

Kaniere Valley – Hydro Electric Power Scheme

Who is TrustPower?

Starting business in 1925, TrustPower has grown to be one of New Zealand's largest electricity generators and retailers. TrustPower now serves over a quarter of a million customers throughout New Zealand.

TrustPower generates electricity exclusively from renewable sources, either as hydro power from its 36 stations in locations such as the Bay of Plenty, Taranaki, Marlborough, the West Coast, Otago and Canterbury, or from its commercial scale wind farm operation in the Tararua Mountain range behind Palmerston North.

The electricity generated by TrustPower is supplied to the wholesale electricity market and produces enough electricity for 220,000 homes around the Country, as well as providing power for industry and energy demanding rural activities.

Isn't there already Power Stations on the Kaniere River?

The power houses of McKays Creek and Kaniere Forks date back to 1931 and 1908 respectively. Together they generate some 1.53 Megawatts (MW), which equates to a supply for approximately 1,500 homes.

The Kaniere Forks station uses water from Lake Kaniere, which is directed through a series of races (the Kaniere water race) and released back into the Kaniere river, downstream of the intake of the McKay's station.

The McKays station uses water from the Kaniere River, which is subsequently released downstream back into the Kaniere River via a tunnel and water race.

The nature and efficiency of the existing Hydro Electric Power Schemes is somewhat out dated given their age. Importantly, the water discharged from the Kaniere Station is unable to be picked up by the McKays Station, as the Kaniere HEPS tailrace returns water to the Kaniere River downstream of the McKays intake. TrustPower have spent the few years examining options which would:

- Provide for the more efficient generation of energy using as much of the existing infrastructure as possible, whilst
 - recognising the important historic nature the existing scheme network;
 - minimising and offsetting impacts to the substantial native forest area surrounding the Scheme, as administered by the Department of Conservation;
 - integrating with the wider network of cycling and walking tracks in the area;
 - ensuring that the natural character and ecology of Lake Kaniere and the Kaniere River are preserved.

As of 2007, peak electricity demand in the West Coast was approximately 65 MW. Generation is currently supplied by nine small West Coast power stations (with a total peak output of 13 MW) with the balance imported from other regions.

TrustPower's Arnold River HEPS at 46MW, which gained approval in 2010, would contribute to electricity generation and satisfying future demand growth. However, additional hydro generation on the West Coast would not only reduce reliance on the Coast of supply to by the national transmission network, but would also diversify electricity generation on the Coast as well as assist in attaining the Government target of having 90 percent of all our electricity to come from renewable sources by 2025.

Where is Lake Kaniere and the Kaniere River?

The Kaniere River flows from Lake Kaniere to its confluence with Hokitika River, some 5km in land from the Tasman Sea. River flows are regulated by the existing Lake Kaniere outlet and both the Kaniere and McKays Hydro Electric Power Schemes which have a total length of some 9km.

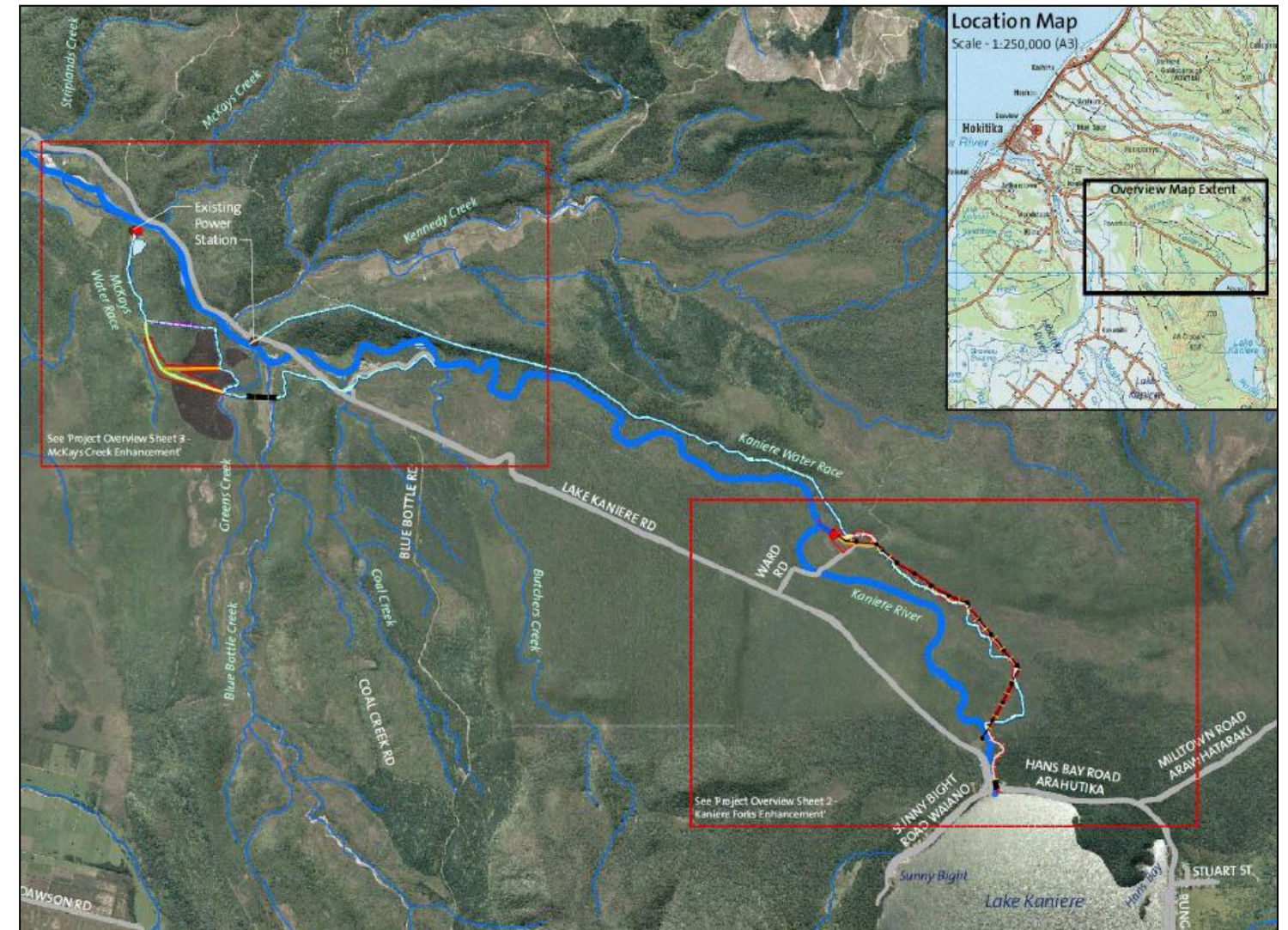


Figure 1: Scheme Location

The Kaniere River is located within a typical West Coast Valley. Steep bush covered hills surround the valley, and limited views of the River are provided from Lake Kaniere Road. Lake Kaniere itself is some 8km long and 2km wide, with depths of up to 195m. There are a number of houses and holiday homes scattered around Lake Kaniere. The Lake is a popular boating and tourist base, with a network of walks in the immediate area.

The river itself is generally shallow, with a gentle slope downriver and moderate water quality. It's general inaccessibility and flow means that the river itself is not popular for recreational activities, although the nearby

Lake Kaniere Walkway, which follows the historic Kaniere water race is a well used by mountain bikers and walkers.

The surrounding area is mainly conservation estate under the management of the Department of Conservation, although there are areas of scrub, farmland and plantation forestry, especially in the area downstream of the McKays Station.

What is TrustPower proposing?

TrustPower's proposed Hydro Electric Power Schemes ('HEPS') on the Kaniere River are designed to refurbish and improve the efficiency of the existing Kaniere and McKay's Schemes, which will not only improve the effectiveness of these Schemes, but will also make the Hokitika area more self sufficient in terms of energy supply.

The key change will be the decommissioning of the Kaniere Station and retaining this building as part of a visitor recreational and interpretation area. A new Station will be developed adjacent to Wards Road (the Ward's Road HEPS), with the existing water race modified between Lake Kaniere and Wards Road and the provision of increased flows to the new Station up to 8 cumecs. These flows will then be returned to the Kaniere River, upstream of the existing McKays Station outlet, so they can be used to provide increased flows of up to 8 cumecs to an enhanced McKays Station.

Other changes include: modifications to the existing water races, including decommissioning the Kaniere water race from Wards Road to the existing Kaniere Station; improvements in river connectivity and the installation of fish screens; and the possible diversion of flows around the existing McKays tunnel.

The proposed changes will provide for a combined generation capacity of some 4.5MW, providing a further 20 gigawatt hours (GWh) of energy per annum, or enough energy to supply a further 2500 homes in addition to the 1500 already served by the Scheme.

The Scheme involves diverting up to 8 cumecs of water flowing via the existing outlet at Lake Kaniere. Currently, the existing Scheme network draws up to 1 cumec of water for the Kaniere HEPS and 5 cumecs for the McKays HEPS.

Flows remaining in the River will be managed to ensure that fish and other aquatic ecology, and the habitat they depend on are provided for. Such management includes, maintaining a range of minimum flows within the River, and monitoring to ensure river temperatures are acceptable.

The combined HEPS, including water races is approximately 9km in length.

The enhanced Schemes will have a long but relatively narrow presence in the Kaniere River Valley, given that it is made up of a series of water races, the Wards Road and McKays power stations and associated intakes and tailraces. The location of the Wards Road Station and enhancements to the system of water races has been selected from a number of options as the most efficient for the generation of electricity, and having the least social and environmental impact.

It will take some 18 months to construct the proposed HEPS enhancements. This will involve changes to the McKays weir and Lake Kaniere outlet, initial dewatering of the water races to allow for works to deepen or widen the races, and developing the Kaniere water race deviation to provide water to the commissioned Wards Road HEPS.

Whilst material taken from one area of the scheme construction will be used as fill elsewhere, some spoil will be used to raise ground levels on farmland close to the McKays tunnel. There will be some employment opportunities expected in the district as a result of construction activity, but will return to normal levels for the operation of the HEPS.

The existing Kaniere station will be decommissioned. Most of the structures will remain and become features in a wider visitor attraction associated with an interpretative and recreational area.



Photo of existing Kaniere water race and mountain bike route

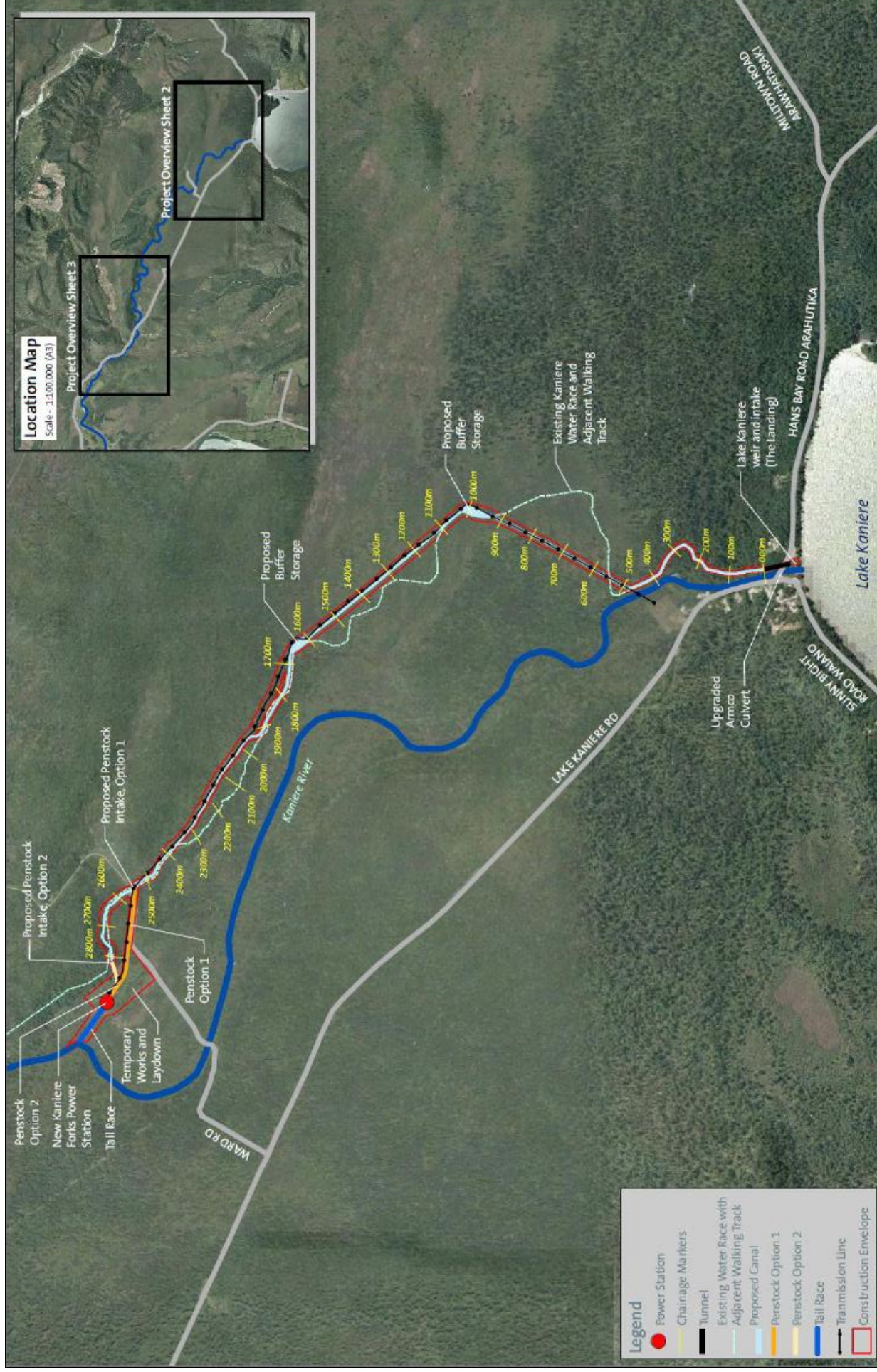


Figure 2: Scheme Plan for Kaniere Hydro-Electric Power Scheme

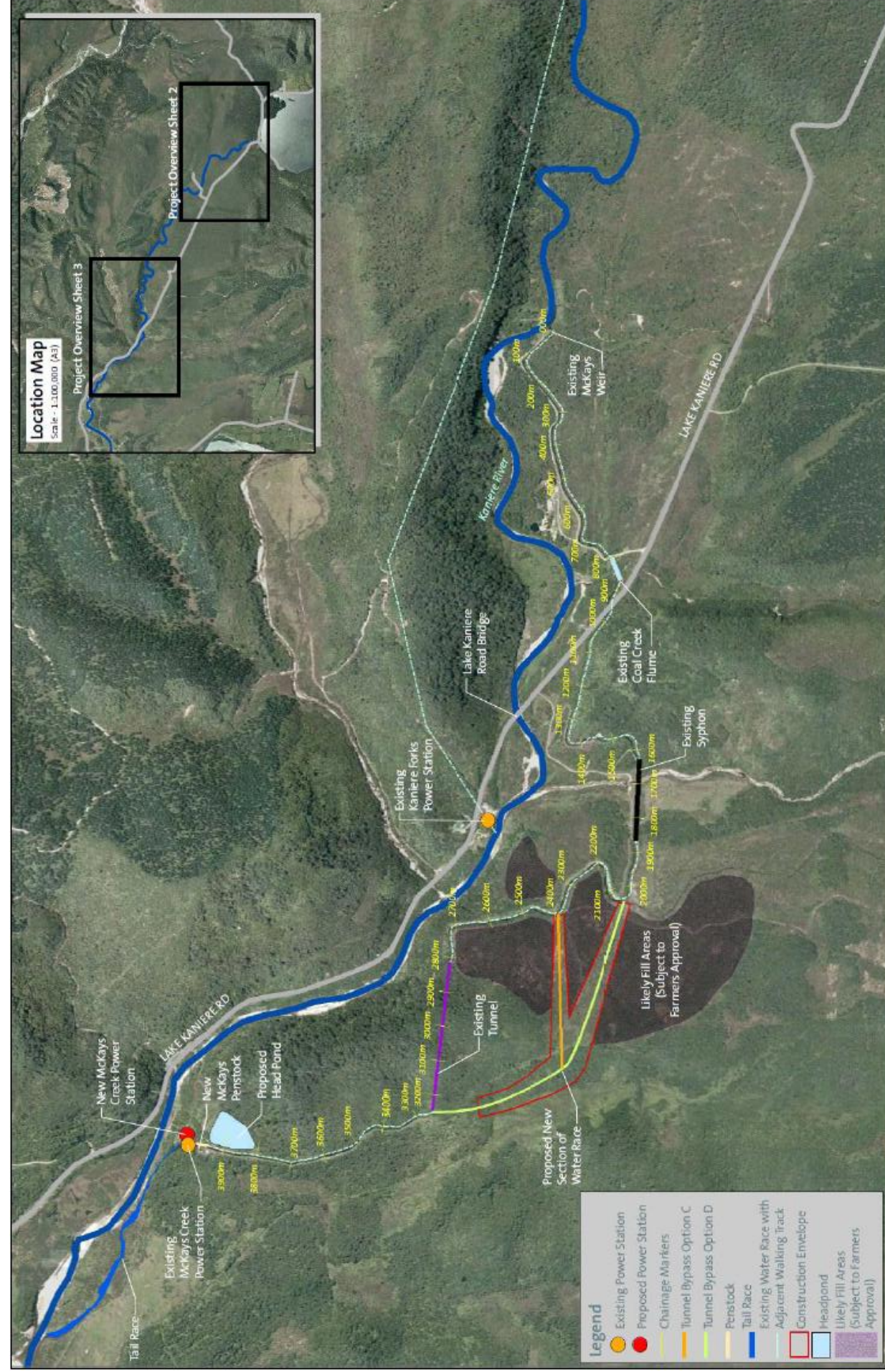


Figure 3: Scheme Plan for McKay's Hydro-Electric Power Scheme

Why are the resource consents necessary?

Permission to construct and operate the proposed Scheme is required under the Resource Management Act 1991 by way of a resource consent process. Resource consent is required for a number of aspects of the construction and operation of the Scheme enhancements, including:

- the diversion, or taking of flow from the Lake Kaniere and the Kaniere River,
- discharging, or returning the water back to the River,
- earthworks required for developing the race system and storage;
- structure construction, operation and maintenance; and
- the operation of the power station itself.

The resource consent process is important as it provides a means by which the Community and Stakeholders can be informed about the proposal and its accompanying detailed assessment, and have their say.

TrustPower recognises that in seeking to reduce the reliance in the West Coast on imported electricity, any proposed HEPS enhancements on the Kaniere River would need to achieve a sustainable environmental, social and economic balance.

Consultation

At an early stage, TrustPower has sought the involvement of Tangata Whenua (Te Runanga o Ngati Waewae and Te Runanga o Ngāi Tahu) and stakeholders such as members of the Lake Kaniere Property Owners Association, the Department of Conservation, Fish and Game New Zealand, the West Coast Regional Council and the Westland District Council in identifying options for designing the scheme. In this way, TrustPower could draw on local knowledge to make sure that the final design would be environmentally as well as technically successful. TrustPower's expert consultant team also advised on those areas within the Kaniere River Valley that would be especially sensitive to the construction and operation of the HEPS, such as heritage, landscape and territorial habitat values.

Impacts

Any proposal of a size of the Scheme enhancements, especially given its location with the Kaniere River valley, has the potential for both positive and negative environmental, social and economic impacts. TrustPower has relied upon the advice of a team of experts with an understanding of the local natural, social and economic environment in developing the project, including inputs from a wide range of interest groups. TrustPower has concluded that the Scheme enhancements will only have a minor impact on the environment, as subject to a wide array of mitigation works that would accompany the proposed works. The benefits in terms of increased local power generation utilising the existing McKays and Kaniere scheme infrastructure in a more efficient manner will provide benefits which outweigh any negative impacts. Where negative impacts are not able to be avoided, mitigation measures have been identified and incorporated into the project.

So what does the project mean...

◆ ...to recreational activity?

Lake Kaniere is a highly valued for boating, recreational, and walking activities within the West Coast. Whilst fishing is possible, access difficulties mean that most fishing within the Lake is undertaken by boat. It is understood that little recreational fishing is undertaken on the Kaniere River.

The Lake Kaniere Walkway is located within the Department of Conservation Estate and generally follows the direction of the Kaniere River. The walkway is of some 9km in length and is also formally used for mountain biking. There will be some changes to the existing walkway, due mainly to the decommissioning of that area from Wards Road to the existing Kaniere Station, and modifications to the remaining areas of the water race. However, after the commissioning of the Scheme enhancements, an increased network of walking and mountain biking tracks will be created in the area.

Those boating or using the Lake for picnics and walking may be able to discern slightly lower lake levels; however these will not be at a level that adversely impacts on the natural beauty and character of the Lake and its surroundings.

◆ ... to the environment and biodiversity?

TrustPower's research shows that the Scheme enhancements will maintain and support a broad range of healthy and diverse eco-systems. Although there will be substantial vegetation clearance and earthworks to deviate the race at Ward's Road, building the Wards Road HEPS, and developing the McKays tunnel deviation. However, landscape restoration and a detailed planting programme will offset such impacts, particularly for race edges and embankments. TrustPower is investigating options to purchase and protect an area of native forest, and also increase the extent of Pest Management in the area.

The project incorporates the installation of fish screens into the Scheme itself, and with the removal of shallow 'pinch points' on the river the project should ensure there is good connectivity along all aspects of the Kaniere River to Lake Kaniere for fish passage.

The decommissioned Kaniere Power Station will be retained as a principle focus within a TrustPower recreation and enhancement area. The recreation and interpretation area will provide a recreational and heritage feature and focus within the Kaniere River Valley and will provide a tangible opportunity to inform the wider community and tourists of the long gold mining and energy development heritage of the area.

The proposed minimum flows within that part of the Kaniere River affected by the Scheme enhancements will not decrease ecological habitat, and will maintain habitat for the modest range of fish species within the River. Flushing flows will also be undertaken when and as necessary to prevent nutrient enrichment or high water temperatures during the summer months. The tributaries to the Kaniere River that provide habitat for native fish will continue to flow into the Kaniere River, although in some instances for the smaller tributaries they may need to cross the race network via a bridge or culvert. The Scheme also contains fish screens to stop eels entering the Power Station.

◆ ... to iwi?

The Arnold River is of significance to iwi. Ngati Waewae Environment Unit (Te Runanga o Ngati Waewae), has been involved in considering the implications of the Scheme enhancements on its cultural heritage and associations with the area. The principle concern of Ngati Waewae relates to the 'wellbeing' of the mauri of the waters of the Kaniere River. A protocol is to be developed between Ngati Waewae and TrustPower to address any discovery of waahi tapu or archaeological sites of significance to Tangata Whenua.

In Conclusion

TrustPower has undertaken a comprehensive assessment and consultation process prior to lodging its application for resource consent for the Kaniere and McKays HEPS enhancements. This Scheme will provide an efficient additional supply of sustainably generated power to the wider Hokitika area. There are considerable benefits to the district from being less reliant on importing electricity from the rest of the country, such as an increased ability to generate electricity where it is used, therefore minimising voltage lost from having to convey electricity from outside the district. The project addresses values relating to fish and bird life, flora and fauna, recreation and natural landscape to ensure that the Scheme enhancements will be sustainable, and in accordance with the Resource Management Act.

TrustPower lodged resource consent for the proposal with the West Coast Regional Council and Westland District Council in November 2010. TrustPower anticipates that the application will be notified in mid 2011, with a hearing to be held towards the end of 2011. Assuming resource consent is granted, TrustPower hopes to have the project delivering additional power to the district by the winter of 2013.

Where to from here?

TrustPower would welcome any feedback from the community regarding the proposal. If you have any comments in regard to this project, please complete the feedback form and return it tonight or to TrustPower by 18 March 2011 in the pre-paid envelope provided.