnel;
- The new power station at McKays; and
- The new headpond at McKays.

In April and May 2010 a number of low flow trials were carried out by TPL. On 26 May 2010 the flow rate at the Hans Bay Road Bridge crossing of the Kaniere River was reduced to 217L/s, the closest that any of the trials got to 200L/s. The photos of these flows have been used to illustrate the low flow scenario, which therefore depicts flows that are lower than those being sought.

### 3. THE EXISTING LANDSCAPE CONTEXT

12. Lake Kaniere is located in the South Island of New Zealand, 16km south east of Hokitika, north west of the main alpine fault that separates the Southern Alps from the West Coast lowlands. The lake is approximately 8km long, 2km wide, and as deep as 195m in places. It drains into Kaniere River, which runs north west to link with the Hokitika River south of Hokitika. The lake is situated between two prominent massifs composed of granite – Mt Graham (826m high) to the west, and Mt Tuhua (1,125m high) to the east. Both these mountains lie just west of the alpine fault line. The valleys between these massifs in this part of the country were formed by glaciers, which poured out of the Southern Alps across the alpine fault to discharge huge volumes of moraine and outwash gravel across the narrow West Coast lowland plain. Lake Kaniere is a terminal lake impounded between the moraines downstream and Mt Graham and Mt Tuhua upstream.<sup>5</sup>
13. The lake is surrounded by the Lake Kaniere Scenic Reserve, which stretches from the lake to the tops of the peaks that surround it – Mt Brown, Mt Graham, and Mt Tuhua, and north following the Kaniere River to Butchers Gully. The reserve includes the lake, flanking ranges up to their crests, moraine and outwash terraces to the north, and small recent flats and fans around the lake.<sup>6</sup> It

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<sup>5</sup> *Landforms – The shaping of New Zealand*. Les Molloy and Roger Smith. Craig Potton Publishing 2002.

<sup>6</sup> *Lands and Survey facts sheet – Lake Kaniere Scenic Reserve No. 29*.

also includes the area between Lake Kaniere Road and the west bank of the Kaniere River north from the lake as far as the bend in the road, half a kilometre south of Butchers Creek. To the north of the Scenic Reserve is the Kaniere State Forest.

14. Further north again, the land has been cleared for farming and forestry and there has been significant landscape disturbance due to roading and farming. A large siphon has been constructed across Green Creek valley, which is part of the existing Kaniere Fork/McKays Creek Scheme. To the north and south of McKays Power Station there are existing pine plantations.
15. The bush in the Scenic Reserve that surrounds the lake, and on the south side of Kaniere River, varies in quality. At Canoe Cove and in places along Lake Kaniere Road the vegetation consists of high quality dense rimu forest on outwash terraces and gentle moraine. In the flatter areas there are large rimu, kamahi, quintinia, and sparse understorey of celery pine. There are also locally dense rimu pole stands. On the boggier terraces on the south side of Kaniere River there is an understorey of stunted rimu, and kahikatea in places, Halls totara, sphagnum, silver pines, mamaku, and celery pines.
16. In other parts of the area south of the Kaniere River the land has been logged for silver pine and is now regenerating. There are scattered remnant rimu and silver pine. Parts of these previously logged areas have a disturbed appearance.
17. Due east of the Lake Kaniere intake, and around Canoe Cove, is a large area of dense rimu forest of high quality. This good quality vegetation including rimu, kamahi, tawherowhero and toatoa, amongst others, also occurs along the existing water race, around the intake at The Landing, and downstream of Wards Road on the face of the river terrace above the Kaniere River.<sup>7</sup> This vegetation is in good condition and all the height tiers are in tact.
18. Along part of the transmission line and the proposed Kaniere Race, to the north east of Lake Kaniere, there are large areas of manuka scrub, which was probably originally forest but has been cleared.
19. North and east of the proposed Kaniere Race is a secondary forest community that has also been logged but young rimu are regenerating, along with many other species.
20. There are two cleared areas on the lake on its eastern shore - at Hans Bay and Slip Bay. Dorothy Falls Road runs along the east side of the lake, and there is a small settlement at Hans Bay at the north end, and on Sunny Bight Road at the north west end, where there is a picnic area and beach.
21. Lake Kaniere is the main source of water for both Kaniere Forks and McKays Creek Power Schemes, though the water in the river is augmented by small local streams such as Butchers, Coal, Green and Blue Bottle Creeks.

#### **4. THE NATURAL CHARACTER, LANDSCAPE AND VISUAL AMENITY VALUES OF THE EXISTING ENVIRONMENT**

22. The natural character, landscape and visual amenity effects of the existing environment in which the scheme is located can be summarised in 3 broad sections, as follows.
23. **Area A** on Plan 1 (Refer to *Plan 1 - Landscape areas around Lake*, Appendix C) includes most of Lake Kaniere and Mt Graham and Tuhua. The landform and geological characteristics (described above) are dramatic and dynamic, and form an alpine backdrop to the lake. The natural science factors include the different vegetative habitats including montane forest above 450m along the tops (including kamahi, and quintinia on spurs and faces, rata on narrow ridges; and rata on the broad spurs and ridges). Above these are subalpine scrub and subalpine grassland. On the lower levels around Lake Kaniere is dense rimu forest.

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<sup>7</sup> Appendix 4. *Vegetation communities on Kaniere Forks and Wards Road HEPS*. Boffa Miskell.





*Photograph 1 – Lake Kaniere looking south from near The Landing (Photo 3294 10/11 April 2010)*

24. In terms of the aesthetic values the landscape is imposing, stately and memorable. It has high natural character values because its natural elements, patterns and processes are largely unmodified. The landscape as a whole demonstrates the formative processes that led to its formation.
25. Lake Kaniere and the surrounding mountains reflect the various light levels at different times of day, and at different seasons.
26. These values are shared and recognised by the number of people who visit the lake and its surroundings and undertake recreational activities including cycling, trout fishing, hunting, kayaking, water skiing, picnicking, sun bathing and tramping.
27. The lake and surroundings are of value to tangata whenua and have historical associations for Maori. The name is linked to the pounamu (greenstone) history of the area. Kaniere refers to the act of sawing pounamu. Lake Kaniere provided access for Ngati Tahu Maori between Hokitika and Arahura Rivers and between the east and west coasts via Browning Pass.
28. While not currently classified as outstanding, this part of the Lake Kaniere landscape may well be identified as an outstanding landscape in the relevant planning documents once a full district landscape assessment has been carried out.



*Photograph 2 – Kaniere River and forest on north west side of river from DoC walkway (Photo 3308 11 April 2010)*

29. **Area B** on Plan 1 incorporates the area to the north west of Kaniere River. It includes the south west bank of Kaniere River and Lake Kaniere Scenic Reserve. The land is rolling in places with flat boggy terraces. The natural science factors include a variety of vegetation including kahikatea, rimu and Halls Totara. In some areas it has been cut over for silver pine, with tall manuka and scattered remnants of rimu and silver pine. Kaniere River meanders along the eastern edge. Kaniere River itself has high aesthetic values, though overall the area is not particularly memorable. This area has high natural character. This area is not identified as outstanding in this assessment.
30. These values are shared and recognised by the number of people who drive, tramp and cycle along Lake Kaniere Road and those who walk along the DoC walkway beside Kaniere race above the river.

31. **Area C** on Plan 1 includes the most northerly parts of the landscape surrounding the Kaniere Forks and McKays Power Stations. It includes pine forests, rolling landform and a number of small streams running down the slopes to Kaniere River. In the past parts of this area were grazed, and there are extensive areas of regenerating bush with some weed species.



*Photograph 3 – Green Creek Valley (Photo 3277 11 April 2010)*

This landscape has a rather disturbed appearance and has been modified. This area wraps around Area B and includes Kaniere State Forest. Lake Kaniere Road traverses this landscape, and Kaniere Forks Power Station, McKays flume and weir, Kaniere Race and DoC walkway, and McKays Power Station are located in this landscape. The landform is rolling. There is a variety of vegetation both indigenous and exotic. There are some remnant and regenerating rimu and kahikatea. The Kaniere River, though more modified than further south, still has high aesthetic value. The overall area is not memorable. Some parts of the landscape retain naturalness.

32. Most of Area C is not accessible to the public but can be seen from Lake Kaniere Road. This area is not identified as outstanding.

## **5. THE LANDSCAPE, VISUAL, AMENITY AND NATURAL CHARACTER EFFECTS OF THE EXISTING HYDRO ELECTRIC POWER SCHEME**

33. The various components of the hydro electric scheme are located within the Kaniere State Forest on the north side of Kaniere River, and are generally well concealed from most public viewpoints, including Lake Kaniere Road.
34. Public access to the existing Kaniere Forks Power Scheme is available at the northern tip of the lake at The Landing (where the weir and gates are visible to people leaving the road and going down to the lake shore), and from Kaniere Road bridge. This part of the scheme is generally concealed by surrounding vegetation, and offers an opportunity for the public to park and view the lake. The Landing contributes to the environment's better use and enjoyment. Kaniere Race and Kaniere Race (DoC) walkway have high amenity and natural character values, though modified, and the river is visible from parts of the walk. Kaniere Forks Power station does not have high natural character values or amenity values and is just visible from Lake Kaniere Road. McKays Station is only visible to people crossing the river on the flying fox (access on this is not open to the public). This area has higher landscape and amenity values than Kaniere Forks Power Station. Parts of the existing McKays flume are visible from Lake Kaniere Road, though partly concealed by vegetation. McKays Weir can be seen from the local access road leading north east from Lake Kaniere Road towards the river. This area is highly modified with grassed areas and very low natural character. The penstocks at Kaniere Forks Power Station are minor elements and are not visually prominent or dominant in their landscape setting because of the surrounding landform and

native species. McKays Race is more visually exposed because of the extent of vegetation clearance that has occurred around it and the embankments and road adjacent to it.

35. The biggest visual impact of the existing components of the hydro electric scheme is the syphon and penstocks that cross Green Valley and Blue Bottle Creek Valley, but these are not visible to the general public.
36. In terms of landscape integration, the concrete weir and outlet from Lake Kaniere have something of a utilitarian appearance close up, but are surrounded by native bush and have blended in well with the surroundings. The various components of the scheme in general are visually contained by the surrounding landforms and good quality bush.

## 4. STATUTORY CONSIDERATIONS

### Resource Management Act 1991

8. The Resource Management Act 1991 (RMA) largely addresses landscape considerations in Part II - "Purposes and Principles". Section 5 of the RMA states its purpose as promoting "...the sustainable management of natural and physical resources". Landscape is an expression of some of these resources.
9. Section 5 of the RMA defines sustainable management as "managing the use, development, and protection of natural and physical resources in a way or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being". Of relevance, the definition includes "sustaining the potential of natural and physical resources..." and "avoiding, remedying, or mitigating any adverse effects of activities on the environment".
10. Section 6, matters of national importance, is specific in stipulating that all persons exercising functions and powers under the Act shall recognise and provide for:
  - (a) *"the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*
  - (b) *The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development."*
11. A significant requirement under the Act is therefore to assess the landscape of territorial areas and their coastlines, and to identify outstanding natural features and landscapes.
12. An assessment of the various parts of Lake Kaniere landscape has been carried out in this assessment using the modified Pigeon Bay criteria, which were identified as one way to assess "outstanding" landscapes.
13. These are:<sup>8</sup>
  - a) natural science factors - the geological, topographical, ecological and dynamic components of the landscape;
  - (b) its aesthetic values including memorability and naturalness;
  - (c) its expressiveness (legibility): how obviously the landscape demonstrates the formative processes leading to it;
  - (d) transient values: occasional presence of wildlife; or its values at certain times of the day or of the year;

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<sup>8</sup> *Wakatipu Environmental Society Inc v Queenstown Lakes District Council* [2000] NZRMA 59 (EC) at paragraph 80.

- (e) whether the values are shared and recognised;
  - (f) its value to tangata whenua; and
  - (g) its historical associations.
14. The threshold for identifying Outstanding Landscapes involves an additional step – an assessment of whether the landscape or feature is “self evident,” “conspicuous” “eminent” or otherwise clearly beyond the mundane. An outstanding landscape needs to have the “wow” factor.
15. Natural character on the other hand is the expression of natural processes, and covers the full range from pristine natural landscapes to highly modified landscapes that still contain some natural features and processes. The preservation of natural character requires the maintenance of natural features and processes, as well as the visual attributes of “naturalness”. For a landscape to have a high degree of natural character, natural elements and patterns must predominate:<sup>9</sup>
- “Natural character is a term used to describe the naturalness of all coastal environments (and other areas). The degree or level of natural character within an area depends on:*
- *The extent to which natural elements, patterns and processes occur;*
  - *The nature and extent of modifications to the ecosystems and landscape/seascape.*
- The highest degree of natural character (greatest naturalness) occurs where there is least modification.*
- The effect of different types of modification upon the natural character of an area varies with the context, and may be perceived differently by different parts of the community”.*<sup>10</sup>
16. A recent decision concerning Long Bay sets out a useful list criteria in respect of determining ‘naturalness’ under section 6(b) or the RMA, as follows:<sup>11</sup>
- Relatively unmodified and legible physical landform and relief;
  - The landscape being uncluttered by structures and/or obvious human influence;
  - The presence of water (lake, river, sea);
  - The presence of vegetation (especially native vegetation) and other ecological patterns; and
17. In carrying out this assessment, I have taken these factors into account.
18. The West Coast Regional Policy Statement (WCRPS) and the Westland District Plan (WDP) for the area are the instruments through which effect is given to the above provisions. These are the relevant statutory documents with respect to natural character and landscape matters.

### **West Coast Regional Policy Statement**

19. Whilst Chapter 9 of the WCRPS – Habitats and Landscapes – notes that most of the outstanding natural features and landscapes on the West Coast are already afforded adequate protection by their inclusion in the DoC estate, the WCRPS also identifies adverse effects on the natural character of outstanding natural features and landscapes, and the natural character of water

<sup>9</sup> *The impact of development on rural landscape values. MFE July 2000.*

<sup>10</sup> *Ministry for the Environment, Environmental Performance Indicators, Landscape Aspects of Natural Character, Stage 1 – Initial findings - A report prepared by Boffa Miskell Ltd for MfE. Feb 2002.*

<sup>11</sup> *Long-Bay Okura Great Park Society Incorporated v Auckland Regional Council A078/2008, Judge Jackson, 16 July 2008 (EC) at paragraph 135.*

bodies (including wetlands, lakes, and rivers and their margins) arising from subdivision, use, and development as relevant issues relating to the Region.

20. The WCRPS does not identify specific outstanding natural features and landscapes; but it does list the criteria that should guide the identification and classification of outstanding natural features and landscapes. The listed criteria are:
- a. *“Its use, value or degree of representativeness of/for scenic, amenity, recreational, heritage, intrinsic, and scientific purposes;*
  - b. *It association with areas of significant indigenous vegetation, and significant habitats of indigenous fauna;*
  - c. *The significance of its association with the coastal environment, lakes, rivers and their margins;*
  - d. *The relationship of Tangata Whenua and their culture and traditions with their ancestral lands, water, sites, wahi tapu and other taonga;*
  - e. *The inclusion or exclusion of a water body from a Conservation Order.”*
21. In order to identify whether Lake Kaniere and its surroundings are in fact an outstanding natural feature or landscape, a full regional landscape assessment would need to be carried out, but that is beyond the scope of this brief. The lake is a feature in a wider landscape. In the absence of a region-wide assessment, in my opinion (on the basis of wide experience in evaluating landscapes in many parts of New Zealand), Lake Kaniere and its setting have high scenic, amenity and landscape values, and may well be an outstanding feature or landscape. The lake is surrounded by areas of significant indigenous vegetation.
22. Only the northern tip of Lake Kaniere is affected by the proposed hydro electric scheme where the water is drawn off over a small weir. The balance of the lake and its margins are largely unaffected by the scheme.

### **Westland District Plan**

23. In section 3.10 of the WDP – Landscapes – the key objectives are as follows:

24. “Objectives

*3.10.1 To ensure development does not impinge on the integrity of landscapes in Westland.*

*3.10.2 To maintain and protect the existing scenic and open and diverse character of Westland District, dominated by natural dynamic processes.*

*3.10.3 To ensure that land uses, buildings and development have regard to the natural landscapes in which they are located or seek to be located.”*

25. In seeking to protect and manage the diverse and distinctive landscapes within Westland District, the WDP does not specifically describe a process for deciding which natural features and landscapes are outstanding. The Plan does, however, suggest examples of outstanding landscapes and features as a guide to assist in deciding what could be considered “outstanding”. The examples listed in 3.10 include:

- Land above 300m;
- Lakes Ianthe and Matahi;
- Lake Mapourika;
- Lake Wahapo;



- Lake Moeraki;
  - Lake Paringa; and
  - Saltwater lagoon and the coastline.
26. Lake Kaniere is not included in the above list. Accordingly, the proposed development will not impinge on the integrity of landscapes in Westland – Objective 3.10.1. Further, the scenic and open and diverse character of Westland, dominated by natural processes, will be maintained – Objective 3.10.2.
27. In terms of Objective 3.10.3, the proposed changes to water flow in the Kaniere River will be managed so that it does not fall below 300L/s. A portion of high quality rimu forest will be removed by the new race from Lake Kaniere to the transmission line. Whilst this will initially have high landscape and natural character effects, proposed revegetation and the provision of amenity areas with seating and rest areas would assist in mitigating effects.
28. In Section 4.8 – Landscape – the WDP provides as follows:

*“Policies*

*A. The continuity of the mountains to sea landscape in Westland particularly in the south of the District and significant landscape elements shall be protected by ensuring development takes into account the landscape setting.*

*B. The contribution of indigenous vegetation to the landscape character of the district shall be recognised and its clearance controlled.*

*C. Council will protect outstanding landscape areas, including natural features, in the District. All outstanding landscape areas shall meet the following criteria:*

**1. Intactness (naturalness)**

*The landscape is natural, open and spacious and is largely unmodified by human activity or development (relative to other landscapes).*

AND

**2. Scientific or other Cultural value**

*The area is of a type, particular locality or other scientific reference area, is listed as a geopreservation site or has distinctive amenity value (e.g. it contributes to a distinctive and outstanding landscape of the district or has other significant historic or cultural value or is of an international importance).*

AND

**3. Distinctiveness**

*The area has one or more of the following: outstanding size, shape, diversity or pattern of natural features or landforms; outstanding area of predominantly indigenous vegetation; and outstanding or popular accessible viewpoints/key views.*

OR

**4. Representativeness**

*Area has one of the best examples of distinctiveness outlined above.”*

29. As stated earlier in this report a full regional landscape assessment needs to be carried out in order to determine whether Lake Kaniere and its surroundings are an outstanding natural feature or landscape on a local or regional level. They are, however, part of the Lake Kaniere Scenic Reserve. To attempt to determine the significance of a single feature in the absence of a full regional landscape assessment can provide only tentative guidance. The proposed options for re consenting will not impact on Lake Kaniere itself.

## **Conclusions**

30. Neither the West Coast Regional nor Westland District Councils have undertaken a full local or regional landscape assessment. As stated above, to attempt to determine the significance of a single landscape feature in the absence of a full local or regional assessment would be misleading. The landscape around Lake Kaniere certainly has high natural character, amenity and landscape values. But the proposed TPL re consenting project will not affect the landscape qualities of the Lake. The proposal will meet the aforementioned objectives.

## PART 2 – EFFECTS ASSESSMENT

37. This landscape effects assessment is divided into two parts, the first is an assessment of the effects of the water level changes in the river, using the *Riverscape and Flow Assessment Guidelines*. The landscape changes to the Kaniere Race are also described in this section.
38. The second part is a description of the landscape, visual, amenity and natural character effects of the various other infrastructural components of the proposed upgrade.

### 7. ASSESSMENT AS TO THE EFFECTS OF THE REVISED KANIERE RIVER FLOW REGIME AND KANIERE RACE IMPROVEMENTS

#### 7.1 Methodology

39. A number of viewpoints were chosen from which to assess the effects of the proposed changes on the landscape of the river and its surroundings. Two viewpoints on Lake Kaniere were also chosen from popular public reserves showing the effects of the existing TPL draw-down of water from the lake. A viewpoint on the DoC walkway has been included showing the existing Kaniere Race. These viewpoints represent views that the public can gain, where the reconsenting enhancements may be visible. From each of the river viewpoints the potential landscape, natural character, amenity and visual effects of the changes in water flow are assessed.
40. Each viewpoint has then been assessed using the methodology outlined in *Riverscape and Flow - Assessment Guidelines* prepared by Boffa Miskell Ltd in 2009. This was a study funded by the Foundation of Science and Technology as part of the Water Allocation Programme lead by the National Institute of Water and Atmospheric Resources. The guidelines were the final output from this research, which was based on the integration of landscape considerations in water allocation decision-making.
41. In summary the methodology involves the following:
  - a. First, a **Natural Character Evaluation** is carried out from each river viewpoint. This analyses the existing natural character values of river channel itself, the riparian area and the wider landscape. Each viewpoint is assessed as to whether the river channel, the riparian area and the wider landscape are strongly natural, partially modified or strongly modified.
  - b. Secondly, the existing **Amenity Values** of the river are evaluated. A river's amenity values include those qualities and characteristics that contribute to people's appreciation of a river's pleasantness, aesthetic coherence and cultural attributes. The public has a preference for high to medium flows in small rivers, and medium to low flows in large rivers. The public consider scenic beauty to increase with stream flow – the quantity of flowing water is seen as important by all respondents.<sup>12</sup>
  - c. **Hydrological Characteristics and River Profiles** were assessed as part of the Amenity Values assessment, as was the importance of each stretch of the river for recreation and how visually exposed the river is at each point to the general public.
  - d. The final evaluation covers **Landscape Values**. This includes natural science factors, cultural and heritage values, aesthetic importance, whether the river is located in an area of outstanding natural landscape that has statutory recognition, and whether this particular river type is commonly occurring or rare. Each of these aspects was rated as to whether they were outstanding or exceptional, significant/attractive, or of little or no special value. In

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<sup>12</sup> *Riverscape and Flow Assessment Guidelines*. Boffa Miskell Ltd July 2009.

carrying out this assessment I have referred to parts of the draft ecological assessment and hydrological assessments.

42. A more detailed description of the methodology is provided in Appendix A, and the individual assessments for each viewpoint are included as Appendix B.

## **7.2 Assessment of the water level changes on the river and Kaniere race improvements**

31. Refer to *Plan 2 - Photo Viewpoint Location Plan* (attached as Appendix D).
32. The viewpoints chosen for assessing the natural character, landscape and visual amenity effects of the revised flow regime and Kaniere Race improvements were:

### **Reserve and walkway viewpoints**

1. The reserve on Lake Kaniere in front of the settlement at Hans Bay. People who would see any changes would be local residents and visitors.
2. The reserve on the Lake at Sunny Bight Road – local residents and visitors.
3. The DoC walkway alongside Kaniere Race – walkers and cyclists using the walkway.

### **River viewpoints**

4. Hans Bay Road crossing of Kaniere River (The Landing) – people using Lake Kaniere Road/Hans Bay Road and people walking around the north end of the lake. Also people kayaking and boating on the lake.
  5. Wards Road off Lake Kaniere Road to Kaniere River – visitors and trampers.
  6. Side road off Lake Kaniere Road to McKays weir – trampers.
  7. Bridge crossing of Kaniere River south of Kaniere Forks Power Station – people travelling along Lake Kaniere Road.
  8. Kaniere Forks Power Station – visitors to the power station.
  9. Ford above McKays Power Station – visitors in vehicles to McKays Power Station.
  10. Kaniere River adjacent to McKays Power Station (visible from Lake Kaniere Road) – people passing on Lake Kaniere Road.
33. A summary of my assessment for each viewpoint is as follows:

## (a) Reserve and walkway viewpoints

### 1. Reserve in front of the settlement at Hans Bay on Lake Kaniere



*Photograph 4 – Hans Bay Reserve (Photo 3290 11 April 2010)*

34. This reserve is well used by local residents and visitors for kayaking, swimming, water skiing, and picnicking. The conditions of TPL's existing resource consents for the Kaniere Forks Power Scheme sets the maximum volume of water that can be drawn off from the lake and also specifies the level to which the lake may be lowered. On the day I visited Hans Bay – 11 April 2010 – during a prolonged period of low rainfall, there was approximately a 3 – 4m wide area of stones and gravel exposed around the lake edge. The level of the lake can be dropped to a lower level than occurred on this day within the current consent. If additional abstraction does occur then it is probable that a wider beach of stones and gravels will be visible for longer periods around the edge of the lake. That is, the level of the lake will more often, and for longer periods, approach the currently consented minimum level.
35. A number of tourists and visitors view the Lake from this viewpoint.

## 2. Reserve at Sunny Bight Road



*Photograph 5 – Reserve at Sunny Bight Road (Photo 3310 11 April 2010)*

36. This reserve is also well used by people, including cyclists, trampers, kayakers, power boating people and picnickers. On the day I visited (11 April 2010) there was a wide strip (6m+) of beach – gravel and stone – exposed around the lake edge. Again the conditions of TPL's existing resource consents for the Kaniere Forks Power Scheme set the maximum volume of water that can be drawn off from the lake. As with the reserve at Hans Bay the level of the lake can be dropped to a lower level than occurred on this day within the current consent. If additional abstraction does occur then it is probable that a wider beach of stones and gravels will be visible for longer periods around the edge of the lake. That is, the level of the lake will more often, and for longer periods, approach the currently consented minimum level.



### 3. Kaniere Race adjacent to DoC walkway



*Photograph 6 – Kaniere Race adjacent to DoC walkway (Photo 3320 11 April 2010)*



*Photograph 7 – Kaniere Race, flume and bridges (Photo 3420 May 2010)*

37. The Kaniere Race has been in operation for over 100 years and has been modified over that time. Since it was built it has been overgrown by ferns, mosses and native plants. The area surrounding the race at the southern end near the lake, has high natural character values. The walkway is moderately important for recreational walks, and the existing race is visible for much of the 10km

walk. Its historic and aesthetic values are moderate. Its ecological values are quite high close to the landing but are less so as one moves north.

38. The existing race is about 1m wide and 1m deep, and has a small mossed track running beside it. Its character varies along its length – in places it is carried on a timber flume, and in others there are timber supports.
39. The proposed upgrade will result in sections of the race between The Landing to Wards Road being widened as described earlier.
40. The existing tunnel from the lake will be opened up, then boxed and back filled and the surrounding vegetation rehabilitated. A meeting point/amenity/picnic area will be located at The Landing. North from here the race will be open following the alignment of the existing Kaniere Race, until it reaches the transmission line which runs north east. At this point the race follows the transmission line for a significant portion of the route. Along the transmission line the vegetation comprises manuka scrub. In the more northerly portion of the project the new race will be located close to the existing race. It culminates in steel penstocks into the new Wards Road Power Station.
41. From The Landing to the point where the proposed race joins the transmission line, the race passes through an area of high quality bush. A corridor of 10m wide would be cleared through this area. This will have high adverse effects on the natural character of this area at least initially, and will also affect the amenity values of the area until the remedial planting has had a chance to mature. There will be changes to the existing landform and landscape character through this area. Initially this new race will be highly visible, particularly from the DoC walkway and a small stretch of Hans Bay Road, and will contrast strongly with the surrounding environment. The proposed revegetation planting and amenity area will help to mitigate these effects over time. If full revegetation is achieved (refer to Mitigation measures in the Conclusions of this report) the natural character of the area will be restored after about 8 years.
42. The race would then be aligned in a north easterly direction following the transmission line route for approximately 620m. This route has already been cleared to a width of 25m. The proposed construction corridor would be wider than 10m in this section with a 3.5 m wide track alongside the race. Again there will be significant landform changes, though because this area is already modified there will be little effect on natural character. The new race will be highly visible to the people walking along the new walkway alongside the new canal, but will not be seen by people following the old DoC walkway along the existing race. The proposed mitigatory planting of manuka will eventually blend the race back into its surroundings. Through this transmission line stage the effects of the new race will be no more than minor, after rehabilitation has taken place.
43. Between chainage 900m and 1100m the new race follows the alignment of the old race, and the old race will be widened. Good quality vegetation will be removed. A 20m wide construction area will be cleared through the bush and there will be landform and landscape character changes.
44. From chainage 1100m to 1650m the new race will follow the transmission line again with the same landscape effects as outlined above. From 1700m – 1900m it follows the existing race, with the same landscape and natural character effects as earlier described - initially it will have high adverse effects on natural character. The new race will also initially contrast strongly with its surrounding environment. However, these effects will be mitigated over time through landscape and vegetation rehabilitation.
45. From chainage 1900m to 2350m the new race will follow the transmission line route again, and at 2350m it reverts to following the old race alignment to Wards Road with the landscape and natural character effects mentioned above.
46. There are two options for the connection to the power station at Wards Road. Option 1 is to carry a penstock straight to the Power Station from the point where the race meets Wards Road. It would be located in a 20m wide penstock corridor. Option 2 would be to follow the existing race alignment with a 30m wide construction corridor to a much shorter penstock running down to the Power Station. In terms of effects on natural character, amenity values and landscape effects

Option 1 would be preferred because it would have less effect on surrounding vegetation over a smaller area.

47. The proposed Wards Road Power Station would be a reinforced concrete building with a steel roof in a compound of 40m by 40m. It will be located close to the hill slope to minimise impact on the Wards Road wetland. Part of Wards Road wetland will be cleared to accommodate the power station. This is initially likely to have adverse effects on landform, landscape character and natural character. It will be visible from Wards Road, and would contrast significantly with its surrounding environment. It will be important to choose a colour for the building and penstocks that blends them into the surrounding bush. Again revegetation will occur around the proposed power station and penstock once built as part of the overall landscape enhancement plan.
48. Through this portion of the race, the initial landscape and natural character effects will be high, but with the proposed revegetation and regeneration the effects overall after some years will be moderate.
49. For the first part of the proposed upgrade (between the Landing and the transmission line) the new race would have high adverse visual/natural character effects immediately after construction. These would be mitigated over time by revegetation and rehabilitation of the existing vegetation by means of new planting of species that already occur on site. For the section of the new race which follows the transmission line, the rehabilitation could consist of planting small manuka nursery species alongside the path and the race.
50. At the more northern parts of the stretch between the Landing and Wards Road, the bush would need to be rehabilitated alongside the new race in a similar way to the stretch between the Landing and the transmission line.
51. In conclusion, the location of the new race is visually contained within the surrounding landform and by areas of mature vegetation. Only people walking along the new DoC track will see the changes. Relating these changes to the Objectives of the Westland District Plan:
  - The development does not impinge on the integrity of the Westland landscape (3.10.1);
  - The scenic open and diverse character of Westland District, which is dominated by natural dynamic processes, is maintained (3.10.2); and
  - The proposed development has appropriate regard to the natural landscape in which it is located (3.10.3).
52. Relating what is proposed to the policies of the Westland District Plan the effects of the development will not be significant in relation to the continuity of the district's landscape, only limited areas of indigenous vegetation will be cleared and the clearance will be controlled and revegetated as part of the proposal. The proposal is not located in an outstanding landscape and the proposal will satisfy the aforementioned objectives.

## (b) River viewpoints

### 4. Hans Bay Road crossing of Kaniere River near The Landing.



*Photograph 8 – Hans Bay Road at the Landing. Full flow. (Photo 3254 10 April 2010)*

53. Looking downstream from the river bridge, the river channel is about 4m wide. The channel itself appears unmodified, with large rocks and boulders along its edges. The banks are sloped and covered in indigenous vegetation on both sides of the river. The riparian area and the wider landscape surroundings for this portion of the river alongside the road are partially modified. In terms of natural character, this part of the river is partially modified and has moderate natural character values.
54. In terms of its amenity values, the river at this point is visually exposed and its main recreational values are informal – walking and scenic viewing. This stretch of the river is vulnerable to flow changes.
55. In relation to its landscape values, the vegetation surrounding the river is of high quality including rimu, and the river is located in an important heritage area (Lake Kaniere Scenic Reserve). From a scenic aesthetic experience, it is an attractive river located adjacent to a scenic reserve, but the river type is not rare – it is a typical example of its type.
56. The river was in full flow on 10 April 2010, right across its width, and the rocks and part of the banks were covered with water. There was some white water visible and the flow was strong.





*Photograph 9 – Hans Bay Road at the Landing - Low Flow. (Photo 3416 26 May 2010)*

57. The low flow conditions shown in Photograph 9 were approximately 217L/s, which represents a slightly more significant effect than would occur under the proposed enhancements, where the flow will be reduced to 300L/s. The width of the water in the channel is reduced to about 2-2.5m. Significant portions of the rocks on the river bottom and on the edges are revealed. The natural character values of the river are reduced and aesthetically it takes on the character of a small stream rather than a river.

## 5. Wards Road off Lake Kaniere Road to Kaniere River

58. Looking upstream from the Wards Road river bridge, the river channel is about 6m wide. The channel itself is unmodified, with a boulder and rock base, boulders and rocks on the river edge, and indigenous vegetation on sloping banks down to the water's edge. There are rimu, kahikatea and flaxes, as well as other indigenous species. This part of the river corridor has high natural character. At high flows the water covers the entire channel and forms a white-water rapids effect with only the tops of some rocks protruding. This part of the river, its riparian area, and the wider landscape context are highly natural.
59. The amenity values of the river at this point are moderately vulnerable to flow changes. Only trampers, and the few visitors to the area who drive down Wards Road, see this stretch of the river. Its recreational importance would be scenic viewing and walking/cycling.
60. In relation to its landscape values, the river at this point has high natural scenic values and has important natural heritage values (part of it is within the Lake Kaniere Scenic Reserve). It is a highly scenic river and is located adjacent to a scenic reserve. This stretch of the river is a particularly good example of a "river type", which is common in this area.
61. Overall, this stretch of the river has high natural character values, moderate amenity values and high landscape quality.



*Photograph 10 – Wards Road bridge across Kaniere River - full flow. (Photo 3315 10 April 2010)*

62. The river was in full flow on 10 April 2010. There is a good depth and volume of water, filling the whole channel. A few rock-tops are visible in the flow of white-water.





*Photograph 11 – Wards Road bridge across Kaniere River - low flow (Photo 3430 25 May 2010)*

63. The low flow conditions shown in Photograph 11 above were approximately 630L/s. This goes some way toward representing the sort of effects that would occur for the proposed upgrade where the flow would be reduced to 400L/s - there would be marginally less water than shown here.
64. In the above picture the water flow is considerably reduced, and the rocky substrate is more visible. White-water flow is less evident and the width of the water in the channel is reduced.
65. The natural character values of the river are changed and aesthetically it takes on the character of a rapidly flowing shallow stream, rather than a full, strong-flowing river.

## 6. McKays Weir off Lake Kaniere Road



*Photograph 12 – McKays Weir Full flow (Photo 3280 10/11 April 2010)*



*Photograph 13 – McKays impoundment Full flow (Photo 3279 10/11 April 2010)*

66. This stretch of the river includes McKays Weir and the impoundment above it. In terms of its natural character the river channel is strongly modified at this point, having been widened to form the impoundment. The riparian area has been modified and is regenerating. Further away from the river the vegetation and landscape are unmodified with rimu and kahikatea trees evident. The wider landscape context is strongly natural.



67. Hydrologically the impoundment is not particularly vulnerable to flow changes. This part of the river has restricted access and is not used for recreation. This area is hidden from the public view.
68. In relation to landscape values, the area has little or no ecological values, little or no known cultural heritage, and because of the modifications, including the concrete weir, it is of only localised aesthetic merit.
69. Below McKays weir the water flow reduces considerably, and this lessens the river's scenic and aesthetic values, and reduces its amenity values. For this proposal the flow remaining in the river below McKays Weir will be reduced, but the residual flow will be increased as part of the proposed scheme enhancements. The effects of this will be similar to what is shown in the photograph below.



*Photograph 14 – Kaniere River below McKays Weir and race (Photo 3282 10/11 April 2010)*

## 7. Bridge crossing of Kaniere River south of Kaniere Forks Power Station



*Photograph 15 – Kaniere River - Normal Flow. (Photo 3432 25 May 2010)*



*Photograph 16 - Kaniere River - Low flow. (Photo 3322 12 April 2010)*

70. This is one of the most visually exposed of the viewpoints to the river, though the numbers of people crossing the bridge is quite small. Lake Kaniere Road crosses the river here and views up stream and down stream can be gained.
71. From the natural character point of view, the river channel has not been physically modified. It is 12 – 15m wide with a stony bed, which is fully visible through the stream flow. The riparian area is partially modified probably as a result of logging. The wider landscape context is also partially modified.
72. Hydrologically this part of the river is different from the river closer to the lake, in that it is wider and shallower, and the variations in flow do not affect the character as much as they do higher up (i.e. nearer the lake). This stretch of the river is rarely used for recreation but from this location the river is visible to the public. This part of the river runs through an area that has been logged and there is little ecological value, and little or no known heritage significance. From this viewpoint the river is attractive, though there is no statutory recognition of its landscape importance. In terms of rarity it is a typical example of its river type.



## 8. Kaniere Forks Power Station



*Photograph 17 – Kaniere Forks - Normal flow (Photo 328510/11 April 2010)*



*Photograph 18m – Kaniere Forks - Low Flow (Photo 3434 26 May 2010)*

73. Photograph 17 shows the river in front of the Kaniere power station looking upstream in April 2010 after a period of low rainfall, but on a full flow day. Photograph 18 shows the river at the same location at low flow in May 2010.



74. Blue Bottle Creek can be seen entering the main river at the top right of the photographs.
75. The river is wider here – perhaps 20 - 25m – with a rocky bottom. The river channel itself has been modified immediately below the power station (not visible in the photos). The riparian areas have also been modified – the bush has been removed from them and though it is regenerating, gorse is apparent. Further back from the river on both sides, mature bush is evident, though roads and tracks are visible in places.
76. In terms of its hydrological characteristics, the river is fairly robust to the visual effects of flow changes. This stretch of the river would rarely be used for recreation, and is generally largely hidden from public view.
77. In terms of landscape values, at this point the river has only of localised aesthetic merit, has little ecological or heritage value, and this is not a rare river type.
78. This part of the river has minor landscape quality values, and other than the parts of the wider landscape, it has fairly low natural character values. Its amenity values are low, and variations in river flow will have little effect.
79. It is proposed that the existing Kaniere Power Station be developed into an interpretation centre for members of the public to learn about the McKays/Kaniere Power Scheme if the upgrade is consented. The river bank and the slope behind the power station could be planted up with indigenous species, and the driveway entrance and car park could be improved.

## 9. Ford above McKays Power Station



*Photograph 19 – Normal flow after low rain fall (Photo 3260 11 April 2010)*



*Photograph 20 – Low flow. (Photo3436 26 May 2010)*

80. This viewpoint is located beside the ford that crosses Kaniere River just above McKays Power Station. At this point the river is wider (between 20 - 25m), again with a rocky bottom. The river channel itself is strongly natural, though the riparian area and the wider landscape context are partially modified.

81. Hydrologically the river at this point is able to handle flow changes, though more of the rocks and boulders are exposed on either side of the river at very low flows.
82. In terms of landscape values, this is an attractive river with little special ecological value and little heritage significance. The river at this point is typical of its type.
83. As can be seen from the photographs, the flow was lower in April after a low rainfall period, than it was in May when TPL carried out a low flow trial. These fluctuations do not adversely affect the natural character, amenity or landscape values of this stretch of the river.

## 10. Kaniere River adjacent to McKays Power Station (visible from Lake Kaniere Road)



*Photograph 21 – Kaniere River from Lake Kaniere Road and flying fox. (Photo 3264 11 April 2010)*

84. This is the view from just off Lake Kaniere Road looking across the river to McKays Power Station, with the flying fox in the view. From the three visits to this location over April and May 2010 the width of the river did not vary much. On all occasions the water remained at about the same level even during low flow periods.
85. At this point the river channel is about 25m wide, again with a rocky bottom. The river channel itself is strongly natural with wide boulder banks, the riparian area has been disturbed by the construction of the power station and cottage, but native shrubs and trees are regenerating. The wider landscape context surrounding the power station and cottage appear to be unmodified.
86. In terms of its hydrological characteristics, the river at this point is fairly able to handle flow changes. Again, this stretch of the river is not visited by the general public and would be used for informal recreation only.
87. This is an attractive river, with little special ecological value and little heritage significance (except for the power station). The river at this point is typical of its type.

## 8. ASSESSMENT AS TO THE EFFECTS OF OTHER INFRASTRUCTURAL ELEMENTS OF RECONSENTING PROPOSAL

### 8.1 Methodology

88. The key to assessing the landscape, amenity, natural character and visual effects of the proposed infrastructural elements is to first establish the existing characteristics and values of the landscape and then to assess the effects of the proposal on them.
89. This methodology is designed to assess whether or not the proposals would have a more than minor effect on the nature and quality of its surroundings.
90. The process of analysing such effects is as follows:

#### Landscape effects

91. Landscape is a combined product of natural and cultural patterns and processes within a geographical area. Landscape effects take into consideration the changes to the physical landscape (physical effects) and to the landscape character (landscape character is the distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another). Landscape assessments therefore investigate the likely nature and scale of changes to individual landscape elements and characteristics.

#### Effects on natural character

92. Natural character effects are considered in relation to natural processes, natural patterns, and natural elements in the existing landscape.

#### Effects on amenity values

93. The RMA defines 'amenity values' in section 2 as:

*"Those natural and physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence and cultural and recreational attributes".*

94. A professional working definition of 'aesthetic' taken from the Canterbury Regional Landscape Study 1993 (Boffa Miskell and Lucas Associates) is:

*"Pertaining to the quality of human perceptual experience (including sight, sound, touch, taste, and movement) evoked by phenomena or elements or configurations of elements in the environment".*

95. Aesthetic coherence in this context means that the various aspects of human perceptual experience are in harmony – united and consistent. In other words that the proposal will fit comfortably into its setting.

#### Visual Effects

96. An assessment of visual effects investigates the visual changes in the landscape resulting from a proposed development. The nature and extent of visual effects will be influenced by:

- the extent of the view that would be occupied by the proposal (i.e. the degree of visibility);
- whether the viewpoint would focus on the proposal due to proximity, or whether the proposal would form one element in the wider view;
- whether the views are transient (e.g. from a car) or stationary (e.g. from a house);
- the degree of contrast with the surrounding environment; and

- design measures to mitigate or enhance visual effects.
97. Effects on the landscape are therefore not restricted to visual effects – they include physical and perceptual effects, as well as effects on natural character. The definitions of amenity and aesthetic coherence point to the fact that people’s experience of landscape, including the sounds, tastes and movements associated with it, and whether or not those experiences are harmonious and consistent, are factors to be taken into account when assessing the landscape and amenity effects of new proposals.
98. A description of the landscape, visual, amenity and natural character effects of each of the other structural elements of the scheme has been carried out. These components are: the repairs and local improvement at McKays weir and canal; the refurbishment of, or construction of a newly aligned McKays tunnel; the new power station at McKays, and the new headpond at McKays.

## 8.2 Effects assessment

99. A description and assessment of the landscape, visual, amenity and natural character effects of each of the other structural elements of the scheme has been carried out. These components are:
- the repairs and local improvement at McKays weir and canal;
  - the refurbishment of, or construction of a newly aligned, McKays tunnel;
  - the new headpond at McKays; and
  - the new power station at McKays.

### (a) The repairs and local improvement at McKays weir and canal

100. This will involve the heightening of McKays weir, undertaking minor repairs, maintenance and local improvement to the existing canal to remove debris and vegetation, and to replace the old leaking Coal Creek Flume with a new 2 or 3 pipe bridge.



*Photograph 22 – McKays canal (Photo 3428 25/26 May 2010)*

101. These proposals will improve the landscape qualities of this area. This canal will be cleaned and smoothed. Coal Creek Flume, which is a dilapidated timber structure visible from Lake Kaniere Road, will be replaced with a two or three pipe bridge. Detailed design for this has not yet been



completed. (Refer Figure 3.2.1 in the McKays Creek Hydro-Electric Power Scheme Enhancement Feasibility and Scoping Report).

### **(b) McKays tunnel**

102. Further along the McKays race between Blue Bottle Creek and the McKays power station is a 500m long tunnel that is in need of significant refurbishment. It also does not have sufficient capacity to pass 9m<sup>3</sup>/s of water. Therefore, two enhancement proposals have been suggested. First, that the tunnel is completely refurbished with an increased diameter (Option A), or secondly that the tunnel is bypassed altogether by a 870m long new race along a different alignment (Option D). Cut fill material from the construction of the new section of race may need to be placed off site outside the construction corridor.
103. If the tunnel is completely refurbished it will have no landscape or natural character effects.
104. In respect of Option D – Proposed New Water Race to bypass existing McKays Tunnel – for the first 400m from the eastern end there will be a 40m wide construction envelope through an area of gorse which has been modified and grazed by cattle. Landscape and natural character effects through this part of the site will be no more than minor.
105. The terrestrial ecology report confirms that for the 470m stretch west from the boundary of Kaniere Farm Conservation Area the proposed construction area passes through an area of Kamahi/quintinie forest. Of the 40m wide construction envelope 25m would be permanently removed to allow for the race. 15m of the construction envelope will be available for rehabilitation. (Refer to notes on mitigation in the Conclusions of this report)

### **(c) The new headpond at above McKays**

106. A new head pond will be engineered and will lead to a new intake and penstock created adjacent to the existing race above McKays Power Station. The area where the proposed impoundment will be located is owned by TPL and the vegetation has already been cleared. The proposed head pond will be located to one side of the existing concrete race. The landform is already disturbed and cleared and the changes required for the headpond will have no effects on natural character, minor effects on landform, and will not contrast with the existing environment.

### **(d) The new power station at McKays**

107. A new power house extension will be built adjacent to the existing power station at McKays. The existing power station is well located on a river terrace on the south west side of Kaniere River up against a rock bank. It is not visible from Lake Kaniere River. An extension to the power station would have minor effects on natural character, which has already been significantly modified. The new power house extension would tuck in beside the existing one and would not adversely affect amenity values. The new power station would not be visible from Lake Kaniere Road. Overall the landscape effects of the new power station would be minor.

## **9. CONCLUSIONS AND RECOMMENDATIONS**

108. The key points that have arisen as a result of this assessment are:

### **1. Landscape values of the Lake Kaniere environment**

- Lake Kaniere and part of the south bank of Kaniere River are located in the Lake Kaniere Scenic Reserve.
- The changes proposed under this upgrade will not affect landscape values of the Scenic Reserve except in terms of the flows in the river.



- The more northerly parts of the river run through Lake Kaniere Forest, which has been cut over and has generally less high quality landscape and natural character values, and is more modified.
- If a full local or regional landscape assessment was carried out, Lake Kaniere and its surrounding environment may well be identified as an outstanding landscape (Refer Plan 1 – Landscape Areas around Lake Kaniere - Appendix C).

## **2. Lake Kaniere**

- The water level of Lake Kaniere fluctuates with drought and high rain falls. As stated earlier the level of the lake can be dropped to a lower level than occurred on the day I visited within the current consent. If additional abstraction does occur then it is probable that a wider beach of stones and gravels will be visible for longer periods around the edge of the lake. That is, the level of the lake will more often, and for longer periods, approach the currently consented minimum level.

## **3. Kaniere River – Effects of changes to water flow**

- The stretch of Kaniere River between Lake Kaniere and the McKays impoundment and weir passes through a landscape of mixed quality, with high natural character in places. The proposed reduction in water flow for the upgrade to a residual flow of 300 - 400L/s along this stretch of river will have some adverse effects on the natural character and landscape values, though fluctuations in river flow occur naturally through drought and rainfall. At The Landing the width of the water in the channel is reduced to about 2-2.5m with the upgrade. Significant portions of the rocks on the river bottom and on the edges are revealed at low flow. The natural character values of the river are reduced and aesthetically it takes on the character of a small stream rather than a river. At the Wards Road bridge the water flow would be reduced, and the rocky substrate would be more visible. White-water flow is less evident and the width of the water in the channel is reduced. The natural character values of the river are changed and aesthetically it takes on the character of a rapidly flowing shallow stream, rather than a full, strong-flowing river. However, these types of effects already occur at low flow times. The effects of the proposed Wards Road power station are likely to result in the clearance of wetland vegetation in an area of moderate natural character and landscape values.
- From McKays Weir northward, 8 cumecs will be drawn off and a residual flow of 300L/s - 500L/s will be left in the river. From the site visits undertaken, this residual flow will reduce the volume of water in the river but this will have no more than minor effects on landscape and natural character values.
- In conclusion, the changes to the river flows will be visually contained and the only places where the public will be able to view the river will be at The Landing, Wards Road and Lake Kaniere Road crossing. The surrounding mature indigenous forest screens the river from most directions.

## **4. Kaniere Race – Effects of the upgrade**

- In terms of the new race, between Lake Kaniere and the start of the transmission line the natural character and landscape effects of the proposed race will initially be high, reducing to moderate over time, as regeneration and enhancement planting occur.
- Along the transmission line the new race will have no more than minor effects as the area has already been cleared of bush.
- From the transmission line to the new Wards Road Power station the natural character and landscape effects will be high initially, reducing to moderate over time.
- The Wards Road Power Station will initially have high adverse natural character effects, and effects on landscape values, but with revegetation, and using materials for the building that blend it into its surrounding, the overall effects in the long-term will be moderate.

- 

## 5. Effects of other infrastructure elements

- The repairs and improvements to McKays Weir and canal will improve the landscape quality of the immediate area. This area is not accessible to the public.
- The construction of a newly aligned McKays tunnel, if pursued, will initially have high effects in the immediate area but will blend into its surroundings over time, particularly if the surrounding area can be revegetated. This area is not accessible to the public
- The area where the proposed impoundment will be located above McKays Power Station is owned by TPL will have no effects on natural character, a minor effect on landform and will not contrast with the existing environment. This area is not accessible to the public
- The new power station at McKays will have minor effects on natural character, and overall effects would be minor.

## 6. Mitigation

109. My recommendation for mitigation are as follows:

- A Rehabilitation Management Plan, and a Landscape Enhancement Plan be prepared for the whole length of the hydro electric power scheme;
- That a good local seed source be found to promote rapid regeneration;
- Strip and store topsoil, leaf litter and cleared vegetation for redistribution over the areas to be rehabilitated;
- That an amenity and picnic area with seats be located somewhere in the area of The Landing or the Hans Bay Road end of the DoC walkway;
- That the redundant Kaniere Forks Power Station be converted into a public interpretation/information centre, telling the story of the historic water race used by the gold diggers, and more recent adaptation to a hydro electric power scheme;
- That native vegetation planting should be undertaken; and
- That any new buildings should be built of materials (or painted in a way) that blends them back into their bush surroundings.

110. Relating these changes to the objectives of the WDP:

- The changes to water flow and the proposed development does not impinge on the integrity of the Westland landscape (3.10.1);
- The scenic open and diverse character of Westland District, which is dominated by natural dynamic processes, is maintained (3.10.2); and
- The proposed development has appropriate regard to the natural landscape in which it is located (3.10.3).

111. Relating what is proposed along the river to the policies of the WDP the effects of the development will not be significant in relation to the continuity of the district's landscape, some indigenous vegetation will be removed, but the clearance will be controlled and revegetated as part of the proposal. The proposal is not located in an outstanding landscape and the proposal will satisfy the aforementioned objectives.

Mary C Buckland FNZILA  
**Landscape Architect**  
**November 2010**

## APPENDIX A

### DETAILED ASSESSMENT METHODOLOGY

This assessment form was used on site to analyse the natural character, amenity and landscape values of the different parts of the river seen from the various viewpoints.

#### Natural Character Evaluation

Natural Character	Strongly natural / partially modified / strongly modified	Score 1 = strongly natural, 2= partially modified, 3= strongly modified.
• The River channel itself		
• The riparian area		
• The wider landscape context		

Looking at the *elements* (the components of the riverscape) and whether they are the product of nature or of human construction; the *patterns* (the composition of elements i.e. trees planted in straight lines, will be less natural than the same plants occurring in natural patterns following the topography and soil type); and *processes* (these underpin elements and patterns. The modification of natural processes such as erosion, deposition, plant succession with human processes such as cultivation, flood control, and dewatering will result in reduced natural character).

#### Site visit notes

#### Amenity Values Evaluation

Amenity Values	Hydrological	Recreation	Public exposure	Total score
• Major				
• Moderate				
• Minor				

#### Hydrological characteristics and river profiles

- 1 = Cross section and flow type usually vulnerable to flow changes, e.g. stable spring fed river with shelving banks.
- 2 = Cross sections and flow type of moderate vulnerability to flow changes.
- 3 = Cross sections and flow generally robust to the visual effect of flow changes, e.g. a braided river, or river subject to extreme flow variation including extreme natural low flows.

#### Recreation importance

- 1 = River/lake of significant importance for active in-river recreation (fishing, jet boating, kayaking etc.).
- 2 = River/lake of known importance for informal recreation (scenic viewing, walking etc.).
- 3 = River/lake rarely used for recreation (e.g. restricted access, unsuitable water quality).

#### Public exposure

- 1 = River flows through locations or settlements with large numbers of viewers.
- 2 = Visible to the public at particular locations.
- 3 = Largely hidden from public view.

Rivers that rank 1 in any of these three categories are likely to involve significant amenity value issues. The absence of any 1 rankings and a total of 8 or 9 will suggest that significant amenity concerns are unlikely.

**Landscape Values**

<b>Landscape values</b>	<b>1 = recognised as exceptional, outstanding</b>	<b>2 = Significant / attractive</b>	<b>3 = Little or no special value, typical</b>	<b>Total</b>
Natural science and legibility				
Cultural heritage importance				
Scenic / aesthetic import				
Landscape status				
Rarity				

**Natural science and legibility value**

- 1 = Recognised as having exceptional natural science values that are readily apparent in the landscape.
- 2 = Significant ecological values that are not exceptional but add to the landscape experience.
- 3 = Little or no special ecological value or values that are not apparent in the landscape.

**Cultural / heritage importance**

- 1= Recognised as important cultural/heritage feature (e.g. statutory acknowledgement area, heritage status in district plan etc.).
- 2 = Of cultural / heritage interest and significance but not statutorily recognised.
- 3 = Of little or no known cultural / heritage significance.

**Scenic / aesthetic Importance**

- 1= Highly scenic river, widely recognised for its beauty.
- 2 = Attractive river.
- 3 = River of little or localised aesthetic merit.

**Landscape status**

- 1 = Identified as outstanding landscape or natural feature in district / region.
- 2 = Within an area with lesser or more sporadic but relevant landscape recognition.
- 3 = No statutory recognition of landscape importance.

**Rarity**

- 1 = The only river of its type in the region.
- 2 = A particularly good (e.g. unmodified) example of a river type.
- 3 = A typical example of its type.

The identification of ranking 1 in any of the above criteria is likely to suggest that 'landscape' considerations will be a significant issue requiring detailed assessment.

A total score of 5-8 will also indicate a river where 'landscape' issues are likely to be very significant. A river scoring a total of 9-12 may justify more targeted landscape assessment. An absence of 1 rankings and a predominance of 3 rankings (total score 12-15) may suggest that in-depth 'landscape assessments are unnecessary.

High landscape quality	Total score -	5-8
Moderate landscape sensitivity		9-12
Minor landscape quality		13-15

## APPENDIX B

### VIEWPOINT RATINGS

Viewpoints 1 and 2 are not included in the viewpoint rating because they refer to the lake not the river.

#### VIEWPOINT 3– DoC walkway alongside Kaniere Race (as existing)

##### Natural Character Evaluation

Natural Character	Strongly natural / partially modified / strongly modified	Score 1 = strongly natural, 2= partially modified, 3= strongly modified.
• The River channel itself (race)	Strongly modified	3
• The riparian area	Partially modified	2
• The wider landscape context	Strongly natural	1

*Natural character partially modified on riparian area, race is fully modified, and wider landscape natural.*

##### Amenity Values Evaluation

Amenity Values	Hydrological	Recreation	Public exposure	Total score
Major				
Moderate	N/A	2	2	4
Minor				

*Amenity values moderate.*

##### Landscape Values

Landscape values	1 = recognised as exceptional, outstanding	2 = Significant / attractive	3 = Little or no special value, typical	Total
Natural science and legibility		2		
Cultural heritage importance		2		
Scenic / aesthetic import		2		
Landscape status		2		
Rarity			N/A	

*Natural science values vary along the race – in some places the values are high and in others fairly low. The race has its own heritage values because of its age and original use – these are moderate rather than outstanding. This area is located on the edge of a scenic reserve – high but not outstanding landscape values.*

## VIEWPOINT 4 – Hans Bay Road crossing of Kaniere River

### Natural Character Evaluation

Natural Character	Strongly natural / partially modified / strongly modified	Score 1 = strongly natural, 2= partially modified, 3= strongly modified.
• The River channel itself	Strongly natural	1
• The riparian area	Partially modified	2
• The wider landscape context	Partially modified	2

*Natural character partially modified.*

### Amenity Values Evaluation

Amenity Values	Hydrological	Recreation	Public exposure	Total score
Major				
Moderate	2	2	2	6
Minor				

*Amenity values moderate.*

### Landscape Values

Landscape values	1 = recognised as exceptional, outstanding	2 = Significant / attractive	3 = Little or no special value, typical	Total
Natural science and legibility		2		
Cultural heritage importance			3	
Scenic / aesthetic import		2		
Landscape status		2		
Rarity			3	10

*Vegetation at this location is partly modified though still attractive; there is little or no cultural heritage value; the area has attractive scenic qualities; and its landscape status is attractive but not outstanding. This is not a rare landscape.*



## VIEWPOINT 5 – Wards Road bridge across the Kaniere River

### Natural Character Evaluation

Natural Character	Strongly natural / partially modified / strongly modified	Score 1 = strongly natural, 2= partially modified, 3= strongly modified.
• The River channel itself	Strongly natural	1
• The riparian area	Strongly natural	1
• The wider landscape context	Strongly natural	1

*Very high natural character values*

### Amenity Values Evaluation

Amenity Values	Hydrological	Recreation	Public exposure	Total score
Major	1			
Moderate		2	2	5
Minor				

*Cross section vulnerable to flow changes. Fluctuations in flow likely to have adverse effects on amenity values.*

### Landscape Values

Landscape values	1 = recognised as exceptional, outstanding	2 = Significant / attractive	3 = Little or no special value, typical	Total
Natural science and legibility		2		
Cultural heritage importance	1			
Scenic / aesthetic import	1			
Landscape status		2		
Rarity			3	9

*Vegetation on either side of the river appears to be of high quality, though not necessarily outstanding; its scenic and cultural heritage is exceptional; its landscape status is of high value but not outstanding; and the river type is not rare.*

## VIEWPOINT 6 – Kaniere River McKays Weir

### Natural Character Evaluation

Natural Character	Strongly natural / partially modified / strongly modified	Score 1 = strongly natural, 2= partially modified, 3= strongly modified.
• The River channel itself	Strongly modified	2
• The riparian area	Strongly modified	2
• The wider landscape context	Strongly natural	1

*River channel, and riparian area are strongly modified. The wider landscape is strongly natural.*

### Amenity Values Evaluation

Amenity Values	Hydrological	Recreation	Public exposure	Total score
Major				
Moderate				
Minor	3	3	3	9

*Cross section and flow generally robust to the visual effect of flow changes; area rarely used for recreation (restricted access) and largely hidden from public view.*

### Landscape Values

Landscape values	1 = Recognised as exceptional, outstanding	2 = Significant / attractive	3 = Little or no special value, typical	Total
Natural science and legibility			3	
Cultural heritage importance			3	
Scenic / aesthetic import		2		
Landscape status			3	
Rarity			3	14

*Vegetation has been modified; little or no cultural heritage values; surroundings are attractive; and minor landscape quality. Typical river type.*

## VIEWPOINT 7 – Bridge Crossing south of Kaniere Forks Power Station

### Natural Character Evaluation

Natural Character	Strongly natural / partially modified / strongly modified	Score 1 = strongly natural, 2= partially modified, 3= strongly modified.
• The River channel itself	Strongly natural	1
• The riparian area	Partially modified	2
• The wider landscape context	Partially modified	2

• *River channel is natural, and riparian area and wider landscape partially modified.*

### Amenity Values Evaluation

Amenity Values	Hydrological	Recreation	Public exposure	Total score
Major				
Moderate			2	
Minor	3	3		8

• *Cross section and flow generally robust to the visual effect of flow changes; area rarely used for recreation. This part of the river is visually accessible to the public.*

### Landscape Values

Landscape values	1 = recognised as exceptional, outstanding	2 = Significant / attractive	3 = Little or no special value, typical	Total
Natural science and legibility			3	
Cultural heritage importance			3	
Scenic / aesthetic import			3	
Landscape status			3	
Rarity			3	14

• *Vegetation has been modified and disturbed over the years; little cultural heritage value; aesthetic values and landscape status is of little value.*

## VIEWPOINT 8 – Kaniere Forks Power Station

### Natural Character Evaluation

Natural Character	Strongly natural / partially modified / strongly modified	Score 1 = strongly natural, 2= partially modified, 3= strongly modified.
• The River channel itself	Partially modified	2
• The riparian area	Partially modified	2
• The wider landscape context	Partially modified	2

• *River channel, riparian area and wider landscape are partially modified.*

### Amenity Values Evaluation

Amenity Values	Hydrological	Recreation	Public exposure	Total score
Major				
Moderate		2	2	7
Minor	3			

• *Cross section and flow generally robust to the visual effect of flow changes.*

### Landscape Values

Landscape values	1 = recognised as exceptional, outstanding	2 = Significant / attractive	3 = Little or no special value, typical	Total
Natural science and legibility		2		
Cultural heritage importance			3	
Scenic / aesthetic import			3	
Landscape status			3	
Rarity			3	14

• *Surrounding vegetation has been modified; little cultural heritage or landscape values; landscape status is of little value.*

## VIEWPOINT 9 – Ford above McKays Power Station

### Natural Character Evaluation

Natural Character	Strongly natural / partially modified / strongly modified	Score 1 = strongly natural, 2= partially modified, 3= strongly modified.
• The River channel itself	Strongly natural	1
• The riparian area	Partially modified	2
• The wider landscape context	Partially modified	2

*River channel is strongly natural. The riparian area and wider landscape is partially modified.*

### Amenity Values Evaluation

Amenity Values	Hydrological	Recreation	Public exposure	Total score
Major				
Moderate				
Minor	3	3	3	9

*Cross section and flow generally robust to the visual effect of flow changes; area rarely used for recreation (restricted access) and this area is largely hidden from public view.*

### Landscape Values

Landscape values	1 = recognised as exceptional, outstanding	2 = Significant / attractive	3 = Little or no special value, typical	Total
Natural science and legibility			3	
Cultural heritage importance			3	
Scenic / aesthetic import		2		
Landscape status		2		
Rarity			3	13

*Vegetation in the riparian area and surroundings has been modified but revegetation has occurred in places. Little cultural heritage values. Scenic and landscape status is significant and attractive. This river type is not rare.*

## VIEWPOINT 10 – McKays Power Station – Kaniere River from Lake Kaniere Road (flying fox)

### Natural Character Evaluation

Natural Character	Strongly natural / partially modified / strongly modified	Score 1 = strongly natural, 2= partially modified, 3= strongly modified.
• The River channel itself	Strongly natural	1
• The riparian area	Strongly modified	3
• The wider landscape context	Strongly natural	2

*River channel and the wider landscape are natural. The riparian area is strongly modified.*

### Amenity Values Evaluation

Amenity Values	Hydrological	Recreation	Public exposure	Total score
Major				
Moderate			2	
Minor	3	3		8

*Cross section and flow generally robust to the visual effect of flow changes; area rarely used for recreation. The public can gain views from Lake Kaniere Road.*

### Landscape Values

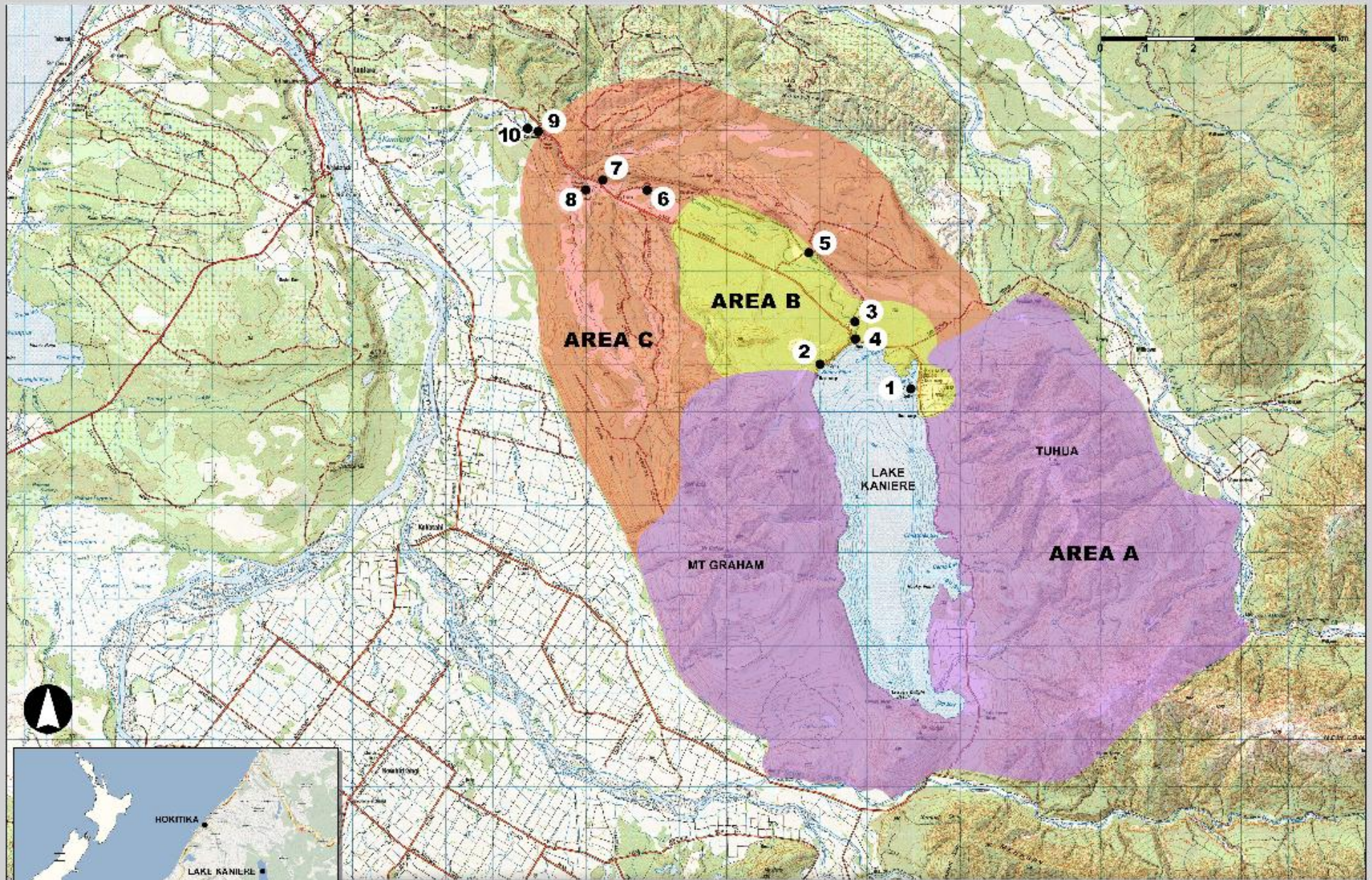
Landscape values	1 = recognised as exceptional, outstanding	2 = Significant / attractive	3 = Little or no special value, typical	Total
Natural science and legibility		2		
Cultural heritage importance		2		
Scenic / aesthetic import		2		
Landscape status			3	
Rarity			3	13

*Quite good quality bush on the slopes between the terraces; only cultural heritage values are the Power Station building. The area is attractive scenically and in a landscape sense. River type is not rare.*



# **APPENDIX C - PLAN 1**



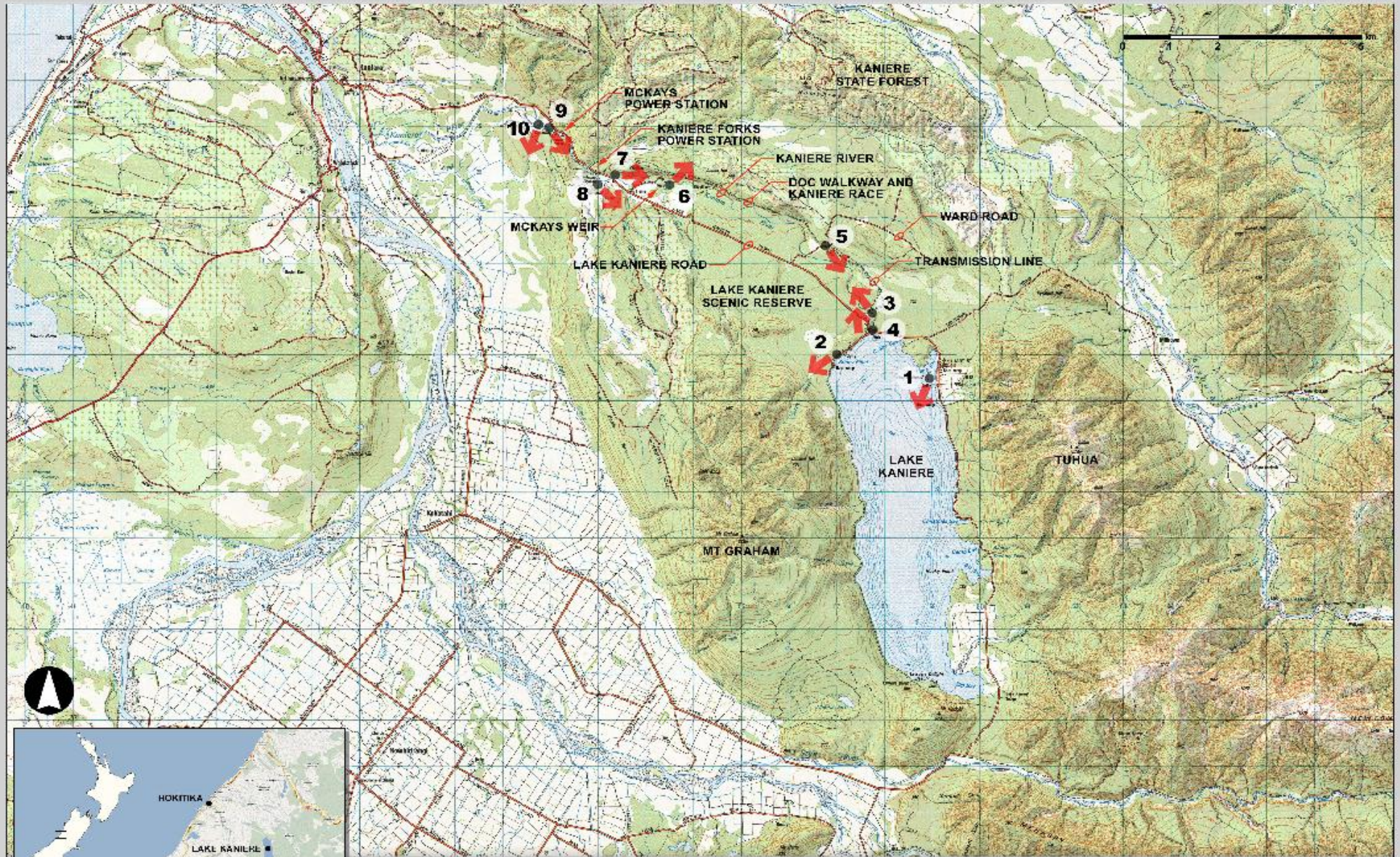


**KANIERE FORKS MCKAYS CREEK POWER SCHEME  
PLAN 1 - LANDSCAPE AREAS AROUND LAKE**



## **APPENDIX D - PLAN 2**





  
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**KANIERE FORKS MCKAYS CREEK POWER SCHEME**  
**PLAN 2 - PHOTO VIEWPOINT LOCATION PLAN**



