A HEALTHY COMMUNITY

13. Personal health

Why is this important?

Rotorua communities want to be healthy and feel healthy. Physical health plays a big part in personal and community well-being.

What are the measures?

13a Estimated life expectancy at birth
13b Low birth weight babies
13c Cardiovascular disease
13d Prevalence of cigarette smoking

How are we doing?

- Latest official estimates for 2005-2007 show that life expectancy at birth was 75.6 years for Rotorua males and 80.1 years for Rotorua females. Life expectancy in the Rotorua District is gradually increasing but remains below the national average. Rotorua's lower life expectancy is likely due to a combination of factors including lower average socio-economic status and a higher proportion of the population who smoke.
- Birth weight is linked with the overall health of the mother (including nutrition and cigarette smoking) as well as the quality and accessibility of prenatal care. In any given year approximately 60 to 70 of every 1,000 live babies born in the Rotorua area have a low birth weight. Historically, the Lakes region has had a higher rate of low birth weight babies than the national average, although recent data has belied that trend. Data for 2008 showed there were 42.1 low birth weight babies per 1,000 live births in the Lakes region compared to 60.5 for New Zealand overall. More recent 2009 data for the Lakes region shows a higher level of 55.0 low birth weight babies per 1,000 live births.
- The incidence of cardiovascular disease, such as ischaemic heart disease, is a key indicator of lifestyle and physical health. The number of hospital discharges for ischaemic heart disease from Lakes DHB declined from around 1,000 per annum in 2001/02 to less than 500 per annum in recent years, reflecting a similar downward trend at the national level. However the standardised hospital discharge ratio for ischaemic heart disease in the Lakes DHB region remains significantly higher than the national average rate.
- The prevalence of cigarette smoking amongst Rotorua adults has declined markedly since 1981 but remains above the national average. The estimated rate of cigarette smoking in the Rotorua District fell from 38.3% in 1981 to 29.3% in 2006, compared with a 2006 national average rate of approximately 20.5%. As at 2006, the average rate of smoking amongst Rotorua adults was highest for females (30.5%), people aged 15-44 years (34.0%) and Māori and Pacific residents (42.8% and 32.9% respectively).

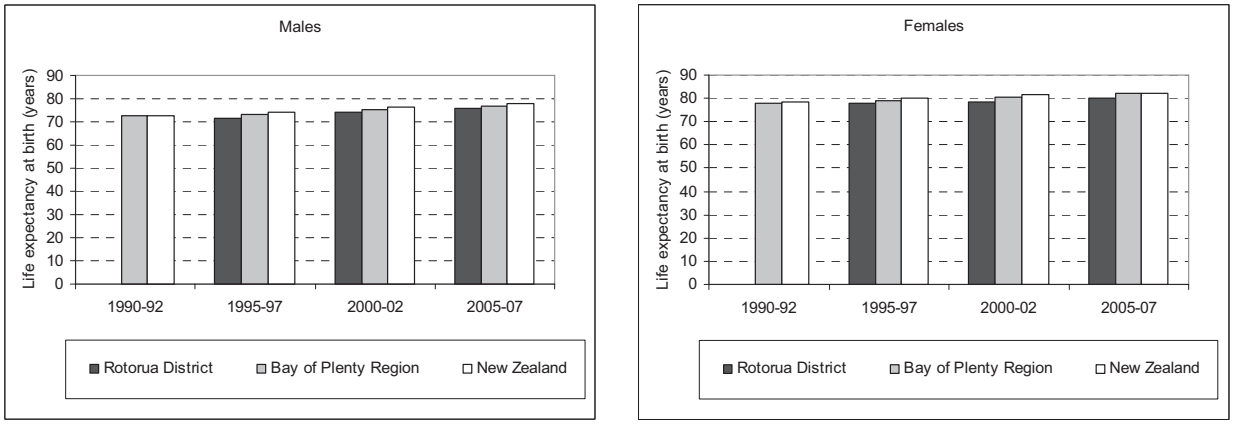
	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
13a	Estimated life expectancy at birth	78 years (approx)	80 years (approx)	GETTING BETTER	GETTING BETTER

Life expectancy is a key indicator of the general health of the population. Improvements in overall life expectancy reflect improvements in social and economic conditions, lifestyle, access to health services and medical advances. Statistics New Zealand compiles Life Tables to give an indication of the average longevity of the population as a whole. Note that life expectancy data is less reliable for smaller territorial authorities. Note also that life expectancy data for 1990-92 are not directly comparable with later years due to differences in methodology.

Based on the mortality experiences of New Zealanders in the period 2005–2007, life expectancy at birth was 78.0 years for males and 82.2 years for females. Since the mid-1980s, gains in longevity have been greater for males than for females.

Figure 13a shows that estimated life expectancy in the Rotorua District is gradually increasing but remains below the national average. Latest official estimates at the territorial authority level for 2005-2007 show that life expectancy at birth was 75.6 years for Rotorua males and 80.1 years for Rotorua females. Rotorua's lower life expectancy is likely due to a combination of factors including lower average socio-economic status, a higher proportion of the population who smoke (or have smoked) and higher proportion of Māori residents.

Figure 13a: Life expectancy at birth



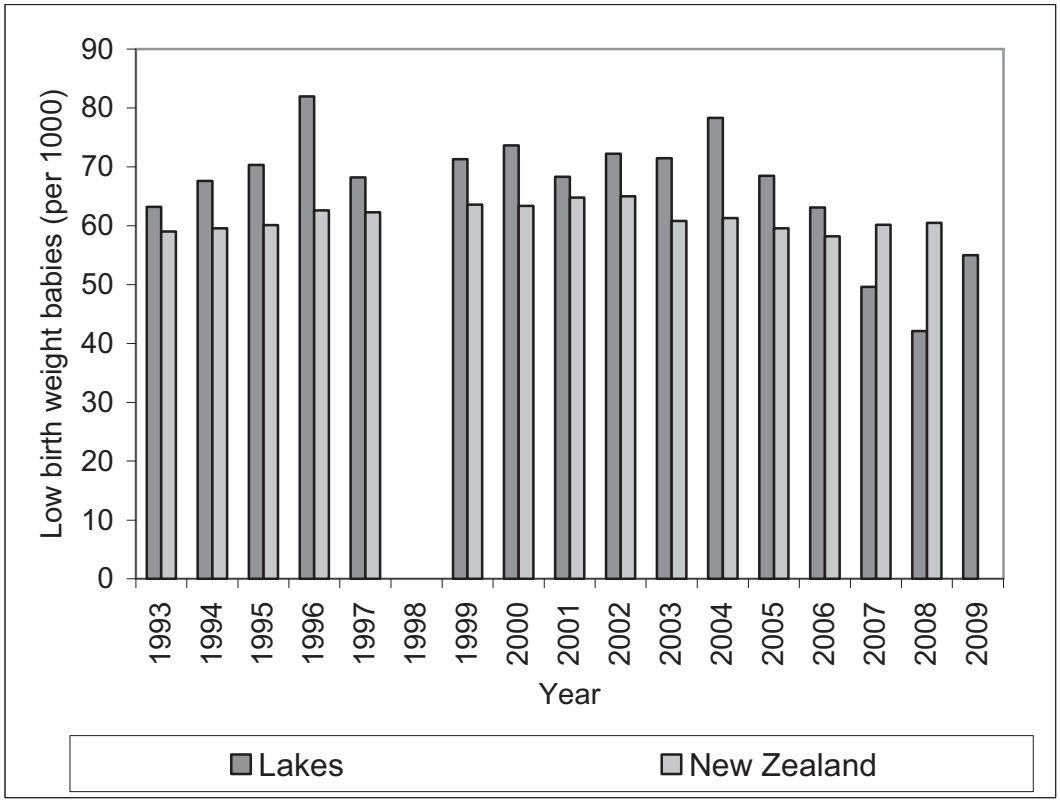
Source: Statistics New Zealand

	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
13b	Low birth weight babies	55.0 per 1,000 live births	60.5 per 1,000 live births		

Babies that weigh less than 2,500 grams at birth tend to have increased risk of health problems and lower life expectancy. Birth weight is linked with the overall health of the mother (including nutrition and cigarette smoking) as well as the quality and accessibility of prenatal care. The higher the number of low birth weight babies per 1,000 live births, the higher the social cost of poor health and educational attainment in the future. The incidence of low birth weight babies is correlated with the infant mortality rate.

In any given year around 60 to 70 of every 1,000 live babies born in the Lakes health region have a low birth weight. Historically, the Lakes region has had a higher rate of low birth weight babies than the national average, although recent data has belied that trend. Data for 2008 showed there were 42.1 low birth weight babies per 1,000 live births in the Lakes region compared to 60.5 for New Zealand overall. More recent 2009 data for the Lakes region shows a higher level of 55.0 low birth weight babies per 1,000 live births. National data for 2009 has not yet been sourced, but is likely to be similar to 2008 levels.

Figure 13b: Low birth weight babies per 1,000 live births



Source: Lakes DHB/New Zealand Health Information Service.

	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
13c	Cardiovascular disease	Standardised hospital discharge ratio of 1.10 for ischaemic heart disease	Standardised hospital discharge ratio of 1.00 for ischaemic heart disease		

Cardiovascular diseases (CVD) are diseases affecting the heart and circulatory system. They include ischaemic heart disease (IHD), rheumatic heart disease, cerebrovascular disease and other forms of vascular and heart disease. Cardiovascular disease is the leading cause of death in New Zealand. Mortality rates for IHD in the Lakes District Health Board region are generally higher than the national rates (refer Table 13c(i)), and mortality rates for Māori are significantly higher than for non-Māori. Modifiable risk factors for CVD include smoking, lack of exercise, poor diet, diabetes and hypertension. Hence the incidence of premature CVD is an indicator of lifestyle and physical health.

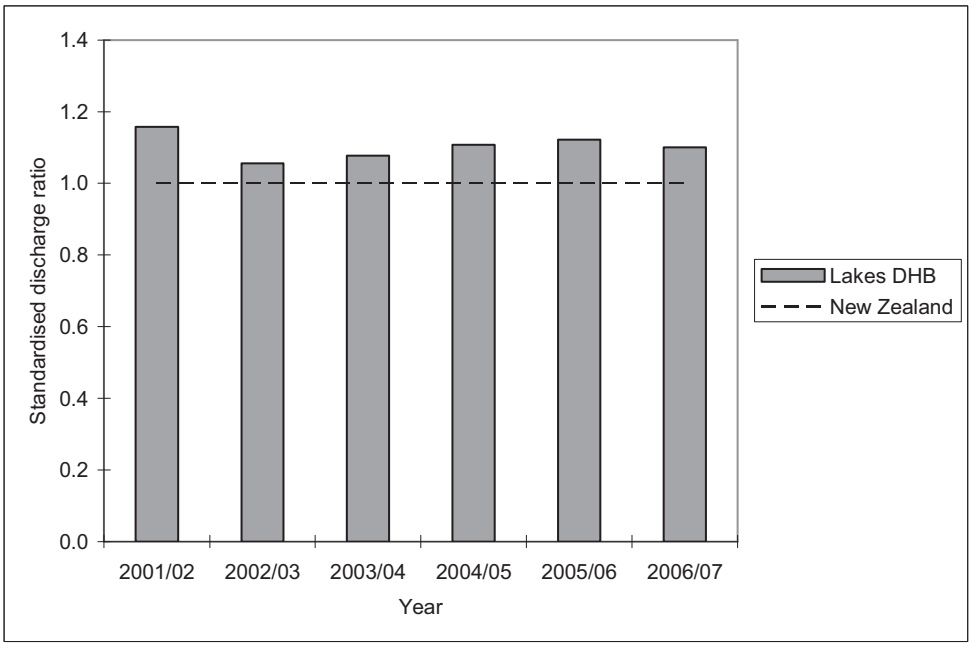
Figure 13c(ii) shows that the standardised hospital discharge ratio for ischaemic heart disease in the Lakes DHB region is significantly higher than the national average rate. In total there were 756 discharges from Lakes DHB in 2006/07 due to ischaemic heart disease including 186 Māori people. Figure 13c(iii), which includes more recent data to 2009/10, shows that in absolute terms the number of hospital discharges for ischaemic heart disease from Lakes DHB has declined from around 1,000 per annum in 2001/02 to less than 500 per annum in recent years. There has been a similar downward trend at the national level.

Table 13c(i): Top 10 avoidable mortality causes, Lakes District Health Board, 1988 to 2001, total population

	Lakes (No.)	Lakes (%)	New Zealand (%)
Ischaemic heart disease	1,275	13.3%	14.4%
Lung cancer	608	6.3%	5.0%
Stroke	551	5.8%	7.0%
CORD	516	5.4%	5.2%
Colo-rectal cancer	389	4.1%	4.0%
Respiratory infections	307	3.2%	3.4%
Road traffic injury	306	3.2%	2.2%
Diabetes	276	2.9%	2.0%
Suicide	217	2.3%	1.9%
Breast cancer	196	2.0%	2.2%

Source: Central Region Technical Advisory Service Ltd (data from Ministry of Health)

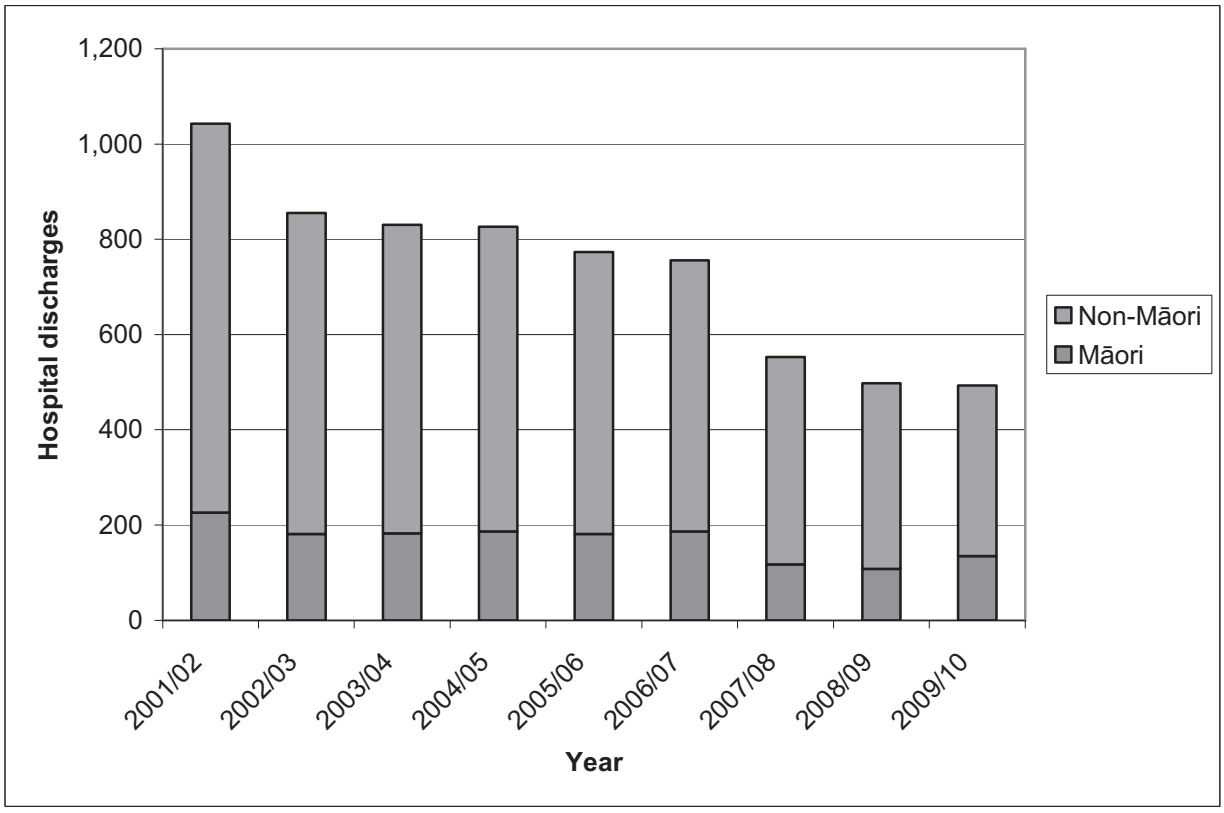
Figure 13c(ii): Standardised hospital discharge ratio for ischaemic heart disease, Lakes DHB and New Zealand



Source: Lakes DHB/NZ Health Information Service

Notes: Discharges relate to region of domicile. Standardised discharge ratio is the ratio of observed to expected discharge rates. Expected rates are calculated on the age and socio-economic deprivation structure of each DHB region, with socio-economic deprivation determined using NZDEP scores from the 2001 census.

Figure 13c(iii): Hospital discharges for ischaemic heart disease, Lakes DHB



Source: Lakes DHB/NZ Health Information Service

Notes: Refer notes to Figure 13c(ii).

	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
13d	Prevalence of cigarette smoking	29% of Rotorua adults are smokers	21% of New Zealand adults are smokers		

Tobacco smoking is a well-recognised risk factor for many cancers and for respiratory and cardiovascular diseases. In addition, exposure to environmental tobacco smoke (particularly maternal smoking) is a major risk factor for Sudden Infant Death Syndrome and respiratory problems in children. Smoking has been identified as the major cause of preventable death in OECD countries.

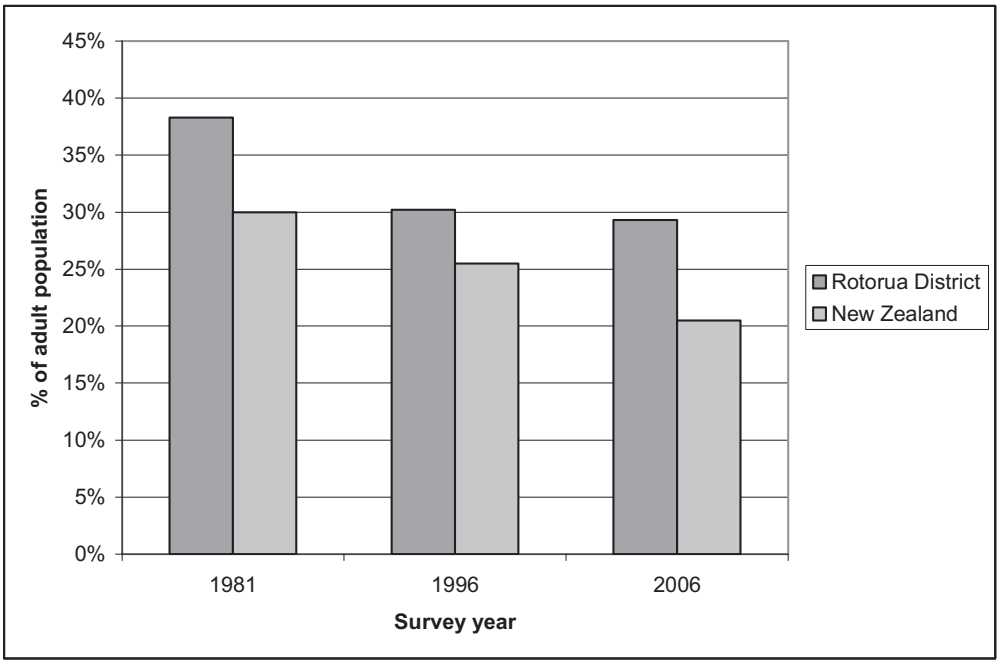
In 2008, 23% of New Zealanders aged 15–64 years were current cigarette smokers, according to the New Zealand Tobacco Use Survey. This was just below the smoking prevalence rate derived from the New Zealand Tobacco Use Survey conducted in the first quarter of 2006 (24%). Long-term trends are available only for the population aged 15 years and over. The Ministry of Health's estimate of smoking prevalence for this population in 2008 is 21.0%. This is similar to the 2006/2007 New Zealand Health Survey estimate of 19.9% and the 2006 Census figure of 20.7%, but below the 24% derived from the ACNielsen survey for 2005. Among the population aged 15 years and over, smoking has declined from 30% in 1986, with most of the decline occurring between 1987 and 1991. It is important to note there are methodological differences between these three surveys and some caution should be used when comparing figures. Ongoing monitoring in the MSD Social Report will be based on the New Zealand Tobacco Use Survey. As this survey is carried out in two out of every three years, it allows the most frequent updates.

Figure 13d(i) shows that the prevalence of cigarette smoking amongst Rotorua adults has declined markedly since 1981 but remains above the national average. The estimated rate of cigarette smoking in the Rotorua District fell from 38.3% in 1981 to 29.3% in 2006, compared with a 2006 national average rate of approximately 20.5%.

As at 2006, the average rate of smoking amongst Rotorua adults was higher for females (30.5%) compared with males (28.0%). Additional statistics are presented in Tables 13d(ii) and 13d(iii). As at 2006, Rotorua smoking rates were highest in the 15-44 years age group. In terms of ethnicity, smoking rates for Māori and Pacific residents were substantially higher than for other age groups.

According to Lakes DHB's 2008 Health Needs Assessment (p 22), tobacco disproportionately impacts on Māori and Pacific peoples, and is a substantial contributor to inequalities in health. The 2006 Census results show that 40% of Te Arawa aged 15 years and over are regular smokers (45% for women).

Figure 13d(i): Prevalence of cigarette smoking (age-standardised), population aged 15 years and over



Source: MSD Social Report (from survey data).

Table 13d(ii): Prevalence of cigarette smoking (age-standardised) by age group, Rotorua District 2006

	15-24 years	25-44 years	45-64 years	65+ years	Total
Number	2,574	5,586	3,429	648	12,237
Percentage	34.0%	34.0%	24.6%	9.9%	29.3%

Source: MSD Social Report (from survey data).

Table 13d(iii): Prevalence of cigarette smoking (age-standardised) by ethnic group, Rotorua District 2006

	European	Māori	Pacific	Asian	Other	Total
Number	6,330	6,078	507	279	981	12,237
Percentage	25.4%	42.8%	32.9%	14.9%	19.7%	29.3%

Source: MSD Social Report (from survey data).

14. Accessing healthcare

Why is this important?

Equity of access to healthcare is important for reducing social and economic disparities. Level of physical and mental health in the community can be more effectively supported through effective, integrated care.

What are the measures?

14a Avoidable hospitalisations
14b Immunisation rates
14c Oral health

How are we doing?

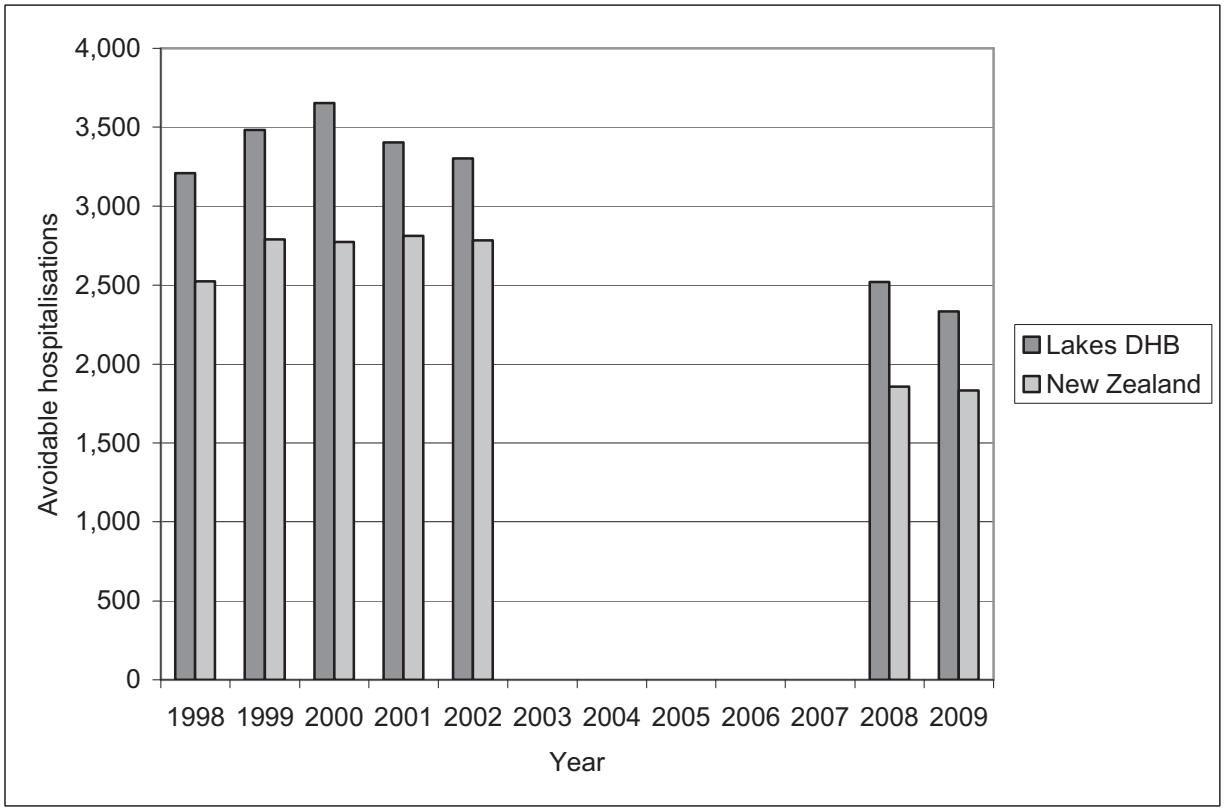
- Avoidable hospitalisations include those that are potentially preventable through population-based interventions (eg, health promotion) and those that are responsive to interventions at the individual level (eg, visiting a GP). Levels of avoidable hospitalisations in the Lakes District Health Board region declined between 2000 and 2009 but remain above the national average. Admission rates for Māori are higher than non-Māori.
- The national target is for 95% of children to be fully vaccinated at the age of two years. According to National Immunisation Register figures for the 12 month period ended March 2010, the full immunisation coverage rate for Rotorua two-year-olds was only 75% compared to a national rate of 84%. Māori children were significantly less likely to be fully immunised at age two years than non-Māori children. Children living in more deprived areas were less likely to be fully immunised at age two years than those living in less deprived areas.
- The mean number of decayed, missing and filled teeth (DMFT) for 12 year old children in the Rotorua area was 2.20 in 2008, which was substantially higher than the national average of 1.42. The mean DMFT score for Māori Year 8 children in the Rotorua area was approximately 2.86. Overall, the mean DMFT score for Rotorua District 12-13 year-olds is around the same level as it was in 1990 when records began.

	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
14a	Avoidable hospitalisations	2,332 per 100,000 population	1,834 per 100,000 population	GETTING BETTER	GETTING BETTER

Avoidable hospitalisations include those that are potentially preventable through population-based interventions (eg, health promotion) and those that are responsive to interventions at the individual level (eg, visiting a GP). The level of hospitalisations that could potentially have been avoided indicates potential gains that could be made through health promotion, disease prevention and treatment. A low level of avoidable hospital admissions indicates healthy lifestyles and good access to appropriate primary care services.

According to data received from Lakes DHB, levels of avoidable hospitalisation in the Lakes District Health Board region declined between 2000 and 2009 but remain above the national average. The age standardised rate of avoidable hospitalisations in the Lakes DHB area in 2009 was 2,331.9 per 100,000 population, compared to 1,834.2 for New Zealand overall (refer Figure 14a). The rate for Māori remains considerably higher than non-Māori at both the regional and national level (3,945.2 and 3,283.9 respectively). According to Lakes DHB's 2008 Health Needs Assessment (p 20), major causes of avoidable hospitalisation in the Lakes region include angina, repiratory infections, road traffic injury, gastroenteritis, cellulitis, ENT infections, asthma, ischaemic heart disease, dental conditions and CORD.

Figure 14a: Ambulatory sensitive hospitalisations (age standardised per 100,000)



Source: Lakes District Health Board/Ministry of Health.
Note: Data for the 2003-2007 years has not been sourced.

	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
14b	Immunisation rates	75% full immunisation at age 2 years	84% full immunisation at age 2 years	**B**	**B**

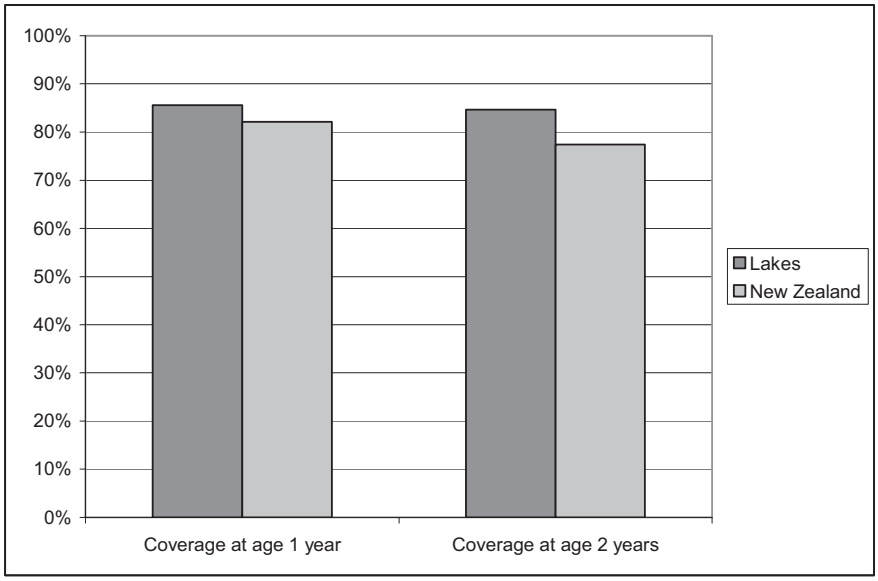
Immunisation improves health by reducing preventable diseases such as hepatitis B, measles and influenza. Research indicates that immunisation is one of the most cost effective means of preventing disease and improving health. Achieving higher immunisation coverage in Māori and Pacific children is a Government priority as coverage in these populations has historically been lower than other New Zealand children. National targets are for 95% of children to be fully vaccinated at the age of two years.

A National Childhood Immunisation Survey was undertaken by the Ministry of Health in 2005 (refer Public Health Intelligence Occasional Bulletin No. 39). This involved interviewing the caregivers of 1,563 children aged two to three years old throughout the country from January to March 2005. The study looked at immunisation coverage of the primary series of vaccinations up to the age of two years. Caregiver responses were verified from written records. Results of the survey showed that the overall coverage level for being fully immunised at age two years was 77.4% nationally compared with less than 60% in an earlier 1991/92 survey. Coverage in the Lakes region was significantly higher at 84.6% (refer Figure 14b(i)).

The National Immunisation Register (NIR) has recently been implemented. Since May 2005 all babies have been on the Register. Data is sourced from primary care providers and the Schools-Based Vaccination System. Immunisation coverage rates for two year olds have been reported through the Ministry of Health website since mid 2009. These show a quite different picture than the 2005 survey-based data. Figure 14b(ii) shows that the full immunisation coverage rate for two-year-olds in the Lakes DHB region is in fact lower than the national average, and the difference is statistically significant. There is currently insufficient historical data to determine a trend over time.

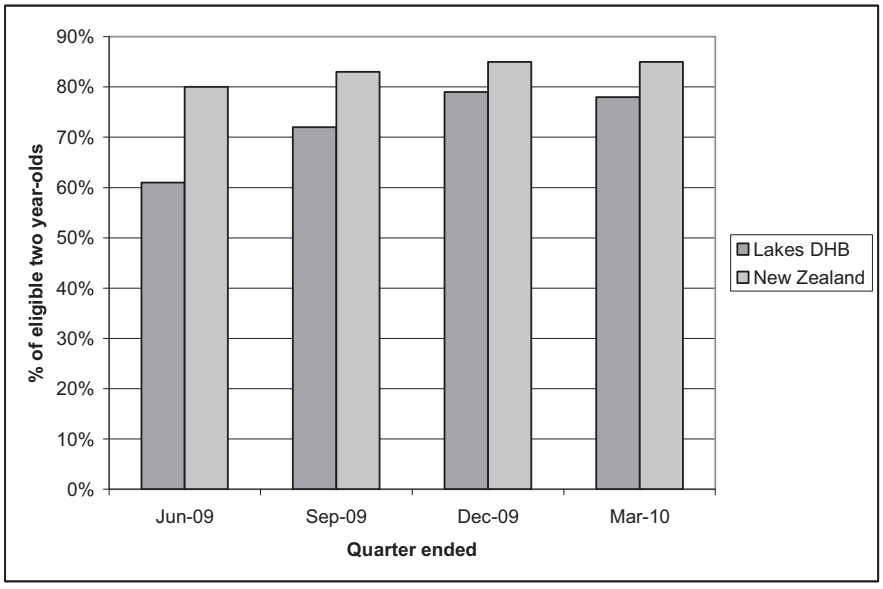
For the 12 months ended March 2010, the full immunisation coverage rate for Rotorua two-year-olds was 75% compared to a national rate of 84%. Māori children were significantly less likely to be fully immunised at age two years than non-Māori children. Children living in more deprived areas were less likely to be fully immunised at age two years than those living in less deprived areas.

Figure 14b(i): Full immunisation coverage, ages one and two years as at 2005



Source: National Childhood Immunisation Survey 2005
http://www.moh.govt.nz/moh.nsf/indexmh/national-childhood-immunisation-survey-2005

Figure 14b(ii): Full immunisation coverage at two years of age (quarterly reporting)



Source: National Immunisation Register (Ministry of Health website).

Table 14b(iii): Full immunisation coverage at two years of age (12-month reporting period ending March 2010) by ethnicity

	Total	NZ European	Māori	Pacific	Asian	Other
Lakes DHB	75%	79%	69%	79%	89%	80%
New Zealand	84%	86%	78%	86%	91%	81%

Source: National Immunisation Register (Ministry of Health website).

Table 14b(iv): Full immunisation coverage at two years of age (12-month reporting period ending March 2010) by level of deprivation

	Dep 1-2	Dep 3-4	Dep 5-6	Dep 7-8	Dep 9-10	Dep unavailable
Lakes DHB	76%	86%	75%	73%	69%	81%
New Zealand	88%	86%	85%	84%	80%	83%

Source: National Immunisation Register (Ministry of Health website).

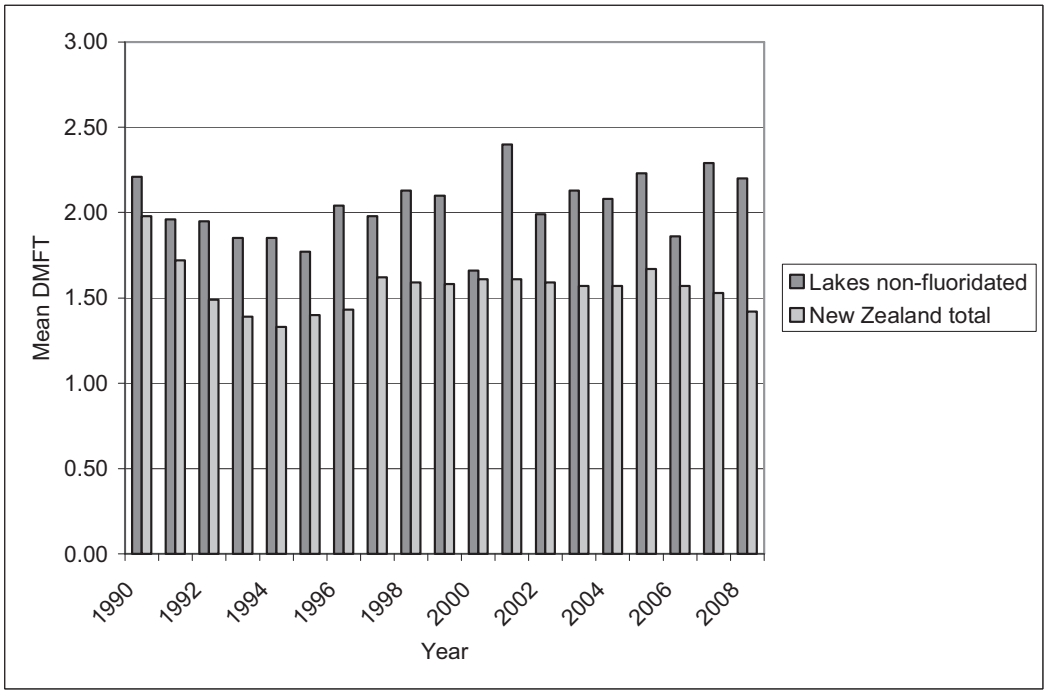
	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
14c	Oral health	Mean of 2.20 decayed, missing and filled teeth	Mean of 1.42 decayed, missing and filled teeth		

The oral health of New Zealand children has been generally static since the mid-1990s, as measured by the proportion of children with decayed, missing and filled teeth (DMFT). As at 2008, only 57% of five year olds in New Zealand were 'caries free'. Poor oral health not only impacts on overall health and well-being but can also inhibit children's ability to participate in education.

This measure shows the average DMFT score at Year 8 (ie, Form 2). The score is derived from the total number of permanent teeth of Year 8 children (12-13 years) that are decayed, missing or filled at the last dental examination before leaving the School Dental Service. Lower DMFT scores reflect better access to healthcare as well as environmental factors. DMFT scores for Year 8 children are relatively less influenced by water fluoridation, diet and lifestyle than DMFT scores for younger children, although these are still the major factors. DMFT scores in fluoridated areas tend to be an on average 0.40 units lower than non-fluoridated areas throughout New Zealand as at 2008.

Latest data for 2008 shows that the mean DMFT for Year 8 children in non-fluoridated parts of the Lakes health region (incorporating the Rotorua District) was 2.20, which was the third-highest rate for non-fluoridated regions behind Bay of Plenty and Wairarapa. The average DMFT score for Māori Year 8 children in the Rotorua area was approximately 2.86, which is substantially above the level for non-Māori children. Overall, the mean DMFT score for Rotorua District 12-13 year-olds is around the same level as it was in 1990 when records began.

Figure 14c: Mean DMFT (decayed, missing and filled teeth) score at Year 8



Source: Ministry of Health website

Note: Data from 1999 and earlier relates to Bay of Plenty Health Region

15. Physical activity

Why is this important?

Regular participation in physical activity is important for keeping physically and mentally healthy and avoiding lifestyle diseases such as obesity, diabetes and heart disease. Physical activities such as sports can also contribute to personal growth and development and be a good way to meet people.

What are the measures?

15a Participation in physical activity

How are we doing?

- Almost two-thirds of Rotorua residents (62%) in 2006 were classified as 'active', undertaking vigorous activity on five or more of the past seven days. This was slightly higher than the 2005 result of 59% but less than the 2006 Bay of Plenty regional result of 64%. According to more recent 2010 survey results, 67% of Rotorua and Bay of Plenty regional respondents were reportedly engaged in five or more days per week of vigorous activity.

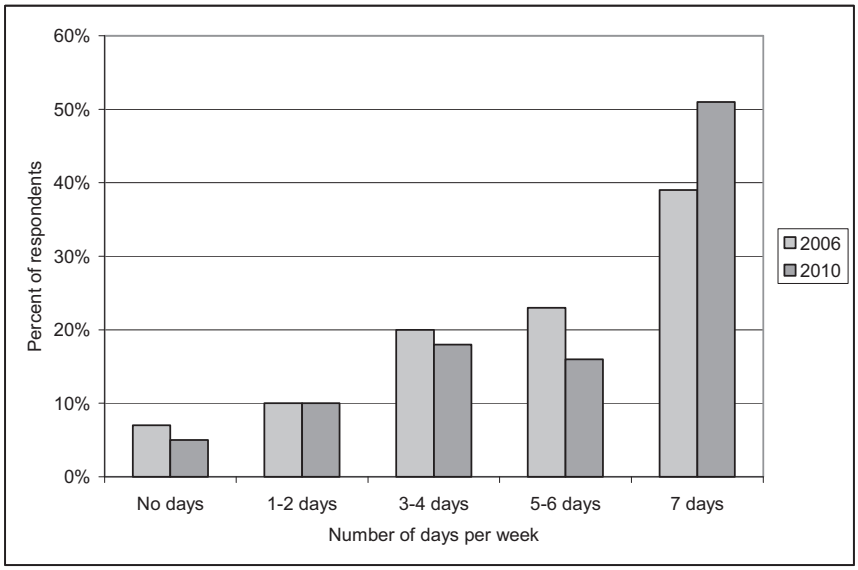
	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
15a	Participation in physical activity	67% of adults 'active'	67% of adults 'active'	**B**	**B**

This measure is based on the proportion of adults who undertook 15 minutes or more of vigorous activity (that is, activity which makes you breathe harder than normal), or 30 minutes or more of moderate exercise (eg, brisk walking), on at least five out of the previous seven days. The measured is adapted from Sport and Recreation New Zealand's Continuous Monitoring Survey. Baseline data was available from Rotorua District Council's 2005 Get Active-Stay Active Survey, with 2006 and 2010 data from the Bay of Plenty Community Outcomes Survey of 400 Rotorua residents.

Almost two-thirds of Rotorua residents (62%) in 2006 were classified as 'active', undertaking vigorous activity on five or more of the past seven days. This was slightly higher than the 2005 result of 59% but less than the 2006 Bay of Plenty regional result of 64%. The 2005 survey found that men were relatively more active than women, Māori were more active than Pākehā, and those living in rural areas were more active than those in towns. According to the 2006 Big Cities Quality of Life Survey, 58% of New Zealanders undertake physical activity on five or more days per week. The 2005 SPARC Continuous Monitoring Survey found that 47% of New Zealand adults were highly active, meaning some level of vigorous physical activity during the week as well as five or more sessions of moderate physical activity (half an hour or more) in the seven days before being interviewed.

The 2010 Bay of Plenty Community Outcomes Survey asked a similar set of questions to the 2006 survey, at both the regional and sub-regional level. The results were similar between Rotorua and the Bay of Plenty regional average, with 67% of respondents reportedly engaged in five or more days per week of vigorous activity. There is insufficient time series to make any strong conclusions regarding trends.

Figure 15a: Number of days per week doing 15 minutes or more of vigorous activity, Rotorua District 2006-2010



Source: BOP Community Outcomes Survey 2006 and 2010.

16. Emotional well-being

Why is this important?

Emotional well-being, including happiness and life satisfaction, is a component of mental health. Self-perceived happiness has been shown through international studies to be a good summary measure of overall personal well-being as well as being a high-level social goal. Happiness is influenced by, and influences, a range of factors including physical health, satisfaction with finances, and personal and social connections.

What are the measures?

16a Happiness

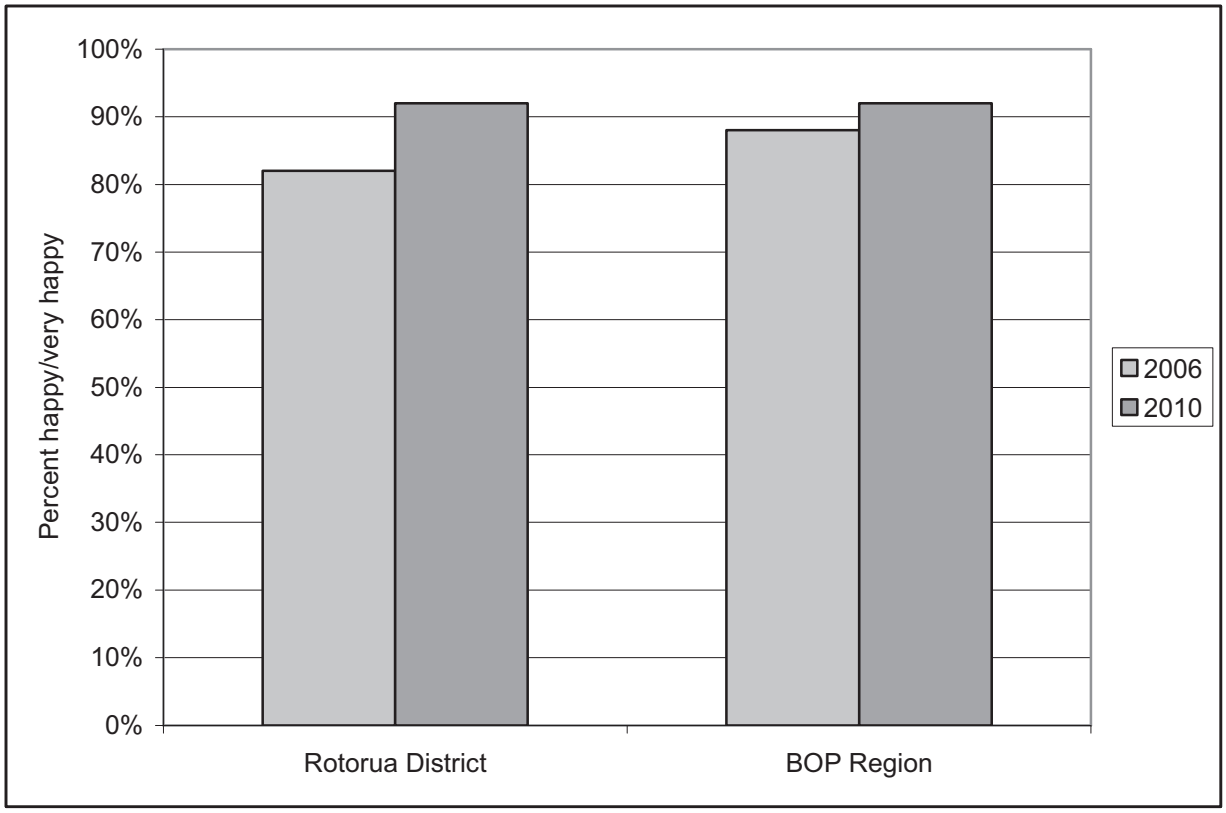
How are we doing?

- The 2010 Bay of Plenty Community Outcomes Survey results show that approximately 92% of Rotorua residents are generally happy or very happy, which is similar to the Bay of Plenty regional average.

	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
16a	Happiness	92% happy or very happy	92% happy or very happy	**B**	**B**

The 2006 and 2010 Bay of Plenty Community Outcomes Surveys included a question asking: "In general, how happy or unhappy would you say you are?" This is a standard item used in overseas studies including the World Values Survey, which has showed that New Zealand is amongst the happiest nations in the world. Latest Bay of Plenty regional survey results show that approximately 92% of Rotorua residents are generally happy or very happy, which is similar to the Bay of Plenty regional average. There is insufficient time series to make any strong conclusions regarding trends.

Figure 16a: Percentage of adults who report being 'happy' or 'very happy'



Source: BOP Community Outcomes Surveys 2006 and 2010.

17. Clean air and water

Why is this important?

A clean, healthy environment, including air and water quality, is important for people's physical wellbeing. Central Government has introduced a National Environmental Standard for Air Quality to reduce air pollution. Research shows that poor air quality causes ill health in some communities. Fine particles in the air, predominantly from home wood burning fireplaces and heating appliances, collect in the lungs causing respiratory illnesses such as asthma. Monitoring has shown that the Rotorua urban area has relatively poor air quality. Rotorua people take considerable pride in their natural environment. From the creeks that run through farms, to the many freshwater lakes in the District, we are constantly reminded of water but often forget how important it is. In order to preserve this precious resource, we need to start thinking about how well we are looking after it.

What are the measures?

17a Urban air quality
17b Drinking water supply risk gradings

How are we doing?

- Rotorua's air quality exceeds the safe and acceptable level set by Ministry for Environment, and has the highest number of exceedences in the North Island. The biggest source of Rotorua's air pollution is from solid-fuel burners for home heating (ie, wood burners, multi burners and open fires). Approximately 228 tonnes of fine particulates are discharged annually into Rotorua's air. This needs to be reduced by 60 tonnes to meet the safe and acceptable standards set by the Ministry for Environment.
- Rotorua's water supply network risk grading is considered satisfactory for most community supplies, although the water source and plant gradings are considered less satisfactory based on the Ministry of Health's risk grading system. According to Council's Ten Year Plan, there is a performance target to raise the local public health gradings to at least a Cc rating as appropriate. Regardless of the risk gradings, Rotorua residents consistently rate the quality of local water supply very highly.

	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
17a	Urban air quality	Highest number of NES exceedences for air particulate matter in the North Island	**N/A**		**N/A**

Environment Bay of Plenty is responsible for managing the Region's air quality. National Environmental Standards for air quality were introduced in 2004 to provide a level of protection for the health of New Zealanders and for the natural environment. Children, older people and people with respiratory conditions such as asthma are the most vulnerable to adverse health effects from air pollution.

Areas called 'airsheds' were established to have their pollution monitored. The Rotorua basin is considered to be a single airshed. Rotorua's air quality exceeds the safe and acceptable level set by Ministry for Environment, and has the highest number of exceedences in the North Island. The biggest source of Rotorua's air pollution is from solid-fuel burners for home heating (ie, wood burners, multi burners and open fires). Approximately 228 tonnes of fine particulates are discharged annually into Rotorua's air. This needs to be reduced by 60 tonnes to meet the safe and acceptable standards set by the Ministry for Environment.

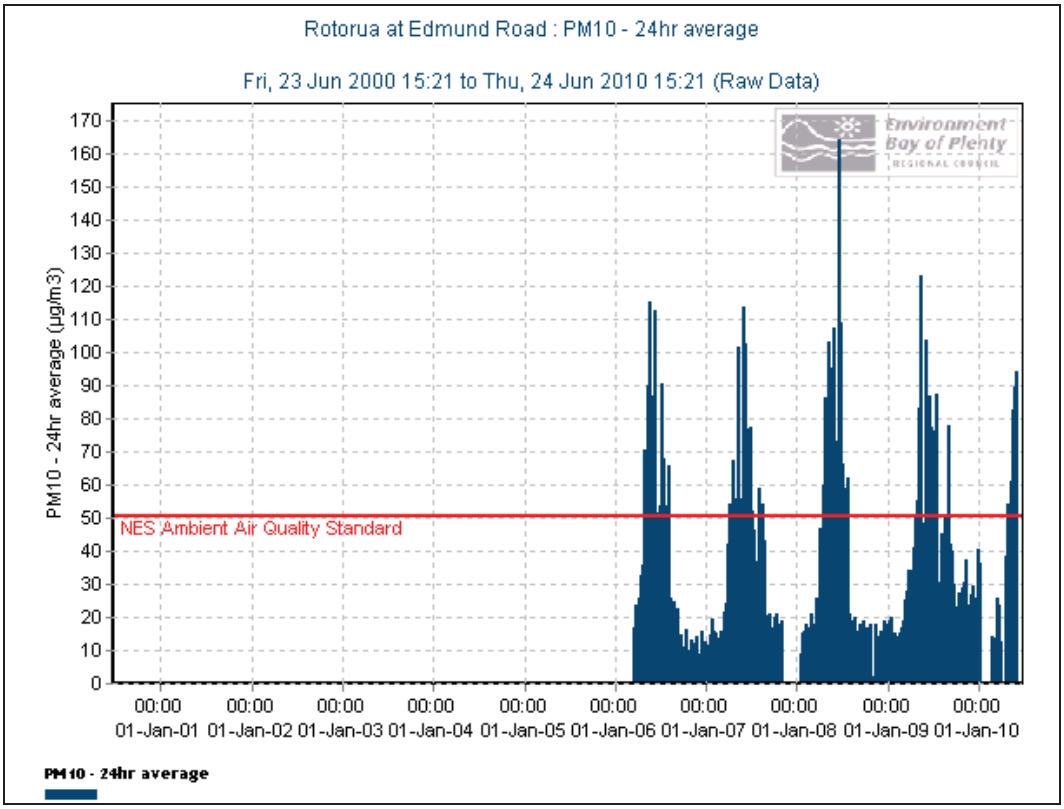
Environment Bay of Plenty is implementing the Rotorua Air Quality Action Plan to clean up air pollution. There is also a collective Air Quality Joint Committee that includes representatives from Rotorua District Council, Environment Bay of Plenty, the Ministry for the Environment and the health sector.

Air monitoring data can be graphed and tabulated through the EBOP website for each of its regional air quality monitoring sites. Figures 17a(i), 17a(iii) and 17a(v) show historical air particulate levels relative to the National Environmental Standard for each of the three urban monitoring sites currently operating in the Rotorua airshed. Figures 17a(ii), 17a (iv) and 17a(vi) show how these figures translate into performance indicators based on the following assessment criteria:

Category	Maximum measured value	Comment
Excellent	<10% of the standard	Off little concern, if maximum values are less than a tenth of the guideline, average values are likely to be much less.
Good	10-33% of the standard	Peak measurements in this range are unlikely to impact air quality.
Acceptable	33-66% of the standard	A broad category, where maximum valuse might be of concern in some sensitive locations but generally at a level which does not warrant dramatic action.
Alert	66-100% of the standard	A warning level, which can lead to exceedences if trends are not curbed.
Action	Exceeds the standard	Exceedences of the standard are a cause for concern and warrant action if they exceed the NES-AQ permissible occasions.

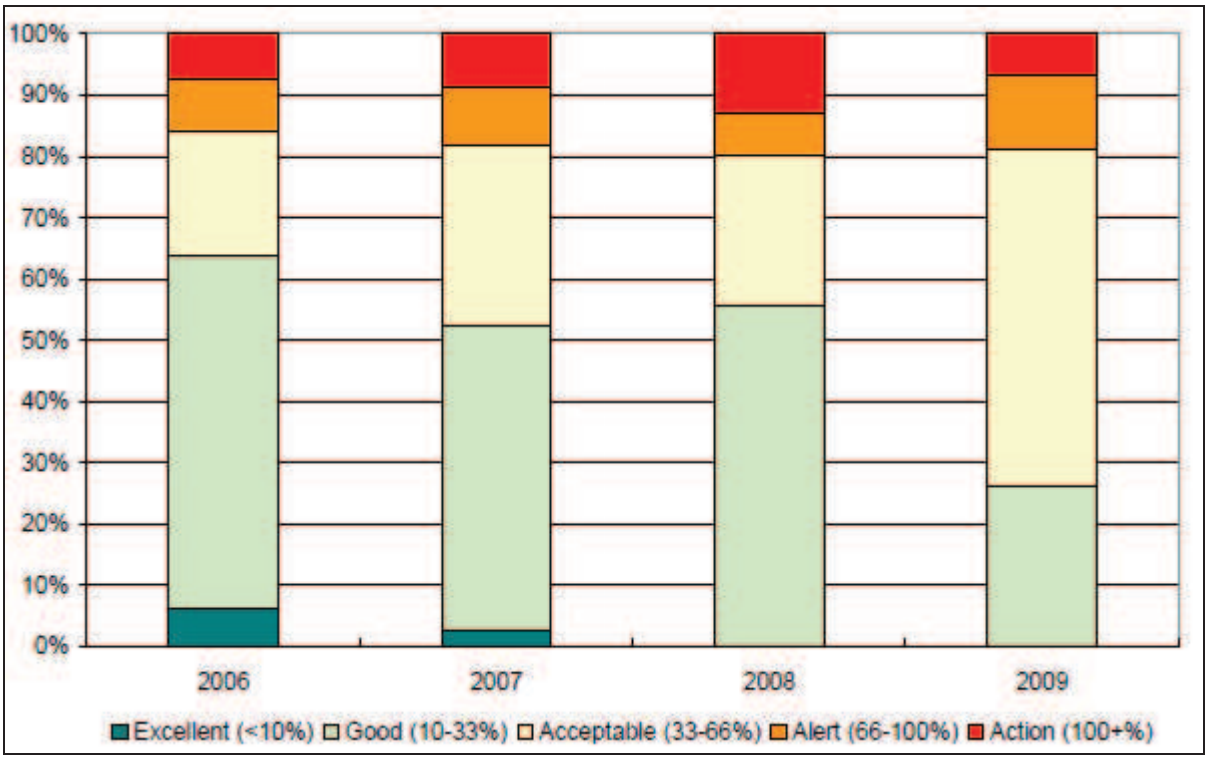
Source: Table 4.1 Performance Indicators, EBOP (2010) 'NERMN Air Monitoring 2010'.

Figure 17a(i): Fine particulates (24-hour average), Edmund Road monitoring site, June 2000 to June 2010



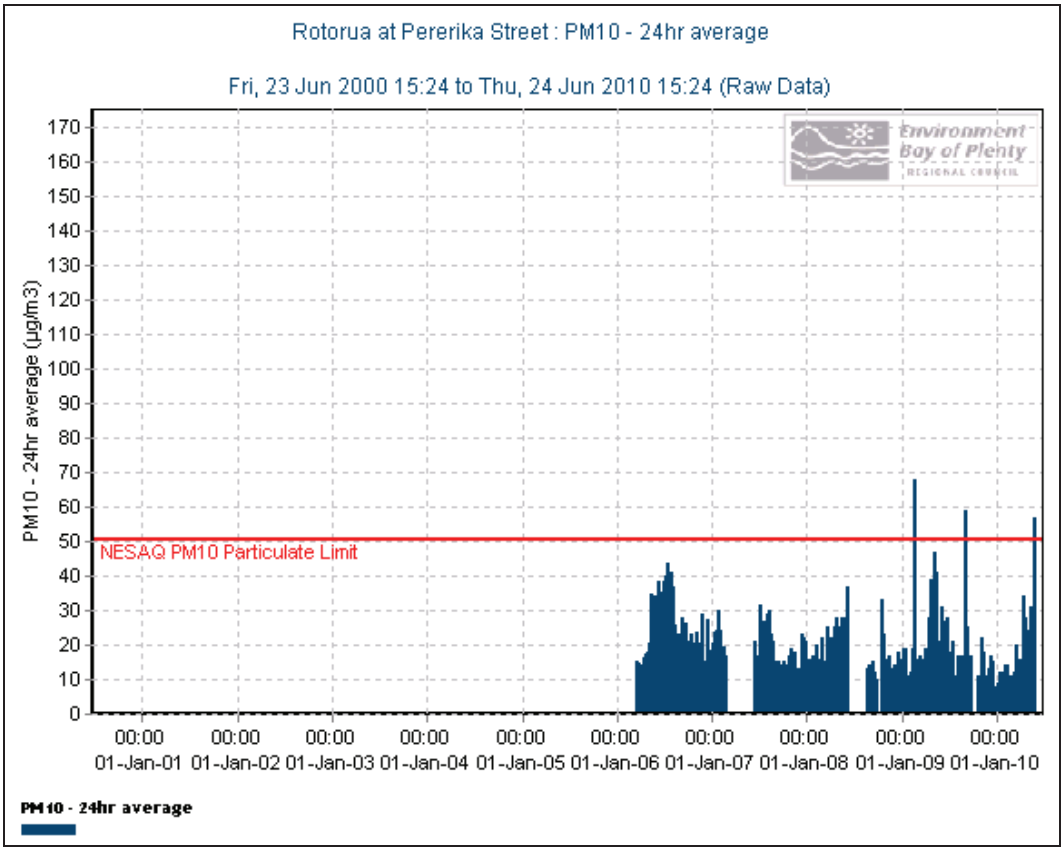
Source: Environment BOP website (keyword: 'Live monitoring').

Figure 17a(ii): Environmental performance indicator PM10, Edmund Road monitoring site



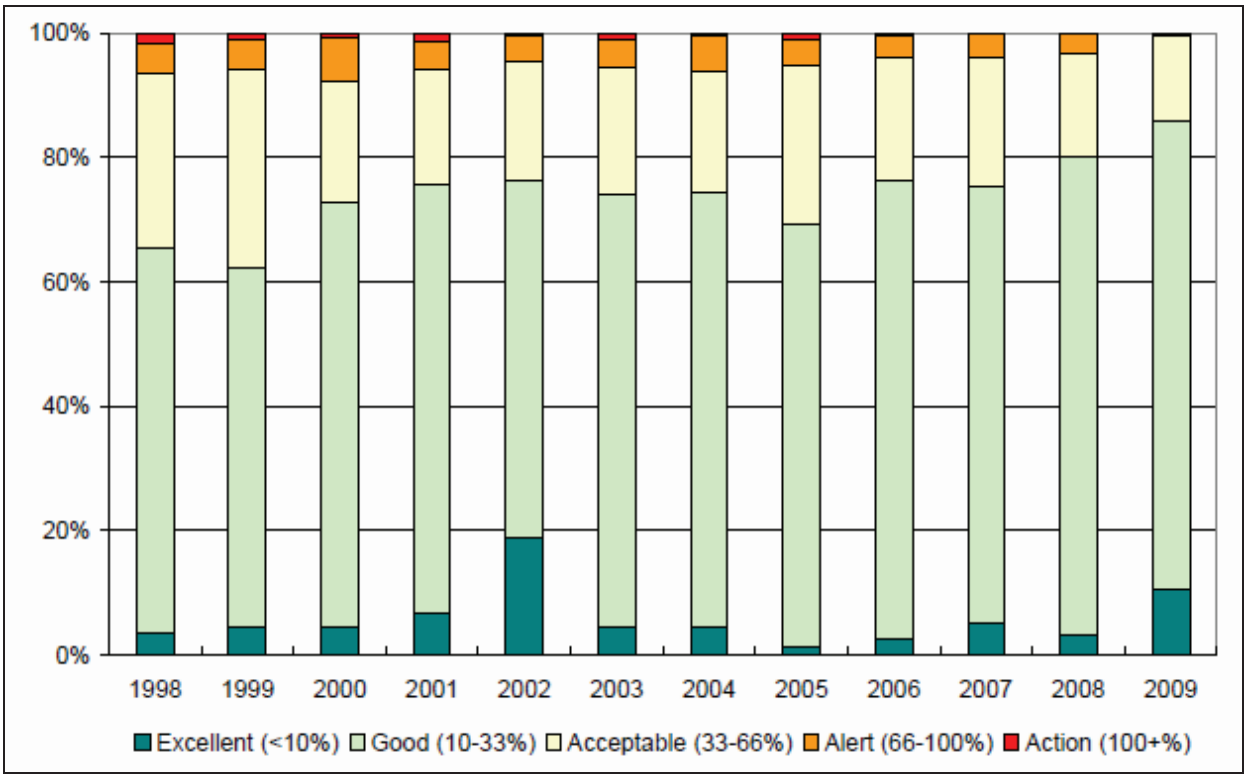
Source: EBOP (2010) 'NERMN Air Monitoring 2010'.

Figure 17a(iii): Fine particulates (24-hour average), Pererika Street monitoring site, June 2000 to June 2010



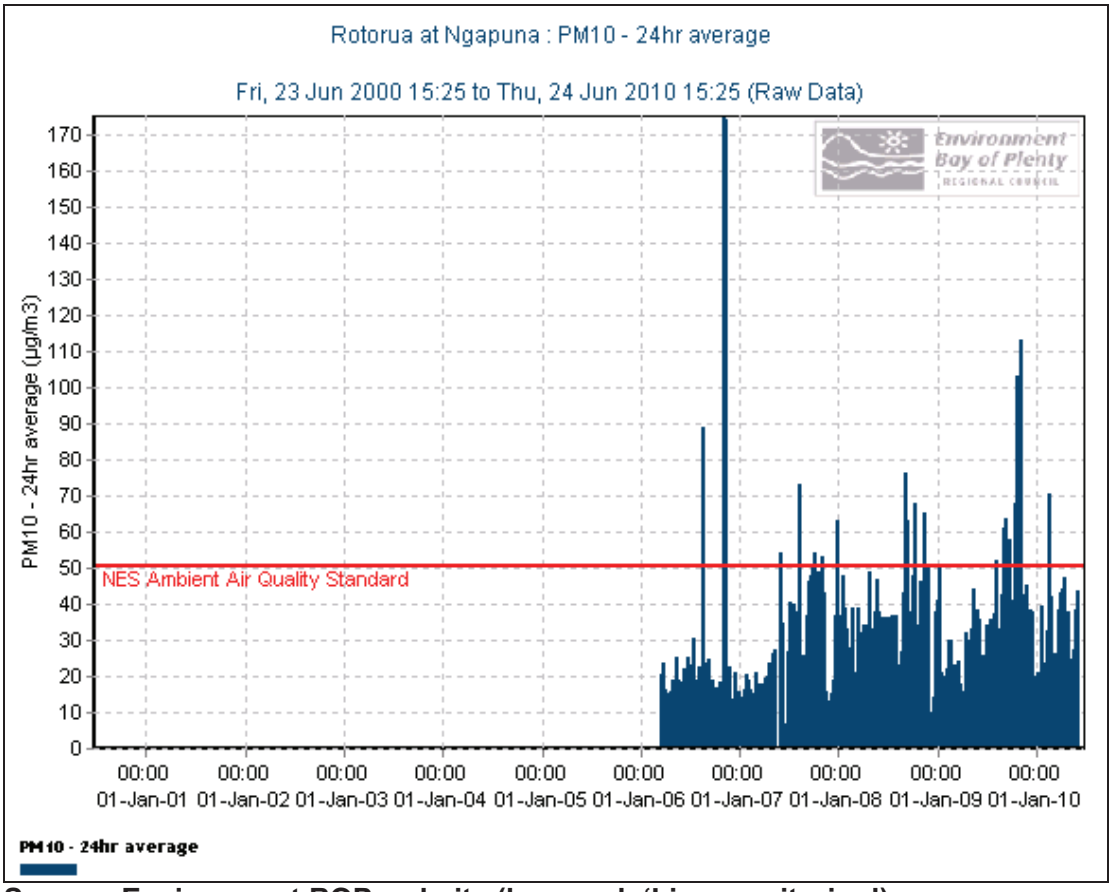
Source: Environment BOP website (keyword: 'Live monitoring').

Figure 17a(iv): Environmental performance indicator PM10, Pererika Street monitoring site



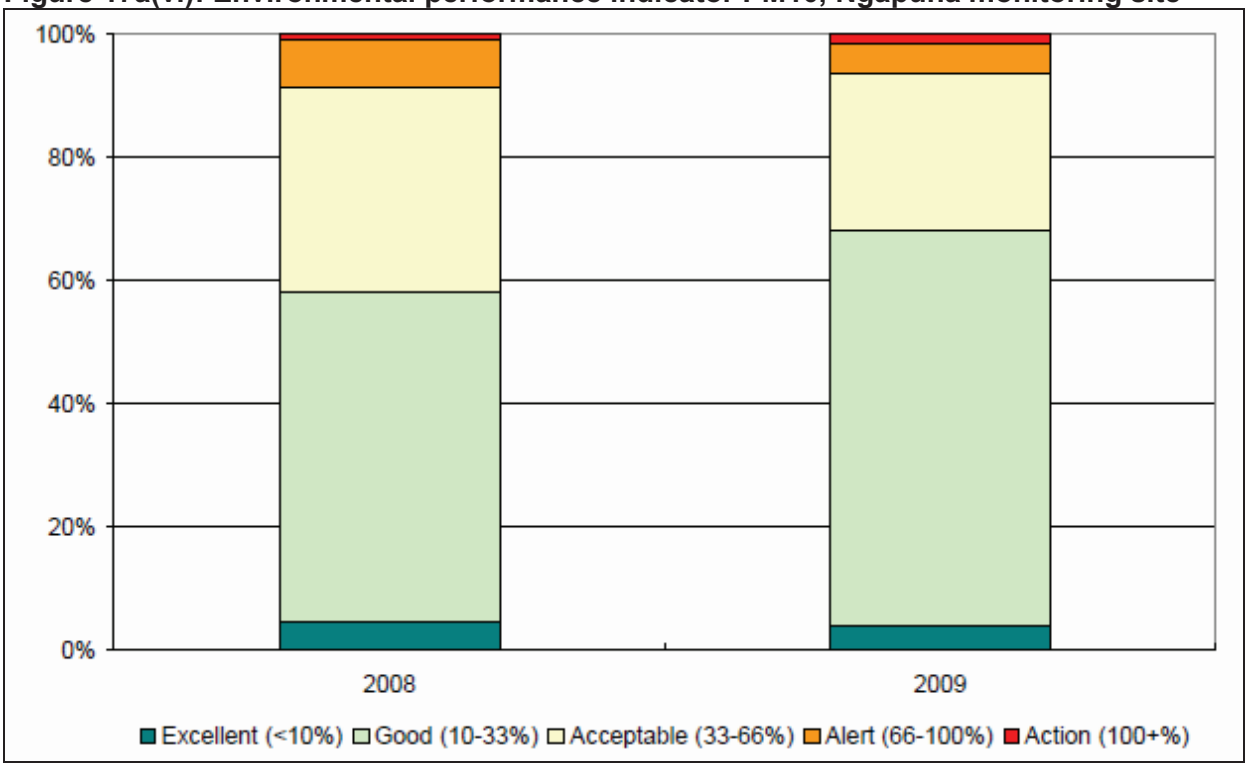
Source: EBOP (2010) 'NERMN Air Monitoring 2010'.

Figure 17a(v): Fine particulates (24-hour average), Ngapuna monitoring site, June 2000 to June 2010



Source: Environment BOP website (keyword: 'Live monitoring').

Figure 17a(vi): Environmental performance indicator PM10, Ngapuna monitoring site



Source: EBOP (2010) 'NERMN Air Monitoring 2010'.

	Indicator	State – Rotorua	State – Regional/NZ	Trend – Rotorua	Trend – Regional/NZ
17b	Drinking water supply risk gradings	Largely satisfactory	**N/A**		**N/A**

This indicator measures the public health grading of drinking water in community supplies. Community supplies are defined as supplies that provide drinking water to 25 people for more than 60 days of a year, and includes cities, towns, camping grounds, marae and schools. The public health risk of drinking water is measured using a grading system developed by the Ministry of Health.

In 2003, 87% of New Zealand's population was served by community drinking water supplies. Maintaining good drinking water quality is critical for human health and quality of life outcomes. The health risk to consumers from water-borne disease in drinking water supplies comes from two main types of microorganisms: bacteria (such as faecal coliforms and E. coli) and parasites (such as Giardia and Cryptosporidium). Throughout the world, by far the most common problems arise from microbiological contamination of the source waters. Animal, bird and even human effluent, introduced in one way or another upstream from a water supply, can make that water unfit for consumption.

Many drinking water community supplies are listed as having a Public Health Grading of "U", or Ungraded. These are generally supplies that have less than 500 people connected, but also include those supplies not graded since December 2005. As of January 2006, the new grading system (implemented 2003) has replaced all previous grading values. However, grading occurs "ad-hoc" and most have not been graded since January 2006. There is a push for grading to happen annually (driven by the Ministry of Health) but this has not yet occurred.

Table 17b shows that the distribution zone (ie, water supply network) grading is considered satisfactory for most Rotorua community supplies, but the water source and plant grading is considered less satisfactory based on the Ministry's risk grading system. According to Council's Ten Year Plan, there is a performance target to raise the Ministry of Health's public health gradings to at least a Cc rating as appropriate. Regardless of the risk gradings, Rotorua residents consistently rate the quality of local water supply very highly.

Table 17b: Public health grading for community water supplies, Rotorua District

Territorial Authority	Community	2009 Grade	2010 Grade (as at June 2010)
Rotorua District	Hamurana	Ee	Eb
Rotorua District	Kaharoa	Ee	Eb
Rotorua District	Mamaku	Da	Da
Rotorua District	Ngongotaha	Da	Da
Rotorua District	Okareka	Uu	Da
Rotorua District	Reporoa	Uu	Ec
Rotorua District	Rotoiti	Db	Db
Rotorua District	Rotorua Central	Ee	Ea
Rotorua District	Rotorua East	Ee	Ec
Rotorua District	Te Takinga Marae	Uu	Uu

Source: www.drinkingwater.org.nz

Note 1: Distribution Zone Grades. Zone grading (a1 to e) is based upon the microbiological and chemical quality of the water, along with the condition of the reticulation system and the quality of its care, etc. A zone grading should always be considered with the accompanying plant and source grading. a1 Completely satisfactory, negligible level of risk, demonstrably high quality. a Completely satisfactory, extremely low level of risk. b Satisfactory, very low level of risk. c Marginally satisfactory, moderate level of risk. d Unsatisfactory level of risk. e Unacceptable level of risk. u Not yet graded. (Not yet required if less than 500 people). Note 2: Source and Plant Grading. Plant and source grading is based primarily on the likely health risks to the community arising from bacteria, protozoa (Giardia and Cryptosporidium) and chemical substances in the source water, and how effectively the treatment plant can act as a barrier to such contaminants passing through to the reticulation. Possible gradings are A1 (best), then A to E. As well as appearing against each plant, each zone inherits the plant grading from the worst plant providing it with water. A1 Completely satisfactory, negligible level of risk, demonstrably high quality. A Completely satisfactory, extremely low level of risk. B Satisfactory, very low level of risk when the water leaves the treatment plant. C Marginally satisfactory, low level of microbiological risk when the water leaves the treatment plant, but may not be satisfactory chemically. D Unsatisfactory level of risk. E Unacceptable level of risk. u Ungraded. Note 3: Results are shown only for communities of 500 or more people. Additional information for smaller supplies is available from www.drinkingwater.org.nz.