

2. ENVIRONMENT

DESIRED OUTCOME

Natural and developed environments are sustained for the enjoyment of current and future generations

- a. Water, land and air are managed sustainably (**Priority**)
- b. Our towns and rural areas are developed in ways that respect the local environment and meet the needs of the community (**Priority**)
- c. Our community understands the need to protect our natural environment and acts to do so

INTRODUCTION

The state of our surrounding natural and developed environment is important on a local, national and global scale, with our actions playing a major role in determining the condition of our environment for future generations. The quality of both environments underpins our social, cultural, environmental and economic wellbeing. Sustainable development is vital for the Ashburton region as our district is dependent on the environment to grow and produce quality products for the world.

Six indicators and their measures have been used to provide an overview of our environment. These indicators are; air quality; water quality; water management; open space; recycling and reusing; and protecting our natural environment.

	State	Trend
2.1 Air Quality <ul style="list-style-type: none"> Air quality – PM₁₀ levels in Ashburton township 	☹️	↔️
2.2 Water Quality <ul style="list-style-type: none"> Groundwater nitrate levels in monitored drinking water wells Swimming water quality in the district's rivers 	😊 ☹️	↓ ↔️
2.3 Water Management <ul style="list-style-type: none"> Water consumption per household on Council drinking water schemes 	😊	↔️
2.4 Open Space <ul style="list-style-type: none"> Ratio of open urban space to built urban space 	😊	↔️
2.5 Recycling and Reusing <ul style="list-style-type: none"> Amount of reusable / recyclable material diverted from the waste stream Satisfaction with kerbside recycling services provided by the Council Satisfaction with rubbish collection services provided by the Council 	😊 😊 😊	↔️ ↔️ ↔️
2.6 Protecting our Environment <ul style="list-style-type: none"> Resident satisfaction that current environmental protection will preserve and sustain the environment for future generations 	☹️	↓

Key:

State	😊	Achieving out Target	😊	Close to Achieving	☹️	Not achieving our Target
Trend	↑	Favourable / Improving	↔️	No significant change	↓	Declining / Unfavourable

2.1 AIR QUALITY

Air quality can have a major impact on people and the environment in which they live. Through the community outcomes development process, our community told us that managing water, land and air sustainably is important to them. Monitoring air quality is one way in which to monitor how we are doing with regard to managing our impact.

AIR QUALITY- PM₁₀ LEVELS IN ASHBURTON TOWNSHIP

What is this about?

Eighty percent of Canterbury's air pollution comes from wood or coal burners and open fires (Clean Heat Project, 2008). Home heating pollution contributes to the common air pollutant PM₁₀ which has been linked with causing serious health problems.

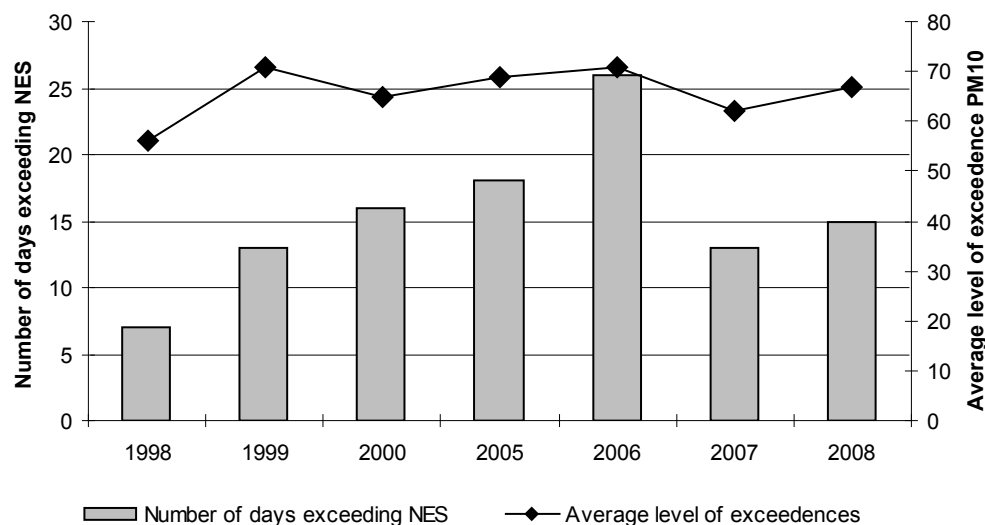
PM₁₀ is also linked with the transport and industry sectors, however on a typical winter's day in Ashburton, 81% of PM₁₀ is thought to come from home heating (Environment Canterbury, 2008). Geography and meteorology have also been identified as contributing factors to PM₁₀ air pollution as air can be caught under layers of warm air, trapping air pollution nearer the ground.

High levels of PM₁₀ are a serious health concern. PM₁₀ particles have a diameter one fifth the size of a human hair. This small particle size means that once inhaled our breathing passages can not get rid of them. PM₁₀ particles attack the respiratory tract, can block lung airways, attack the lungs' defence system and are found to enter the blood stream affecting the nervous system, lungs and heart.

In 2004 the Ministry for the Environment set a National Environmental Standard (NES) target of 50 micrograms of PM₁₀ per cubic metre of air, with only one exceedence allowed per year. This comes into effect in 2013. Currently there is a transition plan in place; steps include banning certain activities which cause PM₁₀ changing heating types, and undertaking monitoring. For further information see www.ecan.govt.nz

As PM₁₀ air pollution has only been identified as an issue in Ashburton, the rest of the district is currently not measured for PM₁₀ air pollution. Environment Canterbury has one monitoring station in Ashburton. Measurements are taken at 10 minute intervals and results are displayed as an average for a 24 hour period.

Fig 19. Ashburton Township Air Quality – PM10 level Exceedences and Average level



Ashburton Township Air Quality – PM10 level Exceedences and Average Exceedence Level 1998 - 2008

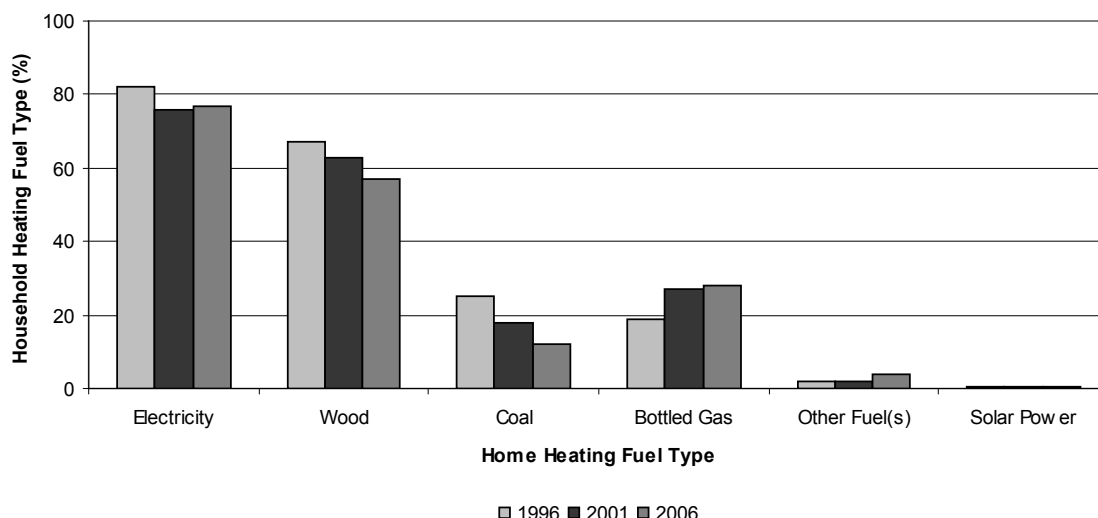
Source: Environment Canterbury PM₁₀ Level Datasets

To reduce PM₁₀ levels in Ashburton by 2013 and meet the target of 50 micrograms of PM₁₀ per cubic metre of air with only one exceedence allowed per year, Environment Canterbury has introduced the Clean Heat Project to Christchurch, Rangiora, Kaiapoi, Timaru and Ashburton. The Clean Heat Project provides financial assistance to landlords and homeowners in these areas to encourage them to change to cleaner forms of heating. This is offered through interest-free loans for clean heating or insulation, funded by Ecan through a targeted rate on Ashburton urban properties.

Within our district, the urban area of Ashburton is currently the only area eligible for this financial assistance. The Clean Heat Project has an annual target measured through conversions per year. The number of estimated conversions per year required to meet the NES by 2013 is greater than the number of targets in the Clean Heat Project, as Environment Canterbury believes voluntary conversions will make up the shortfall (Environment Canterbury, 2008).

In the Census a question is asked about the main types of home heating each household utilises. The graph below shows home heating sources in Ashburton for the ten years from 1996 to 2006. Electricity and wood are the main means of home heating in Ashburton, though the use of these fuels is declining. By 2006 reliance on these sources had declined by 5% for electricity and 10% for wood. Of concern is the increased use of bottled gas as a main source of home heating as it is recognised that unflued gas heaters release polluting gases directly into the room that can potentially harm people’s health.

Fig 20. Main Means of Home Heating in Ashburton 1996 – 2006



Main Means of Home Heating in Ashburton 1996 – 2006

Source: Statistics New Zealand Census

Key points

- All PM₁₀ exceedences in Ashburton have been recorded between the months of May to October (winter)
- The most exceedences were recorded in 2006, when National Environmental Standards were exceeded on 26 days
- In 2008 the National Environmental Standard was exceeded 15 times
- The average level of PM₁₀ exceedence is on average one third above the National Environmental Standard in Ashburton, with the highest PM₁₀ recording being 136 (2006)

How are we doing?

Target:	State:	Trend:
PM ₁₀ levels in Ashburton trend down to meet the national standard of below 50ug/m ³ at all times, by 2013	☹️	↔️

Data Limitations

Air quality exceedences generally correspond to the climate, which can make it difficult to analyse trends over time. For example, 2006 appears to be a particularly poor year for exceeding the NES; however this was due to severe snow and frost events coupled with significant power outages across the district.

2.2 WATER QUALITY

Good water quality is necessary to sustain both human and ecological health. It enables key social, economic and environmental goals to be met such as community health and wellbeing. Our community has indicated that water quality and sustainability of supply is a priority for them.

GROUND WATER NITRATE LEVELS

What is this about?

One indication of the quality of our groundwater is the levels of nitrate. Nitrate levels are a credible gauge of pollution as they can provide an indication of how soils and water systems are coping with sewage disposal systems, fertilisers, and animal, industrial and food processing waste. High levels of nitrate in drinking water can cause serious health concerns.

The Ministry of Health has set a “Maximum Acceptance Level” for groundwater nitrate levels of 11.3 milligrams of nitrate-nitrogen per litre (mg/L). However, the Ministry advocates monitoring and prevention methods when levels reach 5 mg/L.

Environment Canterbury monitors 47 wells in our district. The number of monitored wells is increasing as Environment Canterbury seeks to minimise gaps in their data. It is important to recognise that levels of recorded nitrates are influenced by factors such as well depth, proximity to rivers and climatic conditions.

To establish trends, only those wells with nine or more years of data have been included. This has resulted in only 31 wells being used for the results in Figure 21.

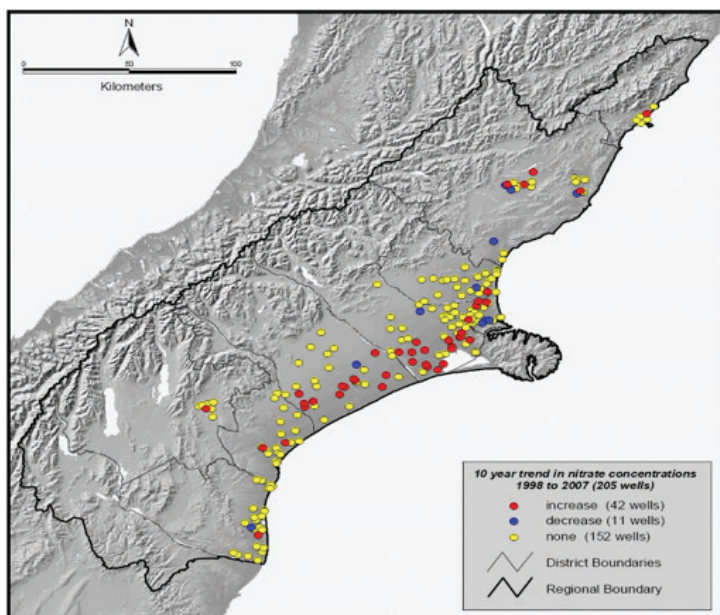
Fig 21. Summary of Nitrate Trends for 31 wells in Ashburton District, between 1998 and 2007

Nitrate-nitrogen levels	Trend 1998-2007			
	Increase	Decrease	None	Total
0 – 5.6mg/L	7	1	10	18
5.7 – 11.3mg/L	4	0	6	10
> 11.3mg/L	1	0	2	3
Total	12	1	18	31

Summary of nitrate trends for 31 wells in Ashburton District 1998 - 2007

Source: Environment Canterbury Nitrate Datasets

Fig 22. Ten year Trends in Nitrate Concentrations in Annual Survey Wells



Ten year Trends in Nitrate Concentrations in Annual Survey Wells 1998 - 2007

Source: Environment Canterbury Annual Groundwater Quality Survey

Key points

- Since 1998 there has been a significant increase in nitrate levels in the wells monitored in the district, with the highest median nitrate level in 2007 being 7.2 mg/LN (still well below the Ministry of Health Maximum Acceptance Level of 11.3 mg/LN)
- 10 of the 47 wells monitored in the Ashburton District during 2007 exceeded the acceptable level of nitrate-nitrogen. In the Ashburton District, many wells with high nitrate concentrations have been found in areas affected by meat processing discharges
- Approximately a quarter of wells in Canterbury indicating an increase in nitrate concentrations over the last 10 years were located within Ashburton District

How are we doing?

Target:	State:	Trend:
All drinking water wells tested in Ashburton District meet the national drinking water standards of 11.3mg/litre or less	☹️	↓

Data Limitations

Nitrate concentrations depend on various factors such as the time of the year, weather, well depth, waste disposal and cultivation practices. These variables need to be kept in mind when interpreting data.

SWIMMING WATER QUALITY

What is this about?

Swimming water quality provides an indication of the aquatic health of the rivers and lakes in the district.

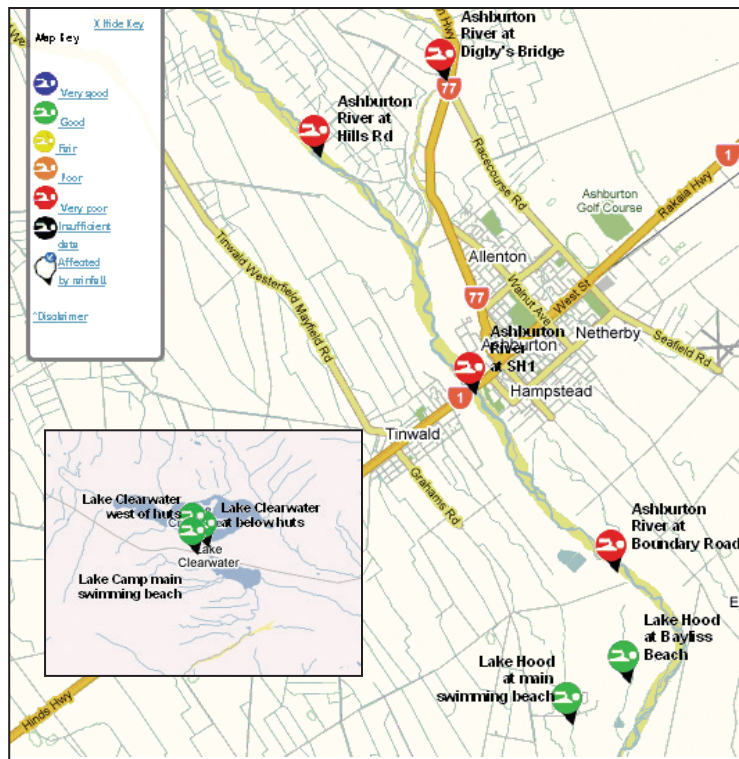
Environment Canterbury undertakes a swimming water quality monitoring programme throughout the region's lakes, rivers, streams and beaches. This is a national grading system published by the Ministry of Health and the Ministry for the Environment, and combines weekly testing with long term trend data assessing faecal indicator bacteria.

Each site is graded at the start of summer, and if unsafe levels are reached during the summer period signage is erected to warn swimmers of the dangers. Sites are selected in consultation with local Councils and public health organisations.

In 1999, identified sources of faecal contamination in the Ashburton River included; terminal water race discharges, grazing of animals on the river bed, black-billed gulls, and the presence of other birds such as ducks and Canadian Geese (Environment Canterbury, 1999). More recently a decline in water quality was associated with groundwater recharge, wildlife inputs, agricultural runoff and several treated wastewater discharges (Burrell, 2008). Although improvements within the Ashburton river vicinity have occurred, no further research has taken place to identify current sources of faecal contamination.

Within the Ashburton District eight locations are monitored. For further information please go to www.ecan.govt.nz

Fig 23. Ashburton District Swimming Water Quality – 2008/09



Ashburton District Swimming Water Quality 2008 - 2009

Source: Environment Canterbury – Swimming Water Quality Monitoring Programme

Key Points

- Four of the eight locations monitored for swimming water quality are rated good. These are at Lake Hood and Lake Clearwater
- Four of the eight locations monitored for swimming water quality in Ashburton District are considered to have very poor water quality to swim in. All of these sites are on the Ashburton River

How are we doing?

Target:	State:	Trend:
Ashburton District swimming sites maintain either 'good' or 'very good' rating	☹️	↔️

Data Limitations

Swimming water quality is measured by faecal indicator bacteria. Each year at the start of summer the swimming site is graded, indicating if the site is generally suitable for swimming. The grade does not indicate anything about the site at a particular point in time. This grade is made up of weekly testing data from previous years monitoring.

2.3 WATER MANAGEMENT

As a district, securing quality and sustainable water supplies is vital to our economic, social and environmental wellbeing. Our community is aware of the importance of looking for sustainable water options to meet current and future needs and demands.

WATER CONSUMPTION PER HOUSEHOLD

What is this about?

Council has 14 community drinking water supplies within the district, with over 80% of households in the district connected to a Council drinking water supply. Council has numerous regulatory requirements to meet regarding the safety and standard of potable water supplies, and carries out regular testing to ensure drinking water provided is of a good quality.

As a part of the provision of potable water, it is also necessary, given the hot dry summers characteristic of the district, to promote water conservation. This encourages the sustainable use of the limited water resources of the district.

A measure of this is the water consumption per annum per connection, as reduction in consumption will indicate improved demand management.

Comparing water consumption between districts is difficult, due to the variations in measuring and illustrating data. In Auckland the average household uses an average 183m³ per annum (Metrowater, 2008), while Christchurch during the winter months uses 200m³ and in summer this can double (Christchurch City Council, 2009).

Fig 24. Ashburton District Water Consumption per Connection

Year	Average water consumption per connection per annum
2003/04	433m ³
2006/07	536m ³
2007/08	516m ³

Ashburton District water consumption per connection 2003 - 2008

Source: Ashburton District Council: Annual performance measure

Key Points

- Between 2006/07 and 2007/08 water consumption per connection decreased by 20m³, providing an initial indication that there has been improved demand management of water
- From the recorded data available, the average water consumption per connection is 495m³ per annum

How are we doing?

Target:	State:	Trend:
Ashburton District reduces water consumption per connection each year	☹️	↔️

Data Limitations

The measure of water consumption per connection consistently began in 2006, making this a relatively young indicator for the district.

2.4 OPEN SPACE

Open space is important for the quality of life of our districts residents and visitors. Population growth and changes in the nature of living environments, including increasing density in urban areas and changes in demographic make-up influence the types of open space needed. Our community has indicated through the community outcomes processes that open space is an important component of town and rural areas development.

What is this about?

The Ashburton District Plan defines open space as land that serves the purpose of providing visual amenity, active and passive recreation, children's play areas, linkages for walkways and nature conservation areas in our neighbourhood.

Fig 25. Ratio of Council Owned Reserves per 1,000 people

Ashburton town (Tinwald included)	8.5ha/1,000 people
Methven	10.6ha/1,000 people
Rakaia	29.5ha/1,000 people
Small townships & rural areas	7.8ha/1,000 people
Ashburton District Total	9ha/1,000 people
NZ Total	5-6ha / 1,000 people

Ratio of Council owned reserves per 1000 people

Source: Ashburton District Plan 2001

Key points

- Ashburton District has 220ha of open space in Council owned reserve land
- Rakaia has the largest ratio of open space per head of population at 29.5ha per 1,000 residents
- Different councils use various methods to calculate open space, thus it is problematic to make comparisons. However, in 2006 South Waikato, which has similar demographics to Ashburton, recorded 8.9ha per 1,000 people and stated the national average was between 5 to 6ha per 1,000 (South Waikato District Council, 2006)

How are we doing?

Target:	State:	Trend:
Ashburton District has a higher ratio of open space than New Zealand as a whole	😊	↔

Data Limitations

The ratio of open space does not tell the story of accessibility, quality, equity, usability or sustainability of the area. Also this measure of the ratio of open space only captures Council-owned property and does not include land owned by private or crown organisations, such as the Department of Conservation.

2.5 RECYCLING AND REUSING

Waste has many wide-ranging impacts on the physical, social and economic environment. A way of measuring our sustainable practices is by how much waste is diverted from the waste stream, by reusing and recycling. If we create less waste and dispose of waste prudently this benefits resident’s wellbeing, the economy and protects our environment at a local, national and global level.

AMOUNT OF REUSABLE / RECYCLABLE MATERIAL DIVERTED FROM THE WASTE STREAM

What is this about?

Ashburton District Council provides recycling and residual waste services in the major towns and villages in the district. Waste that cannot be recycled or reused is transported to the Kate Valley regional land fill for disposal. Council has adopted a zero waste policy for the district with a target of zero waste by 2015. However due to population growth there is greater waste volumes and greater usage of solid waste facilities, making zero waste an elusive target.

Fig 26. Diversion of Reusable and Recyclable Material from the Waste Stream

	2005/06	2006/07	2007/08
Total waste collected (tonnes)	12,212	13,211	13,817
Total waste removed from waste stream through recycling and reuse (tonnes)	4,842	5,321	5,761
Percentage diverted	40%	41%	42%
Annual change in percentage diverted		1%	1%

Ashburton District’s waste stream 2005 - 2008

Source: Ashburton District Council: Performance Measures

Key Points

- The percentage of waste diverted from the waste stream has increased by 1% annually since 2005/ 06
- Although the amount of waste has increased so too has the percentage diverted

How are we doing?

Target:	State:	Trend:
An annual increase of 1% by weight in the percentage of recyclable and reusable material diverted from the waste stream, with a target of 50% of material diverted from the waste stream by 2018/19	😊	↔

Data Limitations

Kerbside recycling and rubbish collection is only provided in the towns and villages in the district. This measure does not, therefore, take account of what rural residents do with their rubbish and recyclables.

RESIDENT SATISFACTION WITH KERBSIDE RECYCLING & RUBBISH COLLECTION SERVICES

What is this about?

Community perception regarding satisfaction with kerbside recycling, although highly subjective, is a way of measuring the quality of the service Council provides. Since 2005 the provision of kerbside recycling has been extended to the larger villages in the district, with 70% of residents in 2008 having access to kerbside recycling.

Satisfaction levels help Council to gauge the level of support the community has for the level of service provided and of priorities for the future.

Fig 27. Resident satisfaction with Kerbside Recycling



Resident satisfaction with Kerbside Recycling (don't knows excluded) 2005 - 2008
 Source: Ashburton District Council NRB Communitrak Survey

Note: The measure above (with Don't Know responses excluded) is the measure Ashburton District Council uses to measure resident satisfaction in Council's Annual Report.

Fig 28. Resident satisfaction with Rubbish Collection



Resident satisfaction with Rubbish Collection (don't knows excluded) 2005 - 2008

Source: Ashburton District Council NRB Communitrak Survey

Note: The measure above (with Don't Know responses excluded) is the measure Ashburton District Council uses to measure resident satisfaction in Council's Annual Report.

Key points

- Over 85% of residents who are able to access kerbside recycling and rubbish collection are satisfied with the service, indicating Council is providing a service that meets the community's expectations
- The high level of resident satisfaction has been consistent over the past four years

How are we doing?

Target:	State:	Trend:
85% or more of residents are satisfied with the kerbside recycling service	😊	↔
85% or more of residents are satisfied with the rubbish collection service	😊	↔

Data Limitations

Resident satisfaction through the NRB Communitrak Survey results in data that is subjective as it is based on individual personal perception. These perceptions are largely determined by people's expectations and experiences.

2.6 PROTECTING OUR ENVIRONMENT

The quality of the natural environment, including the protection, restoration and enhancement of biodiversity and the minimisation of damage to the environment, is directly related to people’s quality of life. Pressure is placed on the sustainability of the natural environment through population growth and economic development.

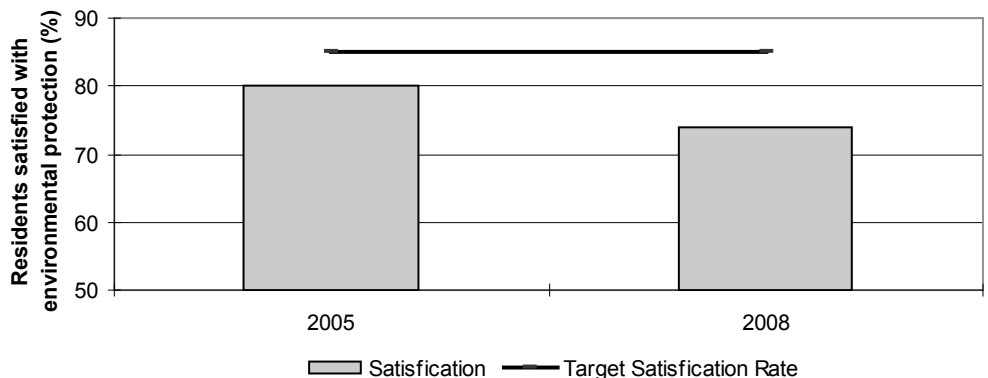
SATISFACTION WITH COUNCIL’S PERFORMANCE IN ENVIRONMENTAL PROTECTION

What is the indicator about?

Resident satisfaction with Council’s performance in environmental protection provides an indication of how well we are doing as a district in protecting our natural environment. It also helps Council to gauge the level of support people may have for proposed actions, policies and rules that protect the environment.

In 2005 and 2008 the NRB Communitrak annual resident survey asked whether respondents were satisfied that the natural environment in the Ashburton District was being preserved and sustained for future generations.

Fig 29. Resident Satisfaction with Council’s Performance in Environmental Protection



Resident satisfaction with Council’s performance in environmental protection (don’t know responses excluded) 2005 - 2008
 Source: Ashburton District Council NRB Communitrak Survey

Note: The measure above (with Don’t Know responses excluded) is the measure Ashburton District Council uses to measure resident satisfaction in Council’s Annual Report.

Key points

- The majority of residents in both 2005 and 2008 were satisfied our environment was being preserved and sustained for future generations
- In 2005 Ashburton was 5% below meeting the target of 85% satisfaction; by 2008 this had fallen to 11% below target
- Between 2005 and 2008 there was a small decline in the percentage of residents either satisfied or very satisfied the environment was being preserved and sustained for future generations. There was a corresponding small increase in the percentage of residents either dissatisfied or very dissatisfied
- This shift may portray a change in public perception, or illustrate the community’s desire to improve the natural environment

How are we doing?

Target:	State:	Trend:
85% or more of residents surveyed are satisfied that the natural environment is being preserved or sustained for future generations	☹️	↓

Data Limitations

Resident satisfaction through the NRB Communitrak Survey results in data that is highly subjective as it is based on individual personal perception. These perceptions are largely determined by people’s expectations and experiences. The NRB Communitrak Survey has a margin of error of +/- 6.9% meaning that results may actually be greater or less than those shown