

MINUTES

TITLE: Environment & Planning Subcommittee
COMMISSIONER HEARING

DATE: Monday 9 February to Friday 13 February 2009

VENUE: Yacht Club, 322 Wakefield Quay, Nelson

PRESENT: B Cowie (Chairman), J Lumsden, S Bryant

IN ATTENDANCE: Environmental Education Officer (J Butler), Consent Planner - Water (N Tyson), Consent Planner - Natural Resources, (L Pigott), Minute Taker - Fanselow Bell (A Whitlock)

1. NEW ZEALAND ENERGY LIMITED, MATIRI VALLEY, MURCHISON - APPLICATION No. RM060937, RM060938, RM060939, RM060940, RM060941, RM060942.

RM060939	<p>To dam Lake Matiri behind three weirs at the Lake Matiri outlet (at or about map reference M29 546492).</p> <p>The lake will not be operated below its natural minimum level. However, the presence of the weirs will raise the maximum level of Lake Matiri by up to 0.4 metres in a 1-in-100-year flood. The applicant has applied for an exemption to the Buller River Water Conservation Order for these rare events.</p>
RM060940	To take and use water from Lake Matiri for hydroelectric power generation purposes at rates up to 6.3 cubic metres for second.
RM060941	To discharge water from a hydroelectric power station via a tailrace to the Matiri River (at or about map reference M29 538474) at rates up to 6.3 cubic metres per second.
RM060937	<ul style="list-style-type: none"> ▪ To construct three weirs, an intake structure, and spillway within 10 metres of the bed of Lake Matiri (at or about map reference M29 546492) and to undertake earthworks and disturb vegetation within 10 metres of the bed of Lake Matiri during construction of the weirs and structures; ▪ To construct a penstock in the bed of the Matiri River and disturb the river bed during construction for a distance of 100 metres downstream of the lake intake structure and within a sweeping bend of the Matiri River; ▪ To construct a power station trailrace in the bed of the Matiri River (at or about map reference M29 538474) and to disturb the bed of the Matiri River during construction of the tailrace; ▪ To construct a temporary ford (Bailey bridge) structure in the bed of the Matiri River (West Branch) at a location approximately 300 metres upstream of the confluence with the Matiri River, and, following construction; ▪ To use the bed of Lake Matiri and the Matiri River to the extent of the permanent scheme structures, including allowing for the ongoing maintenance of the structures.
RM060938	<ul style="list-style-type: none"> ▪ Remove indigenous vegetation and undertake earthworks and land disturbance, which includes a new access track and upgrading of the existing access track and access road and culverts, construction of a 1.6 metre diameter penstock, a power station and tailrace. The vegetation removal includes approximately 50 mature beech trees from the penstock and access track routes; ▪ Stockpile soil and overburden material at various identified lay down areas;

	<ul style="list-style-type: none"> ▪ To extract gravel from four sites located on river terraces of the Matiri River and the Matiri River (West Branch).
RM060942	To undertake an industrial activity being the operation of a hydroelectric power station (at or about map reference M29 538474); and to construct a power station building of approximately 100 square metres adjacent to the Matiri River (at or about map reference M29 538474). In addition, approximately 4 kilometres of new power line is proposed to be constructed on private land to extend the existing Network Tasman pole line from its current northernmost extent to the power station.
	The application site is located at Matiri Valley, Murchison, being legally described as Section 1 SO 15298 and Section 3, marginal strip, bed of Lake Matiri, bed of Matiri River and bed of west branch of Matiri River, Block V, Matiri Survey District.

The Commissioners proceeded to hear the application, presentation of submissions and staff reports as detailed in the following report and decision.

IN THE MATTER OF the Resource Management Act
1991

AND
IN THE MATTER OF Applications RM060937 –
RM060942 by **New Zealand Energy Limited** to Tasman District Council for resource consents associated with the construction and operation of a hydroelectric power scheme in the Matiri Valley.

**Decision of the Hearing Commissioners
Dr Brent Cowie, Mr John Lumsden and Mr Stuart Bryant**

1 Appearances

1.1.1 Applicant

Ms Shoshona Goodall, Counsel, Duncan Cotterill
Mr David Inch, New Zealand Energy Limited
Mr Anthony Hewitt, Envirolink Limited
Mr Thomas Carter, Tasman Carter Ltd.
Mr Charles Mitchell, Biological Consultant
Mr Ian Jowett, Freshwater Consultant
Dr Mark James, Aquatic Biology Consultant
Dr Murray Cave, Resource Solutions
Mr Paul Wopereis, MWH New Zealand Limited
Mr Antony Kusabs, Te Ngahere Native Forest Management Ltd
Mr Thomas Kroos, Fish and Wildlife Services
Mr Erin Roughton, Energy Management Solutions Limited
Mr Simon Beale, MWH New Zealand Limited

1.1.2 Submitters

Mr Dean van Mierlo and Ms Rachael Ennor, Counsel, Department of Conservation
Mr John Wotherspoon, Department of Conservation
Mr Joseph Hay, Cawthron Institute on behalf of Department of Conservation
Mr Martin Rutledge, Department of Conservation
Dr Lionel Solly, Department of Conservation
Mr John Rice
Dr Peter Ballance, Royal Forest and Bird Protection Society
Ms Helen Campbell, Royal Forest and Bird Protection Society
Ms Debs Martin, Royal Forest and Bird Protection Society
Mr Neil Deans, Fish and Game New Zealand
Mr Stephen Wood
Mr Paul Troon

Mr Tom Inglis
Mr Stanley Mackey, Network Tasman Limited
Ms Maree Baker, Counsel for NZ Recreational Canoeing Club and White Water Canoe Club
Mr Brandreth Harvey, Nelson Canoe Club
Mr Michael Hopkinson
Ms Jessica Brown
Mr Zachary Shaw

1.1.3 Council Officers

Mr Neil Tyson, Consent Planner, Natural Resources
Mr Leif Pigott, Coordinator, Natural Resource Consents
Mr Jack Andrew, Coordinator, Land Use Consents
Mr Dugald Ley, Development Engineer
Mr Peter Thomson, Engineering Manager
Mr Trevor James, Resource Scientist, Environmental
Mr Eric Verstappen, Resource Scientist, Rivers and Coast
Mr Martin Doyle, Coordinator, Environmental Monitoring

1.1.4 In Attendance

Mr Jeremy Butler, Principal Resource Consents Adviser (assisting the Commissioners)
Ms Anthea Witlock, Minutes Secretary

2 Summary

1. A panel of three hearing commissioners appointed by the Tasman District Council ('the Council' or 'the TDC') has granted resource consents to New Zealand Energy Limited ('the applicant' or 'NZEL') for the construction and operation of a new hydropower scheme ('Matiri Hydro Scheme' or 'MHS') in the Matiri Valley north of Murchison. The consents are granted for terms of 35 years. Construction consents are granted for the same term as there are conditions that are to be complied with on an ongoing basis. A condition is also included which requires the construction works to be done within 15 years.
2. The consents are granted because, in making a broad overall judgement the commissioners considered that the proposal was consistent with the purpose of the Resource Management Act 1991 ('the Act'), namely the promotion of the sustainable management of natural and physical resources. The scheme will help the community provide for its social and economic needs, the life-supporting capacity of the Matiri River and Lake Matiri can be safeguarded, and the adverse effects of the activities for which consent is granted can largely be avoided or mitigated.
3. Lake Matiri was formed by a large rock avalanche several hundred years ago. It presently has an area of about 57 hectares. Recorded lake levels vary over a range of almost 4.5 metres. The lake is part of Kahurangi National Park, but the area covered by the proposed power scheme, although partly administered by the Department of Conservation, is not part of the National Park.
4. The proposed power scheme uses the fall provided down the rock avalanche to provide a head of some 92 metres. Up to 6.3 cubic metres of water per second will pass down a 1.6 metre diameter penstock to a power station, much of which is underground. The power station will generate some 4.6 megawatts, and, according to the applicant, about 25 gigawatt-hours per annum. The lake will be operated over a range of 1.02 metres; the average level of the lake will be increased 0.5 metres, with live storage estimated at about 540,000 cubic metres. When inflows are low the power station will generate at peak demand times in the morning and evening.
5. Three outstanding characteristics or features of Lake Matiri and the Matiri River upstream of the lake are protected by the provisions of the National Water Conservation Order ('WCO') for the Buller River. These are outstanding wild and scenic values, wildlife habitat and native fisheries. The lake is also a Wildlife Refuge, with noted value for moulting paradise shelduck. The WCO places limits on the management of lake levels by a power scheme and the proposal is consistent with these. Of particular relevance to our decision, the WCO also requires that no structure be placed in the bed of the Matiri River downstream of the lake unless it allows for the passage of eels and koaro in both directions.
6. The expert evidence persuaded us that passage for eels and koaro can be provided upstream through the provision of some flow at all times below the main outlet to the lake, and the provision of a wetted

surface over the constructed weir. This will need to be complemented by poisoning of water rats to limit the risk of predation. Downstream passage will occur readily during higher flows.

7. The consensus view of fisheries experts representing the applicant and the Department of Conservation was that a residual flow of 1,000 litres per second, measured shortly upstream of the power station discharge, will protect the life-supporting capacity of this reach of the Matiri River. We have accepted their advice.
8. The evidence was that the scheme would not have significant adverse effects on the population of the mussel *Hyridella* in the lake, or on existing, partly exotic weed beds. The ribbonwood/coprosma vegetation around the margin of part of the lake may be adversely affected by increased average water levels, but it is considered to not be viable under present conditions.
9. The construction of the scheme does have some adverse effects. Machinery will be needed to construct the three weirs at the lake outlets, and some blasting may also be necessary. The applicant was dissuaded from their initial proposal to lower the level of the lake much further than allowed by the WCO for construction, and now intend to use cofferdams to allow that work to proceed. Consent conditions prohibit construction works at the weirs during the nesting and moulting seasons of paradise shelduck.
10. Other adverse effects include those on natural character, particularly around the three outlets of the lake where weirs will be constructed to control water levels, and sections of the penstock route in the bed of the river for about 90m below the main outlet of the lake, and at "sweeping bend". There will also be adverse effects on the mixed terrace beech forest through which the penstock passes for some 700 metres along a corridor 6 metres wide, and in which laydown areas must also be established. The forest is dominated by beech canopy species, and is of a type very common in the ecological district.
11. Some of these effects cannot be avoided. Along the penstock route in the forest however, vegetation can be re-established by removing and replacing forest "duff" and replanting some canopy species. The effects on natural character will decrease as the penstock becomes better integrated into the landscape with time.
12. The applicant proposed a 10-minute "ramping rate" for the power station discharge. The evidence was that this would not have significant adverse effects, but we have required that these effects be monitored.
13. The Matiri River is used for both angling and kayaking. It is not a highly rated angling river, receiving an estimated 100 visits per year. The evidence was that there may be some effects on the trout population, but this was uncertain. Kayaking occurs mainly at high flows, which are not affected by the operation of the power scheme. The applicant is required to make real time information on river flows available via the internet.
14. The proposal has some substantial positive effects, including: the provision of renewable energy and improved security of supply for the local area, improved road access to the tramping track leading to Lake Matiri and the Kahurangi National Park and the provision of costs towards footbridge access over the West Branch of the Matiri River.
15. Presently road access to the West Branch of the river is very poor for the last 3 kilometres over land partly in the tenure of NZEL. The applicant proposed this be improved to a forestry standard road 3.5m wide, suitable for construction machinery to pass up, and which would be able to be negotiated by 2WD vehicles. We have provided for this standard of gravel road in the conditions of consent.
16. The proposal is not contrary to the provisions of the Tasman Resource Management Plan ('TRMP'), nor is it strongly contrary to any provisions of Part 2 of the Act.
17. We have granted all the consents sought to operate the scheme for 35 years. This term is consistent with case law and offers security for the applicant. We also note that the effects of the scheme, once constructed, are quite constant and relatively minor. If this turns out not to be the case, conditions can be reviewed.

18. Any diversion of the river to construct the penstock route at “sweeping bend” will require a separate consent application. We were not provided with sufficient information about the effects of a possible diversion of the Matiri River down an “old flood channel” to include consent for that activity.
19. The conditions on which consent is granted require the preparation of several management plans for construction activities and associated sediment and erosion control. These need to be certified by council officers. We are satisfied that case law provides for such plans for construction projects, and we have tightly specified the objectives that the management plans must meet.

3 Introduction

1.1.5 The Applications

20. On 9 November 2006 NZEL applied to the Council for resource consents associated with the construction, operation and maintenance of a hydroelectric power scheme in the Matiri Valley north of Murchison. The consents sought were as follows:
 - RM060937: A land use consent to remove vegetation and to undertake earthworks for the purposes of constructing and maintaining the Matiri hydroelectric power scheme.
 - RM060938: A land use consent to undertake works in and on the beds of Lake Matiri and the Matiri River for the purposes of constructing and maintain the Matiri hydroelectric power scheme.
 - RM060939: A water permit to dam Lake Matiri behind three weir structures for the purposes of hydroelectric power generation.
 - RM060940: A water permit to take surface water and storage from Lake Matiri and use the water for the purpose of hydroelectric power generation.
 - RM060941: A water permit to discharge water to water from the Matiri hydroelectric power station.
 - RM060942: A land use consent to construct and operate a power station within the Rural 2 zone and for construction of a new section of transmission line.
 - RM090023: A discharge permit to discharge mineral debris and associated water from the dam sluice gate.
21. The applicant and council officers agreed that application RM060937 is for a controlled activity, and the other applications are for restricted or fully discretionary activities. As there are no non-complying activities, we did not have to consider Section 104D of the Act.
22. The Council sought further information on the applications under the provisions of Section 92(1) of the Act on 19 December 2006 and 3 September 2007. This eventually resulted in comprehensive new information being provided in June 2008.

1.1.6 Submissions

23. The applications were publicly notified on 12 July 2008. There were 255 submissions received with 12 in opposition, two either neutral or in conditional support, and the remaining 241 were in support.
24. Eight of the 255 submissions were received after the formal deadline (8 August 2008) with one in support and seven opposing. Acting under delegated authority from the Council, the then Resource Consents Manager (Dr Rob Lieffering) considered and accepted all eight late submissions and granted an extension of time under Section 37 of the Act.
25. A summary of the submissions follows:

In Support

26. Most of the 241 submissions in support stated the following two reasons:
- I am concerned at the prospect of both energy shortages and global warming and I believe that as a nation we need to pursue sustainable development of energy based on the self-renewing and non-polluting sources that are available to us.
 - I believe New Zealand Energy has demonstrated the Matiri hydro development can be operated and deliver significant benefits to society with less than minor adverse effects on the environment, and in doing so will contribute materially to the public enjoyment of the associated conservation land and Kahurangi National Park.

Neutral or Conditional Support

27. The following submissions were neutral or stated conditional support:
28. **John L and Beverley J Falkner (#81)** supported the application but sought that the Matiri Valley Road be widened to two lanes and sealed to address an already overburdened road in summer and particularly the increase in tourist traffic that improved access will attract. They noted that a section of the road needs to be raised above flood levels and that the applicant should contribute to the road upgrade cost.
29. **Nelson Marlborough Fish and Game Council ('Fish and Game') (#240)** Fish and Game had concerns about the adverse effects of fluctuating flows on trout in the Matiri River and safety issues for fisherman, particularly in the gorge areas of the Matiri River. Fish and Game were also concerned about the potential for adverse effects on paradise shelduck during construction in the summer moulting season.

In Opposition

30. A summary of the submissions in opposition follows:
31. **Mr William S Murray (#80)** stated that he has fished the river for 35 years and opposes the proposal due to adverse effects on the trout stream, trout spawning and habitat and raises safety issues for fisherman from river flow fluctuation particularly in the gorge areas in the Lower Matiri River.
32. **Mr Stephen Wood (#230)** opposed the adverse effects of fluctuating flows from Matiri Hydro Scheme (MHS) operation (hydro-peaking) on the river ecosystem and trout in the Matiri River and will provide a significant hazard to fisherman.
33. **Te Runanga o Ngati Waewae (#82)** was concerned about the impact on the taonga manu (treasured birds), whio (blue duck) and putangitangi (paradise shelduck) and sought further information to gauge impact on degradation of the mauri of the awa (river) and roto (lake). Te Runanga o Ngati Waewae questioned the absence of mitigation of the adverse effects and suggested pest management and further consultation with tangata whenua.
34. **The Department of Conservation (DoC) (#101)** gave the following reasons for its opposition to the proposal in its current form:
- DoC was critical of the lack of assessment in the landscape report of the loss in natural character in the dewatered sections of the Matiri River. In addition, DoC was concerned about the potential and actual effects of the proposal on natural character including the presence of the proposed structures.
 - DoC was critical of the apparent lack of assessment of the effects of MHS construction on both lake edge vegetation and freshwater mussel populations, and the potential for the introduction and spread of weed species. Also, whether the Landcare Research report (Peter A Williams), which assessed the effects of MHS operation on lake edge vegetation, was based on the most up-to-date hydrological data.
 - DoC listed various actual and potential effects of the proposal and the MHS operating regime that it was concerned about, including adverse effects on fish passage and in-stream habitat and particular concern regarding the adequacy of the proposed residual flow regime and maintenance of a permanent river flow connection up to Lake Matiri.

- DoC was critical of the lack of fish passage at two of the lake outlets and the potential for fish entrainment at the intake.
- DoC wished to see safe public access maintained during construction and public access enhanced post-construction.
- DoC was critical of the non-adoption by the applicant of various recommended measures to avoid, remedy and mitigate various actual and potential effects that are contained in various technical reports including the Cultural Impact Report (CIA).
- DoC noted that the decision to amend the Water Conservation (Buller River) Order 2001 (WCO) is still pending but changes are recommended to the provisions relating to both Lake Matiri and Matiri River.
- DoC stated that unless its concerns are addressed, the application should be declined and listed conditions it seeks if the consents are granted.

35. **Royal Forest and Bird Protection Society (RFBPS)(#97)** gave the following reasons for its opposition:

- RFBPS was critical of the lack of ecological assessment at the two eastern lake outlets and Coal Creek and the actual and potential effects of the proposal, including fish passage, on these.
- RFBPS was critical of the assessment of effects of MHS construction, particularly of the weirs and intake.
- RFBPS was critical that there is no mention of proposed residual flow from Outlets 2 and 3.
- RFBPS was critical of the effect on natural character of the proposed MHS including construction effects, the removal of trees and boulders, and the enormous visual and physical modification of the natural environment.
- RFBPS was critical of the effect on avifauna recorded on the lake and listed various actual and potential effects of the proposal and the MHS operating regime that it is concerned about. These include adverse effects on eel migration and fish passage, on freshwater mussel populations in the lake. The reader is referred to the full submission for further detail.
- RFBPS stated that it opposes the applications as they are in direct contravention of the Water Conservation (Buller River) Order 2001 relating to the maintenance of eels and fish passage and the lake level being raised; and
- The applications do not comply with the TRPS and TRMP; and
- The proposed activities are not sustainable and the applicant has not shown the effects can be avoided, remedied or mitigated.

36. **South Island Eel Industry Association Inc (#247)** opposed the application as it had concerns about the passage of eels and other native fish both upstream and downstream past the weirs.

37. **Mick Hopkinson (#250)** gave the following reasons for his opposition:

- Opposed the loss of amenity that will result from the MHS particularly the “gateway” nature of the Matiri Valley into the Kahurangi National Park, that will be visually blighted by the MHS-related works for a mere 6 megawatts.
- Opposed the non-renewable nature of the proposed MHS.
- Opposed the destruction of the fishery in the Matiri Valley and the deleterious affects on the Lake Matiri Wildlife Reserve.

38. **Jessica Brown** (#251) opposed the potential adverse effects on the important kayak amenity in the Matiri River and on the wild and scenic nature of the Matiri Valley. Also opposed the non-renewable nature of the proposed MHS and the poor use of natural resources.
39. **NZ Recreational Canoeing Association** (#252) opposed the potential adverse effects on the important kayak amenity in the Matiri River.
40. **Zachary D M Shaw** (#253) considered that the proposed MHS will kill the river and that the loss of amenity values and wild and scenic value in the Matiri Valley is not justified by the expected hydro energy generation. He was also critical of the proposed residual flow.
41. **John Rice** (#254) gave the following reasons for his opposition:
 - Opposed the MHS as outlined by NZEL and was particularly critical of the proposed residual flow and the adverse effects that will result on in-stream habitat. The reduction in energy generation if a higher residual was adopted is minimal according to the submission.
 - The submission outlined issues relating to possible consent conditions and their monitoring, including of the residual flow.
 - The submitter was concerned about the proposed design and location of the penstock within the river flood channel and effects on waterway efficiency and on natural character.
42. **Whitewater Canoe Club** (#255) opposed the potential adverse effects on the important kayak amenity in the Matiri River.

1.1.7 Access and Land Ownership

43. Access to and along the site of the proposed scheme is partly over land administered by the Department of Conservation (DoC). Similarly, the Matiri River, down to just below what is known as the "sweeping bend" is also administered by DoC. This means that, pursuant to the Conservation Act 1987, a concession is necessary from DoC for the construction and operation of the scheme. Both the applicant and DoC told us this is quite a separate process from deciding the applications before us. We agree with them, so the matter of any necessary concession for the construction and operation of the proposed power scheme is not raised further in this decision.

1.1.8 The Hearing

44. The Council appointed a panel of commissioners to hear and decide the applications. The panel was Dr Brent Cowie (chair), a resource management consultant from Christchurch with particular expertise in aquatic ecology, Mr John Lumsden, also a resource management consultant from Christchurch and a civil engineer, and Mr Stuart Bryant of Tapawera, a farmer and the Council representative for the Lakes-Murchison ward. All panel members are accredited hearing commissioners.
45. We inspected the site on 8 February 2009, which was a fine hot day, and were accompanied by Mr David Inch from NZEL, Ms Helen Campbell from RFBPS acting as a representative and observer for the submitters, and Mr Jeremy Butler from the Council. At the time of inspection the lake level was 340.31 masl, and there was no surface flow from Outlet 1 of the lake. It was made clear to us that the lack of surface flow is a rare event, and we well understand that. Indeed, Mr Martin Doyle, the hydrologist at TDC, said the estimated flow at the recorder site near the proposed power station was 1,170 l/s that day, which using Mr Hewitt's calculations, is about a 1 in 5 year low flow event.
46. The hearing was set down for the week of 9 to 13 February 2009 at the Nelson Yacht Club. By Thursday of that week, however, it became apparent that we would not complete the hearing. Accordingly we adjourned the hearing on 13 February without hearing from the officers, nor discussing conditions or being provided with the right of reply by the applicant. We also advised the applicant that we would be seeking some further information from them prior to the hearing being reconvened.
47. Subsequently, we issued a minute seeking the further information on 18 February 2009 and it was received from NZEL on 4 March 2009. Our minute also outlined the procedure for the reconvened hearing.

48. The hearing was reconvened on 11 and 12 March 2009 at the offices of the Council. We heard first from the Council's planning officers, who had provided additional written comment for which we are grateful. We then worked through possible draft conditions of consent put forward by the applicant, and which had been commented on by the officers. The applicant agreed to representatives of both the RFBPS and DoC taking part in this discussion about conditions. While this is not "standard" hearing procedure, the ensuing discussion was certainly very helpful and constructive.
49. The applicant said they wished to provide their right of reply in writing, so the hearing was adjourned about 3.00 PM on 12 March 2009.
50. The right of reply was received on 6 June 2009. It consisted of brief legal submissions and two sets of draft conditions for our consideration. One set of those conditions had been prepared by staff of the Council; the other set were the applicant's suggested changes tracked into the officer's recommended conditions.
51. We reviewed all the information before us in early July 2009 and we were satisfied that we had all the information necessary to make our decisions.

1.1.9 Acknowledgements

52. We thank the many parties involved in this process for their helpful and constructive approach to the hearing of these applications. We are particularly thankful to Mr Jeremy Butler of the Council, who organised the entire process and helped redraft consent conditions, and Ms Katie Greer, who made sure we were well looked after. We are also very grateful to the applicant, as well as the council officers including Neil Tyson, Leif Pigott and Jack Andrew who put much work into the planning report and provided revised conditions for our consideration. We also particularly thank Mr David Inch, for showing us around the site of the proposed scheme and without whose guidance our inspection would have been of only very limited value, and Ms Helen Campbell (RFBPS), who also accompanied us on that trip.

4 Description of the Proposal

1.1.10 Lake Matiri and the Matiri River

53. Lake Matiri is located about 20 kilometres north of Murchison. It lies on the Matiri River, and was formed by a large rock avalanche, which is dated about 300 years before present and which contained about 15 million cubic metres of sandstone rock and finer material. This resulted in the river being dammed and the formation of the lake, which currently covers some 57 hectares.¹ The lake has a maximum depth of about 30 metres near its southern end, but most of the lake is less than 10 metres deep. It has an estimated life of about 300 years before it is completely infilled with sediment. The catchment upstream of the lake's three outlets covers an area of 134 square kilometres and has a maximum altitude of about 1,500 metres. Mr Hewitt estimated average catchment rainfall to be in the order of 2,500 – 2,800 millimetres per year.
54. The lake is elongated and follows the line of the river valley, which is oriented approximately north-south. There are three separate outlets, all at the southern end. The largest of these outlets, called Outlet 1, is to the west of the other two, much smaller outlets. We understand that the three outlets converge some 400 metres downstream of the lake.
55. The Matiri River flows into and out of the lake. Below the lake the river flows over very large boulders up to about five metres in diameter that originated from the rock avalanche that formed the lake. This section of the channel is very steep, as part of the original riverbed was dammed behind the landslide that formed Lake Matiri, and so the bed below the lake has had to become steeper to compensate. We would imagine that the river here would be an impressive sight during a flood event. The river flows for about 15 kilometres below the lake before entering the Buller River about 2.5 kilometres downstream from Murchison.
56. There is a hydrological recording and gauging site on the Matiri River close to the location of the proposed power scheme. The estimated mean flow at this point is 13.29 m³/s. The mean annual flood is 185 m³/s, and the 100-year flood is estimated at 323 m³/s (flood flows are buffered to some

¹ The evidence on the surface area of the lake was rather contradictory, with estimates varying from 55ha to 70ha.

extent by lake storage). The mean annual low flow (MALF) was estimated by Mr Hewitt to be 1.41 m³/s and the 1 in five year low flow was similarly estimated as 1.15 m³/s. There was, however, some question over the reliability of low flow data, which we describe when discussing the flow regime for the river.

57. There is also a lake level recorder at the outlet of Lake Matiri that collected data between 1979 and 2000. There are periods of missing record, notably between 1982 and 1986, which the applicant said was a dry period. The minimum recorded level is 340.08 metres above mean sea level (masl); the maximum 344.5 masl, the mean is 341.1 masl and the median level is 340.93 masl. Lake levels respond rapidly to heavy rain in the catchment, and can vary as much as 2 metres over 24 hours.
58. Four species of native fish have been recorded in the lake. These are longfinned and shortfinned eels, upland bullies and koaro. Both eel species require passage to and from the sea where adults spawn and from which juvenile elvers return to inland waters. All the adult eels in Lake Matiri will have reached the lake via the Buller and Matiri Rivers. Female longfinned eels live to very old ages before they move down to the sea to spawn, and it is likely that many of these eels in the lake are around 70 years old. Koaro – one of the species in the “whitebait” catch – are also usually migratory but can also form land-locked populations in lakes, with breeding in forest streams. There is strong evidence that the population in Lake Matiri is, at least very predominantly, landlocked.² All four native species are very widespread in much of New Zealand, although longfinned eels are classified by DoC as being “in decline”.³ There is no evidence of trout being present in the lake. Indeed the Special Tribunal that heard the Water Conservation Order application regarded the absence of trout in the lake and upstream catchment contributed to the outstanding native fishery values.
59. Only three fish species have been recorded in the river between the lake and the proposed power station – upland bullies, longfinned eels and (rarely) koaro.⁴ Densities are low, which is not surprising given the steep and turbulent nature of the channel. Blue duck (whio) have also been recorded, but only intermittently on this reach of the river. It is understood that no breeding pairs of blue duck are resident on the river.
60. The Matiri River is a tributary of the Buller River. There is a National Water Conservation Order (WCO), which was first gazetted in 2001, that protects the outstanding features and characteristics of the Buller River and its catchment. This includes Lake Matiri and the Matiri River upstream of the lake. The Matiri River downstream of the lake outlets is not directly covered by the WCO, and so the order does not prevent the granting of consents for the proposed power scheme. However the order does require that fish passage for eels and koaro be maintained between Lake Matiri and the river downstream of the outlet. There is also a requirement to maintain flows in the Matiri River on occasions to meet low flow requirements in the Buller River. We discuss this in more detail later in this decision
61. Lake Matiri is a Wildlife Refuge, first gazetted in 1957. In 1970 the area covered by refuge was reduced to the lake and the land within two chains (about 40 metres) of the shore. This effectively means shooting or other disturbance of any waterfowl, their eggs or young, is prohibited, and it is an offence to take dogs into the area.
62. The main waterfowl species on the lake is paradise shelduck, and the lake is recognised as a regionally important shelduck moulting site. Moulting occurs during late summer, at which time the ducks cannot fly. Fish and Game counts between 1973 and 2007 have recorded between about 150 – 4,000 shelduck moulting on the lake. It usually has the highest number of moulting shelduck of any single site in the Buller Catchment, and sometimes the highest count in the Nelson-Marlborough Fish and Game District. Other species recorded from Lake Matiri include shags, herons, pukeko and other waterfowl, including black swan, grey duck, scaup and shoveler. Waterfowl on the lake feed on the weed beds and the invertebrates that live amongst them. Nineteen species of invertebrates have been recorded from the lake, with the fauna dominated by snails.

² This evidence was summarised by Mr Mitchell. It includes counts of vertebrae, and studies of calcium:strontium ratios in the otoliths of koaro.

³ Despite which they remain a commercial fishing species.

⁴ Elvers of shortfinned eels must be present also in the river at times as adults are present in Lake Matiri.

63. The lake itself is within the Kahurangi National Park, which was gazetted in 1996. Prior to that the margins of the lake had been grazed, and this continues to affect the composition of the vegetation around those margins. However the area covered by the proposed power scheme, although largely administered by DoC, is not within any part of the National Park. This is because the former Tasman Electric Power Board held (unexercised) resource consents for a power scheme conceptually similar to the one proposed by NZEL at the time the National Park was created. Those consents were granted in 1981 and transferred to NZEL in 2000. They expired in March 2006.
64. The penstock route will pass through a section of native forest with a species assemblage typical of what is found in similar locations nearby.⁵ The canopy is dominated by red and silver beech, with scattered podocarps such as Halls totora and matai. Sub-canopy species include broadleaf, stinkwood and horoheka, while species such as ferns are common on ground level.
65. Access to Lake Matiri is initially via Matiri Valley Road. This is sealed for a short distance from Longford, but then becomes a gravel road 3-4 metres wide. There is a small electrical substation in the lower part of the valley. The public road ends some 3 kilometres short of the West Branch of the Matiri River. A rough and largely unformed 4WD track then provides limited access to a car park beside the West Branch. That track is partly on land owned by NZEL and partly on road reserve. From there a well formed tramping track, initially on land owned by NZEL and subsequently on land in the tenure of DoC provides reasonably easy, albeit sometimes steep, access to Lake Matiri. A tramping hut is located on the west side of the lake, and it provides access to the more remote parts of Kahurangi National Park.
66. Tramping aside, there are two main recreational uses of the Matiri River. These are for trout angling and kayaking.
67. The Matiri River is a local trout fishery, although it is sometimes used by fishing guides and their clients. In 2001/02 it received an estimated 100 (±40) angler visits over the season, and was 328th in importance out of 616 rivers ranked nationally. According to Mr Deans, fishing in the river is best during the early or latter parts of the season. We note also that there are several very highly-rated, valued fisheries close to Murchison (such as the Upper Buller, Gowan and Owen rivers and, more remotely, the Sabine and Travers rivers in Nelson Lakes National Park).
68. Murchison and its surrounds has, in recent years, become something of a mecca for kayaking. The Matiri River is one of several local rivers that are regularly paddled. We understand it to be an excellent run for experienced kayakers when the flow is high or even in flood conditions. At lower flows the paddle becomes more sedate and suitable for beginners. The Matiri is understood to be “user-friendly” with access and good put-in and take-out locations. Overall, we understand the Matiri River to be particularly valuable to kayakers for its high-flow experience.

1.1.11 The Proposed Power Scheme

69. The proposed hydroelectric power scheme has been designed to utilise the natural storage capacity of Lake Matiri and the steep gradient of the Matiri River below the lake outlet for the generation of hydroelectric power.
70. The applicant proposes to dam the lake by constructing a weir at each of the three existing outlets. The crest level of the weirs will be at mean lake level, 341.1 masl. All three weirs will have stoplogs. The weir at Outlet 1 will also include a penstock intake, sluice gate and fish pass structure. A small control hut will be constructed near Outlet 1.
71. Water from Outlet 1 will enter a penstock, which has a diameter of 1.6 metres. The penstock will be made of prefabricated steel sections 12m long, which will be welded together on site. Water is carried down the penstock about 2.3km downstream to a new power station to be constructed on the west (true right) bank of the Matiri River before being returned to the river via a tailrace. This provides an operating head of 92 metres. The maximum flow capacity of the penstock will be 6.3 m³/s.
72. NZEL representatives said that the proposed power station would generate up to 4.6 Megawatts of electricity to provide an estimated 25 Gigawatt hours per annum (we note that Mr Rice contested this latter figure).

⁵ Mr Kusabs assessed the ecological value of this forest assemblage, and it scored low or medium on all the criteria considered apart from connectivity, which he considered to be high.

73. The proposed power station will cover an area of about 100 square metres and be about 4.5m high. It will be predominantly underground. The electricity generated will be conveyed from the power station down the Matiri valley using the standard pole line, which is owned and operated by Network Tasman. This is already in the valley and so pylons are not required although the power line will need to be extended and upgraded.
74. The small volume of Lake Matiri does not provide adequate water storage to operate the scheme as a true lake storage hydro station. Therefore, rather than relying on significant storage in the lake to deliver electricity when it is most required (i.e. during winter), the scheme will operate largely with the run of the river, generating electricity when adequate water is available. The lake will be operated over a range of about 1.02 metres and the average level of the lake will be higher by almost 0.5m. The storage utilised by the scheme over the 1.02 metre range is estimated to be about 540,000 cubic metres.

1.1.12 Construction

75. Mr Inch provided us, in his evidence, with a helpful outline of how the proposed power station would be built. The potential for adverse environmental impacts to arise from construction activities is quite considerable and it is important that we understand how such risks will be avoided, remedied or mitigated. Although the final methodology will not be developed until the final design has been prepared and costed, Mr Inch was able to describe in general terms the proposed methods, which he said were based on best practice.
76. The work would start by opening up the quarry pits and working on the existing roads. A temporary Baigent Bridge would be installed across the West Branch of the Matiri River. At the same time the transmission line would be extended through to the location of the new powerhouse.
77. Temporary walking tracks would be prepared to allow the works to be constructed without inconveniencing members of the public, and a road to the power station site would be constructed.
78. The footprint of the power station would then be excavated to allow landscaping to begin around the site. Construction of the powerhouse would be scheduled so that completion coincides with arrival of the generating equipment.
79. Around the same time, work would start on forming the access track and the penstock route from the power station through to where the penstock route meets the river. This is approximately 100 metres downstream from Outlet 1 and the cofferdam would need to be in place before the final section of the penstock can be built. Mr Inch told us that the timing of these works would be constrained by the mussel spawning season and also the period during which paradise shelduck are moulting. Installation of the penstock would be co-ordinated with the transportation of equipment and materials.
80. Additional construction plant would be brought in to open up the existing track and then form a new track down to the site of Outlet 1. Subject to river conditions and the time of the year, a cofferdam would be built to divert the flow down Outlets 2 and 3 while the weir at Outlet 1 is constructed. In response (dated 4 March 2009) to a number of questions we raised at the end of the initial hearing the applicant told us, among other things, that a cofferdam for Outlet 1 would be installed at the upstream end of the U-shaped channel leading to the weir. This would avoid having to lower the lake level while construction of Outlet 1 takes place. Some blasting may be required to split the larger rocks at the outlet site.
81. The base for the route of the final 100 metres of penstock would then be formed up to the site of Outlet 1 allowing access for excavation and construction equipment. As the weir at Outlet 1 is being completed, the installation of the penstock down from the weir can begin and would continue until completion. Once completed, the cofferdam at Outlet 1 would be removed and the river flows directed through Outlet 1.
82. To allow construction of the weirs at Outlets 2 and 3, the applicant initially proposed to lower the lake for approximately 1 week. However, to avoid possible conflict with the terms of the WCO, and in response to questioning from us, the applicant now proposes to complete construction without lowering the lake (Para 50 in applicant's closing submissions).
83. Mr Inch went on to tell us that once installation of the penstock reaches the sweeping bend the river flow would be diverted through the adjacent natural flood channel, if required, to allow the penstock

and its armouring to be installed in the dry. No information was provided as to how this diversion would be achieved.

84. Once the installation of the penstock and construction of the outlets has been completed, restoration work would begin immediately.

1.1.13 Operation

85. Mr Inch said that NZ Energy has over 20 years of flow data for the Matiri River and the projected generation from the scheme is 25Gwh per annum. The crest level of the weirs will coincide with the mean water level in the lake (341.1 masl). During generation, when the weirs are not overtopping, the lake will be drawn down a maximum of 1.02 metres below mean lake level, which is well within the existing range.
86. Generation flows up to a maximum of 6,300 l/s will pass into the penstock at Outlet 1, while a minimum residual flow of 1,000 l/s will be maintained at the recorder site No 2, just upstream of the power station. Contributions to this flow will come from natural seepage through the rockfall plus flows via the weir compensation valve. Generation flows will return to the river via a tailrace downstream from the power station.
87. We note that there is also a need to maintain a minimum flow down the rockfall below Outlet 1 during times when elvers are migrating. This is discussed later in this decision.
88. Below the tailrace, the flows in the river will vary according to generation requirements as well as natural variations caused in flows from the East and West Branches of the Matiri River. When inflows exceed 7,300 l/s, the flows downstream from the tailrace, will be unaffected by power generation.
89. Mr Inch went on to tell us that the turbine is designed to operate at maximum efficiency at full flow (full power) and resource use needs to be optimised accordingly. The residual flow in the river is, thus, a critical issue in determining the viability of the scheme.

5 Summary of Evidence

1.1.14 The Applicant

90. NZEL were represented by legal counsel and 11 witnesses. We only briefly summarise here what they said as the matters they covered are largely included in our more substantial evaluation of the applications.
91. Some of the evidence discussed the effects of lowering the lake below its natural level during construction of the weirs. The applicant subsequently decided however not to proceed with this proposal, but rather form a temporary cofferdam around the construction site.
92. **Ms Shoshona Goodall**, a solicitor with Duncan Cotterill, presented legal submissions. These outlined the detail of the proposed scheme, and addressed the statutory matters that we need to consider in our decision. Case law was cited on occasions.
93. One matter raised by Ms Goodall was that there had been a number of late submissions in opposition to the scheme that had been accepted by staff acting under delegated authority. We understand that delegation was exercised properly, and it is not a matter over which we can exercise any control.
94. **Mr David Inch** is a Director of New Zealand Energy Limited and works as their Operations Manager. He is an electrical engineer. He provided background information on NZEL, which was established in 1999, and currently owns four small locally embedded power schemes at Haast, Fox, Raetihi and Opunake. He outlined the history of the proposal, and that of the Buller Water Conservation Order as it relates to the proposed scheme. We discuss his evidence elsewhere in this decision.
95. **Mr Anthony Hewitt** is a hydrologist with professional qualifications and over 40 years experience. He gave hydrological evidence on the Matiri catchment and the effects of the proposed scheme on lake levels and river flows. We discuss his evidence in detail elsewhere in this decision, so we do not need to summarise it here.

96. **Mr Thomas Carter** is a professional landscape architect with wide experience. He gave evidence on the landscape and visual effects of the proposed power scheme.
97. There will be effects on the natural character of the area around the weirs when viewed from downstream, as these will be solid concrete structures. However because natural boulders will be replaced around these structures, and because the concrete will weather over time, Mr Carter considered their effects on landscape and natural character will be minor.
98. While the weirs at Outlets 2 and 3 will be very difficult to detect from the lake, the weir at Outlet 1 will be visible from some parts of the lake during times when the lake is below its mean level (as at higher levels water flow over the weirs will obscure them). However there are no distant views where the weir at Outlet 1 is visible as the channel curves away from the west side of the lake where the walking track is. Accordingly, Mr Carter considered that the weirs would not have a significant effect on the wild and scenic values of Lake Matiri.
99. Mr Carter then described the construction of the scheme and its effects on natural values, and discussed some of the planning considerations. We discuss these matters elsewhere in this decision.
100. **Mr Charles Mitchell** is a fisheries consultant and an acknowledged expert in the ecology of native freshwater fish in New Zealand. He has a Masters degree in zoology, and nearly 35 years experience, over half of it with the former Fisheries Research Division. He had previously built two fish passes for the applicant at Opunake and Raetihi.
101. His evidence first discussed the native fishery, which we have summarised briefly in our description of Lake Matiri and the Matiri River.
102. He next discussed the ongoing provision of fish passage between the river and lake. The Conservation Order requires that eel passage be maintained, although Mr Mitchell considered that only low numbers of elvers would reach this site. Both juvenile koaro and eel elvers are persistent and effective climbing species. Elver migrations, while variable, normally peak on the declining flows of summer freshes and occur predominantly at night. Migration can occur over several years and largely ceases during low river flows. Elvers have been recorded living for several years below major hydro dams.
103. Adult eels migrate downstream, usually during autumn freshes at ages as great as 50 years or more as they will grow only very slowly in an upland habitat like Lake Matiri. He expected there would be considerable mortality amongst adult downstream migrants in "the highly turbulent cascade that flows over the landslip face during flooding". The intake to the penstock should be screened with a minimum mesh size of 30mm to prevent adult eels entering the penstocks as they would be killed by passage through the turbines.
104. Mr Mitchell described a fish pass of his own design. He said that water rat predation on elvers gathering below the weirs is potentially a significant issue, and that rat poisoning stations should be maintained during summer months. He then discussed monitoring requirements and conditions, which we discuss elsewhere in this decision.
105. **Mr Ian Jowett** is a registered engineer who has for many years been one of the country's leading experts on determining what flows are necessary in rivers and streams to maintain trout and native fisheries. He has carried out instream habitat surveys of over 250 river reaches and assessed minimum flow requirements for over 50 rivers. Now retired, Mr Jowett has worked for both the former Fisheries Research Division and the National Institute of Water and Atmospheric Research (NIWA). He gave evidence on an instream habitat survey and fish and benthic invertebrate surveys in the Matiri River in 2007, and on flow regime requirements. We discuss much of his evidence elsewhere in this decision.
106. Mr Jowett considered that a flow of 1,000 l/s upstream of the tailrace discharge would maintain fish and blue duck habitat in the river downstream of the lake outlet. Although invertebrate numbers in this reach of the river would be reduced by this low flow, the low numbers of fish and any blue duck present means it is unlikely that food availability is a limiting factor for these populations there.
107. The changing flow regime downstream of the tailrace discharge could, during low flows, vary from about 1m³/s to 7.3m³/s over a 10 minute period as power generation is started and stopped. This

would cause a rise in water levels of about 0.325m and an increase in flow velocity from about 0.2 to 0.5m/s at the confluence of the West Branch, which is about 500m downstream.

108. **Dr Mark James** is an aquatic ecologist with over 30 years experience, mostly with Crown agencies. He provided evidence on aquatic macrophyte communities, their associated biota and fish in the lake. Work had been carried out by his former employer, NIWA, in 2007, which he summarised and contrasted with an earlier survey carried out by Bioreserches Ltd in 1980.
109. The lake has “a dense littoral fringe of submerged vegetation”, but with only three species now recorded. The native water milfoil (*Myriophyllum*) inhabits the shallowest water around the littoral fringe, typically at a depth of about 0.4 - 0.8m, which suggests that it can survive exposure for short periods. Water milfoil is nationally widespread and abundant. It was the dominant species present in 1980.
110. Introduced water buttercup (*Ranunculus*) is present at depths below the water milfoil down to about 3m. Below this depth the macrophyte community is dominated by introduced Canadian pondweed (*Elodea*) down to a depth of 4 - 4.5m. The latter species appear to have invaded the lake since 1980, when species such as *Potamogeton* and native charophytes were present in the community below the “band” of water milfoil.
111. Species such as waterfowl and the mussel *Hyridella* rely on these weed beds, or their decay products, for food.
112. Invertebrates present in the lake are widespread in similar habitats, and include species of snails, water boatman and chironomid larvae. The species of most interest however is the large mussel *Hyridella menziesii*, which has a mean density in the lake of 60/m². Larval mussels are parasitic on fish, notably koaro. DoC have recently classified this species as being in gradual decline, but it remains very widespread and any decline is likely to be attributable to factors such as eutrophication and sedimentation in some lakes.
113. Four species of fish are present in the lake – longfinned and shortfinned eels, koaro and upland bullies. All four species are widespread in New Zealand. Eel densities have declined since 1980, which may be due to fishing pressure in the Buller catchment.
114. Dr James then discussed the effects of lake level fluctuations on these biota. We discuss this later in this decision.
115. **Dr Murray Cave** has a PhD on the geology and geological and environmental hazards of Arthur's Pass National Park. He has worked for the Energy and International Consulting Group of Ernst & Young and provided an assessment of the white water kayaking values of the Buller catchment as part of the drafting of the Buller Water Conservation Order. He currently has his own consultancy, Resource Solutions, which undertakes investigations into rivers in the context of energy projects.
116. Dr Cave stated that he has a keen interest in the outdoors and has kayaked most of the rivers in the region. He quoted several kayaking guide publications, which suggested that the value of the Matiri is greatest at high flows. At lower flows he described parts of the river reach as unable to be kayaked due to its shallowness. Through an analysis, which overlaid days with flows greater than 20 m³/s on weekends and holidays, Dr Cave considered that there are about 5 to 10 days per year where conditions and timing are right for maximum use of the river by kayakers. He also stated that the period when kayakers are most likely to be in the region coincides with the middle of summer when weather conditions are more settled and when there is generally lower rainfall.
117. Dr Cave then commented on some direct observations on 23 May 2007 when there was a substantial storm forecast, an estimated flow of 56.6 m³/s was recorded, and he saw no kayakers through until 2.00 pm when he left the site.
118. Dr Cave considered that the proposed power scheme would have no measurable effect on the kayaking values of the river. Any effects on low flow ‘beginner runs’ would not be significant as there were better low flow runs in other rivers.
119. **Mr Paul Wopereis** has a BSc in geology and 28 years experience as a geologist, the last eight of which have been in the field of engineering geology. He is currently employed by MWH New Zealand Limited as a Senior Engineering Geologist. He stated that he has worked extensively around the

Nelson, Tasman and Buller regions and is familiar with the geology and geomorphology of the Matiri Valley.

120. Lake Matiri was formed by a large landslide about 300 to 400 years ago. Mr Wopereis considered the landslide deposit to be stable and that the bouldery substrate of the three outlet channels to have suitable foundation conditions for the weirs.
121. Mr Wopereis referred to the Geological Society of New Zealand website which lists Lake Matiri and the debris dam of regional importance (i.e. not national or international importance). Such dams are not uncommon. He considered there no known outstanding geological features in the lower section of the Matiri River or its valley.
122. Regarding the 'tufa' limestone formation he understood that it would be unaffected by the proposed hydroelectric development.
123. Mr Wopereis stated that MWH New Zealand Limited has advised the applicant that exposed areas of the penstock, particularly at the sweeping bend, should be protected by being buried. A previous geological report had considered that the area of the Lake Matiri landslide was unlikely to suffer major slope failure except in locally steep banks.
124. With regard to Section 31(1)(b)(i) of the Act, territorial authorities are required to "ensure the avoidance or mitigation of natural hazards". Mr Wopereis did not consider that the proposal will worsen the natural geological or earthquake hazards or their effects.
125. Mr Wopereis considered that effective sediment control could be achieved. He also reported the opinion of MWH New Zealand Limited's Senior Rivers Engineer **Mr Rick Lowe** that a design slope of 2H:1V (27 degrees) for the sweeping bend armour rock is a standard and proven design. He described the local sandstone to be a moderately strong rock and suitably durable and resistant to erosion.
126. With regard to the gravel pits he considered that opening only 1 hectare may not be enough and 2 hectares is more appropriate.
127. **Mr Antony Kusabs** has a Bachelors degree in terrestrial studies and about 10 years experience as a plant ecologist with organisations such as Landcare Research and DoC. He is presently a consultant with Te Ngahere Native Forest Management Ltd. His evidence primarily discussed the effects of the proposed scheme on vegetation around the riparian margin of Lake Matiri.
128. Mr Kusabs described the vegetation in areas that will be potentially affected by the proposed power scheme. It comprises a mix of indigenous and exotic species. He separated the vegetation around the margin of the lakes into four zones. Closest to the water is what he called a mud zone where indigenous species dominate, followed by a *Juncus* zone dominated by exotic species such as rushes, and a tall fescue zone, again dominated by exotic species but which includes some native sedges. Inland of this the lake edge community varies depending on location, but includes coprosma, houheria, hebes and ribbonwood. Crack willow is present at the north end of the lake, and Mr Kusabs considered that it would spread and threaten existing lake edge communities.
129. He made an assessment against ecological criteria⁶ of these species assemblages, and those along the penstock route and the margins of the Matiri River. Lake edge vegetation scored high on several counts, as did riparian vegetation along the river margins. The forest along the penstock route scored low or medium on all but one criteria. The coprosma-ribbonwood forest around the margins of the lake is not able to regenerate naturally due to the exotic understorey, and in Mr Kusabs' opinion will eventually die out.
130. **Mr Thomas Kroos** has a Bachelors degree and 28 years experience in working on wildlife and freshwater fisheries in New Zealand, including work for Fish and Game and DoC, and their antecedent organisations. He gave evidence on the effects of the proposed scheme on the waterfowl of Lake Matiri. He considered those effects would be no more than minor; we discuss this conclusion elsewhere in this decision.

⁶ These criteria were the rarity, distinctiveness, representativeness, size, intactness, connectivity and use by migratory bird species.

131. **Mr Erin Roughton** has an engineering degree and specialist knowledge in renewable energy. He previously worked for the Energy Efficiency and Conservation Authority (EECA) where he contributed to the national policy on energy efficiency and renewable energy. He is now a Director of Energy Management Solutions Limited.
132. Mr Roughton stated that between 150 and 200 MW of new generation is required each year to meet increasing demand. He considered it to be imperative that new renewable electricity generation capacity be developed to both meet this increasing demand and also to achieve government targets of 90% renewable energy. New Zealand has sufficient undeveloped geothermal, wind and hydro resources to achieve the target and each will play its unique and critical role. He considered hydro generation to be essential as it provides firm capacity at times of peak load, flexibility, reserve cover for contingencies, and storage capacity that complements intermittent wind generation. Mr Roughton said that 4.6MW from this proposal, which is able to supply approximately 3,000 households per annum, will make a valuable contribution.
133. Mr Roughton referred to Sections 7(i) and 7(j) of the Act, which require regard to be had to the effects of climate change and the benefits to be derived from the use and development of renewable energy.
134. The proposal will make the Tasman region more self sufficient and will reduce the losses from the transmission of electricity on the national grid.
135. **Mr Simon Beale** has a BSc in Zoology and a Bachelor of Forestry Science. He has worked as a planner for over 18 years. He is currently employed as a Senior Environmental Planner and Senior Environmental Scientist with MWH New Zealand Limited.
136. Mr Beale outlined the scope of the scheme and the planning framework within which we would make our decision. He considered the benefits of the scheme to include distributed generation, local generation in the event of a major national grid constraint or failure and a contribution to national renewable generation. He also believed that the effects on the landscape values and terrestrial, lacustrine and river ecosystems were manageable and that effects could be remedied and mitigated.
137. Mr Beale stated that the applicant had commissioned a Te Runanga o Ngati Waewae cultural impact assessment. The key issues arising were the effects of the residual flow, the natural character and mauri of Lake Matiri, and the lake outlet channels.
138. Mr Beale also considered that there was sufficient scope in the WCO to enable the consents sought to be granted. With regard to the Regional Policy Statement he considered that it supported the development of local generation so long as appropriate measures are put in place to avoid, remedy or mitigate the adverse effects of the development. Mr Beale considered the proposal to be not inconsistent with Objective 8.1.2 and Policy 8.1.3.1 of the Tasman Resource Management Plan but accepted some tension between Objective 8.2.2 and Policy 8.2.3.2 with the proposal. He accepted that the headworks (weirs) would reduce the natural character but that the effects are appropriately mitigated.
139. Proceeding to a Part 2 evaluation, Mr Beale stated that the proposal is in accordance with Section 5. Regarding Section 6 he considered that points (a), (b), (c), (d) and (e) are all of direct relevance. Section 6(a) presents a potential stumbling block but he considered the development would not be inappropriate or necessarily incompatible with the natural character of the area. Achieving the requirements of Section 6(b) and (c) will be assured. The formalising of legal public access to the lake is consistent with Section 6(d) and matters surrounding Section 6(e) have been resolved through discussions with Ngati Waewae.

1.1.15 Submitters in Support

140. Three people gave evidence in support of the application
141. **Mr Paul Troon** is contracted to the applicant as a consultant. He had prepared a summary of adverse effects. He considered that he represented the large number of supporting submitters who are not able or not willing to represent their views in person.⁷ He stated that, while it is not a numbers game, the large number of supporting submissions should not be lost sight of.

⁷ This is not an assertion we can accept.

142. Mr Troon said that the residents in the Matiri Valley have been well informed of the proposal and most of their concerns related to the safety of the weirs. The two who have not signed written approvals submitted on a neutral basis and are not in opposition.
143. **Mr Tom Inglis** believes New Zealand has a looming power crisis and considers that hydro energy development is available and necessary.
144. Mr Inglis considered that a number of conditions recommended by Council staff are unnecessary and inappropriate, in particular the requirement for a substantial road extension to the West Branch to be constructed.⁸
145. **Mr Stanley Mackey** has a degree in electrical engineering and is Chief Executive of Network Tasman Limited, being the owner and operator of the electricity distribution network in the Nelson Region.
146. Mr Mackey stated that energy flow in the upper South Island (SI) is almost entirely from south to north, and that any reduction of load or increased generation in the upper SI defers the need for significant investment that would otherwise be required. Local generation also reduces transmission inefficiencies and losses. The proposal will contribute positively to reliability of power supply in the upper SI as well as reducing wholesale prices.
147. Mr Mackey understood that the rainfall in the Matiri catchment is not strongly correlated to that of other SI hydro lakes meaning that Matiri may well operate when southern lakes are low.
148. Finally, Mr Mackey stated that a Nelson Regional Economic Development Agency study completed in December 2007 recommended the establishment of "sustainability of energy infrastructure for distributed generation"

1.1.16 Submitters neither Supporting or Opposing

149. The **Department of Conservation** neither supported nor opposed the proposal. DoC was represented by two legal counsel and four witnesses.
150. Legal submissions for DoC were made by **Mr Dean van Mierlo** and **Ms Rachael Ennor**. They said that NZEL had worked closely with DoC regarding the proposed power scheme, and the Department was confident that some adverse effects were minimal or could be appropriately avoided, remedied or mitigated. However, they believed two aspects of the proposal were contrary to the Act and the WCO. These were the residual flow in the Matiri River, and the connectivity between the lake and the river. Concerns were also held about the effects of lowering the lake for construction and maintenance. If these matters could be appropriately addressed, DoC would not be opposed to the applications. The WCO did not prevent the development of a power scheme on the Matiri.
151. They noted that two of the four power schemes operated by NZEL were located entirely on public conservation land, and another was partly on conservation land. Instances were cited where DoC had worked alongside consent applicants to come to an agreement about appropriate conditions of consent to avoid or mitigate adverse effects. These included the Cobb power scheme in Golden Bay and the Arnold scheme on the West Coast.
152. Case law was discussed next with concerns raised about the adequacy of the information provided by the applicant; uncertainties include the amount of subterranean flow below the existing outlets, the duration of the construction period and predator control. A detailed analysis was provided on how the provisions of the WCO relate to the Matiri Catchment. We discuss this matter elsewhere in this decision.
153. The question of whether the weirs are in the lake or the river was raised.⁹

⁸ Some of Mr Inglis' evidence was critical of the Department of Conservation and was not relevant to the present applications. These parts of his evidence were struck from the record.

⁹ The same matter was also raised by other submitters, notably RFBPS. We do not think that this is a relevant consideration for our decision.

154. The relationship between the consent process we are deciding and the necessary concession from DoC for access over and use of conservation land was discussed in the context of environmental compensation. Two specific proposals had been made - allowing public access across NZEL land to the Lake Matiri walking track, and the covenanting of bush blocks held by NZEL. While DoC supported both of these in principle, they were not sufficient in themselves to mitigate the adverse effects of the proposed scheme. They further noted that improved access to the start of the walking track on the left bank of the West Bank of the Matiri River could encourage less able users to access the lake, and this crossing did pose a threat to the safety of those users.
155. Other statutory matters, including those in Part 2 of the Act and the relevant planning provisions, were outlined. We discuss these later in this decision.
156. **Mr John Wotherspoon** is employed by DoC as a Programme Manager for Community Relations based at St Arnaud. He has a diploma in Parks and Recreation Management and many years experience. He is a recreational trampster who has made five trips to Lake Matiri, and is familiar with the proposed penstock route.
157. The track to Lake Matiri is one of nine tramping access points to Kahurangi National Park, and provides access to more remote areas further up the valley from the lake. He estimated about 400-450 visits to the hut at Lake Matiri occurred annually, of which some 150-300 stay overnight.¹⁰ He considered most of these people would be what DoC terms "back country adventurers", who generally follow marked or poled tramping tracks and expect that key river crossings will be bridged. If, however, the track to the lake is upgraded he expected more of the use would come from less experienced "day visitors", to whom the lack of a bridge over the West Branch of the Matiri would pose a safety threat. Former cables over the river had been removed as their foundations were not secure. Accordingly, while Mr Wotherspoon supported improved 2WD access to the West Matiri car park, he strongly believed this should be accompanied by the provision of footbridge access over that branch of the river.¹¹ This would also promote mountain bike access to the lake.
158. Mr Wotherspoon also passed comment on some statutory matters, such as effects on natural character, which we discuss elsewhere in this decision.
159. **Mr Joseph Hay** is a freshwater biologist employed by the Cawthron Institute. He has an honours degree and several years experience. He gave evidence for DoC on the effects of the residual flow regime in the Matiri River downstream of the lake.
160. We need not detail here what Mr Hay said in his evidence as this was overtaken by latter events, particularly the agreement of fisheries experts (including Mr Hay) as to what is a suitable residual flow regime in the river below the lake to protect instream values. We discuss this matter later in this decision, where we accept the advice of those experts that a residual flow of 1,000 l/s in the lower parts of this reach will suffice for this purpose. We also discuss matters such as the proposed ramping rate, which were also covered in his evidence.
161. **Mr Martin Rutledge** is employed as a Freshwater Technical Officer for DoC, for whom he has worked since 1988. He has an honours degree in freshwater ecology and has given evidence to a number of water conservation and consent application hearings. He has visited Lake Matiri several times and gave evidence on the potential effects of the proposal on the biota of the lake and the Matiri River in the reach where it will be affected by the proposed scheme.
162. The fishery values of the lake and river were discussed, relying largely on information collected by NIWA and discussed by witnesses such as Mr Jowett and Dr James. We have detailed this elsewhere in this decision. Mr Rutledge considered that the *Hyridella* mussel population in the lake is "of considerable value" as the species is considered to be in decline nationally and presently has few anthropogenic risks. He described the invertebrate communities of the lake and river and noted that, although the existing macrophyte community is dominated by introduced species and so has low biodiversity value, they do provide cover for small fish and are vital in reducing turbidity, so it is important that the weed beds be maintained. The invertebrate community in the river has a high

¹⁰ Ms Campbell thought numbers were higher than this, particularly as her most recent count in January 2009 indicated about 450 visitor nights in the previous year.

¹¹ The applicant subsequently agreed to contribute \$30,000 plus GST towards footbridge access over the West Branch, and this is provided for in conditions of consent.

proportion of filter feeders, which he believed was due to seston (fine organic material) in the river that originates from the lake.

163. Mr Rutledge then discussed requirements for native fish passage to the lake. He considered this should be provided at each of the three weirs. We need not summarise this evidence further as there was a subsequent agreement between experts that supersedes some of what he said. Similarly, what he said about the low flow regime has been superseded by subsequent agreement among experts.
164. **Dr Lionel Solly** is a resource management planner with DoC, a position he has held for four years. Prior to that he worked for the English equivalent of DoC. He gave a very useful planning overview of the applications that we have used in helping us to write this decision.
165. **Mr John Rice** is a professional engineer who runs his own project management consultancy, which has worked on resource consent applications for clients such as Meridian Energy. He described himself as an occasional tramp and keen kayaker. His original submission was supplemented by an addendum forwarded to us by Ms Baker.
166. In his principal evidence Mr Rice made comment on four matters. Two of these related to the residual flow, which we discuss in detail elsewhere in this decision. In this discussion he presented evidence between the residual flow and calculated annual generation from the scheme. This was amended in his addendum, where he presented evidence that a 1,000 l/s minimum flow would result in about 30 GwH of generation per annum, not the 25 GwH suggested by the applicant. His modelling suggested a 2,000 l/s minimum flow would generate about 26.7 GwH per annum.
167. Mr Rice also considered that our decision should be “made using a precautionary and conservative approach in favour of the environment”. As with rising power prices the project will be economic someday, project economics should be secondary to environmental considerations.
168. Concerns also were raised about the design of the penstock at the sweeping bend, which Mr Rice considered should be subject to detailed design.

1.1.17 Submitters in Opposition

169. The **Royal Forest and Bird Protection Society** (RFBPS) opposed the applications. The Society represents some 50,000 members, with over 1,000 in the Nelson Bays area. RFBPS was represented by three witnesses.
170. **Dr Peter Ballance** is a former Professor of Geology at the University of Auckland. He detailed the events that resulted in the formation of Lake Matiri. Although most landslip formed lakes, which generally are the result of earthquakes, are ephemeral, there are about 30 such lakes in New Zealand that are “permanent”. The largest of these is Lake Waikaremoana, and Lake Matiri is one of the five largest surviving landslide dammed lakes in the country.
171. In response to questions Dr Ballance noted that the lake held scientific values and that it is presently in its natural state. The proposed power scheme would detract from that. He considered the scheme acceptable if it was not obstructive and that the scientific values were maintained.
172. **Ms Helen Campbell** is chair of the Nelson Tasman branch of RFBPS. She worked for DoC for 10 years and is former ward councillor of the TDC. She has been to Lake Matiri about nine times since returning to the Tasman District.
173. The main concerns of RFBPS were listed by Ms Campbell. These included effects on natural character, outstanding landscapes and features, significant habitats and amenity values. We discuss all these matters elsewhere in this decision. If the application were to be granted Ms Campbell listed nine matters that she would like included in conditions of consent.¹²
174. **Ms Deborah Martin** is a Regional Field Officer employed by RFBPS. She has a Masters degree in geography, for which she studied the societal and ecological effects of large-scale alterations to

¹² We have provided for a number of these, including improved road access, the imposition of a bond, and provision of real time information on flows. Some of the other matters, such as covenanting of NZEL land, will be part of the negotiations regarding a concession application to DoC.

braided rivers in Canterbury. She has also worked as a rafting guide, and has some kayaking experience.

175. Ms Martin looked particularly at matters under Section 6 of the Act, the status of the wildlife refuge and the management of energy demand. These are all matters that we discuss elsewhere in this decision.
176. **Mr Neil Deans** appeared on behalf of Fish and Game New Zealand. He is the manager of the Nelson Marlborough Fish and Game Council.
177. Mr Deans agreed with Mr Kroos that the proposal should have little if any effect on moulting paradise shelduck provided construction activities in or near the lake do not coincide with the moulting season in January and February.
178. Three main concerns were expressed about the potential effects of the scheme on the locally important trout fishery in the Matiri River:
 - As acknowledged by Mr Jowett the lower flows will affect invertebrate production, and this will reduce the potential food available for trout. This is particularly of concern in the approximately 11 kilometres downstream of the proposed powerhouse during times when generation is not occurring.
 - There is a risk of trout being stranded due to rapidly fluctuating flows as the power scheme is turned on and off.
 - The rapidly fluctuating flows could pose a risk to angler safety.
179. Mr Deans said that these effects would be offset in part by improved access along the road to the West Branch of the Matiri River, and the provision of flow information. He was ambivalent about the provision of signs warning of rapid changes in flow, as these tended to deter anglers regardless of the magnitude of the fluctuations. He also said Fish and Game were keen to work with the TDC on improving access to the river.
180. Mr Deans then addressed the officer's report and stated that it had underestimated the potential effects of the scheme on those aspects of the waterbodies not covered by the WCO. He reminded us that Part 2 of the Act still applies and that angling and kayaking amenity should be considered.
181. If granted, Mr Deans sought the following as conditions:
 - no construction within 500 metres of moulting paradise shelduck on Lake Matiri from 1 January to 1 March each year;
 - monitoring of diversity and abundance of invertebrate populations and juvenile trout at fixed sites in riffles on the Matiri River for at least two years before and three years after commissioning of the scheme;
 - notice is provided to anglers and river users on a website as to the likely flow regime and a warning by way of an siren to signal any increase in flows;
 - 30 minute ramping rate;
 - provide and maintain suitable access to the River downstream of the west branch;
 - high flows during daylight hours to enhance fishing opportunities; and
 - signs to include information about likely timing and magnitude of flow changes.
182. **Ms Maree Baker**, counsel for NZ Recreational Canoeing Club and White Water Canoe Club, stated that Water Conservation Orders hold a special place in the range of statutory instruments created by the Act. She also considered that Section 6(a) and (b) are highly relevant and the provisions of the WCO are not "where the buck stops". Both Part 2 and the WCO must be considered side by side, except that the WCO cannot be breached.

183. Ms Baker reaffirmed that no resource consent can be granted for any activity that breaches Clause 12 of the WCO (which relates to the Matiri River). She addressed Clause 14, which sets out circumstances in which an activity may be granted consent that breaches the WCO. She said that the question is, are there exceptional circumstances that justify the granting of the consent, rather than a resource consent allowing occasional breaches of the standards of the WCO as long as they are considered to be exceptional. In this regard, she considered that Mr Tyson looked at the question from the wrong angle by assuming the latter. We agree with Ms Baker's assessment in this regard, as did Mr Tyson when he presented his report (see Paragraph 213).
184. Practically, if lake levels are manipulated at any time then this has a flow-on effect on the flood flows in the river, which are the flows that the river is most renowned for; essentially that if the lake is managed at a lower level then flood events downstream will be rarer.
185. At moderate flows, hydro-peaking will make the river hard to predict and is not a benefit to kayakers.
186. She considered the scheme to be of such a small scale that it does not justify the adverse effects, or the related uncertainty. She considered that granting the consent would be inconsistent with the purpose of the Act and the terms of the WCO.
187. Ms Baker provided a statement from **Mr Hugh Canard** who is a self-employed tourism and economic development consultant and is Patron of the NZRCA. Mr Canard's evidence rebuts much of Dr Cave's evidence.
188. Ms Baker also provided a statement from **Mr Tony Ward-Holmes** who reinforced the value of the Matiri River to kayaking. He spoke of the popularity of the run during high flow events.
189. **Mr Brandreth Harvey** spoke on behalf of the Nelson Canoe Club. He described the Matiri as being a "classic flood run", and that it is seeing increasing use as a low flow beginner's run. He stated that trips are impromptu and there were approximately 13 different runs down the river last autumn with an average party size of around five.
190. The concerns of the Canoe Club are that the low flow run will be lost and the wild and scenic values of the river will be adversely affected by the power lines. The Club considered Dr Cave's assessment for the applicant as being utterly incorrect and that we should take no account of it. He also considered that any amendments or exceptions to the Water Conservation Order should be considered very seriously.
191. **Mr Michael Hopkinson** is the owner and Director of the New Zealand Kayak School, based in Murchison. He outlined his considerable kayaking and expedition experience. Mr Hopkinson considered the applicant's assessment of recreational values as being inadequate. He considered the skills and popularity of kayaking in the area to have increased enormously, and Murchison and the Buller region to be an increasingly important training area for kayaking.
192. He said that the Matiri Valley is the nearest entrance to the Kahurangi National Park from Murchison, the area is scenically and geologically outstanding, and the walk to the Lake Matiri Hut is valuable. The construction of the hydro scheme will result in a considerable loss of amenity and the valley will be visually blighted.
193. Mr Hopkinson disagreed that hydropower is a valuable source of renewable energy and he did not consider that the generation capacity of the proposal was worth the impact caused on the environment and recreation values. He listed recommended conditions to be imposed, should the consents be granted.
194. **Ms Jessica Brown** considered that New Zealand's electricity situation is not as dire as has been represented. She emphasised Sections 6(a) and 7(b), (d), (f), (g), and (j) of the Act as being particularly relevant to the Matiri scheme.
195. She considered that shortages of power occur during dry times when large-scale hydro is unable to supply the necessary electricity. Another small hydroelectric generation scheme will not help this situation. New Zealand needs more generation but not at the expense of natural resources. There are other less intrusive options such as biomass thermal generation, pyrolysis, wind and solar generation. She did not consider that the capacity of generation would be effective or worth the adverse effects.

196. **Mr Zachary Shaw** holds a number of outdoor guiding and instruction qualifications. He stated that the Matiri River has a high value as an advanced kayaking run. He described it as a fantastic resource when it is running high. He has carried his kayak to the sweeping bend to descend the "upper run" twice. Mr Shaw stated that he has concerns over the reliability of access should the scheme proceed, and he opined that access should be granted and ensured unconditionally. The penstock at the sweeping bend will adversely affect the tramping experience.
197. He considered that the scheme will provide a miniscule contribution towards energy demand and will cause significant environmental damage and potential hindrances to recreational opportunities.

6 The Officer Reports

198. Seven officers of the TDC provided comment on the present applications. We are grateful that their comments were updated following the first week of the hearing, as we found this most helpful.
199. **Mr Peter Thomson** (Engineering Manager) has been working in local government engineering for approximately 20 years. He spoke on behalf of **Mr Dugald Ley** (Development Engineer).
200. Mr Thomson described road Types 14 and 15 and described Type 15 as the lowest road formation that is acceptable to the Council. However, he stated that as a compromise position the Council's engineering department would accept a road that has a 5 metre unsealed traffic lane and 600 millimetres gravel shoulders. This gives a total road width of 6.2 metres. As the proposed road is likely to be used by cars and campervans, this design was considered appropriate.
201. Mr Thomson stated that no lesser standard would be accepted as it would cause a cost, maintenance and potential safety liability for the Council. If it is a substandard road then the Council will not be able to obtain a maintenance subsidy from the New Zealand Transport Agency.
202. Mr Thomson confirmed that the road is substandard and, were the public road up to the applicant's land to be constructed now, it would be constructed to a higher standard. He stated that it had a carriageway width of approximately 3.5 to 4 metres.
203. **Mr Jack Andrew** (Coordinator, Land Use Consents) considered that the district land use components of this proposal could proceed with only minor effects. He said that access was created to the lake long ago and the landscape has restored itself through regeneration. Mr Andrew considered that this proposal too would restore itself, and Mr Carter's evidence convinced him of that.
204. Mr Andrew considered that the access improvements gave effect to Section 6(d) of the Act. Overall, he considered it to be a very positive development.
205. Mr Andrew stated that the decision on the standard of the road upgrade is quite central to the overall development and he left it to us to make that decision, although he did say it is a significant benefit to have a practical road on a legal road reserve.
206. Mr Andrew confirmed that the power lines on single poles are permitted under the TRMP.
207. **Mr Leif Pigott** (Coordinator, Natural Resource Consents) stated that the short-term construction effects had largely been overlooked in the application and that faith had been put in management plans. He considered this to be arguably satisfactory, but that a considerable amount of work will need to be put into those plans.
208. He said that it is unclear where armouring material at the sweeping bend will be obtained.
209. He considered there to be a lot of work still to do to finalise the practicalities of constructing the weirs and penstocks, particularly given the steep nature of some of the ground. However, he did consider that it would be practicable and any effects would be short-term.
210. **Mr Eric Verstappen** (Resource Scientist, Rivers and Coast) expressed some concerns with taking an overly "adaptive management" approach to the consent. He said adaptive management certainly has a role as it is a new activity at a new site and there is much that cannot be known with a high level of certainty. He also expressed some concerns with the lack of information about specific construction methods and procedures.

211. We queried Mr Verstappen about the proposal to divert the Matiri River down the flood channel at the sweeping bend. He considered the implementation of the diversion to be an attractive option as the rock armouring at the sweeping bend must be carefully constructed. Therefore, he considered such a diversion is certainly worth considering. However, he was not sure about the engineering aspects of constructing the diversion and maintaining it there, and considered it would need to be looked at again.
212. **Mr Neil Tyson** (Consent Planner, Water) commented on the new U-shaped concrete channel that has been proposed for the lake above the weir at Outlet 1. He said that he understood that there would be a rise at the upper end of the U-shaped intake channel so there is no risk of the lake being lowered to the invert level of the channel.
213. Mr Tyson urged us to clearly consider and correctly interpret the WCO. He agreed with Ms Baker's comments about the nature of exceptional circumstances under the WCO.
214. Mr Tyson stated his opinion that the wild and scenic values do extend into the outlet channels of the lake and that the weirs should, therefore, not be visible. He recommended a precautionary approach to any effect on the WCO.
215. Mr Tyson recommended that real time flow data be collected and published on a publicly accessible website.
216. He stated that staff support the provision of fish passes and plunge pools at all three weirs, as well as the necessary provision of connectivity flows to the permanently flowing river.
217. **Mr Martin Doyle** (Coordinator, Environmental Monitoring) confirmed to us the requirement for a condition restricting the change in flows in the Buller River under the WCO.
218. Mr Doyle stated that the best estimate of mean annual low flow for the Matiri River at the slack line monitoring point is 1,462 l/s. He agreed with Mr Hewitt's low flow calculations.
219. **Mr Trevor James** (Resource Scientist, Environmental) considered that one or two pest control stations around the fish passes are probably not sufficient and at little additional cost much better protection could be provided.
220. Mr James stated that he had reservations about the practicability of providing connectivity flows. We have subsequently had more information on a method for achieving this and this is discussed in greater detail below.
221. He considered a re-suspendable solids test be imposed as this picks up residual effects from sediment discharges, which have real effects on river ecosystems by taking up pore spaces between larger gravels.
222. Mr James considered the adverse effects of the proposed low flow (1,000 l/s) would be minor and in any case it is very unlikely to get down to this flow.

7 Principal Issues and Main Findings of Fact

223. In broad terms the construction of a hydropower scheme involves two types of effects on the environment. The first is the effects of constructing the scheme itself, most of which only occur during the construction period. The second is the longer-term effects of operating and maintaining the scheme. In light of this, we see the principal issues associated with the current proposal as follows:

1.1.18 National Water Conservation Order

224. The Water Conservation (Buller River) Order was made in 2001. It was subsequently amended in 2008. The WCO specifies the outstanding features and characteristics of the catchment and, to protect those features, it restricts the ability of consent authorities to grant consents in the catchment. Some exemptions are provided, including "exceptional circumstances" and for temporary discharges.
225. We agree with Ms Baker that, under the WCO, "exceptional circumstances" are those that are taken into account in making a decision to grant the consent. The exceptional circumstances do not relate to very rare or unusual events or circumstances that may arise as part of the exercise of the consent.

The difference is subtle yet important. We believe that with the applicant's amended proposal there are no exceptional circumstances in considering the consent.

226. The applicant originally sought to lower the level of the lake by about 0.5 metres below its natural range for a week during construction of the weirs at Outlets 2 and 3. We expressed considerable reservations about the applicant's claim that construction of a power scheme met the test of being an "exceptional circumstance", in part due to Ms Baker's evidence. Both the applicant and DoC also cited case law on this, although this referred more to other legislation rather than the Act. However this issue has become academic. We asked if the work could be done inside a cofferdam instead of lowering the lake. The applicant now no longer proposes to lower the lake below its natural range during construction. We think that is a much more satisfactory approach. We have however provided for "essential maintenance" as an exceptional circumstance as we expect that to occur only very rarely, if at all.
227. Schedule 3 of the WCO covers the Matiri Catchment. The catchment above the outlets from the lake (i.e. the lake and the Matiri River upstream of the lake) is protected because of three outstanding characteristics or features. These are wild and scenic values, wildlife habitat and native fisheries. The Matiri River below the lake outlets is protected "for its contribution to the outstanding native fishery". There is nothing in the order that prevents the construction of the proposed scheme, but it must be constructed and operated in a way that meets the constraints imposed by the order.
228. The protection of these characteristics or features is provided for by Clauses 11 and 12 of the WCO. Clause 11 prescribes standards for discharge permits. We are confident that the consents granted will ensure that those standards are met.
229. Clause 12 applies specifically to Lake Matiri and the Matiri River. It includes four clauses:
230. Clause 12(1) means that consents cannot be granted that would allow Lake Matiri to exceed its natural range, or raise the mean level of the lake by more than 0.5 metres. The conditions on which consent is granted ensure that the mean level of the lake will not be increased beyond what is allowed for by the order.
231. The applicant's proposal would result in the maximum level of the lake being raised by about 0.4 metres during a 1 in 100 year flood. No party to the hearing raised any particular concerns about this. Indeed counsel for DoC said that *"we agree with the applicant that this would not compromise the preservation and protection of the outstanding characteristics and features identified in the WCO"*.
232. We consider that, given the likelihood of occasional extreme rainfall events in the catchment and the existing constraints on flows in the three outlets, lake levels will very occasionally exceed the recorded natural range in any case. Because the proposal results in the outlets being more restricted, this will occur more frequently, but this is not an effect about which we have much concern given that it is a rare event.
233. Clause 12(2) has two limbs. The first is that the maximum daily lake level fluctuation caused by artificial control would not exceed more than half of the existing natural range. The natural range of the lake between its extreme recorded levels is 4.42 metres, and there is almost a metre difference between the mean (341.9 masl) and median (340.93 masl) lake levels. The applicant proposes to manage the lake over a range of about 1.02 metres, so the proposal clearly meets this requirement of the Water Conservation Order.
234. The second limb is that fluctuations in lake level caused by artificial control will not significantly affect riparian vegetation. We discuss this matter in detail in Paragraphs 312 to 314.
235. Clause 12(3) requires that no structure be constructed in the Matiri River unless it allows for the passage of eels and koaro in both directions.
236. This was a matter discussed in much detail at the hearing. It was covered particularly in the evidence of Mr Mitchell and Mr Rutledge. The particular focus was on passage for juvenile eels (known as elvers) in their migration upstream to the habitats provided for adult eels in Lake Matiri and the Matiri catchment upstream of the lake. Adult fish will easily be able to migrate over the weirs during higher flows in the river.

237. We are dealing with some “unknowns” in respect of this. While it seems commonly accepted that elvers migrate primarily at night on the descending limb of summer freshes, the numbers that may enter Lake Matiri during any particular season are unknown. The limited evidence suggests that migration is likely to be intermittent and episodic, but again there are uncertainties about this.
238. In the evidence presented us there were differences of opinion about the efficacy of the proposed elver pass to be constructed at Outlet 1. This is not a matter in which we hold any particular expertise, but we accept that Mr Mitchell does. The design he presented to us seems to be generally fit for purpose, particularly as it can operate at all times during the migration season, appears sufficiently robust, and will operate automatically. In setting conditions it seems important that the following matters are provided for:
- Sufficient flow is provided to allow passage of elvers to at least Outlet 1. As discussed under “flow regime” below, agreement was reached between experts on this matter, which we accept and have provided for in conditions of consent. We agree with those experts that it would be counterproductive to also facilitate access to Outlets 2 and 3.
 - Elver passage is provided at Outlet 1 at least most of the time during summer months. This may need to be achieved through pumping water to make a wetted surface to enable climbing. This would prevent elvers congregating in the pools below the weir, where they would be vulnerable to predation by water rats. We do not believe that a “trap and transfer” system for elvers is appropriate because of the risks posed by predators.
 - Fish passes be provided at all three weirs, although a permanent wetted surface only needs to be provided at Outlet 1. The fish passes at the other two outlets would enable elvers to scale the weirs when there is some overtopping of the weirs or when it is raining. It is at these times when there is most likely to be elvers reaching the bases of these weirs. The provision of fish passage at all three outlets was volunteered by the applicant.
 - Water rat numbers need to be controlled through poisoning programmes to limit any impacts of predation.
239. We have provided for these matters in conditions of consent. The final design of the fish pass must be certified by the Council. We acknowledge that to some extent this will be a matter of ‘trial and error’. What we must ensure however is that the passage requirements set by the WCO are met by the applicant at all times during the period when elver migration occurs.
240. One other provision of the WCO also restricts the granting of consents to NZEL for the hydro scheme. This is a requirement that any consent granted not change the instantaneous flow of the Buller River by more than 15% in the reach around the Matiri confluence. This can be adequately achieved through imposition of an appropriate condition.

1.1.19 Effects of Construction on Lake Matiri and the Matiri River

241. Construction of the weirs will affect lake levels but, as was pointed out to us by Mr Carter in his evidence on landscape and visual effects, the change in lake levels is constrained by the provisions of the WCO and is required to be within the natural range of the lake. The applicant initially sought an exemption to lower the lake to 0.5 metres below its natural minimum for a period of up to seven days to allow construction of the weirs at Outlets 2 and 3. As we have already noted (Paragraph 82), this is no longer the case.
242. Dr James, in his evidence on aquatic ecology, told us that construction of the weirs would have little direct effect on ecology, and then only in the immediate vicinity of the outlets, as the weir at Outlet 1 would be located some 20 metres down a channel from the lake and the weirs at Outlets 2 and 3 would be just below the outlet stream. He said any turbid plumes arising as a result of construction activities would be limited in extent and dissipate rapidly. There may be some localised effect on macrophytes but these are expected to recover quickly. He recommended macrophyte surveys after weir construction and again three years later to confirm that there are no long-term effects from the construction.
243. Dr James said that, during construction, some loss of macroinvertebrates could be expected as a result of physical destruction of the community around the outlets. As is the case for macrophytes, he expects macroinvertebrate communities to recover.

244. Mr Kroos, who provided evidence to us on the effects of the proposal on waterfowl, concluded that any such effects would be no more than minor, provided construction of the outlets did not take place during the August-September nesting period and avoided interfering with any moulting paradise shelduck nearby in the period from about mid-January to early February. Mr Deans agreed with this but said that the critical period in the moulting season could be all of January and February, although moulting typically occurred in late January and early February.
245. We have provided for these matters by imposing a condition that prevents scheme construction at the lake or the associated weirs taking place during the shelduck nesting or moulting seasons. By doing so we are confident that construction will not affect the shelduck population on the wildlife refuge provided by Lake Matiri.
246. In order to construct the weirs and the penstock section down the river until it enters the forest, it will be necessary to relocate or modify several large boulders. This is likely to involve some blasting. Apart from noise during blasting, and some change in appearance, the effects are not considered significant.
247. Construction access will be along a 6 metre wide corridor through the forest below the weirs, within which the penstock would be located. Several lay down areas are to be provided during construction but these will be restored post-construction. A new 3 metre wide track is to be constructed from the existing track, parallel to Coal Creek, for access to the weir construction site. This will remain after the work is completed to provide access for maintenance purposes, and would provide foot access for visitors who may wish to see the works.
248. Mr Carter, in his evidence, noted that construction of the weirs would impact on surrounding land surfaces and vegetation. He said in order to minimise such construction effects, the areas within which construction activities and the storage of materials took place should be physically restricted and specific restoration requirements imposed.
249. Once out of the bed of the Matiri River below Outlet 1 the route of the penstock passes through beech dominated forest for about 600 metres. Then the penstock again enters the bed of the river for some 300 metres at what is known as the "sweeping bend". Here the bed of the river is hard against its true right bank around a long left hand bend. Vertically above the sweeping bend is an eroding "tufa" or travertine formation, where the walking access track to Lake Matiri is cut into a face of the erosion feature. This would be the most challenging part of the penstock route to construct because it involves placing rock protection in the bed to protect the penstock.
250. At the sweeping bend the applicant proposes to place the penstock in the bed of the river well above normal flow levels. As we understood it, rocks in the bed would be dozed up to provide a cofferdam in which work could take place. Plinths would be constructed on the bed to hold the penstock, which would then be laid on these. The top of the penstock, after backfilling, would then be formed as a gravel track along which access by a 4-wheel motorbike would be possible.
251. As an alternative to providing a cofferdam to protect the penstock route during construction at the sweeping bend, the applicant proposes to divert the Matiri River upstream of the bend down what they referred to as an old flood channel.¹³ This would involve works in the bed of the river to try to realign the flow by almost 90 degrees and so allow work at the sweeping bend to occur in a relatively dry environment.
252. No assessment was made of the effects of this proposed diversion, nor was any feasibility study carried out. The officers recommended to us that the consents we have granted specifically require a separate consent to be sought if the applicant were to seek to divert the river above the sweeping bend. While we consider it desirable that the consents authorise the entire proposal, we agree with the officers in this instance for two main reasons:
- The technical feasibility of such a diversion has not been assessed. But it will be very difficult to divert a high energy, fast flowing alpine river away from its natural course during high flows.
 - The effects of the proposed diversion have not been assessed. We do not know for instance how sediment is to be controlled, what might happen if the river reverts to its natural course

¹³ We are not sure this is the case. It may well be an old river channel that pre-dates the landslide that formed Lake Matiri.

during a flood while construction is occurring, and the extent to which erosion would be promoted at the lower end of the "flood channel" where the river would have to take another sharp bend to the left.

253. While Mr Verstappen for the Council told us that it may be a worthwhile thing to do so as to allow the unimpeded construction of the penstock, armouring and road at the sweeping bend, this will need to be considered through an independent consent process for the reasons stated above.
254. We agree that a separate consent application will need to be made to the Council if the applicant wishes to divert the river during construction at the sweeping bend.

1.1.20 Effects of Construction on Terrestrial Ecology

255. The proposal will have some adverse effects on terrestrial ecology along the route of the proposed penstock as a number of large beech trees and a substantial amount of sub-canopy trees and shrubs will have to be removed along a corridor some 6 metres wide and 700m long.
256. As already discussed the forest is a mixed beech assemblage, with the canopy dominated by red and silver beech and occasional podocarps. Mr Kusabs described it as a good example of a mixed terrace beech forest, and we understood from Mr Inch that the route along which trees will be removed had been laid out in consultation with the Department of Conservation. We agree with Mr Kusabs that this forest is not a significant habitat in terms of s6(c) of the Act, as there are some 2,538 ha of this habitat type in the Matiri ecological district, and only some 0.5ha will be removed. On the terrace where the trees will be removed only some 4% of the total canopy cover will be lost, and we do not regard this as significant.
257. The applicant proposed several measures for restoration work along the penstock route. These include removing the forest "duff" prior to construction and then replacing it afterward, along with a geotextile base if necessary, and the replanting of at least three specimens of podocarps or species such as kowhai removed along the corridor.
258. We are satisfied that within the context of consenting the power scheme, and the inevitable disturbance to the terrace forest, that the mitigation measures proposed by the applicant are appropriate. We have provided for these in the conditions of consent. We also note that as vegetation becomes established around the penstock, it will become progressively less visible and intrusive in the forest landscape.

1.1.21 Effects on Natural Character

259. The need to recognise and provide for (as matters of national importance) the *preservation of the natural character of lakes and rivers and their margins*, and their protection from *inappropriate subdivision, use, and development* is stated in s.6(a). S.6(b) further provides for the protection of *outstanding natural features and landscapes*.
260. Mr Carter, in his evidence on behalf of the applicant, presented his assessment of the landscape and visual effects of the proposal. We have already referred to his evidence above and do not intend to repeat here all that he said.
261. In considering the visual effects of the proposed weir structures, Mr Carter said that they would be located downstream of the outlets and the visual effects from the lake and the surrounding area would be minor (#20). When viewed from the lake, the larger weir at Outlet 1 would only be visible when lake levels were below the natural mean (341.1 masl). He said the locations of weirs at Outlets 2 and 3 were more discrete as they would be set back from the lake and would be partly concealed by overhanging bush.
262. Mr Carter went on to say he considered that the effects of lowering the lake for a seven day period during construction, and infrequently during maintenance, were short-term events that would not compromise the recognised wild and scenic values of the lake. However, as we have noted, the applicant now no longer proposes to lower the lake during construction but may still do so in the event of emergency maintenance being required. We understand that during scheme operation lake levels would be managed within the natural range of the lake.

263. Mr Carter did not tell us very much about the effects of the penstock on the landscape although he did describe the proposed works in some detail. In particular, we had some concerns about the visual effects of the 6 metres wide penstock corridor through the forest below the weirs. We were told that all disturbed ground will be re-vegetated and that, post-construction, vehicle access to the weir sites for maintenance purposes would be via the existing bull-dozed track and the new 3 metres wide track to be formed parallel to Coal Creek.
264. From the sweeping bend to the power station, the penstock will be buried, or above ground on private land owned by the applicant. We note that the existing walking track traversing the slip face above the sweeping bend, and the travertine waterfall next to the track, will be unaffected by the proposal. Mr Carter proposed a number of outcomes to be included in any condition requiring provision of a management plan concerning construction of the penstock in the sweeping bend area.
265. Mr Carter went on to say that the power station would be embedded in the landforms on the west side of the Matiri River and that these would be reworked to accommodate the powerhouse and switchyard. Affected ground would be shaped so as to mimic, as far as possible, the natural shapes of the surrounding area. He considered that, downstream of the power station, the walking track to the confluence of the West Branch should be constructed within the marginal strip to minimise views of the road.
266. The power lines through the open area adjacent to the West Branch have the potential to be highly visible elements although locating them as low down as possible on the surrounding landforms would, according to Mr Carter, help to mitigate the visual effects. The use of large double pole structures should be avoided.
267. Below the West Branch, Mr Carter considered the effects would be minor.
268. Ms Ennor, in her opening legal submissions on behalf of the Director General of Conservation (DoC), expressed the view that the scheme would give rise to significant adverse effects on natural character. This was mainly in relation to the reduction in flow, as she put it, *to one cumec for 60% of the time*. Ms Ennor went on to remind us of our duties to recognise and provide for various matters in s.6 of the Act and, specifically, those that relate to natural character and features and landscape (s.6(a) and s.6(b)). She said:
- There can be no debate that the natural character of the Lake Matiri area is high, and that if not appropriately mitigated, the effects of the proposal on that natural character would be significant.*
269. DoC, however, did not present us with any expert evidence concerning these matters although Mr Wotherspoon, who does not hold any landscape qualifications but who has expertise in conservation and recreation management, did proffer the view that the most significant impacts on natural features and natural character will be at Outlet 1 and its environs because the area would be *significantly altered both in character and function*. He went on to tell us:
- What is currently almost a gorge at the site of the first weir will require clearing of forest, crushing or removal of a number of large boulders and a general opening of the landscape to allow for construction of the weirs, the topmost sections of the penstock, and room enough for a truck carrying the pipes sections to turn around.*
270. Mr Wotherspoon did not accept the applicant's view, which was not disputed in the Section 42A Planning Report, that the extent to which natural character would be compromised by the weir and its construction was diminished by the fact that the works would not be visible from the current track to Lake Matiri Hut.
271. Mr Wotherspoon also considered that the visual impacts of the penstock crossing the riverbed near the sweeping bend, and the changes in river flows associated with the proposal would be significant.
272. Dr Solly, in his evidence on behalf of DoC, also referred to landscape and natural character mainly in relation to the planning aspects of the application.
273. We also note the submission from RFBPS. Both Ms Campbell, representing the Nelson-Tasman Branch, and Ms Martin, who is the Regional Field Officer, together with Dr Ballance who spoke to us about the geology of the area, presented submissions on behalf the society. While these submissions, with respect to natural character and landscape, do not fit within the realm of expert

evidence, we are aware that those who belong to the society do, generally, have an appreciation of the natural environment, and an interest in preserving it, that arguably surpasses that of the average citizen.

274. Ms Campbell spoke to us about her many trips to Lake Matiri and her enchantment with the views of the river, the rugged nature of the spectacular environment, and the lake and its wildlife. She said the lack of human modification contributed greatly to the enjoyment of those who visited the area. She was less than happy though with the rough condition of the 4WD track to the car parking area at the West Branch. In her view, this had deteriorated in recent years and there has been little, if any, attempt to maintain it in a suitable condition for visitors to the area.
275. Ms Campbell considered that construction of the penstocks, including the 6 metres wide "swath" through the forest, the tracks/roads through DoC land, the removal of trees and some boulders below the weirs, the establishment of gravel pits, and the construction of the weirs, would each have more than minor effects on the environment and she was not convinced that these effects could be adequately *avoided, remedied or mitigated*. Ms Campbell said that enjoyment of those visiting the area would be adversely affected by the proposal and, in this respect, she reminded us of the matters to which we must have regard under Section 7(c) and (f) of the Act.
276. In her discussion of Section 6 of the Act matters, Ms Campbell told us that RFBPS considered the proposal would adversely impact on the natural character of both Lake Matiri, and the river and its margins, particularly between the West Branch and the weirs. Preservation of this natural character is, as she pointed out to us, a matter of national importance that we are required to *recognise and provide for* (Section 6(a)).
277. With reference to Section 6(b), RFBPS consider that a number of features in the area rank as outstanding although they are not recognised as such in the Tasman Resource Management Plan. These include the lake ("wild and scenic" under the WCO), the river, the rockfalls below the proposed weirs, and the travertine rock formation and waterfall above the sweeping bend. In her view, these will inevitably be impacted by the proposal. She also referred us to the submission from Dr Ballance in these respects.
278. Ms Campbell requested that we decline the application. However, should we be of a mind to grant consent, she asked that we consider a number of additional mitigation measures that RFBPS wished to see included as conditions.
279. In a similar vein to Ms Campbell, Ms Martin told us that the impacts of the proposal have the potential to *seriously erode the natural character of the Matiri River, Lake Matiri and its surrounds*. She noted that counsel for the applicant had argued that the proposal was an appropriate development in terms of Section 6(a) of the Act since a hydro scheme can only take place in a river. However, she considered that this view fails to take account of the acknowledged fact that the proposed activity would occur in an area that has very high natural character as well as numerous other values.
280. Ms Martin expressed her concern about the effect of changes in river flow on its natural character, particularly during summer 'low flow' conditions when the area has a higher number of visitors. She said this could be avoided by removing the capacity for 'hydro peaking' during summer, and ensuring that a higher minimum flow than proposed was maintained in the riverbed.
281. Ms Martin considered that Mr Carter, in his evidence on behalf of the applicant, had failed to address Section 6(b) matters relating to outstanding natural features and landscapes and referred us to the Officer's Section 42A Report, which stated (p23):

Within the general area of the MHS there are some quite spectacular landscape features that range in size from huge areas of exposed rock faces uncovered by the earthquake that created Lake Matiri to the quite small tufa feature at the sweeping bend.

282. Having observed these features during our site visit, we agree.
283. Ms Martin's view was that these features warranted protection, regardless of whether or not the proposal was deemed appropriate.
284. Mr Neil Tyson, in the Section 42A Planning Report, provided helpful guidance. He said the proposal, including construction activities, would affect natural character. However, he considered the proposed

removal of trees and boulders, and the visual and physical modification of the natural environment, both of which were of concern to Mr Wotherspoon, would in time be largely absorbed and mitigated by the proposed eco planting and natural regeneration.

285. Mr Tyson also said in his report that the proposed flow regime would affect natural character. However, provided this flow is increased (ramping rate) as recommended, adverse effects would be avoided. He considered that the proposal would comply with the Tasman Regional Policy Statement and the Tasman Resource Management Plan regarding natural character, and does not conflict with the WCO. The design, materials, and finished colours of the various parts of the proposed scheme would be recessive and this would help mitigate the impacts on the visual amenity of the riparian margins of the lake and the river. At the Sweeping Bend, the new access along the top of the penstock would provide safer public access than presently exists. In his view, any loss of natural character can be mitigated and appropriately compensated.
286. There was no disagreement among any of the parties that Lake Matiri and the Matiri River are situated in an area of considerable natural beauty and that the lake, and part of the river upstream of the lake, are deemed outstanding by virtue of the WCO. It was also generally accepted that the construction and operation of the proposed hydroelectric power scheme, in this environment, would inevitably impact on the natural character in a number of ways.
287. In considering the evidence and submissions before us in respect of these matters, and bearing in mind our responsibilities under Sections 6(a) and 6(b) in particular, we find we agree with Mr Tyson's assessment and have determined that the adverse effects on natural character and landscape are not, on their own, of sufficient magnitude as to be fatal to these applications. Furthermore, we consider that conditions can be imposed on the consents granted to ensure that the effects of the proposal on natural character will be minimised by the design, restoration of disturbed areas, and appropriate planting. It falls to us, therefore, to consider these matters in conjunction with a range of other effects, both negative and positive, when weighing up the overall merits of the proposal in terms of Part 2 of the Act.

1.1.22 Effects on Public Access

288. The maintenance and enhancement of public access to and along lakes and rivers is a matter of national importance that we are required to recognise and provide for (Section 6(d) of the Act). As we have already noted, the present access to the Matiri River and Lake Matiri is via the Matiri Valley Road, which leads to a poor quality 4WD farm track (about 3km long) that terminates where the Matiri West Branch joins the main river. From there, after crossing the river, a well-formed tramping track provides access to Lake Matiri and beyond. We understand that the track was originally formed using a bulldozer so that cattle could be grazed at the head of Lake Matiri.
289. Mr Ley, the Council's Development Engineer, sought that the road over the applicant's land be substantially upgraded, including a 5.0 metre wide sealed carriageway, gravelled shoulders and grassed swales and batters.
290. Mr Inch, in his evidence, said that a road suitable for two-wheel drive vehicles would be constructed to the existing car park on the West Bank of the Matiri River. From there, a new maintenance road would be formed to a point approximately 300 metres upstream where a temporary bridge would be erected for the duration of the construction period. From there an access road would be formed on NZEL land to the site of the powerhouse. As we have already noted, an access track would be formed along the proposed penstock route from the powerhouse through to the weir site at Lake Matiri.
291. According to Mr Inch, the public walkway would be diverted wherever necessary to keep visitors to the area away from construction activities or, otherwise, site personnel would be on hand to direct people around the construction area. Appropriate signage would be provided. He said that the proposed scheme would *significantly improve access to the Matiri River area and the Kahurangi National Park*. Kayakers, in particular, would enjoy greatly improved access to the Matiri River.
292. Mr Inch said that NZEL currently allows unrestricted access through its property in the Matiri Valley and encourages greater numbers of visitors. He told us that NZEL had offered (in the application) to upgrade the road in to the valley but that the standard suggested in the Officer's Report was too costly for NZEL to consider.

293. Mr Beale, who provided evidence on planning matters on behalf of the applicant, said NZEL would improve public vehicle access to the West Branch by upgrading the present 4WD farm track, which extends from the existing car park, to a standard suitable for construction equipment and, post-construction, for NZEL service vehicles. This would not necessarily be to a standard comparable to an acceptable public road. The legal road boundaries would thereafter be amended to overlie the upgraded alignment and, therefore, regularise the existing road as a legal public road. Legal foot access across NZEL land beyond the West Branch would be formalised by way of a public easement. This would be offered by NZEL as part of the concession process.
294. We note that the present Matiri Valley Road ends some 3 km short of the West Branch and that the rough 4WD track, which is to be upgraded, traverses NZEL land. The application offers to upgrade this track, which is for the most part on a legal road reserve, to a standard shown on Drawing 601 in TDC Engineering Standards. This includes a "2 coat chip seal" finish, which the applicant mistakenly understood to mean a gravel road. The applicant has since withdrawn its offer to seal the road. NZEL asserted, in the response dated 4 March 2009 to questions asked by us, that they could construct most of the access road on their own land to a standard required for their own purposes providing this road is not available to the public. This seems to us to not be in anyone's best interests.
295. We note that Mr Wotherspoon, in his evidence on behalf of DoC, expressed his concern about upgrading access to Lake Matiri without considering the wider implications. He said that, while improved access may offer increased recreation opportunities, this gives rise to raft of considerations about predominant visitor type (skill levels), the terrain, linkages with other tracks, the matching of the facilities to the visitors, and the resources required to maintain those standards. In particular, Mr Wotherspoon was concerned that improved access would result in larger numbers of significantly less experienced visitors, including mountain bikers, being faced with having to cross the Matiri West Branch in its common state of flood. He suggested that NZEL could mitigate this hazard by constructing a suitable footbridge across the river. He fully supported, however, upgrading the road to the West Branch.
296. Mr Wotherspoon was also concerned about the construction impacts on public access along the track and suggested that the provision of temporary alternative access, where necessary during the construction period, should be considered as an appropriate condition if consent is granted.
297. Ms Martin, in her evidence on behalf of RFBPS, expressed concern that the easement for public access across NZEL land would be offered during the concession process rather than as an outcome from the consenting process. She said it was appropriate for us to be reassured that legalised public access will inevitably occur in the event that we grant consent.
298. A submission referring to the roading infrastructure was received from Mr John and Ms Beverley Falkner who live adjacent to the present gravel section of the Matiri Valley Road, some 2.5 km past the end of the sealed section. They sought widening of the gravel section of the road to two lanes and sealing of the road surface. This request lies outside this decision and is a matter for them to take up with the TDC.
299. Ms Goodall, in her closing submissions on behalf of the applicant, maintained that it would be unreasonable for a condition to be imposed requiring that the present 4WD access track to the West Branch be upgraded to a standard beyond the requirements of NZEL. Given the very low potential use of the upgraded road, and its only purpose in the foreseeable future of providing access for NZEL contractors and staff, as well as trampers, to the Matiri River valley and the lake, we agree with the standard of upgrading proposed by NZEL (Option D attached to the response to our questions dated 4 March 2009), specifically a 3.5 metre metalled surface with 0.5 metres shoulders.
300. Ms Goodall said NZEL has volunteered a number of compensation measures as part of an agreement that has been reached with DoC. Those relevant to public access include:
- Provide secure legal access for the public from end of existing TDC road to West Branch Matiri River with the proviso that NZEL is able to construct the access road to the standard proposed, on the road reserve.
 - Provide practical vehicle access for the public on the access road to the West Branch. Where the road is not able to be constructed within the existing road reserve then the boundaries of the road reserve shall be amended to cover the road.

- Contribute \$30,000 (incl. GST) towards development of a day visitor foot bridge across the West Branch.
- Grant legal access in perpetuity over NZEL land where the existing walking track is no longer on the marginal strip because of erosion (This is offered in lieu of transfer of native bush into the DoC estate and is subject to concession negotiations).
- Contribute by way of prepared aggregate to upgrading of DoC access track from the sweeping bend to the Lake Matiri hut.

301. Having examined the evidence and submissions of the various parties to this application, and taken account of the compensation measures volunteered, we consider that public access would, apart for some potential inconvenience during the construction period, be markedly improved. In the event that we grant consent, conditions can be imposed to mitigate any adverse effects.

302. We accept that, given the nature of the visitors, and vehicles that are likely to seek access to the west branch car park a wide sealed road is neither necessary nor appropriate. While we understand that the Council does not want to inherit "substandard roads" the conditions that are placed on the consent must be reasonable to address the effects of the proposal and in the circumstances of the proposal and the location. In this case, two-wheel drive access in a 30 kilometre per hour speed environment is considered adequate and appropriate to allow access to the West Branch, and for construction purposes.

1.1.23 Kayaking and Angling

303. We heard evidence about the values of the Matiri River for kayaking. Dr Cave considered the values to be low and the river is minimally utilised. A number of submitters said that it has great value, particularly at high flows but also at moderate flows. Given the weight of feeling behind many of the submissions from kayakers we consider the latter views to have some substance.

304. The basis for assessing kayaking and recreational values lies in Section 7(c) of the Act as the definition of amenity values includes the *natural or physical qualities and characteristics ... that contribute to people's appreciation of its ... recreational attributes*. There is no substantive mention of kayaking values in the WCO.

305. The effects of the proposal on the frequency or magnitude of flood events below the powerhouse tailrace discharge is minimal. Essentially, during higher flows the take from the lake will be the same as that in the tailrace discharge. We also consider that a number of positive effects will sufficiently offset any perceived or realised changes in flow events. These positive effects include improved public access, not only to the west branch but also higher into the catchment which, as we heard from Mr Shaw, is also able to be kayaked. Also, real-time flow data available on a publicly accessible website is likely to be invaluable for kayakers wanting to see what river flows are at any given time.

306. Similar issues are relevant to angling. We heard from Mr Deans (Fish and Game) who considered the lower Matiri River to have significant brown trout fishery values. Mr Deans considered that the fluctuating flows would harm the trout population through removal of food, stress on juveniles and stranding of fish. He was also concerned about angler safety. He did not ask for the applications to be declined, but rather sought a range of conditions to mitigate adverse effects.

307. We have provided for some of those conditions in the consents granted. Examples include restricting works while shelduck are moulting, and much improved public access. We have also required effects of the 10-minute ramping rate to be monitored so it can be changed if necessary, and for signage to warn river users of flow fluctuations as a result of the operation of the power scheme.

1.1.24 Effects of Fluctuating Lake Levels

308. The proposed hydro scheme will use part of the limited storage in Lake Matiri to store water at times when demand for power is lowest (typically during the night and the middle of the day) to allow generation during times of peak demand in the morning and evening. This means that while the absolute range of levels in Lake Matiri will vary little due to the scheme, there will be far more frequent fluctuations within part of this range. The average level of the lake will also be raised by about 0.5 metres. This could have potentially significant consequences for the aquatic macrophytes in the lake,

and the biota that dwells within them, and it could also potentially affect the riparian vegetation around the margin of the lake.

309. The effects of fluctuating lake levels on lake biota were discussed by Dr James, on behalf of the applicant, and by Mr Rutledge, on behalf of DoC. Neither considered there would be any adverse effects on fish communities in the lake, but they did have different views of the effects on the macrophyte communities and the freshwater mussel *Hyridella*.¹⁴ These largely related to the effects of the formerly proposed drawdown of the lake to well below natural levels during construction – a proposal that was subsequently abandoned by the applicant. As fish communities will be maintained there will be fish present for the parasitic larvae of *Hyridella*, for which the preferred (but not exclusive) host is koaro.
310. Dr James expected that the effects of the lower average lake level, and much more frequent fluctuations in level over a range of 1.02m will have few effects on macrophyte communities. There may be some loss of the top range of the native milfoil, but this has some degree of tolerance for fluctuating lake levels. While not disagreeing with this conclusion, Mr Rutledge considered that these effects did need to be monitored by the applicant once the scheme is constructed.
311. Dr James also considered that given that the macrophyte beds will be maintained, effects on the population of *Hyridella* will also be less than minor. While Mr Rutledge did not really dispute this, he did raise concerns about the effects of weir construction on these mussels. We share that concern, particularly now that the applicant proposes not to lower the lake during construction, but rather work behind a temporary cofferdam. In this area mussels would be susceptible to desiccation, crushing by machinery and/or heavy sedimentation. We have added a requirement in the Construction, Erosion and Sediment Management Plan that the applicant outline how mussels will be salvaged from this area prior to construction commencing. Further, given the concerns expressed by Mr Rutledge about the effects of artificially low lake levels on macrophyte and mussel communities in the lake, we have limited the maximum period that the lake can be drawn down for structural or emergency maintenance to 24 hours.
312. The effects of the fluctuating lake levels on riparian vegetation around the margin of Lake Matiri were discussed in the evidence of Mr Kusabs on behalf of the applicant. He considered that would result in the following effects:
- Some species in the varial or mud zone could be lost from the lowest part of their range. He did not consider this to be a significant adverse effect and we agree with this assessment.
 - The *Juncus* and tall fescue zones, both of which are dominated by exotic species, may move slightly further upslope and become more distinctive. Similarly wetland communities around seepage areas may move slightly upgradient. We do not consider this a significant adverse effect.
 - He noted that the more woody the vegetation, the more susceptible it was to submergence. However, extremely high lake levels will only occur very rarely and will increase for only short durations due to the presence of the scheme. He did not expect the beech forest around the lake to be affected, as studies at Manapouri had shown beech trees are able to withstand some days of inundation.
 - The significant ribbonwood/coprosma woodland around parts of the lake margin that is currently unable to regenerate due to the dominant exotic understorey may die back prematurely because of the rise in the water table.
313. We consider the most significant potential adverse effect of the rise in lake levels (on average) to be the potential die-off of the ribbonwood/comprosmia woodland around parts of the lake margin. Mr Kusabs recommended that

“accurate levels need to be taken at the current location to identify habitat preference. Seed and cutting material need to be harvested from the current population pre-construction and grown on in anticipation of the possibility of premature die back in the ribbonwood population.”

¹⁴ These differences included the effects of lowering the lake level for up to seven days to allow construction of scheme headworks. As the applicant no longer proposes to do this these differences are now not relevant

314. We agree with Mr Kusabs. We also consider that a plan to reduce the dominance of exotic grasses and possibly allow for the enhancement of the ribbonwood/coprosma woodland would be desirable. Should the dieback not occur after the prescribed monitoring period then it would certainly be desirable that the young plants, kept for contingency purposes, be used to this end.

1.1.25 Flow Regime

315. There are three substantial matters that we need to determine in relation to the flow regime in the Matiri River:

- What minimum flow is necessary to protect life-supporting capacity in the river between the lake outlets and the discharge from the power station?
- What flow is required below Outlet 1 to ensure that native fish passage to the lake is maintained?
- What rate of change of flow can be allowed in the Matiri River downstream of the tailrace race discharge (this is referred to as the “ramping rate”)?

316. We do not need to consider flood flows in this context, as for all intents and purposes these will not be changed by the scheme.

317. In making our decisions on the first two matters we were hampered by a lack of information about low flows. In particular, the relationship between the relative flows in the three outlets is not known (although most of the flow is certainly carried down Outlet 1), and nor is the extent to which sub-surface flow occurs from the outlets during low flow conditions.

318. Mr Hewitt, on behalf of the applicant, said that two simultaneous gaugings had been undertaken. In April 1985 a flow of 1,200 l/s was gauged above the sweeping bend, while at the lower gauging station near the proposed power station the flow was 1,500 l/s. In July 2003 the surface flow at the outlet was 800 l/s while that at the lower gauging station was 2,000 l/s. On the day of our site visit there was no surface flow from Outlet 1 and the flow at the lower gauging station was 1,170 l/s. These latter two results suggest that during low flows there is a contribution of about 1,200 l/s from sub-surface flow under the lake outlets and the rest of the catchment to the flow at the lower gauging station. But this is a very approximate estimate.

319. There was also a little uncertainty over low flow statistics at the gauging site near the tailrace for the proposed scheme. Mr Hewitt had estimated the Mean Annual Low Flow (MALF) to be 1,406 l/s. By correlation with the nearby Karamea catchment Mr Doyle, the TDC hydrologist, considered the best estimate for MALF is 1,462 l/s. Based on extrapolated data from the “extreme drought” of 1973 both Mr Hewitt and Mr Doyle agreed that a 1 in 100 yr low flow is about 780 l/s.

320. These data are important in that Mr Tyson initially recommended that we set a low flow of 1,400 l/s at the gauging station near the proposed power station to protect life-supporting capacity. In his evidence on behalf of DoC, Mr Rutledge advocated for a minimum flow of 2,100 l/s at this same point, whereas the applicant said through Mr Jowett that a minimum flow of 1,000 l/s at this point would be sufficient to protect life-supporting capacity.

321. Following the initial hearing there was further discussion between experts for DoC (Dr Hayes and Mr Hay from the Cawthron Institute) and the applicant (Mr Jowett) about residual flows. In a joint memorandum to us they agreed that a minimum flow of 1,000 l/s in the reach between the sweeping bend and the tailrace discharge would protect life-supporting capacity. This was accepted – perhaps a little reluctantly – by the officers when they reported back to us on 10 March 2009.

322. The memorandum from the experts read partly as follows:

Fish densities in this section of the river appear to be low compared with national averages, partly because of the large distance from the sea. Given that invertebrate densities are slightly above national averages, it is unlikely that native fish will be food limited presently or at the proposed minimum flow of 1,000 l/s. We expect invertebrate densities in the habitat remaining will be similar to existing densities. Elsewhere much higher fish densities are supported by similar or lower invertebrate densities.

We therefore consider that the 1,000 l/s minimum flow in this section will provide sufficient food and habitat for fish at present densities. In practice flows may be higher than 1,000 l/s because present seepage appears to be 1,100 l/s or higher and this flow will be supplemented by the fish passage flow from weir 1.

323. We accept that this expert opinion is soundly reasoned, and we have, accordingly, set a minimum residual flow of 1,000 l/s in the Matiri River at the gauging station above the power station tailrace discharge.
324. Mr Rice said that at this minimum flow his modelling suggested that the power scheme would produce some 30 GwH per annum, not the 25 GwH suggested by the applicant. We do not however see this as a relevant issue. The question for us is “what flow is necessary to protect the life-supporting capacity of the river and to protect any significant habitats therein”. The expert evidence is that a flow of 1,000 l/s will do so.
325. An associated issue was what residual flow is necessary in the river immediately below the weirs to protect native fish passage, principally elvers. This was again a matter over which there were some considerable differences of opinion between experts in their initial evidence to us, and for which the same three experts came to consensus. We paraphrase from their memorandum to us:

We believe that flows adequate for eel passage should be provided in the stream draining weir 1. Elvers migrate at low and moderate flows, and possibly during flood flows, and since the former occur most of the time, passage needs to be maintained over a range of flows. We consider that a flow sufficient to generate a stream with a median width of 300mm in the first 300m below weir 1 would be adequate for passage. We believe that this flow would be less than 400l/s, but provision should be made to discharge up to 400l/s. This condition should be adequate to provide passage for elvers, and pools for resting/holding habitat for both elvers and adult eels. Although eel migration occurs predominantly during summer and autumn, a precautionary approach is to initially provide for this flow all year round, and review this depending on the results of monitoring.

The streams below weirs 2 and 3 appear to dry frequently, and this will become more common once the scheme is in place due to small freshes being captured by the scheme. This will have a small positive effect as the risk of eels being stranded in those outlets will be reduced. We see no significant ecological benefits of providing fish passage up to weirs 2 and 3.

326. The officers supported the expert opinion, and we accept that advice. The Water Conservation Order requires that passage for eels and koaro be maintained into Lake Matiri. The provision of passage for elvers will also provide passage for koaro. We agree that this should be provided via Outlet 1, and that it would be counterproductive to also maintain flows at Outlets 2 and 3, although fish pass structures will be provided at Outlets 2 and 3 so that any elvers that end up in pools below these weirs after moderate flows will be able to climb the weirs and reach the lake at times when it is either raining or the flows are overtopping the weirs.
327. In a supplementary report by the same three experts (dated 3 April 2009) they refined their criteria for achieving adequate passage to the base of the weir at Outlet 1. They stated that:

“a flow sufficient to generate a stream with a median width of 300 mm in the first 300 m of river below weir 1 would be adequate for passage. The method of measuring this width was discussed by the panel and this note provides a further explanation of how the adequacy of the flows required for the passage of eels could be assessed in the section of the Matiri River immediately below the proposed outlet weir.

The panel ... decided to specify a median width. The panel did not consider that the occasional narrow width or disappearance of water as it flowed under boulders would significantly hinder the upstream passage of elvers, because of the ability of elvers to find their way upstream past obstacles ...

The flow required to provide this wetted passage can be established by a simple field survey in the first 300 m of river [by] traversing the river and measuring and recording the visible water surface width every metre.”

328. The expert panel continued by saying that the median width should not be less than 300 millimetres, that no more than 10% of measurements should be without any visible surface water and that no more than 10 metres should be without any visible surface water. We assume that the experts envisage a trial-and-error process to determine what flow achieves these criteria. They go on to say that if the design connectivity flow does result in a contiguous section of channel with no surface flow between 5 and 10 metres long then additional monitoring shall be carried out.
329. We are grateful for the consensus reached by the fisheries experts in relation to minimum flows, the flow required to protect eel passage and habitat below Outlet 1 and a methodology for determining how this flow should be determined and what it should look like in reality. Their agreement has much reduced the requirement we might have had to review and decide upon some initially quite substantial differences of opinion, particularly those opinions expressed by Mr Rutledge.
330. The other matter that we had to address was that of the ramping rate. The applicant had proposed this be a maximum of 600 l/s per minute. In other words the power station, which has a maximum discharge of 6.3 m³/s from the tailrace could be brought from no discharge to being fully operational in 11 minutes.
331. Mr Jowett calculated that at low flows this change would increase water depth by about 0.325 metres, and increase mean flow velocity from about 0.2 to 0.5m/s just above the confluence of the West Branch. He considered that this ramping rate would not have any significant effect on native fish or trout as other studies have shown that they will generally move to prevent being stranded. He did believe however that invertebrate productivity would be affected by flow fluctuations at low flows, and that although this would not have an effect on native fish, it may reduce trout densities.
332. Mr Hay took a somewhat different view, suggesting that the relatively rapid ramping rate may cause fish strandings, and he quoted local and international studies that supported this viewpoint. He said that the rate of change in water depth calculated by Mr Jowett was about 20 times greater than recommended in international literature. Additionally Mr Deans raised some concerns about angler safety.
333. We have considered this evidence and we are not uncomfortable with the ramping rate proposed by the applicant. We have two reasons for this. First, the effects of this ramping rate will be buffered to some extent by flows from the West Branch about 500 metres downstream. These flows are not affected at all by the power scheme. Second, factors such as in-channel storage do attenuate the effects of flow changes. We have also required that the effects of these changes be monitored at the road bridge about 9 km downstream of the discharge for at least six months after the power station is commissioned. This will allow changes to be made to the ramping rate during low flows if necessary.
334. The effects of the rate of change in flow due to the tailrace discharge being "turned on and off" will decrease with higher flows in the river, and indeed above the mean flow of 13.3 m³/s will barely be detectable.
335. Given that the maximum discharge from the tailrace is only 6.3 m³/s versus a mean flow of 13.3 m³/s we do not envisage this rate of change of flow will cause any significant problems for river users. The flow will only rise gradually, and the effects of the change in flow will be attenuated downstream by factors such as in-channel storage. There is however some risk to users such as anglers if they are not aware of the potential threat from relatively rapid changes in flow, as there is no apparent natural reason for this occurring. We have accordingly required that the applicant place signage at access points along the river warning users of potentially rapid changes in river level, and we have required some monitoring of the effects of these changes on flow at the road bridge.

1.1.26 Climate Change

336. The effects of climate change in relation to the generation of, and demand for, electricity are not easy to predict.
337. Electricity use is likely to become greater in summer to provide for cooling, and for additional pumping of water for irrigation. On the other hand, winter demand is likely to drop because the climate will be warmer. The overall effect on demand is not clear at this time.
338. Generation will be positively impacted if there is more rain in the west, which includes the Matiri Catchment, and more wind from the west, which will provide more reliable generation from most wind

farms. However rainfall and snow melt are both likely to decline in the headwaters of the nation's major storage lakes in the South Island, which will have negative impacts on storage and reliability of supply in winter months.

339. There are too many uncertainties about the effects of climate change on generation and demand to draw any firm conclusions. But it does appear probable that in the long term more power will be able to be generated from the Matiri Scheme than is suggested by historical rainfall and flow records.

1.1.27 Renewable Energy

340. Section 7(j) of the Act requires that we have particular regard to the benefits to be derived from the use and development of renewable energy. In this instance the applicant said that the proposed scheme would produce 25 GwH, and that this was sufficient to power some 3,000 homes. It is however a very small amount in the context of national generation, which is presently some 42,000 GwH, with demand projected to grow at about 2% per annum.

341. Mr Hopkinson and Ms Brown, submitters, told us that hydropower is not a renewable energy source. We disagree. While the rivers available for hydroelectric development are not renewable, surface water, particularly in a heavy rainfall area such as the Matiri Catchment, is an infinitely renewable resource. New Zealand regards hydropower as "renewable energy", and so do we.

342. The leading case law on renewable energy is the Environment Court decision on the proposed Awhitu wind farm on the north Waikato west coast.¹⁵ Three of the matters discussed in that decision are pertinent to the proposed Matiri scheme.

- Security of supply is assisted by adding to and diversifying New Zealand's generating base. The Matiri Scheme will help provide secure electricity supplies to the local district.
- Similarly, the scheme will reduce transmission losses, as the further electricity is transmitted the greater the loss through dissipation. The upper South Island is presently very reliant on electricity generated elsewhere, as relatively little electricity is generated locally.
- The scheme may also reduce the nation's greenhouse gas emissions generated from the burning of coal or gas in thermal power stations. It will contribute, albeit in a small way to the government's "90% renewable energy" target by 2025.

343. We have concluded that there are benefits to be provided from the scheme in relation to its use of renewable energy. These benefits are captured most by the local district, particularly in terms of security of supply and reduced transmission losses. This is not to understate national benefits, although they are small.

8 Statutory Provisions

1.1.28 Section 104 of the Act

344. Section 104 requires that, subject to Part 2 of the Act, we consider the following matters that are potentially relevant to the present application:

a) *any actual or potential effects on the environment of allowing the activity; and*

b) *any relevant provisions of-*

- (i) *a national policy statement;*
- (ii) *a New Zealand Coastal Policy Statement;*
- (iii) *a regional policy statement or proposed regional policy statement;*
- (iv) *a plan or proposed plan; and*

¹⁵ Genesis Power Limited v Franklin DC. A148/05, 2005. NZRMA 541.

c) *any other matter the consent authority considers relevant or reasonably necessary to determine the application.*

345. The present applications were lodged on 9 November 2006 so the provisions of the Act, as amended in August 2005, apply.
346. There is no National Policy Statement relevant to the present applications, nor are the provisions of the NZ Coastal Policy Statement relevant. The Tasman Resource Management Plan is the principle regional and territorial local authority plan for consideration.
347. There were three main "other matters" that we considered germane to our decision making on these applications. These were the New Zealand Energy Strategy and the New Zealand Energy Efficiency and Conservation Strategy both dated 2007, and the proposed National Policy Statement for Renewable Energy Generation dated September 2008. These are discussed in Paragraphs 374 to 380.

1.1.29 Effects on the Environment

348. We consider the actual and potential effects associated with scheme construction to be as follows:

- Effects on public access;
- Potential effects of construction on water quality; and
- Effects of construction on vegetation, local amenity and natural character around the headworks, along the penstock route and from the construction of the power station.

349. We see the potential longer term operational effects of the scheme as being:

- Effects of the reduced flow regime on fish and invertebrate communities in the Matiri River;
- Potential effects on native fish passage from the Matiri River into and out of Lake Matiri;
- Potential effects on the biota of Lake Matiri and its surrounding riparian vegetation;
- Effects of the flow regime on the recreational amenity provided by the Matiri River; and
- Positive effects, such as increased power generation, improved security of supply to the local district and improved, safer access to Lake Matiri and the National Park beyond.

1.1.30 The Tasman Resource Management Plan

350. The Council has a Tasman Regional Policy Statement (TRPS). However, the TRMP has progressed to the point where it is partially operative and it was developed to be consistent with the TRPS. The TRMP is therefore considered to be the principal planning document and is assessed below.

Chapter 5 – Site Amenity Effects

351. The relevant objectives and policies from Chapter 5 are:

Objective 5.1.2

Avoidance, remedying or mitigation of adverse effects from the use of land on the use and enjoyment of other land and on the qualities of natural and physical resources.

Policies

- 5.1.3.1 *To ensure that any adverse effects of subdivision and development on site amenity, natural and built heritage and landscape values, and contamination and natural hazard risks are avoided, remedied, or mitigated.*
- 5.1.3.8 *Development must ensure that the effects of land use ... on stormwater flows and contamination risks are appropriately managed so that the adverse environmental effects are no more than minor.*

5.1.3.9 To avoid, remedy, or mitigate effects of:

- (a) noise and vibration;
- (b) dust and other particulate emissions;
- (c) contaminant discharges;
- (f) electrical interference;
- (g) vehicles;
- (h) buildings and structures;
- (i) temporary activities;

beyond the boundaries of the site generating the effect.

5.1.3.14 To provide sufficient flexibility in standards, terms and methods for rural sites to allow for the wide range of effects on amenities which are typically associated with rural activities, and which may vary considerably in the short or long term.

Objective 5.2.2

Maintenance and enhancement of amenity values on site and within communities throughout the District.

Policies

5.2.3.9 To avoid, remedy or mitigate the adverse effects of signs on amenity values.

5.2.3.10 To allow signs in residential, rural residential, recreation and rural areas that are necessary for information, direction or safety.

Objective 5.3.2

Maintenance and enhancement of the special visual and aesthetic character of localities.

Policy

5.3.3.3 To avoid, remedy or mitigate the adverse effects of the location, design and appearance of buildings, signs and incompatible land uses in areas of significant natural or scenic, cultural, historic or other special amenity value.

352. We consider that the proposal is not inconsistent with the relevant objectives and policies that guide effects on amenity values. While there will be some adverse effects on amenity – particularly along the penstock route and at sweeping bend - we consider the overall impact of the scheme to be relatively small scale in what is an impressive broad scale environment.

Chapter 7 – Rural Environment Effects

353. The relevant objectives and policies from Chapter 7 are:

Objective 7.2.2

Provision of opportunities to use rural land for activities other than soil-based production, including papakainga, tourist services, rural residential and rural industrial activities in restricted locations, while avoiding the loss of land of high productive value.

Policies

7.2.3.1 To enable activities which are not dependent on soil productivity to be located on land which is not of high productive value.

7.2.3.2 To enable sites in specific locations to be used primarily for rural industrial, tourist services or rural residential purposes (including communal living and papakainga) with any farming or other rural activity being ancillary, having regard to:

- (a) the productive and versatile values of the land;
- (b) natural hazards;
- (c) outstanding natural features and landscapes, and the coastal environment;
- (d) cross-boundary effects, including any actual and potential adverse effects of existing activities on such future activities;
- (e) servicing availability;
- (f) the availability of specific productive natural resources, such as aggregates or other mineral sources;

354. We consider the proposed power scheme not inconsistent with the relevant objectives and policies that guide the management of rural land.

Chapter 8 – Margins of Rivers, Lakes, Wetlands and the Coast

355. The relevant objectives and policies from Chapter 8 are:

Objective 8.1.2

The maintenance and enhancement of public access to and along the margins of lakes, rivers, wetlands and the coast, which are of recreational value to the public.

Policies

- 8.1.3.1 *To maintain and enhance public access to and along the margins of water bodies and the coast while avoiding, remedying or mitigating adverse effects on other resources or values, including: indigenous vegetation and habitat; public health, safety, security and infrastructure; cultural values; and use of adjoining private land.*
- 8.1.3.2 *Notwithstanding Policy 8.1.3.1, public access by way of esplanade requirements will not be sought in areas where risks to public health and safety cannot be avoided, remedied or mitigated; or in areas where it is necessary to maintain security, consistent with the purpose of any resource consent, such as operational port areas.*
- 8.1.3.3 *To avoid, remedy, or mitigate the adverse effects on public access caused by structures, buildings, and activities in or adjoining water bodies or the coastal marine area.*
- 8.1.3.5 *To seek public access linkages between reserves and public access adjoining water bodies or the coastal marine area in the vicinity.*
- 8.1.3.7 *To ensure that adequate public access is available to outstanding natural features and landscapes in the coastal environment or the margins of lakes, rivers or wetlands, except where the impact of such access is incompatible with the duty to protect these areas or access across private land cannot be negotiated.*

Objective 8.2.2

Maintenance and enhancement of the natural character of the margins of lakes, rivers, wetland and the coast, and the protection of that character from adverse effects of the subdivision, use, development or maintenance of land or other resources, including effects on landform, vegetation, habitats, ecosystems and natural processes.

Policies

- 8.2.3.1 *To maintain and enhance riparian vegetation, particularly indigenous vegetation, as an element of the natural character and functioning of lakes, rivers, the coast and their margins.*
- 8.2.3.2 *To control the destruction or removal of indigenous vegetation on the margins of lakes, rivers, wetlands and the coast.*
- 8.2.3.3 *To avoid, remedy or mitigate adverse effects of land management practices on the margins of water bodies, including wetlands.*
- 8.2.3.4 *To avoid, remedy or mitigate adverse effects of buildings or land disturbance on the natural character, landscape character and amenity values of the margins of lakes, rivers, wetlands or the coast.*
- 8.2.3.6 *To adopt a cautious approach in decisions affecting the margins of lakes, rivers and wetlands, and the coastal environment, when there is uncertainty about the likely effects of an activity.*
- 8.2.3.20 *To ensure that where erosion protection works are deemed to be necessary to protect existing settlements or structures that these are designed as much as possible to harmonise with the natural character of the coastline, river bank or lake shore.*
356. We consider the proposed power scheme is broadly consistent with the relevant objectives and policies that guide the management of river and lake margins. In particular, the proposal will further the objective of enhancing access to river and lake margins. We consider that a suitably cautious approach has been taken so as not to offend Objective 8.2.2 or its associated policies.

Chapter 9 – Landscape

357. The relevant objectives and policies from Chapter 9 are:

Objective 9.1.2

Protection of the District's outstanding landscapes and features from the adverse effects of subdivision, use or development of land and management of other land, especially in the rural area and along the coast to mitigate adverse visual effects.

Policies

9.1.3.1 *To encourage broadscale land uses and land use changes such as plantation forestry and land disturbance to be managed in a way that avoids or mitigates the adverse effects on natural landform, surrounding natural features and on visual amenity values.*

9.1.3.3 *To ensure that structures do not adversely affect:*

- (a) *visual interfaces such as skylines, ridgelines and the shorelines of lakes, rivers and the sea;*
- (b) *unity of landform, vegetation cover and views.*

9.1.3.4 *To discourage subdivision developments and activities which would significantly alter the visual character of land in outstanding landscapes (including adjoining Abel Tasman, Nelson Lakes and Kahurangi national parks).*

9.1.3.6 *To manage activities which may cause adverse visual impacts in the general rural area.*

Objective 9.2.2

Retention of the contribution rural landscapes make to the amenity values and environmental qualities of the District, and protection of those values from inappropriate subdivision and development.

Policies

9.2.3.1 *To integrate consideration of rural landscape values into any evaluation of proposals for more intensive subdivision and development than the Plan permits.*

9.2.3.3 *To retain the rural characteristics of the landscape within rural areas.*

9.2.3.4 *To encourage landscape enhancement and mitigation of changes through landscape analysis, subdivision design, planting proposals, careful siting of structures and other methods, throughout rural areas.*

Objective 9.3.2

Protection and enhancement of views from public viewpoints

Policy

9.3.3.1 *To protect and enhance significant views from key viewpoints on tourist routes within the District*

358. We are satisfied that over time the effects of the proposed power scheme on landscape values will reduce to the point where they are largely minor. The restoration work that has been volunteered will accelerate this recovery. The works will become another point of interest in the landscape, while providing the benefits discussed elsewhere in this decision.

359. While it is questionable whether Objective 9.3.2 and Policy 9.3.3.1 apply, we note that the works will not be visible from the Lake Matiri Hut and nearby viewpoints.

Chapter 10 – Significant Natural Values and Cultural Heritage

360. The relevant objectives and policies from Chapter 10 are:

Objective 10.1.2

Protection and enhancement of indigenous biological diversity and integrity of terrestrial, freshwater and coastal ecosystems, communities and species.

Policies

- 10.1.3.2 *To safeguard the life-supporting capacity of the District's indigenous ecosystems, including significant natural areas, from the adverse effects of subdivision, use and development of land.*
- 10.1.3.3 *To foster community responsibility for the protection of the indigenous habitat values of the district.*

361. This objective and these policies have an extremely wide scope in the context of this proposal. Given the information available, we are satisfied that indigenous habitats and ecosystems will be protected. In particular the proposal will have minimal effects on indigenous fish and invertebrate communities in Lake Matiri.

Chapter 11 –Land Transport Effects

362. The relevant objectives and policies from Chapter 11 are:

Objective 11.2.2

The avoidance, remedying, or mitigation of adverse effects on the environment from the location, construction, and operation of the land transport system, including effects on:

- (a) the health and safety of people and communities;*
- (b) the amenity of residential areas, workplaces and recreational opportunities;*
- (c) air and water quality;*
- (d) natural habitats and ecosystems;*
- (e) landscapes and natural features;*
- (f) aggregate and energy resources;*
- (g) the productivity and use of land.*

Policy

- 11.2.3.1 *To establish a hierarchy of roads and to classify roads according to their traffic and access functions.*
- 11.2.3.3 *To promote transport routes, and approaches and methods of design, construction, and operation which avoid, remedy, or mitigate adverse effects on:*
- (a) the health and safety of people and communities; in particular, cyclists and pedestrians;*
 - (b) amenity values of neighbourhoods and areas of special character;*
 - (c) air and water quality;*
 - (d) natural habitats and ecosystems;*
 - (e) landscapes and natural features;*
 - (f) aggregate and energy resources;*
 - (g) the productivity of land.*

363. We consider that a modest road – essentially a continuation of the road that leads to the applicant's land – is an appropriate standard for an extension of the road to the west branch car park. Conditions must be commensurate with the nature and scale of the effects that they are addressing. In this case we see no effects or reason to require a higher standard of road.

364. The rules in Section 18.8.3 of the TRMP require, as a permitted activity, the sections of this road that will be within the road area specified in the TRMP to be in accordance with road construction standards. These standards are reflected in Policy 11.2.3.1. The standard of road required is not in accordance with these provisions of the TRMP but, as stated above, such a standard is not considered to be warranted given the circumstances. This non-compliance with the rules is to be provided for in land use consent RM060942.

Chapter 12 – Land Disturbance Effects

365. The relevant objectives and policies from Chapter 12 are:

Objective 12.1.2

The avoidance, remedying, or mitigation of adverse effects of land disturbance, including:

- (a) *damage to soil;*
- (b) *acceleration of the loss of soil;*
- (c) *sediment contamination of water and deposition of debris into rivers, streams, lakes, wetlands, karst systems, and the coast;*
- (d) *damage to river beds, karst features, land, fisheries or wildlife habitats, or structures through deposition, erosion or inundation;*
- (e) *adverse visual effects;*
- (f) *damage or destruction of indigenous animal, plant, and trout and salmon habitats, including cave habitats, or of sites or areas of cultural heritage significance;*
- (g) *adverse effects on indigenous biodiversity or other intrinsic values of ecosystems.*

Policies

- 12.1.3.1 *To promote land use practices that avoid, remedy, or mitigate the adverse effects of land disturbance on the environment, including avoidance of sediment movement through sinkholes into karst systems.*
- 12.1.3.2 *To avoid, remedy, or mitigate the actual or potential soil erosion or damage, sedimentation, and other adverse effects of land disturbance activities consistent with their risks on different terrains in the District, including consideration of:*
 - (a) *natural erosion risk, and erosion risk upon disturbance;*
 - (b) *scale, type, and likelihood of land disturbance;*
 - (c) *sensitivity and significance of water bodies and other natural features in relation to sedimentation or movement of debris.*
- 12.1.3.3 *To investigate and monitor the actual or potential adverse effects of soil erosion, other soil damage, sedimentation and damage to river beds, subsurface water bodies and caves in karst, aquatic and other natural habitats, arising from land disturbances.*

366. The proposal is consistent with these objectives and policies. The applicant will have to develop detailed management plans to help control erosion and sedimentation.

Chapter 13 – Natural Hazards

367. The relevant objectives and policies from Chapter 13 are:

Objective 13.1.2

Management of areas subject to natural hazard, particularly flooding, instability, coastal and river erosion, inundation and earthquake hazard, to ensure that development is avoided or mitigated, depending on the degree of risk.

Policies

- 13.1.3.1 *To avoid the effects of natural hazards on land use activities in areas or on sites that have a significant risk of instability, earthquake shaking, flooding, erosion or inundation, or in areas with high groundwater levels.*
- 13.1.3.7 *To maintain or consider the need for protection works to mitigate natural hazard risk where:*
 - (a) *there are substantial capital works or infrastructure at risk; or*
 - (b) *it is impracticable to relocate assets; or*
 - (c) *it is an inefficient use of resources to allow natural processes to take their course; or*
 - (d) *protection works will be effective and economic; or*
 - (e) *protection works will not generate further adverse effects on the environment, or transfer effects to another location.*
- 13.1.3.10 *To regulate land disturbance so that slope instability and other erosion processes are not initiated or accelerated.*

368. We heard evidence from Mr Wopereis and Mr Verstappen on matters of land instability and rock protection around the sweeping bend. We are satisfied that there is a low chance of natural hazards occurring as a result of the proposal and find that the proposal is not inconsistent with Chapter 13 of the TRMP. The proposal does not increase future earthquake induced landslide risks in the Matiri Valley.

Chapter 30 – Taking, Using, Damming and Diverting Water

369. The relevant objectives and policies from Chapter 30 are:

Objective 30.1.0 (1)

The maintenance, restoration and enhancement, where necessary, of water flows and levels in water bodies that are sufficient to: (a) protect their life-supporting capacity (the mauri of the water); (b) protect their natural intrinsic, cultural and spiritual values, including aquatic ecosystems, natural character, and fishery values including eel, trough and salmon habitat, and recreational and wildlife values; and (c) maintain their ability to assimilate contaminants.

Policies

30.1.1 *To maintain and enhance the uses and values of rivers, aquifers, wetlands and lakes that may be adversely affected by reduced water flows or levels including:*

- (a) the uses and values of water bodies identified in Schedule 30.1, particularly the internationally, nationally and regionally significant uses and values of water bodies;*
- (c) the capacity of water to dilute contaminants.*

by taking into account the management objectives specified for each of the water bodies in Schedule 30.1.

30.1.2 *To establish a minimum flow regime or minimum water level regime for rivers, wetlands and lakes where there is a threat to uses and values of the water body or a connected water body, taking into account:*

- (a) the range and significance of the existing and potential water body values and uses;*
- (b) adverse effects from existing and potential abstractive water users and land use activities affecting water quantity;*
- (c) natural flow characteristics;*
- (d) practical monitoring and enforcement needs;*

30.1.9 *When assessing resource consent applications to take water, particularly those applications to take water from water bodies where no allocation limit has been established, to take into account actual and potential adverse effects, including cumulative adverse effects of the proposal in combination with any existing authorised takes, on:*

- (a) natural character of the water body and its margins;*
- (c) cultural and spiritual, amenity and recreational values;*
- (d) aquatic habitat, including plants and animals;*
- (f) hydrological regime of the water body;*
- (g) capacity to dilute contaminants;*
- (h) uses and values identified in Schedule 30.1;*

30.1.18 *To avoid, remedy or mitigate adverse effects of diversion of water, including*

- (c) hydroelectric power generation*

taking into account effects of the diversion on:

- (i) uses and values of water bodies identified in Schedule 30.1;*
- (ii) fish and eel passage;*
- (iii) actual or potential risks of flooding or erosion;*
- (iv) actual or potential impact on river sediment and gravel transport processes;*
- (v) water quality;*
- (vi) aquatic and riparian ecosystems, including wetlands and habitats for indigenous vegetation or fauna;*

370. We consider that the taking of water from the outlet of Lake Matiri will not be contrary to this objective and these policies as it will be discharged back into the river below the powerhouse. This will largely avoid the effects specified in the provisions above. As stated elsewhere the effects on kayaking and other recreational users are considered to be minor. Evidence has shown that the life-supporting capacity of the water will not be compromised, and fish passage is provided for.

371. There will be some loss of natural character in the Matiri River at times when the power station is generating as the flow in the upper reach (between the lake and the powerhouse) is likely to be

noticeably lower. Apart from sweeping bend however this section of the river is difficult to access, and in our experience is impressive even in very low flow conditions.

Chapter 33 –Discharges to Land and Freshwater

372. The relevant objectives and policies from Chapter 33 are:

Objective 33.1.0

The discharge of contaminants in such a way that avoids, remedies, or mitigates adverse effects while maintaining existing water quality ...

Policies

- 33.1.2 *To avoid, remedy, or mitigate the adverse effects of discharges of contaminants so that both individually and cumulatively with the effects of other contaminant discharges, they enable the relevant water quality classification standards to be complied with.*
- 33.1.5 *To ensure that existing water quality is not degraded after reasonable mixing as a result of any discharge of contaminants into water and to take into account the following criteria when determining what constitutes reasonable mixing:*
- (a) *The depth, width and flow characteristics of the receiving water body, including the nature and extent of mixing which may occur and the assimilative capacity of the water.*
 - (b) *The extent of the mixing zone and the likely adverse effects on aquatic life or ecosystems within the mixing zone.*
 - (c) *The characteristics of the discharge, including the presence of toxic constituents.*
 - (d) *The community (public) uses and values of the water or any mixing zone including those specified in the plan, any water conservation order or water classification for any water body.*
- 33.1.6 *To take into account the following factors in determining the significance of actual or likely adverse effects on the receiving water of or from contaminant discharges:*
- (a) *Any water classification given in any schedule to Chapter 36 or water conservation order.*
 - (b) *Existing water quality of the receiving water.*
 - (c) *The significance or sensitivity of the aquatic life or ecosystem.*
 - (d) *The extent of the water body adversely affected.*
 - (e) *The magnitude, time of year, frequency and duration of the adverse effect(s), including any cumulative effects as a result of the discharge.*
 - (f) *The range and intensity of uses and values of the water body.*
 - (g) *The conflicts between uses and values of the water body.*
 - (h) *The nature of the risks of adverse effect(s).*
 - (i) *Any relevant national or international water quality guidelines or standards, or water conservation order.*
- 33.1.8 *To avoid, remedy or mitigate the adverse effects of non-point source contamination arising from land use and discharge activities by a mixture of methods including regulation of discharge activities, and particularly through advocacy of best management practices; and to review the mixture of methods used if environmental monitoring shows that water quality standards are not being maintained.*

Objective 33.3.0

Stormwater discharges that avoid, remedy or mitigate the actual and potential adverse effects of downstream stormwater inundation, erosion and water contamination.

Policies

- 33.3.2 *To advocate works to restore and protect stream or coastal habitats and improve and protect water quality affected by stormwater and drainage water discharges.*
- 33.3.4 *To avoid, remedy or mitigate the potential for flooding, erosion and sedimentation arising from stormwater run off.*
- 33.3.5 *To avoid, remedy or mitigate the adverse effects of stormwater on water quality and the potential for contamination.*

373. The applicant will be required to develop a Construction Management Plan that will have an objective of minimising the adverse effects of any sediment discharges. There are well established means of controlling sediment and other contaminants in any discharges from the construction sites, so we are satisfied that these objectives and associated policies can be met.

1.1.31 Other Matters

The New Zealand Energy Strategy (NZES) and the New Zealand Energy Efficiency and Conservation Strategy (NZECS)

374. In October 2007 the Government released two policies which together outline the government's policy direction on renewable energy:

- New Zealand Energy Strategy to 2050, entitled 'Powering our Future — Towards a Sustainable Low Emissions Energy System (NZES).
- New Zealand Energy Efficiency and Conservation Strategy, entitled 'Making it Happen — Action plan to maximise energy efficiency and renewable energy (NZECS).

375. The NZES states (at page 17): *For the foreseeable future, it is preferable that all new electricity generation is renewable, except to the extent necessary to maintain security of supply.* The strategy requires 90 per cent of electricity to be generated from renewable sources by 2025 (based on an average hydrological year). The strategy states that to achieve this target will require investment in a diverse range of renewable generation projects, including small-scale and distributed generation.

376. The NZES does however recognise the need to balance the climate change benefits of increasing renewable energy against the potential impact on the local environment and states "*All forms of energy generation have some adverse environmental effects. Proposals with unacceptable adverse effects should not proceed, but our commitment to a renewable electricity target requires a substantial increase in renewable capacity overall.*"

377. The NZECS focuses primarily on methods to achieve the NZES. Initiatives listed include the preparation of a National Policy Statement for Renewable Energy, and improving security of supply to rural areas.

378. Government policy emphasises the commissioning of new renewable generation. The proposed Mairi hydropower scheme is clearly consistent with both the NZES and the NZECS.

The Proposed National Policy Statement for Renewable Energy Generation

379. This proposed National Policy Statement (NPS), which was released in September 2008, codifies the thrust of the NZES into a future statutory instrument under the Act. Its objective is to promote the development, upgrading, maintenance and operation of new and existing renewable electricity generation activities such that 90% of New Zealand's energy will be generated from renewable resources by 2025 (based on delivered electricity in an average hydrological year). Benefits are seen to include maintaining or increasing generation capacity while offsetting greenhouse gas emissions, and maintaining or increasing security of supply by diversifying the type and/or location of electricity generation.

380. We do not have to take account of the proposed NPS as it has no status as a statutory instrument – this has to wait until after the Board of Inquiry hears submissions, makes decisions, and the NPS is gazetted. But by way of comment only we observe that just as the present applications are consistent with the NZES and NZECS, they are also largely consistent with the proposed NPS.

1.1.32 Section 105

381. As several of the applications before us are for discharges to the environment, regard must be had to the criteria in Section 105(1) of the Act, which are

- (a) *"the nature of the discharge and the sensitivity of the receiving environment to adverse effects;*

- (b) *the applicant's reasons for the proposed choice; and*
- (c) *any possible alternative methods of discharge, including discharge into any other receiving environment”.*

382. Case law requires the consent authority to find whether, in proposing a discharge of contaminants, the applicant has given adequate consideration to alternatives that would avoid, remedy or mitigate the effects of the discharge of contaminants, and then made a reasoned choice.

383. We certainly consider that this is the case for the present applications. Discharges to water during scheme construction cannot be avoided, and cannot realistically go to any other receiving environment. But what we have done is ensure that effects are mitigated to the greatest extent reasonable so that any adverse effects of these discharges upon the local environment are minimised.

1.1.33 Section 107

384. Section 107 of the Act requires that any permit to discharge to water meets particular standards after reasonable mixing, unless one or more of three exemption tests specified in Section 107 (2) can be met. One of those standards is that a discharge has no conspicuous effect on colour or clarity after reasonable mixing.

385. One of the three exemption tests is that the discharge be only temporary. This is the case for consents issued to discharge to water during the construction phase of the scheme. Furthermore, we consider that in this high energy environment where large fresh and flood flows occur, any build-ups of fine sediment from the construction phase will be regularly flushed downstream.

9 Part 2 of the Act

1.1.34 Section 6

386. Section 6 lists seven matters of national importance that must be recognised and provided for in our decision on these applications.

387. Section 6(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:* The matters relating to Section 6(a), and natural character in particular, have been examined when considering the key issues above. We have concluded that the natural character of the area will not be unduly compromised by this proposal.

388. Section 6(b) *The protection of outstanding natural features and landscapes from inappropriate subdivision, use and development:* The Buller Water Conservation Order protects Lake Matiri and the Matiri River upstream of the Lake as it is considered to have outstanding values. The Matiri River downstream of the lake was not found to have outstanding values in its own right. In this context we do not consider the limited use and development of the outlets to the river and the upper river to constitute inappropriate use or development.

389. Section 6(c) *The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:* We have considered these matters previously in this decision. We note that the applicant has endeavoured to minimise the number of valuable trees that need to be removed along the penstock route.

390. We were advised by Mr Kusabs for the applicant that he considered the ribbonwood/coprosma woodland on the margins of the lake to be significant. Subject to conditions, we are satisfied that the effects, should they occur, can be remedied by revegetation and enhancement at a slightly higher level to ensure the survival of the stand.

391. The significant habitats of indigenous fauna include Lake Matiri, for its populations of native fish, paradise shelduck and the mussel *Hyridella*. The outstanding fisheries values of Lake Matiri will be retained by providing elver passage to the lake. We are satisfied that there will be no significant adverse effects on the *Hyridella* population, and shelduck will be protected by avoiding works during the moulting season. Accordingly, we are satisfied that conditions imposed on the consents granted protect these habitats.

392. Section 6(d) *The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers*: We have discussed matters relating to public access in some detail above. Granting the consents on the conditions we have imposed has significant benefits for public access, particularly via the upgraded road and the footbridge over the West Branch of the Matiri River. These are significant positive features of the proposal.

393. There are three other clauses in Section 6. These relate to the culture and traditions of Maori, historic heritage and customary activities. We heard no evidence on these matters, nor were they raised in submissions.

1.1.35 Section 7

394. This section of the Act lists 11 matters that we must have particular regard to. Two of those matters – kaitiakitanga and the ethic of stewardship – have we think no relevance to this decision. We address the others in turn.

395. Section 7(b) requires that we have particular regard to *the efficient use and development of natural and physical resources*. The current applications do promote the efficient use of the physical resource provided by the flows in the Matiri River. They also use efficiently the existing earthquake caused “damming” of the river, and the limited storage available and able to be utilised in the lake. This means that the scheme will often be able to generate most power at the times of peak demand, which is also an efficient use of the water resource.

396. Section 7(ba) refers to *the efficiency of the end use of energy*. This has some small relevance to the present applications in so far that electricity is lost in transmission, and so transmitting energy over long distances is not very efficient. This is because it is likely that most of the energy generated by the proposed scheme will be used locally (noting that this was a matter that we heard no substantive evidence on). If local supply is the predominant end use, then this will be more efficient than transmitting that electricity over long distances to the Murchison district.

397. Section 7(c) of the Act requires that we have particular regard to *the maintenance and enhancement of amenity values*. These are defined in the Act as *those natural or physical qualities and characteristics of an area that contribute to people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes*. Similarly s7(f) requires that we have particular regard to the *maintenance and enhancement the quality of the environment*.

398. The construction and operation of the scheme will lead to some loss of amenity in what is presently a relatively remote location. The power station and tailrace will be visible from the walking access track to Lake Matiri, as will sections of the penstocks, most notably at the “sweeping bend”. Modifications to Outlet 1 are also likely to be visible to visitors who explore the area a little. We also think most people who visit the area would perceive that there had been some decline in amenity values due to the same visible structures. We accept that others would find the structures, despite being unnatural, add interest, especially given the general awareness of the importance of renewable energy to the country. Over time, regrowth of vegetation, weathering of the weirs, and the growth of moss and lichen on the structures will cause them to be increasingly absorbed into the landscape. The level of impact on the amenity will decline with this integration.

399. For the kayakers and anglers whose recreational amenity must also be considered under Section 7(c) we consider the improved access and access to real-time flow data will offset any minor changes in flow patterns caused by the operation of the scheme.

400. The intrinsic values of ecosystems (Section 7(d) of the Act) are defined as *“meaning those aspects of ecosystems and their constituent parts which have a value in their own right, including their biological and genetic diversity and their essential characteristics that determine an ecosystem’s integrity, form, functioning and habitat”*. Case law does not give a great deal of guidance as to how this is to be interpreted.

401. The conditions on which consent is granted will allow the ecosystem values provided by Lake Matiri and the Matiri River to be perpetuated. Here we particularly refer to the aquatic macrophyte and waterfowl communities of the lake, and the native fish habitat and passage provided by the river below the outlet weirs.

402. Section 7(g) of the Act requires that we have particular regard *to any finite characteristics of natural and physical resources*. Construction of the scheme and ancillary works will require significant volumes of gravel to make concrete. There is ample gravel nearby to provide for this, and it is matter covered by conditions of consent. As we have previously stated, the water to be used for electricity generation is not finite and is renewable, at least until the time in several hundred years when the lake becomes infilled with sediment.
403. Section 7(h) of the act requires us to have particular regard to the habitat of trout. Mr Deans told us that in the reach between the sweeping bend and the power house the trout population would likely be significantly affected by the low flow regime. But he said that this reach represents a minor proportion of the total length of the Matiri River. We also note that according to other witnesses trout numbers in this reach of the river are low. He stated that the greater concern is the effect of varying flows downstream below the power station on brown trout habitat and angler safety. Overall Mr Deans did not oppose the application and sought that monitoring of trout populations be undertaken.
404. The remainder of Section 7 of the Act requires us to consider the effects of climate change and the benefits of renewable energy. These matters have been adequately covered in Paragraphs 336 to 343 and 374 to 380 above.

1.1.36 Section 8

405. We heard no evidence that the current applications are contrary to the Principles of the Treaty of Waitangi.

1.1.37 Section 5

406. Section 5 of the Act defines sustainable management, which is the purpose of the Act. Case law requires that we make a “broad overall judgement” as to whether the applications before us for a new hydropower scheme on the Matiri River will promote the sustainable management of natural and physical resources. In this regard Section 5 of the Act is paramount.
407. Relevant to this decision, Section 5(1) enables *the use, development and protection of natural and physical resources in a way, or at a rate, which enables communities to provide for their social, economic, and cultural wellbeing and for their health and safety...*
408. We think the current applications readily meet this test. The scheme will provide social and economic benefits to the local district and, to a small extent, the nation, and will use an infinitely renewable resource in doing so. There are no significant issues with the safety of the proposed structures as they are only weirs that will not substantially impede flood flows.
409. Section 5(2)(a) requires that the potential of natural and physical resources is sustained to meet the reasonably foreseeable needs of future generations.
410. We consider that the current applications meet that test. As they use a sustainable natural resource – water – the potential of that resource is retained, and used efficiently by the proposed scheme. As the Environment Court has said there can be no sustainable management of natural and physical resources without the provision of energy, of which electricity is a vital part.¹⁶
411. Section 5(2)(b) of the Act requires that, in order to promote sustainable management, *the life supporting capacity of air, water, soil and ecosystems* must be safeguarded.
412. We are satisfied that is the case. The evidence is that the proposed scheme will have minimal if any effects on riparian vegetation alongside Lake Matiri, and minimal effects on aquatic macrophytes in the lake. Native fish passage will be maintained in the Matiri River below the weirs. The maintenance of a residual flow in the river between the outlets and the tailrace discharge will help protect habitat downstream of the tailrace. Although the river between the outlet and the tailrace discharge provides potential blue duck habitat, there was no evidence of blue ducks being recorded in that reach. If they are present, we are satisfied that the residual flows will protect the potential of that habitat for blue duck.

¹⁶ Genesis Power Limited v Franklin DC. A148/05, 2005. NZRMA 541.

413. An important component of the life-supporting capacity of the river and lake ecosystems, as well as a requirement under the WCO is the provision of fish passage. The critical points in this regard are the passage over the weirs and the maintenance of flows down the steep bouldery reach of river to the point where seepage flows emerge. We are satisfied that the conditions that have been volunteered by the applicant, and which we have imposed will suitably avoid any adverse effects on fish passage to the lake.
414. The third part of the second limb of Section 5 requires that adverse effects of activities be avoided, remedied or mitigated.
415. As detailed elsewhere in this decision the proposed scheme has several adverse effects that cannot be avoided. These primarily occur during construction and include short-term effects on water quality, some effects on amenity and native vegetation which will decline over time, and a longer term effect on natural character due to the existence of structures in a natural location. However we consider that these effects can be mitigated by the conditions we have imposed on the consents granted. Further, they are offset by the provision of renewable energy, and the positive effects of enhancing public access to the Matiri River, Lake Matiri and the Kahurangi National Park.
416. Having considered all the relevant matters under s104 and Part 2 of the Act, we have concluded that the present applications do broadly promote the sustainable management of natural and physical resources consistent with Section 5, and accordingly we have decided that the consents sought can be granted.

10 Decision

417. Pursuant to Section 104B of the Act, the Commissioners **GRANT** consents subject to conditions.
418. The document identifying the consents granted and the conditions (pursuant to Section 108 of the Act) is set out as below this decision.

11 Term

419. The applicant sought a term of 35 years for all the consents they lodged, apart from the land use consent, which by default is granted without an expiry date.
420. Mr Tyson advocated to us that the water and discharge permits should be granted with an expiry date of 31 May 2020. This is the common expiry date for permits in the Upper Buller catchment in Schedule 31.1A of the TRMP. Mr Tyson noted that any replacement consents at this time would be considered as “renewals” under the Plan and are controlled activities, which he said gives “significant certainty to consent holders”.
421. In her right of reply Ms Goodall responded by saying:
- Even though “renewals” are controlled activities, the conditions of consent could be changed. This does not provide sufficient security for the applicant, as a new power scheme takes a long time to provide a return on investment.
 - The consent holder would incur substantial expenses in preparing and promoting new consent applications.
 - The shorter term is not consistent with case law, particularly *Genesis Power Ltd v Manawatu-Wanganui Regional Council*, where the High Court overturned the 10-year consent duration for consents associated with the Tongariro Power Development by the Environment Court.¹⁷
 - The policy cited by Mr Tyson is not a directive. It requires that the policy be considered, and that “where appropriate” the common expiry date be imposed.
422. Having considered the policy we agree with the applicant that the consents for the operation of the scheme should be granted for a term of 35 years. We have five main reasons for this:

¹⁷ 2006, NZRMA 535. The decision of the High Court was in June 2009 upheld by the majority of Judges on the bench of the Court of Appeal. Their decision has since been appealed to the Supreme Court

- The 35-year term is consistent with case law.
- Importantly, the effects of the scheme once constructed, will be for all intents and purposes be no different in 2020 to what they are in 2030 or 2040. In the event that effects are of greater magnitude than asserted by the applicant, then the consent can be reviewed. But we see no good reason to put the applicant through the cost and uncertainty of a further consent process when the effects of the scheme will by that time be quite constant.
- We accept the argument that investment certainty will be a significant factor in the applicant securing funds for this project.
- There are no other likely discharges to, or takes or uses of the Matiri River that would be compromised by the granting of these consents.
- Flows in the Buller River are protected by the WCO. The consents we have granted are consistent with that order. As those flows are considered appropriate to protect outstanding characteristics and features, it seems unlikely that the TDC would consider it necessary to raise those flows in the Buller River in any review of the TRMP.

12 Monitoring

423. Given that we have granted the consents sought for the maximum possible term of 35 years, it is important that the applicant undertake sufficient monitoring to ensure that the effects of the scheme are appropriately avoided or mitigated by the conditions on which consent is granted.
424. The extent, frequency and duration of the monitoring to be undertaken were often points of disagreement between the officers and the applicant. In most, but not all cases, we have agreed more with the officers. Examples include continuous sampling of turbidity during construction, and a requirement to measure water levels at a bridge downstream of the tailrace discharge to enable the effects of the ramping rate to be assessed.
425. The applicant often proposed that biological monitoring take place for three years after commissioning of the scheme, and then cease. That would mean no biological monitoring takes place for 32 years, which is not acceptable resource management practice. Any longer term effects of the scheme need to be understood, and this information is also very important to the consent holder for consent "renewal" purposes. We have required that such monitoring be repeated at intervals of five years for the duration of the consent. If this proves to be unnecessary at some time in the distant future, the consent holder is able to apply to vary the conditions of consent.

Issued this 7th day of October 2009



Dr Brent Cowie
Chair of Panel of Independent Commissioners



RESOURCE CONSENT DECISION

Resource Consent Numbers and activities:

- RM060937 To remove vegetation and to undertake earthworks for the purposes of constructing and maintaining the Matiri hydroelectric power scheme.
- RM060938 To undertake works in and on the beds of Lake Matiri and the Matiri River for the purposes of constructing and maintain the Matiri hydroelectric power scheme.
- RM060939 To dam Lake Matiri for the purposes of hydroelectric power generation behind three weir structures.
- RM060940 To take surface water and storage from Lake Matiri and use water for the purpose of hydroelectric power generation.
- RM060941 To discharge water to water from the Matiri hydroelectric power station.
- RM060942 To construct and operate a power station within the Rural 2 zone and for construction of a new section of transmission line.
- RM090023 To discharge mineral debris and associated water from the dam sluice gate.

Pursuant to Section 104B of the Resource Management Act 1991 (“the Act”), resource consent for the above activities is hereby granted to:

New Zealand Energy Limited
(hereinafter referred to as “the consent holder”)

Location Details:

Address of property: Matiri Valley, Murchison
 Valuation number: Crown land, 1918001001, 1918000300
 Legal Description: Sec 1 SO 15298, Crown Land Block V (under action) Matiri Survey District, Sec 2 Blk IX Matiri SD, Sec 1, 2 and 3 Blk V Matiri SD, the bed of the Matiri River, the bed of the west branch of the Matiri River, the Matiri West Bank Road.

Pursuant to Section 108 of the Act these consents are granted subject to the following conditions:

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13 CONDITIONS IMPOSED ON ALL CONSENTS:

1.1.38 General

1. This proposal shall proceed in accordance with the Application dated June 2008 and further information and evidence provided prior to and during the course of the hearing. Notwithstanding this, if there are inconsistencies between the information and evidence provided, and the conditions of the consents, then the conditions shall prevail.

1.1.39 Expiry and Lapsing

2. All resource consents are granted for a term of 35 years from the date that the consents become effective, except RM060942 (land use consent), which has no expiry date.

Advice Note:

The “date the consent becomes effective” is the date at which all appeals have been settled and the consent holder is free to give effect to its consents.

3. All substantive works authorised by RM060937 and RM060938 shall be completed within five years of obtaining a concession from the Department of Conservation and, in any case, within 15 years of these consents becoming effective.
4. These consents shall lapse after 15 years from the date that these consents become effective.

1.1.40 Review

5. The Council may, at any time within the first year of the consent holder giving effect to the consent and during the month of April each year thereafter, give notice of its intention to review any or all of the conditions of these consents pursuant to Section 128 of the Act for all or any of the following purposes:
 - a. to deal with any adverse effect on the environment which may arise from the exercise of the consent that was not foreseen at the time of granting of the consent, and which is therefore more appropriate to deal with at a later stage;
 - b. to deal with inaccuracies contained in the consent application that materially influenced the decision made on the application and are such that it is necessary to apply more appropriate conditions;
 - c. to adjust residual and connectivity flow requirements if it is found that the existing conditions do not adequately provide for fish passage to the lake;
 - d. to require the consent holder to adopt the best practical option to remove or reduce any adverse effects on the environment resulting from the discharge;
 - e. to assess the appropriateness of imposed compliance standards, monitoring regimes and monitoring frequencies;
 - f. to review the frequency of sampling and/or number of determinands analysed if the results indicate that this is required and/or appropriate;
 - g. to review the reporting requirements;

- h. to change any aspects of this consent following any event that causes the Emergency Action Plan to come into effect; and/or
- i. to require consistency with any relevant Regional Plan, District Plan, National Environmental Standard or Act of Parliament.

1.1.41 Financial Contribution

- 6. The consent holder shall, no later than the time of uplifting the building consent for the Power House, pay a financial contribution to the Council. The amount of the financial contribution shall be assessed as a percentage of the value of the building consent component in accordance with the following:

Financial Contribution – Building	
Component	Contribution
Building Consent (\$0 to \$50,000 value)	0%
Building Consent (\$50,001 to \$200,000 value)	0.5%
Building Consent (above \$200,001 value)	0.25%
Notes:	
<ul style="list-style-type: none"> 1. The financial contribution is GST inclusive. 2. The building consent value is GST exclusive. 3. The financial contribution is for reserves and community services where a development contribution has been required for infrastructure services under Council's Development Contributions Policy in its Long Term Council Community Plan prepared under the Local Government Act. Where this has not been required, the financial contribution is double the percentage contribution shown in the figure and is divided evenly between infrastructure services and reserves and community services. 4. The contribution due on a building should be identified separately from other contributions set for any resource consent for an activity that includes buildings. 	

1.1.42 Bonds

- 7. The consent holder shall provide a performance bond of \$10,000.00 to cover maintenance of roads and services to vest in Council. The bond is to be paid when engineering plans are submitted to Council under Condition 43, and shall be retained for a period from that date until the new road reserve has been vested in Council.
- 8. The consent holder shall enter into and provide a bond of a minimum of \$250,000 to cover the Council should the Matiri Hydro Scheme (MHS) fail for any reason including total or partial abandonment or inadequate decommissioning with the bond secured prior to commencing any construction work.
- 9. The consent holder shall enter into an earthworks bond with a financial institution of good repute to be provided as surety to the satisfaction of the Council. The purpose of the bond is:
 - a. To secure the performance of all of the conditions of resource consent RM060937; and
 - b. To ensure the remediation of the adverse effects on the environment arising from the exercise of resource consent RM060937.

The earthworks bond shall be in the sum of NZ\$100,000 + GST (adjusted annually to reflect changes in the Construction Code Index).

The consent holder and the surety remain liable under the bond for any adverse effects on the environment arising from the exercise of the resource consent which may become apparent either during or after the expiry of the consent;

The term of the earthworks bond shall continue until:

- a. One year after the power station has been operating; or
- b. The consent holder has complied with all of the terms and conditions of the resource consent related to earthworks.

The bond is to be secured before this consent may be exercised.

10. The form of any bond is to be prepared by the Council's Solicitors and the consent holder is to pay the Council's reasonable legal costs (not to exceed \$1,000.00 per bond document) on preparation and execution of the bond.
11. If the consent is transferred in part or whole to another party or person, the bond or bonds (in the event that there is more than one) shall continue until any outstanding work at the date of transfer is completed to ensure compliance with the conditions of this consent, unless the Council is satisfied adequate provisions have been made to transfer the liability to the new consent holder.
12. In the event of any such transfer of the consent, the consent holder shall ensure that the transferor forthwith provides a replacement bond or bonds to the Council on the terms required by the Bond/s Conditions.

1.1.43 Commencement of Consent

13. The consent holder shall inform the Council's Coordinator Compliance Monitoring at least 24 hours prior to commencing each major stage of works. The major stages include but are not limited to:
 - a. the construction and upgrade of the access road to the west branch of the Matiri River;
 - b. the opening of any of the quarry pits;
 - c. the construction of the power house;
 - d. the construction of the transmission lines;
 - e. the placement of the Baigent Bridge over the west branch;
 - f. the tracking up to the weir sites;
 - g. construction of cofferdams in the bed of Lake Matiri;
 - h. the construction of the weirs;
 - i. the construction of the penstock; and
 - j. any construction works or works in the bed of the river at sweeping bend.

1.1.44 Landscape Management Plan

14. At least 10 working days prior to undertaking any activities authorised by these consents the consent holder shall submit to the Council's Coordinator Compliance Monitoring a Landscape Management Plan (LMP) prepared by a member of the New Zealand Institute of Landscape Architects. This plan shall address the integration of the following development features into the existing landscape character of the area subject to the specified objectives/outcomes specified below:
 - a. Track A north of the point identified as "locked gate" on Tasman Carter Ltd TCL Sheet 4A 6.6.08 and including Track B, C, D and E;
 - b. the car park at the end of Track A;
 - c. the walking track for any section within which it is realigned from its current location;
 - d. the power station building, switchyard and associated earthworks;
 - e. the 3 weirs and all associated structures;
 - f. the control hut, the penstock and associated earthworks for any section that is above the ground; and

- g. the incorporation of interpretation panels or access where appropriate to the workings of the power station.
15. The LMP shall, in the professional opinion of the member of the New Zealand Institute of Landscape Architects engaged to write the Plan, achieve the following outcomes:
- a. The natural character and wild and scenic values of the lake and river shall be maintained except that following construction, the structures described in the application and further information provided will exist;
 - b. minimise earthworks;
 - c. complete earthworks remediation within six months of commissioning the power station;
 - d. completed earthworks to mimic adjacent natural landforms;
 - e. earthworks will achieve a smooth transition from modified to unmodified areas;
 - f. earthworks to preserve existing hydrological patterns;
 - g. all structures are designed and constructed so as to recessively blend as much as is reasonably possible with the surrounding landscape;
 - h. minimise as much as is reasonably possible the visibility of structures from Lake Matiri;
 - i. retain existing native vegetation patterns; and
 - j. Improve recreational opportunities.

Advice Note:

The general location of Tracks A, B, C, D and E, the car park at the end of track A and the power station is indicated on attached Annexure A. The location of these items is more precisely shown on sheets prepared by Tasman Carter Limited attached and labelled Annexure B.

1.1.45 Engineering Works, Services, Supervision, and Plans

- 16. Unless otherwise authorised by Conditions 41 to 45 inclusive of this consent, all works undertaken and services, plans and bonds which relate to work on road reserve or public land or which are to be vested with the Council shall be in accordance with the Council's Engineering Standards and Policies 2008 or to the Engineering Manager's satisfaction.
- 17. The consent holder shall appoint a representative prior to the exercise of this resource consent, who shall be the Council's principal contact person(s) in regard to matters relating to this resource consent. At least 20 working days prior to beginning the works authorised by this consent, the consent holder shall inform the Council's Coordinator Compliance Monitoring of the representative's name and how they can be contacted within the works period. Should that person(s) change during the term of this resource consent, the consent holder shall immediately inform the Council's Coordinator Compliance Monitoring and shall also give written notice to the Coordinator of the name/s of the new representative(s) name and how that/those persons can be contacted.
- 18. The consent holder shall be responsible for all contracted operations relating to the exercise of this resource consent, and shall ensure that all personnel working on the site are made aware of the conditions of this resource consent and with the appropriate management plans governing the different aspects of the works. The consent holder shall also ensure that all contracted personnel comply with all consent conditions.
- 19. A copy of this resource consent shall be available to contractors undertaking the works, and shall be produced without unreasonable delay upon request from a servant or agent of the Council.
- 20. The consent holder shall ensure that all sites are left in a neat and tidy condition following the completion of the works.

21. Any non-compliance shall be reported to the Council's Coordinator Compliance Monitoring within 72 hours of the event occurring unless a condition requires a different reporting timeframe.
22. Within three months of the completion of the upgrade of the access road to the west branch a complete set of "as-built" plans of the road and all associated engineering works (culverts, batters etc.) shall be provided to the Council's Engineering Manager.
23. Within six months of the commissioning of the power station a complete set of "as-built" plans shall be provided to the Council's Coordinator Compliance Monitoring for the weirs structures (including intake, fish passes, sluice gate etc), penstock, sweeping bend construction, power house, tail race and any other relevant engineering work.

1.1.46 Annual Report

24. The consent holder shall prepare an annual report which shall include, as a minimum, the following:
 - a. Quarry Management:
 - i. the amounts of gravel extracted from the gravel quarry pits;
 - ii. the area of exposed surface within the gravel quarry pits;
 - iii. all land rehabilitation work undertaken in the preceding year;
 - iv. pest control work undertaken in the preceding year;
 - v. vegetation monitoring work undertaken in the preceding year;
 - vi. an assessment of the level of land rehabilitation progress to date;
 - b. Pest Control and Land Rehabilitation:
 - i. an assessment of the level of compliance achieved with the Pest Control and Land Rehabilitation Plan;
 - c. Waterbody Monitoring:
 - i. a summary of the monitoring required by Condition 125 and the results of any such monitoring;
 - ii. an analysis of that information in relation to compliance with all scheme related consents;
 - iii. a comparison of the monitoring information with that from previous reporting periods to identify any trends in effects, particularly in relation to aquatic ecosystems in Lake Matiri and the Matiri River. Such trend analysis shall be based on all monitoring data collected including information provided in the Assessment of Environmental Effects or elsewhere;
 - iv. in the event of a result which does not comply with conditions in the consent a detailed description of reasons why this may have occurred and every corrective action taken to avoid any subsequent non-compliance or further monitoring to determine reasons for the non-compliance;
 - v. any recommendations regarding alterations to the monitoring and reporting conditions attaching to the consents;
 - vi. any other issues considered important by the consent holder;
 - vii. all calibration and monitoring equipment and maintenance records as well as quality control samples such as duplicates (to be appended);
 - d. Operation and Maintenance:

- i. an outline of the maintenance schedules for the current year together with an outline of any other such works that are proposed to be undertaken during the following 18 months to improve environmental or safety performance;
 - ii. the results of any operational review, review of any Management Plan or review of the Emergency Action Plan;
 - iii. a summary of the rates of water taken or discharged for power generation;
 - iv. summarised hydrological data including data from the monitoring sites (see Conditions 162 to 164) and take and discharge records (see Condition 160). The data shall be presented in an appropriate time series graph(s);
 - v. on all occasions when the residual flow was reduced in accordance with Condition 155 to 157 due to declining lake levels this shall be documented along with all relevant data and calculations showing the decline in the lake inflows and the corresponding reduction in residual flow release;
 - vi. a description of any instances when the connectivity flow or fish pass flow was discontinued in accordance with the conditions of these consents;
 - vii. a record of each opening of the sluice gate, and the reasons for and success or otherwise of the use of the gate;
 - viii. a statement of the condition of the weirs, penstocks, powerhouse, tailrace and other supporting structures such as the road and armouring around the sweeping bend and other tracking, following an annual inspection;
- e. Public Relations:
- i. the details of any entries in the complaints register (see Condition 26) and a summary of any action taken by the consent holder in response to all complaints received; and
 - ii. any comments on the success or otherwise of the collection and publishing of river level data on a publicly accessible website.

25. The Annual Report shall be submitted to the Council's Coordinator Compliance Monitoring by 1 July of each year. The report shall cover the preceding period 1 May – 30 April.

1.1.47 Complaints Register

26. The consent holder shall maintain and keep a complaints register to record all complaints received by the consent holder (or any of its contactors) about any activities that arise out of the exercise of these consents including, but not limited to, in relation to: the degradation of water quality; adverse effects on aquatic ecosystems or wildlife; the impedance of public access to or along watercourses and/or the safety of any structures or operational practices. The register shall record;

- a. the name of the complainant;
- b. the location of the complainant when the incident was detected, and the subject matter of the complaint;
- c. the date, time and duration of the incident or matter that resulted in the complaint;
- d. the likely or possible cause or causes of the incident (if known);
- e. the nature of any corrective action undertaken by the consent holder in response to the complaint.

27. The register shall be available to the Council on working days.

28. Complaints received by the consent holder that indicate non-compliance with the conditions of this resource consent shall be forwarded to the Council's Coordinator Compliance Monitoring within 48 hours of receipt.

1.1.48 Insurance Cover

29. The consent holder shall obtain, and provide evidence of, a minimum \$2 million public liability insurance cover to Council before commencing work and shall maintain this cover throughout the life of the MHS and produce evidence of cover on request.

14 CONDITIONS ON RM060942 (land use)

1.1.49 Control Shed

30. The exterior of the control shed building of approximately 4.32 m² (1.8 metres x 2.4 metres) and the powerhouse building and the penstock pipeline shall all be finished in colours that are recessive and which blend in with the immediate environment.

Advice Note:

The consent holder should engage the services of a professional landscape architect to ensure the exterior cladding and colour selection are compatible with the long term durability of the building material in the subject environment.

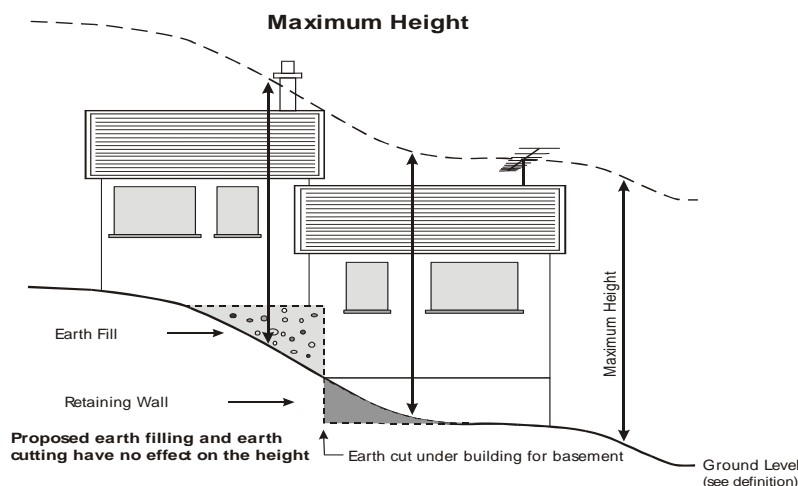
1.1.50 Power House Building

31. The power house building shall be approximately 100 square metres in floor area and shall not exceed 4.5 metres in height and shall be in general accordance with Annexure C (attached). The power house building and associated security fencing to be located at or about M29 538474 and as shown on Annexure B – Sheet 3A attached to this consent.
32. The building height shall be measured in accordance with the following TRMP definition:

“Height – in relation to a building, means the vertical distance between ground level at any point and the highest part of the building immediately above that point. For the purpose of calculating height, account is taken of parapets, but not of:

a) radio and television aerials, provided that the maximum height normally permitted by the rules for the zone is not exceeded by more than 2.5 metres;

b) chimneys (not exceeding 1.1 metres in any direction); or finials, provided that the maximum height normally permitted by the rules for the zone is not exceeded by more than 1.5 metres.



Advice Note:

The 4.5 metre height was volunteered by the applicant

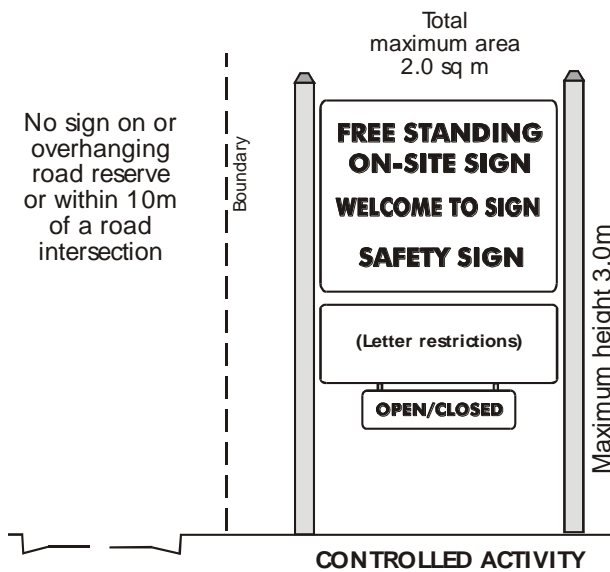
1.1.51 Signs

33. Permanent signs shall be erected in accordance with the documentation submitted with part 6.6 of the Application.

Advice Note:

For clarification it is noted that the Application proposed:

- a. a single free standing sign in accordance with figure 16.1c Controlled Activity sign at the proposed car park giving information on access and safety. This sign should also include the website on which real time river level information for the Matiri can be viewed;
- b. a single 1 m² interpretative and warning sign attached to, and to blend in with, the power house building;
- c. red and white warning signs (each being less than 1 m²) attached to the power house security fence; and
- d. a single 1 m² free standing information and warning sign near the penstock intake.



1.1.52 Noise

34. Noise generated by the activity, when measured at or within the notional boundary of any dwelling in a Rural Zone (other than any dwelling on the site from which the noise is being generated) shall not exceed:

	Day	Night
L ₁₀	55 dBA	40 dBA
L _{Max}	70 dBA	

Day = 7.00 am to 9.00 pm Monday to Friday inclusive and 7.00 am to 6.00 pm Saturday (but excluding public holidays).

Night = All other times, plus public holidays.

35. Noise must be measured and assessed in accordance with the provisions of NZS 6801:1991, Measurement of Sound and NZS 6802:1991, Assessment of Environmental Sound.

1.1.53 Power House and Transmission Line Electromagnetic Fields

36. The Power House shall be designed and constructed to meet the occupational guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998 and recommended by the National Radiation Laboratory, a unit of the New Zealand Ministry of Health (refer www.nrl.moh.govt.nz and also www.icnirp.org)
37. All Power Lines shall be designed to comply with the International Committee on Non-Ionising Radiation Protection Guidelines for limiting exposure to time varying magnetic fields (up to 300GHZ) (Health Physics, 1998 74(4): 494-552 ICNIRP Guidelines) and recommendations from the World Health Organisation monograph Environment Health Criteria (No. 238, June 2007) or revisions thereof and any applicable New Zealand standards or national environmental standards.

Advice Note:

This condition is essentially a standard requirement taken from Policy 9 of the National Policy Statement on Electricity Transmission.

1.1.54 Public Access /Compensation

38. Prior to any building consent being issued for the power house, a registered easement in gross in favour of the Crown, or alternative legal instrument in favour of the Crown, shall be created over the existing formed walking track on Sec 3 Blk V Matiri SD (NL9A/1079) from above the West Branch to the boundary of the conservation estate, where that walking track is no longer on marginal strip and also over the access maintenance road on sec 3 Blk V Matiri SD (NL9A/1079). The easements shall have a width of 6 metres and shall provide for unrestricted non-motorised public access, including mountain bike access, in perpetuity and in the event of river movement. The walking track easement shall maintain practical public walking access in the event of river movement.
39. The marginal strip and access track along the Matiri River from the West Branch to the northern most grazing area as indicated on Annexure A attached shall be fenced to exclude livestock.
40. The consent holder shall make the following contributions to the Department of Conservation:
- a. payment of \$20,000 including GST for riparian planting along the riparian strip of the Matiri River from the West Branch to the northern most grazed area;
 - b. in the event that the Department of Conservation either obtains a resource consent for a footbridge, or constructs a footbridge as a permitted activity across the West Branch Maitiri River, payment of \$30,000 including GST towards the development of a day visitor standard footbridge;
 - c. payment of \$5,000 including GST towards Department of Conservation signage in the area; and
 - d. provision for a one off supply and transportation of prepared aggregate for the upgrading of the Department of Conservation access track from the sweeping bend to the Lake Matiri Hut. The aggregate shall be of a suitable grade to be used for walking track formation and shall be in such quantity as is required to suitably upgrade the track over the specified section.

Advice Notes:

The consent holder will pay separately for any interpretative panels at the power station site.

Condition 40 is volunteered by the consent holder.

1.1.55 Extension to Matiri West Bank Road and car park development

41. The Matiri West Bank Road between 2454817E 5943396N and the parking area at the West Branch of the Matiri River, and the parking area itself, shall be upgraded to the following standard:
- a. A forestry standard road being 3.5 metre wide all weather gravel traffic lane road formed generally over the existing access track, and with 500 millimetre shoulders on both sides;
 - b. The typical structure of the road to be 200 millimetre deep sub base course, 100 millimetre deep base course with drainage and batter slopes to suit conditions;
 - c. design speed 20 kilometres per hour; and
 - d. A minimum of 10 car parks with an all weather finish.

Advice Note:

This standard is as described as option D (NZEL option) in paragraph 45 of the document "Response to questions asked V7" dated 4 March 2009 and provided to the Commissioners during the consent hearing.

42. In addition the following shall apply;
- a. no discharge of sediment to any water body that exceeds the standards specified in the Tasman Resource Management Plan unless a subsequent resource consent is obtained that authorises such a discharge. (Rule 36.2.4 is particularly relevant here;)
 - b. all cut and batter slopes to be stabilised with vegetation as soon as practicable after completion of earthworks;
 - c. all culverts shall be sized to at least pass a 2% Annual Exceedence Probability flood (1 in 50 year on average) before water overtops any roadway or track which the culvert passes under;
 - d. the inlet and outlet of all culverts is armoured as necessary to protect against erosion of the watercourse or undermining of the culvert structure; and
 - e. the culverts shall be constructed to allow fish passage both up and down stream except where fish values are demonstrably absent such as in a channel which only flows during rain events.
43. The extended road and car parking area for 10 car parks be surveyed by a Licensed Cadastral Surveyor and vested in the Council as Road reserve area with the road reserve having a minimum width of 12 metres.

1.1.56 Roding Engineering Plans

44. Prior to undertaking any of the works or installation of services required by Condition 41 (road and car parking construction) engineering plans and specifications shall be submitted to the Council. All road and car park construction works shall be undertaken in accordance with the plans.
45. The plans shall, as a minimum, outline the following:
- a. the design and specification of the formation of the road and car parking surface;
 - b. management of the construction and site works;
 - c. emergency and reporting procedures in the event that any of the standards in Condition 42.a are breached; and
 - d. provision for the clearance and disposal of vegetation and other construction waste.

15 CONDITIONS ON RM060937 (land use – earthworks) AND RM060938 (land use – disturb waterbodies)

1.1.57 Construction, Erosion and Sediment Management Plan (CESMP)

46. At least 20 working days prior to undertaking any activities authorised by these consents, the consent holder shall submit to the Council's Coordinator Compliance Monitoring the following:
- a. Construction, Erosion and Sediment Management Plan (CESMP); and
 - b. Quarrying Management Plan (QMP).
47. Works shall not commence before these Plans have been certified by the Council's Coordinator Compliance Monitoring. The Plans will be certified if the Coordinator is satisfied that they will meet the outcomes specified.
48. Either Management Plan may be amended as the consent holder considers appropriate during the period of these consents as long as the amendments do not constitute or cause a breach of any condition of these consents and the outcomes specified continue to be met. Any amendments shall be supplied to the Council's Coordinator Compliance Monitoring in writing as soon as possible after being made.
49. The CESMP shall be generally in accordance with the Conceptual Sediment Control Plan (July 2007) attached to the Application as Attachment 6. The CESMP shall also, as a minimum, contain the following:
- a. description and engineering design details of the works;
 - b. description of temporary activities and equipment storage in specified areas;
 - c. description of proposed construction programme including timetable, sequence of events and duration including any final land restoration;
 - d. description of construction methods and equipment to be used;
 - e. description of the methodology for assessing, salvaging and relocating *Hyridella* freshwater mussels within the drained area behind the cofferdam to elsewhere in the lake;
 - f. identification of sediment sources and potential impact during construction;
 - g. identification of dust sources and potential impact during construction;
 - h. description of methods proposed for minimising generation of sediment and limiting erosion;
 - i. description of methods proposed for dust suppression during construction activities;
 - j. identification of the location, design, operation and maintenance of stormwater runoff controls and sediment control facilities;
 - k. specifications of the diversion of any water bodies including channel configurations and rehabilitation measures;
 - l. specifications of the spoil storage and stabilization;
 - m. description of the construction method for watercourse crossings;
 - n. description of the rock armouring at the sweeping bend with respect to the visual appearance of armouring;
 - o. description of steps taken to inform staff and contractors about the conditions of consent and the management plans;
 - p. description of traffic management and property access management;

- q. description of public access, community information and liaison procedures;
 - r. contingency plans for mechanical failures, oil/fuel spills, flooding, land slips and any other potentially foreseeable event;
 - s. complaints and reporting procedures;
 - t. cultural and archaeological protocols (including discovery protocols);
 - u. assessment, monitoring and reporting procedures, including water quality monitoring procedures; and
 - v. methodology for making changes to the CESMP.
50. The matters specified above shall be in such detail and shall be sufficient to ensure that the following outcomes will be achieved:
- a. public access to Lake Matiri is maintained;
 - b. minimise the disturbance to land;
 - c. *Hyridella* mussels are successfully relocated away from the areas dried or disturbed areas associated with the construction of the weirs;
 - d. construction is appropriately staged;
 - e. protect steep slopes from erosion;
 - f. protect watercourses from sediment discharge;
 - g. minimise run off from exposed areas and steep slopes;
 - h. trap and remove run off sediment; and
 - i. topsoil is retained wherever possible.
51. All earthworks, works in the bed of Lake Matiri and the Matiri River, stormwater discharges, tracking, vegetation removal shall be exercised in accordance with the CESMP.
52. At any time during the period of these consents, a copy of the latest version of each Management Plan shall be on site and available to all relevant construction personnel.

Advice Notes:

Contractors and staff should be familiar with guidelines of the Technical Publication No. 90 "Erosion and Sediment Control" (Auckland Regional Council) or other similar guidelines.

Contractors and staff carrying out the work should be experienced and trained in erosion and sediment control.

53. Any changes to the CESMP shall be made in accordance with the methodology and approved procedures in that Plan and shall be confirmed in writing by the consent holder following consultation with Council's Coordinator Compliance Monitoring. An updated Construction, Erosion and Sediment Management Plan shall be submitted to the Coordinator Compliance Monitoring.
54. All earthworks, construction works and works in the bed of the lake or any river shall be supervised by an appropriately qualified and experienced Chartered Professional Civil Engineer.
55. Sediment controls shall be implemented and maintained in effective operational order at all times.
56. All erosion and sediment control measures shall be inspected by the consent holder or its authorised agent after any major weather (rainfall, high river levels or wind) event and if necessary sediment controls shall be replaced or upgraded to deal with any sedimentation issue identified as a result of the

weather event. A written record of the inspections and any work undertaken shall be kept and supplied to the Council on request.

57. The discharge of storm water shall not cause, at a point in the receiving water that is 10 metres downstream of any discharge point, any of the following:
- a. the production of any visible oil or grease films, scums or foams, or conspicuous floatable or suspended material;
 - b. any emission of objectionable odour;
 - c. the rendering of freshwater unsuitable for bathing;
 - d. the rendering of freshwater unsuitable for consumption by farm animals; or
 - e. any adverse effect on aquatic life.

1.1.58 Contaminant Management

58. The consent holder shall undertake all practicable steps to minimise the effect of any contaminant discharges to the receiving environment.
59. No petrochemical or synthetic contaminants (including but not limited to oil, petrol, diesel, hydraulic fluid) shall be released into water from equipment being used for the activity and no machinery shall be cleaned, stored, or refuelled within 5 metres of any watercourse.
60. Only fuels, oils and hydraulic fluids associated with the operation, and in the volumes required, may be stored on-site. Such substances shall be stored in a secure and contained manner in order to prevent the contamination of adjacent land and/or water bodies.
61. The consent holder shall notify the Council's Coordinator Compliance Monitoring as soon as is practicable, and as a minimum requirement within 12 hours, of a spill of hazardous materials that is of a volume of 10 litres or more, fuel, oil, hydraulic fluid or other similar contaminants. The consent holder shall, within seven days of the incident occurring, provide a written report to the Council, identifying the causes, steps undertaken to remedy the effects of the incident and any additional measures that will be undertaken to avoid future spills.
62. Should the consent holder cease or abandon work on-site, it shall first take adequate preventative and remedial measures to control sediment discharge, and shall thereafter maintain these measures for so long as necessary to prevent sediment discharge from the site. All such measures shall be in accordance with the conditions of this consent.
63. Prior to bulk earthworks commencing for each construction phase, the consent holder shall submit to the Council's Coordinator Compliance Monitoring, a certificate signed by the Chartered Professional Engineer who is supervising the works to certify that the appropriate erosion and sediment control measures have been constructed in accordance with the CESMP and the conditions of this consent. The certified controls shall include, where relevant, diversion channels, sediment fences, decanting earth bunds, sediment retention ponds and any other measures reasonably necessary to achieve the outcomes of the CESMP. The certification for these measures for each construction phase shall be supplied to the Council's Coordinator Compliance Monitoring.
64. All disturbed vegetation, soil or debris shall be handled so that it does not result in diversion or damming of any river or stream. All stockpiled material shall be banded to protect against storm water erosion.
65. All disturbed vegetation, soil or debris shall be disposed of off site or stabilised to minimise the risk of erosion. All other waste materials shall be disposed of off site at premises licensed to receive such materials.

66. All practical measures shall be taken to ensure that any dust created by operations at the site and vehicle manoeuvring (in accessing the site and driving within it) shall not, in the opinion of Council's Coordinator Compliance Monitoring, become a nuisance to the public or adjacent property owners or occupiers. The measures employed shall include, but are not limited to, the watering of unsealed traffic movement areas, roadways and stockpiles as may be required.
67. Topsoil and subsoil shall be stripped and stockpiled separately. This shall then be re-spread at completion of the works.
68. The consent holder shall take all practical measures to limit the discharge of sediment with stormwater run-off to water or land where it may enter water during and after the earthworks.

Advice Note:

In particular, the key earthworks should be carried out during fine weather periods when the likelihood of erosion and sedimentation will be least.

69. Sediment controls shall be implemented and maintained in effective operational order at all times.

Advice Note:

Appropriate sediment control equipment including erosion protection matting and batter covers should be kept on site for use in minimising potential sedimentation problems from areas of exposed soil.

70. All erosion and sediment control measures shall be inspected after any major rainfall event and any problems shall be rectified within 24 hours.
71. All exposed ground shall be re-vegetated within 12 months of completion of the works so that erosion/downhill movement of soil is limited as much as is practical. This shall include supplemental planting of appropriate vegetation that enhances the stability and minimises surface erosion.

Advice Note:

Any vegetation used should be approved for use by the Department of Conservation.

72. Hay bale barriers shall not be used for sediment control for this project due to their potential to become a seed source for invasive weed species.

1.1.59 Culverts

73. All culverts above the West Branch of the Matiri and any other culverts not on legal road shall be sized to at least pass a 20% Annual Exceedence Probability flood (1 in 5 year on average) before water overtops any roadway or track which the culvert passes under.
74. The consent holder shall ensure that the inlet and outlet of all culverts is armoured as necessary to protect against erosion of the watercourse or undermining of the culvert structure.
75. There shall be a secondary flow path constructed and armoured to minimise any erosion or washout.
76. The consent holder shall ensure that for the duration of this consent any debris build-up is removed and ensure scour protection measures are installed and maintained at the inlet and outlet of all culverts.
77. The culverts shall be constructed to allow fish passage both up and down stream except where fish values are demonstrably absent such as in a channel which only flows during rain events.

1.1.60 Roding and Tracking

78. The water table, cut-offs and culverts shall be constructed and installed to prevent scour, gullyng or other erosion for the formed or constructed surface.
79. All culverts within drains shall be armoured at the outlet to protect against erosion.

80. No significant erosion, scour or deposition shall result from the placement of culverts.
81. All batters shall be constructed to avoid batter failure or shall be retained where considered necessary in the opinion of the Chartered Professional Engineer who is supervising the works.

1.1.61 The Quarry Management Plan (QMP)

82. The QMP required by Condition 46.b shall, as a minimum, address the following matters:
 - a. description of the works;
 - b. work programme including any final land restoration;
 - c. work methods and equipment to be used;
 - d. dust sources and potential impact during construction;
 - e. methods used for minimising erosion;
 - f. location, design, operation and maintenance of stormwater runoff controls and sediment control facilities;
 - g. the measures proposed to rehabilitate the gravel pits and address the integration of the Gravel pits with the rural and river landscape character of the area including:
 - i. The formation of naturalised landforms which meld the gravel pits with the surrounding natural landforms;
 - ii. The egress of natural seepage and surface flows through the gravel pits where this may occur; and
 - iii. The reinstatement of appropriate vegetation on disturbed surfaces, including planting, hydro seeding or natural revegetation processes and weed control measures;
 - h. specifications of the over burden storage;
 - i. staff and contractor training;
 - j. contingency plans for mechanical failures, oil/fuel spills, flooding, land slips and any other potentially foreseeable event;
 - k. cultural and archaeological protocols (including discovery protocols); and
 - l. complaints and reporting procedures.
83. The matters specified above shall be in such detail and shall be sufficient to ensure that the following outcomes will be achieved:
 - a. any discharge to water shall, at a point 10 metres downstream, meet the standards set out in Section 107 of the Act and also in Condition 57;
 - b. revegetation to minimise runoff of sediment laden water and to achieve the outcomes specified in Condition 89;
 - c. revegetation and contouring to ensure the gravel pits are integrated with the rural and river landscape character of the area as determined by a qualified landscape architect engaged by the applicant; and
 - d. gravel Pit 5, in particular, is developed at a scale and to a shape that reflects the river landform surrounding the gravel extraction area.

Advice Note:

Condition 83d above was specified in the landscape evidence of Mr Carter with the outcome that the quarry face should be developed and restored such that it resembles a river-cut terrace in keeping with the geomorphology of the river.

84. All activities associated with quarrying shall be carried out in accordance with the QMP.
85. At any time during the period of these consents, a copy of the latest version of the QMP shall be on site and available to all relevant construction personnel.
86. Any changes to the QMP shall be made in accordance with the methodology and approved procedures in that Plan and shall be confirmed in writing by the consent holder following consultation with Council's Coordinator Compliance Monitoring. An updated QMP shall be submitted to the Council's Coordinator Compliance Monitoring.
87. The area of land open to quarry operations (including excavation, stockpiling and processing areas but excluding access roads) shall be kept to a minimum and shall not exceed a total area of 5 hectares at any one time during construction of the Matiri Hydro Scheme.

Advice Note:

Once an area, including stockpiles, has started to be rehabilitated as per Condition 82.g, then it will no longer be considered as open to gravel quarrying or abstraction operations.

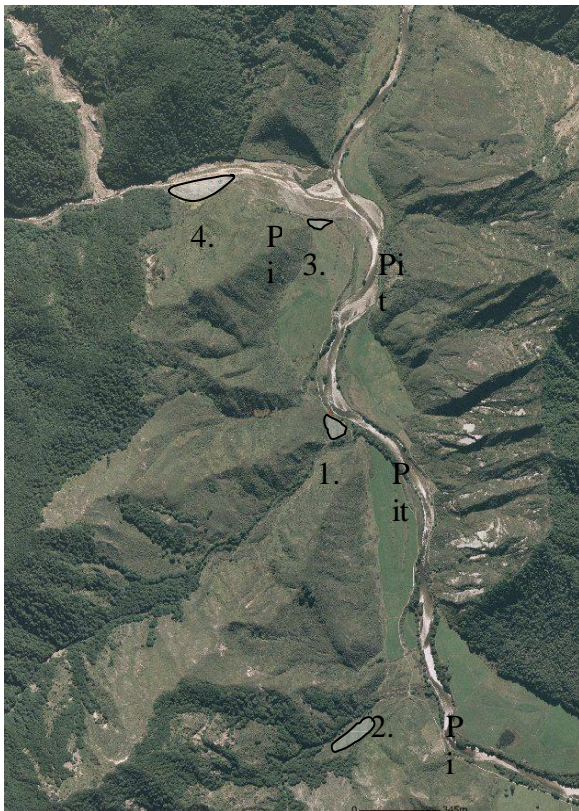
88. After completion of the construction of the Matiri Hydro Scheme the area of land open to quarry operations (including excavation, stockpiling and processing areas but excluding access roads) at Pit 4 shall be kept to a minimum and shall not exceed a total area of 1 hectare at any time.

Advice Note:

Gravel Pit 4 is intended to remain open as a long term source of gravel for ongoing maintenance.

89. After completion of the construction of the Matiri Hydro Scheme, the consent holder shall fully rehabilitate the quarry pits and adjacent surrounding land, with the exception of pit 4, to ensure that this is:
 - a. left in a tidy, safe and stable manner;
 - b. revegetated with a suitable vegetative groundcover having been established or other suitable measures, such that the erosion of soil and generation of dust is minimised as much as practical; and
 - c. stormwater discharges from the site are managed appropriately.
90. The consent holder shall maintain the quarry sites in clean and tidy conditions. Redundant machinery and equipment not required for the operation of the quarries shall be removed from the sites. No disposal of refuse (industrial, domestic, agricultural or other waste) shall occur at the sites.
91. The consent holder may operate a vehicle wash within the upper and lower gravel extraction sites by the West Branch of the Matiri River (i.e. Gravel Pits 4 and 5).
92. The gravel from the quarry pits shall only be used for the Matiri Hydro Scheme and as required for other works that are required by the conditions of these consents (e.g. the access road). After completion of the Matiri Hydro Scheme the ongoing use of gravel from pit 4 shall only be used in the Matiri Catchment. The gravel shall not be on sold or shipped out of the Matiri catchment.

93. The gravel extraction shall only occur from the areas marked on the map below.



1.1.62 Vegetation clearance

94. The only indigenous vegetation to be removed shall be that required to construct the access tracks, control hut, penstock route, laydown areas and gravel pits 1 to 5 inclusive. The consent holder shall not remove any trees or shrubs outside the penstock corridor other than those identified in the Application and shall ensure that all disturbed land is planted as soon as practical after completion of the works.
95. The works shall be undertaken in such a manner as to ensure that the least practical amount of indigenous vegetation is removed, particularly the larger and canopy trees.
96. The vegetation shall be removed in such a way as to minimise damage or disturbance to vegetation that is to be retained. Canopy trees that are to be removed shall be felled by an appropriately qualified person and left on the site adjacent to the area, except within Segments B, C, E & F where that vegetation is visible from the realigned walking track or the river. Vegetation debris from the realigned walking track or the river within Segment B, C, E & F shall be disposed of or stock piled such that it is not visible from the realigned walking track or the river.

Advice Note:

Segments B, C, D, E and F are shown on the sheets prepared by Tom Carter Limited attached and labelled Annexure B.

1.1.63 Biosecurity and Land Rehabilitation

97. During construction all vehicles shall be cleaned with a high pressure water blaster before crossing the west branch of the Matiri River into the main construction area.
98. Following completion of the MHS vehicular access to the power station site shall be limited to NZEL staff and no vehicle that has been south of the west branch of Matiri River shall proceed beyond the power station unless thoroughly cleaned with a high pressure water blaster.

99. The consent holder shall engage an appropriately experienced and qualified ecologist to write a Pest Control and Land Rehabilitation Plan. The Plan shall include all recommendations contained within the report entitled *Assessment of Effects on Vegetation and Restoration Plan for the Proposed Lake Matiri Hydro Electric Scheme* written by Te Ngahere Nelson and dated June 2007. In particular, the Plan shall be consistent with Sections 7, 8 and 9 of that report (attached as Attachment 4).
100. A copy of the Plan shall be provided to the Council's Coordinator Compliance Monitoring for certification before any works on the north bank of the west branch of the Matiri River commence. The Plan will be certified if the Coordinator is satisfied that the outcomes specified in Condition 103 will be met.
101. The Pest Control section of the Plan shall contain the following details:
- a. provision and management of vehicle checking stations and washdown facilities and protocols during construction and after completion of the MHS; and
 - b. ongoing monitoring, control and eradication procedures in the various management areas.
102. The Land Rehabilitation section of the Plan shall:
- a. specify the removal of material (forest duff) from the construction footprint for the purposes of site rehabilitation post construction; and
 - b. establish monitoring to qualify major changes in plant community composition and area in the 'mud zone', 'Juncus zone', and tall 'fescue zone' of Lake Matiri, and river riparian vegetation.

Advice Note:

These zones are referenced in the Application at Attachment 4.

- c. establish monitoring (diameter breast height, canopy cover score, general canopy and trunk tree health) of individual ribbonwood both pre and post construction, for the purpose of monitoring the health of the ribbonwood and assessing whether the operation of the power scheme (rise in lake level) has any adverse effects requiring further mitigation measures;
 - d. provide for the relocation and/or replacement of *Brachyglottis hectorii* where required within the construction footprint;
 - e. specify post construction monitoring within a 5m band either side of the penstock corridor, of a sample of trees over 8m in height, for the purpose of monitoring tree health and canopy closure;
 - f. specify the post construction rehabilitation of lay down sites and bare forest corridor areas;
 - g. establish a hydro-seeding programme at two locations for the purpose of monitoring whether hydro seeding with eco-sourced seed of low growing species would accelerate the natural regeneration process; and
 - h. specify localised planting around areas of higher visual impact as outlined in Appendix E of the evidence of Mr Kusabs.
103. The Plan shall be in such detail and shall be sufficient to ensure that the following outcomes will be achieved:
- a. avoidance of the introduction of aquatic pests, particularly *Didymosphenia geminate* and *Lagarosiphon major*, to the Matiri River above the west branch and into Lake Matiri;
 - b. the introduction of land-based pest plants is avoided where possible;
 - c. all invasive pest plant species introduced to the area as a result of these works are eradicated;
 - d. all non-invasive pest plants introduced to the area as a result of these works are controlled and eradicated where possible;

- e. the penstock route, laydown areas and all other areas to be restored are rehabilitated as quickly as possible using eco-sourced plants and to the same or better quality of forest as that currently existing;
- f. any changes to the quality and range of the various plant zones in the lake riparian zone are detected;
- g. any adverse effects on the health of the ribbonwood population are detected; and
- h. in the laydown areas and disturbed forest corridor at least five species present within the pre-construction plant community are established after five years post-commencement and, in the case of lay down area 2, so as to achieve a 90%+ indigenous cover laydown at five years post commencement.

104. The consent holder shall engage a appropriately experienced professional contractor to implement the Pest Control and Land Rehabilitation Plan.

1.1.64 Ribbonwood/Coprosma monitoring and restoration

- 105. An accurate survey of the ground levels upon which any ribbonwood/comprosuma stands are grown shall be taken and kept.
- 106. An appropriately qualified and experienced person shall oversee the collection of seeds and the taking of cutting material. These seeds and cutting shall be propagated and kept under appropriate conditions.
- 107. The ribbonwood/comprosuma stands shall be monitored in accordance with Mr Kusabs' evidence (paragraphs 65.2 and 65.3) presented at the hearing.
- 108. In the event that monitoring indicates that more than 25% of the trees are dying, restoration shall take place by establishing stands at new locations at higher elevations in accordance with Mr Kusabs' evidence.
- 109. In the event that monitoring is showing that less than 25% die back is occurring and the ecologist monitoring the stands is satisfied, then the propagated and stored plants shall be planted to augment and enhance the existing stands. This planting shall be done with appropriate preparation of planting sites and maintenance-until-establishment after planting.

1.1.65 Works in the beds of waterbodies

- 110. Large rocks shall remain undisturbed in the waterway except where individual rocks have been identified for removal or relocation as part of the application (see Annexure 2) or for works at sweeping bend. Any additional rock required for bank strengthening shall be of similar geological properties to the rock found in the stream.
- 111. Fish passage shall be provided at all times between Lake Matiri and the river downstream during construction of the Matiri Hydro Scheme.
- 112. Machinery may work in the waterway but all practical measures shall be taken to minimise damage to the watercourse and banks.
- 113. At the completion of the works the working areas in the Matiri River will be rehabilitated as far as is practical.
- 114. At the completion of the works the working areas and the bed of Lake Matiri shall be rehabilitated so there is no visible damage on the foreshore or lake bed.
- 115. Where flow is stopped in a channel, monitoring shall be undertaken to determine if there are any fish strandings. Any such stranded fish should be transferred to pools in the river.

Advice Note:

During construction the flows from each weir will be stopped and this condition is to mitigate any resultant fish stranding if there is insufficient leakage from the geology of the natural dam.

116. The consent holder may undertake works in the bed to temporarily divert the Matiri River away from the Penstock route around the Sweeping bend in order to allow construction of the penstock and associated works to proceed. However, the consent holder shall not divert any flow down the flood channel through the forest that cuts off the sweeping bend unless subsequently authorised by a resource consent.

1.1.66 Construction of the Weirs and Spill Point

117. The weirs and associated structures shall be constructed in accordance with the application, further information and the Construction, Erosion and Sediment Management Plan and any directions from the Chartered Professional Civil Engineer supervising the works.
118. The design and specifications of the weirs and associated structures shall be carried out by an appropriately qualified and experienced Chartered Professional Engineer and shall be in accordance with prudent engineering practice.
119. All structures shall be designed and constructed so as to blend into the environment as far as possible. In particular, the concrete used to construct the weirs and associated structures shall be dyed a matching colour to that of the weathered exterior of the predominant stone in the riverbed to minimise the visual intrusiveness of the concrete structures.
120. The consent holder shall provide to the Council producer statements from both the supervising engineer and the contractor for the construction works.
121. Appropriate rock protection shall be provided to avoid erosion of the watercourse downstream of the spillway discharge.
122. Headworks construction for any of the 3 weirs shall cease when paradise shelduck moulting commences on Lake Matiri and shall not recommence until no moulting shelduck are present within 200 metres of the outlets. The decision to commence headworks construction shall be made by the consent holder in consultation with a nominated representative of Fish and Game New Zealand.

Advice Note:

Paradise shelducks are usually moulting in Lake Matiri between late December and February.

1.1.67 Weather

123. The consent holder shall stop construction in heavy rain and/or high river flows when the activity may result in sedimentation such that the water quality standards specified in these consents are likely to be breached.

1.1.68 Lake Matiri

124. The consent holder shall ensure that the work is carried out in such a manner as to minimise sedimentation and contamination of Lake Matiri. Notwithstanding this, there shall be no conspicuous change in the colour or visual clarity of the Lake beyond a radius of 100 metres resulting from any of the works authorised by these consents.

1.1.69 Monitoring Water Quality – Continuous turbidity monitoring

125. Continuous turbidity monitoring (data recording) equipment shall be installed whenever there are earthworks or exposed surfaces from which fine sediment could erode associated with the exercise of these consents and in, or within 10 metres of the edge of, the bed of the Matiri River or any tributary. When installed, such equipment shall be run by a suitably qualified and experienced person. The monitoring equipment shall be installed no more than 200 metres downstream of any such earthworks as well as immediately upstream of the earthworks so that the results can be compared.

126. Subject to Condition 125, monthly calibrations and maintenance shall be carried out by suitably qualified personnel. Written records shall be available on request showing the maintenance and calibration has been undertaken. Results shall be cross checked with duplicate samples analysed in the laboratory.
127. All turbidity water quality sampling shall be undertaken by appropriately trained personnel.

Advice Note:

All sampling should follow documented procedures to insure data quality. The CESMP in Condition 46 includes water quality monitoring procedures.

128. Subject to Condition 125, the date, time and duration of all periods of turbidity equipment downtime shall be recorded, together with an explanation of the cause, and measures to prevent future failures.

Advice Note:

Up to 2% downtime of turbidity equipment is permitted. It is advisable that the turbidity probe be placed in an in-line chamber (~10 litre) of river water that is continuously pumped from a suitable site in the river.

129. The following performance standards shall be met at all times:

Maximum increase 200m down stream	Sample period	Consecutive 5- minute samples
50 NTU	20 minute	Median of 4 samples
20 NTU	40 minute	Median of 8 samples
10 NTU	2 hour	Median of 24 samples

1.1.70 Discrete Sampling

Advice Note:

The following conditions set standards and allow the Council to undertake checks with objective targets in the event of suspected non-compliance.

130. Subject to Condition 125, any discharge to water associated with any of the activities authorised by these consents shall not increase the turbidity by more than 50 NTU at a point 200 metres downstream of any discharge compared to the turbidity at a point immediately upstream of the discharge, as analysed using method APHA 21st Edn 2130B.
131. Any discharge to water associated with any of the activities authorised by these consents shall not increase the concentration of suspended solids by more than 50 g/m³ at a point 200 metres downstream of any discharge compared to the concentration of suspended solids at a point immediately upstream of the discharge, as analysed using method APHA 21st Edn 2540D.
132. While concrete is being poured within the bed of the Lake or River or within two metres of the Lake or River the consent holder shall measure the pH at least daily. The pH shall not be altered by more than 1 pH unit or to take it outside the range of 6.0 to 8.5 at a point 200 metres downstream of any discharge compared to a site upstream of the discharge as measured by APHA 21st Edn 4500 H B or approved data sonde.

This condition does not apply to the area where the tufa formation exists as this may be naturally alkaline.

1.1.71 Reporting of water quality monitoring

133. If monitoring results indicate the exceedence of the maximum levels in Conditions 130 or 131, the consent holder shall submit a report within 2 days to the Council's Coordinator Compliance Monitoring.

The report shall identify why and how the exceedence(s) occurred and, if the exceedence(s) were caused by the exercise of these consents, or by the activities of the consent holder generally, then the report shall also detail what measures will be employed to avoid, remedy, or mitigate any future exceedence. The consent holder shall immediately notify the Council's Coordinator Compliance Monitoring when these measures become operative.

1.1.72 Maintenance

134. The consent holder shall maintain all the structures.
135. The consent holder shall inspect the weirs, the embankments, intake and spillway and low flow system at least weekly for the first six months following commissioning of the scheme and maintain all structures in good condition. In particular, the spillway and compensation valve shall not be obstructed and any damage to the spillway shall be repaired promptly and to the satisfaction of a Chartered Professional Civil Engineer.
136. The consent holder may enter the river or the lake to the minimum extent necessary to maintain the structures.

16 **CONDITIONS ON RM060939 (water permit – dam water), RM090023 (discharge permit – discharge debris), RM060940 (water permit – take and use water) AND RM060941 (discharge permit – discharge water)**

1.1.73 Site and Dam Details:

River or Stream Being Dammed: Matiri River – immediately below Lake Matiri

Zone, Catchment: Upper Buller, Buller Catchment

Catchment Area (km²): 134

Dam storage (m³): approx 885,000 (530,000 m² × 1.67 m)

Live Storage (m³): 540,000 (530,000 m² × 1.02 m)

Dam Details - Weir Outlet 1:

Crest Level (m): 341.1 metres above mean sea level (masl)

Maximum Crest Height (m): 4

Crest Length (m): 20

Location (Easting and Northing): 2454476E 5949217N (NZ Map Grid)

Dam Details - Weir Outlet 2:

Maximum Crest Height (m): 1.8

Crest Level (m): 341.1 masl

Crest Length (m): 5-6

Location (Easting and Northing): 2454548E 5949199N (NZ Map Grid)

Dam Details - Weir Outlet 3:

Maximum Crest Height (m): 1.8

Crest Level (m): 341.1 masl

Crest Length (m): 5-6

Location (Easting and Northing): 2454625E 5949201N (NZ Map Grid)

1.1.74 Water Take Details

Category of Water Source: Surface and Storage
Name of Source: Lake Matiri and Matiri River
Catchment: Upper Buller
Maximum rates of take authorised: 6,300 litres per second
River number: R.594
Location (Easting and Northing): 2454476E 5949217N (NZ Map Grid)

1.1.75 Weir Features

137. Outlet 1 weir shall be designed and constructed to include a flow compensation valve suitable for the release of a variable residual flow and provision of a wetted surface sufficient for eel passage over this weir at all flows when the weir is not spilling.
138. The weirs on outlets 2 and 3 shall each be designed and constructed to include a fish pass.
139. The design of the fish pass at each weir required pursuant to Conditions 137 and 138 above shall be by a suitably qualified and experienced expert in eel and elver passage. A copy of the design shall be submitted to the Council's Coordinator Compliance Monitoring prior to construction. The design shall:
- a. provide for the passage of elvers and other native climbing fish;
 - b. be in general accordance with the application and further information supplied; and
 - c. provide for safe passage of elvers and other native climbing fish into the lake such that the chance of them being entrained in the penstock intake is minimised.

Advice Note:

Mr Charles Mitchell is considered to be an appropriate expert. However this does not preclude the use of another appropriate expert.

140. A plunge pool shall be provided and thereafter maintained in good working order at the bottom of each weir to provide for migrating eels.
141. A minimum of 10 rat traps and one rat poison-bait feeding station shall be maintained adjacent to the fish pass at Outlet 1 from December to February inclusive each year. One rat poison-bait feeding station shall be maintained adjacent to weirs 2 and 3 during the same months. The bait stations shall be restocked and the traps cleared and reset at least monthly.

1.1.76 Intake Screening

142. The penstock intake shall be screened so as to avoid the entrainment of fish and the screen shall have a mesh size not greater than 30 millimetres and shall be constructed such that the intake velocity at a point 300mm outside the outermost surface of the outermost screen is less than 0.5 metres per second.
143. The consent holder and/or the dam owner is required to maintain the intake screen and all associated structures in a good state of repair.

1.1.77 MHS Operation

144. The MHS shall be operated so the rate of change in the discharge from the power station does not exceed 600 litres per second per minute or 15 litres per second per second. This condition shall not apply in the case of emergency, running islanded or governing operations.
145. The maximum daily lake level fluctuation of Lake Matiri as a result of MHS operation shall not exceed 1.02 metres.

Advice Note:

The maximum daily lake level fluctuation excludes any natural change.

146. The minimum water level of Lake Matiri as a result of MHS operation shall not fall below 340.10 masl.
147. The operation of the MHS may increase the 100-year flood level of Lake Matiri by up to 0.4 metres.
148. The MHS shall not cause a change in flow of the Buller River of more than 15% of the naturally occurring instantaneous flow.

Advice Notes:

The Council may grant exemptions to the Water Conservation (Buller River) Order 2001 pursuant to Clause 14 of that Order.

Compliance with this condition shall be determined by ensuring the maximum allowable change in the Matiri River before it reaches the Buller River is:

MHS maximum output = Buller @ Longford Flow x 0.2

1.1.78 Connectivity Flow

149. Eel passage between Lake Matiri and the (Matiri River) East Branch shall be maintained and, as a minimum, at all times when the lake level is above 340.1 masl the consent holder shall release sufficient water from the flow compensation valve at the weir at Outlet 1 to maintain a wetted passage with a median width of 300 millimetres to the point where continuous surface flow has emerged from the natural rock dam, subject to Condition 150 below.
150. The volume of water to be released from the flow compensation valve in the weir at Outlet 1 to achieve full fish passage in accordance with Condition 149 shall be determined by measuring the amount of water necessary to be released from the valve to achieve the following criteria:
 - a. the median width of surface flow over the river reach between the weir at Outlet 1 and where continuous flow emerges from the natural rock dam (approximately 300 metres), measured at one metre intervals, shall not be less than 300 millimetres; and
 - b. there is no more than 10 metres without visible flowing surface water.

This volume shall be determined on two separate occasions during dry periods when there has been no rain in the catchment for at least three weeks. The more conservative of the two values (i.e. the greatest flow necessary to achieve the criteria) shall be adopted. The volume to be released to achieve the criteria shall be rechecked once every five years.

151. If there is one or more section of the bed, which contains a stretch of between 5 and 10 metres without visible flowing surface water, then the monitoring requirement described in Condition 170.c shall apply.
152. The power station shall not take water when the level of Lake Matiri is at or below 340.1 masl.
153. In the event that the monitoring required by the Aquatic Ecology Monitoring Plan (see Condition 168) shows that the criteria specified to achieve wetted passage (300 millimetres median width and less than 10 metres without surface flow) are inadequate to achieve suitable eel passage between the Matiri River and the weir at Outlet 1 then the consent holder shall take advice from an appropriately qualified and experienced aquatic scientist. The aquatic scientist shall investigate the flow regime and

provide a written report identifying the increase in connectivity flow and any other recommendations that are reasonably necessary to achieve effective upstream passage for eelers. The report shall be provided to the Council's Coordinator Compliance Monitoring. The consent holder shall, to the extent considered necessary by the Coordinator, implement the recommendations of the aquatic scientist so that effective eel passage between the Matiri River and the weir at Outlet 1 is achieved.

Advice Note:

Compliance with this condition allows adaptive management to be undertaken in the event that connectivity flow requirements do not achieve the desired outcome of no reduction in fish passage between the Matiri River and the weir at Outlet 1 (and subsequently to Lake Matiri). The Water Conservation Order requires that fish passage be maintained between the Matiri River and Lake Matiri.

154. In addition, the consent holder shall where necessary pump lake water sufficient to provide and maintain a wetted surface for eel passage over the weir at Outlet 1, which shall connect and operate in conjunction with the fish pass and the flow released from the compensation valve.

1.1.79 Residual Flow Release

155. The consent holder shall release sufficient water from the flow compensation valve at Outlet 1 to ensure that the flow of the Matiri River, as measured at the flow recorder site 2 required to be operated in accordance with Condition 162, is equal to or greater than 1,000 litres per second at all times when the lake level is higher than 340.1 masl.
156. Notwithstanding Condition 155, no residual flow release, apart from that occurring via natural seepage, is necessary at lake levels at or below 340.1 masl.
157. Once the power station is shutdown generation shall only recommence if the lake has refilled to at least 340.10 masl, and provided there is flow connectivity sufficient for eel passage and provided the residual flow of the Matiri River as measured at the flow recorder site 2 is equal to or greater than 1,000 litres per second and only if all other conditions of consent are complied with.

Advice Notes:

The majority or all of the required residual flow will be provided by natural leakage under the rock fall dam. Should this leakage be insufficient to provide the required residual flow at recorder 2, water additional to that required for the connectivity flow described in 149 will be released from the compensation valve to make up the required residual flow of 1,000 litres per second at all times when the lake level is above 340.1 masl.

The flow required in 155 will be established by valve openings determined by the calibration process and reported as described in 166.

1.1.80 Emergency Lake Lowering

158. The water level of Lake Matiri may be drawn down to no lower than 339.58 masl for emergency repairs required as a result of a serious threat to the structural integrity of a weir, provided the consent holder shall notify the Council's Coordinator Compliance Monitoring of the event and the cause of the event. The lake shall only be drawn down below the minimum lake level for a maximum of 24 hours at any time. Thereafter the lake must be within its natural range.

Advice Note:

The Council may grant exemptions to the Water Conservation (Buller River) Order 2001 pursuant to Clause 14 of that Order.

159. Under no circumstances other than as specified in Condition 158 shall the level of Lake Matiri be drawn down below its natural minimum level.

1.1.81 Take and Discharge Records

160. The consent holder shall keep records of the instantaneous rates (once per minute) of taking of water for generation. The consent holder shall make these records available to the Council's Coordinator Compliance Monitoring every six months.

Advice Notes:

The consent holder is not required to separately record the rate of discharge from the power station to the Matiri River versus the rate of taking and use as they will always be the same. The records of instantaneous taking, using or discharge of water is recorded each minute. This sampling frequency is to provide sufficient detail to show ramping of the water take.

If the applicant installs more than one turbine it is expected that the discharge from each turbine will be logged to provide an accurate flow rate.

161. The consent holder may use power generation data as a surrogate measure of the instantaneous rate of taking. In the event that power generation figures are used as a surrogate for rates of taking, the consent holder shall convert the record of the power generated within the power station to flow to an accuracy of +/-5%. To do so, during commissioning of the Scheme, the consent holder shall provide to the Council's Coordinator Compliance Monitoring a report that shows the relationship between power generation and water flow rates through the turbine in the power station. In the event that any modifications are made to the turbine which results in a change in efficiency, the consent holder shall, within one week, undertake further calibration tests and provide a revised "water flow rate – power generation" relationship and provide a copy of the new relationship to the Council's Coordinator Compliance Monitoring within two weeks. The consent holder may then use this relationship as a surrogate measure of the instantaneous rate of taking.

Advice Note:

If the applicant installs more than one turbine it is expected that the discharge from each turbine will be logged to provide an accurate flow rate.

1.1.82 Level and Flow Recorders

162. Unless otherwise specified, the consent holder shall operate and maintain four data recorders at the following locations for the duration of the consents:
- a. lake level recorder site 1: Lake Matiri (lake level) Recorder: at the existing site in Lake Matiri at or about grid coordinates M29:545492, located upstream of the weir at Outlet 1 (the exact location to be identified by the Council's Coordinator Environmental Monitoring (Martin Doyle) in consultation with the consent holder);
 - b. flow recorder site 2: Matiri River (residual flow) Recorder: Up stream of the East Branch of the Matiri River in the dewatered zone (the exact location to be identified by the Council's Coordinator Environmental Monitoring (Martin Doyle) in consultation with the consent holder);
 - c. level recorder site 3: Water level recorder at the road bridge downstream of the tailrace discharge. This is to be a temporary recorder to be installed and kept in place for a minimum of six months from the commissioning of the MHS to measure the effect of ramping rates. The data shall be provided to the Council after three and six months; and
 - d. flow recorder site 4: flow compensation valve at the weir at Outlet 1.

Advice Note:

Flow recorder site 4 is likely to require the construction of a flume weir or similar which does not compromise elver passage.

163. Lake level recorder site 1 shall be fully operational no later than six months prior to construction commencing while flow recorder 2, level recorder 3 and flow recorder 4 shall be fully operational prior to the commissioning of the MHS.

164. The consent holder shall remove the two existing recorder towers at Lake Matiri provided that sufficient overlapping data has been collected.

1.1.83 Flow Determination Requirements

165. Each recorder required by Condition 162 shall meet the following standards and requirements as a minimum:

- a. data shall be recorded, audited and verified by an appropriately qualified and experienced hydrologist, and provided for compliance purposes to the Council's Coordinator Compliance Monitoring in accordance with the table below:

Recorder site	Required interval	Data provided to the Council
Level recorder 1 (Lake)	1 per 15 minutes	Every three months for compliance checking purposes; and (Also to be provided continuously for website publication [see Condition 173])
Flow recorder 2 (Matiri River)	1 per 5 minutes	Every three months for compliance checking purposes; and (Also to be provided continuously for website publication [see Condition 173])
Level recorder 3 (Bridge – temporary)	1 per 5 minutes	Every three months
Flow recorder 4 (flow compensation valve in the weir at Outlet 1)	1 per 5 minutes	Every three months for compliance checking purposes; and (Also to be provided continuously for website publication [see Condition 173])
Generation take/discharge (See Condition 160)	1 per 1 minute	Every three months for compliance checking purposes; and (Also to be provided continuously for website publication [see Condition 173])

- b. the consent holder shall aim to have less than 2% missing data in any three month period;
- c. with regard to measuring natural stream flow, this will require a suitable river gauging site and installed staff gauge, recorder, and communication;
- d. water level shall be recorded utilising a sensing device capable of measuring water level to within +/- 3mm without accuracy drift over time and generally in accordance with ISO 1100- 1 (Establishment and Operation of a gauging station);
- e. flow measurements to create and check the rating curve should be carried out within an accuracy of +/- 8%, and at a frequency to fully define the rating curve for the site at least 98% of the time. Gauging accuracy shall be calculated by ISO 748 (Measurement of liquid in open channels – Velocity-area method);
- f. flow measurements and derivation of the rating curve should be carried out by an appropriately qualified and experienced hydrologist. The results of the flow measurements shall be provided to Council as soon as practicable after they have been completed.
- g. rating curves shall be provided to Council each time they change along with an indication of the date range for which each rating curve is applicable;
- h. water level data shall be presented in a Hilltop file, or as a comma separated ASCII file that can be read into Hilltop; and

- i. the relationship between water level and flow shall be provided as a Hilltop rating, or as a series of paired points suitable for importation into Hilltop.
166. Flow curves for the compensation valve will be established by calibration for different lake levels. Flow from the compensation valve will be determined by calculation using the valve opening and the flow curves, and will be reported at 1 minute intervals.
167. Penstock outflow ramping rates will be determined using power station generation output, which will be calibrated to represent resulting flows. Generation output will be reported at intervals of 1 minute.

1.1.84 Aquatic Ecology Monitoring Plan

168. The consent holder shall, prior to commencement of construction of the power station, engage an appropriately experienced and qualified aquatic scientist to prepare an Aquatic Ecology Monitoring Plan in accordance with Conditions 169 to 172 and shall submit this Plan to the Council's Coordinator Compliance Monitoring for certification. The Plan will be certified if the Coordinator is satisfied that it will achieve the outcomes specified in Condition 172. The Plan shall be written in general accordance with the relevant details contained in Schedule 1 of the report provided for the reconvened hearing entitled *TDC Staff Comments & Corrections* dated 10 March 2009. The Plan shall specify the type, method, frequency, purpose and location of the monitoring in respect of:
- a. macroinvertebrates (including mussels) and aquatic plants in Lake Matiri;
 - b. benthic invertebrates and native fish in that Matiri River below the lake outlets;
 - c. the effectiveness of eel passage up the provided connectivity flow (see Condition 149) and over the Weir 1 fish pass; and
 - d. the likelihood of fish stranding, including trout.
169. The purpose of this monitoring shall be to determine:
- a. the effect of lake level fluctuation on the distribution and abundance of macroinvertebrates (including mussels) and aquatic plants;
 - b. whether the flow regime is having any significant effect on benthic invertebrates and native fish in the river;
 - c. the effectiveness of the eel passage over the weir at Outlet 1, and the adequacy of the flow below the weir and recruitment to streams above the lake; and
 - d. whether flow fluctuations downstream of the discharge from the power station are causing significant fish stranding in the river.
170. Monitoring shall be carried out at the following frequencies:
- a. the flow necessary for passage below the weir at Outlet 1 shall be determined by a trial of flow releases to be repeated once every five years during December;
 - b. the effectiveness of eel passage shall be determined by monitoring elver numbers through the trap at weir 1 for five years after commencement of the scheme;
 - c. if the volume of water released from the weir at Outlet 1 to achieve full wetted passage results in one or more continuous section of channel with no surface flow for 5 to 10 metres (as determined using the method in Condition 150) then regular monitoring of the connectivity flow and eel passage should be carried out during the migration season (January to March);
 - d. the age and size structure of the eels shall be determined by a one off sample of at least 50 eels from Lake Matiri 10 years after commissioning of the scheme;
 - e. benthic invertebrates and fish in the river shall be monitored annually between February and March for three years following commissioning of the scheme, and then at not less than five

yearly intervals thereafter, using the same methods as in the pre construction survey. Invertebrate monitoring shall take place after a period of at least 20 days without a flood;

- f. macroinvertebrates (including mussels) and aquatic plants in the lake shall be monitored to determine their abundance and distribution three months after construction of the scheme (or the following summer depending on time of construction) and three years after commissioning of the scheme and thereafter at not less than five year intervals; and
- g. monitoring for stranding of fish shall be carried out from the tail race exit to a point four kilometres downstream on at least three occasions when the MHS is hydropeaking and the natural flow of the Matiri River is less than 7 cubic metres per second. The section of river above the powerhouse shall be inspected immediately following the beginning of the hydropeaking generation and the four kilometre section of river below the powerhouse shall be inspected immediately following the cessation of the hydro-peaking generation. The three hydro-peaking occasions shall be within the first six months following the commissioning of the MHS.

Advice Note:

The elver monitoring programme specified in point c) above shall be recommended by an expert panel with experience in monitoring eel population dynamics. The membership of the Panel shall be subject to agreement between the consent holder and the Tasman District Council. Amongst other things this panel shall consider the requirement for, and feasibility of, before/after monitoring of reference sites to provide a baseline for comparison.

171. The following sites shall be monitored:

Site Number	Location Description	Reason for site
1	Lake Matiri - same sites as previous NIWA report (Sorrel et al 2007) plus one for mussels close to the outlet	To assess the distribution and abundance of macroinvertebrates and aquatic plants in the lake.
2	Matiri River just above West Branch (same sites as monitored before construction of the power scheme)	To assess the effects of flow regime change on benthic invertebrates and native fish in the river.
3	Matiri River between the weir at Outlet 1 and the point where consistent seepage flow emerges from the natural rock dam that formed Lake Matiri	To assess the effectiveness of elver passage from the Matiri River to Lake Matiri.
4	Matiri River just below west branch (same sites as monitored before construction of the power scheme)	To assess the effects of flow regime change on benthic invertebrates and native fish in the river.

172. The following will be the outcomes of the monitoring program:

- a. no significant adverse effect due to lake level fluctuations on macroinvertebrates (including mussels) and aquatic plants due to the operation of the power station;
- b. eel passage in both directions shall be provided for. If monitoring shows that passage is not being provided by the combination of the minimum passage flow and flow over the weir/fish pass, trap and transfer from the power station tailrace shall be carried out;
- c. if significant stranding of fish occurs in the river, further monitoring shall be carried out to determine whether modified ramping rates can alleviate stranding; and
- d. if any significant adverse effects are detected then an independent expert panel shall be convened by the consent holder and consisting of no more than three members with expertise in the appropriate areas, in order to assess the causes of these effects and possible remedies.

Advice Note:

Alterations to the passage requirements or ramping rates may require a variation of conditions.

1.1.85 Information Sharing and signs

173. The calculated flow in the Matiri River below the power station discharge shall be provided to the Council at specified intervals. The intervals at which information is to be provided shall match the frequency that the Council's website is updated and shall be determined in consultation with Council staff.

Advice Notes:

Circumstances beyond the consent holder's control include internet outages.

The calculated flow shall be determined from flow recorder site 2 plus any additional flow from the power station tailrace.

174. Signs shall be erected downstream of the powerhouse at the major river access points informing people that river levels may rise and fall. The signs shall also include information on the likely timing and magnitude of changes in water level and velocity. Prior to the erection of the signs, a draft of the design shall be provided to the Manager of the Nelson Marlborough branch of Fish and Game New Zealand for comment (but not necessarily for approval).

1.1.86 Erosion Control

175. The consent holder is responsible for the design, construction and maintenance of any erosion control works within the Matiri River between Lake Matiri and the Buller River that become apparent and necessary as a direct result of the exercise of this resource consent. The consent holder is also responsible for obtaining any resource consents and water permits that may be required for such works.

1.1.87 Emergency Action Plan

176. The consent holder shall prepare prior to the commissioning of the MHS and, thereafter, have in place at all times an MHS Safety and Emergency Action Plan.
177. The initial Emergency Action Plan shall be supplied to the Council no later than three months following commissioning of the MHS.
178. The consent holder shall review the Emergency Action Plan five yearly and supply a copy of the updated document to the Council's Coordinator Compliance Monitoring.

1.1.88 MHS Maintenance

179. Until such time as the scheme is removed, the consent holder and/or the owner is required to maintain the weirs and all associated structures and scheme infrastructure in a good state of repair. This includes after the scheme is decommissioned.

1.1.89 Discharge from Sluice Gate

180. The consent holder is hereby authorised to discharge mineral debris from upstream of the dam via the dam sluice gate at the outlet 1 weir provided that the following circumstances exist:
- a. the flow of the Matiri River at recorder site 2 exceeds 7 cubic metres per second;
 - b. a significant rain event that is likely to cause flood flows in the Matiri River is forecast to arrive in the next five days;
 - c. the colour of the discharged water does not change the colour of the water in Coal Creek by more than 10 Munsell Units; and
 - d. the consent holder shall keep a record of each discharge event including the date, time and duration of the discharge and this shall be incorporated in the annual report.

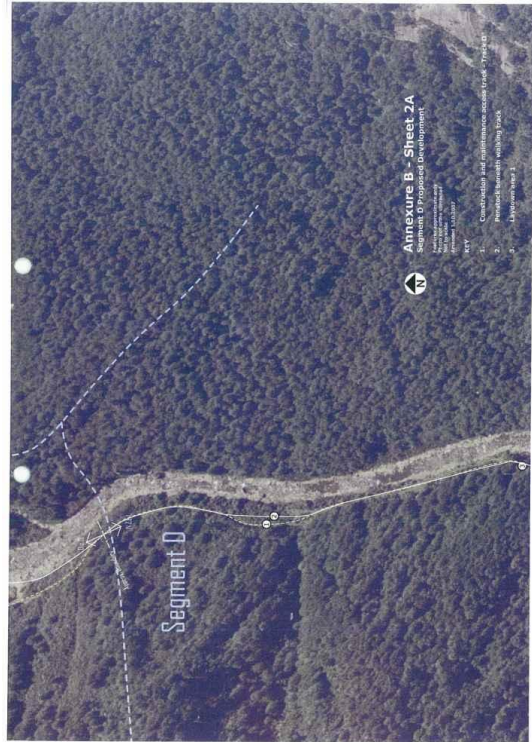
17 ADVICE NOTES

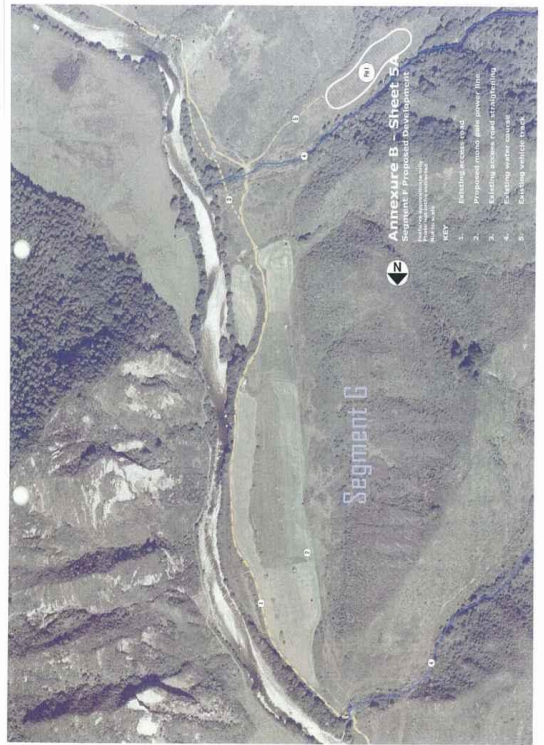
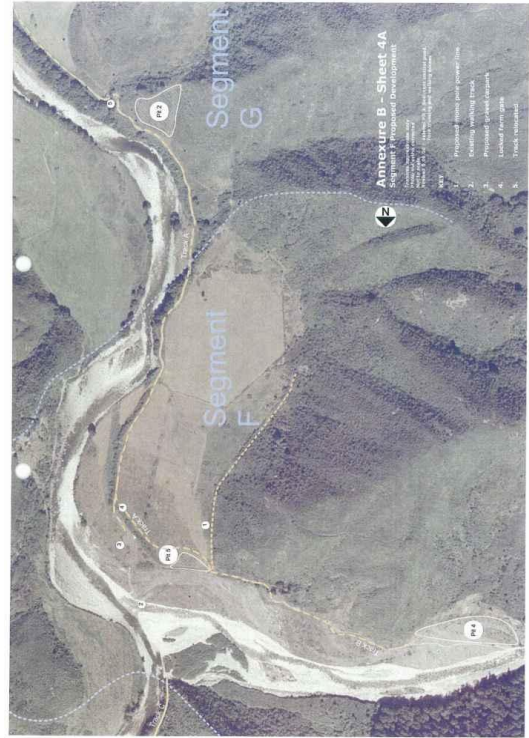
1. This resource consent only authorises the taking and use of water and the discharge from the tailrace to the Matiri River and no other taking or discharge from any pipe, reservoir etc was applied for and none is granted.
2. The purpose of measuring the effects of the discharges from the power station is to determine if there are any effects arising from the exercise of the consent(s) on the water quantity, quality and aquatic ecosystems of the Buller River below the Matiri River confluence.
3. Resource consents RM060938, RM060939, RM060940, RM060941 and RM090023 are not subject to Section 134 of the Act and as such do not “attach to the land”. Therefore, when the ownership of the hydroelectric scheme changes, these consents should also be transferred to the new owners as there are ongoing consent requirements that must be met.
4. Resource consents RM060937 and RM060942 are land use consents required by Section 9 of the Act and are granted to the abovementioned consent holder but Section 134 of the Act states that such land use consents “attach to the land” and accordingly may be enjoyed by any subsequent owners and occupiers of the land. Therefore, any reference to “consent holder” in the conditions shall mean the current owners and occupiers of the subject land. Any new owners or occupiers should therefore familiarise themselves with the conditions of this consent, as there may be conditions that are required to be complied with on an ongoing basis.
5. Access by the Council or its officers or agents to the property is reserved pursuant to Section 332 of the Resource Management Act.
6. All reporting required by this consent should be made in the first instance to the Council’s Coordinator Compliance Monitoring.
7. These resource consents only authorise the activities described above. Any matters or activities not referred to in these consents or covered by the conditions must either:
 - a. comply with all the criteria of a relevant permitted activity rule in the Proposed Tasman Resource Management Plan (PTRMP);
 - b. be allowed by the Resource Management Act; or
 - c. be authorised by a separate resource consent.
8. The works or activities described in Conditions 43 and 175 may require authorisation by way of additional resource consents.
9. Plans attached to these consents are (reduced) copies and therefore will not be to scale and may be difficult to read. Originals of the plans referred to are available for viewing at the Richmond office of the Council. Copies of the Council Standards and documents referred to in this consent are available for viewing at the Richmond office of the Council.
10. Council draws your attention to the provisions of the Historic Places Act 1993 that require you in the event of discovering an archaeological find (e.g., shell, midden, hangi or ovens, garden soils, pit, depressions, occupation evidence, burials, taonga) to cease works immediately, and tangata whenua, the Tasman District Council and the New Zealand Historic Places Trust should be notified within 24 hours. Works may recommence with the written approval of the Council’s Environment & Planning Manager, and the New Zealand Historic Places Trust.

Annexure A Location Plan

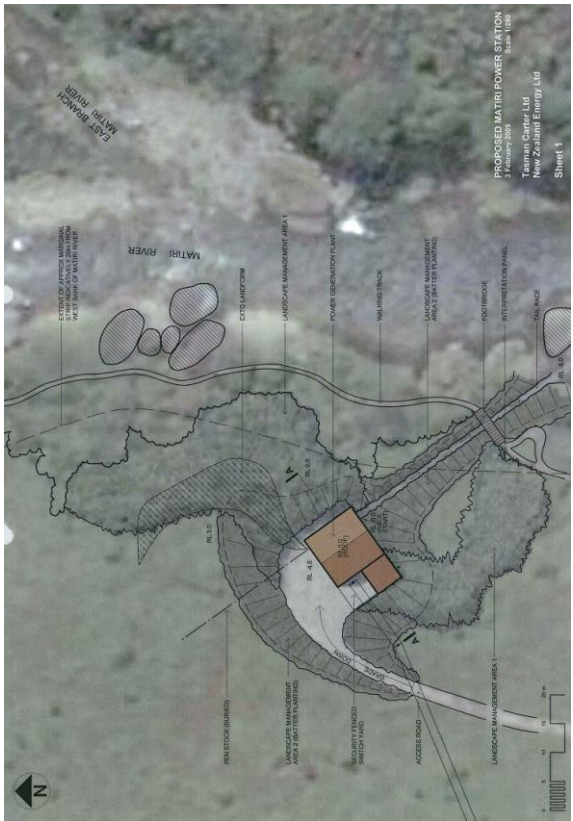


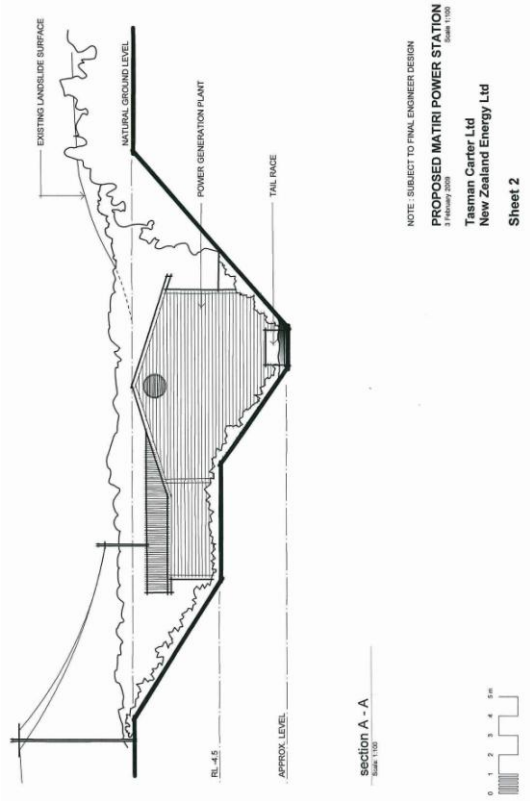
Annexure B Segments taken from Mr Tom Carter's report





**Annexure C
Powerhouse Design**





Annexure D Removal and relocation of boulders

ANNEXURE D
Photos 1, 2 & 3
Photos Points Plan
Inventory of Boulders Affected by Proposed Works

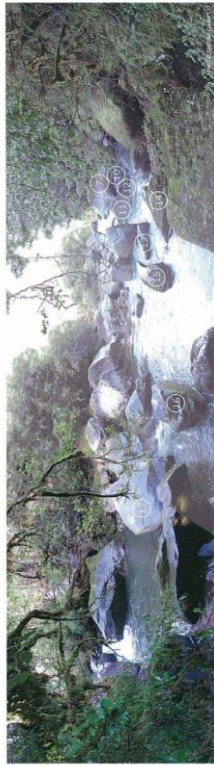
Boulder ID#	Boulders removed permanently	Boulders left in place but slope altered	Boulders removed and put back in place returned to same river position
Boulder 1			
Boulder 2			
Boulder 3			
Boulder 4			
Boulder 5			
Boulder 6			
Boulder 7			
Boulder 8			
Boulder 9			
Boulder 10			
Boulder 11			
Boulder 12			
Boulder 13			
Boulder 14			
Boulder 15			
Boulder 17			

New Zealand Energy Ltd - Hydro Electric Scheme Landscape Report
Tasman District
Tasman Carter Ltd, Tom Carter, landscape architect 6/06/2008



View north from Photo Point 1 (Yellow Boulder Photo Point)

NZ Energy Resource Consent Application and Concession Application
 Manu Valley, Marlborough, Tairātea District
 Photo taken by Tom Carter 11.02.07 (© photographs merged)
 Photograph 1, Amendment # NOT TO SCALE



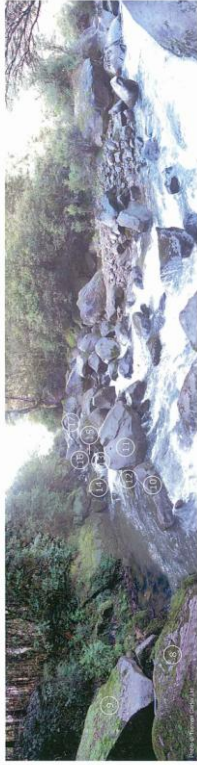
View south from Photo Point 2 (Yellow Boulder Photo Point)

NZ Energy Resource Consent Application and Concession Application
 Manu Valley, Marlborough, Tairātea District
 Photo taken by Tom Carter 11.02.07 (© photographs merged)
 Photograph 2, Amendment # NOT TO SCALE



- KEY
1. Pump station
 2. Water 1
 3. Boundary with site (not currently boxed in)
 4. Horizontal Access Road B
 5. Temporary site office area
 6. Temporary site office area
 7. Temporary site office area
 8. Temporary site office area

NZ Energy Resource Consent Application and Concession Application
 Manu Valley, Marlborough, Tairātea District
 Photo taken by Tom Carter 11.02.07 (© photographs merged)
 Photo Points Area, Amendment # NOT TO SCALE



View north from Photo Point 2 (Yellow Boulder Photo Point)

NZ Energy Resource Consent Application and Concession Application
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 Photo taken by Tom Carter 11.02.07 (© photographs merged)
 Photograph 2, Amendment # NOT TO SCALE