Manawa Energy Ltd Pātea HEP Scheme

Monitoring Programme
Annual Report
2023/24
Technical Report 2024-29

Taranaki
Regional Council

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Taranaki Regional Council
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Executive summary

Manawa Energy Ltd (the Company), formerly known as Trustpower Ltd, operates a hydroelectric power station (HEPS) located on the Pātea River on Maben Road, near Hurleyville. Water is impounded behind the 82m high Pātea Dam to form Lake Rotorangi. This water is diverted through the 32MW power station, the largest hydroelectric scheme in Taranaki.

This report for the period July 2023 to June 2024 describes the monitoring programme implemented by Taranaki Regional Council (the Council) to assess the Company's environmental and consent compliance 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.

During the monitoring period, the Company demonstrated an overall high level of environmental and good administrative performance.

The Company holds 10 resource consents that are being exercised in relation to the Pātea HEPS. Three consents are to allow for the Company to dam, take and/or use water, two consents to discharge water into the Pātea River, three consents for structures associated with the scheme and two consents to discharge emissions into the air at this site. One discharge to air consent was withdrawn and one water abstraction consent was replaced during the year under review. The consents that were in place at the start of the monitoring year included a total of 146 conditions setting out the requirements that the Company must satisfy. During the second part of the monitoring year there was a total of 137 conditions.

The Pātea HEPS was routinely inspected three times during the monitoring period, including visits to the Glen Nui boat ramp. In addition, Council carried out analysis of generation data, lake level data, Pātea River flow and groundwater abstraction data provided by the Company. The Council also reviewed several reports in early 2024 for reports submitted in accordance with consent conditions for the previous monitoring period. There were no hydrological inspections programmed for the 2023/24 period, but hydrological monitoring was undertaken through maintaining the McColl's Bridge flow recorder.

The monitoring showed that overall, the scheme operated within resource consent requirements for the majority of the period being reported. During this period, the Company was fully compliant with lake levels and demonstrated good compliance with rise and recession rate restrictions for the lower Pātea River. The Company provided adequate residual flows within the Pātea River at all times.

The Company successfully operated the trap and transfer system. During the 2023/24 season three 'target' fish species were trapped in the Pātea fish trap: longfin eels, shortfin eels and banded kōkopu. Kōaro were not found this monitoring year. A total of approximately 192,174 elvers and 488 'target' whitebait were transferred to locations in the upper Pātea catchment. Although the total number of elvers caught in 2023/24 slightly exceeded the 2022/23 season, both years recorded some of the lowest counts since monitoring began in 2001.

Downstream eel migration results for 2024 showed a total of 772 successful downstream migrants counted through the bypass system operation and short spill events specifically operated to facilitate downstream eel migration. This is the highest number of migrants observed to date and is largely due to the additional efforts made to optimise the bypass system with direct staff observation and control to facilitate eel migration.

The Company continues to have issues with the timely provision of reports required by consents, likely in part due to the complex and significant monitoring and reporting requirements, together with third party consultants. Additionally, there were some changes to the main consent (0489) with further prescriptive conditions with challenging timeframes during 2023/24. There was ongoing liaison between the Company and the Council during the year under review. Some improvement by the Company is still required in order to ensure relevant reports are submitted in time.

For reference, in the 2023/24 year, consent holders were found to achieve a high level of environmental performance and compliance for 864 (89%) of a total of 967 consents monitored through the Taranaki tailored monitoring programmes, while for another 75 (8%) of the consents a good level of environmental performance and compliance was achieved. A further 26 (3%) of consents monitored required improvement in their performance, while the remaining two (<1%) achieved a rating of poor.

In terms of overall environmental and compliance performance by the consent holder over the last several years, this report shows that the consent holder's performance is improving.

This report includes recommendations for the 2024/25 year.

Table of contents

List of tables

List of figures

1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2023 to June 2024 by Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Manawa Energy Ltd (the Company) in relation to the Pātea Hydroelectric Power Scheme (HEPS). This scheme is located on the Pātea River on Maben Road, near Hurleyville. Trustpower Limited separated into two distinct companies during this compliance period. The generation aspect of Trustpower Limited became Manawa Energy Limited (the Company).

The report includes the results and findings of the monitoring programme implemented by the Council in respect of the consent/s held by the Company that relate to abstractions and discharges of water within the Pātea catchment, and the air discharge permits covering emissions to air from the site, and land use consents to cover the associated structures.

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 *Resource Management Act 1991* (RMA) and the Council's obligations;
- the Council's approach to monitoring sites though annual programmes;
- the resource consents held by the Company in the Pātea River 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 2024/25 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' in as much 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 performance

Besides discussing the various details of the performance and extent of compliance by the consent holders, this report also assigns a rating as to each Company's environmental and administrative performance during the period under review. The rating categories are high, good, improvement required and poor for both environmental and administrative performance. The interpretations for these ratings are found in Appendix II.

For reference, in the 2023/24 year, consent holders were found to achieve a high level of environmental performance and compliance for 864 (89%) of a total of 967 consents monitored through the Taranaki tailored monitoring programmes, while for another 75 (8%) of the consents a good level of environmental performance and compliance was achieved. A further 26 (3%) of consents monitored required improvement in their performance, while the remaining two (<1%) achieved a rating of poor.[1]

1.2 Process description

The Pātea HEPS is located on the Pātea River, some 43km upstream of the river mouth (Figure 1). Following the granting of consents in 1978 to construct a hydroelectric power station on the Pātea River, work commenced on the 82m high earth-filled dam. The dam impounds water in the Pātea River to create the reservoir known as Lake Rotorangi. Lake Rotorangi is the longest man-made lake in New Zealand, being over 46km long. It is fairly narrow and has a surface area of approximately 6km^2. The lake has storage of some 6,600 cumec-hours within the 4.5m operational range, which is small by national standards. The scheme's 32MW power station is however, the largest hydroelectric station in Taranaki.

Monitoring of the receiving environment is required by conditions on the consents, and as such, is coordinated by the Company, who has engaged consultants to undertake this work. The Council was also engaged to undertake some of the required monitoring. The annual monitoring of Lake Rotorangi is undertaken by the Council through a State of the Environment monitoring programme. It is essentially undertaken on a cost sharing basis, with the Company funding this monitoring once every three years, in accordance with consent conditions.

[1] The Council has used these compliance grading criteria for more than 20 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

Figure 1 The Pātea Dam
(The red dot in the inset identifies its location within Taranaki.)

1.3 Resource consents

The Company holds ten (nine) resource consents, the details of which are summarised in the table below. Summaries of the conditions attached to each permit are set out in Section 3 of this report.

A summary of the various consent types issued by the Council is included in Appendix I, as are copies of all permits held by the Company during the period under review.

Table 1 Consents held in relation to the Pātea HEP scheme

Consent number	Purpose	Granted	Review	Expires
Water abstraction permits				
0489-2.3/ 0489-2.4	To dam the Pātea River (forming Lake Rotorangi) and divert water from Lake Rotorangi through the Scheme's intake structure, the service spillway, auxiliary spillway and emergency spillway, for hydroelectric power generation purposes	17 December 2010 Varied 29 September 2017 2 November 2023	2028 or within two months of Expert Panel recommendation	1 June 2040
0491-2.1	To take and use water from Lake Rotorangi for hydroelectric power generation purposes	17 December 2010 Varied 29 September 2017	2028 or within two months of Expert Panel recommendation	1 June 2040
7192-1	To take groundwater to provide a domestic water supply to facilities at the Pātea Dam, including the powerhouse, dwellings and a camping ground	17 December 2010	June 2028	1 June 2040
Water discharge permits				
7190-1.1	To discharge water from the Pātea powerhouse and the main service spillway to the Pātea River for hydroelectric power generation purposes	17 December 2010 Varied 29 September 2017	June 2028	1 June 2040
7191-1	To discharge water from the Pātea hydroelectric scheme's auxiliary spillway and emergency spillway to the Pātea River via spillway creek	17 December 2010	December 2028	1 June 2040
Air discharge permit				
7193-1	To discharge contaminants [including water/dust and particulate matter] into the air from moveable wet and dry abrasive blasting processes during the maintenance of plant and equipment at the Pātea Hydroelectric Power Scheme	30 June 2009	No reviews remaining, operating under s.124 protection. Consent now expired.	1 June 2020 Application for renewal withdrawn 29 May 2024
7194-1	To discharge contaminants [combustion products] into the air during the burning of driftwood captured by the Pātea Hydroelectric Power Scheme log boom	30 June 2009	No reviews remaining	1 June 2028
Land use permits				
0488-2	To use the existing Pātea Dam and associated infrastructure in, on, under or over the bed of the Pātea River and Lake Rotorangi for hydroelectric power generation purposes	17 December 2010	June 2028	1 June 2040
7188-1	To maintain, repair, alter and reconstruct structures and works [including but not limited to the Pātea dam, log boom, auxiliary spillway, emergency spillway, flood channels, river training works and boat ramps] in, on, under or over the bed of the Pātea River and Lake Rotorangi	17 December 2017	June 2028	1 June 2040
7773-1	To place and use a floating pontoon in Lake Rotorangi, including associated excavation and disturbance of the lakebed, for recreational purposes	26 January 2011	No reviews remaining	1 June 2028

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 Pātea HEPS 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;
- 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 Pātea HEPS was visited three times during the monitoring period, for the purpose of undertaking site inspections. The lake and locations of interest are illustrated in Figure 2.

1.4.4 Chemical sampling

Although the monitoring programme included provisional water quality monitoring, no activities were undertaken on site that required this monitoring. This also applied to the emissions from the site and the ambient air quality in the neighbourhood related to the abrasive blasting consent, which was not exercised.

1.4.5 Data review

The consents held for the Pātea HEPS included numerous requirements relating to the monitoring of potential effects from the scheme, lower river ecology, and fish passage provision and success. A number of reports have now been received for the reported period. These reports are in various stages of stakeholder and Expert Panel review, Council feedback and certification by the Council at the time of writing this report.

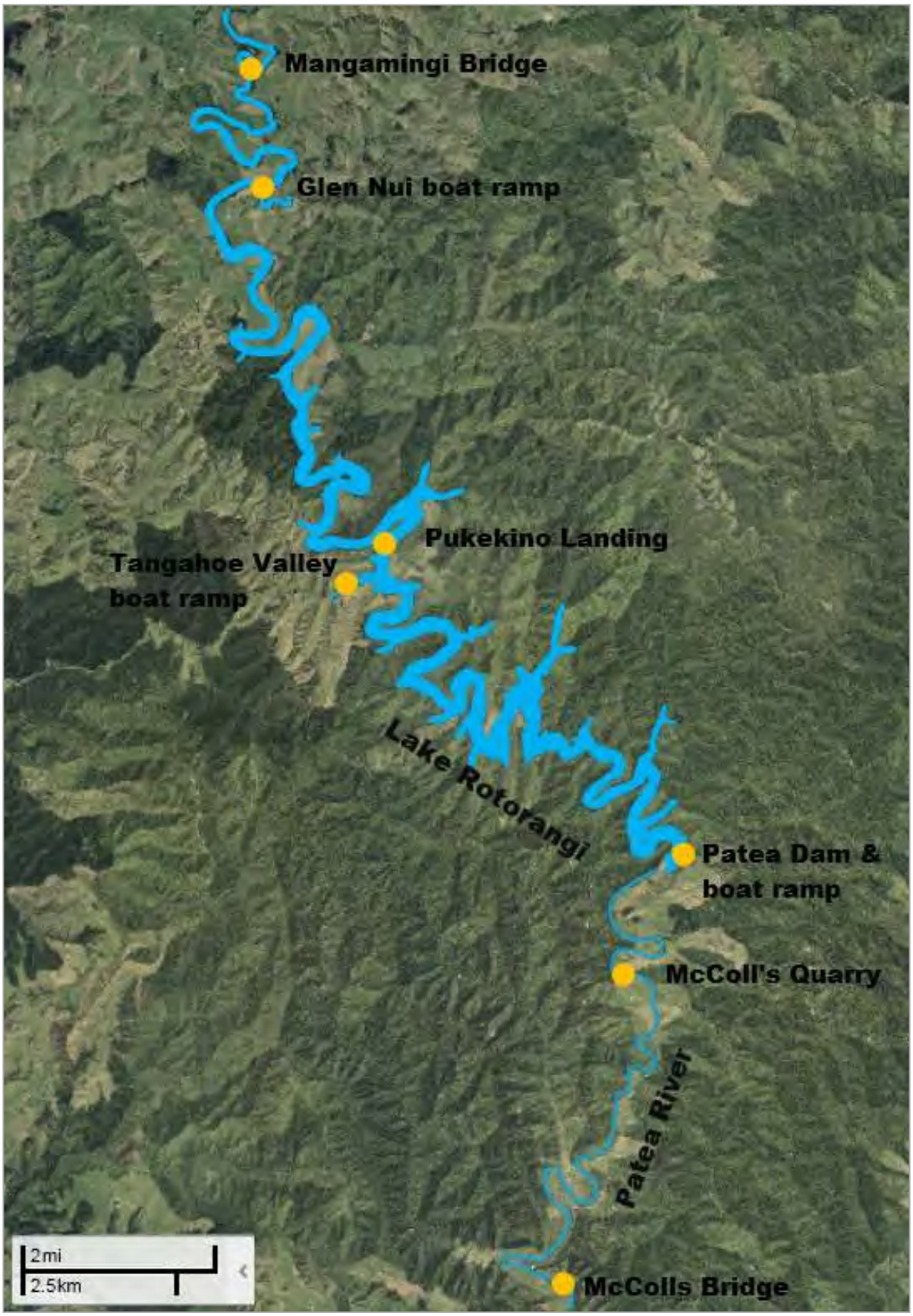

Figure 2 Lake Rotorangi, Pātea Dam and the lower Pātea River

2. Results

2.1 Water

2.1.1 Inspections

During the site visits various aspects of the scheme were inspected, including the boat ramps on the lake, the dam itself, and various locations where signs were required, including the Pātea estuary boat ramp.

The routine compliance monitoring inspections were undertaken on 16 November 2023, 16 April and 13 June 2024.

During all inspections the elver trap was operating and contained many elver during the migration season. The elver trap and access to the elver trap was good, with no other near vicinity attractant flows from any groundwater standpipe outlets nor the water supply tank.

Access to the Pātea Dam boat ramp was in a serviceable condition throughout the monitoring year. During the June inspection there was an increased level of hornwort weed growing in the water surrounding the ramp. The weed may cause issues for boaters and will likely increase the biosecurity risks of transferring the weed to other sites. There are signs in place requesting boaters to ensure the boats are clean prior to departure from the area.

The log boom was intact with varying levels accumulated debris throughout the year. All signage was in place where relevant. Three additional signs with a QR code had been installed during October 2023 around Eltham on approach roads to Lake Rotorangi.

The boat ramps at Glen Nui, Tangahoe Valley and Pukekino Landing were also in good functional condition throughout the monitoring year. The latter two were inspected on 25 October 2023 and 16 April 2024 by the State of the Environment monitoring team from the Council.

During the April inspection the eel bypass pipe was in operation and staff from SLR were present on site, together with staff from the Company. The Council inspector spoke with the Company Site Leader who stated that there had unfortunately been some eel deaths and during the inspection there was one visible in the water below the dam.

Notification for burning the driftwood log pile was received during December 2023, and subsequently the stacked pile was burnt and cleared.

2.1.2 Provision of consent holder data

The Company provides data on discharge rates, abstraction rates and lake levels on a monthly basis. This data is summarised below.

2.1.2.1 Tailrace rise and recession rates

Special conditions of Consents 7190-1 and 7191-1 set the limits on flow rise and recession rates into the lower Pātea River by defining the relationship between flows in the Pātea River above the lake and dam outflows. When the data is processed, a minimum and maximum flow is calculated, and compliance is determined by checking whether the flow released was between these two figures. The algorithm used to calculate the minimum and maximum flow uses flow data to work out the allowable rate of rise or recession. It is important therefore that when comparing the actual flow with these minimum/maximum flows that the same data record is used as was used in calculating the minimum/maximum flows. The Company records flow downstream of the dam in two ways. The water level in the tailrace is recorded, and this is converted to

a flow using a rating curve, called the 'tailrace flow'. The rate of generation is also recorded, which is converted to flow, and added to the recorded spillway flow, giving a figure for total flow downstream of the station. This is referred to as the 'total station outflow'.

Up until June 2015, the Council used the tailrace flow to calculate the allowable rise or recession rates. However, during the flood event that occurred in June 2015, flow in the Pātea River exceeded the range of the tailrace recorder, and as result the Council used 'total station outflow' to assess compliance. Through this process it was realised that this is the most appropriate flow for assessing compliance (as opposed to the tailrace flow). Therefore, compliance is now assessed using the 'total station outflow'.

During the 2023/24 monitoring period, compliance with the rise and recession rate restriction was good.

2.1.2.2 Residual flow compliance

To determine compliance with this condition, data recorded at McColl's Bridge was assessed (Figure 3). This analysis shows that flows were maintained above the minimum of 2.2 cumecs (m^3/s) throughout the reported period. The lowest minimum daily flow recorded during the monitoring year was 2.67 cumecs on the 26 January 2024.

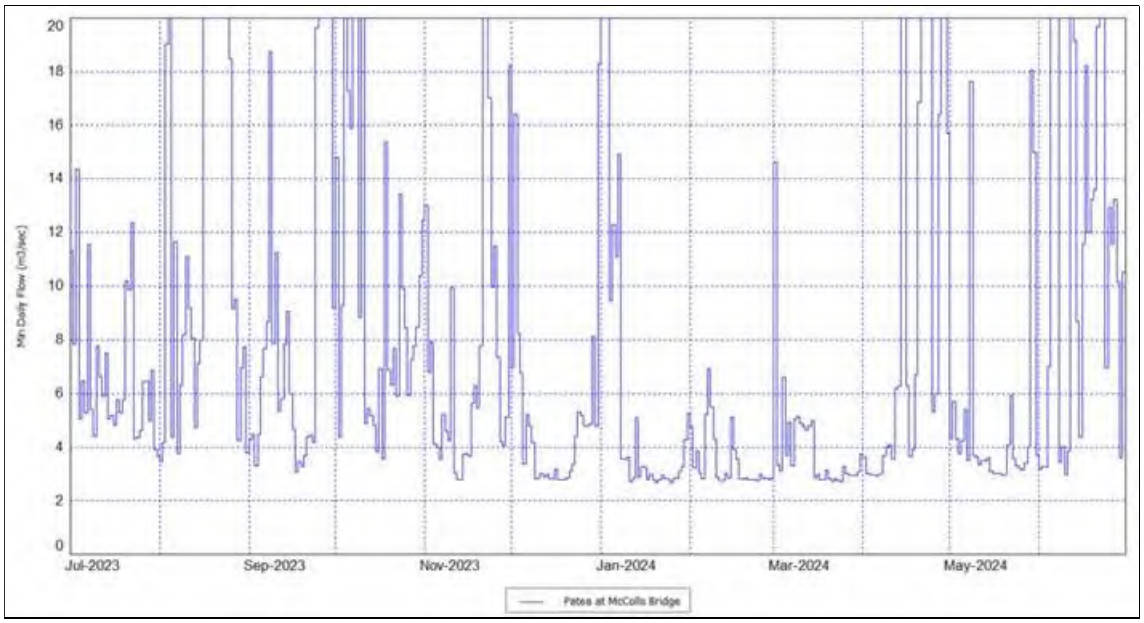

Figure 3 Daily minimum flow in the lower Pātea River recorded at McColl's Bridge (1 July 2023-30 June 2024)

2.1.2.3 Lake level management

Consent 0489 sets the maximum and minimum allowable lake levels, having regard for season, although some flexibility is allowed.

During the summer period (15 December to 15 April), the lake level must not drop below reduced level (RL) 76m, with the exception of a short time frame (264 hours) under specified circumstances and must not drop below RL 75m at all. In winter (16 April to 14 December), the lake level must not drop below RL 76m on more than 125 days, or below RL 75m on more than 40 days.

Table 2 summarises the number of days within the relevant periods the lake level was below RL 75m and 76m. Figure 4 presents a graphic summary of Lake Rotorangi lake levels for the reported period. There were once when the lake level exceeded RL 78m for a short period (maximum level reached was 78.03m), on this occasion there was an associated weather event. The Company is to endeavour to ensure the level returns to less than RL 78m as soon as is reasonably achievable. At no point did the lake level exceed RL 79m.

The lowest the lake level dropped to during the review period was 75.54m on 4 December 2023. This was partly due to allow required maintenance on the Pātea Dam structure to be carried out. Additionally, surveys were being carried out below the dam and the lake level had to be lowered for health and safety reasons.

Lake levels were maintained in accordance with the Consent conditions throughout the monitoring period.

Table 2 Number of days that lake level was below set levels

Season	Lake Level (RL)	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Summer (15 Dec to 15 Apr) 76-78m	<76m	0	0	16	0	0	0	0	0	0
	<75m	0	0	0	0	0	0	0	0	0
Winter (16 Apr to 14 Dec) 74-79m	<76m	55	6	55	40	71	41	46	41	29
	<75m	14	0	13	0	0	0	0	0	0

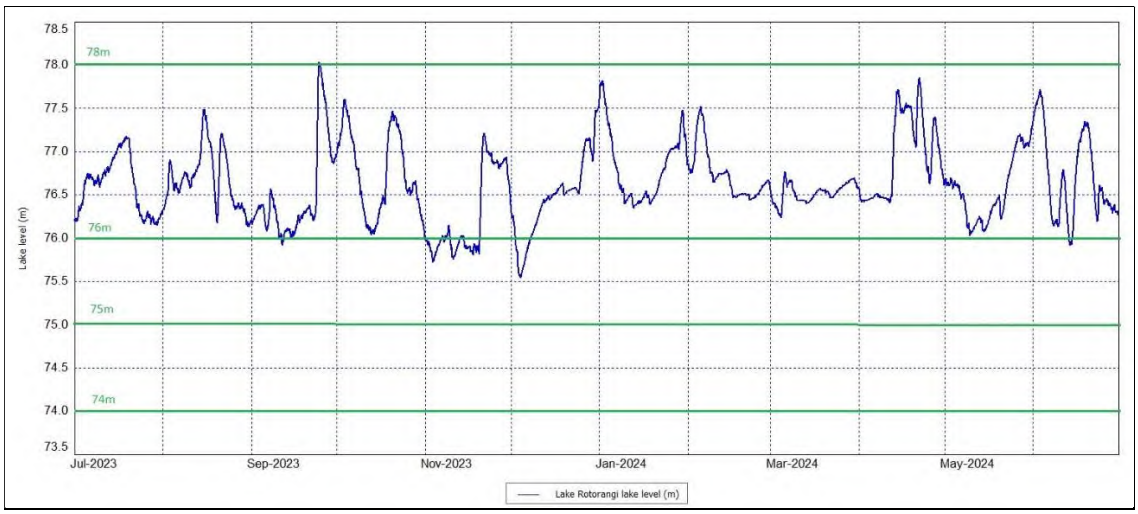

Figure 4 The change in water level of Lake Rotorangi during the 2023/24 monitoring period

Using data from the 2017/18 monitoring period, Figure 5 shows how the lake level changes with changing in-flows and changing generation rates and spillway flows. It is clear that the lake can fill relatively quickly when a flood occurs in the headwaters, reflecting the relatively small amount of storage in Lake Rotorangi.

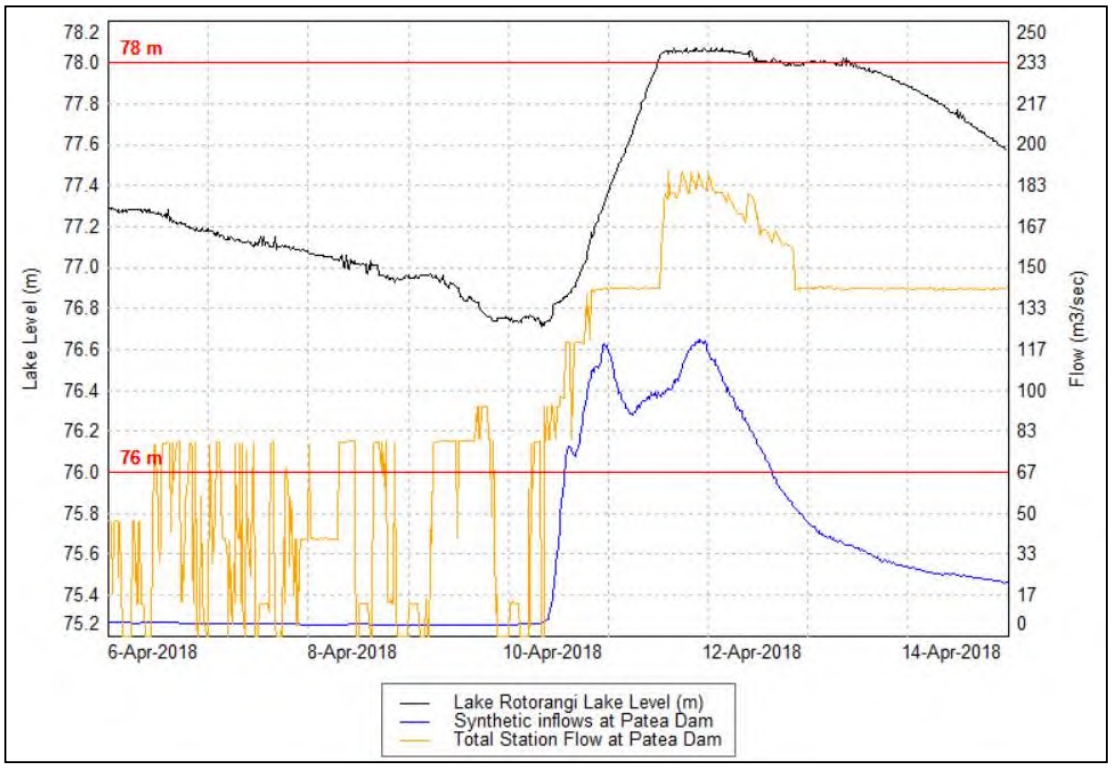

Figure 5 An example of the relationship between lake levels, inflows and tailrace flows (generation flow plus spill-flow) from the 2017/18 monitoring period

Access to boat ramps on the lake must be provided for at all lake levels. There are some exceptions: when the lake is lower than RL 75.5m at the Glen Nui Boat Ramp; RL 74.5m at the Tangahoe Valley Barge Ramp and Pātea Dam Boat Ramp; and above RL 78m for all ramps. If the levels go below or above these points (when allowed) the Company is required to put out signs at predefined locations discussing limited access.

At no point during this monitoring period were lake levels below the usable range, therefore, any inability to use the ramp was a result of maintenance issues. Boat ramp usability is discussed later in this report.

2.1.2.4 Groundwater abstraction

Consent 7192-1 limits the daily groundwater volume that is to be taken for domestic water supply at the Pātea Dam, and requires records be taken of this abstraction. These records, provided as monthly totals, were analysed to provide an average daily abstracted volume. Figure 6 summarises the data provided to Council. The data indicates that the average abstraction volume did not at any point during the monitoring period exceed the limit of 12.5m^3/day. Generally, the highest rate of take at the lake is usually recorded around January and February, coinciding with the busiest time at the Lake Rotorangi campground, which is supplied water by this groundwater abstraction.

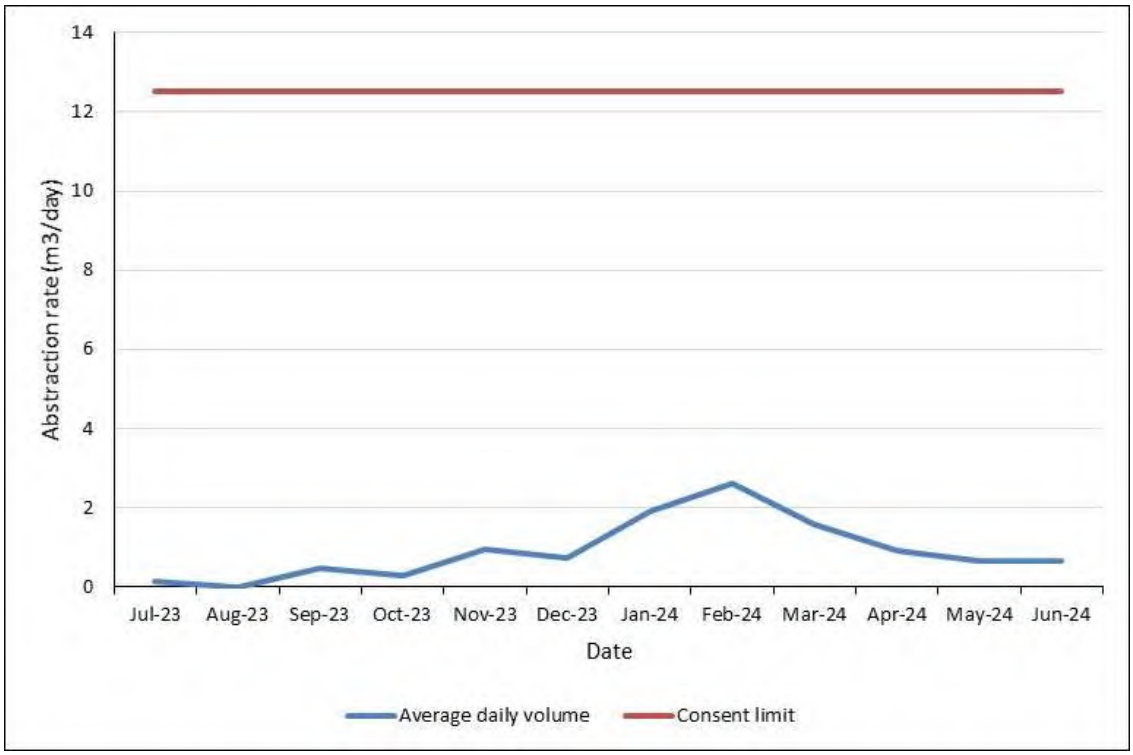

Figure 6 Average daily groundwater volume taken during the 2023/24 period

2.1.3 Results of receiving environment monitoring

The Council did not undertake any receiving environment monitoring in the reported period. The receiving environment monitoring undertaken prior to the scheme gaining new consents is now undertaken separately in another programme, and by the Company as a requirement of Consent. In addition, there were no works undertaken during the reported period that could have disturbed water quality to the extent where additional monitoring was required.

During the reported period, the Company were required to undertake and report on several monitoring projects. These are summarised in Table 3. There is a significant number of reports related to this scheme, so it is not practical to present all details within this compliance report however, all final reports are available on request.

Table 3 Reports required to be submitted to Council by the Company over the reported period

Consent	Condition(s)	Requirement	Detail	Comments/Council Reference
7190-1.1 & 0488-2	7 and 4	Emergency Management Plan	Review of the Emergency Management Plan (annual)	Distributed to key parties and updated accordingly during compliance period. Received March 2024
0489-2.3	28	Fish transfers	Details the work undertaken, and success of upstream fish transfer and spillway opening for downstream eel migration. (annual)	2022/23: Draft report (September 2023) provided to stakeholders January 2024 and finalised during current reporting period 2023/24: Draft report received 29 November 2024
	31	Downstream ecology	Identify and quantify the ecology of the lower Pātea River, including the varial zone. (biennial)	2022/23: Draft report (September 2023) provided to stakeholders January 2024 and finalised. Next survey/report due 2024/25.

Consent	Condition(s)	Requirement	Detail	Comments/Council Reference
	36	Dissolved Oxygen	Final Dissolved Oxygen report (one-off; one interim and one final investigation report)	Dissolved Oxygen (DO) Report (2022) received and reviewed by stakeholders. Expert Panel review received and finalised. Dissolved Oxygen Report (2023) provided to stakeholders January 2024. Awaiting Expert Panel review, informal comments received. No report scheduled for 2023/24 next due 2025 based on 2 years (2023-2025)
	38 & 39	Lake sedimentation	Present the results of sedimentation monitoring of Lake Rotorangi (annual)	2023/24 lakeshore survey complete June 2024 (Presented using digital application)
	41	Lake eutrophication	Carry out an ecological and water quality survey of Lake Rotorangi (triennial)	Monitoring completed during 2023/24. Carried out by TRC as part of State of the Environment annual monitoring. Draft report November 2024.
7190-1.1 & 7191-1	1	Lower Pātea River erosion	Present results of lower Pātea River erosion monitoring (annual; visual inspections and photographic survey, 5-yearly; cross-section survey)	Visual inspection & photographic survey of cross sections. 2023/24 complete June 2024. (Presented using digital application) 5-yearly cross section survey due 2024/25

2.1.3.1 Monitoring of upstream and downstream fish migration

The Company maintain an upstream trap and transfer system for 'target' fish species at the Pātea Dam. This section will summarise the latest draft Upstream and Downstream Fish Transfers Report (SLR 2024a) from this monitoring period.

During the 2023/24 season three 'target' fish species were trapped in the Pātea fish trap: longfin eels, shortfin eels and banded kōkopu. Kōaro were not found this monitoring year. The trap captured a total of approximately 193,321 elvers (21,051 longfin and 172,244 shortfin and 25 unidentified elvers). There were also 504 kōkopu captured. A small percentage of the catch was sent to SLR's laboratory for morphological identification and measurement, the remainder were relocated upstream at several sites.

Although the total number of elvers caught in 2023/24 slightly exceeded the 2022/23 season, both years recorded some of the lowest counts since monitoring began in 2001. Despite the higher estimated number of eels in 2023/24, the total weight of elvers was lower than in the previous season, suggesting the migration comprised a larger number of smaller elvers. Similarly, while the 2022/23 season recorded the highest number of 'target' whitebait since monitoring began, the 2023/24 season saw a significantly lower estimated count, going from approximately 14,000 to 500 individuals. However, such fluctuation in elver and whitebait numbers between seasons are expected, with no consistent trend observed.

A total of 192,174 elvers and 488 'target' whitebait were transferred to five locations in the upper Pātea catchment. The majority of elvers were released in the 'Makuri Stream at Toko Road Bridge', 'Mangaehu Stream at Raupuha Road', 'Pātea River at Skinner Road' and 'Pātea River at Toko Quarry.' The majority of 'target' whitebait were released in the 'Pātea River at Scout Den'. No emergency releases were made to the 'Lake Tributary at Pātea Dam end' site (SLR 2024a).

No adult lamprey were transferred in the 2023/24 monitoring period. No lamprey have been observed to date (19 September 2024). No observations of the species, including adults or juveniles, have been made at the scheme since the 2015/16 transfer, other than a single lamprey captured in the fish trap in August 2022.

Following recommendations made by National Institute of Water and Atmospheric Research (NIWA), a surveillance camera system has been installed to monitor the trap area for lamprey.

The results from the 2023/24 report for the trap and transfer process are presented in Table 4, together with historical data. The full extent of the trap and transfer stakeholder and Expert Panel engagement process as well as the outcome of the reporting is beyond the scope of this compliance report. All reports are available on request.

A survey of fish populations across 56 sites in the upper Pātea River, above the dam, in early 2024 found that longfin and shortfin tuna densities and overall presence were lower compared to levels found in a 2017 survey. Where tuna were present, populations were dominated by smaller individuals (≤3 years old) indicating that the trap and transfer programme continues to support recruitment upstream. Banded kōkopu densities remained stable but low, while kōaro and shortjaw kōkopu were present in small numbers. Recommendations from the study included repeating upstream sampling in six years to monitor if tuna densities continue to decline. This should incorporate environmental DNA sampling to detect rare species like shortjaw kōkopu and amending release sites for target whitebait to be in areas lower in the catchments where kōkopu inhabit. (SLR 2024a).

Table 4 Summary of estimated number of 'target' fish in the fish trap at Pātea HEPS 2011-2024

	Target whitebait species			Target eel species		
Species	**Kōaro**	**Banded Kōkopu**	**Unidentified climbing whitebait**	**Longfin eel**	**Shortfin eel**	**Unidentified elvers**
2011/12	400	1,327	182	8,613	84,639	45
2012/13	386	1,362	0	50,766	183,711	0
2013/14	34	385	7	23,471	169,599	0
2014/15	19	42	41	23,400	237,174	0
2015/16	807	7,950	3	148,532	595,839	0
2016/17	164	3,036	103	56,222	229,951	0
2017/18	28	59	0	105,406	354,817	0 (2,719)
2018/19	0	658	55	67,106	206,375	0 (60)
2019/20	0	12	27	41,565	186,217	0 (0)
2020/21	0	75	30	70,853	286,341	0 (0)
2021/22	0	0	2	33,224	249,080	0
2022/23	1,491	12,386	104	21,875	161,132	4
2023/24	0	457	47	21,051	172,444	25
Total	**3,329**	**27,749**	**601**	**672,084**	**3,117,319**	**74 (2,779)**

Note: Numbers in brackets represent mortalities within the trap with presented records starting from the 2017/18 period. This does not include the mortalities that result from the required lab identification process or those that result from elvers not finding the trap; as has been observed.

Three 'non-target' species were found in the trap during 2023/24, including bullies, shrimp and torrentfish. Totalling 381, of which 27 were bullies, 150 shrimp and 204 torrentfish.

During the 2024 downstream tuna migration season, a total of 771 adult tuna were recorded passing downstream. Of which 722 tuna passed through the spillway, and a further 49 went through the bypass system (Figure 7). The data is summarised in Table 5.

This migration was substantially larger than during the 2022/23 season, which saw only 55 tuna, all of which passed through the bypass system. In 2024, 30 dead tuna were observed in the stilling basin and surrounding areas (bypass system, intake and tailrace) by Manawa staff. This was an improvement in terms of percentage migrating downstream compared to 2023.

Table 5 Summary of adult eels that migrated downstream of the Pātea Dam between 2011-2024

Monitoring year	Number of monitored spill events	Number of days where unmonitored spill events occurred	Number of eels recorded passing over spillway	Number of eels passed through bypass	Number of mortalities recorded at the scheme	Total (excluding mortalities)
2011/12	Unknown	Unknown	59	-	*	59
2012/13	15	12	594	-	*	594
2013/14	40	4	1,884	-	*	1,884
2014/15	13	23	613	1	*	614
2015/16	3	21	311	54	*	365
2016/17	4	16	14	6	*	20
2017/18	5	9	18	42	41	60
2018/19	5	12	392	68	24	460
2019/20	4	3	115	107	22	222
2020/21	2	3	100	66	49	166
2021/22	1	3	11	143	69	154
2022/23	0	3	0	55	39	55
2023/24	Unknown	Unknown	722	49	30	771
Mean (2011-2023)	-	-	**343**	**60**	**41**	**388**

*not reported on during this season

Observed mortalities of adult eels have not historically been reported on as part of this compliance report or in the trap and transfer reports. The performance of the scheme in terms of preventing mortalities for migrating eels will continue to increase in importance as a result of the growing numbers of maturing eels within the upper catchment following on from the long term upstream elver transfer programme. The Company now continues to provide the number and dates of observed mortalities at the scheme on a yearly basis as part of the trap and transfer reports which may be used to better inform eel transfer management practices (Table 5).

The Company is currently undertaking a review of the downstream tuna passage procedure to provide guidance to better facilitate safe tuna passage. This review will benefit from knowledge gained during the bypass efficacy trials undertaken.

The first downstream tuna bypass effectiveness survey conducted in 2022 produced promising results. A second survey was executed during 2023 and a third in 2024. The *Draft 2024 Downstream Tuna Bypass Trials report* (SLR 2024b) states that monitoring was undertaken during the week of 15 April to 19 April 2024. The assessment comprised the capture and study of live tuna that utilised the bypass, trials with a sensor fish/model tuna and a riverbank survey to record tuna carcasses downstream of the HEPS.

The results of the bypass trials conducted to date demonstrate that the system enables the safe passage of tuna that use the bypass, with a 95% survival rate in 2022 and a 100% survival rate in 2024 (in accordance with condition 18 (0489)). However, it is noted that relatively few tuna used the bypass during the 2024 migration season. The Company were aware of only some tuna using the bypass system and subsequently actively monitored and operated the spillway to enable the safe passage downstream of congregating adult tuna.

Ultimately, while the bypass system generally provides successful fish passage, there is still a substantial issue with tuna mortality. Particularly for the greater proportion of individuals which instead attempted passage through the intake screens and suffered internal injuries; died as a result of extreme changes in pressure through the HEPS; or were struck by the hydroelectric turbines. As such, the 2024 report outlines

additional recommendations for 2025. This includes further amendments to the lighting system above the intake screens to discourage tuna from approaching active generators; amendments to operation of the generators; and to continue monitoring the utilisation and mortality rates associated with bypass and spillway passage alongside downstream surveys to characterise mortalities.

Figure 7 Pātea HEPS eel bypass system

Top left: Head pond in Lake Rotorangi. Top right: Location of bypass intake (underwater) in the head pond. Middle left: Intake to the tuna bypass holding tank. Middle right: Holding tank, the outlet is to the right of the photo. Bottom left: The bypass runs down the true right of the spillway wall and discharges to the stilling pond. Bottom right: Bypass outlet to the stilling pond. (Source: SLR 2024b)

2.1.3.2 Downstream ecology

The *2022/23 Draft Downstream Ecology Report*, completed in September 2023 (survey work was undertaken in April 2023) has been submitted to all stakeholders for review during January 2024. The Company is still awaiting the eexpert Panel review. However, informal comments received to date indicate that there are no major issues with the report, based on previous reports. This survey is carried out biennially, with the next survey due during 2025.

The survey results from the draft report are summarised below (4Sight (2023)).

Macrophyte (aquatic plant), macroinvertebrate (bug) and fish communities were sampled at two sites in the Pātea River downstream of the Pātea HEP, at McColl's Quarry and McColl's Bridge. The methods used were the same as previous surveys.

Macrophyte cover in the Pātea River was found to be very low, which was expected given the large floods that occurred in the river during August 2022. High water velocities, debris and sediment movement scour macrophytes from the riverbed and prevent them re-establishing. The invasive macrophyte hornwort was recorded for the first time during river ecology monitoring in 2023 however, it is known to have been present in Lake Rotorangi upstream since at least 2012.

Macroinvertebrate communities were sampled in three habitats (riffles, woody debris and macrophytes). The communities were dominated by taxa that are tolerant of a range of conditions. Comparison of macroinvertebrate communities between the 'varial' zone (area occasionally exposed) and the 'non-varial' zone (permanently under water) was carried out. Community descriptors were higher in the non-varial zone compared to the varial zone, which is to be expected. There was minimal functional differences in the community index scores, which were indicative of 'poor' to 'fair' habitat quality.

Fish communities were sampled using three different techniques. Across all fishing techniques and survey years, a total of 12 fish species have been caught or observed. The majority of fish were native, with three introduced species (perch, rudd and brown trout). In general, the numbers of fish caught has been quite variable, which makes it difficult to draw any conclusions about difference between sites. For those species that have been caught regularly in relatively high numbers (common bully, īnanga, longfin and shortfin eels), there appears to be no significant differences in abundance/densities between sites.

Analysis of water temperature and dissolved oxygen monitoring data was undertaken for the summer period prior to ecology monitoring. Water temperatures at McColl's Quarry site were suitable for native fish however, at times were not optimal for trout. Dissolved oxygen levels at the same site were good for fish communities.

2.1.3.3 Lake eutrophication

Lake Rotorangi water quality monitoring was completed by the Council during 2021/22, 2022/23 and 2023/24 monitoring periods. *The Lake Rotorangi State of the Environment Monitoring Report* is available on request. The key findings of the report are summarised below.

There are two primary components namely, physicochemical and biological. Physicochemical and biological sampling was undertaken at two sites (Figure 8) along the lake, on four occasions per annum. A macrophyte survey is carried out triennially in autumn and was completed in April 2024.

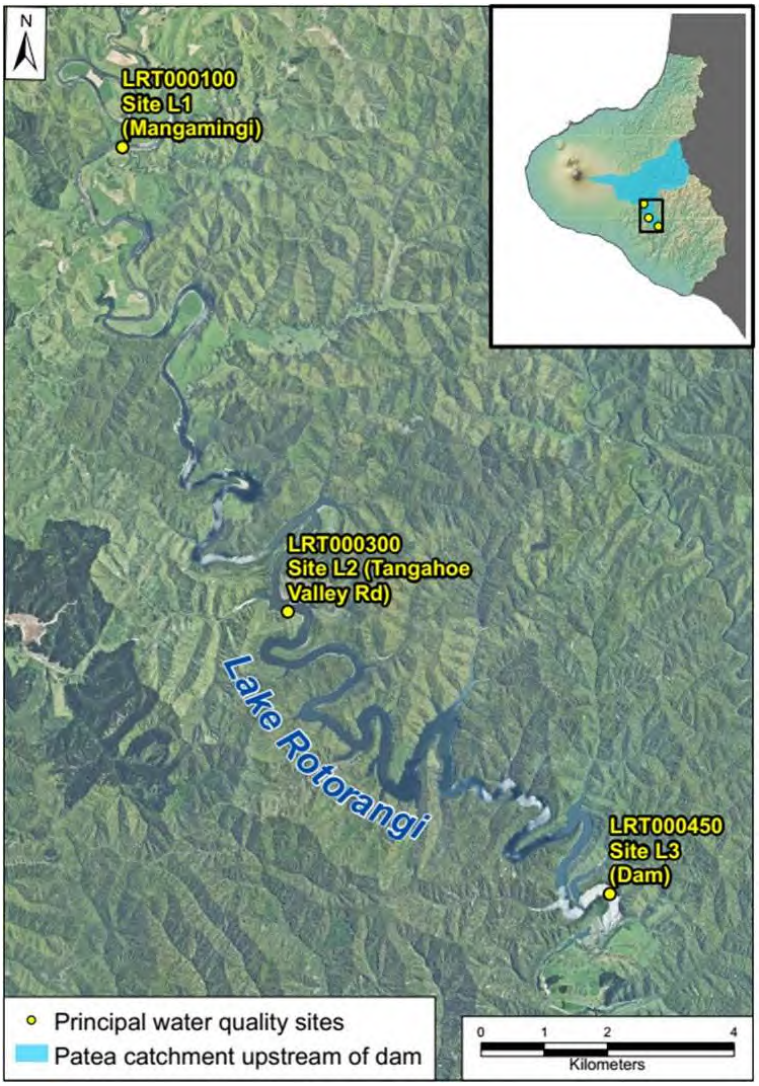

Figure 8 Location of physicochemical and biological monitoring sites Lake Rotorangi

Note: Sites L2 and L3 are currently monitored, while monitoring site L1 was discontinued in 2010 due to the riverine nature of the lake at this northern location.

It is typical to analyse lakes holistically however, Lake Rotorangi is quite riverine in nature and is more pronounced at the mid-lake site (LRT000300/L2) compared to the lower lake site (LRT000450/L3). This leads to differences in water chemistry and ecology between the sites making the individual site analysis potentially more insightful than the analyses of the whole lake.

Dissolved oxygen (DO) in the mid-hypolimnion and lake bottom had an annual minimum below the national bottom line in all three monitoring years. Additionally, anoxic conditions (less than 0.5g/m^3) were observed in both levels. Dissolved oxygen is critical to all aquatic life within a lake ecosystem. Periods of anoxia can ultimately lead to mass fish death. In addition, low lake-bottom DO can result in biochemical conditions that lead to nutrient release from sediments.

Ammoniacal nitrogen annual medians were at, or below the historic median in the epilimnion and hypolimnion at both sites. This indicates that there is a decreasing trend, with no observed effect on any species tested.

Total nitrogen had variable results in the last three monitoring years. In 2021/22 and 2022/23 the hypolimnion and epilimnion annual medians for total nitrogen at both sites were above the historic median.

In contrast, the annual median in 2023/24 was below the historic median. Overall, there was a decreasing trend. However, these trend results all had a relatively low confidence.

The total phosphorus annual medians fluctuated in comparison to the historic medians. There was an increasing trend in total phosphorus at both sites. At site L2 and the whole lake, this trend had a high confidence and was considered "highly likely", while at site L3 this was classed as "likely".

Escherichia coli (*E. coli*) showed variable results across the two sites throughout the most recent three monitoring years. The levels differ greatly between the sites. Site L3 has much lower *E. coli* levels (<1-25MPN/100ml) than site L2 (<1-119MPN/100ml). This could partially be attributed to site L2 being near grazed farmland, whereas site L3 is surrounded by forest in the immediate vicinity.

Chlorophyll levels fluctuated throughout the relevant monitoring years at both sites. The significance of the trend was determined as "likely increasing."

Over the whole lake, and at each site, the trophic state was eutrophic in 2021/22 and 2022/23 and mesotrophic in 2023/24. The trophic level index (TLI) was 4.78, 4.34 and 3.6TLI units in 2021/22, 2022/23 and 2023/24 respectively. The TLI was above the historic mean for the former two monitoring years, and below for the latter.

When the individual components of trophic level are considered, in the 2021/22 monitoring year, chlorophyll *a*, Secchi depth and total phosphorus concentrations categorised the lake as eutrophic, while total nitrogen as supertrophic. For 2022/23, Secchi depth, total nitrogen and total phosphorus concentrations categorised the lake as eutrophic, whilst chlorophyll *a* classified the lake as mesotrophic. There was greater variation for the individual components in 2023/24. Chlorophyll *a* categorised the lake as oligotrophic, total nitrogen as eutrophic, and Secchi depth and total phosphorus as mesotrophic.

When comparing the most recent macrophyte survey (April 2024), to the previous surveys, it is evident that the invasive Hornwort (*Ceratophyllum demersum*) has continued to spread vastly. *C. demersum* is now the dominant macrophyte in Lake Rotorangi (Figure 9). There was only one other macrophyte seen during the whole survey namely, *Potamogeton cheesmanii*, a native pondweed. However, only a small density was located, approximately 1m^2. With this widespread abundance of *C. demersum* in Lake Rotorangi, which is popular for water sports, there is a risk of spread to other lakes. Appropriate warning signage remains in place.

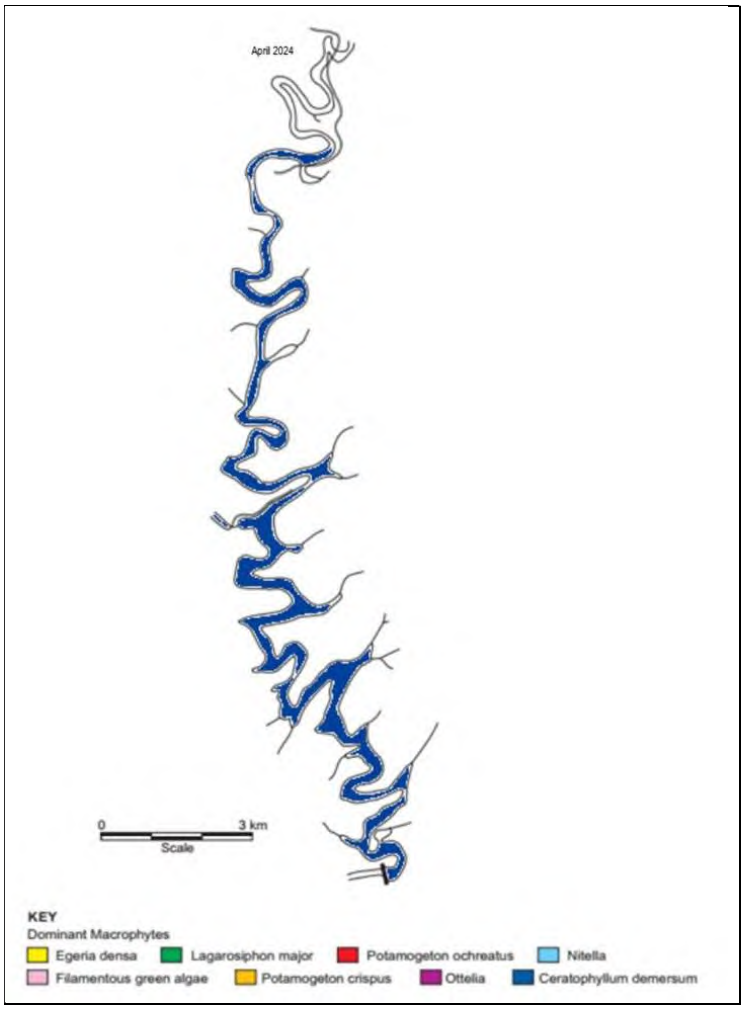

Figure 9 Map of the dominant macrophytes recorded in Lake Rotorangi on 16 April 2024 (Source: TRC (2024b))

2.1.3.4 Effects on trout

The monitoring of trout downstream of the dam was completed in the 2012/13 period. The results indicate that trout spawning in the lower Pātea River is not sufficient to mitigate the barrier to juvenile trout passage posed by the Pātea Dam and Lake Rotorangi. Therefore, the report recommends stocking of the Pātea River downstream of the dam. The Expert Panel review of the report supported this recommendation. Consequently, the Company prepared a trout restocking programme and released 1,000 tagged yearling brown trout and 500 tagged yearling rainbow trout in spring 2017, with this release to be repeated annually. This release has since been repeated again during October in 2018, 2019, 2020, and in November 2021. Annually a record is provided by Fish and Game to the Company detailing the restocking. The Company developed and implemented a monitoring programme to assess the success and effects of the restocking programme. This component was due to be reviewed after five years of monitoring and as such was undertaken during the 2022/23 compliance period, with the report submitted to stakeholders during October 2023.

The report concludes that the five annual releases have not been effective in remedying/mitigating the effects of the Pātea HEPS on trout. The releases of larger (1kg+) rainbow trout appear to have been more successful. The report provides five recommendations, including a recommendation that the Company fund an annual release of up to 200 1kg+ adipose fin-clipped brown and rainbow trout to two sites in the lower Pātea River; and that monitoring should continue with a further review after five years (Fish & Game 2023).

The Expert Panel found that most of the recommendations in the review were useful and should be implemented and supported by the Company. However, the Expert Panel suggest that only rainbow trout are released annually. Given the absence of brown trout in the trout catch and the occasionally high water temperatures below the dam, that no further brown trout are stocked, as natural brown trout spawning seems to maintain the fishery. As rainbow trout are providing returns to anglers, the Expert Panel suggest all 200 trout should be rainbow. The Expert Panel found the analysis of trout stomachs less useful and suggested other ways to collect relevant data (Morphum Environmental 2023a).

The Company provided feedback to Fish and Game stating that providing access to the power station outlet/tailrace area cannot be accommodated for health and safety reasons as this is a high-risk area, subject to flow and water level changes without notice. Access to the same area can still be obtained by fishers crossing the dam wall and using an access track on their own recognisance. The Company has accepted the recommendation of annual trout release to be reviewed after five years.

A further five years of trout restocking will therefore be undertaken. It is proposed that 200 yearling trout sourced locally in Taranaki with the first release scheduled for October/November 2024. There were 200 rainbow trout released on 22 October 2024, a further 2 rainbow and 150 brown trout at McColl's Quarry on 25 November 2024. After five years, the programme will be reviewed again.

2.1.3.5 Dissolved oxygen monitoring

Consent 0489 requires the Company to undertake an investigation into the extent, frequency, causes and effects of de-oxygenated water being discharged into the river below the Pātea Dam. There have been several issues over the ensuing years with this investigation which have been summarised in the 2021/22 compliance monitoring report.

Since the March 2017 issues, the dissolved oxygen (DO) monitoring appears to have progressed relatively well. An interim report was presented to stakeholders for review in October 2018 with the final draft of this report submitted in May 2019 after stakeholder and Expert Panel review and commenting. The complete interim report is available on request.

Further delays with producing the final dissolved oxygen report (2022) have since occurred. The history is also summarised in the 2021/22 compliance monitoring report.

The fourth interim report was provided to Council and Stakeholders on 17 October 2022. The Expert Panel review on the DO report was received during December 2023. There have been a number of delays in having this report finalised within timeframes, but given the significant additional reporting and stakeholder review process required, this has been deemed as acceptable.

Overall this DO monitoring report (2022) indicates that:

- DO concentrations at the dam tailrace are generally lower than at the McColl's Quarry site.
- DO concentrations at the dam tailrace vary less over periods of hours to days (range typically less than 1mg/l) than DO concentrations at the McColl's Quarry site, which tend to display a pronounced diurnal fluctuation of approximately 3mg/L.
- At times, DO concentrations were altered at both the tailrace and downstream site for periods of days to weeks. Discharge data were not presented consistently over the assessment period, so the influence of river flow and rainfall events cannot be consistently identified.
- The DO record for the tailrace site has many spikes (indicating transient or short-term events). The reasons identified for these spikes include probe malfunction, temporary exposure to air caused by fluctuating water levels, inadequate calibration of instruments during each deployment period, and a challenging measurement environment due to air bubbles forming on the sensors as a result of the turbulence at the tailrace site (Morphum Environmental 2023b).

The Expert Panel finds that:

- The causal relationship between the DO concentrations in the lake and the tailrace is complicated by the variations in the lake level and therefore variable depth of the intakes below the lake level. Season stratification patterns and confusion between datum lake levels and depth from the water surface in the depth profiles of temperature and DO concentrations add to the complexity of the causes of low DO concentrations in the tailrace. A thorough review of the historic depth profiles would help in understanding the causes of variation of DO in the tailrace.
- Future monitoring reports should relate lake depth profiles to depths in river level datum units or height above sea level (ASL). This will allow direct comparisons to be made between sampling depths that use the water surface as zero and river level that expresses the depth of the generator intake. This will allow DO of generating lake water taken into the main and G4 generators to be assessed.
- A log of lake level in metres ASL and generator operation would also be key to understanding the causes of low DO in the tailrace.
- Future DO monitoring reports should compare the current year's results to historic patterns (Morphum Environmental 2023b).

The fifth interim report (September 2023) was provided to Council and Stakeholders on 12 January 2024. Below is a summary of this report. The Expert Panel review of the fifth interim report (2023) has not yet been received, but comments received by the Company so far indicate that there are no major issues with the report (Manawa Energy 2024).

During 2022/23 there were no trigger events during the monitoring period for McColl's Quarry site, and the NPS-FM summer bottom lines were also met. The minimum DO concentration over the summer period was 6.3mg/L however, there was a period of missing data during December 2022 and January 2023. At the Tailrace site, DO concentrations did not meet the bottom lines at times during late December 2022 through to early January 2023 however, there is some uncertainty as to the validity of this data. The minimum DO concentration recorded was 2.6mg/L on 2 January 2023. The DO and temperature sensors were replaced at both sites in March 2023, and NIWA audits have not identified any unreliable data and/or unexplained 'spikes' in measurements (4Sight 2023).

Ongoing monitoring and reporting of DO and water temperature in the Pātea River is no longer required in relation to Pātea HEPS Consent conditions. However, the Company plan to continue to monitor DO and water temperature at both sites for at least the next two years.

There is not a report scheduled for 2023/24 with the intention of compiling a more comprehensive report using 2023-2025 data (two years of good quality data) and relate this to dam operations (Manawa Energy 2024).

2.1.3.6 Lake Rotorangi sedimentation

Condition 38 of Resource Consent 0489 requires that the Consent holder shall monitor sedimentation within Lake Rotorangi. That monitoring is to include an annual visual lakeshore inspection of Lake Rotorangi, an annual photographic survey of the 15 permanent cross section locations, and at least once every two years a bathymetric channel cross-section survey of the 15 permanent cross section sites.

The compliance monitoring for the 2023/24 monitoring year was completed on 23 April 2024, comprising the annual visual component. The bathymetric channel cross-section survey was carried out during March 2023 and is next due early 2025.

Combined bathymetric surveying data at the 15 permanent transects spans from 2006 to 2023. At each transect and for each survey year the cross-sectional parameters, mean bed level, cross-sectional area, and thalweg depth were calculated. However, poor data quality captured from 2006 to 2016 prevented analysis

of mean bed level and cross-sectional area during these years (positional quality and extents of data capture). In comparison, thalweg data was determined to be of sufficient quality to examine time-series analysis from all survey years. Thalweg trend analysis demonstrates a general trend of decreasing depth with time (i.e. infilling) at all transect locations. Statistical analysis determined that 40% of transects displayed statistically significant infilling trends. All significant trends were from the mid-upper (fluvial and deltaic) reaches of the lake with rates of change ranging from 0.05m/year to 0.50m/year, with an average of 0.17m/year. Although not statistically significant, the estimated rate of change in the lower (basinal) reaches of the lake ranged from 0.024m/year to 0.044m/year (BTW 2023).

The visual inspection is completed using a mobile application that captures imagery of erosional features and applies a simple classification attribute of active or stable. In 2023/24, a total of 356 erosional features were captured across the entire length of the lake, consisting of 161 active, 170 stable features and 25 undercutting (BTW 2024). There were more erosional features for the current monitoring year than previously when there was a total of 297. However, there has been an increase in both active and stable features. Although it is not currently recommended to directly compare data from year to year due to the subjective nature of this dataset, as this dataset is developed, time-series analysis and analysis of covariance testing will provide insight into any trends over time and trend slope comparison for active and stable feature counts per year (BTW 2023).

The Company has commissioned BTW Company Ltd to do an annual bathymetric survey (through to 2026) of the Glen Nui boat ramp vicinity in order to determine the annual accretion rate of sediment at the site, and to inform a maintenance strategy.

2.1.3.7 Lower river erosion monitoring

The annual photographic and visual inspection of Pātea River, between the Pātea Dam and the coast, was completed on 14 December 2023 to satisfy Consents 7190-1.1 and 7191-1.

The latest bathymetry survey was carried out during March 2023, the previous monitoring year. In general, most of the cross-sections maintained a similar shape compared to previous bathymetric survey years. Some cross-sections showed signs of recovery, with total areas similar to those in 2019. There were notably significant area increases of approximately 30 and 40m^2 at two sites. The mean bed level for these specific cross-sections increased by approximately one metre. The cause of these erosional observations was likely exacerbated by a high flow and rainfall storm events, including a severe high localised rainfall event in December 2022. The study identified a significant erosion trend in eight out of the twelve transects. Four transects exhibited statistically significant trends: three experienced erosion and one showed accretion.

The 2023/24 visual inspection of the lower river erosion found a total of 723 erosional features were captured across the entire length of Pātea downstream consisting of 342 active, 337 stable, 14 undercutting and 2 other features. Overall, there is an increase in total features compared to 2022/23. However, there are fewer active features (392), more stable features (248), and a slight increase in undercutting features (7). Although it is not recommended to compare data from year to year directly due to the subjective nature of this dataset, as this dataset is developed it will provide further insight into any trends over time and trend slope comparison for river structure (BTW 2024).

The geospatial nature of this monitoring dataset is well suited to a Geographic Information System (GIS) application. As a result, compliance reporting from 2022 onwards comprises a hybrid of an online GIS dashboard deliverables (BTW 2023).

The next annual survey work is scheduled for early 2025.

2.2 Recreation - Boat access, lake level website, staff gauges, and signage

The Company is required to provide boating and barge access at a number of sites along the lake at a range of lake levels, facilitate ramp usage by providing an online website showing live lake levels and usability, install staff gauges at several locations to help users launch boats and barges, deploy signage at specified locations when lake levels drop below usable levels, and provide signage related to hazards on the lake. Access to boat ramps on the lake must be provided for at all lake levels, except for when lower than 75.5m reference level (RL) at the Glen Nui Boat Ramp or 74.5m RL at the Tangahoe Valley Barge Ramp and Pātea Dam Boat Ramp, or above 78m RL for all ramps. If the levels go below or above these points (when allowed by Consent) the Company is required to put out signs at predefined locations discussing limited access. As reported in Section 2.1.2.3, at no point during this monitoring period were lake levels below the usable range. Therefore, maintenance issues were the primary reason preventing boat ramp usage during the year under review.

2.2.1.1 Boat Ramp

During this monitoring period, the Council received one complaint about the state of the Glen Nui boat ramp.

In response to a complaint received 12 December 2023 about the water level at Glen Nui boat ramp and surrounding areas,the Council investigated lake levels, contacted the Company, and it was determined that the Company was compliant. The lake level did drop quite low on 4 December 2023 but was above Consent level for this time of year. The Company was carrying out maintenance at Pātea Dam which contributed to lower lake levels. Additionally, surveys were being carried out below the dam, and levels have to be lowered for health and safety reasons. The level was subsequently raised once work was complete.

2.2.1.2 Lake level website

The Company must provide an online tool that allows for lake users to view lake levels as well as the usability of ramps for boating activity. In general, the Company has always maintained a site that showed when the boat ramps were usable based on lake levels alone. The site has historically not been used to show when the ramp was closed due to maintenance issues. The usability of the Glen Nui ramp has not been actively monitored by the Company. Towards the end of the 2021/22 monitoring period, a new site was established (Figure 10 the https://www.manawaenergy.co.nz/Pātea-power-scheme). It should be noted that the website does not provide information on potential lake level drops as a result of generation and maintenance, which could result in unforeseen lake levels as users travel to and utilise the lake; however, this is not a resource Consent requirement.

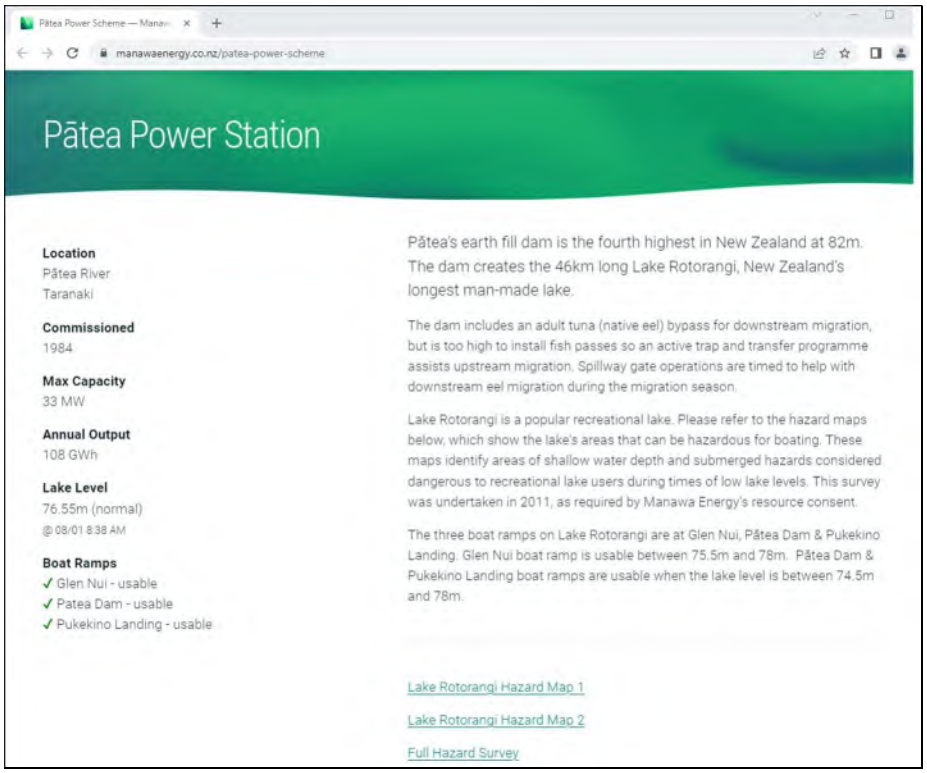

Figure 10 Screenshot of Manawa Energy website showing lake levels and lake usability

2.2.1.3 Staff gauges

The Company is required to provide staff gauges at Glen Nui boat ramp and Pukekino Landing that indicate the lake level over the full operating range.

When the staff gauge was replaced at the Glen Nui boat ramp (June 2023) the Company took the opportunity to change the gauge plates to show the actual lake level as shown on the website (previously it showed a reference level only).

2.2.1.4 Signage

The Company is required to install signs warning of restricted boat ramp access at Rāwhitiroa Road, between Anderson and Oru Roads, when the level of Lake Rotorangi drops below RL 75.5m and at Ball Road, between Hursthouse and Joll Road intersections, when the level of Lake Rotorangi drops below RL 74.5m. At no time during this monitoring period did lake levels drop below these levels, although it was close on 4 December 2023.

Three large signs (Figure 11) were previously installed around Eltham to provide an accessible QR code to access real-time lake level data for Lake Rotorangi. However, during December 2023 the sign located on King Edward Street had to be temporarily removed as it was considered a potential traffic hazard for access to a private driveway. Additionally, South Taranaki District Council were soon to widen this section of King Edward Street.

A suitable alternative location has yet to be determined and agreed upon. The Company was hoping to have this sign in place before mid-December 2024, but this is unlikely. The Company is committed to the approach to provide lake users with up-to-date information and will continue to endeavour to locate a suitable position.

Figure 11 Two of the signs installed on access roads to Lake Rotorangi around Eltham area

Signage on hazards has been installed and generally maintained at the required sites for a number of years (since 2011) following the process required by the Consent. The hazard maps are based on reporting undertaken in 2011. Updating the hazards maps is not required by the current Consent conditions.

2.3 Riparian planting

As per special condition 14 of Consent 7190-1.1, the Company makes an annual donation to the Taranaki Tree Trust. This is to mitigate the effects of downstream erosion by contributing to riparian management in the lower Pātea River catchment. When Consent was granted, the payment was set at $7,500 but is expected to be inflation adjusted in subsequent years, and in 2023 was in the region of $10,000.

Five landholders in the lower Pātea catchment had applied to be subsidised 50% of the cost of plants planted within the catchment for riparian protection in the 2023/24 period, with just under $48,000 available to them at the start of the period. It is expected that there will be approximately $50,000 available for the 2024/25 period following the next contribution by the Company.

2.4 Stakeholder and iwi/hapū meetings

The resource consents for the scheme require the Company to convene a stakeholder and iwi/hapū meeting every year for interested submitters to the Consent. Submitters who have usually attended or been invited to such a meeting include representatives from Ngāti Ruanui, Ngā Rauru Kiitahi, Fish and Game, the Department of Conservation, and the Council.

This meeting intends to keep the submitters up to date with the significant amount of monitoring undertaken, while also keeping them abreast of any compliance issues that may have arisen. These meetings also give the submitters the opportunity to ask questions, and to discuss the monitoring requirements in depth. The stakeholder meeting in the 2023/24 period was held on 26 June 2024. Key stakeholders were present at the meeting however, the Council continues to encourage the Company to endeavour to engage further in contacting all relevant stakeholders.

Discussions at the meeting were held relating to the compliance monitoring of the scheme, including updates with lamprey and downstream eel migration, flow and lake level, water quality and aquatic ecology monitoring, trout restocking, sedimentation and boat ramp access.

It has been previously requested by Ngāti Ruanui that a separate hui is held by the Company. However, a separate hui with Ngāti Ruanui did not eventuate during 2023/24. The Company continue to engage with iwi.

2.5 Incidents, investigations, and interventions

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 causes of non-compliance or failure to maintain good practices. A pro-active approach, that in the first instance avoids issues occurring, is favoured.

For all significant compliance issues, as well as complaints from the public, the Council maintains a database record. The record includes events where the individual/organisation concerned has itself notified the Council. Details of any investigation and corrective action taken are recorded for non-compliant events.

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 individual/organisation is indeed the source of the incident (or that the allegation cannot be proven).

Table 6 below sets out details of any incidents recorded, additional investigations, or interventions required by the Council in relation to the Company's activities during the 2023/24 period. This table presents details of all events that required further investigation or intervention regardless of whether these were found to be compliant or not.

Table 6 Incidents, investigations, and interventions summary table

Date	Details	Compliant (Y/N)	Enforcement Action Taken?	Outcome
07/12/23	A complaint was received concerning the lake levels in the Glen Nui boat ramp vicinity.	Y	N/A	Investigation into the lake levels was carried out, including contact with the Company for comment. Lake levels were compliant with the Consent and associated lake level management. The level was low on 4/12/24 but was above Consent level for this time of year. The Company were carrying out maintenance at Pātea Dam and levels are required to be lowered for health and safety reasons.

3. Discussion

3.1 Discussion of site performance

The most complex aspect to the Consent conditions are the various monitoring and reporting requirements. These can be broken into two broad categories, ecological monitoring and monitoring of water flows and levels.

In terms of reporting, there continue to be issues regarding the Company's timeliness of fulfilling annual reporting requirements. This has been further exacerbated by the new conditions with Consent 0489-2.4 placing further time constraints on fish passage and transfers reporting. The Company engage services from third party consultants, and it is likely that this new condition has been hard to meet during 2024 due to survey dates already scheduled together with the potential lack of communication to the consultants of the new timeframes. The Council continues to work with the Company in order to meet these new timeframe targets going forward.

Draft reports for 2023 were received by stakeholders early in 2024. Several of these reports require stakeholder and Expert Panel review, and therefore the review process is still ongoing. In some instances, in the past, delays with reporting have been allowed by the Council to ensure that relevant stakeholders are given a better opportunity to review submissions. During 2023 and into 2024 there were difficulties in contacting all three members of the Expert Panel. This resulted in delays for the review of the fourth interim DO report (2022), which was received late 2023. The Company requested a temporary solution to ensure progress continued, namely that the Expert Panel operate with only two members. Council agreed to this for a limited period. In the meantime, contact was initiated with the third member, and the Expert Panel was re-engaged with three persons.

Draft annual reports for 2024 were received at the end of November 2024 and have been circulated to stakeholders for review. The draft Pātea Catchment Fish Monitoring report has yet to be received at the time of writing this report.

In general, the Company's long-term track record for reporting has been well managed however, there continues to be issues throughout the last few reporting years. This is likely due to a mixture of reasons, which may be the result of the significant and complex reporting requirements related to the schemes consents, internal staff and process changes over the past years, and a lengthy and complex stakeholder review and engagement process. An improvement in the Company's future performance in this area is still expected, and there has been some improvement observed in this period. The Council is continuing to work with the Company to ensure they meet their reporting obligations, and to navigate through the issues.

With regards to the monitoring of water flows and levels, the Company provided records of the level of Lake Rotorangi, discharge rates from the Pātea powerhouse and spillway, and volumes of water taken from groundwater for domestic use. These records were all provided and to the accuracy required. Flow data recorded at McColl's Bridge site found that adequate residual flow had been provided at all times. The Company was fully compliant with lake level restrictions. The rise and recession rates during floods were controlled to a satisfactory level, with the flows only outside limits during periods of rapid water level rise within the catchment.

The primary Company representatives based in Tauranga have maintained good channels of communication with Council, with frequent open discussions regarding Consent condition requirements and potential Consent non-compliance. The Company have continued to consult with stakeholders and engage with iwi.

The Company have a team of local staff who have numerous responsibilities, including responding to alarms at the Pātea HEPS, and implementing some of the more tangible Consent requirements. Through

inspections and liaison with these staff, the team continue to demonstrate that they are proactive in achieving Consent compliance.

The Company has an Emergency Management Plan (EMP) which is reviewed annually and forwarded to all parties as required by Consent. This EMP covers emergencies such as floods, earthquakes and volcanic eruption. The annual update was received during this monitoring period.

Overall, the scheme has been operated well during the period under review.

3.2 Environmental effects of exercise of consents

Environmental monitoring undertaken by the Council, including observations made during inspections, coupled with monitoring undertaken by the Company provides a valuable insight into the environmental effects of the scheme.

The Company has operated a trap and transfer system for many years now, which has resulted in thousands of galaxiids and eels being transferred into the Pātea River headwaters. During the 2023/24 season three 'target' fish species were trapped in the Pātea fish trap: longfin eels, shortfin eels and banded kōkopu. Kōaro were not found this monitoring year. The trap captured a total of approximately 193,321 elvers. There were also 504 kōkopu captured. Although the total number of elvers caught in 2023/24 slightly exceeded the 2022/23 season, both years recorded some of the lowest counts since monitoring began in 2001. Preliminary indications from the recent fish survey indicate that the trap and transfer programme supports recruitment upstream.

There continues to be a lack of presence of lamprey in the river, and no observations of the species have been made at the scheme since the 2015/2016 transfer. During the 2021/22 monitoring period it was concluded that there are issues with the viability of re-establishment of lamprey upstream of the dam. With the issue of the latest version of Consent 0489 during November 2023, an additional special condition has been inserted in order to directly address lamprey. Engagement of NIWA by the Company to formulate a Lamprey Action Plan is currently underway.

Downstream passage of adult eels remains hard to achieve. A comprehensive review and revision of the Downstream Eel Bypass Procedure was undertaken for the March-June 2024 downstream eel migration. This included intensive observation and directed action and the initiation of small spill events to assist eel migration. Downstream eel migration results for 2024 showed a total of 772 successful downstream migrants counted through the bypass system operation and short spill events specifically operated to facilitate downstream eel migration. This is the highest number of migrants observed to date and is largely due to the additional efforts made to optimise the bypass system with direct staff observation and control to facilitate eel migration. An overall mortality of <10% of total observed eels was achieved this season.

The eel efficacy trial (2024) that coincided with the downstream migration season showed 100 percent of eels passed the bypass system safely. It was concluded, that ultimately while the bypass system generally provides successful fish passage, there is still a substantial issue with tuna mortality. Especially for the greater proportion of individuals which instead attempt passage through the intake screens. Several recommendations were put forward to be incorporated during the 2025 migration.

The lower river ecological monitoring undertaken previously and repeated during the 2022/23 monitoring period determined that the lower Pātea River supports a significant native fishery and moderate macrophyte communities. The macroinvertebrate cover was found to be low, which is relatively typical for rivers that are subject to flow regulation from a hydroelectric dam. There was no apparent pattern in index scores both between sites and years. The invasive macrophyte hornwort was recorded for the first time however, it is known to have been present in Lake Rotorangi upstream since at least 2012.

Previous monitoring has concluded that although there is some risk of fish stranding in the lower reaches due to flow variation, the risk was not significant, as the amount of habitat in which fish could be stranded was limited in the lower river. The fish monitoring during 2023 was inconclusive in terms of differences between sites, as the number of fish caught was quite variable.

Monitoring has determined that trout spawning in the lower Pātea River is limited, and insufficient to mitigate the loss of downstream recruitment of trout from the headwaters. As a result, the Company embarked on a trout restocking programme, which began in spring 2017 and was undertaken on an annual basis until 2021. No tagged fish were caught during monitoring efforts below the dam. The restocking programme was reviewed during the previous monitoring period and concluded that the five annual releases have not been effective in remedying/mitigating the effects of the Pātea HEPS on trout. The releases of larger trout appear to have been more successful. The recommendation that the Company fund release up to 200 larger trout annually in the lower Pātea River, and the continuation of monitoring the component for a further five years has been accepted. The first release was implemented during October and November 2024.

Lake Rotorangi water quality monitoring was completed by the Council during this monitoring period. The State of the Environment Monitoring Technical Report was completed, based on the previous three years monitoring data. The data analysis provided some trends and observations. Total phosphorus is "highly likely" increasing in the whole lake and ammonia is "highly likely" decreasing throughout the lake. Dissolved oxygen in the hypolimnion and lake bottom has an annual minimum below the national bottom line. The trophic state of the lake was eutrophic for 2021/22 and 2022/23, and mesotrophic during 2023/24. When comparing the 2024 macrophyte survey to the previous surveys, it is evident that the invasive hornwort has continued to spread vastly, with *Ceratophyllum demersum* now the dominant macrophyte in Lake Rotorangi.

The scheme provides a significant recreational resource to the public, with Lake Rotorangi being a popular water skiing, jet skiing, swimming and kayaking location. In 2011 the Company completed a survey of lake hazards, and publicised the findings, in an effort to reduce the risk to lake users. The Company continues to manage the functionality of Glen Nui boat ramp. There was a complaint received during this period due to low lake levels. However, lake levels were deemed compliant, and the low levels were brief before raising levels in time for summer use and consent condition requirements. All other boat ramps were functional during this monitoring period.

The scheme impacts on the recreational value of the lower Pātea River. A condition of consent requires the Company to provide water for an annual jet boat race event when requested to do so. The lower river provides an important fishery, with whitebaiting popular in certain locations.

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 7-18.

Table 7 Summary of performance for Consent 0488-2

Purpose: To use the Pātea Dam and associated infrastructure		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Maintain dam in accordance with guidelines	Liaison with Company	Yes
2. Provide an Emergency Management Plan to the TCDEMG	Liaison with Company and TCDEMG	Yes
3. Forward copy of plan to various parties	Liaise with Company	Yes
4. Undertake annual review of plan	Liaise with Company	Yes
5. Review condition	Next review 2028	N/A

Purpose: To use the Pātea Dam and associated infrastructure		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 8 Summary of performance for Consent 0489-2.3

Purpose: To dam the Pātea River		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Limits rate of water that can be diverted	Review of data provided to Council	Yes
2-3. Clarify how this allocation of water does or does not affect the current and future allocation of water upstream of the dam location of discharge point	Procedural	N/A
4. Requires a flow of 2.2 cumecs in the Pātea River	Review of data provided to Council	Yes
5. Limits how often flow can be less than 2.2 cumecs during occasions of abnormally low rainfall	Review of data provided to Council	N/A
6. Requires an explanation should condition 5 be engaged	Receipt of explanation	N/A
7. Allows for a lower residual flow should upstream allocation increase	Procedural and Data review	N/A
8. Sets the absolute minimum flow in the lower Pātea River at 1.8 cumecs	Review of data provided to Council	Yes
9. Sets out the minimum and maximum lake levels	Review of data provided to Council	Yes
10. Requires notification and explanation of lake level being lowered beyond normal seasonal operating range	Notification received	N/A
11. Set out lake level restrictions until hazards have been adequately managed	Review of data provided to Council	Yes
12. Provide a real time estimate of lake level on internet	Liaison with Council	Yes
13. Install and maintain staff gauges in lake	Inspections	Yes
14. Complete and report on hazard survey of Lake Rotorangi	Receive report - provided in 2011	Yes
15. Requires publication of maps detailing the identified hazards	Inspections, liaison with Company - provided in 2011	Yes
16. Construct and maintain a floating pontoon at Pukekino Landing	Inspections	Yes
17. Measure and record lake level, and provide records to Council monthly	Review of data provided to Council	Yes
18. Take all reasonable steps to avoid scheme presenting a migration barrier for target fish species	Inspections and liaison with Company	Yes
19-21. Present report detailing how condition 18 will be achieved	Receipt of report	Yes
22. Implement the fish passage systems detailed in report within 12 months	Inspections	Yes
23-26. Prepare a monitoring plan following prescribed process	Receipt of monitoring plan	Yes

Purpose: To dam the Pātea River		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
27. Allows a review of monitoring plan, and prescribes required process	Receipt of revised monitoring plan-not revised in period	N/A
28. Reports annually on the success of the fish transfer programme	Receipt of annual report	N/A see Table 9
29. Surveys and reports on the estimated densities of the target species upstream of the dam	One report to be received within nine months of consent commencing, another in the sixth year after commencement	Yes
30. Review report of the fish transfer system, including recommendations	Receipt of report within six years of consent commencing	Yes
31. Monitor and report on the downstream ecology of the Pātea River	Receipt of one report in monitoring period	Yes
32. Investigate and report on the effects of the dam on trout in the lower Pātea River	Receipt of reports	Yes
33. Undertake a trout restocking programme if required	Inspections, liaison with Company	Yes
34. If trout restocking undertaken, develop and implement monitoring programme	Receipt of monitoring programme, liaison with Company	Yes
35-36. Monitor and report on dissolved oxygen investigation	Receipt of report, liaison with Company	Yes
37. Monitor and report on the potential for fish stranding	Receipt of report - see 2011-2014 report	Yes
38-39. Monitor and report on the sedimentation of Lake Rotorangi	Receipt of report	Yes
40. Report on the flooding risk to the Mangamingi Bridge and install safety devices	Receipt of report, liaison with Company	Yes
41. Ecological and water quality survey of Lake Rotorangi every three years	Receipt of report, liaison with Company	Yes
42-51. Sets out how the Expert Panel will be established and coordinated	Liaison with Company	Yes
52. Requires certain reports to be circulated to stakeholders for consultation	Liaison with Company	Yes
53. Requires that stakeholder comments are provided to Council	Receipt of comments, liaison with Company	Yes
54. Annual meeting of stakeholders	Attend meeting	Yes
55. Maintain boat ramps	Inspections	Yes
56. Allows temporary restriction of access at boat ramps, notification required	Notification received, inspections	Not implemented during reported period
57. Erect signs at various locations warning of flow and lake level fluctuations and log debris	Inspections	Yes
58. Maintain floating booms at the dam	Inspection	Yes
59-61. Provide water for an annual jet boat race event	Liaison with Company	Yes
62. Install signs should access to boat ramps be restricted due to low lake level	Inspection, liaison with Company	Yes
63. Notify barge operator of potential restriction to Tangahoe Valley boat ramp	Liaison with company & barge operator	Not required during the year

Purpose: To dam the Pātea River		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
64. Review condition	Review sought 20 December 2022, 0489-2.4 issued 2 November 2023	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 9 Summary of performance for Consent 0489-2.4

Purpose: To dam the Pātea River		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Limits rate of water that can be diverted	Review of data provided to Council	Yes
2-3. Clarify how this allocation of water does or does not affect the current and future allocation of water upstream of the dam location of discharge point	Procedural	N/A
4. Requires a flow of 2.2 cumecs in the Pātea River	Review of data provided to Council	Yes
5. Limits how often flow can be less than 2.2 cumecs during occasions of abnormally low rainfall	Review of data provided to Council	N/A
6. Requires an explanation should condition 5 be engaged	Receipt of explanation	N/A
7. Allows for a lower residual flow should upstream allocation increase	Procedural & Data review	N/A
8. Sets the absolute minimum flow in the lower Pātea River at 1.8 cumecs	Review of data provided to Council	Yes
9. Sets out the minimum and maximum lake levels	Review of data provided to Council	Yes
10. Requires notification and explanation of lake level being lowered beyond normal seasonal operating range	Notification received	N/A
11. Set out lake level restrictions until hazards have been adequately managed	Review of data provided to Council	Yes
12. Provide a real time estimate of lake level on internet	Liaison with Council	Yes
13. Install and maintain staff gauges in lake	Inspections	Yes
14. Complete and report on hazard survey of Lake Rotorangi	Receive report-provided in 2011	Yes
15. Requires publication of maps detailing the identified hazards	Inspections, liaison with Company-provided in 2011	Yes
16. Construct and maintain a floating pontoon at Pukekino Landing	Inspections	Yes
17. Measure and record lake level, and provide records to Council daily	Review of data provided to Council	No Data currently provided monthly; working with Company to provide daily as per altered condition
18. Take all reasonable steps to avoid scheme presenting a migration barrier for target fish species	Inspections and liaison with Company	Yes

Purpose: To dam the Pātea River		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
18a. Feasibility of the re-establishment of lamprey and subsequent mitigation if deemed not feasible. Annual feasibility review	Liaison with Company. As this condition is new, the Company is still in the process of commissioning relevant expertise	N/A
19-21. Present report detailing how condition 18 will be achieved	Receipt of report	Yes
22. Implement the fish passage systems detailed in report within 12 months	Inspections	Yes
23-26. Prepare a monitoring plan following prescribed process	Receipt of monitoring plan	Yes
27. Allows a review of monitoring plan, and prescribes required process	Receipt of revised monitoring plan-not revised in period	N/A
28. Reports annually on the success of the fish transfer programme. Final report due 30 November	Receipt of annual report It is noted there are new prescriptive reporting timeframes introduced to this condition. The report is completed by third party consultants and involves a review process by stakeholders and Expert Panel.	No Draft annual report received. However, new timeframes not met regarding the review process. Council working with Company to ensure these are met in 2025
29. Surveys and reports on the estimated densities of the target species upstream of the dam	One report received within nine months of consent commencing, another in the sixth year after commencement (due November 2029)	Yes
30. Report detailing compliance with conditions 18 to 21	Every sixth year	N/A
31. Monitor and report on the downstream ecology of the Pātea River now biennial	Receipt of report January 2023	Yes
32. Investigate and report on the effects of the dam on trout in the lower Pātea River	Receipt of report January 2024 Next report due after a further five years of restocking	Yes
33. Undertake a trout restocking programme if required	Inspections, liaison with Company Restocking recommendation from report due to start 2024/25	Yes
34. If trout restocking undertaken, develop and implement monitoring programme	Receipt of monitoring programme, liaison with Company	Yes
35-36. Monitor and report on dissolved oxygen investigation	Receipt of report, liaison with Company	Yes
37. Monitor and report on the potential for fish stranding	Receipt of report - see 2011-2014 report	Yes
38-39. Monitor and report on the sedimentation of Lake Rotorangi	Receipt of report	Yes
40. Report on the flooding risk to the Mangamingi Bridge and install safety devices	Receipt of report, liaison with Company	Yes
41. Ecological and water quality survey of Lake Rotorangi every three years	Survey completed 2023/24 as part of SoE Report received from Council November 2024 Paid every third year by the Company	Yes
42-51. Sets out how the Expert Panel will be established and coordinated	Liaison with Company	Yes
52. Requires certain reports to be circulated to stakeholders for consultation	Liaison with Company	Yes

Purpose: To dam the Pātea River		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
53. Requires that stakeholder comments are provided to Council	Receipt of comments, liaison with Company	Yes
54. Annual meeting of stakeholders	Attend meeting June 2024	Yes
55. Maintain boat ramps	Inspections	Yes
56. Allows temporary restriction of access at boat ramps, notification required	Notification received, inspections	Not implemented during reported period
57. Erect signs at various locations warning of flow and lake level fluctuations and log debris at	Inspections	Yes
58. Maintain floating booms at the dam	Inspection	Yes
59-61. Provide water for an annual jet boat race event	Liaison with Company	Yes
62. Install signs should access to boat ramps be restricted due to low lake level	Inspection, liaison with Company	Not implemented during reported period
63. Notify barge operator of potential restriction to Tangahoe Valley boat ramp	Liaison with company and barge operator	Not required during the year
64. Review condition	Review sought 20 December 2022, 0489-2.4 issued 2 November 2023	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **Good**

N/A = not applicable

Table 10 Summary of performance for Consent 0491-2.1

Purpose: To take and use water from Lake Rotorangi		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Limits rate of water that can be diverted	Review of data provided to Council	Yes
2-3. Clarify how this allocation of water does or does not affect the current and future allocation of water upstream of the dam Location of discharge point	Procedural	N/A
4. Requires a flow of 2.2 cumecs in the Pātea River	Review of data provided to Council	Yes
5. Limits how often flow can be less than 2.2 cumecs during occasions of abnormally low rainfall	Review of data provided to Council	N/A-Did not meet criteria in monitored period
6. Requires an explanation should condition 5 be engaged	Receipt of explanation	N/A-Did not engage condition 5
7. Allows for a lower residual flow should upstream allocation increase	Procedural and data review	N/A
8. Sets the absolute minimum flow in the lower Pātea River at 1.8 cumecs	Review of data provided to Council	Yes
9. Report on options to deter adult eels from the intake, and recommend one option for implementation	Report received in 2011	Yes
10. Implement deterrent measures for adult eels recommended in report within 12 months of consent commencement	Inspections, liaison with Company	No (delayed)
11. Measure and record the flow in the lower Pātea River, provide records to Councils	Inspections, Review of data provided to Council	Yes

Purpose: To take and use water from Lake Rotorangi		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
12. All water taken to be returned to river	Inspections	Yes
13. Review condition	Next review 2028	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 11 Summary of performance for Consent 7188-1

Purpose: To maintain the Pātea Dam		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Activity is for maintenance or minor upgrades	Inspections	Yes
2. No contaminant other than sediment to be released to river or lake	Inspections	Yes
3. Limits the decrease in visual clarity	Inspections where appropriate	Not assessed
4. Remove all excess material from river or lake	Inspections	Yes
5. Any dewatering for minimum time necessary	Inspections	No dewatering undertaken
6. Minimise the area of disturbance	Inspections	Yes
7. Review condition	Next review 2028	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 12 Summary of performance for Consent 7190-1.1

Purpose: To discharge water from the Pātea HEPS		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Survey the erosion of the lower Pātea River	Liaison with Company	Yes
2. Alter frequency of surveys if criteria met	Procedural	N/A
3. Provide survey results	Receipt of report	Yes
4. Maintain the dam in accordance with guidelines	Liaison with Company	Yes
5. Provide an Emergency Management Plan to the TCDEMG	Liaison with Company and TCDEMG	Yes
6. Forward copy of plan to various parties	Liaise with Company	Yes
7. Undertake annual review of plan	Liaise with Company	Yes
8. Measure and record the rate of discharge from the Pātea powerhouse and main service spillway provide records to Councils	Inspections, Review of data provided to Council	Yes
9. Requires a flow of 2.2 cumecs in the Pātea River	Review of data provided to Council	Yes
10. Limits how often flow can be less than 2.2 cumecs during occasions of abnormally low rainfall	Review of data provided to Council	N/A-Did not meet criteria in monitored period
11. Requires an explanation should condition 10 be engaged	Receipt of explanation	N/A-Did not engage condition 10

Purpose: To discharge water from the Pātea HEPS		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
12. Allows for a lower residual flow should upstream allocation increase	Procedural and data review	N/A
13. Sets the absolute minimum flow in the lower Pātea River at 1.8 cumecs	Review of data provided to Council	Yes
14. Annual payment to Taranaki Tree Trust	Liaison with Company, Taranaki Tree Trust	Yes
15. Rise rate limit and recession rate limit during high flows	Review of data provided to Council	Yes
16. Prescribes how spillway gates are to operate during receding flow	Review of data provided to Council	Yes
17. Contribute to the maintenance of two hydrographic stations	Liaison with Company	Yes
18. Review condition	Next review 2028	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 13 Summary of performance for Consent 7191-1

Purpose: To discharge water through auxiliary and emergency spillways		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Survey the erosion of the lower Pātea River	Liaison with Company	Yes
2. Alter frequency of surveys is criteria met	Procedural	N/A
3. Provide survey results	Receipt of biennial channel report 2023, next due 2025 Data now digital interface	Yes
4. Rise rate limit and recession rate limit during high flows	Review of data provided to Council	Yes
5. Prescribes how spillway gates are to operate during receding flow	Review of data provided to Council	Yes
6. Review condition	Next review 2028	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 14 Summary of performance for Consent 7192-1

Purpose: *To take groundwater for domestic use*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Undertake activity in accordance with application	Inspections, liaison with Company	Yes
2. Limits daily volume taken	Review of data provided to Council	Yes
3. Install water meter	Inspections, liaison with Company	Yes
4. Take records of water taken	Review of data provided to Council	Yes
5. Lapse provision	Consent exercised in time	N/A
6. Review condition	Next review 2028	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 15 Summary of performance for Consent 7193-1 – withdrawn 29 May 2024

Purpose: To discharge contaminants related to abrasive blasting processes-consent not exercised during period under review		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adopt best practicable option	Inspections	N/A
2. No offensive or objectionable discharge beyond boundary	Inspections	N/A
3. Clear work area at end of each day	Inspections	N/A
4. Sand content not to contain more than 5% silica or 2% dust	Inspections, liaison with Company	N/A
5. Ensure operators understand consent	Inspections, liaison with Company	N/A
6. Discharge not to cause various effects on surface water	Inspections	N/A
7. All items to be blasted to be screened as completely as practicable	Inspections	N/A
8. Notify Council if blasting within 100m of water	Notification received, liaison with Company	N/A
9. Limits on suspended particulate matter and dust deposition	Inspections	N/A
10. Lapse provision	Date not yet past	N/A
11. Review condition	No reviews remaining	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**N/A** **N/A**

N/A = not applicable

Table 16 Summary of performance for Consent 7194-1

Purpose: To discharge contaminants related to the burning of driftwood		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adopt best practicable option	Inspections	Yes
2. Due regard to be had to the direction and strength of wind at the time	Inspections, liaison with Company	Yes
3. No offensive or objectionable discharge beyond boundary	Inspections	Yes
4. To be undertaken in accordance with application	Inspections	Yes
5. Burning to be supervised	Liaison/inspection	Yes
6. Council to be notified	Receipt of notification November 2023 for December 2023	Yes
7. Maintain a record of each burning event	Liaison with Company	Yes
8. Lapse provision	Consent has been exercised	N/A
9. Review condition	No reviews remaining	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 17 Summary of performance for Consent 7773-1

Purpose: To place and use a floating pontoon at Pukekino Landing		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. To be constructed in accordance with application	Inspections	Yes

Purpose: To place and use a floating pontoon at Pukekino Landing		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
2. Council to be notified of installation	Receipt of notification	Yes
3. Minimise the area of disturbance	Inspections	Yes
4. Take all reasonable steps to reduce sediment discharges	Inspections	Yes
5. Remove structure if no longer required	Structure still required	N/A
6. Steps to be taken should archaeological remains be discovered	No such remains discovered	N/A
7. Lapse provision	Consent has been exercised	N/A
8. Review condition	No reviews remaining	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 18 Evaluation of environmental performance over time

Year	Consent numbers	High	Good	Improvement req	Poor
2019/20	0488-2, 0489-2.3, 0491-2.1, 7188-1, 7190-1.1, 7191-1, 7192-1, 7193-1, 7194-1, 7773-1	7	1	1	
2020/21	0488-2, 0489-2.3, 0491-2.1, 7188-1, 7190-1.1, 7191-1, 7192-1, 7193-1, 7194-1, 7773-1	7	1	1	
2021/22	0488-2, 0489-2.3, 0491-2.1, 7188-1, 7190-1.1, 7191-1, 7192-1, 7193-1, 7194-1, 7773-1	8		1	
2022/23	0488-2, 0489-2.3, 0491-2.1, 7188-1, 7190-1.1, 7191-1, 7192-1, 7193-1, 7194-1, 7773-1	8		1	
2023/24	0488-2, 0489-2.3, 0491-2.1, 7188-1, 7190-1.1, 7191-1, 7192-1, 7193-1, 7194-1, 7773-1	9			

Note: Consent 7193 not exercised, therefore a N/A rating

During the monitoring period, the Company demonstrated a high level of environmental and a good administrative performance, as defined in Appendix II. All components of the Pātea HEPS were generally operated well for the majority of the reported period.

3.4 Recommendations from the 2022/23 Annual Report

In the 2022/23 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities at the Pātea HEP in the 2023/24 year remain unchanged from that undertaken in 2022/23.
2. THAT should there be issues with environmental or administrative performance in 2023/24, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Recommendation 1 was implemented in the 2023/24 monitoring period. Recommendation 2 was not required to be implemented.

3.5 Alterations to monitoring programmes for 2024/25

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.

There are no planned changes for 2024/25 monitoring programme. Additional monitoring may be required as the recommendations from lamprey and downstream eel efficacy surveys continue to be addressed.

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 2024/25.

4. Recommendations

1. THAT in the first instance, monitoring of consented activities at the Pātea HEP in the 2024/25 year remain unchanged from that undertaken in 2023/24.
2. THAT should there be issues with environmental or administrative performance in 2024/25, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

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

Anoxia	Absence of dissolved oxygen (defined as dissolved oxygen concentrations less than 0.5g/m^3)
ASL	Above sea level.
Basinal	The depression occupied by a lake.
Benthic	Bottom of lake.
Biomonitoring	Assessing the health of the environment using aquatic organisms.
BOD	Biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate.
BODF	Biochemical oxygen demand of a filtered sample.
Bund	A wall around a tank to contain its contents in the case of a leak.
CBOD	Carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate.
Cumec	A volumetric measure of flow- 1 cubic metre per second ($1m^3s^{-1}$).
Deltaic	Of or pertaining to a river delta, where deltas as formed as rivers empty their water and sediment into another body of water.
DO	Dissolved oxygen.
DRP	Dissolved reactive phosphorus.
EMP	Emergency Management Plan.
Epilimnion	Lake zone above the thermocline (surface layer).
Eutrophic	Abundant levels of nutrients that support a dense growth of algae and other organisms.
Fluvial	Of or found in a river.
Fresh	Elevated flow in a stream, such as after heavy rainfall.
g/m^3	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
HEPS	Hydroelectric power scheme.
Hypolimnion	Zone below the thermocline in a stratified lake.
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^2	Square metres.
Mesotrophic	Moderate levels of nutrients, fairly productive in terms of aquatic animal and plant life.
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.
pH	A numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
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.
QMCI	Quantitative macroinvertebrate community index.
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).
RL	Reference level, the surveyed level of a location relative to a datum.
RMA	*Resource Management Act 1991* and including all subsequent amendments.
SS	Suspended solids.
SQMCI	Semi quantitative macroinvertebrate community index.
Supertrophic	Saturated in phosphorus and nitrogen, often associated with poor water clarity.
TCDEMG	Taranaki Civil Defence Emergency Management Group.
Temp	Temperature, measured in °C (degrees Celsius).
Thalweg	The line or curve of lowest elevation within a valley or watercourse.
Thermocline	Zone of most rapid temperature change in stratified lakes.
TLI	Trophic level index, a method of measuring the ecological health of lakes based on the amount of nutrients and algae growing in them.
Trophic level	Amount of nutrient enrichment of a body of water.
Turb	Turbidity, expressed in NTU.
UI	Unauthorised Incident.

For further information on analytical methods, contact a manager within the Environment Quality Department.

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Appendix I

Resource consents held by Manawa Energy Ltd

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

Water abstraction permits

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. Permits authorising the abstraction of water are issued by the Council under Section 87(d) of the RMA.

Water discharge permits

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. Permits authorising discharges to water are issued by the Council under Section 87(e) of the RMA.

Air discharge permits

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Permits authorising discharges to air are issued by the Council under Section 87(e) of the RMA.

Discharges of wastes to land

Sections 15(1)(b) and (d) of the RMA stipulate that no person may discharge any contaminant onto land if it may then enter water, or from any industrial or trade premises onto land under any circumstances, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Permits authorising the discharge of wastes to land are issued by the Council under Section 87(e) of the RMA.

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. Land use permits are issued by the Council under Section 87(a) of the RMA.

Coastal permits

Section 12(1)(b) of the RMA stipulates that no person may erect, reconstruct, place, alter, extend, remove, or demolish any structure that is fixed in, on, under, or over any foreshore or seabed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Coastal permits are issued by the Council under Section 87(c) of the RMA.

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:	Trustpower Limited Private Bag 12023 Tauranga 3143
Decision Date:	25 June 2009
Commencement Date:	17 December 2010

Conditions of Consent

Consent Granted:	To use the existing Patea Dam and associated infrastructure in, on, under or over the bed of the Patea River and Lake Rotorangi for hydroelectric power generation purposes
Expiry Date:	1 June 2040
Review Date(s):	As per special condition 5
Site Location:	Patea Hydroelectric Power Scheme, Maben Road, Hurleyville, Patea
Grid Reference (NZTM)	1734751E-5621514N
Catchment:	Patea
Tributary:	Lake Rotorangi

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 maintain the Patea Dam and all its appurtenant components and ancillary / appurtenant structures to the standards recommended in the operative New Zealand Society of Large Dams, Dam Safety Guidelines (2000) operative as at 20 May 2009.

2. Within 6 months of the commencement of this consent, the consent holder shall, after reasonable consultation with the Taranaki Civil Defence Emergency Management Group, provide an Emergency Management Plan to the Taranaki Civil Defence Emergency Management Group addressing abnormal or excessive release of flows from the Patea Dam. The Plan shall include reference to the following matters:

   (a) identification of modes of such flows, potential size and duration of releases and the probability of their occurrence; and

   (b) the modelling of downstream effects of such discharges particularly on private property; and

   (c) contingency plans for alerting communities and authorities in such events.

3. A copy of the Emergency Management Plan shall be forwarded by the consent holder to the South Taranaki District Council, the Stratford District Council, the New Plymouth District Council, the Hawera station of New Zealand Police and to New Plymouth station of the New Zealand Fire Service within 7 days of being provided to the Taranaki Civil Defence Emergency Management Group.

4. The consent holder shall undertake an annual review of the Emergency Management Plan. Where amendments are made to the Plan, they will be notified to the parties listed in condition 3 within 7 days.

5. 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 2 years from commencement of consent; during the sixth year and every 6 years thereafter, 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 it was not appropriate to deal with at the time the consent was granted.

Transferred at Stratford on 31 October 2016

For and on behalf of
Taranaki Regional Council

_____

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:	Trustpower Limited Private Bag 12023 Tauranga 3143
Decision Date (Change):	29 September 2017
Commencement Date (Change):	29 September 2017 (Granted Date: 17 December 2010)

Conditions of Consent

Consent Granted:	To dam the Patea River (forming Lake Rotorangi) and divert water from Lake Rotorangi through the Scheme's intake structure, the service spillway, auxiliary spillway and emergency spillway, for hydro-electric power generation purposes
Expiry Date:	1 June 2040
Review Date(s):	In accordance with special condition 64
Site Location:	Patea Hydroelectric Power Scheme, Maben Road, Hurleyville, Patea
Grid Reference (NZTM)	1734750E-5621510N
Catchment:	Patea
Tributary:	Lake Rotorangi

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 all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

Water Abstraction Restrictions

1. Subject to the availability of such flows after any upstream uses currently authorised and any uses subsequently authorised in accordance with conditions 2 and 3 below, the consent holder is authorised to divert up to: 75 cubic metres per second of water for hydro-electric power generation purposes; and 25 cubic metres per second of water for fish passage purposes; and 1,400 cubic metres per second for flood flows.

2. Nothing in this consent or the associated consents shall be deemed to:

   (a) create an allocation of water to the exclusion of the exercise or renewal of any consents to dam, divert, take and/or use water in the Patea River catchment upstream of the Patea Dam which existed at 6 May 2009 up to the rates and volumes provided for in those consents as at that date; or

   (b) create an allocation of water to the exclusion of the carrying out of any permitted activity to dam, divert, take and/or use water in the Patea River catchment upstream of the Patea Dam which is authorised in Regional Plans as at 6 May 2009, whether or not that activity was in existence as at May 2009.

   This consent and associated consents shall not be exercised in such a manner as to limit the exercise of any consent or permitted activity referred to above.

3. The total amount of water authorised to be dammed, diverted, taken and/or used pursuant to this consent and associated consents and the total volume allocated under this consent and associated consents, excludes such water as may be authorised to be taken, diverted and or used, by any other persons upstream of Patea Dam pursuant to a water permit granted during the term of this consent, and nothing in this consent or any of the associated consents shall preclude the grant of such additional consents during the term of this consent. Provided that this exclusion shall be limited to a maximum rate of abstraction for upstream consents not existing as at May 2009, not exceeding 0.305 cubic metres per second.

4. Subject to conditions 5-8 below, the exercise of this consent shall not cause the flow in the Patea River, as measured at the 'McColl's Bridge' measuring site (site no. 34305), to be less than 2.2 cubic metres per second (as an hourly average)(the 'minimum flow').

5. Notwithstanding condition 4 above, following unusually long periods of less than normal rainfall in the Patea River catchment the exercise of this consent may cause the flow in the Patea River to be less than the minimum flow, provided that the flow in the Patea River as measured at the 'McColl's Bridge' measuring site (site no. 34305) is not less than 2.2 cubic metres per second (as an hourly average):

   (a) at any time during more than 5 out of any 10 consecutive calendar years; or

   (b) for more than 72 hours in any 30 day period.

6. On any occasion when the exercise of this consent causes the flow in the Patea River to be less than the minimum flow in accordance with condition 5 the consent holder shall, within 14 days, provide the Chief Executive, Taranaki Regional Council with documentation showing that the breach of the minimum flow was a direct result of an unusually long period of less than normal rainfall in the Patea River catchment.

7. In the event that any future upstream water takes (not consented as at 6 May 2009) in combination with existing takes, cause the total inflow to Lake Rotorangi to be less than 2.1 cubic metres per second, the minimum flow referred to in condition 4 shall, at times when the total inflow to Lake Rotorangi is less than 2.1 cubic metres per second, be temporarily reduced by a rate equivalent to the estimated combined rate of take by such future upstream water takes.

8. At no time shall the exercise of this consent cause the flow in the Patea River, as measured at the 'McColl's Bridge' measuring site (site no. 34305), to be less than 1.8 cubic metres per second (as an hourly average).

   Advice Note: *For the avoidance of doubt, it is recorded that the intent of condition 7 is to provide relief to the consent holder if a future allocation of some or all of the 0.305 m^3/s referred to in condition 3 of consents 0491-2 and 0489-2 causes a reduction in lake inflows below 2.1 m^3/s. During those times, the minimum flow below the Patea Dam can be temporarily reduced to reflect the lower inflows. If any future consents are granted on terms that require any future consent holder to cease taking at times when the consent holder is restricted by the minimum flow then the downstream minimum flow will not be affected by that consent.*

   Advice Note: *Nothing in this consent precludes the consent holder from submitting (on any basis permitted by the Act) on any future consent or re-consenting applications to take water from the Patea River catchment upstream of Patea Dam. For the avoidance of doubt, any such future applications need to be considered on their merits.*

Lake Level Management

9. The consent holder shall manage the water level of Lake Rotorangi immediately behind the dam so that:

   (a) the level does not exceed RL 79 m unless the service spillway gates are fully open;

   (b) the level is no lower than RL 74 m;

   (c) the level only exceeds RL 78 m during and immediately following a flood, and the consent holder shall use best endeavours to ensure the level returns to less than RL 78 m as soon as is reasonably achievable;

   (d) subject to condition 11, during the period beginning on 15 December and ending on 15 April the following year the level is no lower than RL 76 m, except for a total of up to 264 hours when it may be lower than RL 76 m but no lower than RL 75 m, provided that the level is below RL 76 m only:

      (i) for the purpose of providing generation for a short term shortage in electricity supply; and

      (ii) for the minimum period necessary to provide the generation and to return the level to RL 76 m; and

   (e) subject to condition 11, during the period beginning on 16 April and ending on 14 December the level is lower than RL 76 m on no more than 125 days and lower than RL 75 m on no more than 40 days.

10. On each occasion that the water level in Lake Rotorangi is below RL 76 m during a period beginning on 15 December and ending on 15 April the following year, the consent holder shall:

   (a) advise the Chief Executive, Taranaki Regional Council within 24 hours of the decision to take the level below RL 76 m being made, by sending an email to worknotification@trc.govt.nz, or by another method that the Chief Executive may advise, with an explanation of the need for the low lake level; and

   (b) within 30 days of the level first being below RL 76 m, provide the Chief Executive, Taranaki Regional Council, with a report demonstrating that the low lake level was necessary to provide for a short term electricity shortage and that the period when the level was below RL 76 m was the minimum necessary.

11. From the commencement of this consent until the hazards to water skiers and boaters have been avoided, remedied or mitigated, in accordance with condition 15 of this consent, the water level in Lake Rotorangi shall be:

   (a) no lower than RL 76 m for the period beginning on 1 November and ending on 30 April the following year; and

   (b) during the period beginning 1 May and ending on 31 October:

      (i) lower than RL 76 m on no more than 128 days; and

      (ii) lower than RL 75 m on no more than 36 days.

12. The consent holder shall provide a real time estimate of the level of Lake Rotorangi at Glen Nui Boat Ramp and Pukekino Landing to the nearest ±0.25 m via a readily available remote electronic means (e.g. the internet) so that recreational users and the public can easily determine whether the lake is suitable for their proposed activity.

    Advice Note: *TrustPower will consult with the Hawera Water Ski Club on the form of the presentation of the estimate of lake levels. For the avoidance of doubt TrustPower is not required to present the estimates or levels under this condition in a form that displays commercially sensitive information.*

13. Subject to the consent holder obtaining any necessary resource consents and access agreements, the consent holder shall install and maintain staff gauges at Glen Nui Boat Ramp and Pukekino Landing that indicate the lake level over the full operating range.

14. The consent holder shall undertake and report on a hazard survey in those areas of Lake Rotorangi that are used for water skiing. In undertaking and reporting on this survey the consent holder shall:

    (a) following consultation with the Hawera Water Ski Club and Mangamingi Residents, being submitters to this application, identify:

        (i) the type of survey to be undertaken,

        (ii) those areas of Lake Rotorangi to be surveyed, and

        (iii) the known hazards in those areas that do not require surveying;

    (b) within the areas required to be surveyed, identify the lake bed features between RL 73.5 m and RL 76 m greater than 2 metres from the lake edge at RL 76 m;

    (c) recommend the measures needed to avoid, remedy or mitigate any hazard which presents a greater threat to water skiers and boaters than existed under the lake level regime existing prior to the commencement of this consent (i.e. as required by condition 14 of consent 0488-1 and the associated Lake Level Management Plan); and

    (d) in preparing the recommendations to avoid, remedy or mitigate hazards (required by condition 14 (c)) the consent holder shall carry out reasonable consultation with Hawera Water Ski Club and Mangamingi Residents (being submitters to this application) that includes submitting the report to those parties for comment and allowing at least one month for a response.

15. The consent holder shall implement the following measures to avoid, remedy or mitigate hazards identified from the fulfilment of condition 14, having taken into account the consultation undertaken with, and the response of interested submitters:

    a) Provide a full set of A3 colour hazard maps at the following locations:
        - Hawera Water Ski Clubrooms;
        - Trust Power internet website (www.trustpower.co.nz);
        - Public boat ramps at Mangamingi, Tangahoe and Patea Dam.

    b) Provide a colour copy of the Hazard Report identified in Condition 15 at the following locations/to the following parties:
        - Taranaki Regional Council;
        - Hawera Water Ski Clubrooms;
        - Trust Power internet website (www.trustpower.co.nz);
        - Mangamingi Residents.

16. Subject to the consent holder obtaining any necessary resource consents and access agreements, within 12 months of the commencement of this consent the consent holder shall construct, and subsequently maintain, a structure at Pukekino Landing that is operational at all lake levels between RL 74 m and RL 76 m. The consent holder shall consult with the South Taranaki District Council and Hawera Water Ski Club about the structure's location and design but it shall, as a minimum, be:

    (a) able to provide safe access to the shoreline and boats for users;

    (b) capable of having at least two boats tied to it at once;

    (c) located to minimise any navigational hazard; and

    (d) designed to minimise floating debris collected on its upstream side.

17. The consent holder shall measure and electronically record the water level in Lake Rotorangi immediately behind the dam to an accuracy of ±0.01 metres at intervals not exceeding 15 minutes. These records shall be provided to the Chief Executive of Taranaki Regional Council at monthly intervals or upon reasonable request.

Fish Passage

18. The consent holder shall take all reasonable steps to ensure that the Patea Dam and Lake Rotorangi do not prevent the establishment and maintenance of populations of longfin eels, shortfin eels, lamprey, koaro, banded kokopu, giant kokopu and shortjaw kokopu (the 'target species') in the major areas of suitable habitat upstream of Lake Rotorangi. The objective shall be to establish and maintain populations of the target species that are comparable with those in similar barrier-free habitats. The steps to be taken shall include:

    (a) operating and maintaining a trap and transfer programme to facilitate passage of the target species upstream;

    (b) undertaking one reseeding of juvenile lamprey to the upper catchment to facilitate transfer of that species upstream; and

    (c) operating and maintaining a system to facilitate the non-lethal downstream passage of adult eels from upstream of the Patea Dam to below the tailrace.

    Advice Note: *In carrying out re-seeding of juvenile lamprey under condition 19(b) the consent holder shall be aware that it will require approvals under the Conservation Act 1987.*

19. Within six months of the commencement of this consent, the consent holder shall have prepared and submitted a comprehensive report to the Chief Executive Taranaki Regional Council that describes the up and downstream fish passage systems that the consent holder will adopt to achieve compliance with condition 18.

20. The report required by condition 19 must as a minimum:

    (a) For upstream passage:

        (i) specify the design and location of the fish trap;

        (ii) specify the period over which the fish trap and transfer programme will be operated (this period will align with the peak migration period(s) for each of the target species);

        (iii) detail the methodology to be used in the transfer of the fish, including a requirement for the target species to be transferred to suitable areas upstream of Lake Rotorangi (ranging from the mouths of upstream tributaries to above Stratford depending on species);

        (iv) specify the proposed locations of the releases of each species and the reasons for those locations being chosen;

        (v) specify the measures to be undertaken to enhance fish survival during the transfer and post release periods;

        (vi) specify the measures to be undertaken to avoid the transfer of smelt;

        (vii) within the first year of commencement of consent, detail a proposed means of transferring juvenile lamprey from other catchments to upstream tributaries of Lake Rotorangi on one occasion for the purposes of facilitating the passage of lamprey upstream.

    (b) For downstream passage:

        (i) set an objective for the effectiveness of the downstream fish passage system; and

        (ii) describe the proposed non-lethal fish passage system for adult eels, and detail the alternative options considered/assessed, the costs and benefits of each alternative and set out the reasons for recommending the proposed fish passage system.

21. In preparing any report referred to in conditions 19 and 20, the consent holder shall carry out reasonable consultation with the Department of Conservation, Nga Rauru Kiitahi and Ngati Ruanui that includes submitting the report to those parties for comment and allowing one month for a response. The consent holder shall provide any comments received from Department of Conservation, Nga Rauru Kiitahi or Ngati Ruanui to the Chief Executive, Taranaki Regional Council.

22. Within 12 months of receiving certification from the Chief Executive, Taranaki Regional Council that the report addresses the matters set out in conditions 19 and 20, the consent holder shall implement the fish passage systems detailed in the report prepared in accordance with conditions 19 and 20.

Monitoring Plan

23. All requirements for monitoring and investigations set out under conditions 24 to 41 below shall be undertaken in accordance with a 'Monitoring Plan', certified by the Chief Executive, Taranaki Regional Council that details techniques, methodologies and procedures that will be employed to ensure compliance with:
    - condition 30 (native fish populations);
    - condition 31 (downstream ecology);
    - condition 32 (investigations about effects on trout);
    - conditions 33 & 34 (trout restocking and monitoring of effects);
    - condition 35 (investigations about dissolved oxygen); and
    - condition 37 (flow fluctuations).

24. In preparing the Monitoring Plan, the consent holder shall carry out reasonable consultation with the Department of Conservation, Fish and Game New Zealand, Nga Rauru Kiitahi, and Ngati Ruanui, allowing one month for a response on the draft monitoring plan. The consent holder shall provide any comments received from the Department of Conservation, Fish and Game New Zealand, Nga Rauru Kiitahi, and Ngati Ruanui to the Chief Executive Taranaki Regional Council, at the time the final Monitoring Plan is submitted for certification under condition 26, including any responses from the consent holder to such comments.

25. In preparing the Monitoring Plan, the consent holder shall submit the final plan to the Expert Panel established for the purpose set out in condition 45. The consent holder shall provide any comments received from the Expert Panel to the Chief Executive Taranaki Regional Council, at the time the final Monitoring Plan is submitted for certification under condition 26, including any responses from the consent holder to such comments.

26. Within 6 months of the commencement of this consent the Monitoring Plan shall be submitted for approval by the Chief Executive, Taranaki Regional Council, acting in a certification capacity to ensure it meets the objectives of the respective monitoring conditions.

27. The Monitoring Plan can be revised by the consent holder as required to ensure the current monitoring methodologies or mitigation programmes are adequate to achieve the objective of the relevant condition(s), provided such changes are within the scope of these conditions, subject to the following process:

    (a) Unless such changes are in response to the recommendations of the Expert Panel under condition 49, the consent holder shall submit any proposed changes to the Monitoring Plan to the Expert Panel;

    (b) The consent holder shall carry out reasonable consultation about any proposed changes with the Department of Conservation, Fish and Game New Zealand, Nga Rauru Kiitahi, and Ngati Ruanui, allowing one month for a response on the proposed changes;

    (c) The proposed changes, along with any comments received from the consulted parties and Expert Panel, shall be submitted for approval to the Chief Executive Taranaki Regional Council, acting in a certification capacity to ensure it meets the objectives of the respective monitoring condition(s).

Monitoring Fish Passage and Transfers

28. The consent holder shall report annually to the Chief Executive, Taranaki Regional Council and to the Expert Panel details of the work undertaken to achieve compliance with condition 18 including:

    (a) an estimate of the number of each species transferred upstream of the Patea Dam and the location of their release;

    (b) an estimate of the success of each spillway opening event for the downstream passage of adult migrating eels using 'before' and 'after' counts.

29. The consent holder shall provide reports of monitoring that surveys and records the estimated densities of each of the target species upstream of Lake Rotorangi. The reports shall be provided to the Chief Executive, Taranaki Regional Council and to the Expert Panel:

    (a) within 9 months of the commencement of this consent; and

    (b) in the sixth year after commencement of this consent.

30. Within 6 years of the commencement of this consent, the consent holder shall prepare and submit to the Chief Executive, Taranaki Regional Council and to the Expert Panel a report that:

    (a) details the work that has been undertaken to achieve compliance with conditions 18 to 20;

    (b) reports the contribution made by the upstream and downstream fish passage systems to the achievement of the objective set out in condition 18;

    (c) assesses the effects of the Patea Dam and Lake Rotorangi on fish populations and the benefits of the work that has been undertaken to maintain and enhance these populations; and

    (d) makes recommendations about mitigating the effects of the Patea Dam and Lake Rotorangi on upstream fish populations, including:

        (i) the value of continuing the facilitation of fish passage;

        (ii) the species that should be targeted for any ongoing facilitation of passage;

        (iii) any changes to the programme that would help achieve compliance with condition 18; and

        (iv) alternative measures and/or programmes for avoiding, remedying or mitigating the effects of the Patea Dam blocking fish passage, in the event that the focus on facilitation of fish passage is shown to be unsuccessful in establishing and maintaining populations as required by condition 18.

    (e) includes any comments received on the draft report by the Expert Panel in relation to matters under (a) to (d) above.

Monitoring downstream ecology

31. The consent holder shall undertake monitoring that identifies and quantifies the ecology of the Patea River downstream of the dam, including the varial zone, using surveys of macroinvertebrates, macrophytes and fish. In the first two years of the commencement of this consent, annual surveys shall be carried out to coincide with monitoring of dissolved oxygen and water temperature required under condition 35. Thereafter, the surveys shall be carried out every two years. The results of each downstream ecological survey shall be reported to the Chief Executive of the Taranaki Regional Council and to the Expert Panel within 4 months of completion.

Effects on Trout

32. The consent holder shall undertake an investigation into the effects of the Patea Dam and Hydro-electric Power Scheme (HEPS) on trout downstream of the dam. Interim reports on this investigation shall be provided to the Chief Executive, Taranaki Regional Council and the Expert Panel annually for the first two years of the commencement of this consent, and a final report including recommendations to be provided to the Chief Executive, Taranaki Regional Council and to the Expert Panel within three years of this consent commencing. The final report shall include conclusions specifically about the effects of flow fluctuations, temperature and low dissolved oxygen on trout recruitment, and recommendations as to whether restocking and/or undertaking further investigations are necessary as a way to mitigate the effects of the Patea Dam and HEPS.

33. If the final report under condition 32 recommends that a trout restocking programme commence and this is confirmed by the Expert Panel, the Consent Holder shall, after consultation with Fish and Game New Zealand (Taranaki Region) and the Department of Conservation, help to mitigate the adverse effects of the power scheme on trout recruitment by annually restocking up to 1,000 tagged yearling brown trout and up to 500 tagged yearling rainbow trout into the Patea River between McColl's Bridge and the Patea Dam. The numbers of trout to be released each year (if any) is subject to North Island availability and shall be decided in consultation with Fish and Game New Zealand (Taranaki Region) and the Department of Conservation and will be reviewed after 5 years of monitoring.

34. If a trout restocking programme is implemented under condition 33, the consent holder, in consultation with Fish and Game New Zealand (Taranaki Region) and the Department of Conservation, shall develop and implement a monitoring programme to assess the success and effects of the restocking programme required by condition 33 including whether modification of the restocking programme is necessary to:

    (a) provide appropriate mitigation for adverse effects on trout populations; and/or

    (b) address levels of trout predation on native fish species where levels of predation are inhibiting the achievement of the objective of condition 18.

    The results of this monitoring shall be reported to the Chief Executive, Taranaki Regional Council and to the Expert Panel.

    The monitoring programme referred to in this condition shall be submitted to the Chief Executive, Taranaki Regional Council for certification purposes and thereafter included in the Monitoring Plan.

Investigation of Dissolved Oxygen

35. Within six months of the commencement of this consent, the consent holder shall commence an investigation that, to the reasonable satisfaction of the Chief Executive, Taranaki Regional Council, investigates the extent, frequency, causes and effects of discharges of de-oxygenated water into the river below the Patea Dam. The investigation shall include a determination of the dissolved oxygen concentration in the river by continuously monitoring dissolved oxygen and temperature at appropriate locations as specified in the Monitoring Plan.

36. The consent holder shall prepare reports on the investigation required by condition 35 and provide them to the Chief Executive, Taranaki Regional Council and the Expert Panel as follows:

    (a) within 18 months of the commencement of the investigation, an interim report on the first year of the investigation; and

    (b) within 36 months of the commencement of the investigation, a final report detailing the dissolved oxygen and temperature characteristics of the study reach and any likely adverse effects of low dissolved oxygen concentration.

    The final report shall include an assessment of the environmental effects of discharges of water with low dissolved oxygen from the Patea dam and options and recommendations for mitigating any effects and/or undertaking further investigations.

Monitoring Flow Fluctuations

37. In addition to the monitoring undertaken in accordance with conditions 31 and 32, the consent holder shall undertake and report on a one-off investigation of the effects of the rapid reduction in water level in the Patea River downstream of the Patea Dam on the frequency and ecological significance of native fish becoming stranded. The report shall be provided to the Chief Executive, Taranaki Regional Council and the Expert Panel within two years of the commencement of this consent.

Monitoring Sedimentation within Lake Rotorangi

38. The consent holder shall monitor sedimentation within Lake Rotorangi. The monitoring shall include:

    (a) an annual visual lakeshore inspection of Lake Rotorangi;

    (b) an annual photographic survey of the 15 permanent cross section locations; and

    (c) at least once every two years a bathymetric channel cross-section survey of the 15 permanent cross section sites. The cross section sites are as shown on Figure One, attached to and forming part of this consent.

39. The results, including a comparison with the previous survey, of the monitoring undertaken in accordance with condition 38 shall be forwarded to the Taranaki Regional Council by the consent holder within 60 days of the survey being completed.

40. The consent holder shall, in consultation with South Taranaki District Council prepare a report on the risk to the Mangamingi Bridge from increased flooding as a result of sedimentation in Lake Rotorangi, and shall install safety devices that, to the reasonable satisfaction of the Chief Executive of Taranaki Regional Council, adequately minimises the risk to the public.

41. An ecological and water quality survey shall be carried out to determine the degree of eutrophication of Lake Rotorangi and the amount and species of aquatic weeds established in the lake, together with a plan showing the location and extent of weed beds. The survey shall follow the sampling locations and methods of existing surveys and the first survey shall be completed and reported to the Taranaki Regional Council within 12 months of the consent commencing. Subsequent surveys shall be conducted at least once every three years and reported to the Taranaki Regional Council within 3 months of the survey being completed.

Expert Panel

42. The consent holder shall engage a panel of three independent people who have not otherwise been involved in monitoring of this consent and between them can demonstrate proven expertise in the matters covered by the monitoring required by conditions 30 to 37 of this consent. The consent holder shall also ensure that the Panel contains the necessary level and scope of expertise to address each of the matters listed under condition 45(e). In the event that any member of the Expert Panel becomes unavailable to continue their role, the panel may temporarily consist of fewer than three people with the agreement of the consent holder and the Chief Executive, Taranaki Regional Council until such time as a new Panel member is engaged.

43. The members of the Expert Panel shall be nominated by the consent holder and, after consultation with the Department of Conservation and Fish and Game, shall only be appointed after having been approved by the Chief Executive, Taranaki Regional Council. If less than three acceptable nominations are made, the Chief Executive, Taranaki Regional Council may appoint one or more persons to act as a Panel Member until an acceptable nomination is made.

44. All reasonable costs incurred by the Expert Panel shall be met by the consent holder and it shall be the consent holder's responsibility to ensure that the Expert Panel carries out the tasks required of it within the timeframes specified in the conditions of consent.

45. The purpose of the Expert Panel shall be to peer review and, where appropriate, provide recommendations to the consent holder and the Chief Executive, Taranaki Regional Council, on the following:

    (a) the report on native fish passage systems required under condition 19;

    (b) the report on the success of native fish passage systems required under condition 30;

    (c) the reports on the effects of the Patea Dam and HEPS on downstream trout populations required under condition 32;

    (d) the final Monitoring Plan required by condition 25 before it is submitted to the Chief Executive, Taranaki Regional Council for certification under condition 26;

    (e) the reports or other outputs required by the following conditions:
        - condition 28 (native fish passage);
        - condition 29 (upstream native fish populations);
        - condition 31 (downstream river ecology);
        - condition 34 (trout restocking);
        - condition 36 (dissolved oxygen); and
        - condition 37 (fish strandings).

    (f) For the avoidance of doubt, the Expert Panel may, as part of its function, review the Monitoring Plan and recommend further reviews of that Plan and the role of the Expert Panel in relation to these reviews.

46. The purpose of any recommendations of the Expert Panel shall be either:

    (a) To confirm that the current monitoring, methodologies, or mitigation programmes are adequate to achieve the objective of the relevant condition(s), or;

    (b) Recommend changes or additions to any monitoring, methodology, or mitigation, in order to ensure that they are adequate to avoid, remedy or mitigate and adverse effect on the environment arising from the exercise of this resource consent.

46A Recommendations made in accordance with condition 46(b) may include but are not limited to:

    (a) recommendations to alter the upstream or downstream fish passage programme to help achieve compliance with condition 18, including:

        (i) recommendations that the consent holder undertake further assessment of the efficiency of the fish trap (utilising dyes or by any other means) and/or that the consent holder alter the location or design of the fish trap;

        (ii) if new technologies have become available, recommendations for improved monitoring of the success of downstream passage, or that the system to facilitate the non-lethal downstream passage of species is improved; and

    (b) monitoring of upstream populations of the target species continuing beyond the date required by condition 29 of this consent.

47. Of those matters specified under condition 45 above, the consent holder shall ensure that the full Expert Panel shall review and make recommendations on:

    (a) The final Monitoring Plan required by condition 25 and any review of that Plan; and

    (b) The final results required in respect of downstream ecology (condition 31) and dissolved oxygen (condition 36).

    Otherwise, of the balance of matters specified under condition 45, only the most appropriate expert(s) need review the relevant report or information and make recommendations, unless the expert(s) consider it necessary to seek the input from another member(s) of the Panel to assist them in their assessment.

48. Unless otherwise specified in these conditions, the expert(s) shall have two months to respond to the consent holder and the Chief Executive, Taranaki Regional Council on any report submitted to them, with any comments to be in writing.

49. The consent holder shall use its best endeavours to ensure that the Expert Panel shall review and provide recommendations to the consent holder and the Chief Executive, Taranaki Regional Council within two months of the receipt of each of the following reports:

    (a) the report required under condition 30 (success of fish passage measures);

    (b) the final report required under condition 32 (effects on trout populations);

    (c) if implemented, the report on the monitoring of the restocking required under condition 34;

    (d) the final report on the investigation required under condition 36 (effects of low dissolved oxygen discharges);

    (e) the report on the investigation required under condition 37 (effects of flow fluctuations on native fish strandings).

50. Should the consent holder choose to adopt the recommendations of the Expert Panel under condition 49, any proposed amendments to the monitoring programme, methodology, or mitigation requirements shall be implemented by the consent holder subject to the approval of the Chief Executive Taranaki Regional Council, acting in a technical certification capacity.

51. In the event that the consent holder declines to adopt any recommendation provided by the Expert Panel in accordance with condition 49, the consent holder shall within 8 weeks of the Expert Panel making its recommendation, provide to the Chief Executive, Taranaki Regional Council, its written reasons for declining to follow the recommendations of the Expert Panel.

Consultation with Stakeholders and Expert Panel

52. Before any report is submitted to the Expert Panel to be reviewed in accordance with condition 45, 47 and 49 of this consent, the consent holder shall carry out reasonable consultation with Fish and Game New Zealand (Taranaki Region), the Department of Conservation, Nga Rauru Kiitahi and Ngati Ruanui, including submitting the Plan or Report in draft to those parties for comment and allowing one month for a response.

53. Where any comments are received from Fish and Game New Zealand (Taranaki Region), the Department of Conservation, Nga Rauru Kiitahi, Ngati Ruanui or the Expert Panel in accordance with condition 52, the consent holder shall provide all such comments, in addition to providing the plan or report itself to the Chief Executive, Taranaki Regional Council. In conjunction with such comments, the consent holder shall as necessary provide to the Chief Executive, Taranaki Regional Council, its response to any of the comments made by any of the parties.

Consent Holder, Submitter and Council Engagement

54. At least once every year the consent holder shall convene a meeting of representatives of the Taranaki Regional Council, and interested submitters to application 4820, including Nga Rauru Kiitahi, Ngati Ruanui and the Department of Conservation, to discuss any matter relating to the monitoring of this consent.

Recreation

55. The consent holder shall maintain the boat ramps at the locations listed below (and as shown in Figure Three, attached to, and forming part of this consent) so that they are usable at the lake levels stipulated below:

    (a) The Glen Nui Ramp between lake levels RL 75.5 m to RL 78 m;

    (b) The new Tangahoe Valley Barge Ramp between lake levels RL 74.5 m and RL 78 m; and

    (c) The Boat Ramp located at the Patea Dam between lake levels RL 74.5 m and RL 78 m.

    If maintenance of any boat ramp proves to be impracticable it shall be replaced.

56. The consent holder may temporarily restrict public access to the boat ramps highlighted in condition 55 due to reasonable health, safety and security requirements. Where such restrictions are imposed the consent holder shall notify the Taranaki Regional Council and the South Taranaki District Council. The notice shall explain the need for the restriction and estimate the duration that the restriction will apply for.

57. The consent holder shall erect and maintain signs at the boat ramp located at the Patea Dam and the Glen Nui Ramp 1, and at McColl's Bridge and at the Patea Estuary boat ramp. The signs shall alert users of Lake Rotorangi and the Patea River to:

    (a) fluctuations in flow downstream of the dam and of the extent of these fluctuations;

    (b) fluctuations in lake levels and of the extent of these fluctuations; and

    (c) the presence of floating log debris and lake bed features that may present a hazard for lake recreational users.

58. The consent holder shall maintain floating booms across the intake to the head race and across the full length of the spillway of the Patea Dam to safeguard persons using the lake for recreation and to prevent floating debris and logs from entering the penstocks. Log debris caught by the boom structure will be removed from the lake and appropriately disposed of in accordance with the special conditions in consent 7194-1.

59. The consent holder shall, in accordance with condition 61 provide jet boaters with water for an annual race event.

60. Water provided in accordance with condition 59 shall:

    (a) be for the annual race event at a flow rate of not less than 40 cubic metres per second at McColl's Bridge, commencing at 2200 on a Friday or a Saturday and ending at 1800 hours on the following Saturday or the following Sunday, as the case may be (a period of 20 hours);

    (b) occur within the period beginning on 20 May and ending on the following 20 September in any year; and

    (c) only occur following the written request of a person delegated to make such requests by Jet Boating New Zealand, received by the consent holder no less than 60 days before.

61. All releases of water under condition 59 are subject to water being available from Lake Rotorangi. If the inflows to the lake over the 60 days prior to a release are low with a return period of greater than 15 years the consent holder need not provide the flow of water required by condition 59.

62. The consent holder shall install signs warning of restricted boat ramp access

    i. On Rawhiti Road, between Anderson and Oru Roads, when the level of Lake Rotorangi drops below RL 75.5 m;

    ii. on Ball Road, between Hursthouse and Joll Road intersections, when the level of Lake Rotorangi drops below RL 74.5 m.

63. The barge operator at the Tangahoe Valley boat ramp shall be notified of the potential restriction to access at least seven days prior to the level of Lake Rotorangi dropping below RL 74.5 m.

64. 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:

    (a) within the sixth year of commencement of this consent, and every six years thereafter for the purposes of:

        (i) ensuring that the conditions are adequate to deal with any adverse effect on the environment arising from the exercise of this resource consent; or

        (ii) implementing the recommendations of the Expert Panel;

    (b) within two months of the consent holder providing its written response under condition 51 to any recommendation of the Expert Panel provided in accordance with condition 49.

Signed at Stratford on 29 September 2017

For and on behalf of
Taranaki Regional Council

_____

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:	Trustpower Limited Private Bag 12023 Tauranga 3143	
Decision Date (Change):	29 September 2017	
Commencement Date (Change):	29 September 2017	(Granted Date: 17 December 2010)

Conditions of Consent

Consent Granted:	To take and use water from Lake Rotorangi for hydro-electric power generation purposes
Expiry Date:	1 June 2040
Review Date(s):	In accordance with special condition 14
Site Location:	Patea Hydroelectric Power Scheme, Maben Road, Hurleyville, Patea
Grid Reference (NZTM)	1734750E-5621510N
Catchment:	Patea
Tributary:	Lake Rotorangi

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 all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. Subject to the availability of such flows after any upstream uses currently authorised and any uses subsequently authorised in accordance with conditions 2 and 3 below, the consent holder is authorised to take and use up to: 75 cubic metres per second of water for hydro-electric power generation purposes; and 25 cubic metres per second of water for fish passage purposes.

2. Nothing in this consent or the associated consents shall be deemed to:

   (a) create an allocation of water to the exclusion of the exercise or renewal of any consents to dam, divert, take and/or use water in the Patea River catchment upstream of the Patea Dam which existed at 6 May 2009 up to the rates and volumes provided for in those consents as at that date; or

   (b) create an allocation of water to the exclusion of the carrying out of any permitted activity to dam, divert, take and/or use water in the Patea River catchment upstream of the Patea Dam which is authorised in Regional Plans as at 6 May 2009, whether or not that activity was in existence as at May 2009;

   (c) This consent and associated consents shall not be exercised in such a manner as to limit the exercise of any consent or permitted activity referred to above.

3. The total amount of water authorised to be dammed, diverted, taken and/or used pursuant to this consent and associated consents and the total volume allocated under this consent and associated consents, excludes such water as may be authorised to be taken, diverted and or used, by any other persons upstream of Patea Dam pursuant to a water permit granted during the term of this consent, and nothing in this consent or any of the associated consents shall preclude the grant of such additional consents during the term of this consent. Provided that this exclusion shall be limited to a maximum rate of abstraction for upstream consents not existing as at May 2009, not exceeding 0.305 cubic metres per second.

4. Subject to conditions 5-8 below, the exercise of this consent shall not cause the flow in the Patea River, as measured at the 'McColl's Bridge' measuring site (site no. 34305), to be less than 2.2 cubic metres per second (as an hourly average) (the 'minimum flow').

5. Notwithstanding condition 4 above, following unusually long periods of less than normal rainfall in the Patea River catchment the exercise of this consent may cause the flow in the Patea River to be less than the minimum flow, provided that the flow in the Patea River as measured at the 'McColl's Bridge' measuring site (site no. 34305) is not less than 2.2 cubic metres per second (as an hourly average):

   (a) at any time during more than 5 out of any 10 consecutive calendar years; or

   (b) for more than 72 hours in any 30 day period.

6. On any occasion when the exercise of this consent causes the flow in the Patea River to be less than the minimum flow in accordance with condition 5 the consent holder shall, within 14 days, provide the Chief Executive, Taranaki Regional Council with documentation showing that the breach of the minimum flow was a direct result of an unusually long period of less than normal rainfall in the Patea River catchment.

7. In the event that any future upstream water takes (not consented as at 6 May 2009) in combination with existing takes, cause the total inflow to Lake Rotorangi to be less than 2.1 cubic metres per second, the minimum flow referred to in condition 4 shall, at times when the total inflow to Lake Rotorangi is less than 2.1 cubic metres per second, be temporarily reduced by a rate equivalent to the estimated combined rate of take by such future upstream water takes.

8. At no time shall the exercise of this consent cause the flow in the Patea River, as measured at the 'McColl's Bridge' measuring site (site no. 34305), to be less than 1.8 cubic metres per second (as an hourly average).

   Advice Note: *For the avoidance of doubt, it is recorded that the intent of condition 7 is to provide relief to the consent holder if a future allocation of some or all of the 0.305 m^3/s referred to in condition 3 of consents 0491-2 and 0489-2 causes a reduction in lake inflows below 2.1 m^3/s. During those times, the minimum flow below the Patea Dam can be temporarily reduced to reflect the lower inflows. If any future consents are granted on terms that require any future consent holder to cease taking at times when the consent holder is restricted by the minimum flow then the downstream minimum flow will not be affected.*

   Advice Note: *Nothing in this consent precludes the consent holder from submitting (on any basis permitted by the Act) on any future consent or re-consenting applications to take water from the Patea River catchment upstream of Patea Dam. For the avoidance of doubt, any such future applications need to be considered on their merits.*

9. Within 12 months of the commencement of this consent the consent holder shall have prepared and submitted a comprehensive report to the Chief Executive of the Taranaki Regional Council, that:

   (a) describes the feasibility of installing deterrent measures at the intake structure of the Patea Dam that will, to the greatest extent practicable avoid the entrapment of adult eels;

   (b) describes the alternate measures considered and assesses the strengths and weaknesses of each measure; and

   (c) recommends a deterrent measure for deflecting adult eels from the intake structure of the Patea Dam.

10. Within 12 months of receiving certification from the Chief Executive, Taranaki Regional Council that the report addresses all the matters set out on condition 9, the consent holder shall implement the deterrent measures recommended in the report required by condition 9.

11. The consent holder shall ensure that the flow passing downstream of the Patea Dam, at the McColl's Bridge Site (site no. 34305), is measured and recorded to an accuracy of ± 5% at intervals not exceeding 15 minutes. These records shall be transmitted to the Taranaki Regional Council's computer system within 2 hours of being recorded.

    Advice Note: *The McColl's Bridge Site and any associated telemetry, is owned and operated by the Taranaki Regional Council. It is therefore acknowledged that the consent holder has no control over the operation and maintenance of the equipment.*

12. The cost of maintaining the hydrographic station 'Patea River at McColl's Bridge' (site no. 34305) shall be shared equally between the consent holder and the Taranaki Regional Council.

13. All the water taken, except that taken for cooling purposes, shall be discharged back into the river immediately below the Patea Dam.

14. 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:

    (a) 2 years from commencement of consent; during the sixth year and every 6 years thereafter; and/or

    (b) within 30 days of receiving the report required by condition 9; and/or

    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 it was not appropriate to deal with at the time the consent was granted.

Signed at Stratford on 29 September 2017

For and on behalf of
Taranaki Regional Council

_____

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:	Trustpower Limited Private Bag 12023 Tauranga 3143
Decision Date:	25 June 2009
Commencement Date:	17 December 2010

Conditions of Consent

Consent Granted:	To maintain, repair, alter and reconstruct structures and works [including but not limited to the Patea dam, log boom, auxiliary spillway, emergency spillway, flood channels, river training works and boat ramps] in, on, under or over the bed of the Patea River and Lake Rotorangi
Expiry Date:	1 June 2040
Review Date(s):	As per special condition 7
Site Location:	Patea Hydroelectric Power Scheme, Maben Road, Hurleyville, Patea
Grid Reference (NZTM)	1734751E-5621514N
Catchment:	Patea
Tributary:	Lake Rotorangi

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 activity is for the purpose of maintaining the structure and associated structures and equipment in good repair or working order or for minor upgrading.

2. No contaminant [other than sediment] shall be released to the area of river or lake bed beyond the area being worked from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river or lake bed.

3. Based on measurements using a black disc, sediment disturbance shall not give rise to a decrease in visual clarity of water of more than 50% beyond a distance of 100 metres from the work site.

4. All material removed from the structure and excess construction materials shall be removed from the river or lake bed as soon as practicable following the completion of the work.

5. Dewatering of any work site shall be for the minimum time necessary to undertake the work. If dewatering for more than 48 hours is expected to be necessary the consent holder shall notify the Council before the work begins. Notification shall include the consent number and a brief description of the activity being undertaken and be emailed to worknotification@trc.govt.nz.

6. The consent holder shall ensure that the area and volume of river bed and lake bed disturbance shall, so far as is practicable, be minimised and any areas which are disturbed shall, so far as is practicable, be reinstated.

7. 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 2 years from commencement of consent; during the sixth year and every 6 years thereafter, 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 it was not appropriate to deal with at the time the consent was granted.

Transferred at Stratford on 31 October 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:	Trustpower Limited Private Bag 12023 Tauranga 3143
Decision Date (Change):	29 September 2017
Commencement Date (Change):	29 September 2017 (Granted Date: 17 December 2010)

Conditions of Consent

Consent Granted:	To discharge water from the Patea power house and the main service spillway to the Patea River for hydro-electric power generation purposes
Expiry Date:	1 June 2040
Review Date(s):	In accordance with special condition 18
Site Location:	Patea Hydroelectric Power Scheme, Maben Road, Hurleyville, Patea
Grid Reference (NZTM)	1734750E-5621510N
Catchment:	Patea
Tributary:	Lake Rotorangi

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 all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The consent holder shall monitor the Patea River below the Patea Dam to assess the extent of erosion that is or is not occurring. The survey shall include:

   (a) an annual visual inspection of the full length of the Patea River downstream of the Patea Dam;

   (b) an annual photographic survey of the 13 permanent cross section locations; and

   (c) at least once every two years a channel cross-section survey of the 13 permanent cross-section sites. The cross-section sites referred to in this condition are shown on Figure Two, attached to and forming part of this consent.

2. In the event that two consecutive surveys conducted in accordance with condition 1(c) show no significant change in cross-section shape then the frequency of the channel cross-section survey shall be changed to five yearly intervals.

3. The consent holder shall provide the results of the monitoring undertaken in accordance with conditions (1) and (2), including a comparison with the previous survey, to the Chief Executive, Taranaki Regional Council within 60 days of the survey being completed.

4. The consent holder shall maintain the Patea Dam and all its appurtenant components and ancillary/appurtenant structures to the standards recommended in the operative New Zealand Society of Large Dams, Dam Safety Guidelines (2000) operative at 20 May 2009.

5. Within 6 months of the commencement of this consent, the consent holder shall, after reasonable consultation with the Taranaki Civil Defence Emergency Management Group, provide an Emergency Management Plan to the Taranaki Civil Defence Emergency Management Group addressing abnormal or excessive release of flows from the Patea Dam. The Plan shall include reference to the following matters:

   (a) identification of modes of such flows, potential size and duration of releases and the probability of their occurrence; and

   (b) the modelling of downstream effects of such discharges particularly on private property; and

   (c) contingency plans for alerting communities and authorities in such events.

6. A copy of the Emergency Management Plan shall be forwarded by the consent holder to the South Taranaki District Council, the Stratford District Council, the New Plymouth District Council, the Hawera station of New Zealand Police and to New Plymouth station of the New Zealand Fire Service within 7 days of being provided to the Taranaki Civil Defence Emergency Management Group.

7. The consent holder shall undertake an annual review of the Emergency Management Plan. Where amendments are made to the Plan, they will be notified to the parties listed in condition 6 within 7 days.

8. The consent holder shall separately measure and electronically record the rate of discharge from the Patea Powerhouse and from the main service spillway at intervals not exceeding 15 minutes to an accuracy of ± 5%. These records shall be provided to the Chief Executive of Taranaki Regional Council, at monthly intervals or upon reasonable request.

9. Subject to conditions 10-13 below, the exercise of this consent shall not cause the flow in the Patea River, as measured at the 'McColl's Bridge' measuring site (site no. 34305), to be less than 2.2 cubic metres per second (as an hourly average) (the 'minimum flow').

10. Notwithstanding condition 9 above, following unusually long periods of less than normal rainfall in the Patea River catchment the exercise of this consent may cause the flow in the Patea River to be less than the minimum flow, provided that the flow in the Patea River as measured at the 'McColl's Bridge' measuring site (site no. 34305) is not less than 2.2 cubic metres per second (as an hourly average):

    (a) at any time during more than 5 out of any 10 consecutive calendar years; or

    (b) for more than 72 hours in any 30 day period.

11. On any occasion when the exercise of this consent causes the flow in the Patea River to be less than the minimum flow in accordance with condition 10 the consent holder shall, within 14 days, provide the Chief Executive, Taranaki Regional Council with documentation showing that the breach of the minimum flow was a direct result of an unusually long period of less than normal rainfall in the Patea River catchment.

12. In the event that any future upstream water takes (not consented as at 6 May 2009) in combination with existing takes, cause the total inflow to Lake Rotorangi to be less than 2.1 cubic metres per second, the minimum flow referred to in condition 9 shall, at times when the total inflow to Lake Rotorangi is less than 2.1 cubic metres per second, be temporarily reduced by a rate equivalent to the estimated combined rate of take by such future upstream water takes.

13. At no time shall the exercise of this consent cause the flow in the Patea River, as measured at the 'McColl's Bridge' measuring site (site no. 34305), to be less than 1.8 cubic metres per second (as an hourly average).

Advice Note: *For the avoidance of doubt, it is recorded that the intent of condition 12 is to provide relief to the consent holder if a future allocation of some or all of the 0.305 m^3/s referred to in condition 3 of consents 0491-2 and 0489-2 causes a reduction in lake inflows below 2.1 m^3/s. During those times, the minimum flow below the Patea Dam can be temporarily reduced to reflect the lower inflows. If any future consents are granted on terms that require any future consent holder to cease taking at times when the consent holder is restricted by the minimum flow then the downstream minimum flow will not be affected.*

Advice Note: *Nothing in this consent precludes the consent holder from submitting (on any basis permitted by the Act) on any future consent or re-consenting applications to take water from the Patea River catchment upstream of Patea Dam. For the avoidance of doubt, any such future applications need to be considered on their merits.*

14. In accordance with the proposal made in the application the consent holder shall mitigate the effects of downstream erosion by, within 60 days of the commencement of this consent, and once per year thereafter, making an annual payment of $7,500 (GST exclusive and inflation adjusted) to the Taranaki Tree Trust for the purpose of providing riparian management in the lower Patea River catchment.

15. The mean hourly rise or recession rate for all flows greater than 95 cubic metres/second, into the Lower Patea River (being the reach of the Patea River immediately below the Patea Hydro Electric Power Scheme), from the tailrace/stilling basin (as determined from the tailrace/stilling basin data) shall:

    (a) for flows up to and including 135 cubic metres/second, not vary by more than 50%, plus or minus 20 cubic metres/second/hour, from the reference rate of change as defined in condition 15(b); and

    (b) for flows greater than 135 cubic metres per second, not vary by more than 50% from a reference rate of change defined as the sum of any two mean hourly flow rise or recession rates, one of the two rates as determined (at any time through the preceding 6 hours) from the Patea River at Skinner Road hydrographic station data (site no, 34308), and the other rate as determined (at any time through the proceeding 6 hours) from the Mangaehu Stream at Bridge hydrographic station data (site no. 34309).

16. Whenever the spillway gate or spillway gates are re-opened during sustained recessions where the sum of the two mean hourly recession rates as determined in condition 15(b) is continuously negative, the discharge from the spillway shall, irrespective of the current lake level, conclude with a continuous discharge of not more than 50 cubic metres/second for a period of not less than 6 hours or until, after 4 hours of the period, the mean lake-level has fallen below 78 metres above mean sea level and not less than 90 millimetres below the mean lake level at the time the spillway gates were opened.

17. The cost of maintaining the hydrographic stations 'Patea River at Skinner Road' (site no. 34308) and 'Mangaehu Stream at Bridge' (site no. 34309) shall be shared equally between the consent holder and the Taranaki Regional Council.

18. 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 2 years from commencement of consent; during the sixth year and every 6 years thereafter, 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 it was not appropriate to deal with at the time the consent was granted.

Signed at Stratford on 29 September 2017

For and on behalf of
Taranaki Regional Council

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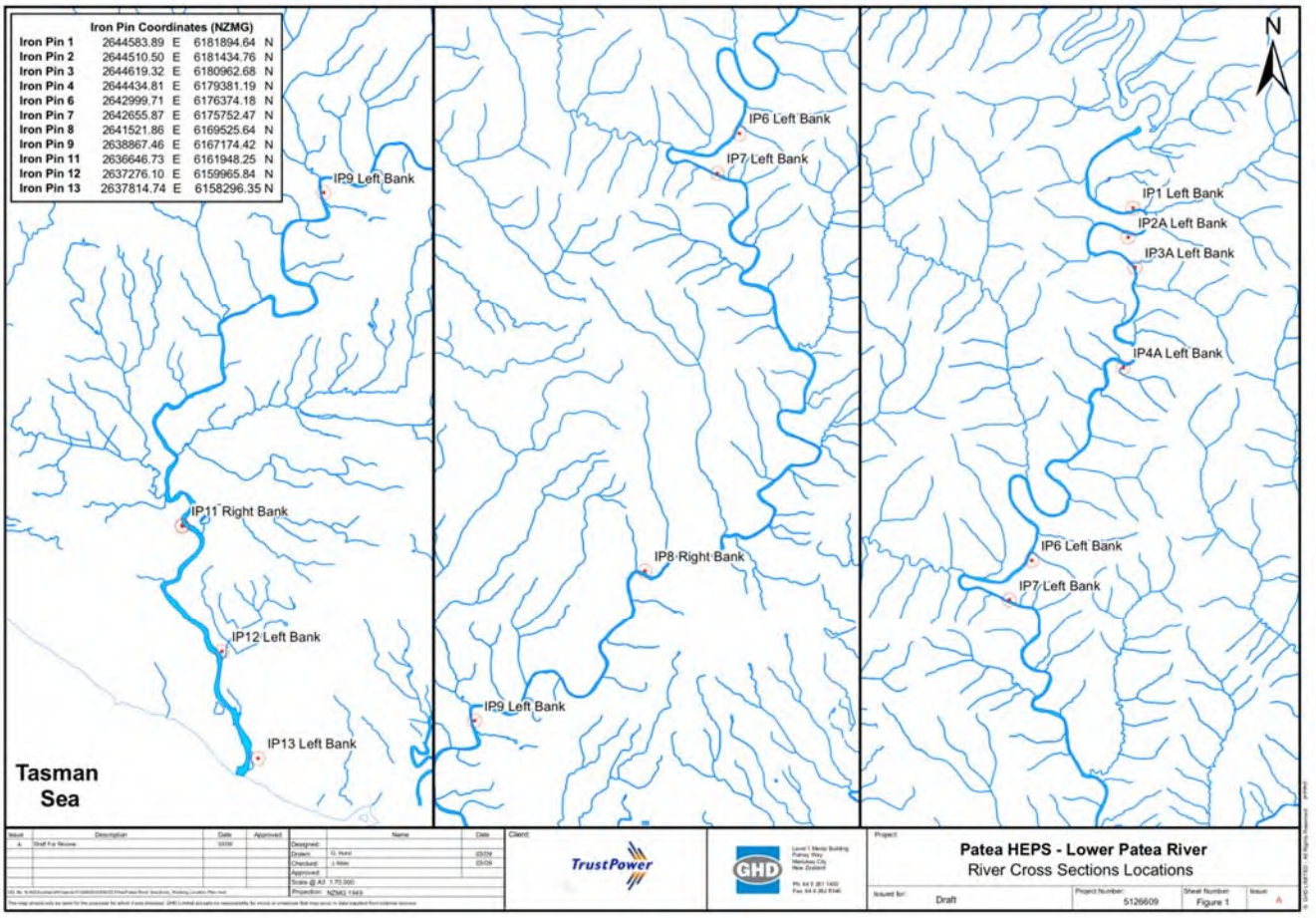
A D McLay
Director - Resource Management

FIGURE TWO – LOWER PATEA RIVER CROSS SECTIONS



Discharge Permit

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

Name of Consent Holder:	Trustpower Limited Private Bag 12023 Tauranga 3143
Decision Date:	25 June 2009
Commencement Date:	17 December 2010

Conditions of Consent

Consent Granted:	To discharge water from the Patea Hydro-electric scheme's auxiliary spillway and emergency spillway to the Patea River via spillway creek
Expiry Date:	1 June 2040
Review Date(s):	As per special condition 6
Site Location:	Patea Hydroelectric Power Scheme, Maben Road, Hurleyville, Patea
Grid Reference (NZTM)	1734751E-5621514N
Catchment:	Patea

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 monitor the Patea River below the Patea Dam to assess the extent of erosion that is or is not occurring. The survey shall include:

(a) an annual visual inspection of the full length of the Patea River downstream of the Patea Dam;

(b) an annual photographic survey of the 13 permanent cross section locations; and

(c) a biennial channel cross-section survey of the 13 permanent cross-section sites. The cross-sections sites referred to in this consent are shown on Figure Two, attached to and forming part of this consent.

2. In the event that two consecutive surveys conducted in accordance with condition 1 (c) show no significant change in cross-section shape then the frequency of the channel cross-section survey shall be changed to five yearly intervals.

3. The consent holder shall provide the results of the monitoring undertaken in accordance with conditions (1) and (2), including a comparison with the previous survey, to the Chief Executive, Taranaki Regional Council within 60 days of the survey being completed.

4. The mean hourly rise or recession rate for all flows greater than 95 cubic metres per second, into the Lower Patea River (being the reach of the Patea River immediately below the Patea Hydro Electric Power Scheme), from the tailrace/stilling basin (as determined from the tailrace/stilling basin data) shall:

(a) for flows up to and including 135 cubic metres/second, not vary by more than 50%, plus or minus 20 cubic metres/second/hour, from the reference rate of change as defined in condition 4(b); and

(b) for flows greater than 135 cubic metres/second, not vary by more than 50% from a reference rate of change defined as the sum of any two mean hourly flow rise or recession rates, one of the two rates as determined (at any time through the preceding 6 hours) from the 'Patea River at Skinner Road hydrographic station' data [site no, 34308], and the other rate as determined (at any time through the proceeding 6 hours) from the 'Mangaehu Stream at Bridge' hydrographic station data [site no. 34309].

5. Whenever the spillway gate or spillway gates are re-opened during sustained recessions where the sum of the two mean hourly recession rates as determined in condition 4(b) is continuously negative, the discharge from the spillway shall, irrespective of the current lake level, conclude with a continuous discharge of not more than 50 cubic metres/second for a period of not less than 6 hours or until, after 4 hours of the period, the mean lake-level has fallen below 78 metres above mean sea level and not less than 90 millimetres below the mean lake level at the time the spillway gates were opened.

6. 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 2 years from commencement of consent; during the sixth year and every 6 years thereafter, 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 it was not appropriate to deal with at the time the consent was granted.

Transferred at Stratford on 31 October 2016

For and on behalf of
Taranaki Regional Council

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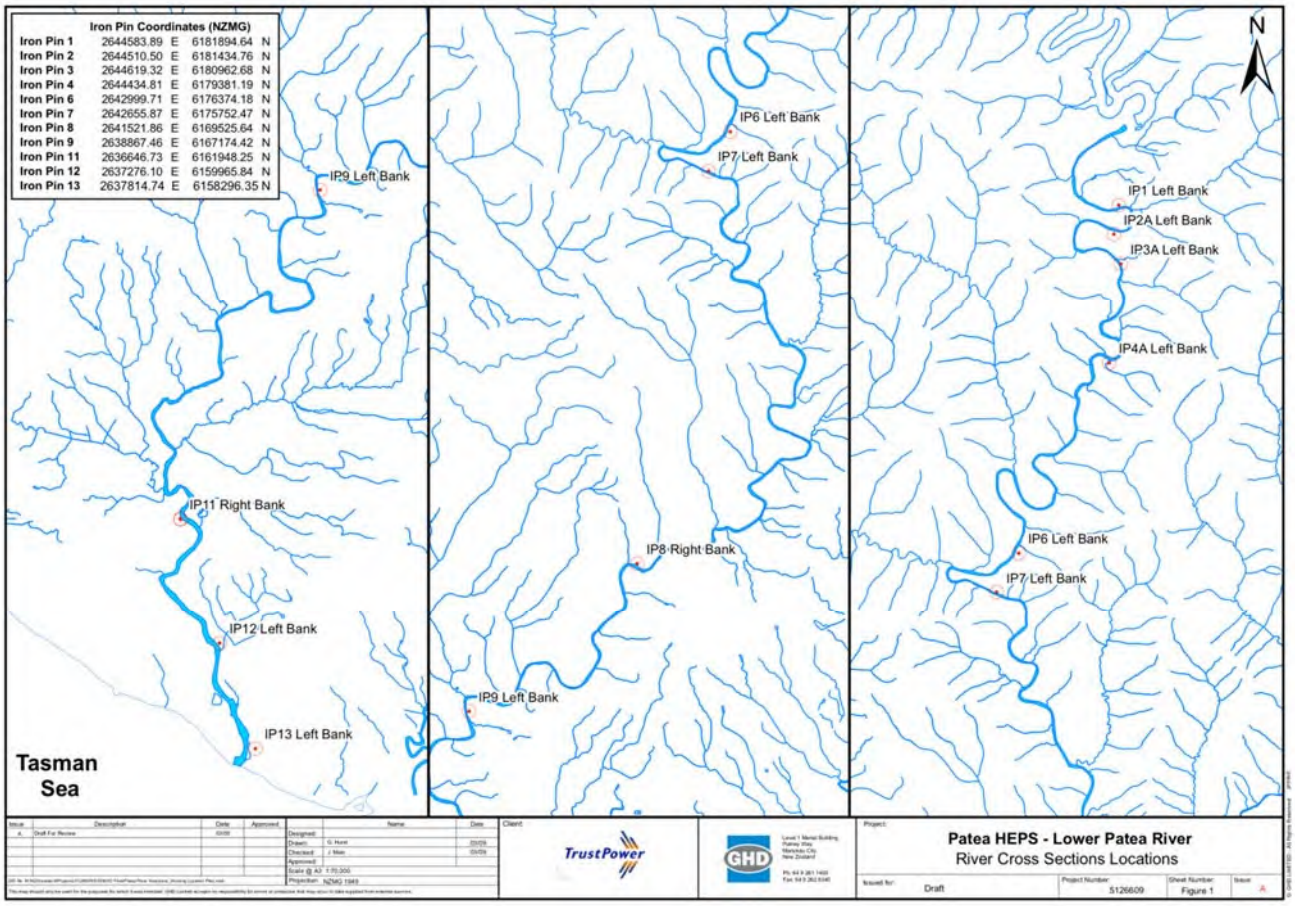
A D McLay
Director - Resource Management

FIGURE TWO – LOWER PATEA RIVER CROSS SECTIONS



Water Permit

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

Name of Consent Holder:	Trustpower Limited Private Bag 12023 Tauranga 3143
Decision Date:	30 June 2009
Commencement Date:	30 June 2009

Conditions of Consent

Consent Granted:	To take groundwater to provide a domestic water supply to facilities at the Patea Dam, including the powerhouse, dwellings and a camping ground
Expiry Date:	1 June 2040
Review Date(s):	June 2022, June 2028, June 2034
Site Location:	Patea Hydroelectric Power Scheme, Maben Road, Hurleyville, Patea
Grid Reference (NZTM)	1734794E-5621358N
Catchment:	Patea

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 exercise of this consent shall be undertaken substantially in accordance with the documentation submitted in support of application 4824. If there is any conflict between the documentation submitted in support of application 4824 and the conditions of this consent, the conditions of this consent shall prevail.

2. The volume of water taken shall not exceed 12.5 cubic metres per day at a rate not exceeding 1 litre per second.

3. The consent holder shall install and maintain a water meter on the bore that records the volume of water taken to an accuracy of ±5%. The meter shall be installed before the consent is exercised.

4. The consent holder shall maintain a record of the volume of water taken each month. The record shall include date of meter reading, pumping hours and volume pumped, and make these records available to the Chief Executive, Taranaki Regional Council, no later than 31 July of each year, or upon request.

5. This consent shall lapse on 30th June 2014, 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.

6. 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 2016 and/or June 2022 and/or June 2028 and/or June 2034, 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 31 October 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:	Trustpower Limited Private Bag 12023 Tauranga 3143
Decision Date:	30 June 2009
Commencement Date:	30 June 2009

Conditions of Consent

Consent Granted:	To discharge contaminants [including water/dust and particulate matter] into the air from moveable wet and dry abrasive blasting processes during the maintenance of plant and equipment at the Patea Hydroelectric Power Scheme
Expiry Date:	1 June 2020
Site Location:	Patea Hydroelectric Power Scheme, Maben Road, Hurleyville, Patea
Grid Reference (NZTM)	1734677E-5621431N
Catchment:	Patea

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. Notwithstanding any other condition of this consent, 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. Any discharge to air from the exercise of this consent shall not give rise to any offensive, objectionable or toxic levels of dust or odour at or beyond the boundary of the property on which the abrasive blasting or associated activity is occurring.

3. As far as is practicable, work areas and surrounding areas shall be cleared of accumulations of blasting material at the end of each blasting session or, where a blasting session extends over more than a day, at the end of a working day.

4. Sand used for dry abrasive blasting shall contain:

(i) less than 5% by dry weight free silica; and
(ii) less than 2% by dry weight dust able to pass through a 0.15 micron sieve.

5. The consent holder shall ensure that all operators of abrasive blasting equipment understand and comply with the all the conditions of this consent prior to the commencement of any work for which this consent is required.

6. The discharge shall not give rise to any of the following effects in any surface watercourse:

a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
b) any conspicuous change in the colour or visual clarity;
c) any emission of objectionable odour;
d) the rendering of fresh water unsuitable for consumption by farm animals;
e) any significant adverse effects on aquatic life;
f) an increase in suspended solids of more than 10 g/m^3;
g) turbidity above 4 nephelometric turbidity units [NTU], except that if the turbidity within the water body is above 3.2 NTU, no more than 25% increase in NTU;
h) any increase in the concentration of zinc, lead, arsenic, chromium or thorium-based products.

7. All items or premises to be blasted shall be screened as completely as practicable by covers, tarpaulins, cladding, , to contain dust emissions and depositions to the satisfaction of the Chief Executive, Taranaki Regional Council, so as to ensure compliance with conditions 1 and 2.

8. Where abrasive blasting or surface coating is to take place within 100 metres of a watercourse, the consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to any operation commencing. The Chief Executive, Taranaki Regional Council, may require additional measures to prevent, minimise or mitigate any potential for adverse environmental effects. It shall be the responsibility of the consent holder to ascertain such measures prior to commencing an abrasive blasting operation, and to comply with any and all such measures at all times. Notification in accordance with this condition shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.

9. The suspended particulate matter shall not exceed 3 mg/m^3 [measured under ambient conditions], and the deposition of dust shall not exceed 0.13 g/m^2/day beyond the property boundary or beyond 50 metres of the discharge when sited on public amenity areas, whichever is less.

10. This consent shall lapse on 30th June 2019, 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.

11. 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 2014 and/or June 2016, 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 31 October 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:	Trustpower Limited Private Bag 12023 Tauranga 3143
Decision Date:	30 June 2009
Commencement Date:	30 June 2009

Conditions of Consent

Consent Granted:	To discharge contaminants [combustion products] into the air during the burning of driftwood captured by the Patea Hydroelectric Power Scheme log boom
Expiry Date:	1 June 2028
Review Date(s):	June 2022
Site Location:	Patea Hydroelectric Power Scheme, Maben Road, Hurleyville, Patea
Grid Reference (NZTM)	1735050E-5621586N
Catchment:	Patea

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. Notwithstanding any other condition of this consent 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. In order to help prevent or minimise adverse effects of the activity, due regard shall be had to the direction and strength of the wind over the duration of the burning, including regard to any available weather forecast.

3. The exercise of this consent shall not give rise to any offensive, objectionable or toxic levels of smoke or odour at or beyond the boundary of the property on which the activity is occurring.

4. The exercise of this consent shall be undertaken in accordance with the documentation submitted in support of application 4826. In the case of any contradiction between the documentation submitted in support of application 4826 and the conditions of this consent, the conditions of this consent shall prevail.

5. The consent holder, or an authorised agent shall supervise the burning at all times.

6. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least three working days before any burning occurs. Notification shall include the consent number and the name and contact details of the person who will be supervising the burning, and be emailed to worknotification@trc.govt.nz.

7. The consent holder shall maintain a record of each burning event, including: the date, time and duration; the wind conditions [strength and direction] over the duration of the burning; any problems or issues that occurred; and details of any complaints received about the burning. This record shall be made available to the Chief Executive, Taranaki Regional Council upon request.

8. This consent shall lapse on 30th June 2014, 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.

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 2016 and/or June 2022, 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 31 October 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:	Trustpower Limited Private Bag 12023 Tauranga 3143
Decision Date:	26 January 2011
Commencement Date:	26 January 2011

Conditions of Consent

Consent Granted:	To place and use a floating pontoon in Lake Rotorangi, including associated excavation and disturbance of the lake bed, for recreational purposes
Expiry Date:	1 June 2028
Review Date(s):	June 2022
Site Location:	Pukekino Road, Ohangai
Grid Reference (NZTM)	1729790E-5627396N
Catchment:	Patea
Tributary:	Lake Rotorangi

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 all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The structure shall be constructed in accordance with a plan by Anchorage Pontoons Ltd for TrustPower, Pontoon with hinged gangway, provided to the Council on 23 December 2010. In the case of any contradiction between the drawing and the conditions of this consent, the conditions of this consent shall prevail.

2. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least 2 working days prior to the commencement and upon completion of the initial installation. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.

3. The consent holder shall ensure that the area and volume of streambed disturbance is, as far as practicable, minimised and any areas that are disturbed are, as far as practicable, reinstated.

4. The consent holder shall take all reasonable steps to:

   a. minimise the amount of sediment discharged to the stream;
   b. minimise the amount of sediment that becomes suspended in the stream; and
   c. mitigate the effects of any sediment in the stream.

   Undertaking work in accordance with *Guidelines for Earthworks in the Taranaki region,* by the Taranaki Regional Council, will achieve compliance with this condition.

5. Except with the written agreement of the Chief Executive, Taranaki Regional Council, the structure[s] authorised by this consent shall be removed and the area reinstated, if and when the structure is no longer required. A further resource consent may be required to authorise the removal of the structure, and the consent holder is advised to seek advice from the Council on this matter.

6. In the event that any archaeological remains are discovered as a result of works authorised by this consent, the works shall cease immediately at the affected site and tangata whenua and the Chief Executive, Taranaki Regional Council, shall be notified within one working day. Works may recommence at the affected area when advised to do so by the Chief Executive, Taranaki Regional Council. Such advice shall be given after the Chief Executive has considered: tangata whenua interest and values, the consent holder's interests, the interests of the public generally, and any archaeological or scientific evidence. The New Zealand Police, Coroner, and Historic Places Trust shall also be contacted as appropriate, and the work shall not recommence in the affected area until any necessary statutory authorisations or consents have been obtained.

7. This consent shall lapse on 31 March 2016, 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.

8. 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 2016 and/or June 2022 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 31 October 2016

For and on behalf of
Taranaki Regional Council

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A D McLay
Director - Resource Management

Appendix II

Categories used to evaluate environmental and administrative performance

Categories used to evaluate environmental and administrative performance

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 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 during investigations of incidents reported to the Council by a third party 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 during investigations of incidents reported to the Council by a third party. 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 during investigations of incidents reported to the Council by a third party. 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.