

Opunake Power Limited  
Monitoring Programme  
Annual Report  
2016-2017

Technical Report 2017-90

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## Executive summary

Opunake Power Limited (the Company) operates the Opunake hydro electric power scheme located at Opunake, in the Waiaua River catchment. The scheme uses a 4.5 m high weir to divert water from the Waiaua River along a canal to Lake Opunake, and then down penstocks to the Opunake power station. The power station discharges water to the Tasman Sea at Opunake Beach. This report for the period July 2016 to June 2017 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the Company's environmental performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of the Company's activities. Opunake Power Limited took ownership of the station in the 2015-2016 monitoring period.

The Company holds eight resource consents, which include a total of 60 conditions setting out the requirements that the Company must satisfy. The Company holds two consents to allow it to take and use water, one consent to discharge water into the Tasman Sea, one consent to discharge sand to the Waiaua River, two consents for structures associated with the scheme, and two consents to disturb the bed of the Waiaua River and Lake Opunake.

### **During the monitoring period, Opunake Hydro Limited and Opunake Power Limited demonstrated an overall good level of environmental performance.**

The Council's monitoring undertaken for the period under review included six compliance monitoring inspections, four hydrological inspections undertaken in relation to the scheme, and two inspections relating to a complaint of sediment laden water entering the lake. In addition, analyses of generation data, fish pass water level data and lake level data provided by the Company was conducted.

Although additional inspections of the fish trap and transfer system were programmed, these were not completed due to the trap and transfer system not yet being installed during the migration period.

The monitoring showed that despite issues related to erosion in the headwaters, and associated equipment failure including loss of gate control, the scheme operated with few major issues. In comparison with previous monitoring years, compliance with residual flow requirements was high, continuing on from the significant improvement noted in the 2014-2015 monitoring period. Management of the level of Lake Opunake improved from the previous period, as maintenance works and changes to operations led to a reduction in the rate of water lost during station shutdowns. Unfortunately, the maintenance works required the lake level to be lowered below the minimum lake level. This was done without approval from the Council, and although approval would almost certainly have been given, this is considered non-compliant with the administrative requirements of the consent. In addition, due to issues around the accuracy of the lake level recorder, water was seen to be taken for generation when the lake was just below the minimum lake level during two inspections. On each occasion the Company immediately ceased generation upon notification. It should be noted that the Company never knowingly generated when the lake level was at or below the minimum authorised level during the reporting period, and that leakage was the principal cause when a low lake level occurred.

There is still concern about the sand inundation of the head of Opunake Lake, and the reduced recreational value that has resulted from this. The Company is continuing to investigate an array of options, including reducing the potential for sand ingress, modifying the head of the lake to allow better flushing of sand, and a means of removing the sand currently in the lake. In the mean time, the intake gates are shut during high flows, to avoid sand laden floodwaters from entering the lake. The gates then reopen as the flood recedes, as this is when there is expected to be less sand in suspension. The Council received a complaint regarding sediment laden water entering Lake Opunake during the monitoring period. An inspection confirmed that sediment laden water was entering Lake Opunake, and it was determined that the Company was operating in contravention of permitted activity rule 21 of the Regional Freshwater Plan for

Taranaki. As a result the Company was issued with an abatement notice, requiring them to comply with rule 21. This incident was caused by a mechanical failure, and the notice was being complied with during each subsequent inspection.

Previous monitoring has determined that the weir and intake remains a barrier to fish passage to the upper Waiaua River, with fish passage for most species provided into the canal and lake only. The Company has been investigating a possible solution during the reported period with a prototype fish trap deployed in September 2017.

With regard to submitted data, the Company needs to make improvements around providing the data within the required timeframes, but improved significantly regarding gaps in the data record, and the collection of erroneous data. However, there is a need to ensure the accuracy of the data is adequate, as not only does this allow the Council to determine compliance with minimum lake levels (for example), it also means that the Company can use the water as efficiently as possible.

During the year, the Company demonstrated a good level of environmental and administrative performance and compliance with the resource consents, but breached a permitted activity rule in the Freshwater Plan. In short, the Company needs to resolve issues around fish passage and the accuracy of the data recorded.

For reference, in the 2016-2017 year, consent holders were found to achieve a high level of environmental performance and compliance for 74% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 21% of the consents, a good level of environmental performance and compliance was achieved.

In terms of overall environmental and compliance performance by the consent holder over the last several years, this report shows that the performance of Opunake Power Limited is good, and an improvement on that demonstrated by the previous owners. It is apparent that the majority of the issues experienced during the 2016-2017 period relate to the new owner familiarising themselves with the scheme and its resource consents.

This report includes recommendations for the 2017-2018 year, including making one of the two gaugings performed during a hydrological inspection provisional.

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# 1 Introduction

## 1.1 Compliance monitoring programme reports and the Resource Management Act 1991

### 1.1.1 Introduction

This report is the Monitoring Report for the period July 2016-June 2017 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Opunake Power Limited (the Company). The Company operates a hydroelectric power scheme situated on Beach Road at Opunake, in the Waiaua River catchment.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the Company that relate to abstractions and discharges of water within the Waiaua River catchment, land use consents related to disturbance and damming of the Waiaua River, a discharge consent related to the discharge of sand and silt deposits and coastal permits for the discharge of water and the associated discharge structure.

One of the intents of the *Resource Management Act 1991* (RMA) is that environmental management should be integrated across all media, so that a consent holder's use of water, air, and land should be considered from a single comprehensive environmental perspective. Accordingly, the Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of the Company's use of water, land and air, and is the 18th combined annual report by the Council for the scheme, and the 2<sup>nd</sup> under the current ownership.

### 1.1.2 Structure of this report

**Section 1** of this report is a background section. It sets out general information about:

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by the Company in the Waiaua catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted in the Company's site/catchment.

**Section 2** presents the results of monitoring during the period under review, including scientific and technical data.

**Section 3** discusses the results, their interpretations, and their significance for the environment.

**Section 4** presents recommendations to be implemented in the 2017-2018 monitoring year.

A glossary of common abbreviations and scientific terms, and a bibliography, are presented at the end of the report.

### 1.1.3 The Resource Management Act 1991 and monitoring

The RMA primarily addresses environmental 'effects' which are defined as positive or adverse, temporary or permanent, past, present or future, or cumulative. Effects may arise in relation to:

- a. the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
- b. physical effects on the locality, including landscape, amenity and visual effects;

- c. ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
- d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
- e. risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each activity. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the RMA to assess the effects of the exercise of consents. In accordance with Section 35 of the RMA, the Council undertakes compliance monitoring for consents and rules in regional plans, and maintains an overview of the performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

#### 1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by the Company, this report also assigns them a rating for their environmental and administrative performance during the period under review.

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year. Administrative performance is concerned with the Company's approach to demonstrating consent compliance in site operations and management including the timely provision of information to Council (such as contingency plans and water take data) in accordance with consent conditions.

Events that were beyond the control of the consent holder and unforeseeable (that is a defence under the provisions of the RMA can be established) may be excluded with regard to the performance rating applied. For example loss of data due to a flood destroying deployed field equipment.

The categories used by the Council for this monitoring period, and their interpretation, are as follows:

##### Environmental Performance

**High:** No or inconsequential (short-term duration, less than minor in severity) breaches of consent or regional plan parameters resulting from the activity; no adverse effects of significance noted or likely in the receiving environment. The Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices or infringement notices in relation to such impacts.

**Good:** Likely or actual adverse effects of activities on the receiving environment were negligible or minor at most. There were some such issues noted during monitoring, from self reports, or in response to unauthorised incident reports, but these items were not critical, and follow-up inspections showed they have been dealt with. These minor issues were resolved positively, co-operatively, and quickly. The Council was not obliged to issue any abatement notices or infringement notices in relation to the minor non-compliant effects; however abatement notices may have been issued to mitigate an identified potential for an environmental effect to occur.

For example:

- High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;

- Strong odour beyond boundary but no residential properties or other recipient nearby.

**Improvement required:** Likely or actual adverse effects of activities on the receiving environment were more than minor, but not substantial. There were some issues noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent minor non-compliant activity could elevate a minor issue to this level. Abatement notices and infringement notices may have been issued in respect of effects.

**Poor:** Likely or actual adverse effects of activities on the receiving environment were significant. There were some items noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent moderate non-compliant activity could elevate an 'improvement required' issue to this level. Typically there were grounds for either a prosecution or an infringement notice in respect of effects.

### Administrative performance

**High:** The administrative requirements of the resource consents were met, or any failure to do this had trivial consequences and were addressed promptly and co-operatively.

**Good:** Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

**Improvement required:** Repeated interventions to meet the administrative requirements of the resource consents were made by Council staff. These matters took some time to resolve, or remained unresolved at the end of the period under review. The Council may have issued an abatement notice to attain compliance.

**Poor:** Material failings to meet the administrative requirements of the resource consents. Significant intervention by the Council was required. Typically there were grounds for an infringement notice.

For reference, in the 2016-2017 year, consent holders were found to achieve a high level of environmental performance and compliance for 74% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 21% of the consents, a good level of environmental performance and compliance was achieved.

## 1.2 Process description

The Waiaua River has been used as a source of hydroelectric power generation since the original construction of the scheme in 1923. The diversion of water from the river below South Road (SH45) (Photo 1) occurs via a 4.5 m high weir, to a head race and storage lake. There is a river channel distance of approximately two kilometres in the Waiaua River between the diversion weir and the sea, known as the residual flow reach. The level of the storage lake (Lake Opunake) varies according to generation requirements. Water passes from Lake Opunake through the penstocks of the powerhouse and finally is released via a tunnel and tailrace onto the southeast end of Opunake Beach and into the Tasman Sea. Lake Opunake is used for a variety of recreational purposes (for example fishing, boating), but is subject to weed and algae proliferation, and also sand inundation.

The weir is designed to divert the total flow of the river for 80% of the time and to overtop only at higher flows. However, some minor seepage often occurs through the sluice gate in the weir. The weir itself constitutes a significant barrier to fish passage, and a fish pass has been installed to aid fish passage into the canal. Monitoring indicates that all species of fish present in the Waiaua River can negotiate this fish pass, but these fish are then expected to swim up the intake tunnels, to re-enter the Waiaua River upstream

of the weir. One of these tunnels has been retrofitted with a second fish pass type structure, although monitoring indicates that some species cannot negotiate these intake tunnels.

Photo 1 shows the scheme as viewed from State Highway 45, while Photo 2 shows the scheme's layout, in relation to the township of Opunake. More extensive historical information is provided in previous monitoring reports, listed in the bibliography.



Photo 1 The Waiaua River, weir, intake, canal, fish pass and Lake Opunake, as viewed from the State Highway 45 Bridge, Opunake.



Photo 2 Opunake Power Limited scheme on the Waiaua River

## 1.3 Resource consents

### 1.3.1 Water abstraction permit

Section 14 of the RMA stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14.

The Company holds water permit **1795-4** to cover the taking of water from the Waiaua River in association with the Opunake hydroelectric power scheme. This permit was issued by the Council on 13 October 2006 under Section 87(d) of the RMA. It is due to expire on 1 June 2018.

Special condition 1 defines the maximum rate of abstraction (3,900 L/s).

Special condition 2 requires the Company to exercise the consent generally in accordance with the application. Special conditions 3 and 4 require the Company to maintain fish passage and a residual flow of 80 L/s in the Waiaua River downstream of the fishpass and 180 L/s downstream of the canal sluice gate.

Special condition 5 is a provision to review the appropriateness of a gradual increase in residual flow.

Special condition 6 requires notification prior to the consent being exercised.

Special condition 7 defines when the sluice gate/bywash can be closed.

Special condition 8 defines data that must be collected and forwarded to the Council.

Special condition 9 requires the Company to review the operational procedure.

Special condition 10 requires the Company and Council to meet with interested submitters to the consent once per year to discuss matters relating to this consent.

Special condition 11 relates to expiry of the consent should it not be exercised, and the last condition was a review provision.

This consent is currently under review, as per special condition 5.

The Company also holds water permit **1796-3** to take and use water from Lake Opunake for hydroelectric power generation. This permit was issued by the Council on 21 March 2001 under Section 87(d) of the Resource Management Act, and a variation to this consent was granted in the 2005-2006 monitoring year. It is due to expire on 1 June 2018.

Special condition 1 requires the Company to maintain water levels in the lake above a specified limit and that approval must be gained prior to lowering it further maintain a constant flow through the fish pass.

Special condition 2 requires there to be a constant flow through the fish pass.

Special conditions 3 and 4 require the Company to maintain a record of water levels within the lake at a minimum of 15 minute intervals and to install a staff gauge at Lake Opunake.

The last condition is a review provision.

The permits are attached to this report in Appendix I.

### 1.3.2 Water discharge permit

Section 15(1)(a) of the RMA stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national regulations.

The Company holds water discharge permit **1797-3** to cover the discharge of sand and silt deposits from a diversion canal sand trap via a spillway to the Waiaua River. This permit was issued by the Council on 21 March 2001 under Section 87(e) of the RMA. It is due to expire on 1 June 2018.

Special condition 1 states that the Company shall supply a sediment management protocol within three months of the granting of the consent.

Special condition 2 states that the Company must maintain a record of any sand trap discharges for supply to the Council.

Special condition 3 requires the Company to adopt the best practicable option.

The last two conditions are review provisions.

The Company holds coastal discharge permit **4744-2** to cover the discharge of up to 3,900 L/s of water from hydroelectric power generation through two marine outfall pipes into the Tasman Sea. This permit expired on 1 June 2012, and on 15 November 2012 a new consent was issued by the Council under Section 87(e) of the RMA. There were effectively no changes to the consent, which is due to expire on 1 June 2018. The short term of this consent provides for a common expiry date, which allows the Company's applications to be considered at the same time.

There are 3 special conditions which limit the discharge rate, require that the discharge of contaminated water shall not occur as a result of the exercise of the consent, and that appropriate warning signage is installed and maintained at the discharge point.

The permits are attached to this report in Appendix I.

### 1.3.3 Land use permits

Section 13(1)(a) of the RMA stipulates that no person may in relation to the bed of any lake or river use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

The Company holds landuse consent **5581-1** to cover the damming of the Waiaua River in association with the Opunake hydroelectric power scheme. This permit was issued by the Council on 21 March 2001 under Section 87(e) of the RMA. It is due to expire on 1 June 2018.

There are 10 special conditions associated with this consent.

Special condition 1 requires the Company to undertake the exercise of the consent generally in accordance with the application.

Special condition 2 states that it is the responsibility of the Company to maintain and operate a safe dam and the Council accepts no responsibility in this regard.

Special condition 3 requires that the Company shall maintain a fish pass that allows the passage of native fish, juvenile trout and adult trout. The special conditions also cover issues regarding maintenance work, notification of works, and that should the structure no longer be required then it is to be removed and the area re-instated.

Special conditions 4 to 6 place limitations and requirements around any maintenance works undertaken on or around the weir, while special condition 7 limits the timing of any riverbed disturbance to between 1 November and 30 April.

Special condition 8 requires the structure to be removed and the area reinstated should it no longer be required, and special conditions 9 and 10 are review provisions.

Section 13(2)(b) of the RMA stipulates that no person may disturb, remove, damage, or destroy any plant or part of any plant or the habitats of such plants or of animals in, on, or under the bed of any lake or river in a manner that contravenes a rule in a regional plan or a proposed regional plan unless the activity is allowed for by a resource consent or by Section 20 of the RMA.

The Company holds landuse consent **4658-2** to cover the disturbance of the bed of Lake Opunake in the Waiaua catchment by removing reeds and flaxes from the edge of the lake. This permit was issued by the Council on 22 March 2006 under Section 87(e) of the RMA, expiring on 1 June 2024.

Special conditions 1 and 2 require the Company to adopt the best practical option to prevent or minimise adverse effects, and to undertake the exercise of the consent generally in accordance with the application.

Special conditions 3 and 4 require the Company to notify the Taranaki Regional Council at least seven days before commencing work and that the works shall only be undertaken during the period 1 May to 31 October.

Special conditions 5 and 6 require that the Company minimise the discharge or placement of silt and/or organics and/or debris into the lake, and that they collect and remove all plant trimmings and other floatable material.

Special condition 7 requires that where removed material is placed on or near the banks of the lake, the Company ensures that decaying vegetation does not fall or leach into the lake.

The last two special conditions specify a lapse date, should this consent not be exercised within five years of it being granted, and provide for a review, if required.

The Company holds landuse consent **5692-1** to cover the disturbance of the bed of the Waiaua River by removing sediment build-up upstream of a weir for the purpose of maintaining the Opunake hydroelectric power scheme. This permit was issued by the Council on 21 March 2001 under Section 87(e) of the RMA. It is due to expire on 1 June 2018.

There are 9 special conditions associated with this consent. Special condition 1 and 2 require notification prior to undertaking maintenance works, and to undertake the exercise of the consent generally in accordance with the application, while special condition 3 states that the works shall only be undertaken during the period 1 December to 30 April.

Special conditions 4 and 5 require the adoption of the best practicable option to avoid or minimise the discharge of contaminants, and to minimise the area and volume of riverbed disturbance.

Special condition 6 requires the Company to keep records of works undertaken.

Special condition 7 requires that written permission be obtained prior to the deposition of sediment downstream of the weir.

The last two conditions are review provisions.

The permits are attached to this report in Appendix I.

#### 1.3.4 Coastal permit

Section 12(1)(b) of the Act stipulates that in the coastal marine area, no person may erect, reconstruct, place, alter, extend, remove, or demolish any structure or any part of a structure that is fixed in, on, under, or over any foreshore or seabed unless expressly allowed by a rule in a regional coastal plan, proposed regional coastal plan or a resource consent.

The Company holds coastal permit **4563-2** to cover the erection, placement, and maintenance of an outfall structure in the coastal marine area on the Opunake Beach foreshore. This permit was issued by the Council on 21 March 2001 under Section 87(e) of the RMA. It is due to expire on 1 June 2018.

There are 7 special conditions associated with the new consent with special condition 1 requiring the Company to undertake the exercise of the consent generally in accordance with the application, and special condition 2 requires the Company to notify the Council prior to maintenance works.

Special condition 3 requires the Company to adopt the best practical option to prevent or minimise adverse effects, and the area and volume of disturbance is to be minimised as far as practicable, as per special condition 4.

Special condition 5 requires the structure to be removed and the area reinstated should it no longer be required, and the last two special conditions are review provisions.

The permit is attached to this report in Appendix I.

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found in the resource consents which are appended to this report.

## 1.4 Monitoring programme

### 1.4.1 Introduction

Section 35 of the RMA sets obligations upon the Council to gather information, monitor and conduct research on the exercise of resource consents within the Taranaki region. The Council is also required to assess the effects arising from the exercising of these consents and report upon them.

The Council may therefore make and record measurements of physical and chemical parameters, take samples for analysis, carry out surveys and inspections, conduct investigations and seek information from consent holders.

The monitoring programme for the Company's site consisted of four primary components.

### 1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Council in:

- ongoing liaison with resource consent holders over consent conditions and their interpretation and application;
- in discussion over monitoring requirements;
- preparation for any consent reviews, renewals or new consent applications;
- advice on the Council's environmental management strategies and content of regional plans; and
- consultation on associated matters.

### 1.4.3 Site inspections

The river intake, lake and station were visited 12 times during the monitoring period. Six of these visits were to inspect the site, with regard to consents for the abstraction of or discharge to water and the associated structures. The main points of interest were the maintenance of the fish pass, the maintenance of the residual flow in the river downstream of the weir, and compliance with lake level requirements. Four hydrological inspections were also completed, with the intention to undertake gaugings of the lower river. During one of these inspections, the flow in the river increased resulting in one of the two gaugings not being completed. The remaining two visits were in response to a complaint regarding sediment laden water entering Lake Opunake. Sources of data being collected by the Company were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council.

Although additional inspections of the fish trap and transfer system were programmed, these were not completed due to the trap and transfer system not yet being installed during the migration period.

#### 1.4.4 Fish surveys

Although no fish surveys were undertaken in the reporting period, they remain a component of the programme, albeit provisional. This means a survey can be undertaken should there be any modifications to the fish pass, to assess the effectiveness of these modifications.

#### 1.4.5 Data audit

Special condition 8 of consent 1795-4 requires that the Company records fish pass water levels and generation figures as a measure of abstraction rates, and is to forward the records to the Council at three monthly intervals.

Special condition 3 of consent 1796-3 requires the Company to maintain a record of water levels in Lake Opunake and provide records to the Council, at three monthly intervals. The Company has provided records at 15 minute intervals of generation records and water levels in Lake Opunake. The records were checked to determine whether or not water levels in the lake complied with consent conditions.

## 2 Results

### 2.1 Water

#### 2.1.1 Inspections

The first compliance monitoring inspection was completed on 10 October 2016. This inspection noted that the Waiaua River had a moderate flow, which was, tannin stained. Fish passage into the canal was good, and there was a high rate of flow in the canal. At the end of the previous (2015-2016) monitoring period, it was discovered that at times when the canal was dewatered, water was escaping the lake by bypassing the lake stop gate. Efforts to repair this issue were underway during this October inspection, with the canal bank being shored up. On the beach, six to seven whitebaiters were observed at the station outlet.

On 2 December 2016 the second compliance monitoring inspection was completed. During this inspection there was a very swift flow through the lake stop gate and into the lake. However, there was quite some scour noted around the lake stop gate, indicating that the repair works that had been completed since the previous inspection weren't completely effective. There was a large delta exposed at the head of the lake, with a number of birds observed including pied stilt, black swan, paradise shelduck and mallards. Water was being taken for generation at the time of inspection, but the lake level was recorded at approximately 10 mm less than the minimum allowable lake level. The consent holder was reminded about the importance of complying with the minimum lake level requirements.

On 9 January 2017 member of the public called to express their concern that the station discharge on the beach had caused a gut to form along the beach, resulting in dangerous swimming conditions. This initiated the third compliance monitoring inspection which was completed that afternoon. This inspection, which was completed during low tide, found that although there was a shallow gut running along the beach, the water that was in this gut was flowing towards the south-east corner of the beach, towards the station. This indicated that the gut had not been formed by the station discharge, but was more likely the result of sand building up on the beach during the settled weather conditions that had preceded the survey.

The Council received a complaint regarding sediment laden water entering Lake Opunake on 2 February 2017. The subsequent inspection confirmed that the Waiaua River had a high, sediment laden flow, with brown water entering Lake Opunake. The consent holder was contacted to inform them that they were in breach of permitted activity rule 21 of the Regional Freshwater Plan for Taranaki. The following day, the scheme was inspected again and no water was being diverted into the lake. This is discussed further in section 2.2.

The fourth compliance monitoring inspection, undertaken on 5 May 2017, found that passage down the fish pass was good, but that there was still no sign of a fish trap at the head of the pass. It appeared that water may still be leaking around the canal stop gate. Due to a high lake level, there was only a small sandbank exposed at the head of the lake. Generation was occurring, and at the beach, the station discharge was heading straight out to sea. There was a longshore current moving towards the station discharge.

The penultimate inspection, performed on 31 May 2017, observed one trout in the river immediately upstream of the weir. Fish passage in the pass and up into the canal looked good, but the provided residual flow appeared lower than normal. The level of Lake Opunake was relatively low, and was recorded at  $0.485 \text{ m} \pm 5 \text{ mm}$ . This was below the minimum lake level set by the conditions of consent (0.5 m), and water was being taken for generation. The consent holder was contacted, and they immediately ceased generation. They committed to checking the recorder at the earliest opportunity, but as a stop-gap measure, changed the settings on the programmed logic controller (PLC), so that generation ceased at a higher lake level. Their investigation found that a third party had tampered with the recorder, causing it to read too high.

The final inspection of the 2016-2017 monitoring period was completed on 30 June 2016. This inspection was completed with the scheme owner, Steve O'Sullivan. Overall the station was operating well, although the lake level was still not being recorded quite accurately enough, as it was reading 15 mm too high. However, generation ceased when the lake level dropped to 0.5 m. Mr O'Sullivan was reminded that recorded data should be provided to the Council on a quarterly basis, and that water level data needs to be recorded accurately.

## 2.1.2 Hydrological inspections

Special condition 4 of water permit 1795-4 sets residual flows that the operator needs to comply with, as follows:

"The consent holder shall ensure that a residual flow of not less than 80 L/s as measured in the Waiaua River immediately downstream of the fish pass, and not less than 180 L/s as measured in the Waiaua River immediately downstream of the canal sluice gate discharge, is maintained at all times".

The site was visited four times by hydrology staff during the reported period. A summary of results are presented in Table 1.

During each hydrological inspection it is intended to perform two gaugings. The first gauging is usually undertaken in the river downstream of the fish pass, and the second gauging is conducted downstream of both the fish pass and canal sluice gate to assess the total residual flow. However, on occasion, flow conditions can preclude any gaugings being undertaken.

Such flow conditions occurred only once during this year's hydrological inspections. During the inspection of 19 December 2017, the river rose rapidly while gauging downstream of the fish pass. As a result no gauging was completed downstream of the canal sluice gate. During each of the remaining visits, two gaugings were performed, and flows were found to be compliant with consent requirements on each occasion (Table 1).

**Table 1 Hydrological inspection and gauging results for the Waiaua River, Opunake HEP**

| Date              | Fish pass level (mm)     | Lake Level (mm) | Flow downstream of fish pass (L/s) | Flow downstream of sluice gate (L/s) | Compliant? |
|-------------------|--------------------------|-----------------|------------------------------------|--------------------------------------|------------|
| Minimum required: | No minimum (440 optimum) | 500             | 80                                 | 180                                  |            |
| 19 December 2016  | 422                      | 520             | 500                                | -                                    | Y          |
| 28 February 2017  | 418                      | 570             | 201                                | 338                                  | Y          |
| 23 May 2017       | 445                      | 620             | 165                                | 199                                  | Y          |
| 22 June 2016      | -                        | 618             | 267                                | 486                                  | Y          |

In addition to undertaking gaugings, the water level in the lake was recorded, and compared with the minimum lake level. The recorded lake level was in compliance with consented limits on each occasion.

On three occasions, the flow in the Waiaua River was also gauged upstream of the scheme. When this is done in conjunction with residual flow gaugings, it allows an estimate to be made of the abstraction rate at that time, being the flow of water into Lake Opunake, by subtracting the flow downstream of the canal sluice gate from that recorded upstream of the scheme. The flow recorded upstream in December was 2.772 m<sup>3</sup>/s, resulting in an estimated take rate of 2.272 m<sup>3</sup>/s, although no gauging was performed downstream of the canal sluice gate. In February, the upstream flow was gauged at 1.506 m<sup>3</sup>/s, resulting in an estimated take at this time of 1.168 m<sup>3</sup>/s. The June visit gauged the upstream flow at 1.603 m<sup>3</sup>/s, with an estimated

take rate of 1.25 m<sup>3</sup>/s. These estimated rates of abstraction were all in compliance with the maximum rate of take condition of consent 1795-4, which is set at 3.9 m<sup>3</sup>/s.

## 2.1.3 Provision of consent holder data

### 2.1.3.1 Generation levels

Water permit 1795-4 allows the Company to abstract 3,900 L/s of water from the Waiau River. Special condition 8 requires the Company to record generation figures (as a measure of abstraction rates) at a minimum of 15 minute intervals and to make records available to the Council. These records were provided to the Council for the 2016-2017 monitoring period (Figure 1). This data was provided at the completion of the monitoring period, and it is expected that in the 2017-2018 monitoring period that they are provided in a more timely fashion, as this data is to be provided every three months.

It is clear that the site experienced a reduced number of outages in the reported period (evident as gaps in the data), with the largest occurring in December 2016, associated with a mechanical issue. The majority of the remaining outages were related to river intake gates being closed, due to the Waiau River being in flood. There are occasionally issues with the programmed logic controller (PLC). The PLC is used to control the scheme, opening and closing gates as circumstances require. This allows the scheme to run automatically. It appears that issues with the PLC reduced significantly during the 2016-2017 period.

Figure 2 shows the typical generation cycle over two distinct periods. This indicates that there is some variation in how often generation occurs in a day, with generation ceasing to allow the lake to refill. This variation will in most cases be directly related to the amount of flow in the river, influencing the rate at which the lake refills. This is well illustrated by Figure 2, which shows generation during a dry period (March 2017) and a wet period (October 2016). Figure 2 also shows the influence of tide on the generation figures, as in October, the tide caused a subtle reduction in generation approximately every 12 hours.

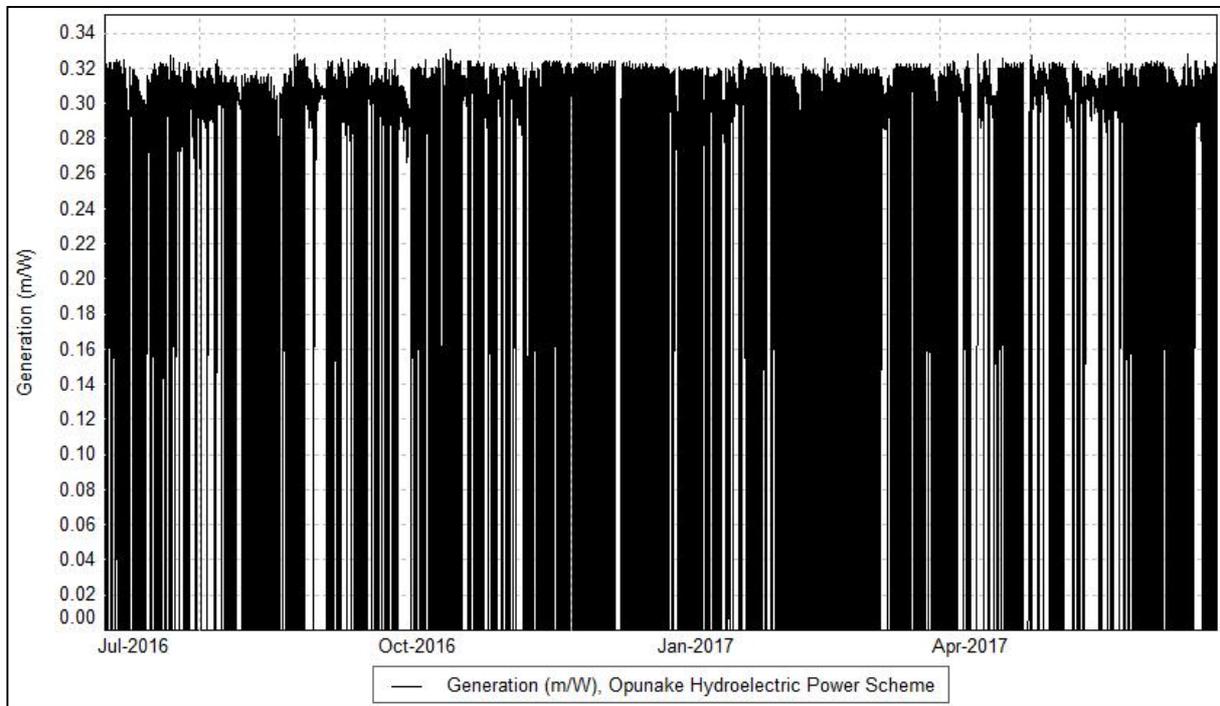


Figure 1 Generation figures from the Opunake HEP scheme from 1 July 2016 to 1 July 2017

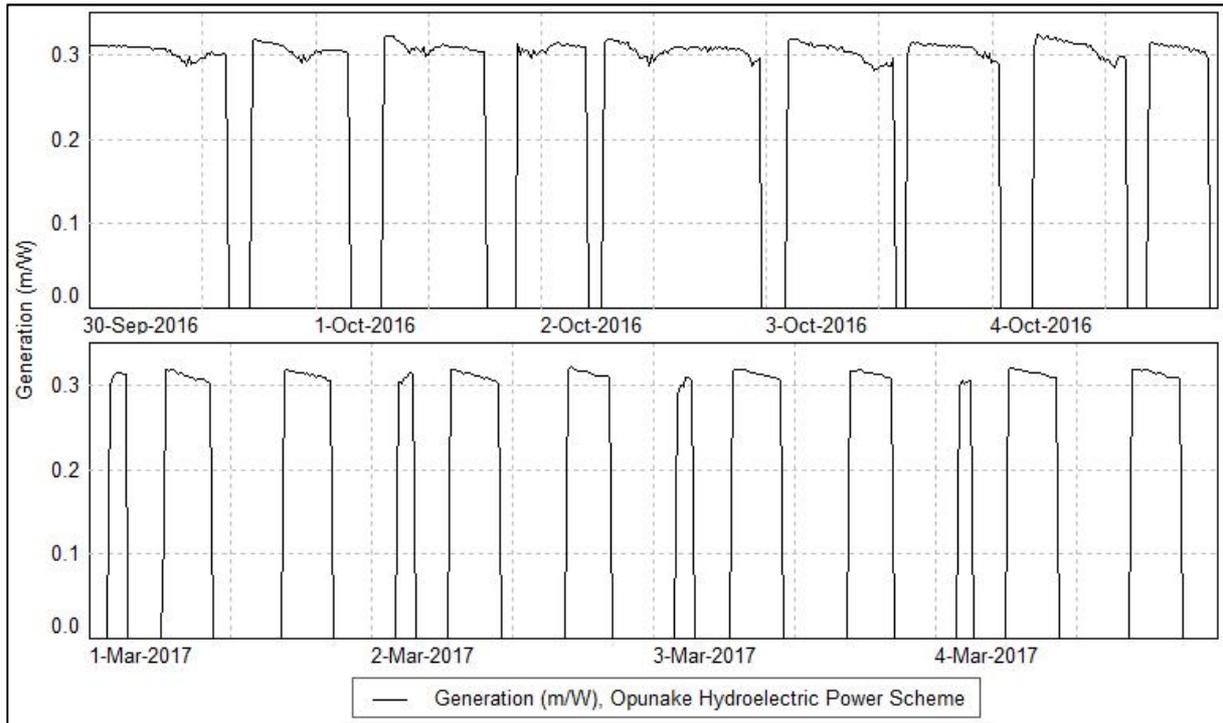


Figure 2 Typical generation pattern over two separate periods during the 2016-2017 period

### 2.1.3.2 Lake levels

Special condition 1 of consent 1796-3 outlines the requirements for water level management in the lake. According to the consent, the water level within the lake is not to be lowered more than 480 mm below the lake spillway crest (lake water level 500 mm), although with the approval of the Council, it may be lowered further for maintenance purposes.

The spillway crest was altered by a previous consent holder, by adding boards to raise the lake level. The altered crest is equivalent in height to 0.98 m on the lake staff gauge. This work was carried out many years ago however, and the Council is of the understanding that the consent conditions relate to the top of the boards as being the "spillway crest". This has been determined from the consent files, and monitoring data from previous consent holders.

A recording device for monitoring lake levels has been installed since November 2001. Records of lake levels have been provided for 2016-2017 period as required by special condition 3 of consent 1796-3.

The 2016-2017 lake level data is provided in Figure 3, and shows that there were no extended periods where lake level data was not recorded. This represents an improvement on that reported in the previous monitoring period, with much of this improvement coincident with a change in ownership. There were some spikes recorded in the data, but these are disregarded as erroneous data.

In terms of breaches of the minimum lake level, the recorded level dropped below this minimum on twelve occasions, over twelve calendar days. This is similar to that recorded in the previous monitoring period, but it should be noted that the majority of occasions (nine) where a low lake level was recorded, it was due to recorder error. These are clearly evident in the recorded data as they present as a negative spike, suggesting the lake level dropped quicker than is physically possible. One occasion was due to the recorder undergoing maintenance, while only two were due to the lake actually dropping below the minimum level.

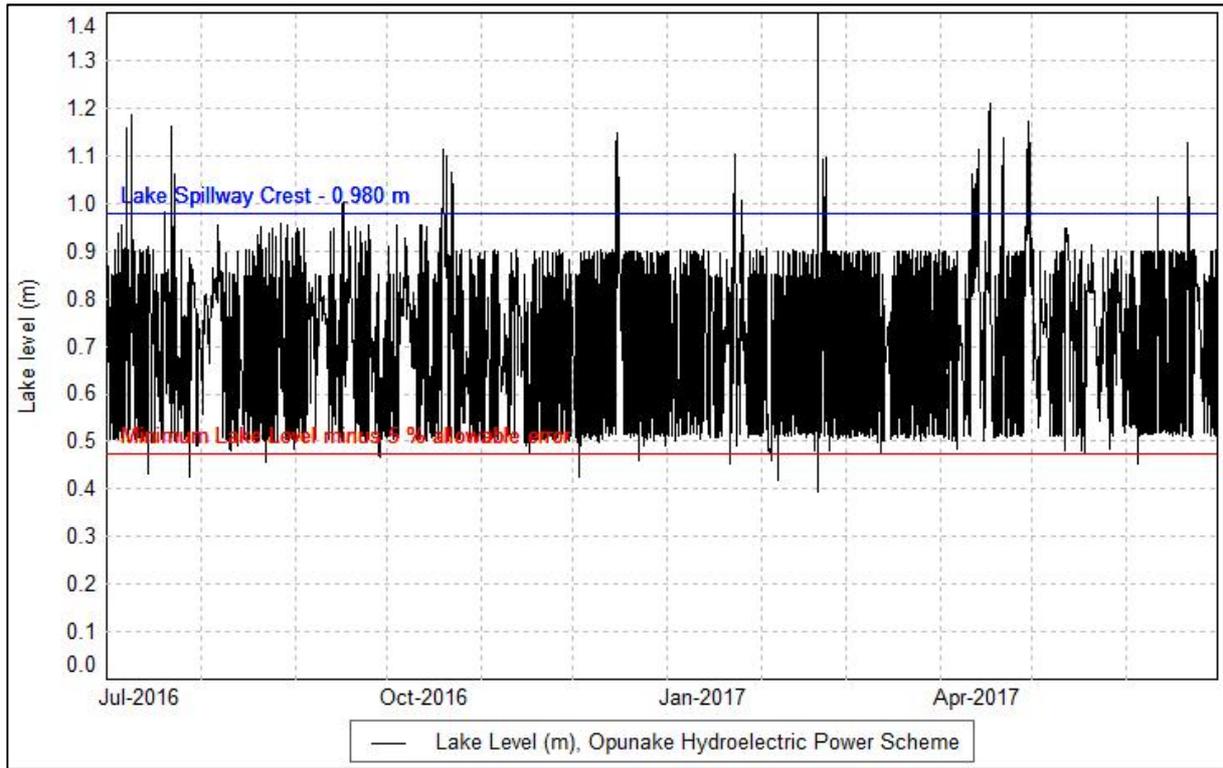


Figure 3 Water levels in Lake Opunake, 2016-2017 period

The first of these occasions was on 28 September 2016. On this day, the consent holder deliberately lowered the lake to facilitate maintenance of the canal wall, to reduce the loss of water from the lake at times when the canal is dewatered. The lake was below 0.5m for 7.5 hours. Although resource consent 1796 allows the lake to be lowered below 0.5m for maintenance, written approval must first be provided by the Council. This was not done in this case, and therefore this is non-compliant with the consent. As approval would have almost certainly been granted for these works, it is considered as administrative non-compliance only.

When there is a flood in the Waiaua River, the intake is closed to minimise sand inundation of the scheme. As a result, the canal is emptied, and even though there is a gate that stops most of the lake water flowing back into the canal, there is inevitably some leakage at this gate, and also at the lake spillway. This leakage draws the lake down if the river remains in flood for some time. This is what caused the lake level to drop below the limit on 4 February 2017. This is illustrated in Figure 4, where a flood occurred on 3 February 2017, resulting in the intake gate closing and generation ceasing. The lake level reduced over time, dropping below the minimum lake level approximately 25 hours after generation ceased.

The previous report concluded that water was being lost from the lake at times when the intake gates were shut, and that this water was being lost at an increasing rate. In July 2013 it took over two days for the lake level to drop below 0.5 m, while in September 2014 it took only ten hours, and in November 2015, six hours. The cause of this was identified, and the leak was repaired in September 2016. However, this repair has partially failed, resulting in some water being lost from the lake, but not at as high a rate as previously.

It is noted that the Company does not draw the lake down to 0.5 m during each generation, and this ensures there is some reserve capacity, should the Waiaua River flood just as generation ceases, reducing the potential for a low lake level to eventuate. No complaints were received regarding the low lake levels during the 2015-2016 monitoring period.

An improvement in the data recorded was noted in the 2003-2004 monitoring period, with a steady improvement occurring over time (2004-2015), and the records reported herein continue to indicate an improvement in the management of the lake level data, being more complete than those provided in

previous periods. As with the generation data, there were few occasions of missing or erroneous data. It is important that data is recorded even if no generation is occurring, and it should be noted that large gaps in the data could be deemed non-compliant. Furthermore, the 5% error applied to the data is a relatively generous allowance, and not consistent with the National Environmental Standard for Water Level Recording (NEMS, 2013). It is likely that this allowance will be reviewed when the consents are processed for renewal.

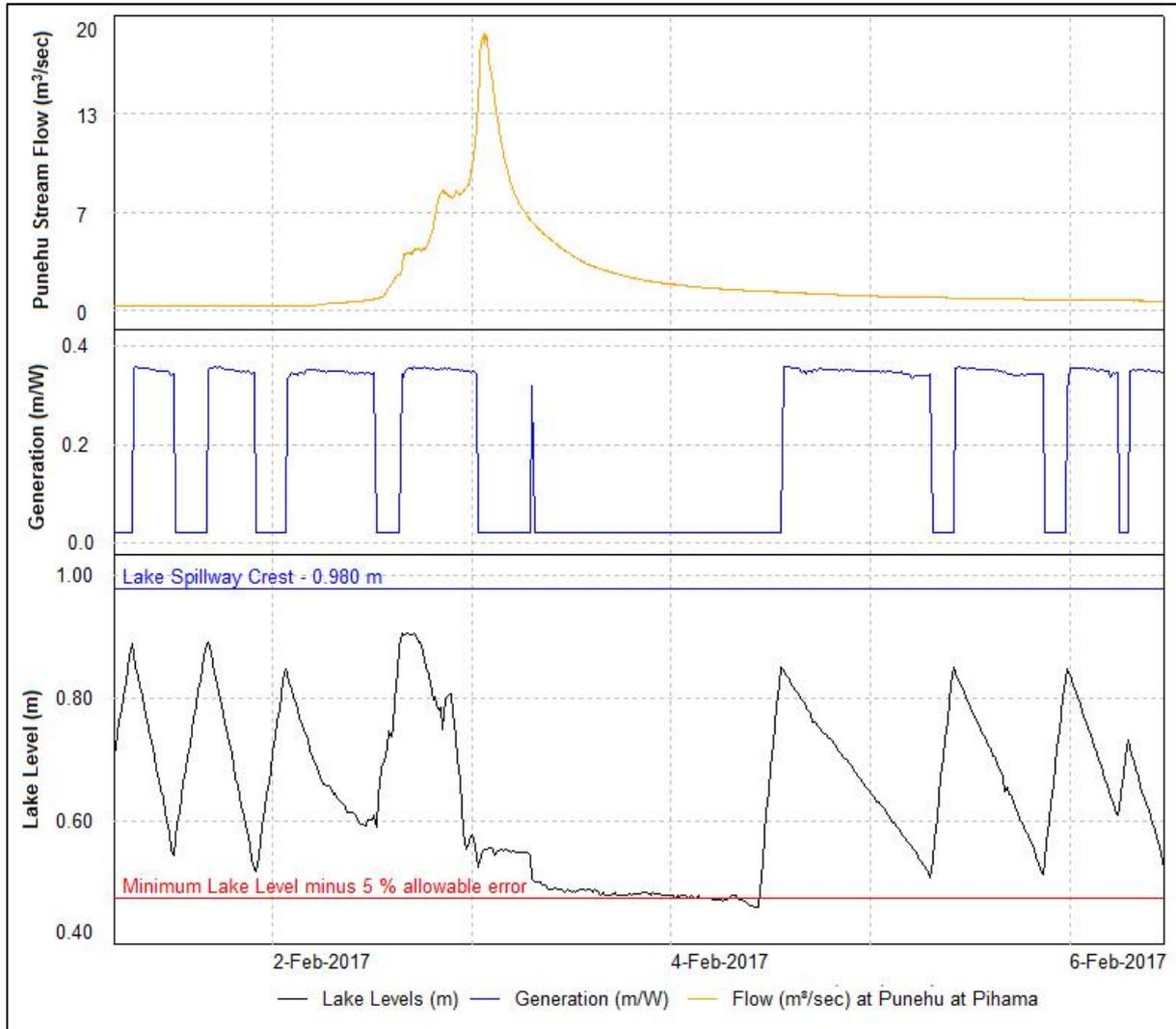


Figure 4 Lake levels, generation figures, fish pass water level and Punehu Stream flow between 1 February 2017 and 6 February 2017

### 2.1.3.3 Fish pass water levels

The entire system is controlled remotely, with the set up allowing the water level in the fish pass to be managed effectively and water levels adjusted remotely. Fish pass water level data has been supplied to the Council since December 2004. The data for the 2016-2017 period is displayed in Figure 5. As with the generation and lake level data, there are few times where there is no data available. Management of the fish pass water levels has improved markedly since the previous monitoring period, with flows often being near to the optimum water level (440 mm). This optimum level has been gauged to reflect the 80 L/s residual flow which is required to flow down the fish pass. The larger variations in fish pass water levels observed in Figure 5 relate either to an incorrect reading or to the routine flushing of the canal and fish pass. The data indicates that for 89% of the time, water levels in the fish pass ranged from 390 mm to 490 mm, a significant

improvement from the 30% noted in the previous year. The improvement is such that water levels in the fish pass were between 430 mm and 450mm for 66% of the time.

At times when the intake gates are closed, the fish pass and canal are usually dry. However over the last half of the monitoring year, the consent holder would open one of the intake gates slightly, in an effort to reduce the rate of water lost from the lake. This ensured some flow was provided down the fish pass also. The lack of flow down the fish pass during a flood results in a lack of fish passage into the canal. Although this is technically not compliant with the wording of the consent, this is not treated as non-compliance. This is because sand inundation, which frequently accompanies a flood in the Waiau River, can severely impact on the operation of the scheme, by jamming equipment such as gates and hydraulic ramps. It is therefore considered unreasonable to require the gates to remain open during floods.

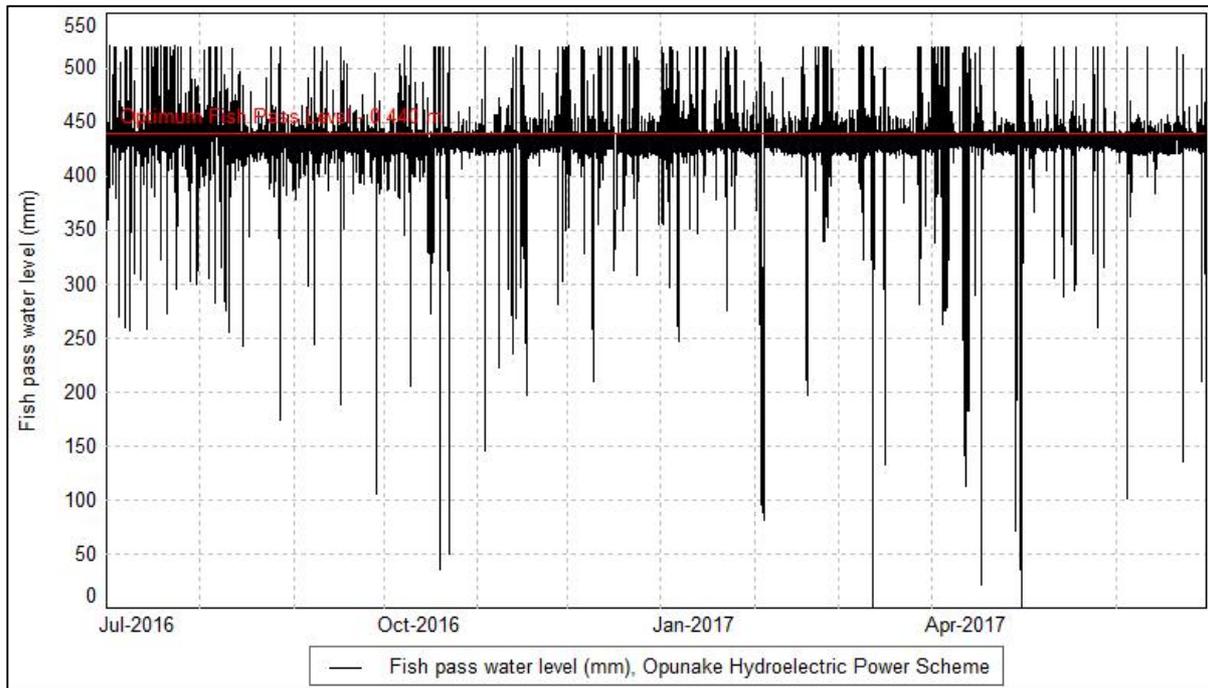


Figure 5 Fish pass water level data, July 2016 – June 2017

#### 2.1.3.4 Cross-checking of data

Along with needing to provide a complete data record, it is also important that the data is accurate. This is not only to ensure that we can properly assess consent compliance, but also so that the consent holder can operate the scheme as efficiently as possible. The recorded data was checked against the field readings, to allow an assessment of how accurate this data really is. This comparison is presented in Table 2.

The data shows that all the fish pass readings were taken when the water level was at or near optimum flows, and none were above the maximum recordable height of 0.52 m. The readings indicate that only on one occasion did the accuracy meet the NEMS (2013) standards of 3 mm accuracy, while five readings differed to the recorded reading by 10 mm or more. For the purpose that water level was being recorded, it appears that the data is being recorded at an acceptable accuracy.

The lake level data was also assessed for accuracy, and all readings taken were within the range of the level recorder. The readings taken differed from that recorded by between 1 and 122 mm. Some of this variation may be due to the actual time the field reading was taken not being recorded accurately, coupled with a variation in lake level at the time. Lake Opunake is rarely held at a stable level, as the lake is used as storage, meaning when the scheme is operating normally, the lake level is either rising or falling. However, an error of 122 mm is excessive, and the consent holder needs to take heed of this, with it expected that the lake level is recorded more accurately in future. Of concern is that the inaccurate recorder resulted in the lake

level being observed at less than the minimum level, and that generation was occurring. Although the consent holder changed the settings to ensure generation ceased at a higher recorded lake level, this did not resolve the accuracy issue.

Ideally, the maintenance and accuracy of the recorders will be consistent with the National Environmental Standards for water level recording (NEMS, 2013). At the very least, the fish pass and lake level recorders should be maintained to an accuracy of 5%. This 5% should be applied to the range of the recorder, as opposed to applying a 5% error to the actual figure recorded.

On a positive note, the extended periods of missing or erroneous data noted in the 2015-2016 period were not repeated in the current monitoring period. This represents an improvement in performance.

**Table 2** Field readings of fish pass water levels and lake level compared with recorded levels, 2016-2017

| Date       | Fish pass level (m) |         |      |          |             | Lake Level (m) |         |      |          |             |
|------------|---------------------|---------|------|----------|-------------|----------------|---------|------|----------|-------------|
|            | Time                | Reading | Time | Recorded | Difference* | Time           | Reading | Time | Recorded | Difference* |
| 10/10/2016 | 1100                | 0.440   | 1100 | 0.425    | 0.010       | 1215           | 0.730   | 1215 | 0.651    | 0.074       |
| 02/12/2016 | 0805                | 0.435   | 800  | 0.433    | 0.005       | 0824           | 0.490   | 815  | 0.561    | 0.066       |
| 19/12/2016 | 1035                | 0.422   | 1030 | 0.429    | 0.005       | 1005           | 0.520   | 1000 | 0.609    | 0.089       |
| 09/01/2016 | 1220                | 0.420   | 1215 | 0.443    | 0.018       | 1235           | 0.710   | 1230 | 0.583    | 0.122       |
| 28/02/2017 | 1112                | 0.418   | 1115 | 0.437    | 0.017       | 1001           | 0.570   | 1000 | 0.527    | 0.041       |
| 05/05/2017 | 0855                | 0.435   | 900  | 0.429    | 0.003       | 0905           | 0.820   | 900  | 0.824    | 0.001       |
| 23/05/2017 | 1105                | 0.445   | 1100 | 0.427    | 0.016       | 1001           | 0.620   | 1000 | 0.643    | 0.013       |
| 31/05/2017 | 1318                | 0.440   | 1315 | 0.425    | 0.010       | 1330           | 0.485   | 1330 | 0.535    | 0.045       |
| 22/06/2017 | -                   | -       | -    | -        | -           | 0941           | 0.618   | 945  | 0.627    | 0.004       |
| 22/06/2017 | -                   | -       | -    | -        | -           | 1249           | 0.632   | 1245 | 0.649    | 0.012       |

\* Taking into account the margin of error recorded at the time of taking the reading

### 2.1.4 Stakeholders meeting

As a requirement of special condition 10 of consent 1795-4, an annual meeting is to be held between the Company, officers of the Council, and interested submitters, to discuss any matters relating to the exercise of this consent, particularly the monitoring programme design, implementation and interpretation, in order to facilitate on going consultation.

Over time, since this consent has been granted, the need for this meeting has reduced, as each issue was resolved. There were no pressing issues raised during the 2016-2017 period, although the concerns raised previously by the public relating to the sand inundation of the outlet posing a risk to swimmers and sand inundation of Lake Opunake restricting recreational use remain valid. Hence no stakeholder meeting was held during the 2016-2017 period.

A representative of Opunake Power Limited did meet with the Council in August 2017, to discuss the upcoming expiry of consents and the renewal process. During the meeting it was suggested that it would be prudent to hold a stakeholders meeting, as a starting point for the consent renewals.

### 2.1.5 Fish surveys

No fish survey was undertaken in the 2016-2017 period. The last survey, undertaken on 26 February 2014, supported the conclusion that the weir and intake tunnels constitute a barrier to fish passage, and as such, the Company are non-compliant with resource consents 1795-4 and 5581-1.

In a previous monitoring report (TRC, 2014), it was determined that the Company needed to investigate options for remediating fish passage at this location, and it was recommended their investigations include consultation with the Department of Conservation and Fish and Game NZ.

Opunake Power Limited had begun investigating the development of a trap and transfer system, which may include assistance from the local school. It was originally anticipated that this system would be in place by August 2016, although this was delayed due to the sale of the scheme. As of September 2017, this system is in the early trial stages.

## 2.2 Investigations, interventions, and incidents

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the Company. During the year matters may arise which require additional activity by the Council, for example provision of advice and information, or investigation of potential or actual courses of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

The Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The incident register includes events where the Company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

Complaints may be alleged to be associated with a particular site. If there is potentially an issue of legal liability, the Council must be able to prove by investigation that the identified company is indeed the source of the incident (or that the allegation cannot be proven).

In the 2016-2017 period, the Council was required to record an incident in relation to the Company's compliance with resource consent conditions.

On 2 February 2017, the Council received a complaint about sediment laden water entering Lake Opunake. The subsequent inspection confirmed that sediment laden water was entering Lake Opunake, and it was determined that the Company was operating in contravention of permitted activity rule 21 of the Regional Freshwater Plan for Taranaki. As the Company does not hold a resource consent specifically for the discharge of water into Lake Opunake, they need to comply with rule 21, which provides for the discharge of water to surface water. This is a permitted activity, provided (amongst other things) that the discharge does not result in any conspicuous change in the colour or visual clarity. This standard was not being met at the time of inspection, and as a result the Company was issued with an abatement notice, requiring them to comply with rule 21. Subsequent investigation by the Company found that equipment failure had resulted in the gates not closing as required, with this resolved quickly upon the Company being notified.

The Company was complying with this abatement notice during all subsequent inspections completed in the 2016-2017 monitoring period. It is recommended that when the Company applies to renew the current resource consents for the scheme, that they also apply for a resource consent to discharge water into Lake Opunake. This will formalise the activity and may allow them to discharge discoloured water into Lake Opunake in the future.

In the previous (2015-2016) monitoring period, the previous owner (Opunake Hydro Limited) received an abatement notice, as they were very slow in providing the data, and the data contained numerous gaps, where data was not recorded, was not recorded at the required frequency, or was recorded inaccurately. The performance of the current consent holder is much better than that demonstrated by the previous owner, but there was still a delay in providing data. The consents require that the data is provided at three monthly intervals. It is expected that performance in this area will improve in the 2017-2018 period.

## 3 Discussion

### 3.1 Discussion of site performance

During the monitoring period under review, the Company has continued maintenance of the system in the face of significant problems caused by the atypical levels of erosion on the mountain within the Waiaua Catchment. Furthermore, localised storms have also impacted on the scheme. The scheme was again impacted by significant sediment impacts, primarily around the weir, where gate controls were compromised at times.

Special condition 2 of consent 1795-4 requires that the Company maintain effective capability for the upstream and downstream passage of native and introduced fish at the diversion weir for the Opunake scheme. During all inspections of the fish pass conducted during the 2016-2017 period, it was noted that the fish pass had appropriate flows. The data submitted indicated that flows were close to the optimum for a fair proportion of the monitoring period. It is accepted that the fish pass will not provide optimum fish passage all of the time, as when the system is flushed, shut down in response to a flood or experiencing a high lake level, the fish pass will have an inappropriate amount of flow. The goal is to provide an appropriate flow for the majority of the time. For the 2016-2017 period, it is considered that this requirement has been complied with, and that there has been a significant improvement in this area from the previous year, coincident with a change in ownership.

This discussion primarily relates to the provision of fish passage into the canal, as it has already been determined that there is little fish passage possible through the intake tunnels to the river upstream of the weir. The intake tunnels are considered to constitute a barrier to fish passage because although fish have been seen within the canal on occasions and in the fish pass during maintenance periods, fish surveys in the Waiaua River have not yet demonstrated that inanga are able to pass the weir (fish pass and intake tunnels). Other weak swimming species such as smelt and torrentfish have also been detected upstream of the weir only sporadically and in a much lower abundance compared to downstream, suggesting the weir and associated structures remain a barrier. Inanga and smelt have been observed on previous occasions in the canal however, suggesting that the fish pass up to the canal provides adequate passage when operating well. This was confirmed in the 2013-2014 monitoring period, with two sites surveyed in the Waiaua River and one in the nearby Mangahume Stream concluding that the Waiaua River upstream of the weir is relatively depauperate. The Company is investigating ways to improve fish passage at the scheme, focusing initially on a trap and transfer system.

Special condition 4 of consent 1795-4 requires that 80 L/s of residual flow is provided downstream of the fish pass, and 180 L/s be provided downstream of the canal sluice gate. These flows were found to be compliant during the four hydrological inspections undertaken between 1 July 2016 and 30 June 2017. In addition, a rough visual estimate made during the compliance monitoring inspections also indicated compliance. The Company understands the importance of providing sufficient residual flow, and has committed to maintaining compliance. Compliance in this area saw strong improvement in the 2013-2014 period when the scheme was under different ownership, and this has continued right through into the currently reported period.

The Company is required to record generation figures, lake level, sand trap discharges, and fish pass water levels, and provide these records to the Council. All of these records, including the sand trap discharges, have been taken, and provided to the Council for the monitoring period in question. This data was provided with some delay, indicating an area where improvement in performance is required.

Resource consent 1797-3 relates to the discharge of sand and silt deposits from a sand trap within the diversion canal, back to the Waiaua River. Special condition 2 of this consent requires that a record of sand trap discharges be kept, and be provided at three monthly intervals for review. Automation work in the

2003-2004 year meant that sluicing was done automatically, four times per week for 10 minutes (at night). However, this equipment has since been removed, and now sluicing can only be undertaken by manually opening the gate. These manual sluices have been logged by the Company and were forwarded to the Council as a part of the 'chat log'.

Special condition 1 of resource consent 1796-3 previously specified minimum water levels within Lake Opunake that the Company must maintain at different times of the day (i.e. the operating ranges for the lake). History showed that the previous consent holder struggled to comply with this consent condition. A change to consent conditions was granted on 16 October 2006, which specified a minimum lake level that was to be maintained at all times. Compliance with this condition during the reported period has been good, in that at no time did generation draw the lake down to at or below this limit. However, on one occasion the lake was drawn down deliberately, to facilitate maintenance works. This was done without gaining the written approval from the Council beforehand, and as such this was not compliant with the consent. However, as the works were to avoid the loss of water from the lake at times of shutdown, this approval would almost certainly have been provided, and as such this is considered as administrative non-compliance only. The maintenance works were undertaken to prevent water escaping around the lake stop gate, at times when the canal has been dewatered, usually during a flood. Although these works were originally effective, some scour has occurred, and water is again able to bypass the lake stop gate. In order to counteract this, the Company has been keeping some water in the canal, to reduce the losses from the lake.

In terms of administrative performance, the recording of data has already been discussed, but has improved in the reported period. Furthermore, there was good contact between the Company and the Council, primarily around providing fish passage around the scheme. However, consent 1795-4 requires the annual provision of a revised operational procedure. No such document was received in the 2016-2017 period, or to date.

Overall, the scheme has operated well, and at all times the Company has been proactive and quick to respond to any queries from the Council. There is some improvement required regarding administrative performance, but this is a reflection of the recent change in ownership, as the new owner familiarises themselves with the numerous requirements.

## 3.2 Environmental effects of exercise of consents

The main environmental effects from the hydroelectric power scheme are associated with fish passage upstream of the weir in the Waiaua River and the maintenance of residual flows below the weir. Instream works such as gravel extraction, and maintenance of the lake may also produce adverse effects.

It is believed that the weir on the Waiaua River restricts the upstream migration of poor swimming native fish such as smelt and inanga, which are present downstream of the weir. The only migrant fish recorded upstream of the weir in any numbers are longfin eels and redfin bullies. Despite good management of the fish pass, and previous improvement works on providing passage through the tunnels, no inanga and few smelt have been recorded upstream of the weir. The fish ladder that was installed in the intake tunnel in the 2004-2005 period does not seem to have improved passage for any species. Fish passage works undertaken to date have had very limited success with achieving fish passage past the weir and intake tunnels, and as such, the Company needs to investigate options for remediating fish passage at this location. The Company is currently in the early stages of developing a trap and transfer system, with a prototype installed during the 2017-2018 period.

In terms of residual flow, the Company has frequently provided flows above what is required, and this will have gone some way in reducing the adverse effects of the reduced flows in the lower river. A fish survey undertaken in 2014 found large numbers of bullies, which is likely to be a result of the low flow in this reach,

as this family of fish prefer lower velocities. However three torrentfish were also recorded, and this species, as their name suggests, prefer swift velocities. This indicates that although the lower flow inevitably reduces the amount of habitat available, it has not necessarily resulted in a loss of species. That said, it does appear that the low flows may result in a reduced abundance of swift water species such as torrentfish.

Gravel extraction in the river has been undertaken in the past to maintain a clear intake, improving the flow of water into the canal. Inspections undertaken in previously reported periods in relation to gravel extraction works have noted only slight discolouration of the river downstream of the works, with the Company operating in a manner that minimises effects during these maintenance works. The Company often diverts the water away from work areas where this is possible and no adverse effects have been noted downstream of instream works when they've been undertaken. No such works were undertaken during the 2016-2017 monitoring period. At times vegetation clearance is undertaken around Lake Opunake, although no such works were undertaken in the reported period. The Company is required to notify the Council prior to undertaking such works, so monitoring can be performed if appropriate.

Although lake levels have been outside consent limits on a number of occasions in the reporting period, these instances were not deemed significant as they were beyond the control of the Company, and no complaints were received by Council about these low lake levels. This is with the exception of one occasion, where lake levels were reduced to facilitate maintenance.

The hydraulic ram in the fish pass operated well, improving from previous years, with optimum flows noted over the majority of the monitoring period.

The issue of sedimentation within the lake has been the main topic of discussion with members of the local community who are concerned at the loss of recreational value in the lake. It is clear that the sand delta is continuing to grow, and the Company has been investigating options to either reduce this sand ingress, or to flush this sand out of the lake. This is taking some time, and as yet no solution has been implemented. It is important that this be resolved, as the recreational value of the lake is an important form of mitigation for the scheme's effects on the local community, including the reduced flows in the lower river. It is worth noting that the Company received an abatement notice during the reported period, as a complaint initiated inspection found that sediment laden water was being discharged to Lake Opunake. Not only was this not compliant with permitted activity rule 21 of the Regional Freshwater Plan, but it is also not best practice with regards to reducing sand inundation of the lake.

### 3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Tables 3 to 10.

During the year, the Company demonstrated a 'good' level of environmental and administrative performance with the resource consents as defined in Section 1.1.4.. However, it should be noted that the Company breached a rule in the Regional Freshwater Plan for Taranaki, resulting in the issuance of an abatement notice. During the year under review, management of residual flows was very good, with flows often exceeding the minimum required by some margin. However, the fact that fish passage remains an issue is the principle reason that certain consents only attained a 'good' rating. There were a small number of administrative oversights by the Company, primarily around the delayed provision of data, and not gaining Council approval prior to lowering the lake level for maintenance. Although there is a need to improve accuracy of the recorded data, the data record was largely intact, with very few gaps. This represents a strong improvement, coincident with the change in owner.

Table 3 Summary of performance for Consent 1795-4

| <b>Purpose: To take water from the Waiaua River in association with the Opunake hydroelectric power scheme</b> |  |                             |
|--|--|-----------------------------|
| <b>Condition requirement</b>   | <b>Means of monitoring during period under review</b>              | <b>Compliance achieved?</b> |
| 1. Limits of abstraction rates   | Inspections, review of data  | Yes                         |
| 2. Exercise of consent in accordance with application  | Inspections  | Yes                         |
| 3. Fish passage  | Inspections, previous fish surveys                                 | No                          |
| 4. Residual flows  | Inspections/Hydrological gaugings                                  | Yes                         |
| 5. Review condition – residual flow  | Actioned by TRC in 2009 – withdrawn 25 May 2015                    | N/A                         |
| 6. Notification condition  | Company to notify council  | Yes                         |
| 7. Sluice gate to be closed at certain flows   | Inspections  | Yes                         |
| 8. Recording of generation and fishpass levels   | Records provided to Council 3 monthly, review of records           | Yes (delayed)               |
| 9. Consent holder to review Operational Procedure by 30 June   | Not provided   | No                          |
| 10. Meeting with stakeholders annually   | Meeting held   | No                          |
| 11. Consent to lapse if not exercised in five years  | Consent was exercised  | N/A                         |
| 12. Review Condition   | No review sought by either Council or Company under this condition | N/A                         |
| Overall assessment of consent compliance and environmental performance in respect of this consent              |  | <b>Good</b>                 |
| Overall assessment of administrative performance in respect of this consent                                    |  | <b>Good</b>                 |

N/A = not applicable

Table 4 Summary of performance for Consent 1796-3

| <b>Purpose: To take and use water from Lake Opunake for hydroelectric power generation</b> |   |                             |
|--|---|-----------------------------|
| <b>Condition requirement</b>   | <b>Means of monitoring during period under review</b>   | <b>Compliance achieved?</b> |
| 1. Defines lake levels within which the consent holder must operate                        | Inspections, records provided to Council 3 monthly  | No                          |
| 2. Must maintain a constant flow down fish pass  | Inspections, records provided to Council – Note, the Company is not required to provide flow when the scheme is shut down in response to flooding or for maintenance. | Yes                         |

| <b>Purpose: To take and use water from Lake Opunake for hydroelectric power generation</b>        |   |                             |
|---|---|-----------------------------|
| <b>Condition requirement</b>  | <b>Means of monitoring during period under review</b> | <b>Compliance achieved?</b> |
| 3. Monitor lake levels and forward records to Council 3 monthly                                   | Records provided to Council                           | Yes                         |
| 4. Maintain a staff gauge at Lake Opunake   | Inspection  | Yes                         |
| 5. Review of consent  | No review sought by Council                           | N/A                         |
| Overall assessment of consent compliance and environmental performance in respect of this consent |   | <b>Good</b>                 |
| Overall assessment of administrative performance in respect of this consent                       |   | <b>Good</b>                 |

N/A = not applicable

Table 5 Summary of performance for Consent 1797-3

| <b>Purpose: To discharge sand and silt deposits from a diversion canal sand trap via a spillway to the Waiaua River</b> |   |                             |
|---|---|-----------------------------|
| <b>Condition requirement</b>  | <b>Means of monitoring during period under review</b>                                   | <b>Compliance achieved?</b> |
| 1. Supply sediment management protocol within 3 months of granting consent  | Received by Council in September 2001   | Yes                         |
| 2. Record sand trap discharges and supply to Council  | Automated discharges 4 times/week; Manual discharges logged but not supplied to Council | Yes                         |
| 3. Adopt best practicable option  | Inspections   | Yes                         |
| 4. Option for change or cancellation of conditions  | No review sought by either Council or Company   | N/A                         |
| 5. Review of consent  | No review sought by Council   | N/A                         |
| Overall assessment of consent compliance and environmental performance in respect of this consent                       |   | <b>High</b>                 |
| Overall assessment of administrative performance in respect of this consent   |   | <b>Good</b>                 |

N/A = not applicable

Table 6 Summary of performance for Consent 4563-2

| <b>Purpose: To erect, place and maintain an outfall structure in the coastal marine area on the Opunake Beach foreshore</b> |   |                             |
|---|---|-----------------------------|
| <b>Condition requirement</b>  | <b>Means of monitoring during period under review</b> | <b>Compliance achieved?</b> |
| 1. Structure shall be maintained in accordance with application   | Inspections   | Yes                         |

| <b>Purpose: To erect, place and maintain an outfall structure in the coastal marine area on the Opunake Beach foreshore</b> |   |                             |
|---|---|-----------------------------|
| <b>Condition requirement</b>  | <b>Means of monitoring during period under review</b> | <b>Compliance achieved?</b> |
| 2. Notify Council prior to and following maintenance works  | No maintenance work undertaken                        | N/A                         |
| 3. Adopt best practicable option  | No maintenance work undertaken                        | N/A                         |
| 4. Disturbance minimised during works   | No maintenance work undertaken                        | N/A                         |
| 5. Structure shall be removed if no longer required   | Structure still in use                                | N/A                         |
| 6. Option for change or cancellation of conditions  | No review sought by either Council or Company         | N/A                         |
| 7. Review of consent  | No review sought by Council                           | N/A                         |
| Overall assessment of consent compliance and environmental performance in respect of this consent                           |   | <b>High</b>                 |
| Overall assessment of administrative performance in respect of this consent   |   | <b>High</b>                 |

N/A = not applicable

Table 7 Summary of performance for Consent 4658-1

| <b>Purpose: To disturb the bed of Lake Opunake by removing reeds and flaxes from the edge of the lake</b> |   |                             |
|---|---|-----------------------------|
| <b>Condition requirement</b>  | <b>Means of monitoring during period under review</b> | <b>Compliance achieved?</b> |
| 1. Consent holder to adopt best practical option  | Inspections   | N/A                         |
| 2. Works to be undertaken in accordance with application  | Inspections   | N/A                         |
| 3. Notify Council prior to works  | No works undertaken                                   | N/A                         |
| 4. Defines time of year works can be undertaken in  | No works undertaken                                   | N/A                         |
| 5. Minimise discharge or placement of silt/organics/debris into lake                                      | Inspections   | N/A                         |
| 6. Remove all plant trimmings during work   | Inspections   | N/A                         |
| 7. Place removed material so it does not enter lake   | Inspections   | N/A                         |
| 8. Consent to lapse if not exercised in five years  | Consent was exercised                                 | N/A                         |
| 9. Review Condition   | No review sought by Council                           | N/A                         |

| <b>Purpose: To disturb the bed of Lake Opunake by removing reeds and flaxes from the edge of the lake</b> |   |                             |
|---|---|-----------------------------|
| <b>Condition requirement</b>  | <b>Means of monitoring during period under review</b> | <b>Compliance achieved?</b> |
| Overall assessment of consent compliance and environmental performance in respect of this consent         |   | <b>N/A</b>                  |
| Overall assessment of administrative performance in respect of this consent                               |   | <b>N/A</b>                  |

N/A = not applicable (consent not exercised in 2016-2017)

Table 8 Summary of performance for Consent 4744-2

| <b>Purpose: To discharge water from hydroelectric power generation through two marine outfall pipes into the Tasman Sea</b> |   |                             |
|---|---|-----------------------------|
| <b>Condition requirement</b>  | <b>Means of monitoring during period under review</b> | <b>Compliance achieved?</b> |
| 1. Discharge rate limit   | Review of data  | Yes                         |
| 2. Discharge of contaminated water shall not occur  | Inspections   | Yes                         |
| 3. Installation of warning signs  | Inspections   | Yes                         |
| Overall assessment of consent compliance and environmental performance in respect of this consent                           |   | <b>High</b>                 |
| Overall assessment of administrative performance in respect of this consent   |   | <b>High</b>                 |

N/A = not applicable

Table 9 Summary of performance for Consent 5581-1

| <b>Purpose: To dam the Waiaua River in association with the Opunake hydroelectric power scheme</b> |   |                             |
|--|---|-----------------------------|
| <b>Condition requirement</b>   | <b>Means of monitoring during period under review</b> | <b>Compliance achieved?</b> |
| 1. Structure shall be maintained in accordance with application                                    | Inspections   | Yes                         |
| 2. Maintain and operate a safe dam   | Inspections   | Yes                         |
| 3. Maintain a fish pass  | Inspections, fish surveys                             | No                          |
| 4. Notify Council prior to and following maintenance works which involve disturbance of the bed    | No works undertaken                                   | N/A                         |
| 5. Adopt best practicable option   | No works undertaken                                   | N/A                         |

| <b>Purpose: To dam the Waiaua River in association with the Opunake hydroelectric power scheme</b> |   |                             |
|--|---|-----------------------------|
| <b>Condition requirement</b>   | <b>Means of monitoring during period under review</b> | <b>Compliance achieved?</b> |
| 6. During works, bed disturbance shall be kept to a minimum and reinstated                         | No works undertaken                                   | N/A                         |
| 7. Defines times when disturbance of river bed may be undertaken                                   | Notification and inspections                          | Yes                         |
| 8. Removal of structure when no longer required  | Structure still in use                                | N/A                         |
| 9. Option for change or cancellation of conditions   | No review sought by either Council or Company         | N/A                         |
| 10. Review of consent  | No review sought by Council                           | N/A                         |
| Overall assessment of consent compliance and environmental performance in respect of this consent  |   | <b>Good</b>                 |
| Overall assessment of administrative performance in respect of this consent                        |   | <b>High</b>                 |

N/A Not applicable

Table 10 Summary of performance for Consent 5692-1

| <b>Purpose: To disturb the bed of the Waiaua River by removing sediment build-up upstream of a weir</b> |   |                             |
|---|---|-----------------------------|
| <b>Condition requirement</b>  | <b>Means of monitoring during period under review</b> | <b>Compliance achieved?</b> |
| 1. Notification prior to and following disturbance  | No works undertaken                                   | N/A                         |
| 2. Disturbance shall be undertaken generally in accordance with application documentation               | No works undertaken                                   | N/A                         |
| 3. Defines times when disturbance of river bed may be undertaken  | No works undertaken                                   | N/A                         |
| 4. Adopt best practicable option  | No works undertaken                                   | N/A                         |
| 5. During works, bed disturbance shall be kept to a minimum and reinstated                              | No works undertaken                                   | N/A                         |
| 6. Maintain a record of disturbance activity and forward to Council annually                            | No works undertaken                                   | No                          |
| 7. Placement of sediment downstream of weir only with Council permission                                | No works undertaken                                   | N/A                         |

| Purpose: <i>To disturb the bed of the Waiaua River by removing sediment build-up upstream of a weir</i> |  |                      |
|---|--|----------------------|
| Condition requirement   | Means of monitoring during period under review | Compliance achieved? |
| 8. Option for change or cancellation of conditions  | No review sought by either Council or Company  | N/A                  |
| 9. Review of consent  | No review sought by Council                    | N/A                  |
| Overall assessment of consent compliance and environmental performance in respect of this consent       |  | <b>High</b>          |
| Overall assessment of administrative performance in respect of this consent                             |  | <b>Good</b>          |

N/A = not applicable (consent not exercised in 2016-2017)

### 3.4 Recommendations from the 2015-2016 Annual Report

In the 2015-2016 Annual Report, it was recommended:

1. THAT monitoring of consented activities at the Opunake Power Station in the 2016-2017 year be amended from that undertaken in 2015-2016, by adding four inspections of the fish transfer system.
2. THAT Opunake Power Limited completes the works to improve fish passage by the end of the 2016-2017 monitoring period (30 June 2017).

Recommendation 1 was implemented by the Council in the 2016-2017 monitoring period. However, there have been some delays for the Company in implementing recommendation 2, with works continuing into the 2017-2018 period.

### 3.5 Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- reporting to the regional community.

The Council also takes into account the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki exercising resource consents.

It is proposed that for 2017-2018 that the hydrological monitoring component be altered slightly. The scheme has two residual flow requirements, being 80 L/sec downstream of the fish pass (but upstream of the canal sluice gate), and 180 L/sec downstream of the canal sluice gate. It was determined that if the first gauging, performed between the fish pass and canal sluice gate, records a flow in excess of 180 L/sec, then the second gauging downstream of the canal sluice gate is not necessary, as it has already been determined that there is adequate flow. It is therefore recommended that the second gauging be made provisional in the monitoring programme, and that for any occasion when a second gauging is required, it is invoiced for at the end of the monitoring period.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

### 3.6 Exercise of optional review of consent

Resource consent 4658 provides for an optional review of the consent in June 2018. Condition 9 allows the Council to review the consent, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Based on the results of monitoring in the year under review, and in previous years as set out in earlier annual compliance monitoring reports, it is considered that there are no grounds that require a review to be pursued or grounds to exercise the review option.

## 4 Recommendations

1. THAT in the first instance, monitoring of consented activities at Opunake Power Station in the 2017-2018 year be amended from that undertaken in 2016-2017, by making one of the two gaugings undertaken per hydrological inspection provisional.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
3. THAT the option for a review of resource consent 4658 in June 2018, as set out in condition 9 of the consent, not be exercised, on the grounds that the existing conditions are adequate to deal with the adverse effects of the activity.

## Glossary of common terms and abbreviations

The following abbreviations and terms may be used within this report:

|                   |   |
|-------------------|---|
| Biomonitoring     | Assessing the health of the environment using aquatic organisms.  |
| Bund              | A wall around a tank to contain its contents in the case of a leak.   |
| Cumec             | A volumetric measure of flow- 1 cubic metre per second (1 m <sup>3</sup> s <sup>-1</sup> ).   |
| DO                | Dissolved oxygen.   |
| Fresh             | Elevated flow in a stream, such as after heavy rainfall.  |
| Incident          | An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred. |
| Intervention      | Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.  |
| Investigation     | Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.   |
| Incident Register | The Incident Register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.  |
| L/s               | Litres per second.  |
| m <sup>2</sup>    | Square Metres.  |
| MCI               | Macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity of the taxa present to organic pollution in stony habitats.   |
| Mixing zone       | The zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.  |
| NTU               | Nephelometric Turbidity Unit, a measure of the turbidity of water.  |
| Physicochemical   | Measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment.   |
| Resource consent  | Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15).   |
| RMA               | <i>Resource Management Act 1991</i> and including all subsequent amendments.  |
| SS                | Suspended solids.   |
| SQMCI             | Semi quantitative macroinvertebrate community index.  |
| Temp              | Temperature, measured in °C (degrees Celsius).  |
| Turb              | Turbidity, expressed in NTU.  |
| UI                | Unauthorised Incident.  |

For further information on analytical methods, contact the Council's laboratory.

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- Taranaki Regional Council (2017): '*Opunake Power Limited Monitoring Programme Report 2015-2016*'. Technical report 2016-7.



# Appendix I

## Resource consents held by Opunake Power Limited

(For a copy of the signed resource consent  
please contact the TRC Consents department)



**Water Permit**  
**Pursuant to the Resource Management Act 1991**  
**a resource consent is hereby granted by the**  
**Taranaki Regional Council**

Name of  
Consent Holder:           Opunake Power Limited  
                                    PO Box 91826  
                                    Auckland 1142

Decision Date:             13 October 2006

Commencement Date:     13 October 2006

**Conditions of Consent**

Consent Granted:         To take water from the Waiaua River in association with the  
                                    Opunake hydro electric power scheme

Expiry Date:              1 June 2018

Site Location:             South Road (State Highway 45), Opunake

Legal Description:        Lot 1 SS6265 Sib Sec 47 Borough of Opunake Blk IX  
                                    Opunake SD

Grid Reference (NZTM)   1674582E-5632132N

Catchment:                Waiaua

*For General, Standard and Special conditions  
pertaining to this consent please see reverse side of this document*

### **General conditions**

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
  - i) the administration, monitoring and supervision of this consent; and
  - ii) charges authorised by regulations.

### **Special conditions**

1. The take authorised by this consent shall be limited to a maximum of 3900 litres per second.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 2661. In the case of any contradiction between the documentation submitted in support of application 2661 and the conditions of this consent, the conditions of this consent shall prevail.
3. The consent holder shall maintain a fish pass that allows the passage of native fish, juvenile trout and adult trout to habitat upstream of the weir at SH45.
4. The consent holder shall ensure that a residual flow of not less than 80 L/s as measured in the Waiaua River immediately downstream of the fish pass, and not less than 180 L/s as measured in the Waiaua River immediately downstream of the canal sluice gate discharge, is maintained at all times.
5. In accordance with section 128 of the Resource Management Act 1991, the Taranaki Regional Council shall review during the month of June 2009 and/or June 2012, the appropriateness of a gradual increase in the residual flow specified in condition 4 of this consent.
6. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least seven days prior to the exercise of this consent.
7. The sluice gate/bywash shall only be closed when the level of the Waiaua River in receding flows falls below a level of 100 mm above the intake weir crest.
8. The consent holder shall record generation figures [as a measure of abstraction rates] and fish pass water levels at a minimum of 15-minute intervals, and shall make such records available to the Chief Executive, Taranaki Regional Council, at three monthly intervals.

## Consent 1795-4

9. The consent holder shall review the Operational Procedure and forward this to the Chief Executive, Taranaki Regional Council by 30 June of each year. The scheme shall be operated in accordance with this Operational Procedure.
10. The consent holder and staff of the Taranaki Regional Council shall meet as appropriate, and at least once per year, with interested submitters to the consent, to discuss any matter relating to the exercise of this resource consent, particularly the monitoring programme design, implementation and interpretation, in order to facilitate ongoing consultation.
11. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2009 and/or June 2012, for the purpose of 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 either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 10 March 2016

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**



**Water Permit**  
**Pursuant to the Resource Management Act 1991**  
**a resource consent is hereby granted by the**  
**Taranaki Regional Council**

Name of  
Consent Holder: Opunake Power Limited  
PO Box 91826  
Auckland 1142

Decision Date  
(Change): 16 October 2006

Commencement Date  
(Change): 16 October 2006 (Granted: 21 March 2001)

**Conditions of Consent**

Consent Granted: To take and use water from Lake Opunake for hydroelectric power generation in association with the Opunake hydroelectric power scheme

Expiry Date: 1 June 2018

Site Location: Lake Opunake, Layard Street, Opunake

Legal Description: Lot 1 SS6265 Sub Sec 47 Borough of Opunake Blk IX  
Opunake SD

Grid Reference (NZTM) 1674033E-5631971N

Catchment: Waiaua

*For General, Standard and Special conditions  
pertaining to this consent please see reverse side of this document*

### **General conditions**

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
  - i) the administration, monitoring and supervision of this consent; and
  - ii) charges authorised by regulations.

### **Special conditions**

#### **Conditions 1 & 2 (changed)**

1. The consent holder shall maintain levels within Lake Opunake in the following manner:
  - a) the lake level shall not be lowered more than 480 mm (equivalent to 500 mm on lake staff gauge) below the lake spillway crest (980 mm on lake staff gauge);
  - b) lowering the lake below this level for maintenance (i.e., weed control, de-silting or other operational reasons) shall be done only with the prior written approval of the Chief Executive, Taranaki Regional Council.
2. Notwithstanding special condition 1 the exercise of this consent shall be undertaken to ensure there is a constant flow through the fish pass.

#### **Conditions 3 & 4 (unchanged)**

3. The consent holder shall monitor Lake Opunake levels, at a minimum of 15 minute intervals and shall make records of such measurements available to the Chief Executive, Taranaki Regional Council, at three monthly intervals.
4. The consent holder shall install and maintain a staff gauge at Lake Opunake to the satisfaction of the Chief Executive, Taranaki Regional Council.

**Condition 5 (changed)**

5. In accordance with section 128 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2009 and/or June 2012, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 10 March 2016

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**



**Discharge Permit**  
**Pursuant to the Resource Management Act 1991**  
**a resource consent is hereby granted by the**  
**Taranaki Regional Council**

Name of  
Consent Holder: Opunake Power Limited  
PO Box 91826  
Auckland 1142

Decision Date: 21 March 2001

Commencement Date: 21 March 2001

**Conditions of Consent**

Consent Granted: To discharge sand and silt deposits from a diversion canal sand trap via a spillway to the Waiaua River in association with the Opunake hydroelectric power scheme

Expiry Date: 1 June 2018

Site Location: Lake Opunake, Layard St, Opunake

Legal Description: Lot 1 SS6265 Sub Sec 47 Borough of Opunake Blk IX  
Opunake SD

Grid Reference (NZTM) 1674248E-5631944N

Catchment: Waiaua

*For General, Standard and Special conditions  
pertaining to this consent please see reverse side of this document*

**General conditions**

- a) That on receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
  - i) the administration, monitoring and supervision of this consent; and
  - ii) charges authorised by regulations.

**Special conditions**

- 1) The consent holder shall supply a sediment management protocol within three months of the granting of this consent for the written approval of the Chief Executive, Taranaki Regional Council.
- 2) The consent holder shall maintain a record of any sand trap discharges for supply to the Chief Executive, Taranaki Regional Council, at three monthly intervals.
- 3) The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to avoid or minimise the adverse effect of the discharge.
- 4) The consent holder may apply to the Taranaki Regional Council for a change or cancellation of the conditions of their consent, in accordance with section 127(1)(a) of the Resource Management Act 1991, to take account of operational requirements or the results of the monitoring.
- 5) In accordance with section 128 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review amend, delete or add to the conditions of this resource consent by giving notice of review during the month of December 2003 and/or June 2006 and/or June 2012, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this consent, which were either not foreseen at the time the application was considered or which it is not appropriate to deal with at the time.

Transferred at Stratford on 10 March 2016

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**

**Coastal Permit  
Pursuant to the Resource Management Act 1991  
a resource consent is hereby granted by the  
Taranaki Regional Council**

Name of  
Consent Holder:           Opunake Power Limited  
                                    PO Box 91826  
                                    Auckland 1142

Decision Date:             21 March 2001

Commencement Date:     21 March 2001

**Conditions of Consent**

Consent Granted:         To erect, place and maintain an outfall structure in the coastal marine area on the Opunake Beach foreshore in association with the Opunake hydroelectric power scheme

Expiry Date:             1 June 2018

Site Location:            Opunake Beach, Beach Road, Opunake

Legal Description:        Lot 1 SS6265 Sub Sec 47 Borough of Opunake Blk IX  
                                    Opunake SD

Grid Reference (NZTM)   1673748E-5632044N

Catchment:                Tasman Sea

*For General, Standard and Special conditions  
pertaining to this consent please see reverse side of this document*

### **General conditions**

- a) That on receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
  - i) the administration, monitoring and supervision of this consent; and
  - ii) charges authorised by regulations.

### **Special conditions**

- 1) The structure authorised by this consent shall be maintained generally in accordance with the information submitted in support of the application and to ensure that the conditions of this consent are met.
- 2) The consent holder shall notify the Taranaki Regional Council, at least 48 hours prior to the commencement and upon completion of, the any subsequent maintenance works which would involve disturbance of, deposition to, or discharges to the coastal marine area.
- 3) That during any maintenance works the consent holder shall adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to avoid or minimise the discharge of silt or other contaminants and to avoid or minimise the disturbance of the coastal marine area and any effects to water quality.
- 4) That during any maintenance works the consent holder shall ensure that the area and volume of disturbance shall so far as is practicable, be minimised and any areas which are disturbed, shall so far as is practicable be reinstated.
- 5) The structure authorised by this consent shall be removed and the area reinstated, if and when it is no longer required. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to the structures removal and reinstatement.
- 6) The consent holder may apply to the Taranaki Regional Council for a change or cancellation of the conditions of their consent, in accordance with section 127(1)(a) of the Resource Management Act 1991, to take account of operational requirements or the results of the monitoring.

Consent 4563-2

- 7) In accordance with section 128 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review amend, delete or add to the conditions of this resource consent by giving notice of review during the month of December 2003 and/or June 2006 and/or June 2012, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this consent, which were either not foreseen at the time the application was considered or which it is not appropriate to deal with at the time.

Transferred at Stratford on 10 March 2016

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**



**Land Use Consent**  
**Pursuant to the Resource Management Act 1991**  
**a resource consent is hereby granted by the**  
**Taranaki Regional Council**

Name of  
Consent Holder:           Opunake Power Limited  
  PO Box 91826  
  Auckland 1142

Decision Date:               22 March 2006

Commencement Date:       22 March 2006

**Conditions of Consent**

Consent Granted:           To disturb the bed of Lake Opunake in the Waiaua  
  catchment by removing reeds and flaxes from the edge of  
  the lake

Expiry Date:                 1 June 2024

Review Date(s):            June 2018

Site Location:              Lake Opunake, Layard Street, Opunake

Legal Description:         Sec 46-49 Borough of Opunake Blk IX Opunake SD

Grid Reference (NZTM)     1674148E-5632044N

Catchment:                 Waiaua

Tributary:                 Opunake Lake

*For General, Standard and Special conditions  
pertaining to this consent please see reverse side of this document*

### **General conditions**

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
  - i) the administration, monitoring and supervision of this consent; and
  - ii) charges authorised by regulations.

### **Special conditions**

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 4057. In the case of any contradiction between the documentation submitted in support of application 4057 and the conditions of this consent, the conditions of this consent shall prevail.
3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least seven days prior to commencing work.
4. That works shall only be undertaken during the period 1 May to 31 October.
5. That the consent holder shall observe every practicable measure to minimise the discharge or placement of silt and/or organics and/or debris into the lake.
6. That the consent holder shall collect and remove all plant trimmings and other floatable material produced during the works.
7. That where removed material is placed on or near the banks of the lake, this is done in a manner which avoids decaying vegetation or leaching into the lake or the Waiaua River.
8. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

## Consent 4658-2

9. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2012 and/or June 2018, for the purpose of 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 either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 10 March 2016

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**



**Coastal Permit  
Pursuant to the Resource Management Act 1991  
a resource consent is hereby granted by the  
Taranaki Regional Council**

Name of  
Consent Holder: Opunake Power Limited  
PO Box 91826  
Auckland 1142

Decision Date: 15 November 2012

Commencement Date: 15 November 2012

**Conditions of Consent**

Consent Granted: To discharge water from hydroelectric power generation through two marine outfall pipes into the Tasman Sea

Expiry Date: 1 June 2018

Site Location: Beach Road, Opunake

Legal Description: Sec 48 Opunake Suburban (Discharge source)  
Adjacent to Sec 1 Blk VII TN of Opunake (Discharge site)

Grid Reference (NZTM) 1673815E-5631907N

Catchment: Tasman  
Waiaua

Tributary: Opunake Lake

*For General, Standard and Special conditions  
pertaining to this consent please see reverse side of this document*

**General condition**

- a. The consent holder shall pay to the Taranaki Regional Council [the Council] all the administration, monitoring and supervision costs of this consent, fixed in accordance to section 36 of the Resource Management Act.

**Special conditions**

1. The rate of discharge shall not exceed 3900 litres per second.
2. There shall be no discharge of contaminated water as a result of the exercise of this consent.
3. The consent holder shall install and/or maintain signage at the site of discharge warning the public that there may be discharge of water from the outfall structures at any time.

Transferred at Stratford on 10 March 2016

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**

**Land Use Consent**  
**Pursuant to the Resource Management Act 1991**  
**a resource consent is hereby granted by the**  
**Taranaki Regional Council**

Name of  
Consent Holder:           Opunake Power Limited  
                                    PO Box 91826  
                                    Auckland 1142

Decision Date:             21 March 2001

Commencement Date:     21 March 2001

**Conditions of Consent**

Consent Granted:         To dam the Waiaua River in association with the Opunake hydroelectric power scheme

Expiry Date:             1 June 2018

Site Location:            South Road (State Highway 45), Opunake

Legal Description:        Lot 1 SS6265 Sib Sec 47 Borough of Opunake Blk IX  
                                    Opunake SD

Grid Reference (NZTM)   1674548E-5632144N

Catchment:                Waiaua

*For General, Standard and Special conditions  
pertaining to this consent please see reverse side of this document*

### **General conditions**

- a) That on receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
  - i) the administration, monitoring and supervision of this consent; and
  - ii) charges authorised by regulations.

### **Special conditions**

1. The weir authorised by this consent shall be maintained generally in accordance with the information submitted in support of the application and to ensure that the conditions of this consent are met.
2. It is the responsibility of the consent holder to maintain and operate a safe dam and the Taranaki Regional Council accepts no responsibility in this regard.
3. The consent holder shall maintain a fish pass that allows the passage of native fish, juvenile trout and adult trout.
4. The consent holder shall notify the Taranaki Regional Council, at least 48 hours prior to the commencement and upon completion of, the any subsequent maintenance works which would involve disturbance of, or deposition to, the riverbed or discharges to water.
5. That during any maintenance works the consent holder shall adopt the best practicable option, as defined in the section 2 of the Resource Management Act 1991, to avoid or minimise the discharge of silt or other contaminants into water or onto the riverbed and to avoid or minimise the disturbance of the riverbed and any adverse effects on water quality.
6. That during any maintenance works the consent holder shall ensure that the area and volume of riverbed disturbance shall so far as is practicable, be minimised and any areas which are disturbed, shall so far as is practicable be reinstated.
7. That any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration shall be undertaken only between 1 November and 30 April, except where this requirement is waived in writing by the Chief Executive, Taranaki Regional Council.

## Consent 5581-1

8. The structure[s] authorised by this consent shall be removed and the area reinstated, if and when the structure[s] are no longer required. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to structure[s] removal and reinstatement.
9. The consent holder may apply to the Taranaki Regional Council for a change or cancellation of the conditions of their consent, in accordance with section 127(1)(a) of the Resource Management Act 1991, to take account of operational requirements or the results of the monitoring
10. In accordance with section 128 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review amend, delete or add to the conditions of this resource consent by giving notice of review during the month of December 2003 and/or June 2006 and/or June 2012, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this consent, which were either not foreseen at the time the application was considered or which it is not appropriate to deal with at the time.

Transferred at Stratford on 10 March 2016

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**



**Land Use Consent**  
**Pursuant to the Resource Management Act 1991**  
**a resource consent is hereby granted by the**  
**Taranaki Regional Council**

Name of  
Consent Holder:           Opunake Power Limited  
                                    PO Box 91826  
                                    Auckland 1142

Decision Date:             21 March 2001

Commencement Date:     21 March 2001

**Conditions of Consent**

Consent Granted:         To disturb the bed of the Waiaua River by removing  
                                    sediment build-up upstream of a weir for the purpose of  
                                    maintaining the Opunake hydroelectric scheme intake

Expiry Date:              1 June 2018

Site Location:             South Road (State Highway 45), Opunake

Legal Description:        Lot 1 SS6265 Sub Sec 47 Borough of Opunake Blk IX  
                                    Opunake SD

Grid Reference (NZTM)   1674548E-5632144N

Catchment:                Waiaua

*For General, Standard and Special conditions  
pertaining to this consent please see reverse side of this document*

### **General conditions**

- a) That on receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
  - i) the administration, monitoring and supervision of this consent; and
  - ii) charges authorised by regulations.

### **Special conditions**

- 1) The consent holder shall notify the Taranaki Regional Council in writing at least 72 hours prior to the commencement and upon completion of any disturbance licensed by this consent.
- 2) The disturbance authorised by this consent shall be undertaken generally in accordance with the documentation submitted in support of the application and to ensure the conditions of this consent are met.
- 3) Any disturbance of parts of the riverbed covered by water and/or any works which may result in downstream discolouration shall be undertaken only between 1 December and 30 April, except where this requirement is waived in writing by the Chief Executive, Taranaki Regional Council.
- 4) The consent holder shall adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to avoid or minimise the discharge of silt or other contaminants into water or onto the riverbed and to avoid or minimise the disturbance of the riverbed and any adverse effects on water quality.
- 5) The consent holder shall ensure that the area and volume of riverbed and bank disturbance shall, so far as is practicable, be minimised and any areas which are disturbed shall, so far as is practicable, be reinstated.
- 6) The consent holder shall maintain a record of all disturbance activity including, timing and duration of disturbance activities and volumes of sediment removed, and shall forward this to the Chief Executive, Taranaki Regional Council on an annual basis, by 31 May each year.
- 7) The placement of sediment downstream of the weir for the purposes of maintaining clearance at the intake gates shall only be undertaken upon written approval of the Chief Executive, Taranaki Regional Council, and in accordance with special conditions 3, 4, and 5.

Consent 5692-1

- 8) The consent holder may apply to the Taranaki Regional Council for a change or cancellation of the conditions of their consent, in accordance with section 127(1)(a) of the Resource Management Act 1991, to take account of operational requirements or the results of the monitoring.
- 9) In accordance with section 128 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review amend, delete or add to the conditions of this resource consent by giving notice of review during the month of December 2003 and/or June 2006 and/or June 2012, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this consent, which were either not foreseen at the time the application was considered or which it is not appropriate to deal with at the time.

Transferred at Stratford on 1 April 2016

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**

