

# Destination Rotorua

## LAKE WATER QUALITY PERCEPTIONS SURVEY

2005  
Report

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## 1 Executive Summary

### ***Actual Cause of Poor Lake Water Quality***

Research conducted by 'expert' organisations (Nimmo Bell, et al) suggest that there are a number of factors contributing towards substandard lake water quality. Increased nutrient levels, especially nitrogen and phosphorous (in the main caused through farm run-off and community effluent) and climatic conditions create algal blooms which pose health risks to users as well as discolouring the water. 'Old water' and nutrient rich water moving from one lake to another are other causes of substandard water quality.

### ***Media Reporting***

The most common aspects of poor lake water quality reported through the media were the presence of algal blooms (often without reference to how algal blooms occur) and the potential impacts of algal blooms on lake users health. Different initiatives or suggested actions to remedy the lake water quality problems were also frequently reported as well as the results of environmental reports concerning lake water quality.

### ***Respondent Perceptions***

Respondents who perceived the lake water quality to be poor were generally unable to identify the contributing causes. This would indicate that while the causal factors are/were being reported and communicated via media to potential visitors, no single factor is perceived to be the major area of concern. The message received was simply 'Rotorua lakes have poor water quality'.

### ***Lake Water Quality Perceptions***

- Almost three in every ten respondents (29%) stated that their general perception of Rotorua lake water quality was either *poor* (20%) or *very poor* (9%) compared to 19% of respondents who stated it was either *good* (15%) or *very good* (4%). Over one half of respondents (53%) responded neutrally either stating *neither poor nor good* (30%) or *don't know/not sure* (23%).
- Lake Tikitapu (Blue Lake) had the highest percentage of respondents (33%) who stated that the water quality is either *very good* (9%) or *good* (24%). Lake Rotorua had the highest percentage of respondents (30%) stating the water quality is either *poor* (24%) or *very poor* (6%).

### ***Key Statement Testing (Including Correlation Analysis)***

- Not one of the statements exhibited a particularly strong relationship with the general perception of lake water quality, indicating that no single statement has a significant influence upon overall perceptions. To this end, perceptions of Rotorua lake water quality are not driven by one factor or issue but rather are simply an overall perception of poor lake water quality.
- The statement for which respondents were most likely to agree was *Lakes are crucial to tourism in Rotorua* with 54% of respondents stating that they strongly agreed with the statement and 34% of respondents stating that they agreed with the statement. Other comments for which a high level of respondents agreed were *Some lakes are worse affected than others* (23% of respondents strongly agreeing and 51% agreeing) and *Toxins from algal blooms make lakes unsafe for water contact activities* (22% of respondents strongly agreeing and 47% agreeing).

- The statement with the strongest relationship to respondents' perceptions of lake water quality was *Lake water quality is deteriorating* (coefficient .31). The other statements with reasonable relationships to the general perception of lake water quality were *Some lakes are worse than others* (coefficient .24) and *Lake Rotorua is the main cause of Lake Rotoiti's poor water quality* (coefficient .23).

***Travel Behaviour***

- Three quarters of respondents (75%) *had* travelled to the Rotorua District for at least one night in the past five years.
- Almost two fifths of respondents (38%) stated that it is *highly likely* that they will travel to the Rotorua District for at least one night within the next two years. Only 9% of respondents stated that it is *highly unlikely* that they will travel to the Rotorua District for at least one night within the next two years.

***Effect of Lake Water Quality Perceptions***

- Almost three in every five respondents (59%) stated that their current perception of Rotorua's lake water quality would have *no effect* on the likelihood of visiting Rotorua in the future.
- Respondents who perceived lake water quality to be substandard were more likely to state that it would affect their future travel plans to the Rotorua District than those who felt there were no water quality issues.

***Lake Water Quality Communication Mediums***

- *Newspaper articles* (40%) and *television reports* (40%) were the two most common contributors to respondent perceptions of Rotorua lake water quality. Other common contributors were *personal experience* (34%) and *word of mouth* (20%).

## **2 Introduction**

Considerable publicity has been generated regionally and nationally over the past 12 months around the water and lakebed quality of Rotorua's lakes. As tourism is a significant generator of economic prosperity within the district it is imperative that the effects of this publicity are measured.

Destination Rotorua commissioned Key Research & Marketing to conduct a survey of residents in the Auckland region regarding their perceptions of Rotorua's lake water quality.

### **2.1 Research Objectives**

The specific objectives of the research were:

- to determine the key messages about the quality of the lakes which have been or are being communicated through the media;
- to determine domestic visitor's perceptions of the quality of the lakes;
- to ascertain whether these perceptions have an influence upon the decision to visit Rotorua.

## **2.2 Research Method**

This study consisted of two key phases.

- 1 – a media search to identify the key statements or determinants of perception development, that is, identify the key statements which are being or have been communicated.
- 2 – a survey amongst the key domestic market to determine whether these key statements or determinants have influenced visitor decisions.

The media search was conducted between Monday 17<sup>th</sup> January and Monday 24<sup>th</sup> January. The results of this phase are evident in the questionnaire design.

The survey involved telephone interviews with 501 Auckland residents. Auckland residents were surveyed due to being the most appropriate available representation of potential visitors to the Rotorua District.

- Interviewing took place between Thursday 10<sup>th</sup> February and Monday 21<sup>st</sup> February 2005.
- The overall results have a margin of error of +/- 4.38% at the 95% confidence level.

The following steps were taken to ensure objectivity, validity and reliability of the study:

- The questionnaire was developed by executives from Key Research & Marketing in partnership with Destination Rotorua;
- Respondents for telephone interviews were selected using Telecom's random number generation service;
- Respondents were household members who are responsible for making travel decisions within their household and who had travelled outside of Auckland for at least one night in the past year;
- All interviews were conducted by trained and experienced Key Research & Marketing interviewers.

*Appendix One* is the questionnaire.

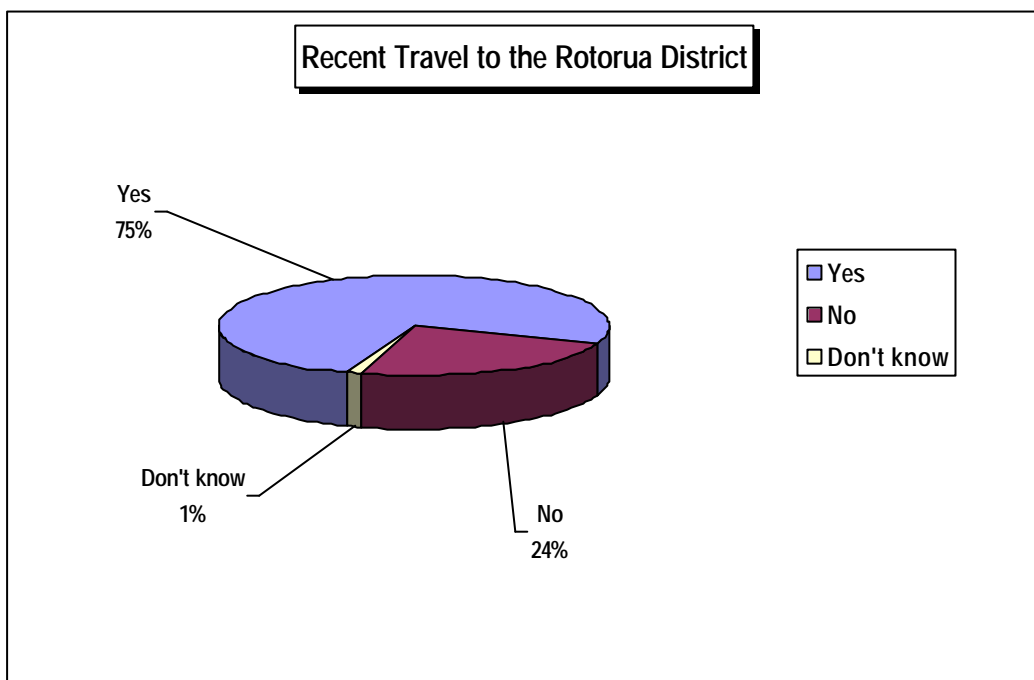
### 3 Research Results

#### 3.1 Recent Travel to the Rotorua District

Respondents were first asked if they had travelled to the Rotorua District for at least one night in the past five years.

- Three quarters of respondents (75%) *had* travelled to the Rotorua District for at least one night in the past five years.

**Figure 1:**



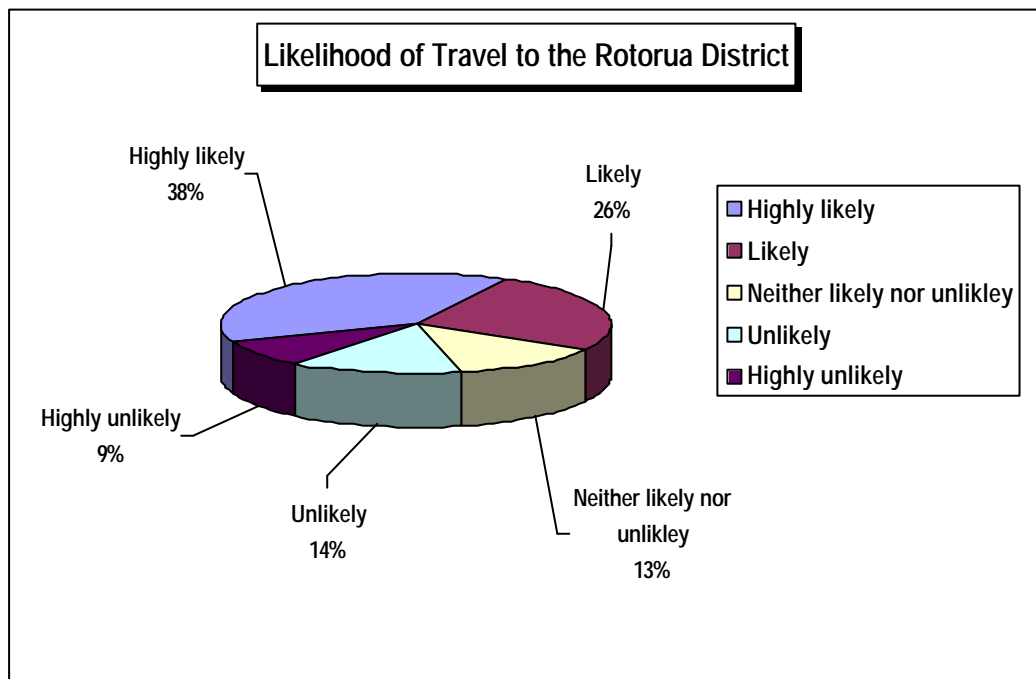
Base: 501 respondents

### 3.2 Likelihood of Travel to the Rotorua District

Respondents were then asked to rate how likely they are to travel to the Rotorua District for at least one night within the next two years. Their options were;

1. Highly likely
  2. Likely
  3. Neither likely nor unlikely
  4. Unlikely
  5. Highly unlikely
- Almost two thirds of respondents (64%) stated that it is *highly likely* (38%) or *likely* (26%) that they will travel to the Rotorua District for at least one night within the next two years.
  - Only 9% of respondents stated that it is *highly unlikely* that they will travel to the Rotorua District for at least one night within the next two years.

**Figure 2:**



Base: 501 respondents

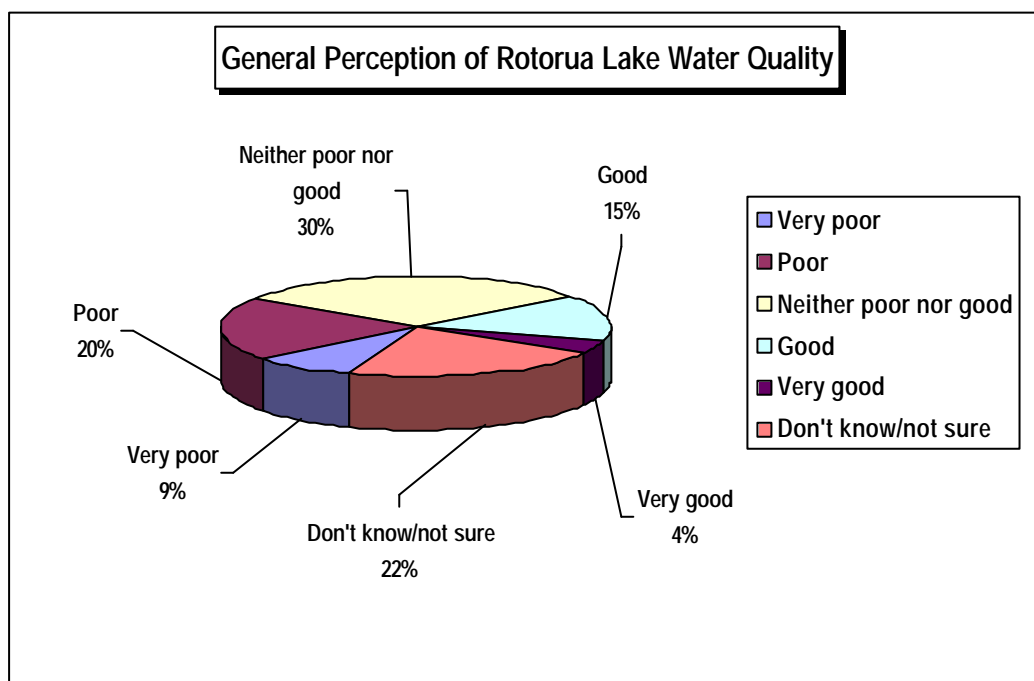


### 3.3 General Perception of Rotorua Lake Water Quality

Respondents were then asked to rate, in general, the water quality of Rotorua's lakes. The options they were provided were;

1. Very poor
  2. Poor
  3. Neither poor nor good
  4. Good
  5. Very good
- Slightly less than one in five respondents (19%) stated that their general perception of Rotorua lake water quality was either *good* (15%) or *very good* (4%).
  - Almost three in every ten respondents (29%) stated that their general perception of Rotorua lake water quality was either *poor* (20%) or *very poor* (9%).
  - Over one half of respondents (52%) answered this question neutrally either stating *neither poor nor good* (30%) or *don't know/not sure* (22%).

**Figure 3:**



Base: 501 respondents

### 3.4 Individual Lake Water Quality Perceptions

Respondents were then asked to rate the lake water quality of a number of Rotorua Districts' lakes. The following lakes were rated;

- a. Rotorua
  - b. Rotoiti
  - c. Rotoma
  - d. Tikitapu (Blue Lake)
  - e. Rotoehu
  - f. Okataina
  - g. Tarawera
  - h. Okareka
- A significant number of respondents stated *don't know/not sure* when asked about the water quality of individual lakes in the Rotorua District.
  - Lake Tikitapu (Blue Lake) had the highest percentage of respondents (33%) who stated that the water quality is either *very good* (9%) or *good* (24%).
  - Lake Rotorua had the highest percentage of respondents (30%) stating the water quality is either *poor* (24%) or *very poor* (6%).

**Table 1:**

How would you rate the quality of the water in the following lakes?	Very Good	Good	Neither Good nor Poor	Poor	Very Poor	Don't know/Not sure	Total
Tikitapu (Blue Lake)	9	24	19	6	2	40	100
Tarawera	7	22	18	7	4	42	100
Okataina	4	11	19	6	2	58	100
Rotorua	3	18	27	24	6	22	100
Rotoiti	3	14	23	14	10	36	100
Rotoma	2	9	19	10	3	57	100
Rotoehu	2	9	18	6	3	62	100
Okareka	1	8	20	6	1	64	100

*Base: 501 respondents*

### 3.5 Key Statement Testing

Respondents were then read a number of statements that had been developed as a result of a media search and identified as key messages being communicated with the general public. Each respondent was asked if they *strongly agree, agree, neither agree nor disagree, disagree* or *strongly disagree* with each statement.

- The statement for which respondents were most likely to agree was *Lakes are crucial to tourism in Rotorua* with 54% of respondents stating that they strongly agreed with the statement and 34% of respondents stating that they agreed with the statement.
- Other comments for which a high level of respondents agreed were *some lakes are worse affected than others* (23% of respondents strongly agreeing and 51% agreeing) and *toxins from algal blooms make lakes unsafe for water contact activities* (22% of respondents strongly agreeing and 47% agreeing).

**Table 2:**

How much do you agree with each of the following statements?	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know	Total
Lakes are crucial to tourism in Rotorua	54	34	7	3	1	1	100
The lakes will take decades to recover	24	41	15	5	1	14	100
Some lakes are worse affected than others	23	51	10	3	1	12	100
Toxins from algal blooms make lakes unsafe for water contact activities (swimming etc.)	22	47	13	6	1	11	100
Lake water quality is deteriorating	21	38	18	5	1	17	100
Community effluent/sewerage causes poor lake water quality	18	45	15	5	1	16	100
Central Government is providing insufficient financial support for lake restoration	14	31	22	3	0	30	100
Poor lake water quality has resulted from farm run-off	12	39	24	8	1	16	100
Local Council considers lake quality to be high priority	12	29	19	7	1	32	100
Efforts to reduce farm run-off will have a negative financial impact on farmers	5	33	17	22	4	19	100
The level of litter in Rotorua lakes is comparable to other New Zealand lakes	5	33	21	18	2	21	100
Lake Rotorua is the main cause of Lake Rototiti's poor water quality	3	16	25	7	1	48	100
Definite action is underway to repair lakes	3	24	25	7	1	40	100
Pest fish do not inhabit Rotorua's lakes	2	11	23	19	4	41	100
Fishing in the lakes is the best it has been in years	2	9	21	19	6	43	100

*Base: 501 respondents*

### 3.5.1 Correlation Analysis

The results of the key statement testing were then correlated with the responses given to the general perception of lake water quality question.

- Not one of the statements exhibited a particularly strong relationship with the general perception of lake water quality. This would tend to indicate that no single statement has a significant influence upon the overall perception of lake water quality.
- The statement with the strongest relationship to the general perception of lake water quality question was *lake water quality is deteriorating* (coefficient\* .31). The other statements with reasonable relationships to the general perception of lake water quality were *some lakes are worse than others* (coefficient .24) and *Lake Rotorua is the main cause of Lake Rotoiti's poor water quality* (coefficient .23).
- There were also a number of statements that had negative coefficients, indicating that these statements were likely to contradict the respondents' perception of lake water quality. These statements were *fishing in the lakes is the best it has been in years* (coefficient -.26), *the level of litter in Rotorua lakes is comparable to other New Zealand lakes* (coefficient -.1), *pest fish do not inhabit Rotorua's lakes* (coefficient -.07).

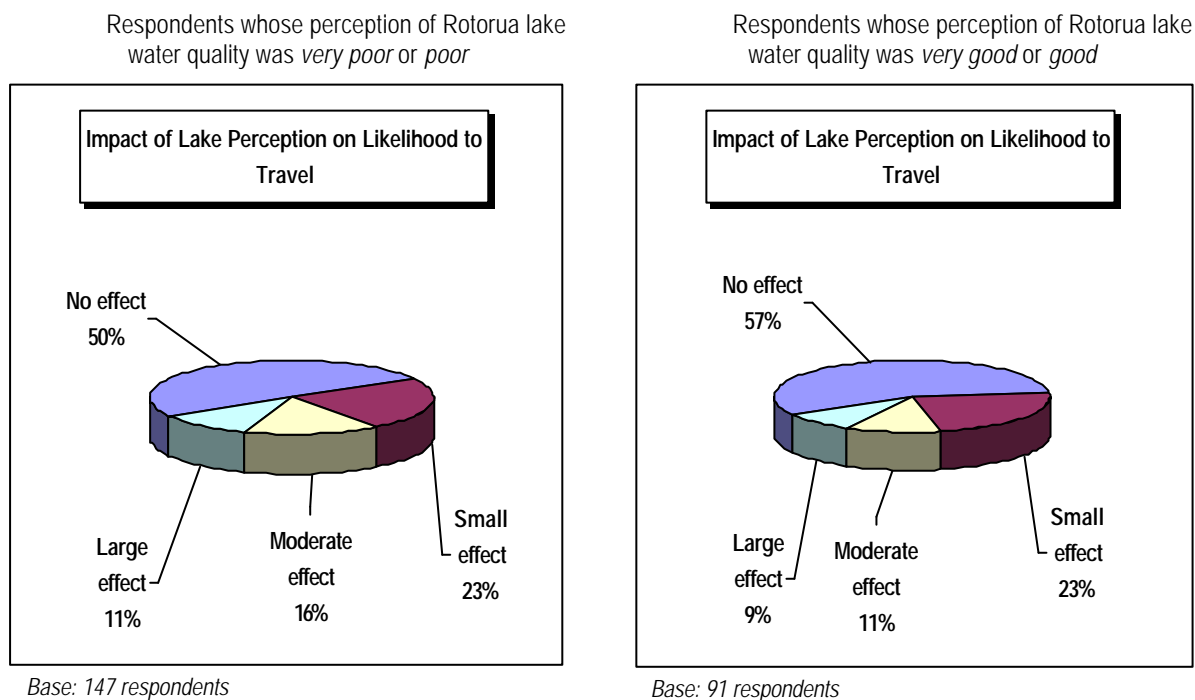
\*Coefficients reflect the strength of the relationship between two variables. A coefficient close to 1 or -1 represents a strong relationship, while a coefficient close to 0 represents a weak relationship. A negative coefficient indicates a negative (and potentially illogical) relationship between two variables (i.e. the value of one variable/response increases as the other variable/response decreases). A negative relationship may indicate that other factors 'are at work' in determining the influence of the attribute on overall perception.

### 3.6 Impact of Lake Perception on Likelihood to Travel

Respondents were then asked “what effect does your perception of Rotorua’s lake water quality have on the likelihood of you visiting Rotorua in the future?” For the purpose of this report respondents were grouped into those whose perception of Rotorua lake water quality was *very poor* or *poor* and those whose perception of Rotorua lake water quality was *very good* or *good*.

- 57% of respondents whose perception of Rotorua lake water quality was *very good* or *good* stated that their perception had *no effect* on their likelihood to travel. The corresponding figure for respondents whose perception of Rotorua lake water quality was *very poor* or *poor* was 50%.
- The other percentage differences between respondents whose perception of Rotorua lake water quality was *very poor* or *poor* and those whose perception of Rotorua lake water quality was *very good* or *good* were minimal.

**Figure 4:**



#### 3.6.1 Further Analysis

- Those who stated that their perception of lake water quality would have a *large* or *moderate effect* on their likelihood to visit Rotorua were much more likely to state that water quality of Rotorua’s lakes were *poor* or *very poor* (42%) than respondents who stated that their perception of lake water quality would have *no effect* or a *small effect* on their likelihood to visit Rotorua (29%).

### 3.7 Communication Mediums

Respondents were then asked which of the following contribute to their view of Rotorua's lake water quality:

- Newspaper articles;
- Radio reports;
- Television reports;
- Word of mouth;
- Internet articles;
- Personal experience.
  
- *Newspaper articles (40%) and television reports (40%) were the two most common contributors to respondent perceptions of Rotorua lake water quality.*
  
- *Other common contributors were personal experience (34%) and word of mouth (20%).*

**Table 3:**

Communication Mediums	% of responses
Newspaper articles	40
Television reports	40
Personal experience	34
Word of mouth	20
Radio reports	18
Internet articles	2
Don't know/not sure	6
Other	5
<b>Total</b>	<b>165</b>

*Base: 501 respondents*

*Note: multiple responses were permitted, therefore total percentage exceeds 100*

*Other responses (5%) included:*

- *All of the above. (9)*
- *Tour operators talk about the algae and run-off problems.*
- *No feedback from any source.*
- *Marae.*
- *Magazines.*
- *Magazine articles.*
- *I was in Rotorua in the 60's, water was good then.*
- *Have a reasonable amount to do with the Tourism Industry.*
- *Fresh water fishing reports on radio.*
- *Fishing and Hunting magazines.*

NOTE: There was no relationship evident between communication mediums and general perceptions of Rotorua Lake Water Quality. That is, no mediums created significantly different positive or negative perceptions than another.

## 4 Respondent Profile

### 4.1 Age

**Table 4:**

Age	% of responses
18 to 24	7
25 to 34	19
35 to 44	26
45 to 54	21
55 to 64	13
65 to 74	10
75+	4
<b>Total</b>	<b>100</b>

*Base: 501 respondents*

### 4.2 Gender

**Table 5:**

Gender	% of responses
Male	38
Female	62
<b>Total</b>	<b>100</b>

*Base: 501 respondents*