Consent Holder Annual Report on Okere Gates (Consent 65979) and Ohau Weir (Consent 65980) 1 June 2013

Bay of Plenty Regional Council
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Cover photo: Ohau Weir – February 2013

Acknowledgements

Bay of Plenty Regional Council's (BOPRC's) Survey and Environmental Data Services Teams are acknowledged for their invaluable contributions.

Their work in groundwater monitoring, asset capture, cross section surveys, velocity monitoring and software support has contributed to the findings of this report.

Executive summary

As consent holder, Bay of Plenty Regional Council's 'Natural Hazards Group' is required to submit an annual report on the operation and performance of the Okere Gates and Ōhau Channel Weir in accordance with resource consent (RC) 65979 Condition 15 and RC 65980 Condition 12.

Resource consents 65979 and 65980 approve the continued placement, operation and maintenance of the Okere Gates and the Ōhau Channel Weir structures that are located at the outlets of Lake Rotoiti and Rotorua respectively and were approved by a Consent Order signed on 21 March 2012.

This report will cover the 12 months of operations from 1 April 2012 to 31 March 2013. The previous report covered the first four months of operation to satisfy consent requirements to submit an annual report by 31 August 2012.

For the 12 month period above, lake levels and flow rates were within consent operating envelopes except for three minor incidences.

Good communication was maintained across the various interest groups and the establishment of two Kaitiaki Groups and a liaison group was facilitated. There was also ongoing communication with Rotorua Tourism, Kaituna River Rafting, Fish and Game and various lakeside residents over this period. Media were also kept informed at various times when needed.

This report discusses:

- Actual distribution of lake levels compared to the target distributions.
- Actual flow rates compared to minimum flow rates.
- Operational difficulties.
- Stakeholder consultation.
- Complaints and investigations.
- Conclusions.

Contents

Tables and Figures

Part 1: Introduction

1.1 Background

Lake Rotoiti and Lake Rotorua levels are controlled by the operation of the Okere Radial Gates and the Ohau Channel Weir respectively. The gates also regulate the rate of discharge from Lake Rotoiti to the Kaituna River.

The Okere Radial Gates and Ohau Weir are Bay of Plenty Regional Council assets and are part of the Kaituna Catchment Control Scheme. They are operated by the Natural Hazards Group, in accordance with their existing resource consents.

The purpose of the Okere Gates is to increase the outflows from Lake Rotoiti to permit floodwater to be discharged when required, and to reduce outflows to prevent undesirable low lake levels. The impacts of Okere Gates operation on Lake Rotorua levels are generally minor.

The purpose of the Ohau Weir is to control the level of Lake Rotorua, predominantly to prevent undesirable low levels.

The Ohau Channel Weir was constructed in 1989 as a simple weir structure with stop-logs.

The Okere Gates structure, constructed in 1982, is a substantial radial triple gate structure.

Prior to the construction of the Okere Gates in 1982, there was a natural rock ledge (at approximately RL 278.5 m) about 35 m downstream of the existing gates, which naturally controlled Lake Rotoiti levels.

Both control structures were put in place as part of the Kaituna Catchment Control Scheme. Pre-scheme, there was no lake level control on either Lake Rotoiti or Lake Rotorua (apart from the natural rock ledge), with the result that lake levels fluctuated considerably with rainfall, inflow and climate. The structures were designed so that the lake level ranges could be managed within the range set by the former National Water and Soil Conservation Authority (NWSCA), in 1975. These levels were included in BOPRC's Transitional Regional Plan, and are referred to in the existing consents granted for damming the outlets of both lakes.

The Ohau Weir and Okere Gates are operated and maintained as part of the Rivers and Drainage Asset Management Plan (AMP). The AMP outlines the requirements to inspect and maintain the structures over their expected life cycle.

The 35 year resource consents for Ohau Weir and Okere Gates were approved on 21 March 2012.

1.2 Reporting

It is a requirement of Bay of Plenty Regional Council Resource Consents 65979 and 65980 to report annually as follows.

Resource consent condition/s state:

(i) RC 65979 – Condition 15 (Okere Gates – Lake Rotoiti).

ANNUAL REPORTING

By 1 June each year for the term of this consent, the consent holder shall provide a report to the Chief Executive of the Bay of Plenty Regional Council or delegate, the Rotorua Te Arawa Operational Liaison Group (RTALOLG) and the Ohau ki Rotoiti Kaitiaki Group setting out:

a) the actual distribution of lake levels compared to the target distribution;

b) the actual flow rates of the Okere Gates compared to the minimum flow rates;

c) any difficulties experienced by the consent holder in achieving the target lake level ranges and minimum Okere Gate flow rates;

d) a summary of any consultation undertaken with stakeholders in accordance with Conditions 9, 10, 11 and 14 of this consent;

e) a summary of any investigations undertaken as a result of complaints about the adverse effects of the lakes;

f) methods for how any difficulties in achieving target level ranges and Okere Gate minimum flows have and will be resolved and how any complaints about the adverse effects of lake levels have been responded to; and

g) Methods proposed to resolve any issues that may have risen including operational difficulties, water quality, and extreme weather events, and any changes required to the Operational Management Plan.

(ii) RC 65980 – Condition 12 (Ōhau Channel Weir – Lake Rotorua)

By 1 June each year for the term of this consent, the consent holder shall provide a report to the Chief Executive of the Bay of Plenty Regional Council or delegate, the Rotorua Te Arawa Operational Liaison Group (RTALOLG), the Ohau ki Rotoiti Kaitiaki Group and the Okere ki Kaituna Kaitiaki Group setting out:

a) the actual distribution of lake levels compared to the target distribution;

b) any difficulties experienced by the consent holder in achieving the target lake level ranges and minimum Okere Gate flow rates;

c) a summary of any consultation undertaken with stakeholders in accordance with Conditions 10 and 11 of this consent;

d) a summary of any investigations undertaken as a result of complaints about the adverse effects of the lakes;

e) methods for how any difficulties in achieving target level ranges and Okere Gate minimum flows have and will be resolved and how many complaints about the adverse effects of lake levels have been responded to; and

f) Methods proposed to resolve any issues that may have risen including operational difficulties, water quality, and extreme weather events, and any changes required to the Operational Management Plan.

Part 2: Actual distribution of lake levels against target distribution

2.1 Lake Rotoiti lake level distributions

Lake level distributions are determined by consent number 65979 Condition 7.4 a. – c. *(Operational Limits)* and are best expressed in the graphical envelope shown in Figure 1 below.

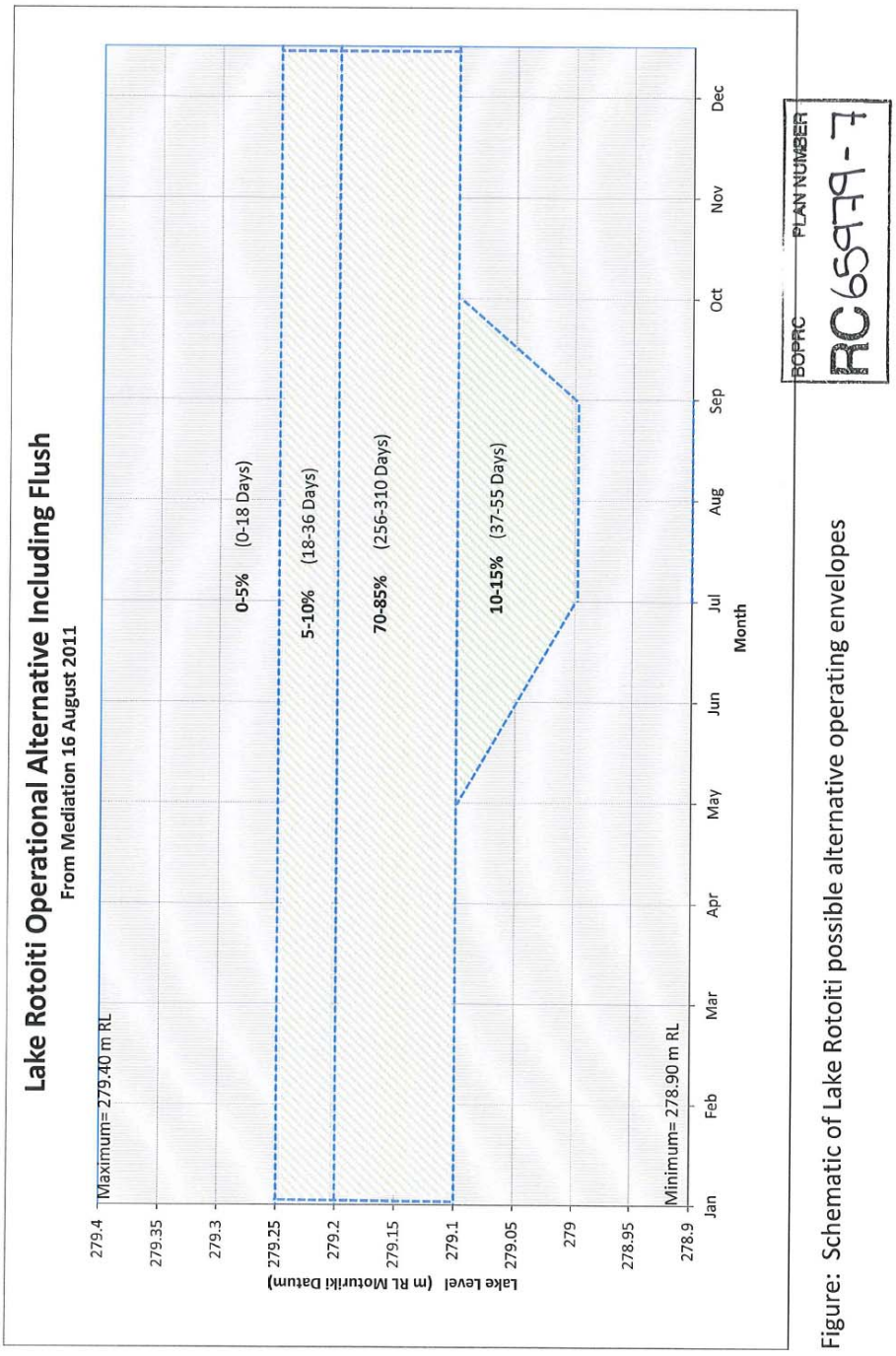

Figure: Schematic of Lake Rotoiti possible alternative operating envelopes

Figure 1 Lake Rotoiti Operational Envelope – Target Distributions.

2.2 Data collection and management

Lake levels, Okere Gate settings and flow rates are interrogated each morning from HydroTel - (BOPRC Telemetry and Data Management Software). HydroTel data is usually recorded at 15 minute intervals and from this the 0800 hours dataset is extracted as a spot reading and recorded in an 'operational spreadsheet' along with flows, weather conditions, rainfall and general commentary. This data can also be extracted from the HydroTel archive as historical data.

Figure 2 below shows the 12 month trace of levels for Lake Rotoiti from 1 April 2012 to 31 March 2013.

Key observations:

- The 'Consent required drawdown' of Lake Rotoiti and 'flushing of Ōhau Channel' between 1 May and 30 September commenced on 12 June and concluded 15 July 2012 (33 days or 9%). Target allocation 10-15% per annum.
- Successive rain events in July 2012 resulted in a successful and rapid recovery in lake level following the required flush/drawdown.
- Lake levels remained relatively stable and within consent conditions during this year's drought from November 2012 to March 2013 except for a few days in early March 2013 when levels dipped below the main operating minimum of RL 279.10 m.

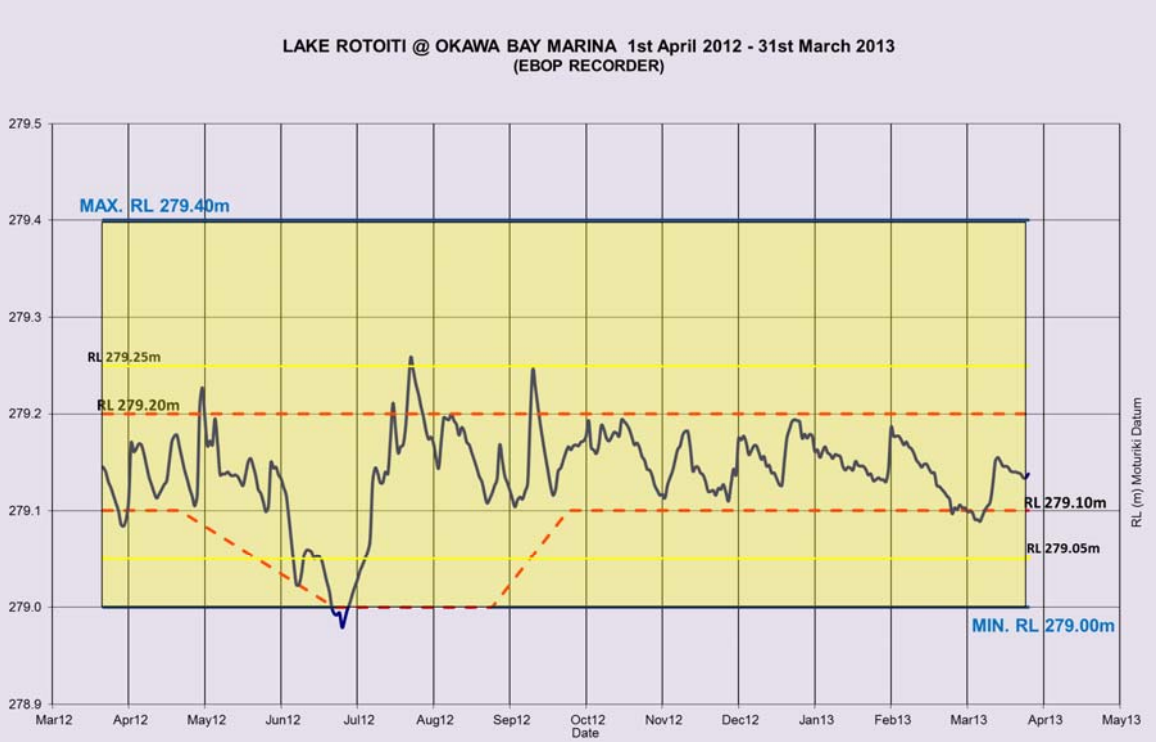

Figure 2 Lake Rotoiti levels measured at Okawa Bay Marina from 1 April 2012 to 31 March 2013.

Table 1 below shows the distributions against the consent target distributions.

Table 1 Lake level target distributions verses actual distributions.

Consent number 65979 OKERE GATES				**Results**	
Condition	**Range** (RL m)	**Target distribution** (per calendar year)		**Consent evaluation period** 1 April 2012 to 31 March 2013	
		Days	**%**	**Days**	**%**
7.4 a	279.00 - 279.40	365	100%	**358**	**98.1**
7.4 b. i.	279.05 - 279.25	332	91%	**343**	**94.0**
7.4 b. i. (a) Drawdown Zone from 1 May to 1 October 2012	279.00 - 279.10	36-55	10-15%	**33**	**9.0**
7.4 b. i. (b)	279.10 - 279.20	256-310	70-85%	**308**	**84.4**
7.4 b. i. (c)	279.20 - 279.25	18-36	5-10%	**11**	**3.0**
7.4 c	>279.25	18	5%	**1**	**0.3**

2.2.1 Discussion

Lake level distributions over the various ranges were generally on target with a particularly good performance result in the main operating range of RL 279.10 to 279. of 84.4% compared to the target of 85%.

The required drawdown of Lake Rotoiti began 12 June 2012 and concluded 15 July 2012 (33 days or 9% of 365 days). Target distribution for this drawdown was 10-15% and was narrowly missed due to a successful and rapid refill following heavy rain in July 2012.

For all practical purposes, it is deemed that Lake Rotoiti levels were successfully controlled within the minimum and maximum levels set out in Condition 7.4(a) of the consent.

2.3 Lake Rotorua

Figure 3 below shows the 12 month lake level trace for Lake Rotorua from 1 April 2012 to 31 March 2013. Notable observations are:

- Successive rain events in July 2012 resulted in lake level rising above the consented maximum by approximately 017 m.
- One stop-log operation during the 12 month period on 16 November 2012.

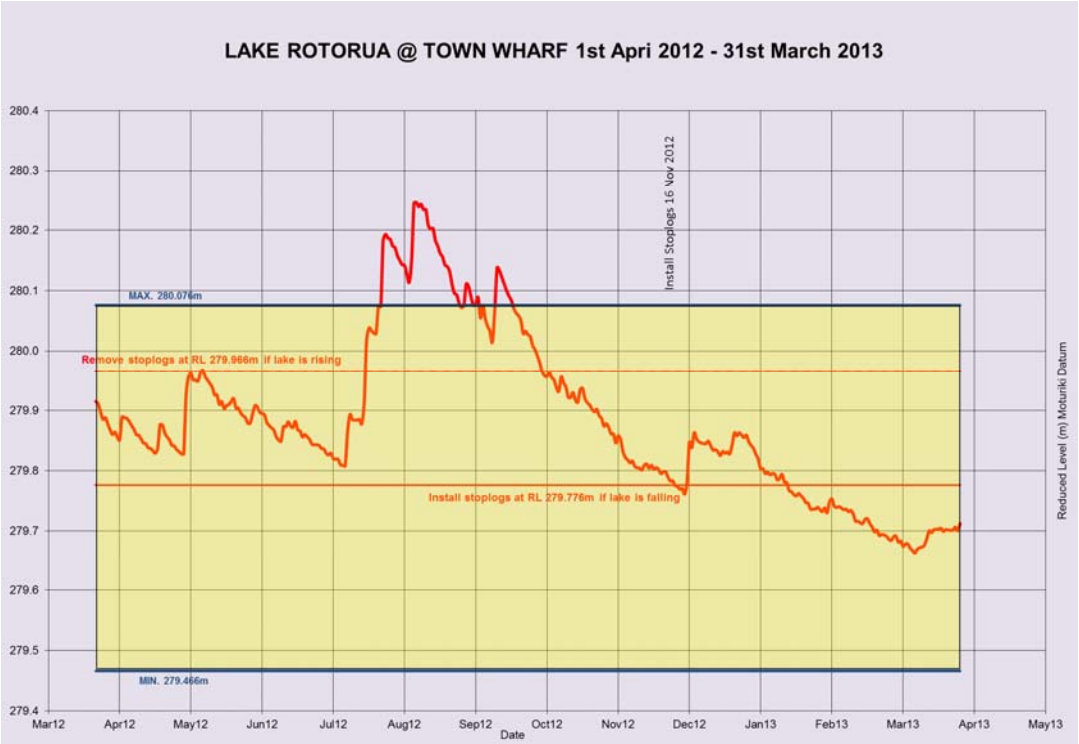

Figure 3 Lake Rotorua levels measured at Town Wharf from 1 April 2012 to 31 March 2013.

2.3.1 Discussion

For the 12 month period, Lake Rotorua levels were held below the maximum level of RL 280.076 m for 317 days or 86.8% of the time.

Lake level minimums and maximums may be exceeded but only as a result of extreme drought or rain as was the case from August to September 2012 when most other lakes in the Bay of Plenty region also exceeded their maximums.

This wet weather event was followed by the worst recorded drought in New Zealand for 70 years that saw lake levels decline to RL 276.663 m or 0.197 m above the consent minimum.

During the 12 month period, the stop-logs were ‘operated’ once following installation on 16 November 2012 to manage declining lake levels.

It should be noted that the Ōhau Channel Weir provides minimal flood relief once maximum lake levels occur as the outflows are marginally increased when the stop-logs are removed. The stop-logs perform best during low lake levels to decrease outflows to manage low lake levels.

The attached photos show the stop logs stored on the channel berm and removal during high lake levels.

Figure 4 *Ōhau Weir Stop logs (x3) stored onsite after removal (dimensions 6m x 0.3 m).*

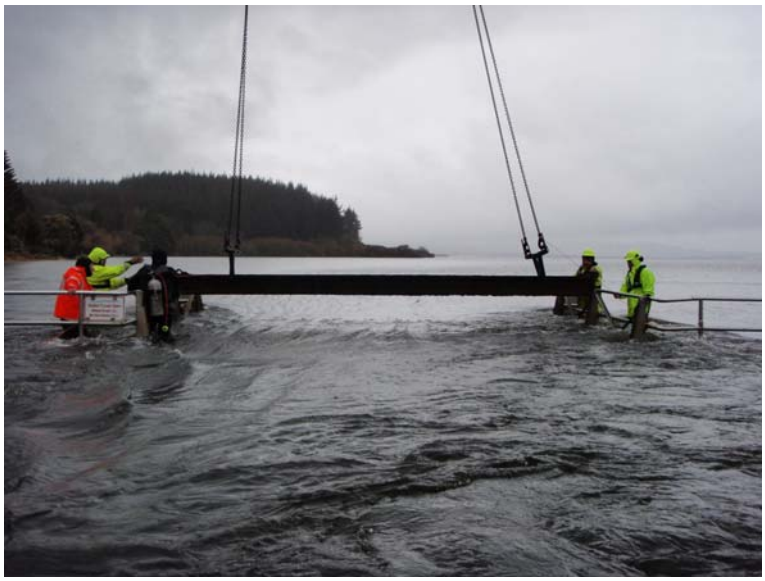

Figure 5 *Ohau Weir stop-log removal in progress (12 August 2008).*

Part 3: Actual flow rates versus minimum flow rates

3.1 Consent number 65979 flow rate conditions

Operational Limits 7.4 (f) to (l) related to flow through the Okere Gates are specified in conditions of consent 65979. In summary these conditions require that except under extreme droughts or an emergency:

- A minimum river flow (7.9 cumecs) with a seven day minimum of 9.84 cumecs.
- Greater outflows (Okere Gates) than inflows (Ōhau Channel) assisting to preserve water quality of Lake Rotoiti.
- Okere Gates ramping rates - closing (-5 cumecs/hr) or opening (+10 cumecs/hr) in consideration of river bank stability downstream when flows fluctuate.
- Recreational river flows for rafting and kayaking to be provided wherever possible within the other limits of the consent.

Comments on performance follow in 3.3.1 discussion notes.

3.2 Monitoring

Flow rates on the Ōhau Channel and Okere Gates are monitored by telemetry using NIWA's lake level recorder at Mission Bay on Lake Rotorua and the Taaheke River Gauge Station on the Kaituna River, located approximately 3 km downstream of the Okere Gates.

A consent priority is maintaining greater outflow (Okere Gates) than inflow (Ōhau Channel) to prevent reflux around the downstream end of the Ohau Diversion Wall. This measure assists in maintaining the water quality of Lake Rotoiti.

3.3 Results

Flow rates at Taaheke and Ohau Channel are shown in Figure 6 below.

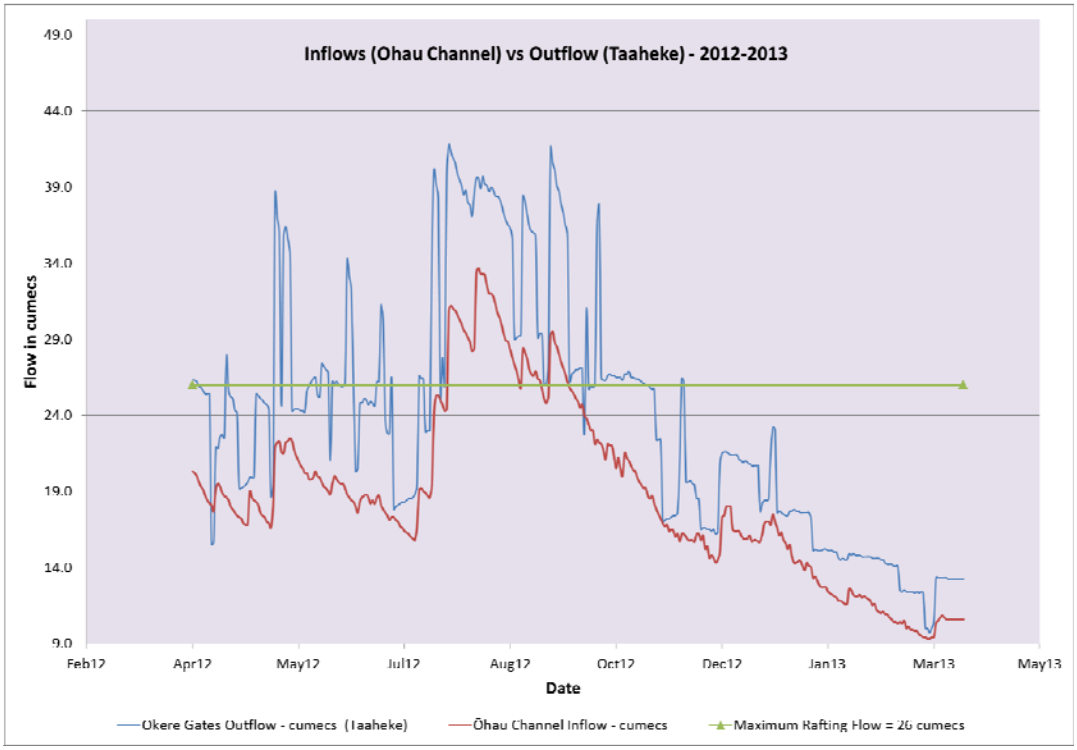

Figure 6 *Lake Rotoiti inflow through Ōhau Channel (red) and outflow through Okere Gates (blue) from 1 April 2012 to 31 March 2013.*

See Table 2 for performance summary of flow and Okere Gate ramping rates for the consent period 1 April 2012 to 31 March 2013.

Table 2 Okere Gate flow distributions from 21 March to 31 July 2012.

Consent #65979 OKERE GATES			Consent Evaluation Period 1 April 2012 to 31 March 2013		Variation from requirement	
Condition	**Flow requirement** (m^3/s)	**Target distribution** (per calendar year)	**Days**	**%**	**Incident date**	**Comment**
7.4 f. i.	6 hourly average flow of 7.9 m^3/s.	100%	365	100	-	-
7.4 f. ii.	7 day rolling average flow of 9.84 m^3/s.	100%	365	100	-	-
7.4 i	6 hourly average outflow through gates > 6 hourly average inflow from Ōhau Channel.	100%	363	99.5	10-11 April 2012	Over-shot 'operating minimum' lake level of RL 279.10 m by 0.016 m (16 mm) in response to Met Service Warning. Closed gates down to recover lake level but outflows were < inflows. When realised, opened gates further.
7.4 j. i.	When opening the gates, a maximum flow increment of 10 m^3/s per hour.	100%	365	100	-	-
7.4 j. ii. (a)	When closing the gates, a maximum flow decrement of 5 m^3/s per hour when operating the Okere Gates below 30 m^3/s.	100%	364	99.7	17 May 2012	Missed interim gate setting of 3 @ 650 in morning. Rafters on river at 1025 hrs waiting for settings of 3 @ 500 to facilitate rafting. Operator error in applying ramping rate of 5m^3/hr when closing Okere Gates.
7.4 j. ii. (b)	A maximum flow decrement of 10 m^3/s per hour when operating the Okere Gates at or above 30 m^3/s.	100%	365	100	-	-

3.3.1 **Discussion**

Minimum flow rates often occur during the summer months when lake levels and inflows are low.

The minimum Kaituna River flow for this reporting period was 9.7 cumecs recorded on the 15 March 2013. This followed evening Okere Gates closures to maintain lake levels to help provide rafting flows during the day. Ōhau Channel inflows during this time were also low at 9.3 cumecs.

The seven-day minimum flow was 11.443 cumecs (extracted from the HydroTel record).

Okere Gates outflows were greater than Ōhau Channel inflows for 99.5% of the time. Reasons for not achieving 100% are commented in Table 2.

Okere Gate ramping increments were maintained 100% of the time while the ramping decrement of 5 m^3/s was achieved 99.7% of the time with one occurrence exceeding 5 m^3/s on 17 May 2012 to facilitate recreational river activity on time.

Recreational flows – Kaituna River.

- It is a requirement of the consent to facilitate recreational flows for Kaituna River activities where ever practical.
- Rafting flows are satisfied inside the 13-26 cumec range or at gate settings of 3 @ 200 – 3 @ 500 respectively. These ‘safe’ flows have been determined by Maritime New Zealand.
- Every reasonable effort is made to accommodate rafting flows but this is ultimately determined by consent and environmental conditions. Frequent communications are made to advise and assist the rafting community with planning.
- For this reporting period, there were 293 rafting days or 80.3% of the time.
- The Kaituna River was unavailable to rafting for 53 days from 22 July to 24 September 2012 due to high Lake Rotorua levels and subsequent high Ohau Channel flows. These flows were greater than 26 m^3/s therefore Okere Gate flows are required to be greater (outflows > inflows) therefore compromising commercial rafting on the Kaituna River.

Part 4: Operational difficulties

4.1 Discussion

Operationally, there are no difficulties to report for this reporting period.

The consent conditions for both structures are clear and concise but require continuous monitoring by operating staff to ensure lake levels and flow rates meet consent parameters.

Ohau Weir operations require the installation or removal of the stop-logs at specified trigger levels. These levels have now been added to the BOPRC flood pager to alert the Flood Manager and operator.

At times there have been minor technical issues with hardware and software but these have been quickly resolved.

The main Okere Gates control system was fully upgraded in February 2013 improving control and communications to and from the site. The steel lifting ropes and connections on each gate were also replaced during this time. The new system has been operating well since the upgrade.

The challenge each year has been to stay within the consent ranges and limits during times of climatic extremes. Lake level distributions were generally achieved this year through diligent gate operations and by releasing or storing lake water to maintain percent ranges in response to weather forecasts. The new consents are deemed to have sufficient flexibility to allow 'operator discretion' to pre-empt gate settings (within reason) to best manage drought or extreme rain events and therefore meet the desired outcomes.

However, Lake Rotorua maximums were exceeded in July 2012 for nearly two months following high and successive rainfall events. These high lake levels were also experienced in other Bay of Plenty lakes.

The Ohau Channel stop-logs had been out since 30 December 2011 and had little effect on reducing the high lake levels of July 2012.

The Ohau Channel stop-logs were installed two weeks earlier than usual on 16 November 2012 in an effort to hold Lake Rotorua levels for longer following a three month dry forecast from NIWA.

Part 5: Consultation with stakeholders

5.1 Establishment of liaison and Kaitiaki groups

Under the conditions of these consents, the consent holder has been tasked with facilitating the establishment of a liaison group and two Kaitiaki groups within three months of the commencement of the consent. The purpose of the groups is to essentially facilitate discussion and free flow of information between the consent holder and the community.

These groups are:

- Rotorua Te Arawa Lakes Operational Liaison Group (RTALOLG).
- Ohau Ki Rotoiti Kaitiaki Group (OKRKG).
- Okere Ki Kaituna Kaitiaki Group (OKKKG).

All these groups have been established with initial meetings held as follows:

- RTALOLG 8 June 2012
- Ohau Ki Rotoiti Kaitiaki Group 7 August 2012
- Okere Ki Kaituna Kaitiaki Group 29 August 2012

Each group has elected a Chair and are in the process of developing or have completed their respective terms of reference. The meetings have been tape recorded and the notes of the meetings completed. These are available on request.

5.2 Community communication

Every effort has been made to maintain regular communication with all stakeholders.

This communication includes:

- Iwi – Response to inquiries and establishment of Kaitiaki groups.
- BOPRC Flood Managers – Lake level and flow conditions.
- Residents – Response to enquiries.
- NIWA – Review and adjust flow rating curves.
- Rotorua Tourism Operators – Lake front issues.
- Rafters – Gate settings and river flows.
- Media – Situation reports.

Part 6: Complaints and investigations

6.1 Complaint summary – 1 April 2012 to 31 March 2013

Note: No complaints were received by BOPRC's Compliance Section.

Concerns and complaints received by the consent holder are recorded and summarised in Table 3 below.

Table 3 Summary of complaints and concerns regarding lake levels.

Complaint or concern	Date	By	Issue	Actioned
Concern	8/4/12	Email	Low lake level over Easter weekend.	Close gates to recover lake level while maintaining greater outflows. Follows forecast rain from Met Service that did not materialise. Lake levels recovered within three days.
Concern	11/4/12	Email	Low lake level – trouble with boat sheds.	Follows low lake level over Easter weekend. Lake Level now back with operating range.
Concern	11/4/12	Phone	Kaituna River flows low.	Follows low lake level over Easter weekend. Lake Level now back with operating range.
Concern	9/5/12	Phone	Kaituna River flows too high for rafting.	Gates opened in response to high lake levels and consent conditions.
Concern	9/5/12	Phone	Hinehopu flooding.	Okere Gates are fully open in effort to reduce lake levels following heavy rain.
Concern	14/5/12	Phone	Okere Gates fully opened when should be closed.	BOPRC server failure – email failed to advise rafters gates to remain fully open following Met Service Warning.
Concern	11/6/12	Email	Loss of rafting days during drawdown.	Rafters seeking formal explanation from consent holder over loss of rafting opportunity resulting from drawdown. Explanation completed.
Concern	12/6/12	Email	Loss of rafting days during drawdown.	As above.
Concern	5/7/12	Email	Low Lake Levels and poor communication over drawdown.	Advised that public notifications completed in respect to drawdown and expected low lake levels.

Complaint or concern	Date	By	Issue	Actioned
Informal complaint (General) No compliance breach	August to September 2013	Email, phone, letters	Rafters complaining of sustained gate closures causing negative impact on business.	Held meeting with rafters discussing conditions of consent to maintain inflows and outflows. Waiting for inflows to decrease to then provide maximum rafting flows.
Concern	11/3/13	Phone	Lake Rotorua low. Shallow at town wharf area affecting boats and float plane.	Advise that stop-logs are in and little more BOPRC can do under current drought conditions.

Total number of consent complaints = 1, Total number of concerns = 10.

6.2 Investigations and monitoring

Investigations completed or currently underway to meet conditions of the consents are shown in Table 4 below:

Table 4 Investigations and monitoring completed or in progress.

Investigation	Consent Condition # 65979 Condition:	Location	Issue	Progress
Flood monitoring	12	Mourea/Ōhau Channel	Flooding	In progress. Mitigation measures on hold until further research gathered.
Velocity monitoring	13.2	Ōhau Channel	Maintain fish migration during flush (Fish & Game)	Report completed by BOPRC - EDS Section 17 July 2012. Submitted to Consent Authority and Fish & Game 31 October. Ongoing each year.
Water table monitoring	14	Hinehopu	Flooding	In progress. Note: Initial report completed but outside this reporting period although conclusions are expected to be similar.
Beach width monitoring. Application of herbicide	12.3-	Hinehopu Te Ruato Bay Lake Rotorua at Ohau Weir	Narrow beaches. Inundation by vegetation and grasses	Ongoing. No granting of permission from Ohau Ki Rotoiti Kaitiaki to apply herbicide Discussions continue
Lake level/staff gauge monitoring and settlement	8	Hinehopu Gisborne Pt Okawa Bay Te Akau Bay	Monitor settlement	Ongoing.
Ōhau Channel Delta		Lake Rotoiti	Aggradation/ flooding and safe ship	Survey completed February 2013, design and estimates in progress to

			navigation	dredge pilot cut.

Hinehopu water table monitoring

Consent condition 14 states that - the consent holder is tasked to investigate the correlation between lake levels and ground water for a 12 month period within three months of the new consent being issued. This monitoring is now in progress with analysis due September 2013. At this stage, previous monitoring indicates a correlation between lake level and ground water but further monitoring will clarify this observation and the possible mitigation measures to follow.

Ohau Channel cross sections and velocity monitoring.

Ōhau Channel cross sections are undertaken annually at locations shown in Figure 8 below to monitor bed levels prior to and after channel flush each year.

Figure 7 Ohau Channel cross section locations.

At this time, there is little evidence from cross section data to suggest deepening of the channel.

Figure 9 below shows a typical channel cross section at site number 13 prior to the flush on 12 June 2012 (red) followed by a post flush cross section on 12 June 2012 (black) indicating little change in cross section shape apart from minor aggradation on the left side of the channel.

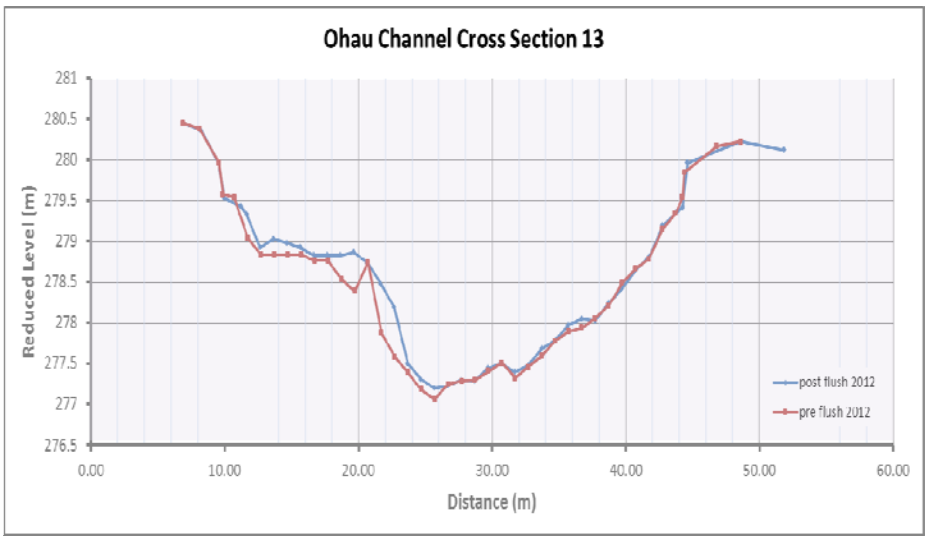

Figure 8 *Cross section number 13 – pre-flush 12 June 2012 and post-flush 12 July 2012.*

A staff gauge shown in Figure 9 below has been installed on the Ohau Channel/ State Highway 33 Bridge to replace temporary water level monitoring pegs.

Figure 9 *New Ohau Channel/State Highway 33 staff gauge located on pillars of State Highway 33 Bridge at Mourea.*

Velocity monitoring

Velocity measurements have been made at several locations along the Ohau Channel before and during the flush test to assess any changes in velocities. Under Condition 13.2, annual monitoring is required to address concerns by Fish & Game to determine any effects of the flush on Ōhau Channel velocities and fish migration.

The monitoring concluded no significant change in velocities during the flush and was reported to Fish & Game.

This monitoring will continue annually or until reviewed if results remain consistent.

Ohau Diversion Wall - reflux monitoring

Velocity monitoring work was carried out in October 2012 by BOPRC using an Acoustic Doppler Current Profiler (ADCP), to measure reflux currents at the Ohau Diversion Wall after the Okere Gates were closed down to less than Ōhau Channel inflows.

This followed concerns by the rafting industry that the high flows through the Okere Gates were preventing commercial rafting opportunity on the Kaituna River and reflux should be monitored for assessment and better understanding.

The results of this monitoring were inconclusive due to wind and wave action on the day but initial indications suggest a negligible effect .

It is proposed to carry out further monitoring and this will be reported on in future reports.

Part 7: Conclusion

This 2013 report satisfies revised consent requirements to report annually on the Ohau Weir and Okere Gates consents by 1 June each year.

The consents have been 'operational' since the consent order was signed on 21 March 2012.

Key achievements during this period were successful lake level and flow management within the various operating ranges, and the establishment of the liaison and Kaitiaki groups.

The biggest driver for lake level management today is water quality followed by water levels. The operational regime of these consents compliments the Rotorua Lakes Programme to improve water quality by ensuring outflows through the Okere Gates are always greater than inflows from the Ohau Channel.

During the 12 months that the structures have been operated under the new consent conditions, there were a few occasions when Lake Rotoiti was operated outside of its target ranges for a short time and one occurrence of Lake Rotorua being above its maximum level due to extreme wet weather in July 2012.

There was one instance when inflow to Lake Rotoiti briefly exceeded outflow and one instance when maximum flow rate decrement was exceeded. These were a result of operator error and greater attention will be paid to avoid these types of instances in future.

This report has evaluated the first 12 months of operation under the new consent issued on 21 March 2012. There were two climatic extremes during this period, severe wet weather in July 2012 and a severe drought over the 2012/2013 summer.

Considering these extremes, lake level distributions for both lakes have been good with no operational difficulties to report.

Monitoring and investigation programmes are in place and will provide further understanding around lake level management and water quality issues in the future.

At this stage, there are no recommendations to review current consent conditions or the Operational Management Plan.