

**IN THE MATTER OF**

The Resource Management  
Act 1991 (“the RMA”)

**AND**

**IN THE MATTER OF**

An application by **TrustPower Limited** to the **Bay of Plenty Regional Council** for resource consents for the on-going operation and maintenance of the **Matahina Hydro-electric Power Scheme**.

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**FINAL DECISION OF HEARING COMMISSIONERS**

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**Executive Summary**

This is the final decision on these applications for consent to a modified operating regime for the Matahina Hydro-electric Power Scheme (HEPS). An interim decision was issued on 9<sup>th</sup> December 2011 with a Direction that comments only in respect of the conditions would be received and considered by the Commissioners. Having received and considered those comments the Commissioners sought additional comments from the Applicant on two substantive matters (matters of an absolute minimum flow and the mitigation relating to river bank erosion/bank stability, including the quantum of any financial contribution). Having received those comments we now issue our final decision.

To assist readers, material wording changes between the interim decision and this final decision are shown in grey shading.

Consent has been granted to a modified operating regime for the HEPS pursuant to section 104A of the RMA. The modified operating regime granted is different to that sought by Trust Power Limited (the Applicant or TPL), and this is set out below.

The consents sought are a controlled activity. Consequently, consent must be granted to the applications but conditions may be imposed (and have been) which are provided for in the Operative Bay of Plenty Regional Water and Land Plan (RWLP). Rule 47C identifies those matters over which the consent authority may exercise control for “Lawfully Established Hydroelectric Power Schemes”.

Five operational changes were proposed to the current HEPS by the Applicant. The purpose of the changes was to address what the Applicant described as the plant’s limitations and to improve the ability of the HEPS to meet the demand for energy:

- (i) The first operational change was to allow for ‘peaks’ in generation flows from the dam operation when inflows to Lake Matahina are

equal to or greater than 20 cumecs (namely a decrease in the allowed minimum flow from 40 cumecs to 20 cumecs)<sup>1</sup>;

- (ii) The second operational change was to allow for the ability to 'peak' as required in response to electricity market conditions;
- (iii) The third operational change was to establish a Constraints Envelope that defines the operation of the HEPS when inflows to Lake Matahina are equal to or greater than 20 cumecs;
- (iv) The fourth operational change was to allow the 'ramping down' rate to be at a constant 30 cumecs per hour;
- (v) The fifth operational change was to allow the 'ramping up' rate to be at a maximum of 97 cumecs per hour;

We have granted a modified operating regime that gives effect to the Applicant's operational changes, **except** that we have required a 40 cumec minimum flow downstream of the dam (other than when inflows to the storage reservoir are less than this where we have imposed an absolute minimum flow of 28 cumecs). The details and reasons for this are set out below.

## 1. Introduction

TrustPower Ltd (TPL or "the Applicant"), the owner of the Matahina Hydro-electric Power Scheme (HEPS) has made applications to the Bay of Plenty Regional Council (BOPRC) as "consent authority" under the Resource Management Act 1991 (RMA), providing for the continued operation and maintenance of the Matahina HEPS. The Consent Authority's application numbers are 65750, 65751, 65752, 65753 and 65754.

The consent authority has appointed Greg Hill (Chairman), Rob van Voorthuysen and Alan Bickers as independent hearing commissioners pursuant to s.34A(1) of the RMA to hear and determine the applications.

The Commissioners have noted the relevant provisions of s.113(3) of the RMA which states:

- "A decision prepared under subsection (1) may, -*
- (a) instead of repeating material, cross-refer to all or a part of -*
    - (i) the assessment of environmental effects provided by the Applicant concerned;*
    - (ii) any report prepared under section 41C, 42A, or 92; or*
  - (b) adopt all or a part of the assessment or report, and cross-refer to the material accordingly".*

We (the Commissioners) record that we intend to adopt the approach enabled by s. 113(3) in this Decision.

The Matahina HEPS is located on Lake Matahina on the Rangitaiki River approximately 10 km upstream of the township of Te Teko, in the Whakatane

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<sup>1</sup> We note the Environment Court's declaration (19 April 2011) stated that TPL's existing resource consent "does not require any residual flow or minimum discharge, particularly when inflows are less than 40 cumecs"

District. Downstream of the dam the river flows through Te Teko, Edgecumbe and Thornton before it discharges to the coast (Pacific Ocean) at Thornton. Lake Matahina extends a length of approximately 6 km upstream of the dam. In the upper catchment of the Rangitaiki the townships of Murupara, Waiohau and Galatea are situated beside the river. Lake Aniwhenua is located on the river immediately downstream of Galatea and is the site of the Bay of Plenty Electricity owned and operated Aniwhenua Power Station, approximately 25 kilometres upstream of the Matahina HEPS.

The HEPS site is described in the application<sup>2</sup> as 1 Te Mahoe Village Road and the legal description is described as Lot 1 DPS 77091; Block XV Rangitaiki Upper Survey District being Section 1 SO 59596; Part Lake Matahina Sections 1 and 2 SO 60956; Part Rangitaiki Old Riverbed Sections 2 and 3 SO 60568.

The application documents included a detailed description of the proposal as well as a report "*Matahina Hydroelectric Power Scheme Reconsenting Project: River Hydrology, Hydraulics and Bank Erosion*", (May 2009) which is summarised as follows:

- The physical structures associated with the dam and power house will not be changed nor will the current maintenance regime;
- There will be no change to the controls of Lake Matahina or the operation of the HEPS during flood conditions;
- There are five operational changes proposed to the current HEPS;
- The purpose of the changes are to address the generation plant's limitations and to improve the ability of the HEPS to meet the market demand for electricity;
- The first operational change is to allow for 'peaks' in the dam operation when inflows to Lake Matahina are equal to or greater than 20 cumecs (as opposed to 40 cumecs currently)<sup>4</sup>;
- The second operational change is to allow for the ability to 'peak' as required;
- The third operational change is to establish a Constraints Envelope that defines the operation of the HEPS when inflows to Lake Matahina are equal to or greater than 20 cumecs;
- The fourth operational change is to allow the 'ramping down' rate to be at a constant 30 cumecs per hour;
- The fifth operational change is to allow the 'ramping up' rate to be at a maximum of 97 cumecs per hour;
- There are proposed environmental response changes under the new regime to minimise the impacts of the proposed regime on the environment;

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<sup>2</sup>Submitted by Ryder Consulting Ltd on behalf of TPL on 18 May 2009.

<sup>3</sup>Prepared for HOBEC (Solicitors) on behalf of TrustPower Limited by BECA Infrastructure Ltd.

<sup>4</sup>Measurement of river flow at the Te Teko Gauging Station in cubic metres per second (m<sup>3</sup>/s).  
Also see footnote 1. .

- Technical experts identified the changes to the HEPS that would mitigate or minimise environmental effects;
- In some instances the experts considered no changes were required;
- Fish passage was identified as a key area where changes to the environmental response would improve how the system interacts with the environment;
- There is to be extensive monitoring and performance reporting to be applied to many aspects of the HEPS operation and environmental effects; and
- The idea of 'Adaptive Management' as a way of identifying adverse effects of the HEPS and recommending measures to mitigate the effects is to be incorporated into the proposed regime.

The proposed activities for which consent is sought are summarised below:

	Consent type	Activity	Regional Plan	Rule	Status
1.	Water permit	To impound water behind the Matahina Dam	Operative Bay of Plenty Regional Water and Land Plan (RWLP)	47c	<i>Controlled activity</i>
2.	Land use consent	To maintain a structures on the bed of the Rangitaiki River being the Matahina Dam and Power House and the associated structures	RWLP	47c	<i>Controlled activity</i>
3.	Water permit	To take and use up to 160 cumecs of water from Lake Matahina for the purposes of power generation	RWLP	47c	<i>Controlled activity</i>
4.	Water permit	To take and use up to 140L/s of water from Lake Matahina for the purposes of cooling water	RWLP	47c	<i>Controlled activity</i>
5.	Discharge permit	To discharge up to 160 cumecs of water to the Rangitaiki River from a Hydroelectric Generation Scheme	RWLP	47c	<i>Controlled activity</i>

	Consent type	Activity	Regional Plan	Rule	Status
6.	Discharge permit	To discharge up to 140L/s of water to three locations on the Rangitaiki River from a Hydroelectric Generation Scheme	RWLP	47c	<i>Controlled activity</i>
7.	Discharge permit	To discharge contaminants, in the form of stormwater, to three locations on the Rangitaiki River	RWLP	47c	<i>Controlled activity</i>
8.	Discharge permit	To discharge drainage water from the Matahina Dam, powerhouse and spillway to two locations on the Rangitaiki River	RWLP	47c	<i>Controlled activity</i>
9.	Discharge permit	To discharge up to 1980 cumecs of water from Lake Matahina over the Matahina Dam spillway to the Rangitaiki River	RWLP	47c	<i>Controlled activity</i>
10.	Discharge permit	To discharge incidental volumes of contaminants to the Rangitaiki River from processes associated with power generation	RWLP	47c	<i>Controlled activity</i>
11.	Discharge permit	To discharge up to 140 cumecs of water from the Matahina Dam Left Abutment Dewatering Tunnel to the Rangitaiki River	RWLP	47c	<i>Controlled activity</i>

The relevant provisions of the RMA dealing with “controlled activities” are provided for in s.104A as follows:

*“Determination of applications for controlled activities*

*After considering an application for a resource consent for a controlled activity, a consent authority—*

- (a) must grant the resource consent, unless it has insufficient information to determine whether or not the activity is a controlled activity; and*
- (b) may impose conditions on the consent under section 108 only for those matters—*
  - (i) over which control is reserved in national environmental standards or other regulations; or*

(ii) *over which it has reserved its control in its plan or proposed plan.”*

Consequently, we must grant consent to the applications but may impose conditions which are provided for in the Operative Bay of Plenty Regional Water and Land Plan (RWLP). Rule 47C<sup>5</sup> identifies the matters over which the consent authority may exercise control for “Lawfully established Hydroelectric Power Schemes”<sup>6</sup> as follows:

- (a) Measures to provide for the passage of fish, both upstream and downstream.
- (b) Upstream and downstream water levels, residual flows and water quality.
- (c) Screening of intake and diversion structures.
- (d) Intake velocities.
- (e) Measures to manage erosion effects (including destabilisation of beds and banks of river).
- (f) Measures to identify and manage the risk of dam failure.
- (g) Stability of the land bordering the dam.
- (h) Measures to manage discharges to water from the use or alteration of the dam structure.
- (i) Measures to avoid, remedy or mitigate any adverse effect on aquatic ecosystems, areas of significant indigenous vegetation, significant habitats of indigenous fauna.
- (j) The quantity and flow rate, outstanding natural features and natural character.
- (k) Measures to avoid, remedy or mitigate any effects on other lawfully established users of the river or stream of water released from the dam.
- (l) Volume and rate of any take or diversion.
- (m) Techniques for ensuring the safe passage of flood water.
- (n) Effects on the relationship of tangata whenua and their culture and traditions with the site and any waahi tapu or other taonga affected by the activity.
- (o) Effects on the ability of tangata whenua to exercise their kaitiaki role in respect of any waahi tapu or other taonga affected by the activity.

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<sup>5</sup>Which applies to applications to replace existing resource consents.

<sup>6</sup>Matahina HEPS is described in Schedule 11 of the Operative RWLP as a scheme covered by the Rule.

- (p) Measures to avoid, remedy or mitigate adverse effects of the operation on downstream sediment transport processes.
- (q) Measures to avoid, remedy or mitigate adverse effects on lawfully established downstream infrastructure.
- (r) The range, or rate of change of levels or flows of water.
- (s) The structural integrity and maintenance of the structure.
- (t) Measures to avoid, remedy or mitigate adverse effects on amenity values (including recreation), and existing public access to and along the margins of rivers and lakes.
- (u) Information and monitoring requirements.
- (v) Administration charges under s. 36 of the Act.

These matters, over which the consent authority has control, have been the focus of our consideration of the application. These are addressed below.

We record that we have had regard to the relevant objectives and policies of the various planning documents. These were fully set out in Mr Faithfull's s.42A report<sup>7</sup> Mr Kemble's evidence (for the Applicant) and Mr Chris Dawson for EHG. However given this is an application for a controlled activity we are not required to determine the applications in terms of their 'consistency' with the objectives and policies. They have been a consideration in terms of the 'evaluation' of the matters over which the RWLP has retained control and the conditions of consent that we have imposed, as set out in Schedule 1 to this decision.

TPL has a suite of resource consents covering its existing operating regime. The following table compares the existing operational restrictions with those proposed under the current suite of applications:

Activity	Restrictions under the existing resource consent 22195	Proposed restrictions under the resource consent application
<i>Lake Matahina Operational Range</i>	Extreme Min. Reservoir Level = 71.6m <sup>8</sup> Min Operational Reservoir Level = 73.15m Max Operational Reservoir Level = 76.2m, Max Flood (Less than 200 cumecs) Reservoir Level = 76.4m Design Flood Level = 76.8m Spillway Gate Crest Level = 76.4m	No changes to the Lake Matahina Operational Regime
<i>Lake Level Changes</i>	Lakes level shall not change by more than 0.25m/hour unless under emergency operating conditions when the spillway is operating	No change to the rate of lake level change under the proposed regime

<sup>7</sup>See section 12.7 - Section 104(b)(iv) Relevant Plans

<sup>8</sup> All levels are expressed in terms of Moturiki Datum.

Activity	Restrictions under the existing resource consent 22195	Proposed restrictions under the resource consent application
<i>Minimum Output from the Matahina Dam</i>	The minimum flow shall not be less than 40 cumecs (22MW) except when inflow to the Lake is less than this.	The minimum flow shall not be less than 20 cumecs (10MW) except when inflow to the Lake is less than this. When inflow is less than 20 cumecs, outflows from the HEPS must match inflows
<i>Number of Operational Peaks</i>	No more than 2 operational peaks may occur each day. No peaks are permitted when inflow is less than 40 cumecs.	There is no limit on the number of operational peaks per day. No peaks are permitted when inflow is less than 20 cumecs.
<i>Upward 'Ramping' Rates</i>	Outputs from the HEPS shall not increase by more than 70 cumecs (37MW)/hour except in system low flow frequency conditions	Outputs from the HEPS shall not increase by more than 97 cumecs (52MW)/hour except in system low flow frequency conditions
<i>Downward 'Ramping' Rates</i>	Outputs from the HEPS shall not decrease by more than 30 cumecs (16MW)/hour in the first hour, 22 cumecs (12MW)/hour in the second hour and 14 cumecs (8MW)/hour for every hour thereafter.	Outputs from the HEPS shall not decrease by more than 30 cumecs (16MW)/hour.

## 2. Public Notification and Submissions Received

Rule 47C of the Operative RWLP requires that the application be publicly notified.

The application was publicly notified in the Eastern Bay News and the Rotorua Daily Post on Thursday 17 September 2009 and the Whakatane Beacon on Friday 18 September 2009. In addition, notice of the application was served on 221 interested parties, including:

- Fonterra Co-Operative Group Limited<sup>9</sup>;
- Lochinver Station;
- Whakatane District Council – Maori Liaison;
- Whakatane District Council;
- All downstream land owners immediately adjacent to the Rangitaiki River;
- Land owners immediately adjacent to Lake Matahina;
- Bay of Plenty Regional Council – Rivers and Drainage;
- All consented water abstractors;

<sup>9</sup>Fonterra's submission in response to this notification was withdrawn – refer to section 3.1 of this decision.



- New Zealand Jet Boat Association;
- Department of Conservation;
- Federated Farmers;
- Fish and Game New Zealand – Eastern Region;
- Bay of Plenty Electricity;
- Kokopu Charitable Trust (Bill Kerrison); and
- Iwi

When submissions closed on 18 September 2009, 37 submissions had been received. One submission (Ngati Awa, in the form of their Cultural Impact Assessment) was received prior to the submission period commencing and one submission (Malcolm Campbell) was received after the close of submission period. These submissions were accepted, using the provisions of s.37 of the RMA by the BOPRC's Consents Manger, acting under delegated authority, with express approval of the Applicant.

We note that two requests were made at the hearing to accept late submissions. These are addressed in sections 3.4 and 3.5 below. Neither was accepted as we had no jurisdiction to do so.

A total of 39 submissions were received as summarised below:

Oppose/Support	Requesting to be heard		Total
	No	Yes	
Neutral	2	5	7
Opposed	5	21	26
Supportive	1	2	3
Conditional Support	0	3	3
<b>Total</b>	8	31	39

The majority of submissions (26) opposed the proposal. Six submissions were received in support however, two of these were conditional. Seven neutral submissions were received. Thirty one submitters requested that they be heard by the Commissioners.

The key issues raised by submitters in opposition are summarised below. Generally these raise concerns about the effects of the proposed modified operational regime on the following matters:

- Aquatic ecology and fish passage;
- Water quality;
- Cultural and spiritual relationships of Tangata Whenua with the Rangitaiki River;
- Riverbank erosion;
- Floodway management;

- Navigational safety at Thornton Bar;
- Existing water abstraction downstream of the dam;
- Future availability of the water resource for other uses downstream of the dam;
- Recreational effects;
- Duration of consent sought.

The Applicant provided the written approvals for the proposal from the following:

- Anthony Benedict Schlepers, 467a Westbank Road, Whakatane;
- John Francis Schlepers, 469 Westbank Road, Whakatane;
- Mark Ruiter Family Trust, 565 Westbank Road, Whakatane;
- William Leonard and Glenys Ann McCracken and Arthur McCracken, 144 McCracken Road and 32 Hydro Road, Whakatane;
- Ruitmac Farms Limited, C/- 88 The Strand, Whakatane; and
- W L & G A McCracken Family Trust, Lot 2 DP 36308 and Lot 1 DPS 36428, Whakatane.

In accordance with s.104(3)(ii) of the RMA, we are unable to consider any effects on these persons.

### **3. Procedural Matters**

Fonterra Co-operative Group Ltd ("Fonterra") has applied to BOPRC to replace its existing resource consents for discharges to the Rangitaiki River<sup>10</sup>. Issues arose between Fonterra and TPL over the proposed minimum flow of 20 cumecs. As a result of complex legal issues between this application and that of Fonterra the consent authority sought a declaration from the Environment Court. The Court's decision of 19 April 2011 is summarised as follows:

1. TPL's resource consent application should be heard and determined prior to the consideration of Fonterra's application;
2. When considering TPL's application the BOPRC must take into account the existing resource consents held by Fonterra relating to discharges to the Rangitaiki River;
3. The existing environment to be considered for the application hearing includes existing consents and those continuing under s.124 of the RMA, permitted activities under the Regional Plans, and any granted but unimplemented consents;

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<sup>10</sup>This application is yet to be considered by BOPRC.

4. Condition 5.1 of TPL's existing resource consent '*does not require any residual flow or minimum discharge, particularly when the inflows to the lake are less than 40 cumecs.*' and
5. The consent authority has the ability to include a review condition on TPL to be implemented once the Fonterra consents are determined, but the wording of such a condition shall be confirmed once the outcome of the Fonterra application is known.

It should be noted that Fonterra advised by letter<sup>11</sup> on 3 October 2011 that while it had concerns about the potential adverse effects that TPL's proposed modified operating regime may have on Fonterra's rights to discharge wastewater to the Rangitaiki River, it had reached agreement with TPL and, consequently,

*"...(it) hereby gives its written approval to TrustPower's application for consents..."*. Fonterra, consequently, withdrew its submission in its entirety. In accordance with s.104 (3)(ii) of the RMA we must not have regard to any effects on Fonterra. We can, however, consider any adverse effects that might result from a range to the river's flow regime and the subsequent way in which the contaminants arising from the Fonterra discharge are assimilated by the river waters.

A pre-hearing meeting was convened by BOPRC on 9 May 2011 under the chairmanship of Russel de Luca. TPL was represented by a number of consultants and staff and many of the submitters were also present. A key outcome of the meeting related to amendments to the proposed individual mitigation agreements offered by TPL to downstream abstractors.

Oral submissions were received at the hearing on the 28<sup>th</sup> June 2011 from Anthony Olsen, on behalf of Ngati Tuwhareroa (BOP) Settlement Trust, seeking to enable the Trust to make a late submission. The submission was outside of the timeframe provided for under s.37A (4)(a) of the RMA and, consequently, we had no jurisdiction to waive the time limit and accept the submission..

Ms Tania Waikato, on behalf of Nga Maihi hapu, sought leave for us to accept a late submission from the hapu. The submission was also outside of the timeframe provided for under s.37A (4)(a) of the RMA and so we could not accept it either.<sup>12</sup> Ms Waikato then withdrew her request.

#### **4. Hearing**

The hearing to consider the applications was held on the 28<sup>th</sup> to 30<sup>th</sup> June 2011 and 4<sup>th</sup> to 8<sup>th</sup> July 2011 in Whakatane. The hearing then adjourned to

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<sup>11</sup>David Wright, National Consents Manager, Fonterra Co-operative Group Ltd (3 October 2011).

<sup>12</sup>Te Runanga o Ngati Awa allowed Ms Waikato to give evidence in support of its submission, but later, by way of letter of 5 October 2011, advised that Ms Waikato's submissions did not represent the position of Ngati Awa in three areas – the term of the consent, peaking and consultation with Ngati Awa. In these respects we have accorded no weight to Ms Waikato's evidence.

allow for the preparation of rebuttal evidence and closing submissions from TPL.

The hearing was reconvened on the 12<sup>th</sup> and 13<sup>th</sup> October 2011 in Whakatane. We sought a written response from TPL to several questions and adjourned again to allow time for these and TPL's closing written submissions to be submitted.

On receipt of TPL's closing written submissions and our consideration of them, the hearing was formally closed on the 28<sup>th</sup> October 2011 having stated, with the agreement of the Applicant, that an interim decision would be issued. This was due to granting the consents on terms different to those sought by TPL, notably imposing a minimum flow below the dam of 40 cumecs (unless inflows to reservoir above the dam were less than that) and not the 20 cumecs sought. This had implications for the suite of conditions proposed by TPL, including the financial contribution offered on an Augier basis to address the effects on downstream bank stability and erosion.

In those circumstances we considered it appropriate to issue an interim decision and give all parties an opportunity to provide written comments on the suite of conditions that we had settled on at that stage. In the Direction accompanying the interim decision we stated that we would not be reconsidering our findings on the substantive issues relevant to each matter of control contained in Rule 47C. However having reviewed the comments, there two matters of substance that warranted further comment from TPL. We sought further comment from them on conditions 28 (Contribution to River Bank Protection Programme) and 30 (Periods of Normal Operation). TPL also requested that they be able to respond to any comments from the EHG's on Condition 30. TPL responded in writing on those two matters.<sup>13</sup>

We determined, pursuant to s.37 and s.37A (2) of the RMA, to grant a waiver to extend the time in which to issue a decision until 9 December 2011. This was due to the complexity of the issues and the significant amount of evidence, including expert evidence, much of which was contested. In issuing the interim decision, we requested of TPL that they agree to the process and a further extended timeframe. TPL agreed. Furthermore when we sought additional comments from TPL on conditions 28 and 30, we again sought TPL's agreement to further extend the time frame. TPL did not oppose this extension.

We carried out a site visit on 1<sup>st</sup> July 2011, which included travelling by boat from the Thornton Bar area up the Rangitaiki River to the dam. We viewed the riverbank protection works, eroded areas and remedial works, eel transfer facilities, the dam and Lake Matahina and TPL's administration facility at the dam. During the period of our inspection, we were advised that the discharge from the HEPS was 142 cumecs.

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<sup>13</sup> Holland Beckett Lawyers, letter to Bay of Plenty Regional Council dated 20 February 2012.

## **5. Appearances at the Hearing**

We record that the following persons gave evidence or made submissions to the hearing:

Submissions and evidence for the Applicant (TPL):

- Vanessa Hamm (Counsel) and Lizzy Wiessing (Associate Counsel)
- Graham Levy (Water Resources Technical Director, Beca Infrastructure Ltd)
- Peter Lilley (Hydro Development Manager, TPL)
- Kirsty Joynt (Environmental Advisor, TPL)
- Do Van Toan (Chief Geotechnical Engineer, Beca Infrastructure)
- Don Tate (Geotechnical & Water Resource Director, Riley Consultants Ltd)
- Gregory Ryder (Water Quality Scientist & Aquatic Ecologist, Ryder Consulting Ltd)
- Buddy Mikaere (Cultural Consultant, Buddy Mikaere & Associates)
- Martin Single (Environmental Consultant)
- John Goodwin (Landscape Architect, Boffa Miskell Ltd)
- Robert Greenaway (Leisure Consultant, Rob Greenaway & Associates)
- Thomas Brent Layton (Economics Consultant)
- Gavin Kemble (Environmental Planner, Ryder Consulting Ltd)
- Ian Lees (Canterbury Development & Wind Energy Asset Manger, TPL)

Written statements of evidence were also received from Robin Dawson (Senior Water Resources Engineer, Tonkin & Taylor Ltd), Mark Sanders (Senior Ecologist, Boffa Miskell Ltd) and Rodney Clough (Archaeologist, Clough & Associates Ltd). We read those statements but had no questions for the witnesses.

Submitters:

- Alan Law (Wyndlea Farms)
- Platt Gow
- Bill Kerrison (Kokopu Trust)

- Mick Kearney (Te Whare Wananga o Awanuiarangi in support of the Kokopu Trust)
- Tenara Wara (On behalf of Ngāti Haka Patuheuheu)
- Robert Pouwhare (Chairman of Ngāti Haka Patuheuheu Trust)
- Ani Hare (On behalf of Ngāti Haki Patuheuheu)
- Henare McCorkingdale (Chairman of Waiohau Marae Committee on behalf of Ngāti Haki Patuheuheu)
- Timahio Tupe (For Kapi Tupe on behalf of Ngāti Haki Patuheuheu)
- Wayne Checkley
- Matthew Gow (Gow Family Trust)
- Simon Berry (Counsel for the Environmental Hazards Group [EHG] of BOPRC) and Jen Vella (Associate Counsel)
- Ken Tarboton (Group Manager EHG)
- Colin Holmes (Rangitaiki River Scheme Liaison)
- Bruce Crabbe (Rivers & Drainage Operations Manager, EHG)
- Brent Wheeler (Economics Consultant on behalf of EHG)
- Gary Williams (Hydrological Engineering Consultant on behalf of EHG)
- Chris Dawson (Senior Planner, Bloxham, Burnett & Olliver Ltd on behalf of EHG)
- Beverly Hughes (Environmental Manager of Te Runanga o Ngāti Awa/Rangitaiki Hapu Coalition)
- Pouroto Ngaropo (On behalf of Ngāti Awa)
- Tania Waikato (Ngā Maihi hapu as a witness in support of Ngāti Awa)
- Pouhairi Morris
- George Johnston
- Scotty Muir
- Philip Leaming
- Ian Kinvig
- Mark Hudson

- Robert Hunter (On behalf of Horticulture New Zealand and NZ Kiwifruit Growers Inc)
- Marianne O'Halloran (Geotechnical Engineering Consultant on behalf of EHG)
- Roger Burchett (Hydro–electricity Generation Engineering Consultant on behalf of EHG)
- Linda Conning (Planner on behalf of the Royal Forest & Bird Society NZ Inc)
- Mark Fort (Chairman of Eastern Branch of the Royal Forest & Bird Society)
- Bill Clarke (On behalf of the Royal Forest & Bird Society)
- Craig Hammond
- Richard Gardner (Counsel and Senior Policy Advisor of Federated Farmers of New Zealand)
- Gwyn Morgan (Policy Advisor of Federated Farmers)
- Alan Law (On behalf of Federated Farmers)
- Gerard van Beck (On behalf of Federated Farmers)
- Matt Gow (On behalf of Federated Farmers)
- Mike Noord (On behalf of Federated Farmers)
- Dale Tawa (Acting Area Manager, East Coast Bay of Plenty Conservancy of Department of Conservation)
- Helen Neale (Community Relations Officer [Planning] Department of Conservation)
- David Kelly (Scientific Officer, Aquatic and Threats Unit, Department of Conservation)
- Rebecca Lander (Technical Support Officer, Department of Conservation)
- Michael Dedual (Freshwater Fisheries Scientist, Department of Conservation)
- Josh Kalan (Chairman, Whakatane District Council's Māori Liaison Committee)
- M Sisley (On behalf WDC Māori Liaison Committee).

At the resumed hearing on the 12<sup>th</sup> October 2011 the following additional submissions and evidence were heard:

- Simon Berry (Counsel for the EHG) and Jen Vella (Associate Counsel)
- Gary Williams (Hydrological Engineering Consultant on behalf of EHG)
- Ken Tarboton (Group Manager EHG).

Supplementary statements of evidence were also received from Bruce Crabbe (Rivers and Drainage Operations Manager EHG)<sup>14</sup> and Brent Wheeler (Economics Consultant). Dr Wheeler provided a written response to questions from the Commissioners.

Rebuttal Evidence and Submissions on behalf of TPL were received from:

- Peter Lilley (Hydro Development Manager, TPL)
- Graham Levy (Water Resources Technical Director, Beca Infrastructure Ltd)
- Do Van Toan (Chief Geotechnical Engineer, Beca Infrastructure)
- Ian Lees (Canterbury Development & Wind Energy Asset Manger, TPL)
- Bruce Walpole (Hydrological Engineer, TPL)
- Thomas Brent Layton (Economics Consultant)
- Gavin Kemble (Environmental Planner, Ryder Consulting Ltd).

Written statements of rebuttal evidence were also received from Don Tate (Geotechnical & Water Resource Director, Riley Consultants Ltd), Gregory Ryder (Water Quality Scientist & Aquatic Ecologist, Ryder Consulting Ltd), Buddy Mikaere (Cultural Consultant, Buddy Mikaere & Associates), John Goodwin (Landscape Architect, Boffa Miskell Ltd) and Robert Greenaway (Leisure Consultant, Rob Greenaway & Associates).

Reports and Evidence were received from BOPRC as Consent Authority as follows:

- Shane Iremonger (Environmental Scientist, BOPRC)
- Paul Scholes (Environmental Scientist [Water Quality], BOPRC)
- Matthew Bloxham (Environmental Scientist [Freshwater], BOPRC)
- John Philpott (Water Resources Consulting Engineer) who also provided a written statement as part of the presentation of the officer's report)
- Luke Faithful (Consents Officer, BOPRC) who had coordinated the s.42A report.

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<sup>14</sup>Dr Tarboton responded to questions concerning Mr Crabbe's supplementary evidence because Mr Crabbe was unable to appear at the resumed hearing.



Helen Creagh, BOPRC's Consents Manager was in attendance throughout most of the Hearing and Rueben Fraser (Senior Consents Officer) attended in her absence. We also received written legal advice from Counsel Paul Cooney (Cooney Lees Morgan).

Ms Hamm gave closing oral submissions and subsequently she and Ms Wiessing presented the Applicant's written reply which addressed questions put to her by the Commissioners.

## **6. Evaluation of the Applications**

We must consider the application under the provisions of s.104A of the RMA. Consequently, we must grant the application given that we received sufficient information about the proposal and its likely effects. We may, however, impose conditions under s.108 for matters over which control is reserved under national environmental standards, regulations or in Rule 47C of the Operative RWLP. Only Rule 47C is relevant in this case.

The matters over which the RWLP has retained control have been referred to earlier (section 1.8 of this decision). We now address the issues of contention under those matters of control.

## **7. Matters over which control has been retained**

### **7.1 Flow Matters**

The relevant matters of control are:

- (b) Upstream and downstream water levels, residual flows and water quality.
- (h) Measures to manage discharges to water from the use or alteration of the dam structure.
- (i) Measures to avoid, remedy or mitigate any adverse effect on aquatic ecosystems, areas of significant indigenous vegetation, significant habitats of indigenous fauna.
- (j) The quantity and flow rate, outstanding natural features and natural character.
- (k) Measures to avoid, remedy or mitigate any effects on lawfully established users of the river or stream of water released from the dam.
- (l) Volume and rate of any take or diversion.
- (r) The range, or rate of change of levels or flows of water.

The above matters of control directly relate to the proposed mode of operation of the Matahina dam. In terms of these matters of control and the evidence presented we evaluate the following issues in the sequence listed:

- Minimum (residual) flow
- Peaking
- Ramping rates
- Lake levels

### 7.1.1 Minimum (Residual) Flow

The Matahina dam has limited storage and so it is required to generate electricity and discharge water in a manner that correlates to the river flows above the storage reservoir (the lake). In that regard it approximates a run of the river scheme. In the context of this decision the 'minimum flow' or 'residual flow' is the lowest volume (expressed as cubic metres per second) of discharge that will be permitted to occur from the dam during times of normal operation (namely outside of flood flows). In other words, the volume of water discharged from the dam must always exceed the minimum flow.

The proviso to this is that the volume of water flowing into the storage reservoir from the Rangitaiki River may at times be lower than the required minimum flow. In that situation outflows from the dam should match inflows to the reservoir in a way that enables TPL to avoid the "rough running range" of the two turbines, but does not enable TPL to hold the river below the dam at flows well below those entering the reservoir for long periods of time. We return to that particular matter later.

In our view the starting point for determining the quantum of the residual flow is the RLWP. Policy 66(c) of the RLWP states:

*To consider allocating water for new Hydroelectric Power Schemes on a case by case basis to avoid, remedy or mitigate adverse effects on the environment, while:*

- (i) *Maintaining the instream minimum flow requirements set in accordance with this regional plan (refer to Schedule 7 or Policy 68).*

Schedule 7 of the RLWP does not deal with the Rangitaiki River. Policy 68 of the RLWP in turn refers to Method 179 and that method states:

*Where an instream minimum flow has not been established in accordance with Method 177, the following flow will be used as the default instream minimum flow requirement: 90% of Q5 7 day low flow.*

The nearest flow monitoring gauge below the dam on the Rangitaiki River is located 12 km downstream at Te Teko. Mr Levy helpfully advised that, based on an analysis of flow records from 1949 to 2010, the Q5 7-day low flow at Te Teko is 38 cumecs<sup>15</sup>. Therefore, under the RLWP the minimum flow at Te Teko should be set at 90% of that or 34 cumecs. Mr Levy also advised that "... there appears to be of the order of 5 cumecs more flow at Te Teko than immediately below the Matahina Dam"<sup>16</sup>. This means that the minimum flow at the dam (which is the same as the residual flow) should be set at around 29 cumecs.

We note that the flow record at Te Teko is influenced by the historical flow releases from the dam. However, Mr Levy verbally advised that he had adjusted the flow record to account for the operation of the scheme but not for other abstractions. He advised that the flow series he used was therefore

<sup>15</sup>Levy, evidence-in-chief (EIC), paragraph 33, page 10

<sup>16</sup>Ibid, paragraph 30, page 8.

close to a naturalised flow series. On that basis we are satisfied that the 29 cumecs figure noted above is indicative of the residual flow required under the statutory planning framework. The relevant point is that this residual flow is greater than the 20 cumecs flow that sought by TPL.

The previous consent for the dam (02 2195/1) contained condition 5.1 which specified:

*The minimum load shall not be less than 22MW (40 cubic metres per second) except when the river inflow is less than this. When river inflow is less than 40 cubic metres per second no peaking is permitted.*

Condition 5.1 rather unhelpfully did not explicitly address the minimum flow requirement when the river inflow (to the lake) was less than 40 cumecs. In that regard Ms Hamm advised us:

*“TrustPower had historically interpreted its consent to mean that once inflows were less than 40m<sup>3</sup>/s, it was required to operate the Scheme on an instantaneous outflows match inflows basis.”<sup>17</sup>*

For completeness we also note that the 28 March 2011 Environment Court Declaration stated:

*“For current purposes we are content to hold that the existing consent continuing under s124 for TrustPower does not require a residual flow where inflows to the lake are less than 40 cumecs. We acknowledge that the applicant to date has not operated the consent to that extent regularly.”*

However, we are of the view that a residual flow is required below the dam at all times. It is inconceivable to us to contemplate a situation whereby a major river such as this would be permitted to run dry below a dam, even at times of extreme low river flow. Under its proposed modified operating regime TPL has sought a residual flow below the dam of 20 cumecs at all times. We address the effects of this later in this decision.

#### 7.1.2 Peaking

TPL wish to adopt a regime whereby the current restriction of two peaks per day is removed and multiple peaking is allowed. Mr Lilley explained that 80% of the annual generation from Matahina is constrained by the minimum flow and ramping rates. He advised:

*“As such only 20% of the energy produced can be effectively placed against demand. Even this remaining 20% of energy can still not be placed with full flexibility due to the two peaks per day constraint. This requires a level of presumption of energy demand to manage the twin peaking regime. Demand is however driven by a range of factors, such as time of the day, day of the week, weather and industrial load and as such can vary significantly over short periods. Often this means that the*

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<sup>17</sup>Opening legal submissions, paragraph 21, page 10.

*scheme may generate a peak which does not match the demand that requires it.*<sup>18</sup>

In terms of water quality and aquatic ecology we note and accept the view of Dr Ryder who advised:

*"The loss of habitat associated with flow fluctuations is determined by changes in depth and velocity at points across the river channel, and by changes in wetted width. Loss of edge habitat is important for some plant species and benthic macroinvertebrates that are associated with these plants (utilising them as habitat), as edge habitat is typically a productive part of the river environment." "....I expect that multi-peaking is unlikely to result in measurably greater effects on river ecology relative to single or twin peaking, provided that general river bed disturbance does not occur and displace submerged vegetation, which provides habitat for macroinvertebrates and fish. I understand from the evidence of Dr Toan that lateral erosion effects from the current operation of the Scheme have been minor (the worst having been caused by the 2004 flood) and this will not be worsened by the proposed revised operating regime ...".*<sup>19</sup>

Having reviewed the evidence of the other relevant experts we have concluded that the majority of their concerns related to the potential adverse effects of reducing the minimum flow in combination with a multiple peaking regime. Having addressed the minimum flow issue (and having found that it should remain at 40 cumecs with an absolute minimum flow of 28 cumecs) we are satisfied that the residual potential adverse effects on water quality and aquatic ecology arising from multiple peaking will be minor.

We discuss the potential adverse effects of multiple peaking on river bank stability elsewhere in this decision.

### 7.1.3 Ramping Rates

Mr Lilley explained the problems with the existing ramping rates. He advised:

*"The present ramping rates mean that the Scheme has to take a long time to reach a given output in order to meet electricity demand and likewise when this demand drops off, the Scheme takes a long time to come down from the peak. The length of time taken to ramp up, and then down again, effectively means that the Matahina HEPS cannot always supply electricity to the National Grid when it is sought by Transpower. In addition, more water must be used to respond to the market demand for electricity than necessary which reduces the storage available to meet future energy demand."*<sup>20</sup>

Mr Levy advised us:

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<sup>18</sup> Lilley, EIC, paragraphs 3.5 and 3.6, page 4.

<sup>19</sup> Ryder, EIC, paragraph 3.11, page 52.

<sup>20</sup> Lilley, EIC, paragraph 3.12, page 5.

*"I have determined that the current consented rate of rise is of the order 1.0 to 1.5 m/hr (lower and upper reaches), and this would increase to 1.4 to 2.1 m/hr. Expressed in the time for the water level to rise 200 mm (i.e. a perceptible amount that someone may then need to respond to for safety reasons), currently this rise would take between 8 and 12 minutes. With the proposed ramping rates, this would reduce to between 6 and 8 minutes." "While these rates of rise would be perceptible to an observer on the bank, they are not so rapid that they could be considered a safety issue. The change from what is currently permitted to what is proposed is, in my opinion, minor."<sup>21</sup>*

There were few other concerns expressed to us about the proposed increase in ramping rates. Dr Dedual considered that the proposed ramping down rate of 30 cumecs per hour would result in a water level change of "approximately 28cm/hour in the Te Teko reach" which in his view was "substantially above those being advocated around the world"<sup>22</sup>. However, Dr Dedual's concern was in relation to the possible stranding of salmonids (trout in this case). In that regard Dr Ryder advised:

*"I do not consider that the proposed change to the ramping rate is a significant issue for fish of the lower Rangitaiki River due to its confined channel and relatively steep banks. Backwaters, that could potentially become isolated due to a sudden drop in flow, are uncommon."<sup>23</sup>*

On balance we find that the potential adverse effect of the proposed change in ramping rates is no more than minor.

#### 7.1.4 Lake Levels

The Matahina dam has a normal operating range of just over 3 metres. TPL has not sought to alter the existing lake level range in terms of the normal electricity generation operating regime. Changes are proposed to the low end of the operating range in response to flood management requirements, but that is discussed elsewhere in this decision.

Dr Ryder considered the effects of the lake level regime on water quality, macrophytes, macroinvertebrates and fish. He concluded:

*"Water quality in the Lake is likely to be influenced primarily by what is occurring in the upper river. No changes to water quality in the Lake are anticipated as a result of the ongoing operation of the Scheme."*

*"Despite the loss of some macrophyte cover resulting from lake level fluctuations, the lake continues to support good densities of macroinvertebrates and fish that reside within the littoral zone habitat."*

*"...the current operating regime in Lake Matahina is sustaining a diverse and abundant macroinvertebrate community typical of macrophyte dominated lakes."*

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<sup>21</sup>Levy, EIC, paragraphs 154 to 157, page 36.

<sup>22</sup>Dedual, EIC, paragraphs 29 and 30.

<sup>23</sup>Ryder, EIC, paragraph 13, 15, page 53.

*“The littoral zone has a high abundance of common bullies, indicating that the productivity of the lake littoral environment is high, and the Lake supports a recreational brown and rainbow trout fishery. The absence of the nuisance exotic fish species koi carp, catfish and Gambusia (which is present upstream in Lake Aniwhenua) is also positive. The high abundance of common bully represents a high energy food source for larger fish (adult eels and trout) in addition to macroinvertebrates. Together these observations indicate to me that the current operating regime of the lake is not adversely affecting lake fish communities.”<sup>24</sup>*

The effects of the existing lake level regime on terrestrial ecological matters were considered by Mr Sanders (an ecologist appearing for TPL). He concluded:

*“Lake Matahina supports a moderately low diversity and abundance of water birds, including low numbers of some threatened and endangered species. In my opinion, the small lake level changes under the proposed operating regime would have essentially no effect on the lake as habitat for birds. Consequently, ongoing operation of the Scheme would have no effects on birds of Lake Matahina.*

*Similarly, the vegetation on the slopes surrounding Lake Matahina includes ecologically valuable indigenous vegetation, which will be unaffected by the existing or proposed operating regime. Lake edge plant communities might see a slight upward shift in distribution of some species, but in my view any such effect would be negligible.”<sup>25</sup>*

However, Mr Scholes expressed some concerns about potential stratification of the lake and that the resulting oxygen depletion of the bottom waters could result in increased nutrient releases, particularly phosphorous. Such nutrient releases could exacerbate downstream nuisance algae growth.<sup>26</sup> Mr Scholes went on to state:

*“Monitoring the potential for lower dissolved concentrations immediately below the dam has been proposed by the applicant. This monitoring will provide a useful check if lake waters with low dissolved oxygen are discharged by the [Matahina] HEPS.”*

We agree with Mr Scholes regarding the proposed monitoring. Notwithstanding that, on the basis of the evidence we find that the adverse effects resulting from the proposed lake level regime are no more than minor.

We now consider the merits or otherwise of allowing a decrease in the residual flow from 40 to 20 cumecs in terms of:

- Aquatic ecology and water quality: control matter (i),
- Tangata Whenua values: control matters (n) and (o),
- Downstream abstractors: control matters (k) and (q),

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<sup>24</sup>Ryder, EIC, paragraphs 10.4, 10.7, 10.9, 10.12 and 10.13.

<sup>25</sup>Sanders, EIC, paragraphs 25.1 and 25.2, page 24.

<sup>26</sup>Scholes, EIC, paragraphs 22 and 24, pages 5 and 6.

- Recreational uses and public access to the river: control matter (t),
- Amenity values: control matter (t), and
- Electricity generation.

We then set out our overall findings on this matter.

## 7.2 Aquatic ecology and water quality

The matter of control is:

- (i) Measures to avoid, remedy or mitigate any adverse effect on aquatic ecosystems, areas of significant indigenous vegetation, significant habitats of indigenous fauna.

In terms of aquatic ecology and water quality we agree with the proposition put to us by Mr Scholes, an environmental scientist with the Council:

*“The question that springs to mind when examining the applicant’s proposal is what impacts on water quality and ecological integrity are likely to occur when it is asserted that approximately 25% of the time the low flow will be less than the existing operation (section 8.2.1 of BECA AEE Report).<sup>27</sup>*

In saying that we note that Mr Levy’s reply evidence revised the ‘25% of the time’ figure to ‘20% of the time’.

Mr Levy advised that in a worse-case scenario under the TPL modified operating regime the Rangitaiki River could be held at a low flow of 25 cumecs at Te Teko for a period of 4.5 days when the natural flow would have otherwise been 40 cumecs.<sup>28</sup> However, at other times, as part of the generation regime the river could also fluctuate between 20 and 160 cumecs on a daily basis.

The reduced minimum flow will also affect water levels. Mr Levy advised:

*“Matahina Scheme peaking operation at low river flows will result in lower water levels in the River, potentially affecting the operation of some irrigation and stockwater intakes. The change from 45 m<sup>3</sup>/s to 25 m<sup>3</sup>/s will reduce water level by between 0.2 and 0.5m, depending on the location along the river, with reduction to 20 m<sup>3</sup>/s lowering water levels a further 0.1 to 0.2 m.”<sup>29</sup>*

The potential effects of the proposed modified operating regime on aquatic ecology and water quality were assessed for TPL by Dr Ryder. Dr Ryder considered that the reduced minimum flow would not have an adverse effect on aquatic ecology and water quality. He stated:

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<sup>27</sup>Scholes, EIC, paragraph 6, page 2.

<sup>28</sup>Levy, EIC, paragraph 141, page 33 and Exhibit 8 “Mean Annual Low Flow Example”.

<sup>29</sup>Levy, EIC, paragraph 143, page 33.

*“IFIM instream habitat modelling .... Indicated that the optimum physical habitat for most fish species and food producing habitat assessed in the lower Rangitaiki River occurs at flows much less than 40 cumecs and, as such, in my opinion, low flow effects are unlikely under the Scheme’s existing or proposed operating regime for the lower river.”<sup>30</sup>*

*“In cumulative terms, the varial zone effects are, in my opinion, minor relative to the physical and water quality changes to the lower River brought about by surrounding land use activities and river control works.”<sup>31</sup>*

Dr Ryder’s view was not shared by the other scientists we heard from.

Mr Scholes described how at low flows increases in temperature and decreases in dissolved oxygen could be expected to arise and how this would vary across the river as at low flows multiple channels occurred.<sup>32</sup> He considered that such water quality changes could increase growth rates of bacteria and algae which would in turn would lead to decreased water clarity. Increased water temperatures can also adversely affect the distribution of stream invertebrates.<sup>33</sup> Mr Scholes went on to advise:

*“Potential impacts extend not only to lower dissolved oxygen concentrations and elevated temperatures, but also to an increased size of the varial zone on the river margins. Here sediments are exposed to air for part of the day, with potential negative effects on sediment characteristics, invertebrates, fish spawning and strandings, and aesthetics. Dr Ryder has stated in his evidence “that multi-peaking is unlikely to result in greater adverse effects on river ecology relative to single or twin peaking”. This may be the case when compared against the current regime, however he appears to neglect the proposed lower flow levels which will expose more river bed.”<sup>34</sup>*

*“Therefore, it is reasonable to assume that reduced benthos densities caused by widely varying flows can reduce the growth and condition of fish in these waters.”<sup>35</sup>*

Mr Scholes was unable to conclude that the potential adverse effects of reducing the minimum flow would be less than minor. In response to our questions Mr Scholes advised that in his view it was preferable to retain the existing minimum flow as that would avoid the potential adverse effects on aquatic ecology and water quality that were of concern to him.

We also heard from Mr Bloxham, a freshwater scientist with the Council. He was similarly concerned about a reduction in the minimum flow from 40 to 20 cumecs. He advised<sup>36</sup>:

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<sup>30</sup> Ryder, paragraph 13.3, page 48.

<sup>31</sup> Ibid, paragraph 13.38, page 58.

<sup>32</sup> Ibid, paragraphs 8 and 9, page 2.

<sup>33</sup> Ibid, paragraph 10, page 3.

<sup>34</sup> Ibid, paragraph 15, page 4.

<sup>35</sup> Ibid, paragraph 17, page 4.

<sup>36</sup> Bloxham, EIC, section 5.



*“... we overlook what may happen to the habitat of these [native fish] species at extreme low flows. The Rangitaiki’s bank profiles, as with every river, have depth limits and there comes a point where if water levels keep falling, the toe of the bank and adjacent emergent habitat can be exposed to air and effectively lost to aquatic species for periods. These become dead zones.”*

*“Because low flows will span kilometres of river downstream of the Matahina dam, there is potential for a large proportion of productive river edge and riverbed habitat to be repeatedly lost under the revised low, multiple peaking regime.”*

Mr Bloxham’s concerns regarding the increased exposure of the river bed at low flows were echoed by Dr Kelly, a scientist with the Department of Conservation. Dr Kelly advised:

*“Thus, the largest proportion of macrophytes occur along edge zones of the channel typically where velocities are lower, and in my opinion these are the areas that might be most negatively affected by the change in flow regime.” “The effect of shifting suitable habitat for macrophytes to the central portion of the river channel is concerning because when peak flows are released during generation, significantly greater velocities and depths will occur in these portions of the channel, and it is likely that they may not be suited to be colonized by aquatic plants.”<sup>37</sup>*

Dr Duedal, also appearing for the Department of Conservation, expressed similar concerns:

*“.. when flows are reduced from 130 to 40 cumecs (a difference of 90 cumecs; within the current consented range), the wetted width of the river is reduced by an average of about 6m. However, when flows are reduced from 40 to 20 cumecs (a difference of 20 cumecs), the wetted width is further reduced by approximately 6m. If you multiply this by the length of river that the Te Teko reach represents, a considerable amount of productive edge habitat is likely to be affected.”<sup>38</sup>*

Mr Bloxham expressed some concern that a lower minimum flow could exacerbate the formation of Phormidium mats (toxic mat forming cyanobacteria). He stated:

*“As flows approach a 20 m<sup>3</sup>/s-1 run of the river’ operating scenario, conditions will presumably become even more favourable for mat development.” “So it follows that even if generated flushing flows were possible, if followed by another low flow period where flows are again held artificially at 20 m<sup>3</sup>/s-1, Phoridium could theoretically recover back to its previous levels inside a week.”<sup>39</sup>*

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<sup>37</sup>Kelly, EIC, paragraphs 17 and 18, page 6.

<sup>38</sup>Dedual, EIC, paragraph 17.

<sup>39</sup>Ibid, section 5.3.

Mr Bloxham concluded:

*“However, I would find it difficult, given the information submitted, accepting a proposal that lowers the critical low flow threshold to the extent proposed.”<sup>40</sup>*

In terms of water quality effects, we note that a reduced minimum flow will result in the salt water interface migrating up to two kilometres inland<sup>41</sup>. In that regard we note and agree with the evidence of Ms Lander, a scientist with the Department of Conservation, who advised:

*“The saline wedge will intrude further upstream, which Dr Ryder has identified is likely to result in a reduction in the distribution of some freshwater macrophyte species. The report states this will be a reduction over “only” a few kilometres. In my opinion, a few kilometres is a substantial distance over which to reduce the abundance of some macrophyte and invertebrate taxa.”<sup>42</sup>*

On balance, we find that the weight of evidence shows that the proposed reduction in the minimum flow from 40 to 20 cumecs will have potential adverse effects on aquatic ecology and water quality that are more than minor, and in the context of a river whose natural flow regime has already been substantially altered, those adverse effects may well prove to be significant.

### 7.3 Tangata Whenua values

The matters of control are:

- (n) Effects on the relationship of tangata whenua and their culture and traditions with the site and any waahi tapu or other taonga affected by the activity.
- (o) Effects on the ability of tangata whenua to exercise their kaitiaki role in respect of any waahi tapu or other taonga affected by the activity.

There were a number of submissions lodged by Iwi, with evidence presented by Ngati Haka Patuheuheu (Robert Pouwhare, Tenara Wara, Ani Hare, Timahio Tupe and Henare McCorkingdale - Chairman of Waiohau Marae Committee on behalf of Ngāti Haki Patuheuheu), and Ngati Awa (Bev Hughes, and Pouroto Ngaropo), Pouhairi Morris, and Tania Waikato (Nga Maihi Hapu)).

Their concerns, while all expressed differently, relate to:

- Mauri and mana of the river (awa), particularly from a reduced flow of the river,
- The cultural and spiritual relationship with the river due to any reduced flow,

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<sup>40</sup>Ibid, section 6.

<sup>41</sup>Ryder, EIC, paragraph 13.5, page 49.

<sup>42</sup>Lander, EIC, paragraph 39, page 13.

- The exercise of Kaitiakitanga,
- Fish stocks and fish passage (mainly tuna - eels),
- The ecological impact of the proposal,
- Traditional use of the river (e.g. kai-moana – mainly tuna and whitebait as well as the preparation process of Maori traditional food e.g. kanga pirau, recreational activities (swimming and waka ama),
- Wahi Tapu,
- Flooding, and
- Consultation.

Mr Buddy Mikaere presented evidence for the Applicant on iwi matters.

It is noted that the issues of the ecological impact of the proposal, fish passage, flooding and recreational use of the river, including from an iwi perspective, have been addressed in separate sections in this decision. However they are also referred to here in terms of the iwi's 'holistic' relationship with the river.

While the concerns of the various iwi submitters were similar they can be broadly divided into two geographical 'categories' – upstream of the dam - Ngati Haka Patuheuheu, and downstream of it - Ngati Awa (including Nga Maihi Hapu).

#### *Upstream*

Ngati Haka Patuheuheu set out their concerns with respect to the proposal in terms of the adverse effects on the mauri, mana and relationship to the Rangitaiki River – and the effect the Matahina HEPS has had on them. Ngati Haka Patuheuheu accepted that the dam was in place and would remain, however they sought mitigation to restore mauri, mana and their relationship with the river.

In response to our questions Mr Pouwhare said the most practicable way this could be addressed was in relation to eel passage – to enable eels to migrate upstream and downstream of the dam. This has been discussed by us in the section addressing Fish Passage - it being noted the Applicant addressed this matter and detailed conditions of consent have been included to ensure fish passage up and down the river.

The Commissioners accept there is some effect on Ngati Haka Patuheuheu from the existing operation and this will continue with the proposed modified operating regime given that the dam exists. However with respect to the modified operation regime and the conditions of consent including those relating to fish passage and the relationship with Tangata Whenua, there will be an improvement over those effects already being experienced.

### *Downstream*

Ngati Awa addressed the TPL proposal from their perspective downstream of the dam. While concerned about the entire proposal, the greatest concern raised was the reduction in the minimum flow. It was this matter that would have, in their opinion, a significant adverse on the:

- Mauri and mana of the awa,
- Their cultural and spiritual relationship with the awa,
- Fish stocks and fish passage (mainly tuna),
- Traditional use of the awa (e.g. kai-moana – mainly tuna and whitebait as well as the preparation process of Maori traditional food e.g. kanga pirau, recreational activities (swimming and waka ama), and
- The ecological impact of the proposal.

Ms Hughes in her evidence<sup>43</sup> set out that Ngati Awa is the tangata whenua and have a traditional relationship with the Rangitaiki River and that this is ancient and ongoing. Moreover this relationship is enshrined in the Ngati Awa Claims Settlement Act 2005, where the Crown acknowledges Ngati Awa's cultural, spiritual, historical and traditional association to the Rangitaiki River. This association was also clearly set out by Mr Ngaropo who demonstrated how inextricably linked the people of Ngati Awa are to the river – stating that their traditions:

*“Represent the links between the world of the gods and present generations. These histories reinforce tribal identity, connection and continuity between generations and confirm the importance of the Rangitaiki River to Ngati Awa”.*<sup>44</sup>

Mr Ngaropo also stated that:

*“The Rangitaiki River has been a treasured taonga and resource for Ngati Awa”.*<sup>45</sup>

This view was succinctly put by Ms Waikato in her evidence where she stated a number of times the following:

*“I am the river and the river is me”.*<sup>46</sup>

Ms Hughes and Ms Waikato set out in their respective evidence what they considered to be the adverse effects on the people of Ngati Awa – particularly in terms of the proposed minimum flow of 20 cumecs. This included the effects on the mana of the river (an essential component of mauri), on kaitiakitanga in terms of sustaining the potential of the river as a natural resource to meet the needs of their future generations, on recreational

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<sup>43</sup>Hughes, paragraph 22 to 27, page 5.

<sup>44</sup>Ngaropo, paragraph 28 of Hughes, page 6.

<sup>45</sup>Ngaropo, paragraph 28 of Hughes, page 6.

<sup>46</sup>Waikato, paragraph 5.3, page 8.

activities (swimming and jumping from the Te Teko bridge), as a food collection and preparation source.

Ngati Awa accepted that the dam and controlled river flow were part of the existing environment, and to an extent the river had 'healed itself' or had found a new equilibrium. Notwithstanding Ngati Awa consider that there are still existing adverse effects in terms of the mana and mauri of the river, and consequently their cultural and spiritual as well as practical relationship to it. In terms of giving effect to their concerns, and the statutory imperatives in Part 2 of the Act, they sought, as a minimum, that the situation be no worse than the current operating regime. According to Ngati Awa's evidence this would require, amongst other things:

*"A minimum low flow of at least 40 cumecs ...from the dam at all times, except when inflows to the dam are less than this at which point inflows are required to match outflows instantaneously".<sup>47</sup>*

Notwithstanding Mr Mikaere's evidence for the Applicant, we are more persuaded by the evidence of Ngati Awa with respect to the effects on them – effects which cannot be appropriately avoided, remedied or mitigated by consent conditions. It is these iwi who live on and by the river on a daily basis. Their relationship with the river is clearly very strong and inextricably linked to their cultural and spiritual identity as well as to their day to day lives. This has been set out in evidence and statutorily acknowledged by the Ngati Awa Claims Settlement Act 2005.

With respect to the majority of issues raised by Ngati Awa, imposing a minimum 40 cumec flow, as requested by them, would largely avoid the adverse effects that would otherwise be created by the modified operating regime sought by the applicant. This includes the potential difficulties and dangers for those preparing the traditional Maori delicacy, kanga pirau, which involves placing corn in flowing water. We heard how low flows and water levels make this process more problematic.<sup>48</sup>

We consider that a modified operating regime encompassing a minimum flow of 40 cumecs, combined with the conditions of consent (including those specifically relating to tangata whenua and fish passage) will to the extent possible given the existence of the dam, recognise and provide for the relationship of the iwi and their culture and traditions with the Rangitaiki River and lands and other taonga as required by s.6 (e) a matter of national importance in the RMA. The operating regime proposed by the Applicant would not give effect to s.6 (e) for the reasons set out above.

In terms of s.7 (a) (Kaitiakitanga), Kaitiakitanga can be exercised under the consent granted. This is because the conditions of consent enable the iwi to provide for their future generations as TPL is required to consult with the various iwi regarding the management of the river and on an ongoing basis.

With respect to s.8 of the RMA (Treaty Principles), Mr Mikaere's evidence set out what he considered to be the three relevant Treaty principles for this

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<sup>47</sup>Waikato, paragraph 3.3, page 4.

<sup>48</sup>M Sisley, WDC Maori Liaison Committee, oral evidence.

application, namely partnership, active protection and mutual benefit. We agree with him. Partnership issues have been adequately addressed by consultation (see below) and the involvement of the applicant and iwi in the ongoing management of the river (conditions of consent).

We find that active protection of the river and iwi concerns will be achieved by a consent granted with a minimum flow of 40 cumecs, but would not have been had a minimum flow of 20 cumecs been granted. The reasons for this are those already set out in this decision. The consent granted provides greater flexibility to TPL to generate more power and at times of the day which suit them (to take advantage of more favourable market conditions), although not to the full extent sought by the applicant. Iwi achieve benefits from the consent granted (greater than the existing regime). Overall we Commissioners find that there is mutual benefit in the consent as granted.

#### *Iwi Consultation*

All of the iwi submissions and evidence raised the issue of consultation – that iwi considered that it had not been appropriate. Ms Joynt and Mr Mikaere (for the Applicant) set out in their evidence the extent of consultation undertaken.

We accept that consultation is not required by the Act in respect of resource consent applications (s.36A). However Mr Mikaere stated in his evidence that it is ‘good practice’ and we agree with this.

Having heard the evidence of all parties, we agree that the Applicant made a significant commitment to, and undertook, consultation with the relevant iwi groups. It is not for us to determine if the parties were satisfied with the consultation, and again as consultation is not ‘statutorily’ required, we find that any lack of consultation is not an issue in this case. We consider that all the relevant issues are squarely on the table before us.

We also note that the purpose of consultation is to identify the relevant issues of concern to interested or affected parties. The purpose of consultation is not to reach agreement with those parties regarding their concerns. However, if that occurs then it is obviously beneficial.

#### 7.4 Downstream abstractors and downstream infrastructure.

The matters of control are:

- (k) Measures to avoid, remedy or mitigate any effects on other lawfully established users of the river or stream of water released from the dam, and
- (q) Measures to avoid, remedy or mitigate adverse effects on lawfully established downstream infrastructure.

The impact of the proposed modified operating regime on the downstream extractors and infrastructure, from the Applicant’s and abstractor’s perspective, was fully canvassed at the hearing. Many of the downstream abstractors (mainly related to rural production activities) had lodged submissions opposing TPL’s proposed minimum low flow of 20 cumecs and in

fact any reduction in flow from that which currently occurs<sup>49</sup>. These submitters presented detailed evidence at the hearing supporting their opposition and explaining why the mitigation being offered by TPL was not acceptable to them.

TPL also presented detailed evidence on the consultation taken with the abstractors, the results of a low flow trial, the likely effects on the abstractors and the offers made by TPL to mitigate any effects from the proposed reduced flows. This was set out in the evidence of Ms Joynt and Mr Levy.

Ms Joynt's evidence set out the process that TPL had undertaken with respect to the downstream abstractors. This included contact with them (late 2009) to discuss the revised operating regime, potential effects on their intakes, a proposed low flow trial and proposed 'side agreements' as a mechanism for ensuring that the effects on the intakes were appropriately avoided or mitigated.

TPL had also engaged with Fonterra recognising the need to address any significant adverse effects of the modified operating regime on the dairy factory's existing consented operations. In particular, TPL sought to ensure that Fonterra's ability to comply with the conditions of their wastewater discharge consent to the Rangitaiki River was retained. As has been addressed elsewhere Fonterra withdrew their submission in opposition to the application and provided their written support to it. Accordingly no further evaluation or findings are made with respect to effects on Fonterra.

Mr Levy stated that the Matahina HEPS peaking operation at low river flows would result in lower water levels in the River, potentially affecting the operation of some irrigation and stock water intakes. He stated that:

*"The change from 45 m<sup>3</sup>/s to 25 m<sup>3</sup>/s will reduce water level by between 0.2 and 0.5m, depending on the location along the river, with reduction to 20 m<sup>3</sup>/s lowering water levels a further 0.1 to 0.2 m."*<sup>50</sup>

He accepted that the downstream abstractors had valid concerns because, as observed during a low flow trial, there are a number of intakes that would have difficulty operating when the river flow was at the low end of the proposed modified operating range. Mr Levy also stated that most of the intakes on the river downstream of the dam were inspected to assess the effect lower water levels may have on their operation and to recommend suitable measures to allow the intakes to continue to operate. This included installing duplicate conductivity sensors/transmitters to the control pumps, installing intake screens, extending the intake float to deeper water, upgrading the intake float or providing new intake floats and providing greater off river storage.

With the proposed lower flow regime there is a greater risk of saline intrusion up the river, and consequent adverse effects on intakes. In response to this TPL carried out a field trial to identify the effects on saline intrusion up the

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<sup>49</sup>Learning, Kinvig, Law (Wyndlea Farms), Hudson, J Gow, Law (Unicorn Trust), Federated Farmers, Martin, Langdon, Manson (Eastpak), Checkley, Fonterra, M Gow, Department of Conservation, Horticulture NZ, Marshall.

<sup>50</sup>Levy, EIC, paragraph 143, page 33.

river, together with the river water levels at water supply intakes that would result from the proposed lower flow regime.

The results of this trial were set out in the evidence, with the salient points being:

*“On a rising tide there is a clearly defined saline wedge that moves up the River, with surface water remaining relatively fresh and the deeper water being saline, and with a transition zone in between. At Thornton Bridge the saline layer reaches a depth of about 1 to 1.5 m (depending on river flow and timing) at high tide, with the fresh water layer progressively reducing to about 0.5 to 0.8 m on top of this.*

*On the outgoing tide there was greater mixing, with the salinity being relatively constant with depth, and decreasing as the tide goes out.*

*The extent of saline intrusion up-river was greater with the lower flow. At approximately 50 m<sup>3</sup>/s the upstream extent at which salinity was measured was about 0.5 km above Thornton Bridge, or 2.5 km from the mouth. At the lower flow of 26 m<sup>3</sup>/s salinity was recorded a further 1.5 km, or about 4 km from the mouth”<sup>51</sup>*

Mr Levy identified that there were five intakes affected. Three of these are in the lower reaches of the river and are already affected by low flow / high tide conditions with it being reported that they do not have any specific problems with river water salinity to date. Mr Levy opined that this may be due to the tendency for the saline wedge to be under a surface fresh water layer<sup>52</sup>. He also stated that two of these intakes currently have storage tanks, which he considered may be sufficient for short periods when water cannot be taken from the river, and if not, then the storage capacity could be increased.

Two other intakes would potentially be affected by saline water intruding as much as 1.5 km further upstream than it does at present. Mr Levy’s opinion was that given the three intakes already within the saline area have only minor problems with salinity, it was probable that these two intakes, being at the upper limit of saline intrusion under combined low flow and spring tide conditions, will not need any mitigation for saline intrusion. He suggested these could be monitored, and if necessary storage provided to bridge the occasional short duration salinity.

Overall it was Mr Levy’s opinion was that the concerns of the abstractors could be mitigated, with respect to low flow water levels and salinity, by<sup>53</sup>:

- (a) Continuing to monitor HEPS generation and river flow at Te Teko;
- (b) Where necessary, provide assistance to owners of existing water intakes so they can be modified to operate effectively during river

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<sup>51</sup>Ibid, paragraphs 91 to 94, page 22.

<sup>52</sup>Ibid, EIC, paragraph 146, page 34.

<sup>53</sup>Ibid, EIC, paragraph 14, page 40.



flows down to as low as 20 cumecs as measured at Te Teko (to provide a margin below the expected minimum of 25 cumecs);

- (c) Where necessary, provide assistance to owners of existing intakes in the reach up to 2 km above Thornton bridge to enable them to address the effects of short duration periods of elevated salinity in the river due to low flow operation of the HEPS;

The downstream abstractors presented evidence relating to the current TPL operation and their own abstraction operations and the effects the reduced river flows would have on them and the ability to operate their water intakes on the river downstream of dam. Their main concerns were with the proposed reduction in the minimum low flow and the unpredictability of when flows may change due to multiple peaking. They all set out the imperative of having 'certainty of supply' for stock watering and dairy shed wash down, crop irrigation and frost protection. They were also concerned about water quality and saline intrusion from a reduced flow.

The abstractors, in evidence and in response to our questions, were not convinced by, nor particularly wanted, the mitigation offered by the Applicant (as set out above). The majority of abstractors were satisfied with their existing intake float structures and operating regimes. While acknowledging that TPL would upgrade their intake structures, they were concerned about the terms and conditions of the formal written 'agreement' offered by TPL, and that they would be faced with greater operating and maintenance costs due to the (generally) larger intake structures, pumps and other equipment.

We understand the concerns of the abstractors and acknowledge the value of their production activity (dairy farming and horticulture). We also accept their need for certainty of supply.

While we accept the effects on abstractors could 'technically' be mitigated as suggested by the Applicant, it is not ideal and not without additional cost to and uncertainty for the abstractors. None of the above issues (adverse effects) would arise if the minimum flow is set at 40 cumecs. Overall, for the reason set out above, we find that the proposed minimum flow would have adverse effects on the abstractors, and that these can be largely avoided by requiring a minimum flow of 40 cumecs.

## 7.5 Recreational users and public access to the river

The matter of control is:

- (t) Measures to avoid, remedy or mitigate adverse effects on amenity values (including recreation), and existing public access to and along the margins of rivers and lakes.

Mr Greenaway, an open space planner, presented detailed evidence for the Applicant on the recreational impacts of the proposed modified operating

regime. A number of submissions<sup>54</sup> were also concerned about the impact of the modified operating regime on recreational activities.

According to Mr Greenaway the lower river and Lake Matahina are of regional significance for recreation and tourism. Aniwhenua and the upper river are potentially of national significance<sup>55</sup>. The recreational effects can be divided in above the Dam (Matahina Lake) and below the dam – Rangitaiki River.

#### *Lake Matahina*

The main recreational uses of Lake Matahina include are:

- Angling
- Waka ama,
- Rowing,
- Jet boating and power boating,
- Kayaking,
- Eeling,
- Hunting, and
- Swimming and picnicking

No changes are proposed to the current operating levels of Lake Matahina as a part of the revised operating regime. However, under the proposed regime the lake level will be higher for more of the time. Mr Greenaway set out in his evidence:

*“Historically the Lake has been below Reservoir Level (RL) 75 around 72% of the time. The modelled regime indicates that levels would be below RL 75 for around 50% of the time. The more frequent smaller peaking under the proposed regime will result in a slightly less aggressive change in lake level on a daily basis”.*<sup>56</sup>

We accept that these changes would represent a net gain to the recreation amenity of the lake, with fewer daily fluctuations and the lake being held at higher levels for longer. This would alleviate some of the main recreation issues associated with recreational use of the lake such as the exposure of the lakeshore ‘weeds’ (macrophytes) at low levels, and improved ease of use of launching ramps. Issues relating to fish resources are addressed in the section of this decision on Fish Passage.

#### *Rangitaiki River*

The main recreational activities on the lower Rangitaiki River include:

- Fishing,

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<sup>54</sup>Submissions include those from, Ngati Haka Patuheuheu and Ngati Awa, I and J Kinvig, Eastern Bay of Plenty Royal Forest and Bird Protection Society, Fish and Game (Eastern Region), Thornton Rescue, A Steel, W Checkley, M Gow, B Marshall, Whakatane District Council Iwi Liaison Standing Committee, Whakatane Sportfishing Club (Inc) and Jetboating NZ, Northern Districts Branch.

<sup>55</sup>Greenaway, EIC, paragraph 10.2, page 32.

<sup>56</sup>Greenaway, EIC, paragraph 7.7, page 22.

- Whitebaiting,
- Angling,
- Jet boating,
- Waka ama,
- Eeling,
- Hunting, and
- Swimming and picnicking.

In terms of the effects, recreational (and other) users of the river would experience three changes to the flow regime:

- Fluctuations at flows above 20 cumecs, (previously 40 cumecs);
- Changes to the rates of change in river flow as the scheme ramps up and down; and
- Changes to the frequency with which low flows are encountered.

Mr Greenaway identified that swimmers at Te Teko and Edgecumbe might notice a change in the rate of increase and decrease in flow. However he considered that changes in flow were a normal element of the river environment at these locations and any effects were unlikely to be important to recreation. He also stated that Dr Ryder, in his evidence, indicated no water quality effects from the HEPS. Mr Greenaway then stated that in his opinion:

*“There will be no adverse effects on recreational use of the River, including the swimming opportunity at Te Teko”.<sup>57</sup>*

This opinion was strongly refuted by some submitters who stated that being able to swim in the river and jump from the Te Teko Bridge was a long held and valued recreational activity for many who live in and round Te Teko and Edgecumbe. They were of the view that if the river flow was allowed to fluctuate as proposed and to have a minimum flow of 20 cumecs, this would adversely affect their recreational enjoyment, mainly swimming in the river, and most likely make jumping from the bridge extremely hazardous.

In their view there would be adverse amenity effects (see the next section) due to the reduced amount of water in terms of the appreciation of the river (awa) as a recreational resource; i.e. reduced amount of water in which to swim, the visual effects from greater bank and weed exposure and odour from rotting vegetative matter uncovered by the lower flow level.

We accept the concerns of all of the submitters with respect to the impact on swimming and picnicking/relaxing by the river. Based on the submissions received we are unable to accept Mr Greenaway’s opinion that there will be no adverse effects on recreational use of the river, including the swimming opportunity at Te Teko.

With respect to navigation and boating issues Mr Greenaway relied on the evidence of Mr Levy and Dr Single that the increase in the frequency with which the river will be held at lower flows would have little effect on river

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<sup>57</sup>Greenaway, EIC, paragraph 7.18, page 25.

navigation, and as most recreation occurs at the river mouth, where the effects of flow variability and volume are overshadowed by tidal influences, there will be little effect on recreation in the river generally.

The navigability of the Thornton Bar (at the river mouth) had been raised by a number of submitters, including Mr Johnston, as a key concern for some users of the lower river. There was agreement between the parties that the bar is often dangerous and can be challenging to navigate.

It is accepted that tidal influences, rather than river flows, dominate the bar. It is also accepted that the bar is a dynamic coastal setting and subject to change over time as a result of flood and marine events. Given this Mr Greenaway could not correlate any effect on bar navigation safety as a result of the current or proposed operation of the Matahina Scheme.

Mr Johnson and other submitters (e.g. Mr M Gow and Mr Kinvig), all regular users of the Thornton Boat ramp and bar crossings, did not agree with Mr Greenaway and other TPL experts that the river flow would have little or no impact on the Thornton Bar. This was based on their 'on the ground' knowledge of the bar and having crossed it numerous times.

Mr Iremonger (BOPRC's environmental scientist) stated in his evidence that his opinion was that:

*"The effect of the proposal on the geomorphology and dynamics of the Rangitaiki River mouth is likely to be minor. However, the bar has been identified as having significant navigation issues and there is a need to be certain that the proposed changes will not aggravate the existing situation"*<sup>58</sup>

He recommended that to achieve this certainty monitoring, including hydrographic surveys of the navigational area under a range of flow regimes, was needed.

Overall Mr Greenway considered that no mitigation measures were required with regard to the proposed operation of the HEPS. He considered the TPL proposal represented a balanced approach to providing for recreation on Lake Matahina and the lower Rangitaiki River.

We find that there are no adverse effects (and likely to be positive effects) upstream of the dam due to the proposed modified operating regime. However there are likely to be adverse effects downstream.

The effects in relation to navigation at Thornton's Bar and other activities such as fishing and boating, while not enhanced by the proposal, are unlikely to be significant. However we find that other recreational activities particularly swimming, picnicking and generally enjoying the instream river environment (and in particular adjacent to Te Teko and the bridge) would be more significant. Amenity values would also be affected in terms of people's 'appreciation' of the natural values of the area for recreational activities.

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<sup>58</sup>Iremonger, paragraph 18, page 4.

These effects are not, and cannot be, mitigated by the proposal or by conditions of consent.

As set out in other sections, the identified adverse effects can be avoided if a minimum flow was set at 40 cumecs. While we accept that an applicant is not required to avoid all adverse effects, setting a minimum flow at 40 cumecs will, mitigate some effects, while at the same time avoiding others.

## 7.6 Amenity

The matter of control is:

- (t) Measures to avoid, remedy or mitigate adverse effects on amenity values (including recreation), and existing public access to and along the margins of rivers and lakes.

Mr Goodwin, a landscape architect, presented evidence for the Applicant and addressed matters of natural character, landscape values and visual amenity values. Two specific submissions raised these issues, Royal Forest and Bird and Mr Marshall. A number of other submissions more generally raised amenity issues mainly in respect of the visual appearance of river and recreational activities (e.g. the submission from iwi) that would be associated with the proposed minimum flow of 20 cumecs.

Mr Goodwin's view was, and was accepted by the Commissioners, that the HEPS is currently well integrated into its landscape setting. The creation of Lake Matahina has resulted in a landscape feature which although man made provides a high degree of landscape quality and visual amenity. This is likely to be improved by the modified operation regime as the lake will be higher for longer periods of time. We have no concerns with respect to the natural character, landscape or amenity values upstream of the dam.

With respect to the current operation of the HEPS downstream of the dam, Mr Goodwin's opinion was that this had resulted in minor adverse effects on natural character, landscape and visual values<sup>59</sup>. These effects were associated with changes in the river levels and the potential for downstream erosion of the Rangitaiki River banks (addressed elsewhere), and exposure of weed at Te Teko and other elements where the bed of the river is more shallow.

In terms of the proposed operating regime Mr Goodwin's view was that:

*"While are a few areas where the lower river levels may be noticeable creating low adverse effects, overall the river would maintain its current character resulting in minor effects on visual amenity. In summary I believe the proposed operation would have negligible effects on the natural character, or landscape values of the Lake and River environment"*<sup>59 60</sup>

Submitters did not agree that the proposed operation would have negligible effects. They considered that the reduced flow had the potential to expose

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<sup>59</sup>Goodwin, EIC, 7.2, page 24.

<sup>60</sup>Goodwin, EIC, 7.4, page 24.

greater portions of the river banks and adversely affect amenity values. As an example the submission from Royal Forest and Bird stated:

*"It is acknowledged that the lower Rangitaiki is a highly modified river. However its management needs to actively consider how degraded river banks and water quality can be improved. The amenity values of the river are locally important. If the modification of the riverbanks is accelerated by the proposal, that is a loss to the community. The constant fluctuations result in an unsightly margin that reduces amenity values."<sup>61</sup>*

We have already set out the concerns of iwi with respect to amenity as they relate to their cultural concerns as well as their recreational and active use of the river.

Notwithstanding that the Rangitaiki River is highly modified and that much of the river generally traverses private land with limited potential for public access or view (apart from at the settlement of Te Teko), we find that the modified operating regime incorporating a minimum low flow of 20 cumecs would have some adverse amenity effects, both from a visual and appreciative perspective. This is in terms of the greater river bank exposure and the exposure of river weeds and mud, especially during the summer months with parts of the river that are highly used for recreational activities such as sightseeing, picnicking, water sports/activities, fishing and the like. These effects are not able to be mitigated by the Applicant's proposal.

As set out in other sections, we find that requiring a minimum flow of 40 cumecs would ensure that there are no additional adverse effects from the current operation.

## 7.7 Electricity generation

The issue of electricity generation is not a matter of control under Rule 47C. However, we have nevertheless considered it appropriate to turn our minds to the effect of granting an operating regime that differs from that sought by TPL. We consider this to be relevant given the need for us to give effect to the National Policy Statement for Renewable Electricity Generation 2011 (NPSREG).

TPL has sought to authorise a modified operating regime that includes a lower minimum flow, increased ramping rates and the allowance of multiple generation peaks on a daily basis.

When it lodged its consent application TPL was of the view that this modified operating regime would enable an additional 3 GWh (gigawatt hours) of electricity to be generated on an annual basis.<sup>62</sup> The Matahina HEPS produces 275 GWh of electricity in an average year.<sup>63</sup> The additional 3 GWh equates to a 1.1% increase in annual electricity generation. However, Mr Lilley subsequently revised the estimated additional electricity generation to

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<sup>61</sup>RFBPS's submission.

<sup>62</sup>Lilley, EIC, paragraph 3.3, page 3.

<sup>63</sup>Layton, EIC, paragraph 28, page 7.

5.6 GWh when he extended the simulation period of the generation simulation model used from two years to nine years.<sup>64</sup> An additional 5.6 GWh equates to a 2.0% increase in annual electricity generation.

In our view the additional electricity generation is small in both absolute and percentage terms.

In response to issues raised by submitters we asked TPL to advise us what the additional amount of electricity generation would be if the residual flow from the dam was retained at 40 cumecs (other than when inflows to the reservoir were less than that), but the increased ramping rates and multiple peaking were allowed. Mr Lilley advised that in that case the increase in electricity generation would be 2.8 GWh<sup>65</sup> which we note is a 1.02% increase in annual generation. This revised level of additional generation is very similar to the figure that the initial TPL application was founded on (namely 2.8 GWh compared to 3 GWh).

It appears that the original aim of TPL, insofar as it regarded additional electricity generation, can now be largely achieved with the retention of the existing residual flow. We note and accept, as explained by Mr Lilley, that the ability of TPL to place energy in the market at times when prices are highest would be compromised if the minimum flow was retained at 40 cumecs, but we find that to be a matter relating more to the financial return enjoyed by the company as opposed to the integrity of electricity supply for the nation.<sup>66</sup>

#### 7.8 Overall finding on the minimum (residual) flow

Firstly, we note that Mr Faithfull (the Council's principal s42A reporting officer), having reviewed the relevant technical evidence, advised us:

*"... no consent should be granted for any operating regime that reduces the minimum flow to less than what is currently granted."*<sup>67</sup>

Mr Faithfull also pointed out that:

*"... some consideration needs to be given to the effects of not only the low flow but effects on the river if all water abstractors are taking their maximum volume allowed at the same time as the low flow events. There is a high likelihood that the worst-case scenario' and the high percentage of water takes would occur concurrently as this will usually be happening in the summer months when there is little or no rainfall."*<sup>68</sup>

We had no evidence regarding the significance of such cumulative effects at times of low flow but we accept that the issue raised by Mr Faithfull is relevant. We find that further militates against allowing a reduction in the minimum flow.

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<sup>64</sup>Lilley, Reply Evidence, paragraph 3.5, page 3.

<sup>65</sup>Lilley, Addendum, paragraph 5, page 2.

<sup>66</sup>Ibid, paragraph 5(b), page 2.

<sup>67</sup>Faithful, section 2.6, Report dated 13 October 2011.

<sup>68</sup>Ibid, section 2.13.

Having reviewed the relevant technical evidence ourselves we have concluded that the reduced minimum flow would have more than minor adverse effects on instream water quality and ecology, downstream abstractors, recreational users, amenity values and Maori cultural values. It may also have potential adverse effects on the stability of the river bar at Thornton.

Some of these adverse effects are unable to be mitigated and in other cases (such as the downstream abstractors) the directly affected parties remain unsatisfied with the mitigation proposed by TPL. In the case of the downstream abstractors the mitigation itself (modifications to water intake structures) may require further resource consents to be obtained and there are questions regarding the long-term integrity of the measures proposed and who would be responsible if they did not work as anticipated by TPL.

The benefit that might be gained at the cost of these adverse effects is an additional 1% increase in the electricity generation capacity of the Matahina HEPS (namely an annual increase of 5.6 GWh at a minimum flow of 20 cumecs compared to an annual increase of 2.8 GWh at a minimum flow of 40 cumecs). We find that level of benefit to be insufficient to justify the potential adverse effects that could arise.

In this respect, while the full extent of the additional generation proposed by TPL's modified operating regime cannot be achieved by the consent granted, we do not think this is contrary to the NPSREG. The consent granted enables greater electricity generation within a more flexible operating manner as sought by TPL.

However, providing for renewable electricity generation must be weighed in terms of all of the (adverse) effects of the proposed modified operating regime and the relevant Part 2 matters of the RMA. The effects of the proposed modified operating regime have been set out above. Notwithstanding that the full extent of the additional generation sought cannot be achieved by the consent as granted, we are of the view that the national significance of renewable electricity generation is still recognised and provided for as prescribed in the NPSREG

On balance we find that the minimum flow should be retained at 40 cumecs as is presently the case.

However, in the situation where inflows to the storage lake fall below 40 cumecs we find it reasonable that dam discharges (or outflows) should be required to match lake inflows in a way that enables TPL to avoid having to run the turbines in their "rough running range". This was the informal arrangement that existed prior to the issuing of the 28 March 2011 Environment Court Declaration. The rough running range was summarised by Ms Hamm as follows:

*"... when river inflows into Lake Matahina are less than 40m³/s, running the scheme on an instantaneous outflows matches inflows basis would cause the turbines to run within what is termed the "rough running range". The rough running range occurs between approximately:*



- (a) *Flows of 29-41m<sup>3</sup>/s; or*
- (b) *12-18MW;*

*and causes damage (cavitation) to the turbines ...*<sup>69</sup>

Originally we considered enabling the outflows from the dam to match inflows to the reservoir over a 24 hour period in the absence of any further operational constraints. However, that would result in there being no effective minimum flow at such times as TPL could conceivably hold the river below the dam at very low levels for part of the 24 hour period. We acknowledge that TPL did not indicate any intention of operating the dam in that manner, but nevertheless we do not wish to facilitate that sort of outcome over the 35 year duration of the consent.

We consequently consider that during periods when the inflows to the reservoir are below 40 cumecs, TPL should be required to match dam outflows to reservoir inflows over a 24 hour period, subject to an absolute minimum release from the dam of 28 cumecs (this being one cumec below the 29 to 41 cumec rough running range and a figure very close to the minimum flow derived from Policy 66(c) of the RLWP). We find that level of absolute minimum flow better addresses the concerns of the submitters, and our understanding of what is required to avoid potential adverse effects, than would an absolute minimum flow of 20 cumecs as suggested by TPL.

In addition to the above we also considered whether there should be a restriction on the number of generation peaks that could occur during each 24 hour period but decided that we had no evidence of the necessity for any such further restrictions on TPL's operational flexibility. Accordingly we have not imposed any such restriction.

We note that Fonterra discharge to the Rangitaiki River at Edgecumbe. Fonterra originally opposed the TPL applications but withdrew their submission after the hearing had commenced. We understand that the Fonterra discharge can have adverse effects on water quality (due to its lactose and BOD content), especially at times of low river flow. However, our decision to retain the minimum flow at 40 cumecs means that the effects of the Fonterra discharge on water quality will not be exacerbated by the granting of this TPL consent. We are also aware that Fonterra have sought to authorise their discharge on an ongoing basis and that application will be the subject of a hearing in 2012. We find it is appropriate to leave any detailed consideration of the effects of the Fonterra discharge to that separate consent process.

## 7.9 Erosion effects

The relevant matter of control is:

- (e) Measures to manage erosion effects (including destabilisation of beds and banks of rivers)

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<sup>69</sup>Opening legal submissions, paragraph 19, page 10.

Erosion, including resultant damage and risk to the stopbanks and flood protection scheme, was the major issue of concern to a number of submitters<sup>70</sup> and, in particular, the EHG of BOPRC.

Dr Tarboton stated that EHG was concerned with the impact of the TPL proposal on the river scheme in that “the current Matahina Dam operations have a significant detrimental effect on the downstream river processes, the security of the flood protection system and the effectiveness of the river edge protection works . . .”.<sup>71</sup> He also advised:

*“The proposed operations for Matahina Dam will have further detrimental effect on downstream rivers scheme assets as a result of increased peaking, quicker ramping and lower flows.”<sup>72</sup>*

Colin Holmes, member of the Rangitaiki-Tarawera River Schemes Liaison Group, submitted that the Group was concerned at the potential need for increased maintenance and cost should the TPL proposal be approved. He said that the Group had “a growing belief that the TrustPower contribution<sup>73</sup> toward scheme costs was quite inadequate when compared to the costs incurred by its operation”.<sup>74</sup>

Bruce Crabbe, Rivers and Drainage Operations Manager of EHG submitted that the key issues concerning river management related to the operation of HEPS were:

- “(a) The fluctuations in river level which arise as a result of the peaking. The key issue which arises here is the effect on vegetation, the ability for vegetation to re-establish and consequent erosion of bare banks.*
- (b) The seasonal range of those fluctuations. When seasonal variations in fluctuation over a period of time are combined, the overall range of levels is very large.*
- (c) Peaking during low flows. Peaking during low flows extends the range of fluctuations below the natural range and increases the range of overall fluctuation.*
- (d) Ramping rates. The key issue with respect to ramping rates is the rate at which river levels are ramped down and the effect that this has on stability of the river banks...”*

Mr Crabbe referred to the monitoring of the river by EHG and its concerns and those of the River Scheme’s ratepayers, and that the monitoring undertaken on behalf of TPL by Beca Infrastructure did not adequately recognise trends of ongoing erosion of the river banks and stability of stopbanks.

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<sup>70</sup> Craig & Marianne Hammond, Alan & Wendy Law (Wyndlea Farms Ltd), Martin Family Trust, Federated Farmers, Murray Langdon (Oriini Farms Ltd), Paul Manson, Gow Family Trust, etc.

<sup>71</sup> Tarboton evidence. Refer paragraph 5.2.

<sup>72</sup> Ibid. Refer paragraph 5.5.

<sup>73</sup> Tarboton stated that this was \$15,646 (plus GST) per annum for 2008/09 and \$13,776 (plus GST) for 2010/11 because of annual index adjustments.

<sup>74</sup> Holmes submission, Refer paragraph 5.1(iv).

Dr Marianne O'Halloran, an experienced geotechnical engineer, gave expert evidence in support of EHG's position. She had carried out an analysis of the effect of water level fluctuations on surface erosion and stability of the stopbanks. She concluded that the effects of TPL's proposal on the flood protection scheme would likely be:

- “(a) The reduction in stability due to lower operating river levels.*
- (b) The reduction in stability due to the loss of river berm as a result of progressive erosion.*
- (c) The increase in water pressures in inland sand layers due to the loss of a silt lining over a large proportion of the river banks.”<sup>75</sup>*

In regard to the proposed low flow regime (as a result of allowing low flows to reduce to 20 cumecs), Dr O'Halloran considered that the result could be more critical as a result of the reduction of stability in some places on the river.<sup>76</sup> She concluded that the range of operating levels in the river and the number of peaks should not be increased.<sup>77</sup>

Gary Williams, an independent consulting engineer specialising in water and soil engineering, gave expert evidence in support of EHG's submission. The main findings of his evidence in relation to TPL's proposed modified operating regime were:

- “...  
(g) The proposed operating regime is an extreme regime for the benefit of power generation, for high demand flexibility and hence revenue maximisation. It, thus, raises very serious concern for the integrity of the Scheme and the management of the river to mitigate erosion and flooding hazards.*
- (h) Given the inadequacy of the contribution to the river Scheme of TPL, my recommendation is that the operational regime of the Matahina HEPS return to its earlier operation of run-of-the-river, with a (single) daily peak that utilises available reservoir storage.”<sup>78</sup>*

We record that all parties, including the Applicant, accepted that the operation of the dam has some impact on downstream erosion of the riverbanks and stopbanks. The Applicant's response to this was to offer, on an *Augier* basis, a financial contribution to offset this effect. While it was accepted by all parties that we had no jurisdiction to impose a financial contribution condition, we are clear that we may accept a contribution on an *Augier* basis. The issue in contention was the quantum of that offer.

A lot of evidence was presented by the applicant, EHG and the consent authority on the appropriate level of contribution. The Applicant was required

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<sup>75</sup>O'Halloran evidence, Refer paragraph 8.1.

<sup>76</sup>Ibid. paragraph 8.5.

<sup>77</sup>Ibid. paragraph 10.8.

<sup>78</sup>Williams evidence, paragraph 2.1.

to do this given the submissions and evidence of the EHG Group. We have not set the evidence out in any detail as we accept we have no jurisdiction to impose a financial contribution. Moreover, the Applicant's legal counsel advised that the final offer made (in closing submissions) was contingent on granting the modified operating regime as applied for.

In summary TPL was currently making an annual financial contribution of approximately \$15,000 and at the beginning of the hearing was proposing an *Augier*<sup>79</sup> condition of consent to increase that to \$50,000. The EHG argued that this sum was not adequate to compensate EHG for the effects of the current operating regime let alone the modified operating regime.

Counsel for TPL, in her closing submissions, advised that TPL had revised its *Augier* offer for an annual financial contribution based on Mr Levy's assessment to:

\$116,876 per annum for the modified operating regime, and

\$88,009 per annum for the current operating regime.<sup>80</sup>

We have carefully considered the opinions of the various experts who gave evidence to the hearing. While many of their opinions are conflicting they appear to be in agreement that the operation of the HEPS has some adverse effects on bank stability in the Rangitaiki River which is mitigated through maintenance and remedial work undertaken as part of the Rangitaiki River Control Scheme.

However the expert evidence has been unable to demonstrate to our satisfaction the relative proportions of effects due to the HEPS and those resulting from natural processes such as floods. We appreciate that differentiating between the impacts of natural processes on erosion and destabilisation of the river bed and banks and those caused by the HEPS is extremely difficult. This is demonstrated by the diversity of opinions in relation to potential risks to the river banks, stopbanks and river bed and causation.

The EHG, in response to our questions, could not demonstrate any significant effects following the introduction of the twin peaking regime from the single peaking as originally consented, and significant flood events appeared to be a primary cause of erosion.

We found the expert evidence on behalf of TPL to be more compelling than that of EHG, because of the level of analysis undertaken and the logic of the engineering analysis. The EHG experts seemed to be heavily focussed on maximising the financial contribution to be made by TPL. We find their suggestion that we impose a "run of the river" regime is not sufficiently justified because it seems to adopt a "no effects" approach which is not a requirement of the RMA.

As has been discussed elsewhere in this decision, we have found that the minimum flow should be set at 40 cumecs. Consequently, some of the

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<sup>79</sup>An undertaking by an applicant to be bound by a proposed or volunteered condition. Refer *Augier v Secretary of State for the Environment* (1978) 38 P & CR 219 (QBD).

<sup>80</sup>Hamm Legal Submissions in Reply, paragraph 19(a) and (b).

erosion risks and bed degradation risks referred to by the expert witnesses will be reduced. However, adverse effects on river bank stability attributable to the HEPS will still occur.

It was not within our jurisdiction to impose a condition of consent that TPL make an annual contribution to the River Scheme. TPL has made an *Augier* offer of \$116,876 per annum (with annual inflation adjustments). This was based on Graham Levy's analysis which we found more compelling than that of Gary Williams. John Philpott's analysis lacked clarity and, in our view, was simply following the Williams' line.

We find that TPL's final *Augier* offer would be reasonable if we had been of a mind to grant the modified operating regime as sought by TPL. However, we have not granted that regime and we have instead imposed a higher minimum flow of 40 cumecs. A different annual financial sum would now be applicable. However, we had no evidence on what such a sum would be other than it is likely to be some between the two figures submitted by Ms Hamm in closing (namely between \$116,876 and \$88,009 per annum).

We are also unable to deviate from the *Augier* sum finally offered by TPL for two reasons. Firstly, it was contingent on the modified operating regime being allowed. Secondly, as it was an *Augier* offer we can impose it in the form it was offered, but we cannot impose it in some amended form.

This left us in a difficult position and was one of the reasons we issued an interim decision. We wished the parties, and in particular TPL, to consider what monetary contribution, or consent condition requiring river bank erosion protection works to be undertaken, might be appropriate given our decision to grant an operating regime different than that sought by TPL.

We were of the view at the time of issuing the interim decision that a lower annual sum than the \$116,876 finally offered by TPL may have been appropriate but we had no evidence on what that lower sum should be (although it should be higher than \$88,009) and we could not impose it in any case unless it was offered. This left us with no choice but to impose a condition requiring TPL to undertake annual works and services that equate to fixed percentages of the River Scheme's annual operating costs. The fixed percentages are those finally recommended by Mr Levy. This was condition 28 in the suite of interim conditions attached to the interim decision.

TPL's response to the interim decision was to offer the following condition in substitution of our condition 28:

*"In each year (July to June) for the duration of this consent the consent holder shall undertake river bank protection works, on behalf of the and under the direction and supervision of the Bay of Plenty Regional Council (Environmental Hazards Group), in accordance with the following percentages of that portion of the Bay of Plenty Regional Council's programmed operation, maintenance and flood repair works directly related to river bank erosion (and associated overheads) for that year:*

- *Edgecumbe to mouth (5%)*
- *Te Teko to Edgecumbe (12%)*
- *Matahina to Te Teko (23%).*

*provided that the cumulative value of the works performed does not exceed \$102,000 (exclusive of GST) per annum. The cumulative value of the works will be 'PPI' adjusted annually."*

The percentage figures were amended from those in our interim decision by TPL's expert witnesses to reflect the operating regime associated with a minimum flow of 40 cumecs. We are satisfied that the percentage figures should be modified as suggested by TPL.

The EHG strongly supported Condition 28 and the principle of allocating a percentage apportionment for river bank protection works for the three reaches of the river. They considered the apportionment of works based on a methodology of percentages was fairer to both parties. However unlike TPL who sought that the value of any works be based on the 'programmed' works (budgeted cost estimate), the EHG requested that it be based on the percentage of the value of works actually completed in the previous year

We do not support the condition being based on the actual works undertaken, and find that it should be based on programmed works. In this respect we agree with TPL in their response to our further requests for comments - that programmed works "*enables Trustpower to understand, with some certainty, the extent of its obligation*".<sup>81</sup>

Moreover, upon reflection we do not consider that there should be a monetary cap on the annual works undertaken as suggested by TPL. To do so would ignore the reality that the necessary scope of river protection works will vary from year to year. That is why the percentage contribution approach is preferable to a fixed monetary contribution. We are satisfied, as was pointed out by TPL's legal Counsel in her response to the interim decision, that the wording of condition 28 requiring works to be undertaken does not have the effect of requiring a financial contribution, and is therefore a vires condition.<sup>82</sup>

7.10 Dam failure, structural integrity and maintenance of the structure stability of land bordering the dam.

The relevant matters of control are:

- (f) Measures to identify and manage the risk of dam failure.
- (g) Stability of land bordering the dam.
- (s) The structural integrity and maintenance of the structure.

No significant concerns were raised by submitters<sup>83</sup> or the reporting officers in relation to the structural integrity and maintenance of the Matahina Dam, the risk of failure and/or the stability of land bordering the dam.

Robin Dawson, Senior Water Resources Engineer at Tonkin & Taylor Ltd, and a recognised expert in dam design, safety reviews and surveillance, presented

<sup>81</sup> Holland Beckett Lawyers, letter to Bay of Plenty Regional Council dated 20 February 2012.

<sup>82</sup> Holland Beckett Lawyers, letter to Bay of Plenty Regional Council dated 23 January 2012.

<sup>83</sup> Platt Gow and Ngati Awa did refer to dam safety, the latter suggesting monitoring and surveillance.

a written statement of evidence. This outlined the scope of his involvement with the Matahina Dam and HEPS including:

- Review of the design and construction documentation;
- Review of the Matahina Dam's Safety Management System;
- Review of previous dam safety reviews and inspections; and
- Review of previous risk assessments associated with dam failure and the consequences of that.

Mr Dawson concluded that:

- (a) The design of the Dam (in the current condition) is suitable for the geology at the site.<sup>84</sup>
- (b) As a result of extensive strengthening work carried out on the Dam in 1988 and 1997-98, the stability of the Dam under static and seismic loads currently complies with NZSOLD<sup>85</sup> Dam Safety Guidelines and international best practice.<sup>86</sup>

He advised that:

*"The proposed changes to the operational flow regime will not have any adverse effect on the dam safety or geotechnical conditions at the Dam. The Dam is ranked in the NZSOLD system as a High PIC Dam. This ranking requires a high standard of surveillance, maintenance and safety review. TrustPower implements these requirements through the Matahina HEPS dam safety management programme which includes:*

- *regular surveillance;*
- *maintenance when this is required;*
- *regular safety reviews; and*
- *assessments of various technical and safety aspects undertaken by external suitably qualified professionals.*

*The analysis of the Dam's safety, in terms of societal and individual risk to the community downstream suggests that the risk associated with the Matahina HEPS is low and that it is well within norms accepted internationally. Consequently, the results of the dam safety analysis is consistent with the purpose and intent of the Dam Safety Guidelines, which is to implement procedures that maintain dams of this nature in a satisfactory condition.*

*The civil safety procedures followed by TrustPower are in line with best practice".<sup>87</sup>*

We are aware that dam safety is regulated under the Building Act 2004 and the Building (Dam Safety) Regulations 2008 (and 2010) which are

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<sup>84</sup>Dawson evidence, paragraph 4.8.

<sup>85</sup>New Zealand Society on Large Dams.

<sup>86</sup>Dawson evidence, paragraph 5.8.

<sup>87</sup>Ibid, paragraph 16.3-16.6.

administered by the Department of Building and Housing. The Government intends to introduce a nationwide Dam Safety Scheme in the near future.

Having regard to the foregoing, particularly the expert evidence of Mr Dawson, we are satisfied that matters concerning risks of dam failure, structural integrity, including maintenance and stability of land bordering the Dam, have been comprehensively addressed and that the proposed conditions of consent are appropriate.

7.11 Safe passage of flood water.

The relevant matter of control is:

(m) Techniques for ensuring the safe passage of flood water.

A number of submitters<sup>88</sup> expressed concerns about the effect of the Matahina Dam and operation of the HEPS on flood flows of the Rangitaiki River. Some considered that TPL could do more to attenuate the effects of significant flood events and/or that the operation of the HEPS was exacerbating the effects of floods on downstream land, including the River Scheme's stopbanks.

The EHG and TPL had been negotiating the detail of a Revised Flood Management Protocol for the Matahina Dam. The Applicant proposed maximum and minimum operating levels for Lake Matahina, including prior to and during flood events. A "Flood Management Plan"<sup>89</sup> (FMP) was proposed as a condition of consent which was required to comply with the Building (Dam Safety) Regulations 2008.

Peter Lilley, TPL's Hydro Development Manager, described the draft FMP in his evidence. He said that effective flood management could be achieved through a combination of experienced personnel, a network of hydrological recording stations and weather forecasting. This could be augmented by reliable catchment modelling.

Ian Lees, previously TPL's Asset Manager for Hydro Generation, said in evidence, that the FMP formed part of TPL's Emergency Action Plan for Matahina HEPS, Dam and associated structures which addressed the worst case scenario following an exceptional event such as extreme flooding in the catchment area. He said that the FMP would be implemented in necessary circumstances, by appropriately trained and competent personnel in collaboration with BOPRC and the Regional emergency management programme.

Colin Holmes, in his submissions on behalf of the River Liaison Group, referred to "growing disappointment with the lack of progress on best practice flood forecasting capability and realistic protocols for reservoir flood management"<sup>90</sup> by the River Liaison Group. He referred to the need to have

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<sup>88</sup>Alan & Wendy Law (Wyndlea Farms Ltd), Martin Family Trust, Platt Gow, Federated Farmers, Murray Langdon (Oriini Farms Ltd), etc.

<sup>89</sup>The proposed FMP could be amended by TPL.

<sup>90</sup>Holmes evidence, paragraph 5.1(vi).



the best possible arrangements to attenuate large floods through management of the reservoir.

Dr Ken Tarboton, in his submission on behalf of the EHG, said:

*"Since 2004 Environment Bay of Plenty has been engaged with Trustpower to review the flood management operation of Matahina Dam which had not been reviewed since 1989.*

*The EHG takes the view that the Matahina Dam can be used for attenuation of floods (even large floods) if the appropriate mechanisms are in place which enable the dam to be used as a flood management device to its fullest potential.*

*On that basis, the EHG submission is targeted at achieving specific conditions to ensure that when floods are forecast above a certain trigger level, a set of pre-determined operations are implemented by the Matahina Dam operators under the direction of the Bay of Plenty Regional Council Flood Manager to ensure flood pending lowering of the dam, and return to normal operations once the flood or threat of flood has passed."<sup>91</sup>*

During the course of the hearing negotiations were continued between TPL and EHG and amended conditions of consent were proposed by TPL concerning the FMP, which are summarised as follows:

- When a flood of 300 cumecs or more into Lake Matahina is predicted TPL will reduce the level of Lake Matahina in advance so as to bring the lake level to at least 74.6 m.<sup>92</sup>
- When flows into Lake Matahina are 300 cumecs or more, and a flood of 500 cumecs or more is predicted TPL will reduce the level of Lake Matahina so as to bring the lake level to at least 72.25 m.
- Within three months of the commencement of the consent, the TPL will, following consultation with EHG, issue, for certification by BOPRC the FMP to include protocols in relation to flood management strategies and communication with EHG to give effect to the above. The Matahina HEPs shall be operated in accordance with the FMP.
- The contents of the FMP shall be reviewed at least every five years thereafter.

Having regard to the negotiations between TPL and EHG and the apparent agreement reflected in the proposed conditions of consent we are of the view that sufficient consideration has been made by TPL for the safe passage of flood water without risk to the Matahina Dam. We note that EHG will have the opportunity to review the FMP after it is developed and at its five yearly reviews.

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<sup>91</sup>Tarboton evidence, paragraph 5.11-5.13.

<sup>92</sup> All levels are expressed in terms of Moturiki Datum.

## 7.12 Downstream sediment transport processes.

The matter of control is:

- (p) Measures to avoid, remedy or mitigate adverse effects of the operation on downstream

Graham Levy and others described the catchment of the Rangitaiki River:

There are three hydroelectric schemes on the Rangitaiki River. The most upstream is the Wheao scheme (approximately 70 km upstream of the Matahina Dam), which is run-of-river and has minimal effect on inflows to Lake Matahina. The Aniwhenua Scheme is approximately 20 km upstream of the Matahina Dam, with a catchment area approximately 80% of that at Lake Matahina. While Aniwhenua has a reservoir, its limited storage capacity has been significantly compromised by sediment deposition, and therefore it effectively operates as a run of river scheme, with minimal capacity to buffer flood peak flows and little operational effect on the Matahina HEPS.

Mr Levy referred to the likely effects of the dams on downstream sediment transport processes:

*“Truncation of sediment supply leading to degradation of the River downstream of the Dam ... currently occurs primarily in Lake Aniwhenua, which captures most of the sediment from a large proportion of the Lake Matahina catchment, although with the sedimentation in Aniwhenua, deposition may start to occur in Matahina.*

*The increasing extent of bank protection works will be reducing the supply of sediment to the River from bank erosion, which will, in the long term, have some influence on bed degradation and potentially on bank erosion in areas not already protected.*

*(There is an) inability of vegetation to establish on the banks within the zone of level variation, and consequently a reduced ability to trap fine sediment on the face of the banks, and an increased exposure of the banks to erosive river flows”<sup>93</sup>.*

Dr Van Toan referred to the effect of the three dams on sediment transport:

*“The reduction of bed load has been the result of sediment captured in the three dams on the Rangitaiki River, namely the Aniwhenua, Wheao and Matahina (i.e. not just the Matahina dam)”<sup>94</sup>.*

Dr Van Toan also referred to the benefits of sediment transport in his evidence in chief as follows:

*“Although lesser in proportion, but important in terms of contribution, coarser particles (coarser than sands, i.e. fine gravels) in the range of 5mm up to 50mm were found. These fine to medium sized gravels were observed on gravel banks on the “inside” of the bends, at the toe of some*

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<sup>93</sup> Levy evidence, paragraph 159.

<sup>94</sup> Van Toan reply evidence, paragraphs 8.1 -8.10.

*of the river banks ... and on the river bed. These gravels act as a layer of "armour" to the river bed and river banks limiting erosion under most flows, up to about a 2 year flood. However these fine gravels would be moved by higher flow velocities in larger floods; once the armour of fine gravels is moved, this would expose the finer grained materials (i.e. sands and silts) which would be transported by the River as sediment load...*

*... the presence of fine gravels visibly exposed on the river bed act as armouring for moderate flood flows and for the operating flows to protect the river bed against erosion".<sup>95</sup>*

Gary Williams, Dr O'Halloran and John Philpott referred to the armouring benefits associated with sediment deposition on river banks.

We find from the expert evidence that effects on sediment transport from the proposed modified operating regime will be minimal because of the sediment retention that occurs in Lakes Aniwhenua and Matahina.

In our view, there are no significant issues related to downstream sediment transport that warrant specific control as a result of this proposal.

#### 7.13 Fish Passage

The matters of control are:

- (a) Measures to provide for the passage of fish, both up and downstream.
- (c) Screening of intake and diversion structures and (d) Intake velocities.

The Matahina Dam (and the Aniwhenua Barrage upstream of Lake Matahina) presents a barrier to the movement of migratory fish up and down the Rangitaiki River. Also the intake velocities and intake and diversion structures 'trap' fish, in particular adult eels attempting to migrate downstream of the dam. Fish passage and operation of the HEPS was an issue of significance to iwi – both those upstream of the Matahina Dam (Ngati Haka Patuheuheu) and downstream (Ngati Awa). This was in terms of not only providing a food source but also to 'repair' the mauri of the river – and to enhance iwi's cultural and spiritual relationship with the Rangitaiki River. This is set out in more detail where we collectively discuss Matters of Control (b), (h), (i), (k), (l) and (r). Fish passage was also of concern to Department of Conservation, Fish and Game New Zealand and the Kokopu Trust, with respect to ecological and biodiversity values.

TPL accepted that fish passage was a significant issue. The Applicant's evidence (Dr Ryder) explained the existing elver pass and a trap and transfer system that operates at the Matahina Dam allowing juvenile migrating fish – mainly tuna (eels) and galaxiids or whitebait species that are capable of climbing to pass upstream of the dam, to migrate. He also discussed trials with respect to downstream migration of mature eels and their survivability when passing through the dam (and spillway).

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<sup>95</sup>Van Toan evidence, paragraph 2.7 and 2.8.

Manual transfers of eels from the Matahina Dam to the upper catchment, including Lake Aniwhenua, began in 1983. Also, in 1991 a gravel-lined fish pass was constructed at the Matahina Dam to assist elver movement upstream<sup>96</sup>. In addition to elvers, galaxiid whitebait, bullies and shrimp are also transferred.

Dr Ryder stated that the manual transfer programme at Matahina Dam was currently operated by Mr Bill Kerrison of the Kokopu Charitable Trust Inc. on behalf of TPL in fulfilment of a condition of TPL's resource consent (02 4744) to ensure continued passage of elvers past Matahina Dam.

Mr Kerrison and Dr Kearney (Te Whare Wananga o Awanuiarangi) presented evidence at the hearing. While supportive of the existing initiatives they supported the improvements proposed to the trap and transfer system including; the earlier opening of the dam's manual trap and transfer system and that a greater range of fish (all fish species) that are trapped be released into Lake Matahina. They also agreed on the need for a pilot study to investigate the feasibility of utilising the spill gate escarpment for adult eels to migrate downstream. It was their view that if this was not feasible an alternative would be to divert adult eels into a system of cages set within the turbine inlet bays. They accepted this would need a feasibility study to determine if it was practicably achievable or not.

Dr Ryder considered that the proposed modifications to the HEPS operation would not present any additional barriers to fish movement and he noted that the programme of manual native fish transfer upstream of the dam will continue. He considered that the manual transfer program had been successful to date, but that there was room for improvement<sup>97</sup>. This included proposed modifications to enhance fish survival and additional mitigation measures to enhance downstream passage of adult eels.

The fish passage requirements and the improvements from the existing system are set out in the conditions of consent. These in summary require that TPL actively facilitates the upstream passage of native fish species (targeting longfin eel, shortfin eel, koaro, banded kokopu, shortjaw kokopu and giant kokopu species) and downstream passage of adult eels past the Matahina Dam. The objective of this 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.

To achieve this the conditions offered by TPL (and agreed to by the Council officers) require, amongst other things, expert reports to set out how the fish passage (both up and down the river) is to be achieved, the setting of targets for the effectiveness of the fish trap and transfer system, the methodology used to transfer live fish, measures to be undertaken to enhance fish survival, as well as monitoring and consultation requirements with agencies including Department of Conservation, Fish and Game New Zealand, the Kokopu Trust, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa, and Ngati Umutahi.

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<sup>96</sup> Ryder, paragraph 11.43, page 43.

<sup>97</sup> Ibid, paragraph 11.49, page 46.

Furthermore conditions have also been imposed to addressing the issue of intakes screens to the penstocks. These set out that screens are required (the gap between bars of the screen being no greater than 90 millimetres), as well as a comprehensive report for certification by the Council that:

- a. Describes the feasibility of installing further deterrent measures at the intake structure of the Matahina Dam to avoid or minimise the entrapment of adult eels;
- b. Describes the alternative deterrent measures options considered and assesses the strengths and weaknesses of each option; and
- c. Recommends a deterrent measure for deflecting adult eels away from the intake structure of the Matahina Dam towards the spillway gates or an alternative downstream migration pathway.

We find those conditions to be satisfactory in the circumstances.

With respect to brown and rainbow trout, the presence of the Matahina Dam and the Aniwhenua Barrage restricts trout passage up and down the Rangitaiki River. However according to Dr Ryder:

*"It appears that resident trout populations have successfully developed in the upper river catchment and also in the River between Lake Aniwhenua and Lake Matahina (Environment Bay of Plenty 2008). Consequently I do not consider that the Dam significantly affects the viability of the Rangitaiki trout fisheries".<sup>98</sup>*

We accept Dr Ryder's evidence and that no specific conditions are required in respect of trout passage.

#### 7.14 Information and monitoring requirements.

The matter of control is:

##### (u) Information and monitoring requirements

We have included conditions requiring TPL to monitor the status of the river banks downstream of the dam and also to monitor flows into and out of the storage reservoir.

In response to their concerns regarding the potentially more than minor adverse effects of the reduced minimum flow, combined with the possible allowance of multiple daily peaks, the Council's reporting officers recommended an extensive monitoring programme that involved weed bed and riparian vegetation, macro-invertebrates, baseline monitoring of fish stocks, inanga spawning sites, and temperature and dissolved oxygen.

Given our decision to retain the existing minimum flow we do not consider that any ongoing monitoring is required in relation to fish stocks and inanga

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<sup>98</sup>Ibid, paragraph 11.51, page 46.

spawning. In making that finding we also note the advice of Mr Bloxham that “... there are few monitoring methods available for investigating fishery impacts to the depth required to detect subtle, yet significant ecosystem impacts.”<sup>99</sup> We also note that the retention of the existing minimum flow means that the inanga spawning habitat utilised currently will continue to be utilised as the salt water interface will not migrate inland as would be the case had the minimum flow reduced to 20 cumecs.

We consider that the monitoring offered by TPL in relation to weed bed and riparian vegetation, macro-invertebrates, and temperature and dissolved oxygen should occur, notwithstanding the fact that the minimum flow is to remain unaltered. However, we find that the monitoring should only be initially required for a period of 36 months after the commencement of the consent in order to better characterise the nature of the existing environment and to quantify the effects of the new multiple peaking regime. We have adopted a simplified form of the Aquatic Monitoring Programme prepared by Dr Ryder and this is now included as Appendix Four to the conditions.

If at the end of the initial 36 month period any ongoing monitoring is considered by the Bay of Plenty Regional Council (as consent authority) to be appropriate, then that can be introduced by way of a review of consent conditions under s.128 of the Act. We have amended the recommended review condition accordingly.

#### 7.15 Administration charges under section 36 of the Act

The matter of control is:

- (v) Administration charges under section 36 of the Act.

We have imposed the condition recommended to us by the reporting officers, which was accepted by TPL, requiring all reasonable costs incurred by the Bay of Plenty Regional Council in undertaking a review of the consent under s.128 of the Act to be borne by the consent holder.

For the sake of completeness we note that consent duration is not a matter of control specified under Rule 47C of the RLWP. Consequently, we have no jurisdiction to deviate from the duration sought by TPL which is 35 years. The consent therefore expires in 2046. We have inserted a condition to clarify that matter

## 8. Determination

Under the provisions of s.104A of the RMA (refer 1.8), we must grant consent to the application but may impose conditions of consent under s.108 for matters over which we have control under Rule 47C the Operative Bay of Plenty Regional Water and Land Plan. These matters are described earlier (refer to section 1.8 of this decision).

We record that there is no need for us to undertake a detailed analysis of the objectives and policies of the RWLP or indeed of Part 2 of the Act (although

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<sup>99</sup>Bloxham, EIC, section 6.

Part 2 is addressed below). Those matters are only relevant insofar as they might inform the wording of conditions imposed under the relevant matters of control listed in Rule 47C. We have considered those provisions in that context and have referred to specific provisions where we considered that necessary to better describe the approach we have taken to imposing conditions. In many cases that was not necessary as the wording of conditions had been agreed between the Applicant and the reporting officers and we in turn agreed with that wording.

We have considered Part 2 of the Act in making our decision on this proposal. There are two relevant matters of national importance (s. 6). They are public access to and along rivers (s. 6(d)) and the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga (s. 6(e)). There are also issues relevant to Maori in ss. 7 and 8. With respect to Maori issues these have been fully set out in section 7.3 of this decision. Public access is addressed in section 7.5. Other relevant matters in s. 7 of the Act include:

- (b) the efficient use and development of natural and physical resources:
- (ba) the efficiency of the end use of energy:
- (c) the maintenance and enhancement of amenity values:
- (d) intrinsic values of ecosystems:
- (f) maintenance and enhancement of the quality of the environment:
- (g) any finite characteristics of natural and physical resources:
- (h) the protection of the habitat of trout and salmon:
- (j) the benefits to be derived from the use and development of renewable energy.

We find that proposal as granted better satisfies s7(b), (c), (d), (f), (g) and (h) than would the proposal as sought by TPL – and in particular in terms of downstream effects had a minimum flow of 20 cumecs been granted. The reasons for this have been fully set out in preceding sections of this decision. We have also had particular regard to s7 (ba) and (i), and the requirements of the NPSREG. Our findings and reasoning on this are set out in sections 7.7 and 7.8 of this decision. Overall we find that the consent granted better meets the sustainable management purpose of the Act than the proposal sought by the Applicant.

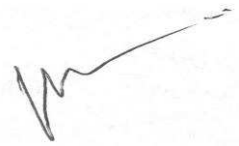
Our decision is as follows:

Pursuant to sections 104A and 108 of the Resource Management Act 1991 the applications of TrustPower Limited (hereinafter referred to as “the Consent Holder”) for the Matahina Hydroelectric Power Scheme, 1 Te Mahoe Village Road, Te Mahoe legally described as Lot 1 DPS 77091; Block XV Rangitaiki Upper Survey District being Section 1 SO 59596; Part Lake Matahina Sections 1 and 2 SO 60956; Part Rangitaiki Old Riverbed Sections 2 and 3 SO 60568 are hereby **granted** subject to the conditions contained in Schedule 1.

Signed this 23<sup>rd</sup> day of February 2012.

A handwritten signature in black ink, appearing to read 'Greg Hill'.

Greg Hill  
Chair of Hearing Commissioners

A handwritten signature in black ink, appearing to read 'Rob van Voorthuysen'.

Rob van Voorthuysen  
Commissioner

A handwritten signature in black ink, appearing to read 'Alan Bickers'.

Alan Bickers  
Commissioner



## SCHEDULE 1 –CONDITIONS

### General

1. The dam, penstock intake, tailrace, spillway and dewatering tunnel and points of discharge associated with the Matahina Hydroelectric Power Scheme are to be sited as shown in the plans attached to this resource consent as **Appendix One**.
2. The maximum height of the Matahina Dam shall not exceed 80 metres as measured from the bed of the Rangitaiki River to the dam crest.
3. The individual Matahina Spillway Gate widths shall not exceed 8.53 metres.

### Civil Safety

4. The consent holder shall, within seven days of receiving a request from the Chief Executive of the Bay of Plenty Regional Council, provide a copy of all information it holds regarding the dam safety management systems employed at the Matahina Hydroelectric Power Scheme to the Chief Executive of the Bay of Plenty Regional Council.
5. The consent holder shall maintain the Matahina Dam and all its appurtenant components and ancillary/appurtenant structures to the standards recommended in the operative version of the NZSOLD Dam Safety Guidelines.

### Lake Levels

6. The consent holder shall operate the Matahina Hydroelectric Power Scheme so as to comply with the following maximum or minimum operating levels for Lake Matahina (all levels are stated in 'metres above Moturiki Datum').

Extreme Minimum Reservoir Level (flood pending)	70.0 metres
Minimum Operational Reservoir Level	73.15 metres
Maximum Operational Reservoir Level	76.20 metres
Maximum Reservoir Level during floods of less than 200 cubic metres per second	76.40 metres
Design Flood Level	76.80 metres
Spillway Gate Crest Level	76.40 metres

7. The rate of change in the level of Lake Matahina shall not exceed 0.3 metres per hour except under 'Emergency Conditions' when a rate of change of up to 0.5 metres per hour is permitted.
8. For the purpose of Condition 7 'Emergency Conditions' occur when:
  - a. Plant within the Matahina Hydroelectric Power Scheme has failed;
  - b. The electrical network or transmission system has become constrained or unavailable;
  - c. A natural event, such as a flood, restricts the ability to operate all or any aspect of the Matahina Hydroelectric Power Scheme safely; or

- d. Storage needs to be provided in anticipation of a flood event that is forecast in accordance with Conditions 42 and 43 or with a methodology set out in a flood management plan that is certified under conditions 44 or 45.

### **Intake Screens**

9. The intake to the Matahina Hydroelectric Power Scheme penstocks shall be fitted with a screen. The gap between bars of the screen shall be no greater than 90 millimetres.
10. Within 12 months of this consent commencing the consent holder shall have prepared and submitted a comprehensive report to the Chief Executive of the Bay of Plenty Regional Council for certification that:
  - a. Describes the feasibility of installing deterrent measures at the intake structure of the Matahina Dam to avoid or minimise the entrapment of adult eels;
  - b. Describes the alternative deterrent measures options considered and assesses the strengths and weaknesses of each option; and
  - c. Recommends a deterrent measure(s) for deflecting adult eels away from the intake structure of the Matahina Dam towards the spillway gates or an alternative downstream migration pathway.
11. When preparing the report required by Condition 10, the consent holder shall consult with the Department of Conservation, Fish and Game New Zealand, Kokopu Trust, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa, Ngati Umutahi, the Bay of Plenty Regional Council (as consent authority) and any additional parties deemed relevant by the Chief Executive of the Bay of Plenty Regional Council. 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 Chief Executive of the Bay of Plenty Regional Council.
12. Within 12 months of receiving certification from the Chief Executive of the Bay of Plenty Regional Council that the report addresses the matters set out in Condition 10, the consent holder shall implement the deterrent measure(s) recommended in the report.
13. The consent holder shall provide final copies of the report required by Condition 10 to the Kokopu Trust, Department of Conservation, Fish and Game New Zealand, the Royal Forest and Bird Protection Society, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa, Ngati Umutahi, the Bay of Plenty Regional Council (as consent authority) and any additional parties deemed relevant by the Chief Executive of the Bay of Plenty Regional Council.

### **Boat ramps**

14. The consent holder shall install and maintain a water level indicator at the main launching boat ramp located at map reference NZTM 1934917, 5774496. This water level indicator shall be installed within six months of the commencement of this consent.
15. The consent holder may temporarily restrict public access to the boat ramps (and associated pontoon structures) located at map references NZTM 1934917, 5774496

and NZTM 1934987, 5774200 due to reasonable health, safety and security requirements. Access may only be restricted to one boat ramp and any associated pontoon structure at a time. Where access is restricted by the consent holder, it shall notify the Chief Executives of both the Bay of Plenty Regional Council and the Whakatane District Council in writing. The written notification shall (i) explain the need for the restriction, and (ii) estimate the duration that the restriction will apply for.

### **Lakeshore Processes and Sedimentation**

16. The consent holder shall, within one year of this consent commencing, and then every five years thereafter, undertake inspections of the Lake Matahina shoreline. The inspection shall (i) use the methodology and visit the sites identified by Dr Martin Single in his report entitled "*Matahina Hydroelectric Power Scheme Re-consenting: Assessment of Environmental Effects – Lakeshore Erosion (October 2008)*" and (ii) consider the entire lake, but shall note the changes at the sites of erosion scarps highlighted on the map attached within **Appendix Two**.
17. The inspection required by Condition 16 shall identify potential erosion and sedimentation hazards for lake users.
18. In addition to the inspections undertaken in accordance with Condition 16, inspections shall be undertaken by the consent holder following every 'flood event'. These inspections shall also identify potential erosion and sedimentation hazards for lake users.
19. For the purpose of Condition 18, the term 'flood event' shall mean a flood of greater than 500 cubic metres per second (cumecs) into Lake Matahina.
20. The consent holder shall report the findings of the Lake Matahina shoreline inspections required under Conditions 16 and 18 to the Chief Executive of the Bay of Plenty Regional Council within two months of the completion of each inspection. The report must:
  - a. Identify any works that are needed to avoid, remedy or mitigate significant erosion and sedimentation hazards attributable to Lake level fluctuations and the reasons for any conclusions reached; and
  - b. If works are recommended, describe the nature of the works, the timeframe for carrying out the works, and the reasons for undertaking those works; and
  - c. Include an assessment of whether any additional monitoring is required and the reasons for any conclusions reached.
21. Within three months of receiving certification from the Chief Executive of the Bay of Plenty Regional Council that the report required in Condition 20 addresses the shoreline erosion and sedimentation hazards caused by the lake level fluctuations associated with the operation of the Matahina Hydroelectric Power Scheme, the consent holder shall implement any mitigation measures recommended in the report.

## General Monitoring

22. The consent holder shall monitor and keep records of:
- a. The Matahina Hydroelectric Power Scheme reservoir level.
  - b. The megawatt set point data and converted to a cumec discharge.
  - c. The flow of water discharged from the Matahina Power Station and/or via the Matahina Spillway.
  - d. The flow of water taken for cooling water purposes.
  - e. The flow of water in the Rangitaiki River, as measured at the Te Teko river flow recording site.
  - f. The flow of water flowing into Lake Matahina, as calculated in accordance with Condition 27.

The time interval between data readings shall be recorded at no greater than 15-minutes and all flow shall be provided in cumecs.

23. The data gathered in accordance with clauses (a), (c), (d) and (e) of Condition 22 shall, within 6-months of this consent commencing, be made available to the Bay of Plenty Regional Council, via telemetry, at all times.
24. The data gathered in accordance with clauses (b) and (f) of Condition 22 shall, within 6-months of this consent commencing, be made available to the Bay of Plenty Regional Council, via telemetry, at all times when a flood event is forecast in accordance conditions 42 and 43 or with a methodology set out within the Flood Management Plan certified in accordance with condition 44 or 45. At all other times, this data shall be provided within 24 hours of it being gathered. The data files shall be submitted in the XML format (or other format as advised by the Chief Executive or delegate) from time to time.
25. Reservoir levels shall be measured to an accuracy of +/-0.1 metres. Flow of the water in the Rangitaiki River, over the Matahina spillway, abstracted into the Matahina penstocks and abstracted into the cooling system associated with the Matahina Power Station shall be measured to an accuracy of +/- 10 percent.
26. All records and monitoring results required by Conditions 22 shall be kept for a minimum period of 18 months from the date of each entry and shall be provided to the Chief Executive of the Bay of Plenty Regional Council:
- a. Annually (on the anniversary of this consent commencing); and
  - b. Within seven days of the consent holder receiving a request from the Chief Executive for the record and monitoring results.
27. The calculation and the sources of data used to determine the inflow into Lake Matahina shall be set out in the Flood Management Plan required by Condition 44. Once the Flood Management Plan is certified in accordance with Condition 44, the consent holder shall calculate the inflows into the Lake in accordance with the Flood Management Plan.

## Contribution to River Bank Protection Programme

28. In each year (July to June) for the duration of this consent the consent holder shall undertake river bank protection works (or ensure such works are undertaken), on behalf of and under the direction and supervision of the Bay of Plenty Regional Council (Environmental Hazards Group), in accordance with the following percentages of the Bay of Plenty Regional Council's programmed operation, maintenance and flood repair works (and associated overheads) for the Rangitaiki River for that year:
- (i) Edgecumbe to mouth (5%)
  - (ii) Te Teko to Edgecumbe (12%)
  - (iii) Matahina to Te Teko (23%).

## Periods of Normal Operation

29. Except as provided for by Condition 30, the consent holder shall ensure that a flow of not less than 40 cumecs is maintained in the Rangitaiki River, immediately downstream of the Matahina Hydroelectric Power Scheme, at all times.
30. When inflows into Lake Matahina are less than 40 cumecs, the consent holder shall operate the Matahina Hydroelectric Power Scheme to ensure that the flow in the Rangitaiki River, immediately downstream of the Matahina Hydroelectric Power Scheme, equals, when averaged over a 24-hour period, the inflows into Lake Matahina. At such times the consent holder shall ensure that a flow of not less than 28 cumecs is maintained in the Rangitaiki River immediately downstream of the Matahina Hydroelectric Power Scheme, at all times.
31. For the purpose of Condition 30 the term '24-hour period' shall be from 12-midnight to 11.59pm.
32. The maximum increase in generation discharge from the Matahina Power Station shall not exceed 97 cumecs per hour except during an under-frequency event and/or a flood event (where no maximum discharge increase restrictions apply).
33. The maximum decrease generation discharge from the Matahina Power Station shall not exceed 30 cumecs per hour except during an under-frequency event and/or a flood event (where no maximum discharge decrease restrictions apply).

## Notification

34. Should the maximum rates of increase and decrease required in Conditions 32 and 33 be exceeded as a consequence of an under-frequency event and/or flood event, the consent holder shall notify the Chief Executive of the Bay of Plenty Regional Council within 72 hours of the under frequency event and/or flood event occurring.

## Definitions

35. For the purpose of Conditions 32, 33 and 34 the term 'under frequency event' shall mean either;
- a. An interruption or reduction of electricity injected into the national grid, or

- b. An interruption or reduction of electricity injected from the HVDC link into the South Island HVDC injection point or the North Island HVDC injection point

where there is, within any 60-second period, an aggregate loss of electricity in excess of 60 megawatts.

- 36. For the purpose of Conditions 32, 33 and 34, the terms 'flood event' and 'flood Conditions' shall mean when (i) flows into Lake Matahina exceed 160 cumecs, and/or (ii) the water level in Lake Matahina is equal to, or exceeds 76.20 metres above Moturiki Datum.

## Monitoring

- 37. The consent holder shall appoint an appropriately qualified independent expert (or experts) to monitor the Rangitaiki River from the Matahina Dam to its mouth. The monitoring programs and the methodology to be employed in the monitoring are set out in (a) to (h). The purpose of the monitoring is to assess the effects of the consented operating regime on the environment.
  - a. The consent holder shall survey 15 cross-sections at the sites identified on the Plan attached as Appendix Three, plus 2 new cross-sections at approximately 0.5 and 2.9km below the Dam. The first cross-section survey shall be completed within 12 months of the consent commencing. Subsequent surveys shall occur every five years thereafter, and within two months of any flood event exceeding 320 cumecs at Te Teko.
  - b. The consent holder shall implement a visual monitoring program that, as a minimum, requires:
    - i. An inspection of the Rangitaiki River between the Matahina Dam and Edgecumbe by jet boat.
    - ii. Compilation of a photographic record of all erosion sites and eroded banks, located by GPS position, including a log of erosion type, length of erosion area, bank materials, and with repeat photographs over time of the same bank locations.
  - c. The first visual monitoring survey conducted in accordance with paragraph (b) shall be completed within 12 months of the consent commencing, and continue annually for 3 years, with additional monitoring within two months of any flood event exceeding 320 cumecs at Te Teko. The visual monitoring shall continue after the completion of the first three years of monitoring, at the same times as set out in (a) for the cross-section surveys.
  - d. To the degree that is practicable, all erosion monitoring shall be conducted when the flow in the Rangitaiki River, as measured at the Te Teko flow recorder, is approximately 40 to 50 cumecs. The erosion hazard inventory and visual monitoring is to be undertaken in late spring or early summer.
  - e. A report on the monitoring undertaken in accordance with conditions 37(a) to 37(d) shall be presented to the Chief Executive of the Bay of Plenty Regional Council or delegate within 3 months of completion of the field work for each monitoring requirement. The report shall include:

- i. Records of the flow in the river at the time of survey or monitoring, and the hydrological characteristics of flows that have occurred since the previous monitoring, both as a consequence of the operation of the Matahina Hydroelectric Power Scheme and of natural weather patterns.
  - ii. A comparison with the results of the previous surveys or inspections. For the first monitoring, the comparison shall be made against the report entitled 'Matahina HEPS – Biennial Rangitaiki River Monitoring' (Beca Infrastructure Limited - 2010) where relevant.
  - iii. An assessment of the erosion that has occurred in the context of the hydrology of the intervening period and taking account of repair works undertaken.
- f. The effect of the consented operating regime on aquatic flora and fauna is to be monitored. This monitoring programme shall be undertaken in accordance with **Appendix Four** and shall include:
  - i. Weed bed and riparian vegetation health and coverage assessments; and
  - ii. An assessment of macro-invertebrate abundance and diversity of the Rangitaiki River between the Matahina Dam and Edgecumbe; and
  - iii. The measurement of temperature and dissolved oxygen levels (concentration and percent saturation).
- g. The weed bed and riparian vegetation health/coverage, macro-invertebrate abundance/diversity monitoring required under Condition 37(f) shall be undertaken at six monthly intervals over a period of 36 months from the commencement of the consent.
- h. The temperature and dissolved oxygen level monitoring required under Condition 37(f) shall be undertaken:
  - i. Immediately downstream of the Matahina Hydroelectric Power Scheme's tailrace; and
  - ii. At the Te Teko river flow recording site; and
  - iii. Every 15 minutes over a period of 36 months from the commencement of the consent.
- 38. The consent holder shall provide reports detailing the results of the monitoring required under Condition 37(f), (g) and (h) to the Chief Executive of the Bay of Plenty Regional Council or delegate no later than 39 months of the consent commencing.
- 39. In addition to the reporting requirements set out in Condition 38, the consent holder shall notify the Chief Executive of the Bay of Plenty Regional Council or delegate if the dissolved oxygen concentration at the Te Teko river flow recording site is less than 80 percent. The notification shall be in writing and shall record the dissolved oxygen levels measured, and the duration that the dissolved oxygen concentration was less than 80 percent. The notification shall be made within 48 hours of the consent holder becoming aware of the dissolved oxygen concentrations being less than 80 percent.

40. In the event that monitoring conducted in accordance with Conditions 16 to 19, 37(a) and 37(b) of this resource consent identifies that a cultural and/or archaeological site (or sites) is damaged, modified or destroyed by events that are attributable to the modified operating regime the consent holder shall advise the Chief Executive of the Bay of Plenty Regional Council or delegate within 48 hours of the consent holder being aware of the damage, modification or destruction. In such an event the following actions and subsequent mitigation shall be undertaken:
- a. Within 48 hours of the consent holder being aware of the damage, modification or destruction, the consent holder shall advise Ngati Awa, Ngati Tuwharetoa and the New Zealand Historic Places Trust.
  - b. Within 7 days of the consent holder being aware of the damage, modification or destruction, the consent holder shall commission a suitably qualified archaeologist to provide a report on the site, including advice from the appropriate Pukenga of Ngati Awa and Ngati Tuwharetoa, and any recommended actions or mitigation measures.
  - c. Within 7 days of the report required in accordance with Condition 40(b) being completed, the consent holder shall provide a copy of the report to Ngati Awa, Ngati Umutahi and Ngati Tuwharetoa for comment, allowing one month for a response. Upon receipt of any comments the consent holder shall submit the report, and any comments received from Ngati Awa or Ngati Tuwharetoa to the Chief Executive of the Bay of Plenty Regional Council for review and certification.
  - d. Within 7 days of the report required in accordance with Condition 40(b) being completed, the consent holder shall also provide a copy of the report to the New Zealand Historic Places Trust if it has been established that an archaeological site has been damaged.
41. Within 6 months of receiving certification from the Chief Executive of the Bay of Plenty Regional Council or delegate that the report required in Condition 40(c) adequately addresses environmental effects associated with the damage, destruction or modification, the consent holder shall implement any recommended actions or mitigation measures set out in the report.

### **Flood Operating Conditions**

42. When the Chief Executive of the Bay of Plenty Regional Council, or delegate, predicts a flood of 300 cumecs or more into Lake Matahina up to twenty four hours in advance of inflows exceeding 300 cumecs, the consent holder shall reduce the level of Lake Matahina so as to bring the lake level to at least 73.15 m above Moturiki Datum. This condition shall cease to have effect when Condition 44 is satisfied.
43. When flows into Lake Matahina are 300 cumecs or more, and the Chief Executive of the Bay of Plenty Regional Council, or delegate, predicts a flood of 500 cumecs or more up to twenty four hours in advance of inflows exceeding 500 cumecs, the consent holder shall reduce the level of Lake Matahina so as to bring the lake level to at least 70.00 m above Moturiki Datum. This condition shall cease to have effect when Condition 44 is satisfied.
44. Within three months of the commencement of the consent, the consent holder shall, following consultation with the Environmental Hazards Group of the Bay of Plenty Regional Council, issue, for certification by the Chief Executive of the Bay of Plenty Regional Council or delegate, a flood management plan ('the FMP'). The FMP shall



be in general accordance with the Draft Flood Management Plan, a copy of which is attached as **Appendix Five**, and shall include protocols in relation to flood management strategies and communication with the Environmental Hazards Group of the Bay of Plenty Regional Council to give effect to Conditions 42 and 43. The Chief Executive or delegate shall only issue the certificate if he/she is satisfied that the FMP accords with the relevant obligations of this Resource Consent, the Building Act 2004 and the Building (Dam Safety) Regulations 2008, or any subsequent revisions to the Act. The Matahina Hydroelectric Power Scheme shall, subject to Condition 45 and upon the FMP being certified by the Chief Executive or delegate, be operated in accordance with the FMP.

45. The contents of the FMP shall be reviewed by the consent holder, in consultation with the Environmental Hazards Group of the Bay of Plenty Regional Council, within 12-months of the certificate being issued in accordance with Condition 44, and at least every 5-years thereafter. Any amendments arising out of the review shall not have effect until the Chief Executive of the Bay of Plenty Regional Council or delegate certifies that they accord with the relevant obligations of this Resource Consent, the Building Act 2004 and the Building (Dam Safety) Regulations 2008, or any subsequent revisions to the Act. The Matahina Hydroelectric Power Scheme shall, upon the amended FMP being certified by the Chief Executive or delegate, be operated in accordance with the amended FMP.

## **Fish Passage**

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, shortjaw kokopu and giant kokopu species and any other species considered appropriate by the Chief Executive of the Bay of Plenty Regional Council (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.
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 Chief Executive of the Bay of Plenty Regional Council or delegate that describes:
  - 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
  - b. The programme of monitoring that will be undertaken to record the live fish (by number and species):
    - i. Transferred upstream of the Matahina Dam, and
    - ii. Observed achieving passage downstream of the Matahina Dam

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
  - 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.

48. When preparing the report required by Condition 47, the consent holder shall consult with the Department of Conservation, Fish and Game New Zealand, the Kokopu Trust, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa, and Ngati Umutahi (and any additional parties deemed relevant by the Chief Executive of the Bay of Plenty Regional Council). 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 Chief Executive of the Bay of Plenty Regional Council or delegate.
49. The report required by Condition 47 shall be submitted to the Chief Executive of the Bay of Plenty Regional Council 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 Chief Executive of the Bay of Plenty Regional Council 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 of the downstream adult 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 Chief Executive of the Bay of Plenty Regional Council 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 Chief Executive of the Bay of Plenty Regional Council or delegate, on the work undertaken to comply with Condition 50 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 objective set out in Condition 46 and discussion of how this may be incorporated into the fish passage process.
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 Chief Executive of the Bay of Plenty Regional Council or delegate a report that:
- a. Details 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 populations in the Rangitaiki River catchment 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; and
    - iii. Describing alternative measures and/or programmes for avoiding, remedying or mitigating 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 Department of Conservation, Fish and Game New Zealand, Kokopu Trust, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa, and Ngati Umutahi, the Bay of Plenty Regional Council (as consent authority) and any additional parties deemed relevant by the Chief Executive of the Bay of Plenty Regional Council or delegate. 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 Chief Executive of the Bay of Plenty Regional Council **or delegate**.

54. Within 6 months of receiving certification from the Chief Executive of the Bay of Plenty Regional Council **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 Chief Executive of the Bay of Plenty Regional Council **or delegate** by the 31st of 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 48 to 56 to the Department of Conservation, Fish and Game New Zealand, the Royal Forest and Bird Protection Society, the Kokopu Trust, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa, Ngati Umutahi the Bay of Plenty Regional Council (as consent authority) and any additional parties deemed relevant by the Chief Executive of the Bay of Plenty Regional Council **or delegate**.

### **Cooling Water Discharge**

58. The maximum rate of discharge of water used for cooling purposes at the Matahina Dam Powerhouse to the Rangitaiki River shall not exceed 140 litres per second.

### **Maintenance Activities**

59. The consent holder shall notify the Chief Executive of the Bay of Plenty Regional Council **or delegate** of its intention to carry out maintenance activities at the Matahina Hydroelectric Power Scheme that will disturb the bed of Lake Matahina and/or the Rangitaiki River at least 48 hours prior to the commencement of the activities. The notification shall be in writing and set out the nature of the proposed activities, their purpose and anticipated duration.
60. No contaminants (other than sediment) shall be released to the area of Rangitaiki River or Matahina Lakebed, beyond the area that is being worked, from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the Rangitaiki River or Matahina Lakebed. All equipment used in the maintenance activities undertaken by, or at the request of the consent holder shall be cleaned to the MAF Biosecurity didymo cleaning standards prior to, and following the work undertaken within the bed of Lake Matahina or the Rangitaiki River to minimise the prospect of aquatic **pests** being transferred into or from the Rangitaiki River catchment.
61. All material removed from a structure or from within the immediate vicinity of a structure, and all excess construction materials shall be removed from the river and/or lakebed within 7 days following the completion of the work. The consent holder shall ensure that any stockpiles of materials are located so that the materials cannot enter a water body and/or a watercourse.

62. Dewatering of any work site shall be for the minimum time necessary to undertake the work. If dewatering for more than 48 hours is expected to be necessary the consent holder shall notify the Chief Executive of the Bay of Plenty Regional Council or delegate before the work begins. The notification shall be in writing and shall describe the activity, its purpose and expected duration.
63. Maintenance activities undertaken in accordance with this consent shall not cause the flow of the Rangitaiki River to be less than 40 cubic metres per second immediately below the Matahina Hydroelectric Power Scheme, unless Condition 30 applies.

### **Relationship with Tangata Whenua**

64. The consent holder shall, at least once per calendar year, convene a meeting with representatives of the Bay of Plenty Regional Council, Ngati Awa, Ngati Haka Patuheuheu, Ngati Manawa, Ngati Whare, Ngati Tuwharetoa and Ngati Umutahi, to discuss any matter relating to the exercise and monitoring of this consent.
65. The meeting required by Condition 64 need not occur if either (i) the tangata whenua parties listed in the Condition advise the Bay of Plenty Regional Council that the meeting is not required, or (ii) there is no response from all of the Tangata Whenua groups to an invitation from the consent holder to meet.
66. The consent holder shall keep minutes of the meetings held in accordance with Condition 64 and shall forward them to all attendees and to the Bay of Plenty Regional Council.

### **General Review**

67. In accordance with section 129 of the Resource Management Act 1991, the Chief Executive of the Bay of Plenty Regional Council or delegate may serve notice of the intention to review, amend, delete or add to the Conditions of this resource consent under section 128 of the Resource Management Act 1991 by giving a notice of review during the month of March 2014 and/or March 2019 and/or March 2024 and/or March 2029 and/or March 2034 and/or March 2039, for the purpose of:
  - i. Ensuring that the Conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were not foreseen at the time the application was considered or which it is appropriate to deal with at a later stage.
  - ii. Reviewing the effectiveness of the conditions in avoiding, remedying or mitigating adverse effects on the environment from the consent holder's activities (including, but not limited to, the effect of the Scheme on fish passage).
  - iii. Reviewing the percentage of river bank protection works to be undertaken under Condition 28.
  - iv. Reviewing the need for any ongoing monitoring of weed bed and riparian vegetation, macro-invertebrates, and temperature and dissolved oxygen in the Rangitaiki River below the Matahina dam.

68. In accordance with section 128(1)(b) of the Resource Management Act 1991, the Chief Executive of the Bay of Plenty Regional Council or delegate may serve notice of its intention to review, amend, delete or add to the Conditions of this resource consent for the purpose of ensuring that the Conditions reflect any instream minimum flow regime that is made operative in an applicable planning instrument.
69. The Chief Executive of the Bay of Plenty Regional Council or delegate may, within six months of the completion of any environmental investigation or compliance report carried out by the Regional Council, or on the receipt of monitoring results that show there is an adverse effect on the environment, serve notice on the consent holder under section 129 of the Resource Management Act 1991 of its intention to review the Conditions of this consent under section 128 of the Resource Management Act 1991.
70. All reasonable costs incurred by the Bay of Plenty Regional Council in undertaking a review of the consent under section 128 of the Resource Management Act 1991, as specified in Conditions 67 to 69 shall be borne by the consent holder.

**Term**

- 71 This consent shall expire on 30 November 2046.

**ADVICE NOTE:**

1. There is no limit to the number of operating peaks allowed (per day) under this resource consent.