

REPORT ON HYDROELECTRIC DAMS IN NEW ZEALAND AND FISH PASSAGE



Report Prepared for Wai Maori Trustee Limited

By LMK Consulting Ltd

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1. Introduction

In June 2014 Wai Maori hosted the Maori Eel Symposium in Hopuhopu. At this hui fish passage at dams was identified as having a big impact on native fish, particularly eels. Hydro-dams are causing a major barrier for young elvers when finding suitable habitat to live, while also chopping up eels as they migrate to sea to breed.

Wai Maori will utilise the report to discuss with tangata whenua, power companies and local authorities to get the right fish passage conditions into the consent when it is up for renewal. The report will also support the development of a GIS Map which shows the location of each dam, the consent holder and dates of renewal for the consent.

This report covers the following key aspects of hydroelectric dams within New Zealand:

- Name, location and name of consent holder for the relevant dam
- When the resource consent is up for renewal
- Outline of the conditions of consent as they relate to fish passage

The hydroelectric dams and schemes covered in this report by region are:

- Northland – Wairua Hydroelectric
- Waikato - Tongariro power scheme and Waikato Hydro scheme
- Bay of Plenty Region – Aniwhenua, Matahina and Kaimai
- Taranaki - Motukawa, Patea and Mangorie
- Hawkes Bay - Lake Waikaremoana Scheme
- Otago - Clutha and Roxburgh
- Marlborough - Waihopai and Branch River
- West Coast – Wahapo
- Canterbury – Tekapo, Ohau, Coleridge, Benmore, Rakiatia

Acknowledgements to those local authorities that assisted with the compiling of this report and supported by providing guidance and copies of information as required.

2. Northland Region

Wairua Hydro Station

The Wairua power station owned by Northpower was first built in the early 1900's with this first of the generators installed in 1916. The water canal intake was upgraded in 2009. . The new weir flap gates allow better water management of the river in flood situations and reduced maintenance costs. The power station's aging control system has also been replaced to maximise output and reduce outages.

A 4th generator was installed at the site in 2007 and with the latest improvements to the canal walls, control systems and increased capacity (5MW or 50,000 100 watt light bulbs) the power station can now run at its optimum level. This work has also resulted in a station that is now a solid robust structure and the life of the asset has also been extended well into the future. The maximum half hourly system demand on Northpower's network is approximately 147 MW drawing supply from Transpower's national grid at five main substations:

- Maungatapere - 45 MW
- Bream Bay - 45 MW
- Dargaville - 12 MW
- Maungaturoto - 18 MW
- Kensington - 65 MW

Consent Holder	Northpower Ltd ¹
Resource Consent Number	Water Permit 4845
Date of Commencement	20 March 1992
Location	Wairua Falls Rd
Details of Activity	To erect structures and to dam the Wairua River by means of automatic tilting gates and vertical lift sluice gate, approximately 140 metres upstream of the Wairua Falls To divert, use and take water at the rate of up to 30 cubic metres per second for generating electric power at a power generating plant approximately 2.2 kilometres downstream of the Wairua Falls
Consent Duration and Review	Expires: 31 May 2020
Conditions of Consent – Fish Passage	Conditions: 13. <i>i) a climbing fish pass shall be installed to allow the passage of upstream migrating fish from the river near the power generating house into the headpond. The fish pass design shall be submitted to Council prior to construction,</i>

¹ Northland Regional Council (1992), Northpower – Water Permit 4585

- ii) The penstock(s) shall be adequately screened with grills having no gap wider than 25mm,*
- iii) Provision shall be made in the headpond for downstream migration of eels. The design for this feature shall be submitted to Council for approval prior to construction,*
- iv) iv) Fish passes shall be operated and maintained in accordance with their design and intended function.*

2. Waikato Region

The Waikato Region hosts two substantial hydroelectric schemes, the Tongariro Power Scheme and the Waikato River Hydroelectric Scheme.

The Tongariro Power Scheme (1400 GWh) diverts water from the south side of Mount Ruapehu and the west and north sides Mount Tongariro. This leads into the Tongariro River and eventually into the Waikato River. The scheme is comprised of:

- Rangipo (underground cavern)
- Tokaanu
- Moawhango

Tongariro Power Scheme

Consent Holder	Genesis Energy Limited ²
Resource Consent Number	103879
Date of Commencement	1 December 2004
Location	(Tongariro Power Scheme) Tongariro - NZMS 260 T20:499-179 (Rangipo Dam and Tunnel Rangipo Dam Flushing)
Details of Activity	Poutu Section/Lake Rotoaira East - Dam the outlet of Lake Rotoaira by means of the Poutu Dam Structure and to discharge water to the Poutu Stream.
Consent Duration and Review	35 years after the date of commencement.
Conditions of Consent – Fish Passage	No specific Fish Passage Clause

Consent Holder	Genesis Energy Limited ³
Resource Consent Number	103867.01.05
Date of Commencement	1 December 2004
Location	(Tongariro Power Scheme) Tongariro - NZMS 260 T20:499-179 (Rangipo Dam and Tunnel Rangipo Dam Flushing)
Details of Activity	To dam the Tongariro River by means of the Rangipo Dam structure and to divert and take water at a maximum rate of up to 69 cubic metres per

² Waikato Regional Council (2004), Genesis Energy Limited – Resource Consent 103879

³ Waikato Regional Council (2004), Genesis Energy Limited – Resource Consent 103867.01.05

	<p>second from the Tongariro River, to discharge water from the Rangipo Dam to the Tongariro River, and to undertake the following activities for the purpose of flushing, moving, and removing accumulated sediment in the vicinity of the Rangipo Dam structure;</p> <ol style="list-style-type: none"> i) to enter, pass across or disturb the bed of the Rangipo headpond and the Tongariro River; ii) to deposit removed material on the bed of the Rangipo headpond and the Tongariro River downstream of the Rangipo Dam; iii) to divert water; iv) to discharge water, sediment or other materials into water
<p>Consent Duration and Review</p>	<p>35 years after the date of commencement. However there is review of conditions clauses within the consent which could trigger a consultation or discussion on fish passage.</p> <p>20. <i>The Council may during the month of June in the fifth year after the commencement of this consent, and every five years thereafter, serve notice on the Consent Holder pursuant to section 128(1)(a)(iii) of the Resource Management Act 1991 of its intention to review:</i></p> <ul style="list-style-type: none"> • <i>Conditions 14, 15 and 16 for the purpose of assessing the sediment flushing requirements; and/or</i> • <i>The extent of monitoring required by condition 17; and/or</i> • <i>The conditions of this consent for the purpose of avoiding, remedying or mitigating any adverse effect on the environment that may arise from the exercise of this resource consent and that was not anticipated at the time of commencement of this consent.</i> <p>21. <i>The Council may during the month of June in the seventh year after commencement of this consent serve notice on the Consent Holder pursuant to section 128(1)(a)(iii) of the Resource Management Act 1991 of its intention to review:</i></p> <ul style="list-style-type: none"> • <i>Condition 10 of this consent relating to scouring of periphyton in the reach of river between the Rangipo Dam and the Poutu Intake; and/or</i> • <i>The extent of monitoring required by condition 10.</i>
<p>Conditions of Consent – Fish Passage</p>	<p>No specific Fish Passage Clause</p>

Waikato Hydro System Consents

The Waikato is a series of hydrostations starting from Lake Taupo. The river has a series of eight dams and nine hydroelectric power stations that generate electricity for the national grid. The power scheme begins at Lake Taupo, which has control gates to regulate the flow of water into the river. Once released through the gates it takes over 18 hours for the water to flow to the last power station at Karapiro. On its journey downstream it passes through power stations at Aratiatia, Ohakuri, Atiamuri, Whakamaru, Maraetai, Waipapa, Arapuni and Karapiro. Approximately 4000 (GWh) of electricity is generated annually by the scheme, which is around 13% of New Zealand's total electrical generating capacity.

Consent Holder	Mighty River Power ⁴
Resource Consent Number	RC 105226, RC 105227, RC 105228
Date of Commencement	12 April 2006
Location	Waikato River from Lake Taupo Control Gates to Lake Karapiro
Details of Activity	These consents authorize damming, diversion and discharge of the full available flow of the Waikato River
Consent Duration	35 years after the date of commencement
Conditions of Consent – Fish Passage	<p>Conditions</p> <p>7.8 <i>The consent holder shall make available reasonable access to parties authorised to undertake transfer of elvers from below Karapiro dam to any of the hydro reservoirs.</i></p> <p>a) <i>At least 12 months prior to the first five-yearly opportunity for consent review (as defined in condition 8.7 below), the consent holder shall provide to the Waikato Regional Council a peer reviewed report addressing possible means of allowing for transfer or passage of migrating adult eels from above to below the Karapiro and Arapuni dams.</i></p>

⁴ Waikato Regional Council (2006), Might River Power – Resource Consent RC 105226, RC 105227, RC 105228

3. Bay of Plenty Region

Aniwhenua Scheme

The 25MW Aniwhenua hydroelectric scheme in the eastern Bay of Plenty was commissioned in 1980 within 3 years of construction being commenced. The scheme incorporates a 2.2 km long headrace canal and two dams of moderate height, and is built in an area of ignimbrite rock and airfall volcanic ashes. Equipment includes radial and flap type flood gates, wheeled penstock intake closure gates and twin vertical shaft Francis turbines.

Consent Holder	Bay of Plenty Energy Limited ⁵
Resource Consent Number	20190-0
Date of Commencement	5 November 1976
Location	Lake Aniwhenua
Details of Activity	<ul style="list-style-type: none"> - To dam the Rangitaiki River and Pokairoa Stream at their confluence to form a lake to be known as the 'Aniwhenua Lake' - Dam the Pahekeheke to form the Pahekeheke Head pond - Divert water from Lake Aniwhenua into a canal leading to the Pahekeheke Headpond - Take water from Lake Aniwhenua through an outlet pipe, use the water for the generation of electric power and discharge water into the original course of the Rangitaiki River - Downstream of Lake Aniwhenua - Take water from Pahekeheke Headpond through a control structure and penstocks leading to a powerhouse and use the water for the generation of electric power - Discharge water from Lake Aniwhenua into the original course of the Rangitaiki River - Discharge water from the Pahekeheke Headpond through a draw off pipe into the original course of the Pahekeheke Stream - Discharge water from the powerhouse into the Rangitaiki river downstream of the Aniwhenua Falls
Consent Duration	-
Conditions of Consent – Fish Passage	No specific fish passage clause.

⁵ Bay of Plenty Regional Council (1976), Bay of Plenty Energy Limited – Resource Consent 20190-0

Consent Holder	Bay of Plenty Energy Limited ⁶
Resource Consent Number	20458-1
Date of Commencement	16 February 1979
Location	Lot 1, DPS 4730, Block 11, Galatea S.D (Whakatane District)
Details of Activity	To divert the Hikurangiha Stream and discharge back into Aniwhenua Lake
Consent Duration	-
Conditions of Consent – Fish Passage	No specific fish passage clause.

Consent Holder	Bay of Plenty Energy Limited ⁷
Resource Consent Number	50158-0
Date of Commencement	9 February 1993
Location	Rangitaiki River Blk IV, Galatea SD (Whakatane District Council)
Details of Activity	A land use consent to carry out and maintain works in the bed of the Rangitaiki River
Consent Duration	Expires: 30 September 2026
Conditions of Consent – Fish Passage	No specific fish passage clause.

Consent Holder	Bay of Plenty Energy Limited ⁸
Resource Consent Number	50341-0
Date of Commencement	17 May 1994
Location	Lake Aniwhenua, Blk II, Galatea SD (Whakatane District)
Details of Activity	A land use consent to extend/maintain two existing training banks at the head of Lake Aniwhenua
Consent Duration	Expires: 31 March 2029

⁶ Bay of Plenty Regional Council (1978), Bay of Plenty Energy Limited – Resource Consent 20458-1

⁷ Bay of Plenty Regional Council (1993), Bay of Plenty Energy Limited – Resource Consent 50158-0

⁸ Bay of Plenty Regional Council (1994), Bay of Plenty Energy Limited – Resource Consent 50341-0

Conditions of Consent – Fish Passage	Conditions: <i>6.2 The Grantee shall maintain the channel between the training bank and the eastern bay to ensure that fish passage to the Hikurangi Stream is not impeded by these works.</i>
Consent Holder	Bay of Plenty Energy Limited ⁹
Resource Consent Number	60592
Date of Commencement	12 February 2001
Location	Pokairoa Stream, Arm of Lake Aniwhenua, Blk II, Galatea SD (Whakatane District)
Details of Activity	<ul style="list-style-type: none"> - A water permit to disturb the bed through the taking of sediment and water from the Pokairoa Stream; and - A land use consent to discharge river sediment and water onto land and undertake large scale earthworks and place pipes on the ground; and - To discharge settled dredge water and suspended solids into the Pokairoa Stream arm of Lake Aniwhenua
Consent Duration	Expires: 31 December 2020
Conditions of Consent – Fish Passage	Conditions: <i>6.8 The works shall carried out in a manner that minimises disruption to fish passage</i>

Consent Holder	Bay of Plenty Energy Limited ¹⁰
Resource Consent Number	60348
Date of Commencement	14 March 2000
Location	Lake Aniwhenua. Crown Land (lake bed), adjacent to Lot 5 DPS 30235 (rec Reserve), Block I, Galatea SD (Whakatane District)
Details of Activity	A land use consent to use a jetty on the bed of Lake Aniwhenua
Consent Duration	Expires: 31 January 2020
Conditions of Consent – Fish Passage	No specific fish passage clause.

⁹ Bay of Plenty Regional Council (2001), Bay of Plenty Energy Limited – Resource Consent 60392

¹⁰ Bay of Plenty Regional Council (2000), Bay of Plenty Energy Limited – Resource Consent 60348

Consent Holder	Trust Power Limited ¹¹
Resource Consent Number	50880-0
Date of Commencement	26 January 1999
Location	Rangitaiki River. Lot 1, DPS 77091, Block XV, Rangitaiki Upper SD (Whakatane District)
Details of Activity	A land use consent to disturb the bed of, and to erect and use an access ramp, in the bed of the Rangitaiki River
Consent Duration	Expires: 30 October 2033
Conditions of Consent – Fish Passage	No specific fish passage clause.

Matahina

Matahina Hydroelectric Power Scheme is on the Rangitaiki River, in the central North Island of New Zealand. The scheme was commissioned in 1967. Matahina’s 86 metre high earth dam is the largest of this type in the North Island. Average annual generation output is 290 GWh. There are plans to further assist fish passage at the dam

Consent Holder	Trust Power Limited ¹²
Resource Consent Number	65750
Date of Commencement	Unknown (not on Consent)
Location	Matahina Dam
Details of Activity	<ul style="list-style-type: none"> - Impound the Rangitaiki River behind the Matahina Dam; - Maintain structure on the bed of the Rangitaiki River being the Matahina Dam, power house and associated structures; - Take and use up to 160 cumecs of water from Lake Matahina for the purpose of power generation; - Take and use to 140 litres per second of water to 3 locations on the Rangitaiki River from a hydroelectric generation scheme and substation for cooling water purposes; - Discharge contaminants, in the form of stormwater, to 3 locations on the Rangitaiki River; - Discharge drainage water from the Matahina Dam, power house and spillway to a river at 2 locations - Discharge up to 1980 cumecs of water to the Rangitaiki River from the spillway of the Matahina Dam;

¹¹ Bay of Plenty Regional Council (1999), Trust Power Limited – Resource Consent 50880-0

¹² Bay of Plenty Regional Council (1999), Trust Power Limited – Resource Consent 65750

	<ul style="list-style-type: none"> - Discharge incidental volumes of contaminants to the Rangitaiki River from the Matahina Dam left abutment dewatering tunnel; - Apply herbicide (by hand) to all concrete and steel structure associated with the Matahina Dam
Consent Duration	Expires: 31 August 2048
Conditions of Consent – Fish Passage	<p><i>Conditions:</i></p> <p><i>46. The consent holder shall facilitate the upstream passage of native fish species that currently arrive at the Matahina Dam face (targeting longfin eel, shortfin eel, koaro, banded kokopu, short jaw kokopu and giant kokopu species and any other species considered appropriate by the Chief Executive (CE) of the Bay of Plenty Regional Council (BOPRC) (or delegate) (the target species) and downstream passage of adult eels past the Matahina Dam, the objective of which is to ensure that the Matahina Dam does not prevent the establishment and maintenance of diadromous native fish populations in the Rangitaiki River catchment upstream of the Matahina Dam.</i></p> <p><i>47. Within 6 months of this consent commencing the consent holder shall have submitted a report, prepared by a suitably qualified independent expert(s), to the CE of the BOPRC (or delegate) that describes:</i></p> <ul style="list-style-type: none"> <i>a. The up and downstream fish passage systems that are practicable for use at the site. And the system that the consent holder will adopt to comply with Condition 46; and</i> <i>b. The programme of monitoring that will be undertaken to record the live fish (by number and species);</i> <ul style="list-style-type: none"> <i>i. Transferred upstream of the Matahina Dam, and</i> <i>ii. Observed achieving passage downstream of the Matahina Dam</i> <p><i>To demonstrate whether the fish passage systems are assisting in the achievement of the objective set out in, Condition 46, and, to assess the effectiveness of the fish passage systems implemented; and</i></p> <i>c. The targets (set in terms of numbers transferred and survivability) that are to be employed by the consent holder to measure the effectiveness of the fish passage systems and the contribution that their implementation is making to the achievement of the objective set out in Condition 46.</i> <p><i>48. When preparing the report required by Condition 47, the consent holder shall consult with the DoC, Fish and Game, Forest and Bird, Kokopu Trust, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa, and Ngati Umutahi (and any other parties deemed relevant by the CE BOPRC). This shall include submitting a draft of the report to those parties for comment and allowing one month for a response. The consent holder shall provide a copy of any comments received to the CE BOPRC (or delegate).</i></p>

49. The report required by Condition 47 shall be submitted to the CE BOPRC (or delegate) and must, as a minimum:

a. For upstream passage:

- i. Set a target (or targets) for the effectiveness of the fish trap and transfer system and detail how the achievement of the target (s) will be monitored; and
- ii. Specify the period over which the fish trap and transfer system will be operated (this period will align with the peak migration period(s)) for the target species listed in Condition 46. The Consent Holder is to adopt a precautionary period of operation for the fish trap and transfer system until the CE BOPRC (or delegate) certifies that he/she is satisfied that the peak migration period is adequately defined; and
- iii. Specify the programme of monitoring that is to be undertaken to refine the peak migration period(s), and
- iv. Detail the design and location of the fish trap, the methodology to be used in the transfer of the live fish and specify the locations where the live fish will be transferred to and the reasons for the locations; and
- v. Specify the measures to be undertaken to enhance fish survival during the transfer and post release periods.

b. For downstream passage:

- i. Set a target (or targets) for the effectiveness downstream eel passage system and detail how the achievement of the target (s) will be monitored; and
- ii. Describe the proposed downstream adult eel passage system, and detail the alternative options considered/assessed, the costs and benefits of each alternative and set out the reasons for recommending the proposed adult eel passage system.

50. Within 12 months of receiving certification from the CE BOPRC (or delegate) that the report required in Condition 47 addresses the matters set out in Conditions 47, 48, and 49 the consent holder shall implement the fish and adult eel passage systems and monitoring programmes recommended in the report.

51. The consent holder shall annually report (on the anniversary of the commencement of this consent), to the CE BOPRC (or delegate) on the work undertaken to comply with Condition 59 and the monitoring undertaken including:

- a. An estimate of the number of each species transferred upstream of the Matahina Dam and the location of their release; and
- b. An estimate of the number of adult eels that have passed downstream of the Matahina Dam; and
- c. Results of the monitoring conducted to assess the number of fish transferred and the survivability of the fish transferred upstream and downstream; and

- d. *Any new knowledge and/or technology that has become available and which may assist in the achievement of the objectives set out in Condition 46.*

52. Within 3 years of this consent commencing the consent holder shall appoint a suitably qualified independent expert (or experts) to prepare and submit to the CE BOPRC (or delegate) a report that:

- a. *Details of the work and the outcomes of the monitoring that has been undertaken to comply with Conditions 46 to 51;*
- b. *Reports the contribution made by the upstream and downstream fish passage systems to the achievement of the objective set out in Condition 46;*
- c. *Assesses the effects of the Matahina Dam and Lake Matahina on fish and describes the benefits of the work that has been undertaken to maintain and enhance these populations; and*
- d. *Makes recommendations about mitigating the effects of the Matahina Dam and Lake Matahina on upstream fish populations, including:*
 - i. *The species that should be targeted for any ongoing facilitation of passage;*
 - ii. *Any changes to the programme that would help achieve the objective set out in Condition 46;*
 - iii. *Describing alternative measures and/or programmes for avoiding, remedying or mitigation the effects of impeding fish passage, in the event that the focus on facilitation of passage is shown to be unsuccessful in maintaining viable populations of the target species upstream of Lake Matahina.*

53. When preparing the report required by Condition 52, the consent holder shall consult with the DoC, Fish and Game, Forest and Bird, Kokopu Trust, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa, and Ngati Umutahi (and any other parties deemed relevant by the CE BOPRC). This shall include submitting a draft of the report to those parties for comment and allowing one month for a response. The consent holder shall provide a copy of any comments received to the CE BOPRC (or delegate).

54. Within 6 months of receiving certification from the CE BOPRC (or delegate) that the report addresses the matters set out in Conditions 52 and 53, the consent holder shall implement the mitigation measures recommended in the report.

55. Where the consent holder has implemented additional mitigation measures in accordance with Condition 54, it shall repeat the monitoring and reporting requirements set out in Conditions 49 to 54.

56. Notwithstanding Condition 55, the monitoring and reporting requirements set out in Conditions 51, 52, and 53 shall be repeated and reported to the CE BOPRC (or delegate) by the 31 December in following

years 2020, 2025, 2030, 2035, 2040 and 2045.

57. The consent holder shall provide final copies of all reports required by Conditions 47 to 56 to DoC, Fish and Game, Forest and Bird, Kokopu Trust, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa, Ngati Umutahi and BOPRC (as consent authority) and any other parties deemed relevant by the CE BOPRC(or delegate).

Consent Holder	Trust Power Limited ¹³
Resource Consent Number	60102
Date of Commencement	26 January 1999
Location	Matahina Dam. Lot 1, DPS 77091, Block XV, Rangitaiki Upper SD (Whakatane District)
Details of Activity	A land use consent to disturb the bed of, and to erect and use a jetty in the bed of Lake Matahina
Consent Duration	Expires: 30 October 2033
Conditions of Consent – Fish Passage	No specific fish passage clause.

Consent Holder	Trust Power Limited ¹⁴
Resource Consent Number	63299
Date of Commencement	26 January 1999
Location	Rangitaiki River. North of Matahina Power Station, Lot 1 DPS 77091 (Whakatane District)
Details of Activity	A land use consent to: <ul style="list-style-type: none"> - Carry out small-scale earthworks in an erosion hazard zone - Remove, place and use a structure in, on, under or over the bed of the Rangitaiki River
Consent Duration	Expires: 6 December 2005
Conditions of Consent – Fish Passage	No specific fish passage clause.

¹³ Bay of Plenty Regional Council (1999), Trust Power Limited – Resource Consent 60102

¹⁴ Bay of Plenty Regional Council (2005), Trust Power Limited – Resource Consent 63299

Consent Holder	Trust Power Limited ¹⁵
Resource Consent Number	63388
Date of Commencement	11 February 2006
Location	Lake Matahina, Lot 1, DPS 77091, Block XV Rangitaiki Upper SD (Whakatane District)
Details of Activity	<ul style="list-style-type: none"> - Use erect, reconstruct, place, alter and extend two existing boat ramps and a jetty on Lake Matahina; and - Disturb the bed of Lake Matahina; and - Discharge sediment contaminated stormwater to Lake Matahina
Consent Duration	Expires: 31 October 2040
Conditions of Consent – Fish Passage	No specific fish passage clause.

Kaimai Scheme

Kaimai Hydroelectric Power Scheme is in the Wairoa River catchment, in the North Island of New Zealand. The scheme consists of four power stations: Lloyd Mandeno Station, Lower Mangapapa Station, Ruahihi Station and Kaimai 5 Station; with an average annual generation output of 167 GWh. At Kaimai 5 Station a diversion tunnel feeds Lake Mangaonui and there are extensive recreation areas around McLaren Falls.

Consent Holder	Trust Power Limited ¹⁶
Resource Consent Number	61766
Date of Commencement	13 February 2003
Location	Kaimai Hydro Electric Scheme in the Ngatuhua Stream. Waiti Kuranui Block of the Kaimai Mamaku State Forest Park GAZ 1975 P2328, Block IX Otanewainuku SD (Western Bay of Plenty District)
Details of Activity	<p>A land use consent to:</p> <ul style="list-style-type: none"> - Excavate and disturb the bed of the Ngatuhua Stream; and - Deposit material on the bed of the Ngatuhua Stream; and - Enter the bed of the Ngatuhua Stream
Consent Duration	Expires: 1 December 2026
Conditions of Consent – Fish Passage	No specific fish passage clause.

¹⁵ Bay of Plenty Regional Council (2006), Trust Power Limited – Resource Consent 63388

¹⁶ Bay of Plenty Regional Council (1999), Trust Power Limited – Resource Consent 61766

Consent Holder	Trust Power Limited ¹⁷
Resource Consent Number	50880-0
Date of Commencement	26 January 1999
Location	Rangitaiki River. Lot 1, DPS 77091, Block XV, Rangitaiki Upper SD (Whakatane District)
Details of Activity	A land use consent to disturb the bed of, and to erect and use an access ramp, in the bed of the Rangitaiki River
Consent Duration	Expires: 30 October 2033
Conditions of Consent – Fish Passage	No specific fish passage clause.

¹⁷ Bay of Plenty Regional Council (1999), Trust Power Limited – Resource Consent 50880-0

3. Taranaki Region

The Taranaki region has 3 hydroelectric schemes the Motukawa, Mangorie and Patea Dam. Of the first 14 publicly available electricity supplies in New Zealand, seven were in Taranaki. Most of these were hydroelectric schemes, based on the seasonally consistent water supply provided by Mt Taranaki/Egmont's many streams. The schemes have combined power generation of 161.7 GWh.

Mangorie Scheme

Consent Holder	Trust Power Limited ¹⁸
Resource Consent Number	2053-3
Date of Commencement	19 April 2013
Location	Lake Mangamahoe Junction Road New Plymouth
Details of Activity	To divert up to 10 cubic metres per second of water from the Waiwhakaiho River via a diversion weir and associated intake structures into Lake Mangamahoe through the Mangorie Hydroelectric Power Scheme and back into the river approximately six kilometres downstream of the diversion point
Consent Duration	Consent Expires 1 June 2021, Review date June 2016
Conditions of Consent – Fish Passage	<p>Conditions</p> <p>5. <i>That the consent holder shall maintain as far as reasonable practicable, the river channel below the diversion weir to the 'Meeting of the Waters' for the purpose of enhancing available fish passage and habitat, to the satisfaction of the Chief Executive, Taranaki Regional Council; and, the Taranaki Regional Council will inspect the fish passage device and river channel for compliance after any significant river fresh.</i></p>

Consent Holder	Trust Power Limited ¹⁹
Resource Consent Number	4887-1
Date of Commencement	4 September 1996
Location	Lake Mangamahoe Junction Road New Plymouth
Details of Activity	To erect and maintain structures associated with the diversion of water from the Waiwhakaiho River into Lake Mangamahoe for hydroelectric power generation purposes

¹⁸ Taranaki Regional Council (2013), Trust Power Limited – Resource Consent 2053/3

¹⁹ Taranaki Regional Council (1996), Trust Power Limited – Resource Consent 4887/1

Consent Duration	Consent Expires 1 June 2021, Review date June 2001, June 2006, June 2011, June 2016
Conditions of Consent – Fish Passage	<p>Conditions</p> <p>2. <i>That the consent holder shall install and maintain, to the satisfaction of the Chief Executive, Taranaki Regional Council, a structure at the diversion weir to enable the passage of native fish, juvenile trout and adult trout</i></p>

Consent Holder	Trust Power Limited ²⁰
Resource Consent Number	2053-3
Date of Commencement	19 April 2013
Location	Lake Mangamahoe Junction Road New Plymouth
Details of Activity	To divert up to 10 cubic metres per second of water from the Waiwhakaiho River via a diversion weir and associated intake structures into Lake Mangamahoe through the Mangorie Hydroelectric Power Scheme and back into the river approximately six kilometres downstream of the diversion point
Consent Duration	Consent Expires 1 June 2021, Review date June 2016
Conditions of Consent – Fish Passage	<p>Conditions</p> <p>5. <i>That the consent holder shall maintain as far as reasonable practicable, the river channel below the diversion weir to the 'Meeting of the Waters' for the purpose of enhancing available fish passage and habitat, to the satisfaction of the Chief Executive, Taranaki Regional Council; and, the Taranaki Regional Council will inspect the fish passage device and river channel for compliance after any significant river fresh.</i></p>

Patea Dam

Consent Holder	Trust Power Limited ²¹
Resource Consent Number	0489-2
Date of Commencement	27 March 2012
Location	Patea Hydroelectric Power Scheme, Maben Rd, Hurleyville, Patea

²⁰ Taranaki Regional Council (2013), Trust Power Limited – Resource Consent 2053/3

²¹ Taranaki Regional Council (2012), Trust Power Limited – Resource Consent 0489-2

Details of Activity	To dam the Patea River (forming Lake Rotorangi) and divert water from Lake Rotorangi through the Scheme's intake structure, the service spillway, auxiliary spillway and emergency spillway, for hydro-electric power generation purposes.
Consent Duration	Consent Expires 1 June 2040, Review date June 2016
Conditions of Consent – Fish Passage	<p>Conditions</p> <p>19. <i>The consent holder shall take all reasonable steps to ensure that the Patea Dam and lake Rotorangi do not prevent the establishment and maintenance of populations of longfin eels, shortfin eels, lamprey, koaro, banded kokopu, giant kokopu and short jaw kokopu (the 'target species') in the major areas of suitable habitat upstream of Lake Rotorangi. The objective shall be to establish and maintain populations of the target species that are comparable with those in similar barrier-free habitats. The steps to be taken shall include:</i></p> <p style="padding-left: 40px;"><i>a) Operating and maintaining a trap and transfer programme to facilitate passage of the target species upstream</i></p> <p style="padding-left: 40px;"><i>b) Undertaking one re-seeding of juvenile lamprey to the upper catchment to facilitate transfer of that species upstream; and</i></p> <p style="padding-left: 40px;"><i>c) Operating and maintaining a system to facilitate the non-lethal downstream passage of adult eels from upstream of the Patea Dam to below the tailrace.</i></p> <p>Advice Note: <i>In carrying re-seeding of juvenile lamprey under condition 19(b) the consent holder shall be aware that it will require approvals under the Conservation Act 1987</i></p> <p>20. <i>Within 6 months of the commencement of this consent, the consent holder shall have prepared and submitted a comprehensive report to the Chief Executive Taranaki Regional Council that describes the up and downstream fish passage systems that the consent holder will adopt to achieve compliance with condition 19.</i></p> <p>21. <i>The report required by condition 20 must as a minimum:</i></p> <p style="padding-left: 20px;"><i>a) For upstream passage:</i></p> <p style="padding-left: 40px;"><i>(i) Specify the design and location of the fish trap;</i></p> <p style="padding-left: 40px;"><i>(ii) Specify the period over which the fish trap and transfer programme will be operated (this period will align with the peak migration periods for each of the target species);</i></p> <p style="padding-left: 40px;"><i>(iii) Detail the methodology to be used in the transfer of the fish, including a requirement for the target species to be transferred to suitable areas upstream of Lake Rotorangi (ranging from the mouths of upstream tributaries to above Stratford depending on species);</i></p> <p style="padding-left: 40px;"><i>(iv) Specify the proposed locations of the releases of each species and the reasons for those locations being chosen;</i></p> <p style="padding-left: 40px;"><i>(v) Specify the measures to be undertaken to enhance fish survival during the transfer and post release periods;</i></p>

	<p>(vi) Specify the measures to be undertaken to avoid the transfer of smelt;</p> <p>(vii) Within the first year of commencement of consent, detail a proposed means of transferring juvenile lamprey from other catchments to upstream tributaries of Lake Rotorangi on one occasion for the purposes of facilitating the passage of lamprey upstream.</p> <p>b) For downstream passage:</p> <p>(i) Set an objective for the effectiveness of the downstream fish passage system; and</p> <p>(ii) Describe the proposed non-lethal fish passage system for adult eels, and detail the alternative options considered/ assessed, the costs and benefits of each alternative and set out the reasons for recommending the proposed fish passage system</p> <p>22. In preparing any report referred to in conditions 20 and 21, the consent holder shall carry out reasonable consultation with DoC, Nga Rauru Kiiitahi and Ngati Ruanui that includes submitting the report to those parties for comment and allowing one month for a response. The consent holder shall provide and comments received from DoC, Nga Rauru Kiiitahi or Ngati Ruanui to the Chief Executive, Taranaki Regional Council.</p> <p>23. Within 12 months of receiving certification from the Chief Executive, Taranaki Regional Council that the report addresses the matters set out in conditions 20 and 21, the consent holder shall implement the fish passage systems detailed in the report prepared in accordance with conditions 20 and 21.</p>
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Motukawa

Consent Holder	Trust Power Limited ²²
Resource Consent Number	6390-1
Date of Commencement	23 June 2006
Location	Motukawa Race, Mangaotea Rd, Ratapiko, Inglewood
Details of Activity	To impound water behind a dam on the Motukawa Race for hydroelectric power generation purposes
Consent Duration	Consent Expires 1 June 2022, Review dates June 2009 and June 2015
Conditions of Consent – Fish Passage	Conditions

²² Taranaki Regional Council (2006), Trust Power Limited – Resource Consent 6390/1

	<ol style="list-style-type: none"> <i>The consent holder shall ensure that the intake is appropriately screened to avoid the entrapment of freshwater fauna.</i> <i>In accordance with section 128 of the Resource Management Act 1991, the Taranaki Regional Council may review the conditions of this consent if, after the completion of the first 6 bypass events, the monitoring shows that a significant number of trout accumulate in the generator head pond and are not being passed by the bypass valve, or there are a significant number of trout mortalities caused by passage through the turbine.</i>
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Consent Holder	Trust Power Limited ²³
Resource Consent Number	5086-1
Date of Commencement	19 September 2001
Location	Ratapiko Rd, Ratapiko, Inglewood
Details of Activity	To erect, place, use and maintain various structures in, on and over the bed of Lake Ratapiko in the Waitara catchment for hydroelectric power generation purposes
Consent Duration	Consent Expires 1 June 2022, Review date June 2001, June 2003, June 2009 and June 2015
Conditions of Consent – Fish Passage	<p>Conditions</p> <ol style="list-style-type: none"> <i>That the consent holder shall maintain the penstock intake screens with spaces no larger than 30mm in order to minimise eel and fish entrapment</i> <i>That the consent holder shall install, maintain and operate a light barrier, within 6 months of the granting of this consent, for the purpose of diverting fish from the penstock intake screens.</i>

Consent Holder	Trust Power Limited ²⁴
Resource Consent Number	5080-1
Date of Commencement	19 September 2001
Location	Manganui River, Tariki Rd, Ratapiko, Inglewood

²³ Taranaki Regional Council (2001), Trust Power Limited – Resource Consent 5086/1

²⁴ Taranaki Regional Council (2001), Trust Power Limited – Resource Consent 5080/1

Details of Activity	To erect, place, use and maintain weir and various structures associated with hydroelectric power generation activities in the Manganui River in the Waitara Catchment
Consent Duration	Consent Expires 1 June 2022, Review date June 2001, June 2003, June 2009 and June 2015
Conditions of Consent – Fish Passage	<p>Conditions</p> <ol style="list-style-type: none"> 1. <i>That the consent holder shall design, install, maintain and monitor a structure at the weir to enable the passage of eels, native fish, juvenile and adult trout.</i> 2. <i>That the fish passage structure, required by condition 1, shall be constructed within 12 months of the granting of this consent, according to sheets 1, 2 and 3 of drawing 4-1007-2-7804 supplied with the application. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to the commencement of fish pass construction.</i> 3. <i>That the consent holder shall install, maintain and operate a light barrier, within 6 months of the granting of this consent for the purpose of diverting fish from the intake gate</i>

Consent Holder	Trust Power Limited ²⁵
Resource Consent Number	3372-2
Date of Commencement	19 September 2001
Location	Motukawa Power Station, Motukawa Rd, Ratapiko, Inglewood
Details of Activity	To discharge up to 7787 litres/second of water from the Motukawa hydroelectric power station into the Makara Stream in the Waitara catchment
Consent Duration	Consent Expires 1 June 2022, Review date June 2001, June 2003, June 2009 and June 2015
Conditions of Consent – Fish Passage	<p>Conditions</p> <ol style="list-style-type: none"> 3. <i>That the consent holder shall install, maintain and monitor a facility to enable the passage of eelers over the dam within 6 months of the granting of this consent. The monitoring information is to be forwarded to the Chief Executive, Taranaki Regional Council, at 12 monthly intervals</i>

²⁵ Taranaki Regional Council (2001), Trust Power Limited – Resource Consent 3372/2

Consent Holder	Trust Power Limited ²⁶
Resource Consent Number	3373-2
Date of Commencement	4 November 2002
Location	Motukawa Hydroelectric Power Scheme, Lake Rataipiko, Rataipiko Rd, Rataipiko, Inglewood
Details of Activity	To dam the Mako Stream a tributary of the Makino Stream in the Waitara catchment to form Lake Rataipiko for hydroelectric power generation purposes
Consent Duration	Consent Expires 1 June 2022, Review date June 2001, June 2003, June 2009 and June 2015
Conditions of Consent – Fish Passage	<p>Conditions</p> <ol style="list-style-type: none"> 1. <i>That the consent holder shall install, maintain and monitor a facility to enable the passage of elvers and adult eels over the spillway within 6 months of the granting of this consent. The monitoring information is to be forwarded to the Chief Executive, Taranaki Regional Council, at 12 monthly intervals</i>

Consent Holder	Trust Power Limited
Resource Consent Number	3369-2
Date of Commencement	19 September 2001
Location	Manganui River, Downstream of Tariki Road Bridge, Rataipiko, Inglewood
Details of Activity	To take and use up to 5200l/s of water from the Manganui River in the Waitara Catchment for hydroelectric power generation purposes
Consent Duration	Consent Expires 1 June 2022, Review date June 2001, June 2003, June 2009 and June 2015
Conditions of Consent – Fish Passage	<p>Conditions</p> <ol style="list-style-type: none"> 2. <i>That the residual flow shall be passed through the fish pass, within 12 months of the granting of this consent, subject to conditions 1 and 2 of consent 5080</i> 7. <i>That the consent holder shall, as far as practicable, maintain a residual flow of 150 l/s in the race during maintenance periods.</i>

²⁶ Taranaki Regional Council (2001), Trust Power Limited – Resource Consent 3369/2

During periods when it is not practicable, the consent holder shall arrange for a fish salvage operation to relocate stranded fish from the race.

4. Hawkes Bay Region

Lake Waikaremoana Power Scheme

The Power scheme in this region is the Lake Waikaremoana Power Scheme. The Waikaremoana Power Scheme is located between Te Urewera National Park and Wairoa, along the upper 7km of the Waikaretaheke River. The 138MW hydro scheme comprises three power stations – Kaitawa (36MW), Tuai (60MW) and Piripaua (42MW). Water is taken from Lake Waikaremoana via tunnels to Kaitawa Power Station, before being discharged into Lake Kaitawa. Water is then passed through Tuai Power Station and discharged into Lake Whakamarino. From there, water is carried by tunnel to Piripaua Power Station and is discharged into the Waikaretaheke River.

Consent Holder	Genesis Energy Limited ²⁷
Resource Consent Number	LU120396C, LU120397V, WP120398M, DP120399W
Date of Commencement	26 February 2013
Location	Throughout the Waikaremoana Scheme
Details of Activity	To undertake activities associated with maintaining existing structures within the Waikaremoana Power Scheme, and any other activities directly associated with them.
Consent Duration	Consent Expires 31 December 2032,
Conditions of Consent – Fish Passage	<p>Conditions</p> <p>22. <i>The activities authorized by this consent shall not prevent the passage of fish, both upstream and downstream of the work site (s)</i></p> <p>23. <i>Any temporary diversion or damming of water shall only remain in place as long as is necessary to allow for the works authorized by this consent to be undertaken, and on completion of these works, temporary diversion or damming of water shall cease.</i></p>

Consent Holder	Genesis Power Limited ²⁸
Resource Consent Number	WP 982420Md
Date of Commencement	26 February 2013
Location	Lake Whakamarino

²⁷ Hawkes Bay Regional Council (2013), Genesis Energy Limited – Resource Consent LU120396C, LU120397V, WP120398M, DP120399W

²⁸ Hawkes Bay Regional Council (2013), Genesis Energy Limited – Resource Consent WP 982420Md

Details of Activity	To dam the Kahutangaroa Stream to form Lake Whakamarino with two earth dams, the Whakamarino spillway structure and the Whakamarino sluice gate
Consent Duration	Consent Expires 31 December 2032
Conditions of Consent – Fish Passage	<p>Conditions</p> <p>9. (v) <i>Methodologies and procedures to improve upstream and downstream passage for eels in the upper Waikaretaheke catchment in the vicinity of the Waikaremoana Power Scheme. This shall include a description of the measures for:</i></p> <ul style="list-style-type: none"> - <i>The collection and transfer of elvers from Piripaua Power Station tailrace</i> - <i>Assessing suitable habitat for release of the captured elvers</i> - <i>Making provisions for other fish types of fish and koura inadvertently captured to be released</i> - <i>Investigating other potential sites for collection and transfer of elvers</i> - <i>Monitoring the need for elver passage at other sites</i> - <i>Monitoring the effectiveness of the ‘elver catch and transfer’ programme</i> - <i>Investigating means of preventing migrating eels from entering the Power Station intakes and passing over barriers.</i>

Consent Holder	Genesis Power Limited ²⁹
Resource Consent Number	WP 982121Mb
Date of Commencement	26 February 2013
Location	Kaitawa Power Station, Waikaremoana
Details of Activity	To dam the Waikaretaheke River with the Kaitawa spillway Structure and divert water to form Lake Kaitawa by means of earth dam.
Consent Duration	Consent Expires 31 December 2032
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses

Consent Holder	Genesis Power Limited ³⁰
Resource Consent Number	WP 982030Mc
Date of Commencement	26 February 2013

²⁹ Hawkes Bay Regional Council (2013), Genesis Energy Limited – Resource Consent WP 982121Mb

³⁰ Hawkes Bay Regional Council (2013), Genesis Energy Limited – Resource Consent WP 982030Mc

Location	Waikaremoana Power Scheme, Main Rd, Tuai
Details of Activity	To dam the water of Lake Waikaremoana
Consent Duration	Consent Expires 31 December 2032
Conditions of Consent – Fish Passage	<i>No specific Fish Passage Clauses.</i>

5. Otago Region

There are two hydroelectric power stations, the Clyde Dam and the Roxburgh Dam, located on the Clutha River providing electricity to the New Zealand power grid. They have a combined power supply of 865 MW.

Consent Holder	Contact Energy Limited ³¹
Resource Consent Number	2001.385.V2
Date of Commencement	18 October 2011
Location	Approximately 1.5 kilometres upstream of Clyde Centred on NZMS 260 G42:197-523
Details of Activity	<p>To dam the Clutha River approximately 1.5 kilometres upstream from Clyde with a concrete dam, with a crest level of 196.75 metres above datum for the purpose of hydro-electric power generation</p> <p>To be read in conjunction with the following resource consents:</p> <p>Hawea Dam</p> <p>No. 2001.383 – Water Permit to Dam No. 2001.389 – Water Permit to Divert No. 2001.392 – Discharge Permit No. 2001.395 – Discharge Permit No. 2001.399 – Water Permit to Take & Use</p> <p>Gladstone Gap Stop Bank</p> <p>No. 2001.384 – Water Permit to Dam</p> <p>Clyde Dam</p> <p>No. 2001.385 – Water Permit to Dam No. 2001.390 – Water Permit to Take & Use No. 2001.393 – Discharge Permit No. 2001.396 – Discharge Permit</p> <p>Roxburgh Dam</p> <p>No. 2001.386 – Water Permit to Dam No. 2001.388 – Water Permit to Divert No. 2001.391 – Water Permit to Take & Use No. 2001.394 – Discharge Permit No. 2001.397 – Discharge Permit No. 2001.398 – Land Use Consent</p>
Consent Duration	Consent Expires 25 May 2042
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses

³¹ Otago Regional Council (2011), Contact Energy Limited – Resource Consent 2001.385.V2

Consent Holder	Contact Energy Limited ³²
Resource Consent Number	2001.387
Date of Commencement	15 July 2008
Location	Centred on NZMS 260 G42:197-523 Approximately 1.5 km upstream of Clyde
Details of Activity	<p>to divert water from Lake Dunstan through spillways, sluices and penstocks at the Clyde Dam for the purpose of operating the Clyde Dam</p> <p>To be read in conjunction with the following resource consents:</p> <p>Hawea Dam</p> <p>No. 2001.383 – Water Permit to Dam No. 2001.389 – Water Permit to Divert No. 2001.392 – Discharge Permit No. 2001.395 – Discharge Permit No. 2001.399 – Water Permit to Take & Use</p> <p>Gladstone Gap Stop Bank</p> <p>No. 2001.384 – Water Permit to Dam</p> <p>Clyde Dam</p> <p>No. 2001.385 – Water Permit to Dam No. 2001.390 – Water Permit to Take & Use No. 2001.393 – Discharge Permit No. 2001.396 – Discharge Permit</p> <p>Roxburgh Dam</p> <p>No. 2001.386 – Water Permit to Dam No. 2001.388 – Water Permit to Divert No. 2001.391 – Water Permit to Take & Use No. 2001.394 – Discharge Permit No. 2001.397 – Discharge Permit No. 2001.398 – Land Use Consent</p>
Consent Duration	Consent Expires 25 May 2042
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses

Consent Holder	Contact Energy Limited ³³
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³² Otago Regional Council (2008), Contact Energy Limited – Resource Consent 2001.387

³³ Otago Regional Council (2008), Contact Energy Limited – Resource Consent 2001.390

Resource Consent Number	2001.390
Date of Commencement	15 July 2008
Location	Centred on NZMS 260 G42:197-523 Approximately 1.5 km upstream of Clyde
Details of Activity	<p>To take and use water from Lake Dunstan for the purpose of generating electricity at the Clyde Dam and passing flood flows safely.</p> <p>To be read in conjunction with the following resource consents:</p> <p>Hawea Dam</p> <p>No. 2001.383 – Water Permit to Dam No. 2001.389 – Water Permit to Divert No. 2001.392 – Discharge Permit No. 2001.395 – Discharge Permit No. 2001.399 – Water Permit to Take & Use</p> <p>Gladstone Gap Stop Bank</p> <p>No. 2001.384 – Water Permit to Dam</p> <p>Clyde Dam</p> <p>No. 2001.385 – Water Permit to Dam No. 2001.390 – Water Permit to Take & Use No. 2001.393 – Discharge Permit No. 2001.396 – Discharge Permit</p> <p>Roxburgh Dam</p> <p>No. 2001.386 – Water Permit to Dam No. 2001.388 – Water Permit to Divert No. 2001.391 – Water Permit to Take & Use No. 2001.394 – Discharge Permit No. 2001.397 – Discharge Permit No. 2001.398 – Land Use Consent</p>
Consent Duration	Consent Expires 25 May 2042
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses

Consent Holder	Contact Energy Limited ³⁴
Resource Consent Number	2001.393
Date of Commencement	15 July 2008
Location	Centred on NZMS 260 G42:197-523 Approximately 1.5 km upstream of Clyde

³⁴ Otago Regional Council (2008), Contact Energy Limited – Resource Consent 2001.393

Details of Activity	<p>To discharge water and water-borne sediment into the Clutha River from the Clyde Dam for the purpose of operating the Clyde Dam</p> <p>To be read in conjunction with the following resource consents:</p> <p>Hawea Dam No. 2001.383 – Water Permit to Dam No. 2001.389 – Water Permit to Divert No. 2001.392 – Discharge Permit No. 2001.395 – Discharge Permit No. 2001.399 – Water Permit to Take & Use</p> <p>Gladstone Gap Stop Bank No. 2001.384 – Water Permit to Dam</p> <p>Clyde Dam No. 2001.385 – Water Permit to Dam No. 2001.387 – Water Permit to Divert No. 2001.390 – Water Permit to Take & Use No. 2001.396 – Discharge Permit</p> <p>Roxburgh Dam No. 2001.386 – Water Permit to Dam No. 2001.388 – Water Permit to Divert No. 2001.391 – Water Permit to Take & Use No. 2001.394 – Discharge Permit No. 2001.397 – Discharge Permit No. 2001.398 – Land Use Consent</p>
Consent Duration	Consent Expires 25 May 2042
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses

Consent Holder	Contact Energy Limited ³⁵
Resource Consent Number	2001.396
Date of Commencement	15 July 2008
Location	Centred on NZMS 260 G42:197-523 Approximately 1.5 km upstream of Clyde
Details of Activity	<p>To discharge stormwater, drainage water and cooling water from the Clyde Dam and associated structures and facilities to the Clutha River for the purpose of operating the Clyde Dam.</p> <p>To be read in conjunction with the following resource consents:</p>

³⁵ Otago Regional Council (2008), Contact Energy Limited – Resource Consent 2001.396

	<p>Hawea Dam</p> <p>No. 2001.383 – Water Permit to Dam No. 2001.389 – Water Permit to Divert No. 2001.392 – Discharge Permit No. 2001.395 – Discharge Permit No. 2001.399 – Water Permit to Take & Use</p> <p>Gladstone Gap Stop Bank</p> <p>No. 2001.384 – Water Permit to Dam</p> <p>Clyde Dam</p> <p>No. 2001.385 – Water Permit to Dam No. 2001.387 – Water Permit to Divert No. 2001.390 – Water Permit to Take & Use No. 2001.393 – Discharge Permit</p> <p>Roxburgh Dam</p> <p>No. 2001.386 – Water Permit to Dam No. 2001.388 – Water Permit to Divert No. 2001.391 – Water Permit to Take & Use No. 2001.394 – Discharge Permit No. 2001.397 – Discharge Permit No. 2001.398 – Land Use Consent</p>
Consent Duration	Consent Expires 25 May 2042
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses

6. Marlborough Region

The Marlborough Region hosts two standalone schemes, the Waihopai and the Branch River Scheme. Both schemes have a combined power generation of 66.1 GWh.

Waihopai

Consent Holder	Lower Waihopai Irrigation Company ³⁶
Resource Consent Number	U011242
Date of Commencement	23 October 2002
Location	The Delta Farm, Waihopai
Details of Activity	Resource consent was sought for a Water Permit (Take Surface Water, Dam Water and Take Underground Water), Land Use (Dam Construction, Land Disturbance and Bore Construction), Discharge Permit (to Water) to construct a 20 metre high dam for the storage of 1,000,000 cubic metres of irrigation water, including the recovery of seepage losses and the draining of the reservoir for maintenance purposes.
Consent Duration	Consent Expires 1 May 2037
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses

Branch River

Consent Holder	Trust Power Limited ³⁷
Resource Consent Number	MLB80008
Date of Commencement	1980
Location	Branch River at start of gorge S27 532 779
Details of Activity	Dam the Branch River by means of a concrete weir, approx.. 4 metres above normal water level. For power generation residual flow, surplus flood flow. Up to 37.5 cumecs.
Consent Duration	Unknown as documentation provided does not provide details on the renewed consent in 2000
Conditions of Consent – Fish Passage	<p>Conditions</p> <p><i>a) The discharge shall be channelled from the foot of the fish ladder to the main channel. A flow of at least 0.5 cumecs shall be maintained in this channel at all times (i.e. to allow for replenishing water in the deep gravels which would be cut off by the dam) and this flow shall discharge into the main channel in such a way that passage of fish</i></p>

³⁶ Marlborough Regional Council (2002), Lower Waihopai Irrigation Company – Resource Consent U011242

³⁷ Marlborough Regional Council (1980), Trust Power Limited – Resource Consent MLB 80008

is always possible. Any work necessary from time to time to ensure this condition is met shall be carried out by the grantee at his expense as a matter of urgency

- b) The grantee may at any time discharge a residual flow greater than that set out as a minimum in order to maintain a surface flow in the connecting channel or the main channel. However, this shall not be discharged in such a way that it causes a velocity barrier to fish, and the minimum flow control structure and the fish pass shall be capable of dealing with such variations as may be necessary.*
- Fish pass is to be constructed as part of the device to release residual flow. This will be to the satisfaction of the Acclimatisation Society*

7. West Coast Region

Lake Wahapo

Wahapo Hydroelectric Power Scheme makes use of the natural storage of Lake Wahapo, in the South Island of New Zealand. The Scheme has an average annual output of 15.3 GWh, and plays a vital role in ensuring reliable electricity supply to South Westland. The Department of Conservation (DOC) and Fish and Game New Zealand have worked closely with Trust Power to identify the best ways to encourage passage of trout, salmon and native fish species.

Consent Holder	Trust Power Limited ³⁸
Resource Consent Number	RC12131/1
Date of Commencement	7 August 2012
Location	Zalas Creek, Lake Wahapo Hydroelectric Power Scheme at or about Map Reference – NZMS 260 H35: 859-690
Details of Activity	To disturb the bed of Zalas Creek associated with the upgrade of a fish pass (installation of swale).
Consent Duration	Five years from date of commencement
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses, however consent is Fish Passage related.

Consent Holder	Trust Power Limited ³⁹
Resource Consent Number	RC08170/1
Date of Commencement	21 October 2009
Location	Lake Outlet Creek, Lake Wahapo at or about Map Reference – NZMS 260 H35: 865-689
Details of Activity	To undertake works in the bed of Outlet Creek for the purpose of constructing fish recovery pools, Lake Wahapo
Consent Duration	Five years from date of commencement
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses, however consent is Fish Passage related.

Consent Holder	Trust Power Limited ⁴⁰
Resource Consent	RC08139/1 – RC08139/5

³⁸ West Coast Regional Council (2012), Trust Power Limited – Resource Consent RC12131/1

³⁹ West Coast Regional Council (2009), Trust Power Limited – Resource Consent RC08170/1

⁴⁰ West Coast Regional Council (2009), Trust Power Limited – Resource Consent RC08139/1 & RC08139/5

Number	
Date of Commencement	22 April 2009
Location	Lake Wahapo at or about Map Reference – NZMS 260 H35: 858-694
Details of Activity	<ul style="list-style-type: none"> - To dam Lake Wahapo for hydroelectricity generation. - To divert water from Lake Wahapo for hydroelectricity generation. - To take and use water from Lake Wahapo for hydroelectricity generation. - To discharge water to the Lake Wahapo outlet stream. - To discharge water to the Okarito River after using it for hydroelectricity generation.
Consent Duration	35 years from date of issue
Conditions of Consent – Fish Passage	<p>Conditions</p> <ol style="list-style-type: none"> 4. <i>The Consent Holder shall prepare design specifications for improvements to the weir to minimise fish stranding as far as practicable. The design specifications shall be prepared in consultation with the New Zealand Fish and Game Council – West Coast Branch, and shall include details of a monitoring programme to determine the efficacy of the weir improvements, which shall be submitted to the Consent Authority as soon as they have been finalised, but under no circumstances later than 1 December 2009.</i> 5. <i>The Consent Holder shall implement weir improvements in accordance with the design specifications, and the monitoring programme, prepared under Condition 4.</i> 6. <i>The Consent Holder shall prepare and implement a native fish monitoring programme in consultation with Te Runanga o Makaawhio and the Department of Conservation. The objective of this programme shall be to determine the abundance and significance of the native fish resource within Lake Wahapo and to determine the efficacy of the native fish pass.</i>

7. Canterbury Region

The river was developed in multiple stages. The Waitaki dam was built first, without earthmoving machinery, followed by the development of the Aviemore Dam on Lake Aviemore and Benmore Dam on Lake Benmore. Lake Pukaki was initially dammed at this stage to provide storage and flow control. A small station was also installed on Lake Tekapo, but although it has a small dam to raise the pre-existing lake, water was taken through a 1.6 km (1 mi) tunnel to a powerstation below the level of the lake.

In the 1960s, work was started on the Upper Waitaki project. This project consisted of taking the discharge from the original Tekapo (A) station through a power canal, the Tekapo Canal, to Tekapo B station at the edge of Lake Pukaki. The dam at Pukaki was increased in height. Water from Pukaki is then transferred into a the Pukaki Canal which meets the Ohau Canal from Lake Ohau into Ohau A station and Lake Ruataniwha. The Ohau Canal continues beyond Lake Ruataniwha to Ohau B midway along, before emptying through Ohau C into Lake Benmore.

The stations are:

Power Stations	Capacity (MW)	Annual Output (GWh)	Year Commissioned
Tekapo A	25	160	1955
Tekapo B	160	800	1977
Ohau A	264	1150	1980
Ohau B	212	970	1984/1985
Ohau C	212	970	1984/1985

The original Waitaki power stations discharge water back into the Waitaki River which then forms a storage lake for the next station in the chain. The three power stations are:

Power Stations	Capacity (MW)	Annual Output (GWh)	Year Commissioned
Benmore	540	2200	1965
Aviemore	220	940	1968
Waitaki	105	500	1935

Project Aqua was a proposed scheme of 6 dams on a manmade canal running from the Waitaki Dam to the sea. It was cancelled by Meridian Energy on 29 March 2004.

Rakaia River

Consent Holder	Electricity Ashburton Limited (known as Barhill Chertsey Irrigation Scheme) ⁴¹
Resource Consent Number	CRC080847
Date of Commencement	27 August 1993
Location	State Highway 77, RAKAIA
Details of Activity	To divert and dam water of the Rakaia River
Consent Duration	Expires 28 January 2035
Conditions of Consent – Fish Passage	<p>Conditions</p> <p>4. <i>The diversion shall not prevent the passage of fish.</i></p> <p>5. <i>Water shall only be diverted into the canal and settling pond when a fish screen, as provided in Conditions (5), (6), (7), and (8), of resource consent CRC990088, is operated.</i></p> <p>20. <i>(Please refer to consent the condition was too lengthy to include)</i></p>

Consent Holder	Main Power NZ Limited ⁴²
Resource Consent Number	CRC121888
Date of Commencement	12 February 2013
Location	Blackford Road, METHVEN
Details of Activity	To divert and use water
Consent Duration	Expires 12 February 2048
Conditions of Consent – Fish Passage	No specific Fish Passage clauses.

Consent Holder	Trust Power Limited, Auckland ⁴³
Resource Consent Number	CRC080396
Date of Commencement	14 July 2009

⁴¹ Environment Canterbury (1993), Electricity Ashburton Limited – Resource Consent CRC080847

⁴² Environment Canterbury (1993), Main Power NZ Ltd – Resource Consent CRC080847

⁴³ Environment Canterbury (2009), Trust Power – Resource Consent CRC080396

Location	Lake Coleridge and Rakaia River, LAKE COLERIDGE
Details of Activity	To dam and use surface water from an artificial water course for hydroelectric generation
Consent Duration	Expires 9 July 1944
Conditions of Consent – Fish Passage	No specific Fish Passage clauses.

Lake Tekapo

Consent Holder	Genesis Power Limited, Auckland ⁴⁴
Resource Consent Number	CRC905301.4
Date of Commencement	31 January 1993
Location	Lake Tekapo, TEKAPO
Details of Activity	To dam Tekapo River to control and operate Lake Tekapo between the levels of 701.80 and 710.90 metres (msl) at or about map reference NZMS 260 I37:080-860 (Late Tekapo Control Structure)
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	No specific Fish Passage clauses.

Tekapo River

Consent Holder	Genesis Power Limited, Auckland ⁴⁵
Resource Consent Number	CRC905306.3
Date of Commencement	31 May 2011
Location	Tekapo River, TEKAPO
Details of Activity	To dam Tekapo River to control and operate Lake Tekapo between the levels of 701.80 and 710.90 metres (msl) at or about map reference NZMS 260 I37:080-860 (Late Tekapo Control Structure)
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	No specific Fish Passage clauses.

⁴⁴ Environment Canterbury (1993), Genesis Power Ltd – Resource Consent CRC905301.4

⁴⁵ Environment Canterbury (2011), Genesis Power Ltd – Resource Consent CRC905306.3

Ohau River

Consent Holder	Meridian Energy Limited, Christchurch ⁴⁶
Resource Consent Number	CRC040557
Date of Commencement	31 May 2011
Location	Upper Ohau River, MACKENZIE
Details of Activity	to temporarily and partially dam the waters of the Upper Ohau River associated with the works listed in resource consent applications CRC040555 and CRC040556
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	Conditions: <i>9. The damming and diversion works shall not prevent fish passage.</i>

Consent Holder	Meridian Energy Limited, Christchurch ⁴⁷
Resource Consent Number	CRC905330.3
Date of Commencement	31 May 2011
Location	Ohau Weir, OHAU
Details of Activity	to dam OHAU RIVER to control and operate Lake Ohau between levels of 519.45 and 520.40 metres (msl) at or about map reference NZMS 260 H38:661-536
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	Conditions: <i>18. The Grantee shall design, install, operate and maintain a fish pass on the Ohau Weir Control Structure (at or about Map Reference H38:661-536), to the satisfaction of the Water Resources Manager, Canterbury Regional Council, following consultation with the Manager, South Canterbury Fish & Game Council.</i>

⁴⁶ Environment Canterbury (2011), Meridian Energy Ltd – Resource Consent CRC040557

⁴⁷ Environment Canterbury (2011), Meridian Energy Ltd – Resource Consent CRC905330.3

Consent Holder	Meridian Energy Limited, Christchurch ⁴⁸
Resource Consent Number	CRC905335.3
Date of Commencement	31 May 2011
Location	Lake Ruataniwha Control Structure, LAKE RUATANIWHA
Details of Activity	to dam the Ohau River to control and operate Lake Ruataniwha between levels of 458.00 and 458.80 metres (mls) at or about map reference NZMS 260 H38: 777-540 (Lake Ruataniwha Control Structure)
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	Conditions: <i>9. The damming and diversion works shall not prevent fish passage.</i>

Lake Pukaki

Consent Holder	Meridian Energy Limited, Christchurch ⁴⁹
Resource Consent Number	CRC905321.7
Date of Commencement	31 May 2011
Location	Tekapo Twizel Road (sh81), LAKE PUKAKI
Details of Activity	To change the conditions of CRC905321.3 - to dam Pukaki River to control and operate Lake Pukaki between the levels of 518.00 and 532.50 metres (msl) at or about map reference NZMS 260 H38:820-649 (Lake Pukaki Control Structure)
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	No specific fish passage clause.

⁴⁸ Environment Canterbury (2011), Meridian Energy Ltd – Resource Consent CRC905335.3

⁴⁹ Environment Canterbury (2011), Meridian Energy Ltd – Resource Consent CRC905321.7

Lake Benmore

Consent Holder	Meridian Energy Limited, Christchurch ⁵⁰
Resource Consent Number	CRC905344.4
Date of Commencement	31 May 2011
Location	Benmore Dam, BENMORE
Details of Activity	to dam Waitaki River to control and operate Lake Benmore between the levels of 355.25 and 361.45 metres(msl) at or about map reference NZMS 260 H39:874-232 (Benmore Power Station)
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	<p>Conditions:</p> <p><i>21. The Grantee shall design, install (prior to 1 May 1996), operate and maintain a native fish pass on the following Dams: Aviemore and Waitaki (at or about map references; I40:002-134 and I40:060-101), and shall design, install (prior to 1 May 2001), operate and maintain a native fish pass on the Benmore Dam (at or about map reference H39:874-232), to the satisfaction of the Water Resources Manager, Canterbury Regional Council, following consultation with the Ngai Tahu Maori Trust Board.</i></p>

Consent Holder	Meridian Energy Limited, Christchurch ⁵¹
Resource Consent Number	CRC905321.7
Date of Commencement	31 May 2011
Location	Benmore Dam, BENMORE
Details of Activity	to dam Waitaki River to control and operate Lake Benmore between the levels of 355.25 and 361.45 metres(msl) at or about map reference NZMS 260 H39:874-232 (Benmore Power Station)
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	<p>Conditions:</p> <p><i>23. The consent holder shall implement an annual monitoring programme to determine an appropriate entrance site for the fish pass and shall report the results to the Canterbury Regional Council before 30 June each year.</i></p>

⁵⁰ Environment Canterbury (2011), Meridian Energy Ltd – Resource Consent CRC905344.4

⁵¹ Environment Canterbury (2011), Meridian Energy Ltd – Resource Consent CRC905321.7

Lake Waitaki

Consent Holder	Meridian Energy Limited, Christchurch ⁵²
Resource Consent Number	CRC905351.3
Date of Commencement	31 May 2011
Location	Aviemore Dam, AVIEMORE
Details of Activity	to dam Waitaki river to control and operate Lake Aviemore between the levels of 265.50 and 268.30 (msl) at or about map reference NZMS 260 I40:002-134 (Aviemore Power Station)
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	<p>Conditions:</p> <p><i>21. The Grantee shall design, install (prior to 1 May 1996), operate and maintain a native fish pass on the following Dams: Benmore, Aviemore and Waitaki (at or about Map References; H39:894-232, I40:002-134 and I40:060-101) to the satisfaction of the Water Resources Manager, Canterbury Regional Council, following consultation with the Ngai Tahu Maori Trust Board.</i></p>

Consent Holder	Meridian Energy Limited, Christchurch ⁵³
Resource Consent Number	CRC905360.1
Date of Commencement	31 January 1993
Location	WAITAKI DAM
Details of Activity	to dam Waitaki River to control and operate Lake Benmore between the levels of 355.25 and 361.45 metres(msl) at or about map reference NZMS 260 H39:874-232 (Benmore Power Station)
Consent Duration	Expires 30 April 2025
Conditions of Consent – Fish Passage	No specific fish passage clause.

⁵² Environment Canterbury (2011), Meridian Energy Ltd – Resource Consent CRC905351.3

⁵³ Environment Canterbury (1993), Meridian Energy Ltd – Resource Consent CRC905360.1

Lake Ohau

Consent Holder	Ohau Snow Holdings Limited ⁵⁴
Resource Consent Number	CRC930402B
Date of Commencement	6 September 2005
Location	Lake Ohau Road, LAKE OHAU
Details of Activity	To dam water an unnamed creek, at or about map reference H38:551-598
Consent Duration	Expires 31 July 2028
Conditions of Consent – Fish Passage	No specific fish passage clause.

Transpower New Zealand Global Consent

Consent Holder	Transpower NZ Ltd ⁵⁵
Resource Consent Number	CRC050505
Date of Commencement	6 September 2005
Location	Global, RIVERS WITHIN CANTERBURY REGION
Details of Activity	To dam and divert water
Consent Duration	Expires 26 August 2040
Conditions of Consent – Fish Passage	<p>Conditions:</p> <p><i>1. (a)Water shall only be diverted for the purposes of carrying out works in accordance with resource consent CRC042566.(b)Diversion of water shall be temporary, for the time taken to carry out works.(c)The diversion shall not remain after completion of works and the channel characteristics existing prior to the diversion shall be reinstated.(d)Water shall only be diverted into an existing braid of the same waterbody, so as to ensure that fish passage is not impeded</i></p>

⁵⁴ Environment Canterbury (2005), Ohau Snow Holdings Ltd – Resource Consent CRC930402B

⁵⁵ Environment Canterbury (2005), Transpower Ltd – Resource Consent CRC050505

Consent Holder	Transpower NZ Ltd ⁵⁶
Resource Consent Number	CRC050505
Date of Commencement	9 August 1993
Location	Global, RIVERS WITHIN CANTERBURY REGION
Details of Activity	To dam and divert water
Consent Duration	Expires 26 August 2040
Conditions of Consent – Fish Passage	<p>Conditions:</p> <p><i>2. (a)The diversion of water shall not interfere with fish spawning, including fish spawning at sites identified by the appropriate Fish and Game Council as set out in Condition 9 of CRC042566 or the Department of Conservation in accordance with Condition 11 prior to the commencement of works as sites requiring protection.(b)The diversion of water shall not prevent the passage of fish over the entire length of the diversion and discharge channel, and particular regard shall be given to avoiding the stranding of fish in pools or channels.</i></p>

Lake Coleridge

Consent Holder	Trust Power Ltd ⁵⁷
Resource Consent Number	CRC960805.2
Date of Commencement	19 October 2007
Location	Lake Coleridge Power Station, WILBERFORCE RIVER
Details of Activity	to dam water in the Wilberforce River by means of a series of temporary gravel weirs/embankment at or about map reference K34:815-774
Consent Duration	Expires 19 December 2031
Conditions of Consent – Fish Passage	No specific fish passage clause.

⁵⁶ Environment Canterbury (2005), Transpower Ltd – Resource Consent CRC050505

⁵⁷ Environment Canterbury (2005), Trust Power Ltd – Resource Consent CRC960805.2

Consent Holder	Trust Power Ltd ⁵⁸
Resource Consent Number	CRC960818.2
Date of Commencement	19 October 2007
Location	Lake Coleridge Power Station, HARPER RIVER
Details of Activity	to dam water in the Harper River by means of a temporary gravel weir/embankment (Oakden Bank) at or about map reference K34:828-755
Consent Duration	Expires 19 December 2031
Conditions of Consent – Fish Passage	No specific fish passage clause.

Consent Holder	Trust Power Ltd ⁵⁹
Resource Consent Number	CRC960832.3
Date of Commencement	19 October 2007
Location	Lake Coleridge Power Station, LAKE COLERIDGE
Details of Activity	to dam water in Lake Coleridge at Lake Stream at or about map reference K34:834-742
Consent Duration	Expires 19 December 2031
Conditions of Consent – Fish Passage	No specific fish passage clause.

Consent Holder	Trust Power Ltd ⁶⁰
Resource Consent Number	CRC960841.2
Date of Commencement	19 October 2007
Location	Lake Coleridge Power Station, ACHERON RIVER
Details of Activity	to dam water in the Acheron River by means of an existing concrete weir at or about map reference K35:998-608

⁵⁸ Environment Canterbury (2007), Trust Power Ltd – Resource Consent CRC960818.2

⁵⁹ Environment Canterbury (2007), Trust Power Ltd – Resource Consent CRC960832.3

⁶⁰ Environment Canterbury (2007), Trust Power Ltd – Resource Consent CRC960841.2

Consent Duration	Expires 19 December 2031
Conditions of Consent – Fish Passage	<p>Conditions:</p> <p><i>1. The dam and bed of the river at the base of the dam shall be maintained to ensure that native fish are not prevented from climbing over the dam when there is a flow of water over the dam.</i></p>

Grehan Stream

Consent Holder	Christchurch City Council ⁶¹
Resource Consent Number	CRC920826
Date of Commencement	27 August 1993
Location	State Highway 75, AKAROA
Details of Activity	to dam the waters of Grehan Valley Stream, at or about map reference N36:076-118 for a recreation pond
Consent Duration	Expires 31 July 2028
Conditions of Consent – Fish Passage	No specific Fish Passage Clauses.

⁶¹ Environment Canterbury (1993), Christchurch City Council – Resource Consent CRC920826B

8. Recommendations

Council's approach to the inclusion of fish passage into hydroelectric dam development is diverse. There is an unknown factor in the findings though, which is whether fish passage was detailed in the application for resource consent by the applicant. If so, it may have been deemed unnecessary to include conditions of consent relating to fish passage, as this was in the submitted application plans. There is further work to be investigated to get detail on resource consents where there are no conditions of consent relating to fish passage.

Recommendations from this report are:

1. Further work to test the effectiveness of the different ways fish passage has been provided for in the approving of resource consents.
2. Further discussions with Councils and Consent Holders for Wai Maori to become a notified partner to renewals and new hydroelectric developments, specifically for fish passage.

9. References

- Bay of Plenty Regional Council (1976), *Bay of Plenty Energy Limited – Resource Consent 20190-0*
- Bay of Plenty Regional Council (1978), *Bay of Plenty Energy Limited – Resource Consent 20458-1*
- Bay of Plenty Regional Council (1993), *Bay of Plenty Energy Limited – Resource Consent 50158-0*
- Bay of Plenty Regional Council (1994), *Bay of Plenty Energy Limited – Resource Consent 50341-0*
- Bay of Plenty Regional Council (2001), *Bay of Plenty Energy Limited – Resource Consent 60392*
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- Bay of Plenty Regional Council (1999), *Trust Power Limited – Resource Consent 50880-0*
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- Bay of Plenty Regional Council (1999), *Trust Power Limited – Resource Consent 60102*
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- Bay of Plenty Regional Council (1999), *Trust Power Limited – Resource Consent 50880-0*
- Environment Canterbury (2007), *Trust Power Ltd – Resource Consent CRC960818.2*
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- Environment Canterbury (2005), *Transpower Ltd – Resource Consent CRC050505*
- Environment Canterbury (2005), *Trust Power Ltd – Resource Consent CRC960805.2*
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- Environment Canterbury (2011), *Meridian Energy Ltd – Resource Consent CRC905321.7*

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Environment Canterbury (2009), *Trust Power – Resource Consent CRC080396*

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Environment Canterbury (1993), *Main Power NZ Ltd – Resource Consent CRC080847*

Hawkes Bay Regional Council (2013), *Genesis Energy Limited – Resource Consent LU120396C, LU120397V, WP120398M, DP120399W*

Hawkes Bay Regional Council (2013), *Genesis Energy Limited – Resource Consent WP 982420Md*

Hawkes Bay Regional Council (2013), *Genesis Energy Limited – Resource Consent WP 982121Mb*

Hawkes Bay Regional Council (2013), *Genesis Energy Limited – Resource Consent WP 982030Mc*

Marlborough Regional Council (2002), *Lower Waihopai Irrigation Company – Resource Consent U011242*

Marlborough Regional Council (1980), *Trust Power Limited – Resource Consent MLB 80008*

Northland Regional Council (1992), *Northpower – Water Permit 4585*

Otago Regional Council (2011), *Contact Energy Limited – Resource Consent 2001.385.V2*

Otago Regional Council (2008), *Contact Energy Limited – Resource Consent 2001.387*

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Waikato Regional Council (2004), *Genesis Energy Limited – Resource Consent 103867.01.05*

Waikato Regional Council (2006), *Might River Power – Resource Consent RC 105226, RC 105227, RC 105228*

West Coast Regional Council (2012), *Trust Power Limited – Resource Consent RC12131/1*

West Coast Regional Council (2009), *Trust Power Limited – Resource Consent RC08170/1*

West Coast Regional Council (2009), *Trust Power Limited – Resource Consent RC08139/1 & RC08139/5*