Christchurch City Plan

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Volume 1

Section Contents The Statement of Issues

The Statement of Issues

Content Page

Section Contents Introduction to the Statement of Issues

Introduction to the Statement of Issues

Introduction to the Statement of Issues

Updated 14 November 2005

This **Statement of Issues** is the first of the three volumes comprising the City Plan. The other volumes of the City Plan are the Statement of Objectives, Policies and Methods and the Statement of Rules.

Format of the Statement Of Issues

Updated 15 September 2006

The contents of the Statement of Issues derive from the requirements of the Resource Management Act (particularly Part II).

Section 75 of the Act provides that in addition to making provision for such of the matters set out in Part II of the Second Schedule as are appropriate to the circumstances of the district, the Plan may state:

1. The significant resource management issues of the district.

Updated 14 November 2005

The significant resource management issues provide the basis for deriving objectives, policies and methods of implementation to promote the sustainable management of the district's natural and physical resources.

The Statement of Issues contains a brief description of the City and its natural and physical resources, as well as describing sustainability in terms of development and management of resources to promote a sustainable City.

The issues for Christchurch are considered under a range of subjects including background information in respect of resources and activities and the significant issues arising from managing the effects of the use, development or protection of the City's natural and physical resources. The statement generally outlines key data, the identification of trends, the consequences of the trends identified and summaries of issues derived from them.

2. The processes to be used to deal with issues which cross territorial boundaries.

Updated 22 May 2006

Christchurch City shares a boundary with three adjoining territorial authorities, the districts of Waimakariri, Selwyn and Banks Peninsula District Councils. In the preparation of respective plans, a number of cross boundary issues have been identified which have relevance for the City and all adjoining authorities. The issues include:

- The issues associated with urban and rural residential development within the City and in adjoining districts. The opportunities for this type of development within and beyond the City boundary are particularly significant in influencing where such development occurs. The manner in which anticipated growth is managed within the City has considerable bearing on adjoining districts, particularly nearby settlements such as Rolleston, West Melton, Rangiora, Kaiapoi and Lyttelton.

- Christchurch is a major urban centre, representing considerable investment in terms of physical network and community infrastructure and resources, as well as opportunity with respect to economic and other activity. The City is also dependent upon activities and opportunities in the surrounding hinterland. Consequently, the City has an important role beyond its boundaries as a place of employment, as a centre of

commercial, industrial and service activity, and as a link both out of and into the region, such as via the International Airport and other transport routes.

- The natural resources of the City also have significance beyond the City itself. The use of land, particularly rural land, and water use are examples, as are the values associated with natural features of the landscape, such as the coast, the estuary and the Port Hills. This is particularly significant where such features themselves border adjoining districts.

In addition to those issues of significance to all adjoining authorities, the following cross boundary issues have been identified as particularly significant for individual territorial authorities adjoining the City.

Issues relevant to the Waimakariri District Council

Updated 16 November 2009

- Control of activities on the surface of the Waimakariri River.
- International Airport height and noise restrictions.
- Flood plain management and the control of activities in flood plains on both sides of the Waimakariri River.
- Land use activities and their effect on water quality in the Waimakariri River.
- Applications and plan change proposals adjacent to the Waimakariri River on the common boundary between the two authorities.
- Road transport proposals to the north.
- Availability of living accommodation and serviced residential land to meet the needs of future generations and predicted population growth.
- The potential for a changing distribution in the pattern of retail activity in Christchurch City to generate significant adverse effects on existing commercial centres in the Waimakariri District Council area and on the infrastructure servicing these areas.

Issues relevant to the Selwyn District Council

Updated 16 November 2009

- Airport height and noise restrictions associated with the Christchurch International Airport.
- The control of land use activities over the ground water management area.
- The development of residential, rural-residential, or business activities and its impact for Selwyn District.
- Applications and plan change proposals adjacent to the boundary between Selwyn District and Christchurch City.
- The impact of land use activities on water quality and volumes discharged down the Halswell River.
- Land use activities on the Port Hills.
- The cross boundary implication resulting from major land transport links between Christchurch City and Selwyn District.
- The potential for a changing distribution in the pattern of retail activity in Christchurch City to generate significant adverse effects on existing commercial centres in the Selwyn District Council area and on the infrastructure servicing these areas.

Issues relevant to the Banks Peninsula District Council

Updated 16 November 2009

- The Port Hills and activities on the Port Hills including utilities, towers, forestry and other structures.

- The impact of any activities for which consents or plan changes may be sought along the common boundary between the two authorities.

- Activities within the ambit of the Summit Road (Canterbury) Protection Act.

- The provision of public utilities (water supply) to Lyttelton.

- Access to the Port of Lyttelton, and recognition of the port as a strategic resource for the Canterbury Region.

- The potential for a changing distribution in the pattern of retail activity in Christchurch City to generate significant adverse effects on existing commercial centres in the Banks Peninsula District Council area and on the infrastructure servicing these areas.

Processes for dealing with cross territorial issues

Updated 15 September 2006

It is anticipated that in the case of the great majority of activities for which plan changes or resource consents may be sought (or which are permitted as of right within the various adjoining authorities) there will be little or no cross territorial boundary issues of any significance. However, it is also recognised in some cases there will be a need for a joint approach to be taken on some development proposals. The primary processes for dealing with these issues are set out as follows:

- Regular liaison at officer level, including forums such as district liaison meetings, and at lesser frequency, elected representative level between adjoining authorities and through the offices of the Regional Council. A Greater Christchurch Urban Development Strategy Forum has been formed to oversee the preparation of a long term urban development strategy for the area in and around metropolitan Christchurch.

- The undertaking of joint consent processes under Part 6 of the Act where applications are adjacent to or close to the boundaries of authorities, including the option of joint hearings.

- Involvement in discussions on any plan preparation or plan changes prepared by the authorities concerned, which may affect land or activities in an adjoining authority's area.

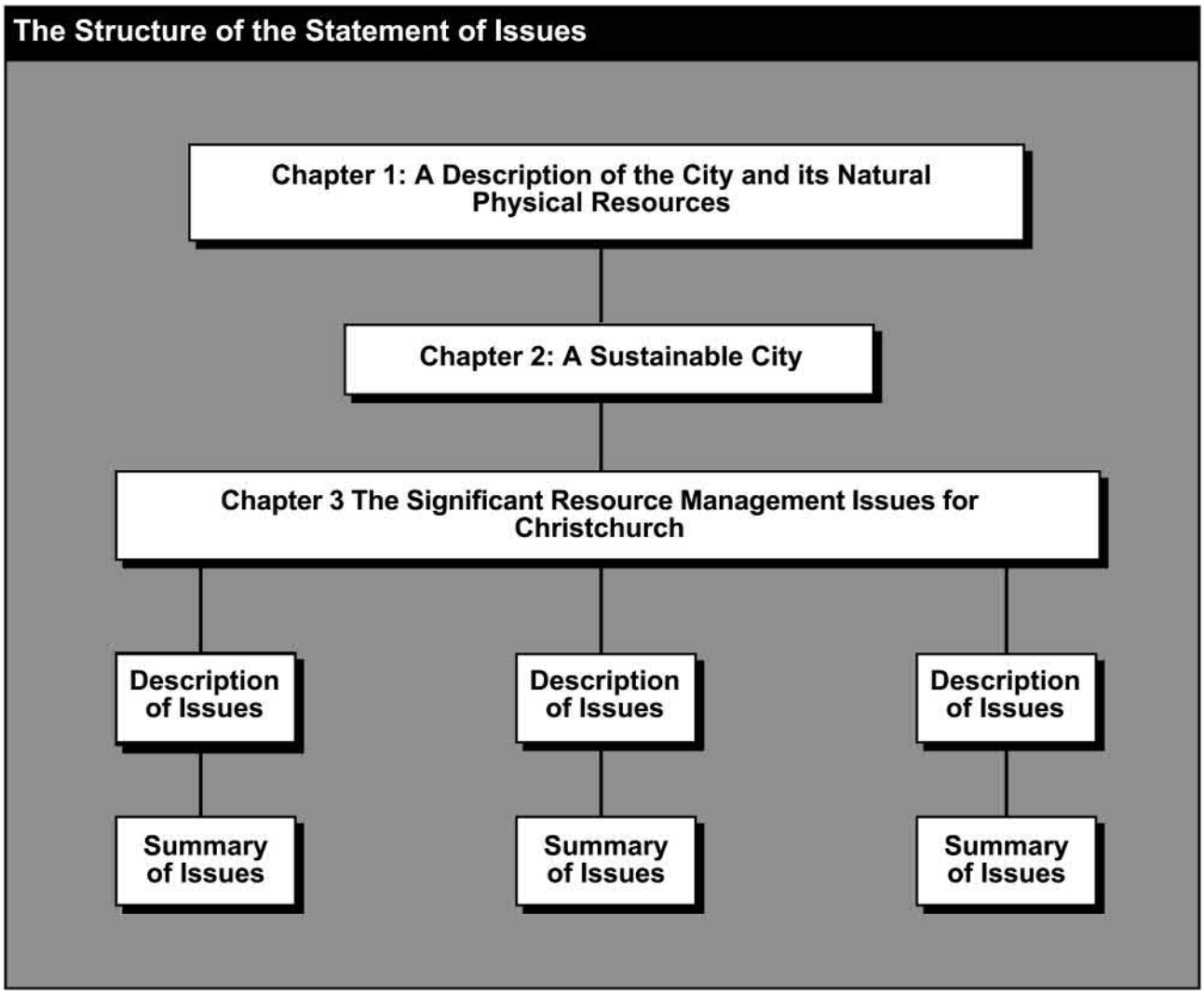
- Service of copies of applications received for plan changes or resource consents which have significance beyond territorial boundaries or which are located on a common boundary between territorial authorities, on the adjoining authority.

- In terms of any consultation procedures required for resource consents and under the First Schedule of the Act for plan changes and plan preparation, to ensure that any proposals which may affect communities of interest across the territorial boundaries of adjoining authorities are in fact notified to those communities of interest, notwithstanding the fact that they are not within the area of the authority containing the site of the application itself.

- Pursue opportunities to achieve a consistency in respect of control standards across the boundary between districts where this is seen as desirable. This can be achieved in the preparation of plans, accepting however that all plans are not necessarily prepared concurrently.

- An agreed programme of consultation on cross boundary issues, to be reviewed annually.

It is also noted that there are provisions under Sections 140-150 of the Act for the Minister to call in applications which may be of such significance as to involve the need for adjudication by the Minister. Such circumstances however are expected to be rare.


The Structure of the Statement of Issues
Chapter 1: A Description of the City and its Natural Physical Resources
Chapter 2: A Sustainable City
Chapter 3 The Significant Resource Management Issues for Christchurch
Description of Issues
Description of Issues
Description of Issues
Summary of Issues
Summary of Issues
Summary of Issues

Volume 1 : Introduction to the Statement of Issues : Processes for dealing with cross territorial issues

Section Contents Chapter 1 : A Description of the City and its Natural and Physical Resources

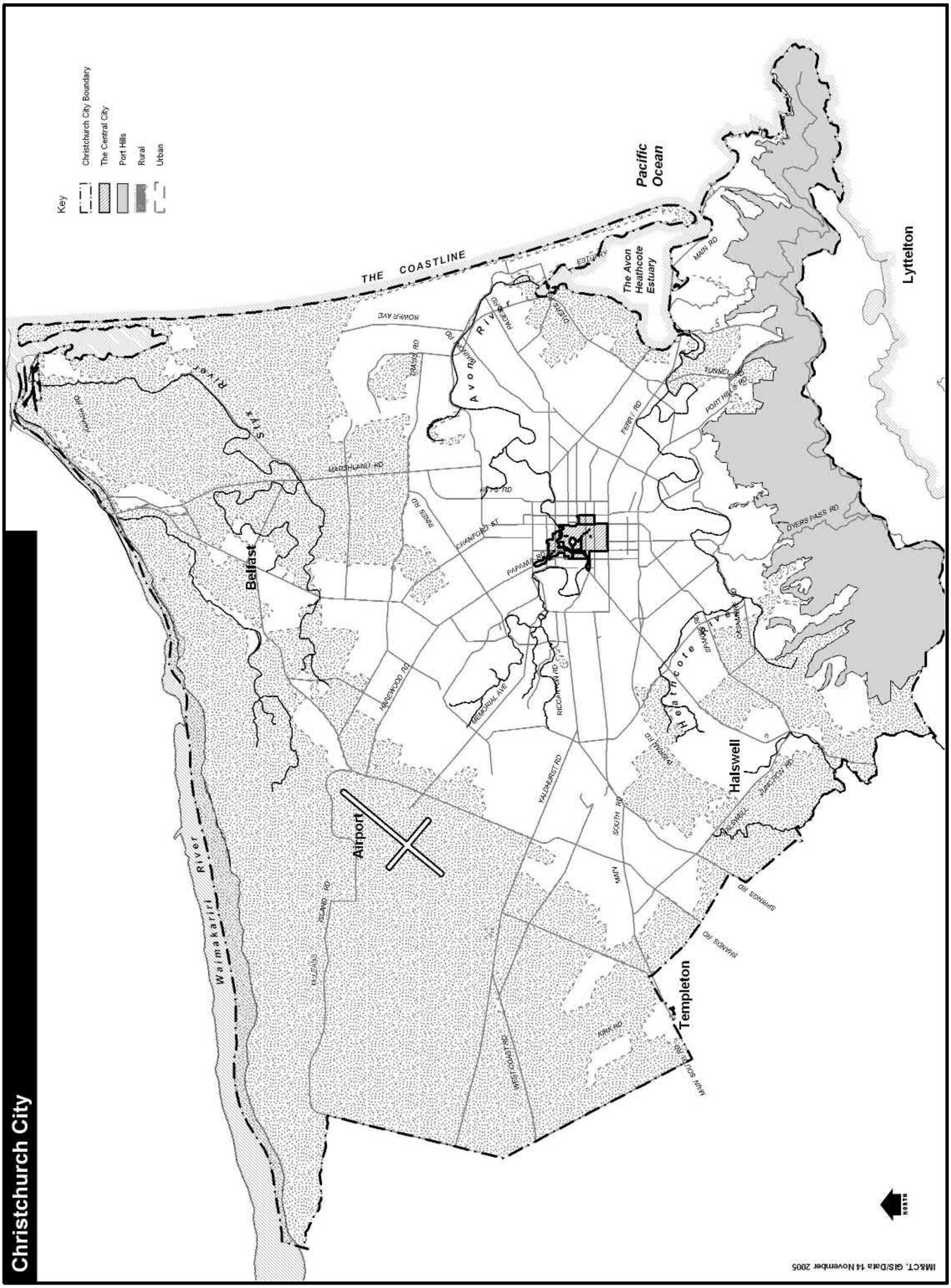
Chapter 1 : A Description of the City and its Natural and Physical Resources

1.1 Area of the City

Updated 14 November 2005

The City of Christchurch covers an area of 45,250 hectares comprising some 16,300 hectares in urban use and 29,000 in rural use. While almost two thirds of the City is outside of the urban area, some 97% of the City's population is concentrated within the urban area.

The extent of Christchurch City is illustrated on the following map.


Christchurch City
Key
Christchurch City Boundary
The Central City
Port Hills
Rural
Urban
Pacific Ocean
THE COASTLINE
The Avon Heathcote Estuary
Lyttelton
Belfast
Airport
Halswell
Templeton
Waimakariri River
Styx River
Avon River
Heathcote River
IM&CT, GIS/Data 14 November 2005

1.2 Geology and soils

Updated 14 November 2005

Christchurch comprises two distinct geological areas. The Port Hills are part of a series of large eroded volcanoes, the vents of which now form the harbours of Banks Peninsula. The main rock type of the Port Hills is basalt, covered by a layer of loess (wind blown dust) originating from the Southern Alps and plains.

The Canterbury Plains have been formed by outwash gravels deposited by rivers rising in the Southern Alps. The majority of Christchurch City is located on the coalescing shingle fans of the Waimakariri River. Bordering the plains to the north east are the sand dunes and coastal sandflats. A low lying peaty area occurs between the dunes and flats and the plains themselves.

The Alpine Fault lies approximately 100 km west of the City and the Porters Pass Fault zone only 50 km to the west. Both of these fault zones are active and capable of generating major earthquakes.

The Port Hills soils are yellow-grey or yellow-brown earth derived from basalt or loess and are of varying, generally low, fertility. Most of these soils are susceptible to erosion, particularly soil creep and gully erosion. Micro-climates in the Port Hills have a major influence on both soil formation and local soil productivity.

Soils of the Canterbury Plains are derived generally from outwash gravels and sand. There is a range of soil types found within the City. These include the fertile and versatile Waimakariri and Selwyn silt loams and sandy loam textures, soils which have natural drainage problems, and soils which are stony to very stony, poorly drained and susceptible to wind erosion.

1.3 Climate

Updated 14 November 2005

The average annual rainfall of the City is 658mm and the number of bright sunny hours 1985. The mean daily maximum temperature during January is 22 ^{o}C and July 11 ^{o}C. Wind gusts of 63 km/h or greater occur on 54 days of the year.Two micro-climates exist in the Christchurch area. The Port Hills, with a higher humidity and a greater seasonal variability of rainfall (due to relief), and the plains, drier with more evenly distributed rainfall. The plains are affected by dry strong nor-westerly winds which have the effect of drying out the soils of the plains increasing their erosion potential, and thereby placing limits on forestry and agricultural productivity. Localised microclimates, such as those of the Port Hills Valleys, also exist within the City.

1.4 Groundwater

Updated 14 November 2005

The groundwater resource beneath Christchurch is currently the sole source of potable water for the City's inhabitants. It is relied on to continuously provide high quality water for which no treatment is required. Christchurch obtains its water supplies via groundwater bores ranging in depth from 25-180 m. Groundwater aquifers are recharged in the inland plains, and later flow eastward towards the coast, finally discharging offshore.

1.5 Surface waters and the coastline

Updated 14 November 2005

The catchments of the Avon, Heathcote, Styx and Halswell Rivers lie within the City boundaries. The waters of the Avon and Heathcote flow through the urban area of the City and reach the sea at the Avon - Heathcote Estuary. The waterways within the Christchurch urban area are a significant feature and contribute to the naturalness of the urban area. The Styx River flows through rural land and reaches the sea at Brooklands Lagoon. All of these are spring fed. The Halswell originates within Christchurch, but flows out to the south, eventually discharging into Lake Ellesmere. Most of the course of the river is through rural land.

The Waimakariri River, which forms the northern boundary of the City, has large braided channels fed by rainfall in the Alps to the west. The river is important for recreation, and provides the region with important natural habitats and resources. At least 37 fish and 19 bird species as well as many species of invertebrate have been recorded. The river is also a source of potential flooding of the City should it spill out beyond its banks, and beyond flood protection works.

There are also numerous small streams that flow through the City, many of which are managed more as drains rather than valuable water resources.

The City is bounded on the east by the Pacific Ocean and to the south, the coast is defined by rocky headlands and sandy bays from Godley Head to Sumner Head. From Sumner, the Avon-Heathcote Estuary forms approximately 8 km^2 of open space bounded almost entirely by urban development. The beach foreshore then continues from Southshore up to the northern boundary of the City at the Waimakariri River. This beach dune system is approximately 20 km long with foredunes up to five to six metres high, and forms an important buffer area between the sea and adjacent urban areas.

The whole of the coast including the rocky headlands to the south, and the sand dunes of the foreshore further north represent important wildlife habitats. Sites of significant coastal wetland are the Avon-Heathcote Estuary and Brooklands Lagoon. The natural character of the coastal environment includes those qualities and features which have been brought into being by nature. The Avon-Heathcote Estuary, Brooklands Lagoon/ Waimakariri River mouth and Scarborough Cliffs/ Godley Head, all contain important elements that constitute natural character for the City's coastline.

There are very few remaining wetlands left within Christchurch. The most important site is the Travis Swamp. Other sites include Wilsons Swamp, Bottle Lake and Cockaynes Reserve. Their small extent increases the value of these as ecological resources.

1.6 Vegetation and wildlife

Updated 14 November 2005

There are very few remnants of native forest remaining within the City. A few forest remnants exist on the Port Hills (largely in gullies). Riccarton Bush is the last remnant of wetland podocarp forest on the plains. Native forest areas are typically associated with areas of scrubland and tussock grasslands.

Indigenous grasslands (albeit modified) with scattered scrubland and trees are associated with coastal and riverine habitats for wildlife. Important locations include areas south of the Waimakariri River and on the Port Hills. River channels, both in the urban and rural areas of the City, are also important habitats as are the adjoining riparian zones.

Other habitats include the exotic forestry plantations and urban parks and gardens, in particular areas such as Hagley Park and the Botanic Gardens.

1.7 Current land use

Updated 14 November 2005

The land use pattern of Christchurch is dominated by two major elements, urban and rural, with some 16,300 hectares in urban use and 29,000 hectares in rural use.

Within the urban area, the major land uses are housing and associated community activities (73%), recreation and open space (14%) and industrial activities (11%). Commercial activity accounts for under 2% of the land area of the City.

Some 8% of rural land is used for recreation and open space and over 4% for rural industry, airfields and quarries.

In both urban and rural areas of the City, the amount of land used for recreation and as open space is significant. These areas range from local neighbourhood parks to large metropolitan recreational areas. In addition, considerable tracts of land are held for reasons of conservation, many as reserves, enabling passive recreational activity.

Land area by activity zone as at 1991 is illustrated in Table 1.

Table 1. Land Use by Zone 1991

Location/Zone	Land Areas		
	Hectares	Percent	
Urban			**Percent of Urban**
Cultural	21	0	0.1
Central Residential	1,135	2.5	7.0
Suburban Residential	10,770	23.9	66.2
Central Commercial	130	0.3	0.8
Suburban Commercial	129	0.3	0.8
Recreation/Open Space	2,235	4.9	13.7
Industrial	1,856	4.1	11.4
Sub Total Urban	**16,276**	**36.0**	**100.0**
Rural			**Percent of Rural**
Recreation/Open Space	2,232	4.9	7.7
Rural Industrial	276	0.6	1.0
Quarry/Airport	986	2.2	3.4
Rural	25,479	56.3	87.9
Sub Total Rural	**28,973**	**64.0**	**100.0**
TOTAL	**45,249**	**100.0**	

Notes to Table 1

- Land areas are gross areas including roads. Central residential included the R2-R6 and RC zones located around the central commercial zones.
- Central commercial included the Business 1 zone.
- Industrial included the remaining business, employment and industrial zones.
- All reference to zones is to those existing in 1991

The capital value of property indicates another way that the physical resources of the City are being used as shown in the following table:

Table 2. Capital Values 1992

	$m	%
The Central City	1,184	6.5
Central Industrial	208	1.1
Suburban commercial	788	4.3
Suburban Industrial	1,060	5.8
Rural	495	2.7
Residential	12,506	68.4
Other (schools, sports, health, etc)	2,042	11.2
	18,283	**100.0**

1.8 Structures and buildings

Updated 14 November 2005

The physical infrastructure of Christchurch represents a considerable resource, both in a physical sense and also in terms of investment. Christchurch is one of the largest single concentrations of physical resources in the country and the management of these resources is significant locally, but also important both regionally and nationally.

The following broadly describes the extent of physical infrastructure in Christchurch.

Residential buildings

Updated 14 November 2005

Christchurch's housing stock represents one of the City's most important physical resources. The capital value of residential properties totalled $12.5 billion in 1992, 68% of the total value of the City. Some 73% of the land within the urban part of the City is given over to residential activities and related uses.

Commercial and industrial buildings

Updated 16 November 2009

Commercial and industrial activity utilises major resources of the City in terms of land and buildings. In 1992, these resources were valued at some $3.2 billion, 18% of the capital value of the City as a whole.

The central city is the largest commercial centre in the City and contains a total floor area of 1.37 million m^2 (72% of total commercial floorspace). The capital value of this resource is $1.184 million, (6.5% of the City's value as a whole.

Within the City in 1991 there were 27 district suburban centres and a further 112 local shopping centres. In addition, there were also some 200 dairies in the City. The district centres had a combined floorspace of 398,654 m^2 in 1991, with local centres a floorspace of 121,582 m^2 (520,235 m^2 combined).

In 1993, industrial floorspace in the City totalled approximately 3,792,000m^2.

Commercial activity (which includes retail, commercial service and office activities) also occurs outside suburban centres and the central city. For example, retail activity has traditionally been provided for within industrial zones to a limited degree and more recently, some commercial centres have established in light industrial areas. A limited amount of retail activity has also been permitted in other zones, generally in association with a primary activity. Examples include rural selling places, and ancillary retailing in industrial zones and the Arts Centre (Cultural 1 Zone).

Transport

Updated 11 July 2011

Within its boundaries, Christchurch City has 1490 kilometres of roads. Approximately 2900 hectares of land within the City is occupied by formed roads, with a book value of some $720 million.

The state highway network represents a particularly significant physical resource as the principal roads within the City area, and as part of the national road network serving the region and other parts of the country.

The Christchurch International Airport represents a considerable physical resource within the City, comprising some 560 hectares of land, with a further approximately 660 hectares held for airport purposes. The total indicative value of the airport as at June 1995 was $225 million of which approximately $150 million is owned by Christchurch International Airport Limited.

The rail network within the City comprises some 80 kilometres of main line, and several hundred kilometres of sidings. Associated with this are a number of ancillary buildings and structures, including signalling, which combined with the network itself, have an estimated value in the order of $30 million.

Utilities

Updated 14 November 2005

Major utility services in the City also comprise considerable physical resources. For example, water services include 78 pumping stations, 37 reservoirs, and 1300 kilometres of watermain. Similarly, sewerage services extend for an equal distance and include 100,000 lateral connections and 73 pumping stations. In addition to these there are a range of other utility services such as supplying energy and telecommunications throughout the City.

Community and other facilities

Updated 14 November 2005

Whilst housing, commercial and industrial buildings make up the majority of built infrastructure in the City, a number of other building spaces and facilities also exist to meet community needs. Collectively these make a substantial contribution to the resources of Christchurch.

1.9 Use, development and protection of resources

Updated 14 November 2005

The effects of use, development or protection of natural and physical resources in relation to the environment is a major focus of the Act and this Plan. The Act has defined the meaning of effect to include:

(a) Any positive or adverse effect; and

(b) Any temporary or permanent effect; and

(c) Any past, present, or future effect; and

(d) Any cumulative effect which arises over time or in combination with other effects - regardless of the scale, intensity, duration, or frequency of the effect, and also includes:

(e) Any potential effect of high probability; and

(f) Any potential effect of low probability which has a high potential impact.

All forms of activity and development create effects. These may be positive or negative, such as the positive effect of landscaping accompanying developments and negative effect due to increased traffic congestion. Effects can be either direct or indirect. A direct effect of increased traffic in one area may be balanced by an indirect effect in other areas where traffic has been reduced. Some effects may be relatively short-term; for example, some noise effects, smell and increased vermin at landfills. The long-term impacts however, include the possibility of leachates entering groundwater. The role of the Plan is to intervene to control effects where such intervention or regulation is necessary in achieving the purpose of the Act.

It is important that the environmental effects of activities and developments are recognised and the levels of their effects measured in some manner. Activities with potential high levels of risk should be monitored both to allow for the rapid identification of changes and also to make certain the measures set in place to reduce or eliminate these effects are actually effective in doing so.

Effects upon the human environment of:			
contamination			
habitat loss			
siltation			
erosion			
runoff			
soil loss			
vegetation loss			
Effects upon the human environment of:			
Amenity	**Health**	**Social**	**Economic**
odour	smoke	privacy	value of resources
wind	dust	access to services	existing investments
noise	emissions	convenience	direct costs
vibration	effluents	heritage	opportunity costs
traffic congestion	leachates	identity	energy costs
glare	solid waste		production outputs
daylight	fires		maintenance costs
shadowing	earthquakes		
views	safety		
appearance	open space		
scale	noise		
landscapes			
character			
coherence			

Environmental effects impact upon the human environment and the natural environment. Although interrelated, the human and natural environments can be separated to reduce complexity and clarify the area of impact. The human environment can be further broken down into four areas of effects - amenity, health, social and economic. Many effects can be grouped under more than one heading, but they are listed under the category of primary concern.Many of the effects of use, development and protection of resources are identified in subsequent sections of this Plan.

Issues arising from consideration of effects include:

- Identification of effects;
- The level of effects acceptable to the community;
- The level of effects consistent with maintaining the quality of the environment;
- Techniques available to avoid, remedy or mitigate effects.

Volume 1 : Chapter 1 A Description of the City and its Natural and Physical Resources : 1.9 Use, development and protection of resources

Section Contents Chapter 2 : A Sustainable City

Chapter 2 : A Sustainable City

2.1 Sustainable development

Updated 14 November 2005

There is a need to distinguish between the general expression of sustainable development and the term used in the Act of sustainable management.

The concept of sustainable development rose to prominence in the 1980s in response to a growing awareness of the need for action on global issues such as environmental degradation, resource depletion, and socio-economic inequities.

In 1983 the United Nations resolved to create a World Commission on Environment and Development. This body was to be responsible for formulating a global agenda for change. The Commission was asked to recommend ways the international community could deal more effectively with environmental concerns, and to propose long-term strategies to achieve sustainable development.

Issued in April 1987, the final report of the Commission's findings was entitled "Our Common Future" and has become known as the Brundtland Report. It is recognised as a milestone in the development of environmental planning throughout the world.

Sustainable development is a challenging concept because it is seemingly very simple yet is in fact complex. The most commonly used definition of sustainable development is that in the Brundtland Report. It describes sustainable development as being development that meets the needs of the present without compromising the ability of future generations to meet their own needs. However, applying this general prescription to the management of resources requires considerable thought.

The Brundtland Commission saw sustainable development as leading to the reduction of poverty through environmentally sustainable economic growth:

"The concept of sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organisation on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organisation can be both managed and improved to make way for a new era of economic growth."

The Commission saw sustainable development as a means to ensure that developing countries get "their fair share of the resources required to sustain that growth." It was also the way to achieve equity through more effective public participation and greater democracy in international decision making. Sustainable development would require developed countries to adopt lifestyles more in keeping with the planet's ecological means.

In June 1992, the United Nations Conference on Environment and Development was held in Rio de Janeiro, Brazil. The main outcome of the conference was "Agenda 21" (named for its place on the Agenda of that conference). It incorporates a wide array of development and environmental objectives aimed at achieving sustainable development. In many respects "Agenda 21" builds on findings of the Brundtland Report but goes further by setting quite specific objectives to be achieved by countries within a given timeframe. "Agenda 21" targets all sectors of society and recognises the importance of identifying processes for effective implementation of objectives. As in the Brundtland Report, sustainable development is promoted as the means whereby countries can provide adequately for the social and economic needs of its citizens in the long term.

The concept of sustainable development comprises three main interrelated goals:

- To ensure that all society's needs are met (needs as distinct from wants - those essential inputs required to sustain human life).

- To ensure that all members of society have their needs met (in other words, equity in the use of resources).

- To ensure that all development is sustainable over time in a social, economic and environmental sense.

It is important to recognise that, at the broadest level, the concept of sustainable development requires a fully integrated social, economic and environmental policy to be applied at local, regional, national and international levels. The key to achieving sustainable development is acquiring and maintaining the political will needed to implement policies and to make difficult, and sometimes painful, decisions.

New Zealand has implemented a number of initiatives intended to integrate sustainable development into policy making processes. Most have focused on improving environmental management, both domestically and internationally. The major initiative in this country has been the passing of the Resource Management Act 1991, which has as its purpose "to promote the sustainable management of natural and physical resources". This will be achieved through policy development and administration at national, regional and district levels.

The Act is part of a national agenda for implementing sustainable development. However, many other policy instruments may be used for implementing sustainable development within New Zealand. It is important to recognise their role, and that of the Resource Management Act, within the overall agenda

2.2 Sustainable management

Updated 15 September 2006

Sustainable management as embodied in the Act (which focuses on natural and physical resources) covers a narrower field than the broader objectives of sustainable development. The Act is not intended to be the sole legislative vehicle by which the broader objectives of sustainable development are to be driven. Nor will sustainable management alone achieve social or economic sustainability. Rather, it supports efforts to attain sustainable development both within New Zealand, and internationally, by concentrating on promoting sustainable management of natural and physical resources.

The purpose of the Act is "to promote the sustainable management of natural and physical resources." The concept of sustainable management is, therefore, the cornerstone of the Act. All objectives, policies, decisions and actions formulated or taken under the Act must seek to fulfil this purpose. It is expressed as a goal to which all other goals are subservient.

Sustainable management is defined as:

"managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while -

(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment."

The Act goes on to list matters to be recognised and provided for, and to which particular regard has to be given when exercising functions and powers under the Act, which assists with defining the New Zealand concepts of sustainable management. These include recognising and providing for:

(a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development;

(b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development;

(c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna;

(d) The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers;

(e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga;

(f) The protection of historic heritage from inappropriate subdivision, use and development;

(g) The protection of recognised customary activities.

and, having particular regard to:

(a) Kaitiakitanga (guardianship);

(aa) the ethic of stewardship;

(b) The efficient use and development of natural and physical resources;

(ba) the efficiency of the end use of energy;

(c) The maintenance and enhancement of amenity values;

(d) Intrinsic values of ecosystems;

(i) the effects of climate change;

(ii) the benefits to be derived from the use and development of renewable energy;

(e) Maintenance and enhancement of the quality of the environment;

(f) Any finite characteristics of natural and physical resources;

(g) The protection of the habitat of trout and salmon.

Definitions contained within the Act assist further in understanding the meaning of sustainable management in the New Zealand context. These include:

- "Amenity values" are those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes.

- "Environment" includes:

(a) ecosystems and their constituent parts, including people and communities; and

(b) all natural and physical resources; and

(c) amenity values; and

(d) the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) of this definition or which are affected by those matters.

- "Natural and physical resources" includes land, water, air, soil, minerals, and energy, all forms of plants and animals (whether native to New Zealand or introduced), and all structures.

- "Structure" means any building, equipment, device, or other facility made by people and which is fixed to land.

- "Effect" includes:

(a) any positive or adverse effect; and

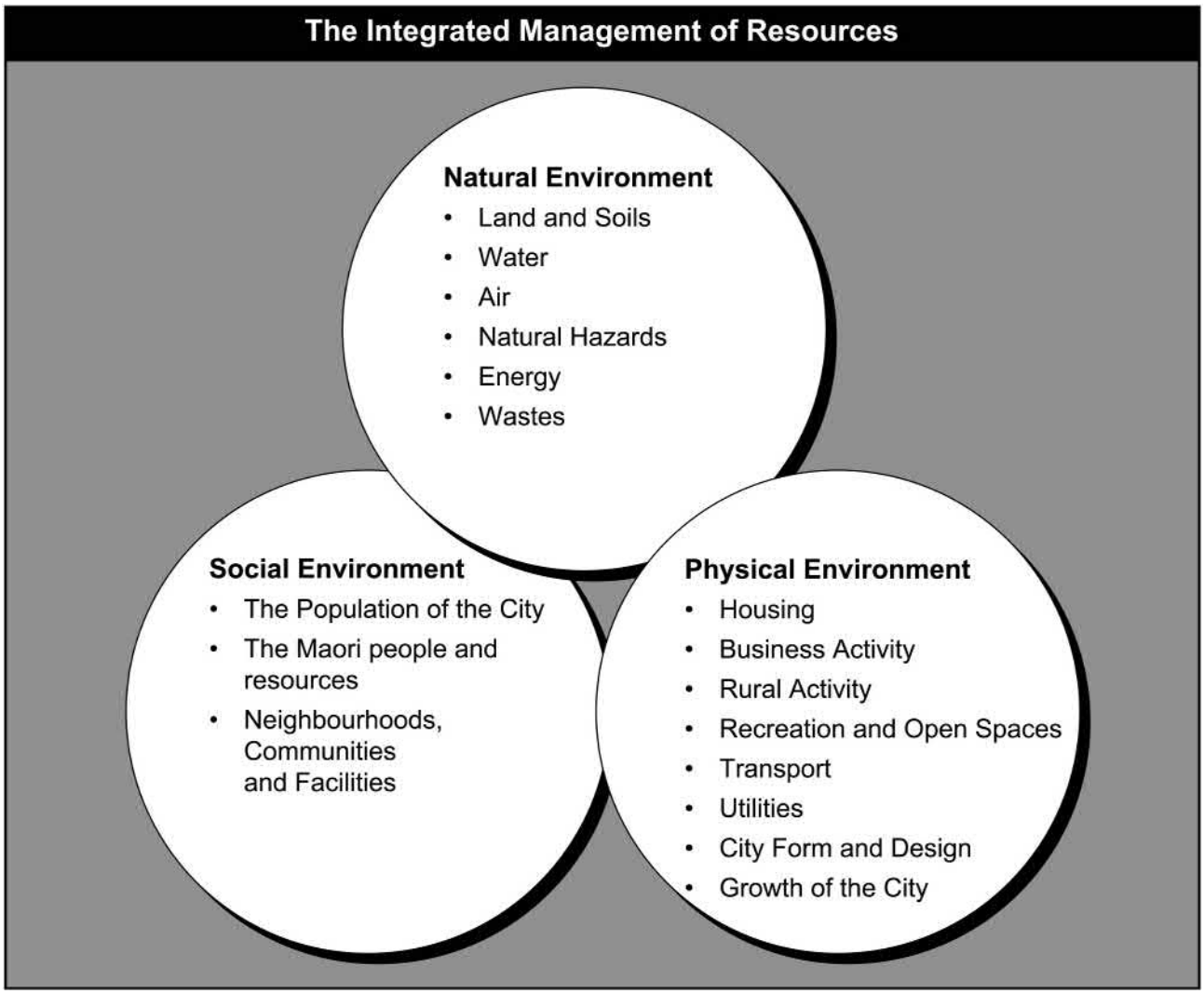
(b) any temporary or permanent effect; and

(c) any past, present, or future effect; and

(d) any cumulative effect which arises over time or in combination with other effects - regardless of the scale, intensity, duration, or frequency of the effect, and also includes -

(e) any potential effect of high probability; and

(f) any potential effect of low probability which has a high potential impact.



2.3 A sustainable Christchurch

Updated 22 May 2006

Cities are about people and their environment; about how they produce and conserve the goods and services that people need; about how and why decisions are made to locate and undertake activities; about how, when and why interactions occur between places and people; and about the means by which individuals, groups and institutions make decisions and administer and manage the City, its people and their activities. Developing policies for the future development, growth and management of the City necessitates an understanding of the functions and patterns of the City. The concept of sustainable management therefore demands an integrated approach to urban planning.

Sustainable management of cities is seen internationally as one of the keys to achieving sustainable development. Under the Act, this means considering urban sustainability initially from the biophysical/ecological perspective. Within this framework, regard can be given to the economic and social effects of the use of natural and physical resources.

Cities are in a constant state of change. While enabling achievement of the diverse economic and social goals of the communities they contain, any adverse effects must be avoided, remedied or mitigated.

Cities use, or affect, many natural and physical resources because most of this country's population, industry, transport and communications are concentrated in these places. This means that policies which encourage increased density (subject to addressing the adverse effects of particular forms of infill development) in order to improve the use of land, improve the efficiency of transportation and energy use, and other similar goals need to be considered. The relationship between activities and transport is important for promoting the safe and efficient use of resources. The economics of servicing could also be a resource use issue particularly in respect to publicly owned network and community infrastructure.

Activities carried out in cities are a major source of pollutants which can affect the natural resources far outside the immediate environs. A city's population can also generate a large amount of waste which in turn must be disposed of.

Many cities also contain important natural values forming part of the land resources such as distinctive landscapes and estuaries. The flora and fauna of our cities are equally important. Many cities include significant areas of rural land with resource values different from the growing urban parts. The manner by which one area develops will affect the other

The maintenance and enhancement of amenity values are important to the people living in cities. These include pleasantness and coherence, the recognition of heritage values and the general enhancement of environmental quality.

The proper planning and management of the natural and physical resources of cities is critical to achieving many of the outcomes sought for a sustainable city. Planning cities is about considering a future based on an analysis of the present state and the likely trends that are occurring both in the city and beyond. It is about identifying future opportunities and options, likely physical and natural restraints, and determining the preferences of its citizens. It is about identifying the desired and feasible future for the city in its regional context. It is about specifying the goals and objectives for the environmental outcomes that relate to that future state. It is about indicating the policies which may achieve those goals and objectives. Complementing this may be functions undertaken by the Council in its service delivery and non-regulatory roles which can include social and economic goals consistent with a sustainable Christchurch. For the Council, other public agencies, the private sector and individuals, it then becomes an issue as to what actions and programmes should be implemented over time to help realise the goals and objectives in order that the desired future state of the City is achieved.

Section Contents Chapter 3 : The Issues for Christchurch

- 3.10 Housing
    - 3.10.1 Historic patterns of housing
    - 3.10.2 Some of the consequences of post 1945 housing patterns
    - 3.10.3 Recent housing trends
    - 3.10.4 Design and siting of housing
    - 3.10.5 Vacant land
    - 3.10.6 Summary of housing issues
- 3.11 Business activity
    - 3.11.1 Tourism
    - 3.11.2 The central city
    - 3.11.3 Commercial activity outside the Central Area
    - 3.11.4 Trends in commercial activity
    - 3.11.5 Industry
    - 3.11.6 Trends in industrial activity
    - 3.11.7 Summary of business issues
- 3.12 Rural activity
    - 3.12.1 Intensification of land use
    - 3.12.2 Aquifer protection
    - 3.12.3 Versatile soils
    - 3.12.4 Rural industry
    - 3.12.5 Flood protection
    - 3.12.6 Non rural uses
    - 3.12.7 Quarrying
    - 3.12.8 Forestry
    - 3.12.9 Rural selling places
    - 3.12.10 Summary of rural issues
- 3.13 Neighbourhoods, communities and facilities
    - 3.13.1 Cultural diversity
    - 3.13.2 Communities within the City
    - 3.13.3 Cultural activities
    - 3.13.4 Community care of people with special needs
    - 3.13.5 Local employment opportunities

        - 3.13.6 Community facilities and buildings
        - 3.13.7 Civic and metropolitan facilities
        - 3.13.8 Location, accessibility and use of community facilities and services
        - 3.13.9 Effects of community facilities
        - 3.13.10 Summary of community issues
- 3.14 Recreation and open space
        - 3.14.1 Recent trends in recreation
        - 3.14.2 The function of public open space in the City
        - 3.14.3 Existing public open spaces
        - 3.14.4 Private recreation facilities
        - 3.14.5 Impacts of recreation activities
        - 3.14.6 Summary of recreation and open space issues
- 3.15 Transport
        - 3.15.1 Motor vehicles
        - 3.15.2 The roading network
        - 3.15.3 Land use
        - 3.15.4 Traffic safety
        - 3.15.5 Parking and access
        - 3.15.6 Public transport
        - 3.15.7 Cycling
        - 3.15.8 Pedestrians
        - 3.15.9 Rail, air and sea
        - 3.15.10 Summary of transport issues
- 3.16 Utilities
        - 3.16.1 Water supply
        - 3.16.2 Sewage disposal
        - 3.16.3 Drainage
        - 3.16.4 Solid wastes
        - 3.16.5 Works depots
        - 3.16.6 Electricity supply and communication facilities
        - 3.16.7 Summary of utility issues
- 3.17 City form and design

        - 3.17.1 Past influences on the form of the city
        - 3.17.2 City character
        - 3.17.3 Architectural styles
        - 3.17.4 The heritage of the City
        - 3.17.5 Urban design and form
        - 3.17.6 Open spaces and form
        - 3.17.7 Summary of city form and design issues
- 3.18 The growth of the city
        - 3.18.1 Recent changes and future prospects
        - 3.18.2 Opportunities for growth
        - 3.18.3 Some growth options
        - 3.18.4 Some restraints on growth of the City
        - 3.18.5 Summary of growth issues
- 3.19 Subdivision
        - 3.19.1 Summary of subdivision issues

Chapter 3 : The Issues for Christchurch

3.1 Land and soil

Updated 14 November 2005

Christchurch City comprises 45,250 hectares of land. Almost two-thirds of this area is in rural use with the remainder occupied by the urban area.

Land is a resource which fulfils a variety of functions in the City. A key issue in respect of land, and particularly soils as a natural resource, is reconciling competing interests for its use. The demand for land can be considered broadly in terms of its use for rural and urban purposes; rural production, and in providing for the needs of recreation, commerce, industry and housing. Some of these activities can significantly reduce the life supporting capacity of soils. However the alternatives for providing for such activities may have even more significant adverse effects. In addition, within both rural and urban areas in themselves there is competition for land. Christchurch represents a very small physical area of land yet it is a major concentration of physical resources in the form of buildings, roads and other infrastructure. The urban area provides opportunities for people to enjoy all the social, economic, cultural and accessibility advantages that living in a city offers. This concentration of resources places considerable pressure on and competition for use of that land resource.

Land is critical in supporting not only human activity, but also wildlife, vegetation and habitat dependent upon it. The City contains a number of areas such as the Port Hills, which have high landscape and ecological values. With pressure for the use of land, the potential of this resource to meet future needs is important in its sustainable management. The degradation of land and soils such as through erosion, contamination or loss of soil versatility is therefore an important issue in terms of managing the land resources of Christchurch.

3.1.1 Summary of land and soil issues

Updated 14 November 2005

a. reconciling the competing demands for use of land, its use for rural and urban purposes, as well as within rural and urban areas of the City.

b. sustaining the life supporting capacity of soils.

c. the potential reduction in the stability and versatility of the City's land and soil resources.

d. the potential degradation, including erosion and contamination, of land given pressure for its use.

3.2 Water

Updated 14 November 2005

Water in the City takes many forms, it may be flowing or still and be over or under the ground. Water is contained in rivers, streams, ponds, wetlands, aquifers, channels, and water races.

The catchment of the Avon, Heathcote, Styx and Halswell rivers lie within the City boundaries and the Waimakariri River forms the northern boundary of the City. Numerous streams and drains also flow through the City. These rivers serve a number of functions, including aesthetic, habitat, drainage, landscape and amenity purposes. The quality of these waters is integral to their value in fulfilling these functions.

There is also a significant ground water resource beneath the City from which Christchurch gains its water supply. The water is contained in a series of aquifers, which are water bearing layers below the ground surface. This water supply is artesian in nature, and near the coast wells are flowing artesian.

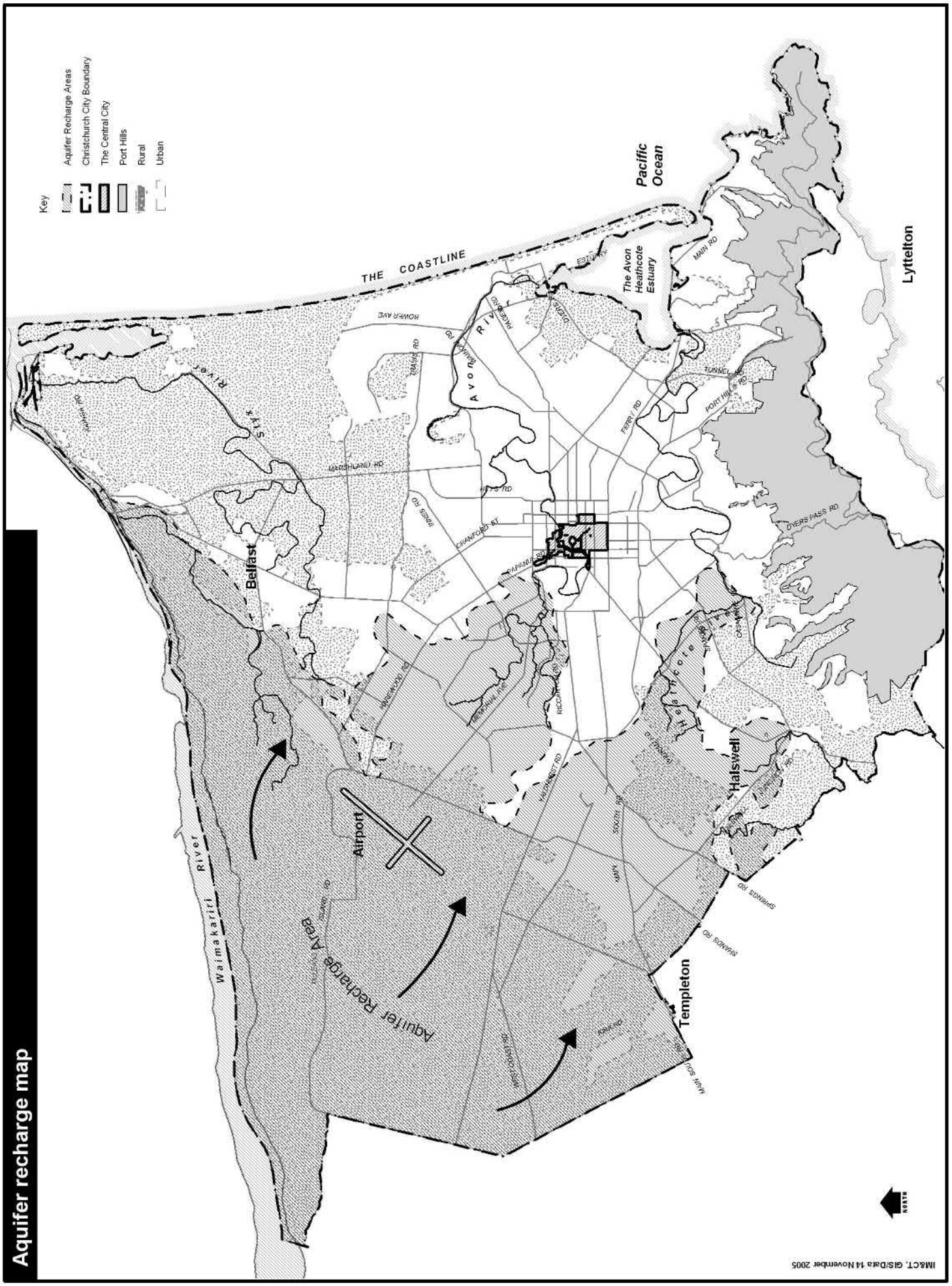
Water is of central importance to Maori people. Clean water is important in relation to the provision of mahinga and in maintaining the life-force of water which incorporates physical and spiritual values. Contamination or mixing of different bodies of water adversely affects these values.

The Canterbury Regional Council is the primary agency for regulating water use. With some minor exceptions, water cannot be taken, used, dammed or diverted unless allowed by the Council or a rule in a plan. Similarly no one may discharge contaminants if water might be adversely affected. Contamination of water can occur directly through discharges or indirectly from land use. Certain activities such as building, planting or excavation in river or lake beds also need Regional Council permission. This is because activities such as gravel extraction may reduce flood risk but can also harm fish habitats.

The central issues which arise in relation to water are:

- the quality of water;
- the supply of water;
- recreation activities on the surface of rivers;
- the amenity value of water; and
- the use of river beds.

Aquifer recharge map



IM&CT, GIS/Data 14 November 2005

3.2.1 Water quality

Updated 14 November 2005

Water quality, land use and the availability of water are all inter-related. Reducing water volumes can lead to lower water quality as dilution of any contaminants is reduced. Water quality can also be affected by discharges resulting from the use of land and from the effects of activities on the bed of a water body. The general availability of water can be increased through conservation or augmentation and water applied for irrigation may augment ground water. Lack of irrigation water can diminish the versatility of land.

The four productive aquifers beneath the urban area, are separated by layers of clay. To the north-west these confining layers of clay thin out and disappear. Each of the four aquifers is recharged by the Waimakariri River and rainfall. Near the river, it becomes the active recharge source, with rainfall becoming the predominant recharge source further from the river.

Threats to ground water quality include the following:

- leaks and spillages from underground storage tanks;
- contaminated stormwater;
- old refuse pits on the outskirts of the City;
- toxic waste from industry, agriculture and horticulture;
- sewage disposal, leaking sewers, septic tanks; and
- sea water intrusion brought about by high use, drought and potential climate changes.

There is also evidence of localised ground water contamination in the southern part of the uppermost confined aquifer from chlorinated solvents, a waste product from many industrial uses. It is difficult to identify the sources of contamination as the use of chlorinated solvents is so widespread.

Surface water quality can also be affected by a variety of sources, many similar to those with impacts on the ground water resource. Contaminated stormwater discharges and run-off, industrial and agricultural waste discharges direct to rivers and accidental spills or leaks, all pose significant threats. Poor water quality will affect wildlife which depend on surface water, amenity and aesthetic values, and reduce the contribution that rivers and other waterbodies make to the overall landscape values of the City.

Water quality issues include the threat of ground water contamination. Potential and actual sources of contamination need to be identified (and notified) and further risk of contamination minimised. This also applies to maintaining and enhancing surface water quality.

3.2.2 Water supply

Updated 14 November 2005

The amount of water that can sustainably be taken from the City's ground water supply is finite and difficulty is already being experienced in abstracting sufficient water to meet peak summer demands. The Canterbury Regional Council's best estimate of the long-term sustainable yield from the Christchurch-West Melton aquifer system (which supplies all of Christchurch's water) is approximately 130 Mm^3/yr. (million cubic metres per year). Currently the City takes 55 Mm^3/yr. and other users 65 Mm^3/yr. a total of 120 Mm^3/yr.

Demand is growing at 3% per year. At this rate of growth, demand for water will reach the sustainable yield near the turn of the century. The sustainable yield is the point at which the net withdrawal matches the net inflow. When this point is exceeded more water is being drawn from the aquifer than flows into it. The observable effects include; a fall in both aquifer water pressure and well water level, a deterioration in water quality, and an inshore movement of the saline/fresh water interface.

Four ground water aquifers to a depth of approximately 200 metres have been identified from which Christchurch draws its water. While it is considered possible that deeper aquifers exist below this level (down to about 500 metres) the more compacted gravels found here are unlikely to yield useful quantities of water.

The options for an alternative supply include:

- exploring the ground water resource to a greater depth and extracting water from a deeper aquifer (if possible). This is not likely to be a practical option, for unless the deeper aquifer was recharged from a different water source, it only provides more storage, not more water. The availability of water depends in the longer term on rainfall, and recharge from the Waimakariri River;

- additional water from the Waimakariri River to be used to artificially recharge the aquifers or some of the City's aquifers;

- water from the Waimakariri River to be treated and used directly as a source for the City, possibly in tandem with the supply from the ground water resource; or

- a dual supply using water from the Waimakariri for uses requiring water of lesser quality and the ground water resource for uses requiring water of higher quality such as domestic household requirements.

Given the demands on water resources, there is a need to conserve the limited supply of natural water available. Thus the sustainability of the water resource is an important issue which falls within the planning period. When considering alternatives a number of issues arise including the impact on the quality of ground water of any artificial recharge, the costs of treating alternative supplies, and the impact on the Waimakariri River water levels.

Given that the sustainable yield for the aquifer system may be reached by about 1998, alternatives to this supply need to be considered. The issue for Christchurch is which of these alternatives represents the most efficient and sustainable means of supplying the City with water into the future. A related issue is whether public water users should bear restrictions on their use (other than for basic domestic needs) similar to those imposed on rural users, for example, for irrigation.

The continued supply of water also has the potential to adversely affect the "Garden City" image of Christchurch with the increasing need to ensure adequate supplies for plant growth during the summer months.

3.2.3 Recreational use of water

Updated 14 November 2005

Waterways are used for a wide variety of recreational activities, including canoeing and kayaking, rowing, jet skiing and jet boating (particularly on the Waimakariri River) fishing, walking, picnicking, nature watching and purely enjoying the river environment. Many children also use the rivers, streams and drains for play activities. Punting in the inner city is important for residents and visitors to the City. In the future, river transport may become important again particularly for tourism.

The areas of water where there has traditionally been high recreational activity are those contained within the Estuary of the Avon and Heathcote Rivers, and the Brooklands Lagoon. Both of these areas are within the coastal marine area and will be subject to policies and rules of the coastal plan of the Canterbury Regional Council.

Conflicts between different recreational activities are largely limited to the mouths of the Avon, Heathcote and the Waimakariri Rivers and between powered and non-powered craft.

The quality of access to the rivers varies, with the lower and middle stretches of the Avon River and the middle stretches of the Heathcote River being very accessible with roads on one or both sides. In comparison, the upper reaches of both these rivers, the Styx River and the lower branch of the Waimakariri River are far less accessible.

The major restraints to the public's increased enjoyment of the rivers and the surrounding environment are the large amounts of litter, excessive weed growth (in particular areas) and poor water quality.

In summary, the major issues relating to recreational use of water include; conflicts between different recreational activities, access to and along waterways and the coast, pollution, litter, weed growth, declining water quality and the maintenance and enhancement of the visual amenity and natural values of the waterways and the coast.

3.2.4 Amenity values of water

Updated 14 November 2005

Water is undoubtedly one of the most attractive features to be found in the City's environment. In addition to the rural hills and plains, the City's water features contrast quite markedly to the formal geometry of the urban environment. This contrast, between the City and its natural features, defines the qualities of both. For this reason, it is desirable that the unique qualities of the many water features, are enhanced.

The City is well endowed with a great diversity of water environments. These range from an estuary, lagoon, harbour, open ocean, wetlands, braided and meandering rivers and streams, to built features such as fountains, pools and small lakes. This diversity offers many opportunities for a wide range of activities. Furthermore, all of these features, lie within a 15 kilometre radius of the City centre. This small distance, combined with accessibility, makes a wide range of water based activities readily accessible. Accessibility, in combination with the effective qualities of water, ranging from the placid and serene to the turbulent and sublime, make it one of the most important landscape assets the City has to offer.

The most important factor influencing amenity values is the ways in which the water environment is experienced and in the quality of how it is contained. The water's edge is the place of greatest interest and diversity, both in terms of human and wildlife activity. Apart from the prevention of chemical and solid waste pollution, it is also the area where the most can be done to maintain and enhance amenity. However, the quality of the water can only be maintained if the water resource is highly valued by the community. If the water body concerned is considered a liability to the community, as has often been the case in the past, then the amenity values of these water features cannot be guaranteed. For example, wetlands have been often considered wastelands to be drained and reclaimed, and small streams seen as obstacles to be piped.

The significant issues relating to amenity values of water are how best to maintain and enhance the diversity in water environments found within the City, and how to promote a positive attitude and awareness of the value of water.

3.2.5 River beds

Updated 14 November 2005

Any activity which involves the use, excavation or construction on the beds of rivers within the City is subject to resource consent from the Canterbury Regional Council.

A major activity involving the use of a river bed within the City is metal extraction from the Waimakariri River. Each year some 200,000m^3 of metal is removed. Gravel accumulation in the river has prompted suggestions to increase the rate of extraction from the river as an alternative to using the gravel of the plains.

Significant issues to arise from use of the river beds in Christchurch include; the modification or destruction of natural riparian and riverbed habitats, the effect on wildlife, the end use of sites after mineral extraction has ceased, and the placement of jetties and bridges and other structures.

3.2.6 Summary of water issues

Updated 14 November 2005

a. the threats to the quality of water of the City.

b. the increasing demand for water and sustaining the water resource to serve the future needs of the City.

c. resolving the conflicts between different recreational activities on the surfaces of rivers and estuaries of the City.

d. access to and along waterways and the coastline, recognising that access in some locations is restricted.

e. maintaining and enhancing the amenity and natural values of waterways and the coast.

f. the use of riverbeds for the placement of jetties and other structures and the excavation of minerals.

3.3 Air

Updated 14 November 2005

A range of activities in the City may affect air quality, particularly discharges of contaminants to air. Many desirable or acceptable activities and associated discharges may cumulatively contribute to these effects, giving rise to what is commonly known as "air pollution". Air pollution can affect people's health and damage buildings and plant life. Scientists predict that the climate may also be affected by pollution. In particular, the release of greenhouse gases into the atmosphere. In addition, pollutants can dissolve and wash into drains, contaminating the waters into which they flow. The effects of air pollutants are either concentrated near their origins or dissipate to affect the upper atmosphere. While Christchurch will share any world wide ill-effects of contaminants which reach the upper atmosphere, the City can only deal effectively with localised sources and their environmental effects. However, in doing this, the City does contribute to solving the overall problem.

The particular circumstances of Christchurch mean it is particularly susceptible to air pollution. Cold air draining from the Southern Alps and the Port Hills collects in the Christchurch "basin." This forces the air of normal temperature upwards. The warm layer then traps warm polluted air, preventing it from dispersing and therefore creating air pollution over the City.

Christchurch's air pollution is from a combination of industrial, commercial, domestic, and vehicle emissions.

Nitrogen dioxide, carbon monoxide and lead are all pollutants, released into the environment through the use of motorised vehicles. In Christchurch it has been calculated that during winter months, transport provides approximately 46% of nitrogen dioxide emissions. Petrol produced in New Zealand has, until the recent past, had one of the highest lead levels in the world. Recently however, lead-free petrol has become available.

While increased public awareness may have reduced the levels of domestic air pollution, however, it is likely that mild winters have been the major reason for any reduction.

Under the Resource Management Act, there is an overlap of functions between the City Council and the Regional Council in relation to air quality. The Regional Council is charged with controlling discharges of contaminants into air. District Councils are charged with controlling the effects of the use, development, or protection of land. Such effects may include effects on air quality. Unless a regional rule says otherwise emissions into the air as a result of the ordinary activities of people are permitted, for example, smoke from fires, and exhaust from cars. On the other hand discharges from industrial or trade premises are not allowed unless permitted by a rule in a plan or by a specific consent. The City Council cannot control the discharge of contaminants to air, but can influence the location of such discharges.

3.3.1 Summary of air issues

Updated 14 November 2005

a. the need to decide what level of air quality is desired now and for future generations.

b. the most effective and efficient means of achieving desired air quality.

c. the integration of functions between the Regional and City Councils in relation to air.

d. the question of odours that arise from activities, particularly industrial and rural processes.

3.4 Natural hazards

Updated 14 November 2005

New Zealand is a geologically young and active country subject to periods of heavy rainfall and with a coastline which experiences severe storms. This combination of natural features means that landslips, floods and coastal erosion are all events which could occur at any time. The active geologic processes can also result in earthquakes and volcanic eruptions. Although such events occur with less frequency, they have a very high potential to cause extensive damage. These events can be described as natural hazards and have been defined in the Act to mean:

"...any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire, or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment."

Within Christchurch there is risk from a number of natural hazards including:

- possible sea level rises;
- erosion of the coastline and rivers;
- erosion of the Port Hills;
- flooding from the rivers and the coast;
- damage caused by high winds;
- earthquakes; and
- fires in rural areas.

In the past the impact of natural hazards has often been regarded as unpredictable. Now there is increasing knowledge about the degree and nature of risks associated with natural hazards. When devastation from natural hazards does occur, lives are often at risk and property damaged can be significant. The effects of flooding and erosion can also damage or destroy sites or features of significance to Maori. The community, including those directly affected, has to pay the costs of damage through relief measures and insurance.

One response to hazards in the City has been to build protective works, but this approach is becoming increasingly expensive and is effective only against events of a limited intensity. In many cases it is recognised that the best means of guarding against the consequences of natural hazards is to avoid locations that are subject to the risk. However, a large part of the population and the economic activity within the City is established on river flood plains and in areas of coastal erosion and so already carries some degree of risk.

Both the Canterbury Regional Council and Council have responsibilities under the Act for control of the use of land for the avoidance or mitigation of natural hazards. The Regional Council has considerable knowledge about river and coastal processes that give rise to the major natural hazards. The Act requires the Council to hold records of areas subject to natural hazards and has considerable expertise in earthquake standards, flooding and erosion control measures.

Key issues for the City are to determine what degree of risk is acceptable for property and people already located in areas vulnerable to the impacts of natural hazards; to what level of cost, economic, social and environmental is the Council prepared to undertake works, or implement rules to mitigate possible effects of hazards and how (and by whom) should priority be arranged to carrying out such works and/or action, and in what areas. Another issue is how can the Council most effectively work with, and utilise the experience and expertise, of the Regional Council in particular, with regard to flood control issues. The Regional Council has responsibility in the wider Canterbury area of activities which may directly or indirectly affect what happens in Christchurch (in terms of natural hazards).

3.4.1 Sea level rises and climate change

Updated 14 November 2005

In the past three decades, scientists have reached a majority consensus that humanity is gradually setting in motion global warming by a mechanism commonly known as the ‘greenhouse effect'. Human activities have substantially increased the atmospheric concentrations of greenhouse gases principally carbon dioxide (CO2). Additional warming of the earth's surface and atmosphere caused by increases in these gases, could result in a rise in sea level (over a period of 50-100 years) by up to a metre, higher local temperatures, or changes in rainfall pattern and "storminess".

Sea level rise will be due mainly to thermal expansion and not ice pack melt, and it is therefore relatively uncomplicated to predict from a predicted temperature rise. Climatic changes on the other hand, will be regionally variable and complex. Consequently, these charges will be more difficult to predict. The consequences of these changes are likely to be quite significant. A rise in sea level of the magnitude predicted would threaten coastal and low land communities, the viability of some agricultural practices, and the world-wide distribution of vegetations.

The United Nations has recognised the problems posed by climate change and the potential for sea level rise around the world. Accordingly, it set up the International Panel on Climate Change. Its role is to evaluate actual and potential trends in climate change and to develop a process for decreasing world-wide emissions of greenhouse gases. Several international agreements, and declarations, have been promulgated in an effort to reduce world wide emissions. The most recent being the 1992 Framework Convention on Climate Change tabled during the Earth Summit at Rio de Janeiro, Brazil. It calls on countries to make further efforts to reduce greenhouse emissions. However, in spite of any future initiatives, climatologists generally now conclude that it is too late to prevent a global temperature increase of 1 ^{o}C to 3 ^{o}C per decade during the next century.

The effects of global climate change and possible resulting sea level rises in the resources of Christchurch are still uncertain but could include the following:

- saline water entering coastal aquifers;
- coastal flooding increasing in frequency;
- coastal erosion increasing;
- changes in the flow patterns and channels of river mouths;
- increased aggradation in the lower reaches of the Waimakariri River;
- increases in demand for irrigation of land;
- increases in animal pests but decreases in plant diseases;
- increases in temperate horticultural crops;
- changes in distribution and composition of flora and fauna;
- increased fire danger in forests and grasslands
- possible improvement in winter smog but increases in summer smog;
- decrease in base line river flows;
- changes in wetlands and freshwater ecosystems;
- changes in outfall conditions from stormwater drains and sewage treatment works; and
- changes in recreation activities on water with the growth of weeds.

The effects listed above represent a number of significant issues in the City. The major issue must be how to respond to these changes given the uncertainty in scientific knowledge and the potentially wide-ranging environmental impacts involved.

3.4.2 Erosion of the coastline and rivers

Updated 14 November 2005

Coastal hazards, in particular from erosion, require consideration regardless of whether the sea level is rising. A particular area where risks have been identified is the New Brighton Spit where historically there have been significant movements. This has been recognised in the past by the public ownership of the end of the Spit and restrictions placed on housing on the seaward side. Sand erosion is also a problem on the coastal dunes.

Issues include how to manage the coastal fringe in order to avoid serious erosional problems and to assess whether traditional methods of fore-dune stabilisation are still an appropriate method of mitigating the impact of this natural hazard. Erosion mitigation should be sympathetic to protecting the natural character of the coastal environment.

Although not a major problem in Christchurch, there are circumstances in which material may be deposited as a result of the natural flooding of rivers (alluvion) or more frequently by the scouring of banks and the alterations to flood channels (avulsion). The appropriate treatment of river banks to contain these movements is an issue.

3.4.3 Erosion on the Port Hills

Updated 14 November 2005

Tunnel gully erosion is occurring at a significant rate on the Port Hills. Erosion due to slope failure indicates not only a natural tendency to failure, but also poor land management practices. The problem highlights the limitations for various land uses on the Port Hills, for example, urban development farming and large blocks of monoculture forestry subsequent to harvesting. These uses result in quite different environmental effects, and influence and change erosion processes in different ways.

Key issues for erosion on the Port Hills are how to effectively control erosion now and in the future, for example by changes in land use patterns in particularly sensitive ways. Alternatives land uses include forestry, harvested in a sustainable and sensitive way, recreation and conservation.

3.4.4 Flooding from the rivers

Updated 29 June 2012

Christchurch is susceptible to flooding from a number of rivers, both within and outside its boundaries. Most of the Christchurch urban area, Belfast and Kaiapoi lie on the flood plain of the Waimakariri River. The flooding potential of the river poses a significant threat to the City.

The Heathcote River catchment lies entirely within the City and drains rural land on the Port Hills to the south, and the Wigram area to the west, and the southern suburbs of Christchurch and other urban settlements such as Oaklands, Hornby and Islington. The Heathcote is closely settled along at least two thirds of its length. The Woolston Cut diversion, opened in 1986 relieved flooding on the lower reaches of the river but the flood plain above Opawa Road is still prone to flooding. Difficulties with the stormwater capacity of the Heathcote River currently places some limitations on further urbanisation within the catchment of this river.

The Avon River acts as a main drainage channel for Christchurch and has been modified for this purpose. The Dudley Creek Diversion, Upper Dudley Creek Diversion and the Lower Avon stop banking have been effective in addressing the major flooding problems of the Avon catchment.

The Styx River is a small but significant river to the north of the urban area. It plays an important flood control role for the northern part of the City. Flooding from the Styx River normally occurs throughout the catchment once or twice a year, principally affecting residential and some rural property. It is usually caused by rapid runoff of stormwater, however there are other factors such as tidal influence and aquatic weed growth which may influence frequency, intensity and duration of a flood event. The river and existing catchment, including areas already partially developed, are prone to an increase in flooding. New buildings and paved areas will increase the volume and rate of runoff. The Styx catchment is also prone to flooding from overflow of the Waimakariri River.

A substantial amount of the drainage from Christchurch rivers discharges into the Estuary either through drains and pipes directly or via rivers. Some areas discharge to the Styx River, minor areas to the Halswell River via Nottingham Stream, and Parklands, Sumner, North Beach and other locations drain directly to the sea through separate stormwater outfalls.

An issue for the longer term is stormwater discharge from the airport area. The disposal of stormwater into the Styx may be considered for the future and water quality aspects are likely to be important.

While much of the Halswell River catchment lies outside the City, some parts are included within the City boundary. The River eventually discharges into Lake Ellesmere. Extensive areas of ponding occur in the lower and middle catchments, particularly after heavy south-westerly storms.

Flood protection works have been completed or are planned for most of the rivers running through the City. Issues remain as to whether additional development should be allowed in flood prone catchments or should development be assessed in terms of how much additional run-off it is likely to generate.

A further issue relating to flooding is determining the most appropriate flood management techniques. For example, these could include , depending on the level of risk, avoiding or ~~avoiding~~ managing further subdivision, filling , excavation and building, ~~of flood plains,~~ the use of retention basins and /or the adoption of more ‘natural' rather than engineered solutions to waterway management. **(Plan Change 32 Decision)**

3.4.5 Earthquake risk

Updated 14 November 2005

Christchurch lies on the edge of a seismically active region. Consequently, earthquakes are likely to occur at a magnitude which will have major impacts on the City. In addition, there are other areas of active faults close to Christchurch, including Pegasus Bay, Porters Pass, Ashley and Mt Grey, Hope and Lake Heron.

The two main hazards which result from earthquakes are earth deformation (ground surface rupture) and earth shaking (liquefaction, land sliding, ground-cracking, tsunamis).

Strong shaking associated with either a close small magnitude earthquake, or a large magnitude distant event could cause considerable damage to the City, in particular in urban areas.

While single or two storey timber-framed residential dwellings are unlikely to suffer much structural damage in these events, in some areas liquefaction (where the solid ground takes on liquid qualities due to increased pressures) could cause distortion of buildings. Damage to buried cables, water and sewage pipes could also occur.

The most susceptible areas to liquefaction are those with water saturated, loose, well soiled silt and sand. It is also common in peaty soils. Large parts of the eastern suburbs and area around the Heathcote River are underlaid by these materials.

The New Zealand Building Code requires designers to take account of foundation conditions, and most buildings built since 1960 have been designed in the knowledge that foundation conditions will have an effect on the response of the building to earthquake forces. Some of these buildings could be subject to cosmetic damage in a severe earthquake but severe damage to buildings built since 1980 is not a likely event. The old, squat masonry buildings of the city have not been designed to resist earthquakes and may be prone to damage if the earthquake event was relatively close and generated seismic waves which were of a predominantly short period. However, the effects of earthquake shaking on structures are likely to vary substantially across the City, depending on local differences in land forms, soils and ground water levels.

Tsunamis also represent a serious hazard, particularly for the eastern suburbs. Tsunamis originate from earthquakes on the sea floor and would be difficult to detect if originating relatively close to Christchurch.

Issues relating to earthquake risk include how to most effectively mitigate the effects of ground shaking on buildings and structures and whether areas particularly susceptible to liquefaction be controlled more rigorously than areas of little or no risk. The balance between the desire to retain heritage buildings and the need to protect these buildings from earthquake damage, will need to be addressed.

3.4.6 Fire risk in rural areas

Updated 14 November 2005

Experience with rural fires around Christchurch has revealed that there is a real risk of significant property loss from fire in parts of the rural area of the City. No measures can guarantee the protection of property, particularly dwellings, from fire, but the extent of property loss and trauma associated with disastrous fire can be great and need to be considered to reduce this hazard. The areas of highest risk in Christchurch City are:

- areas where reticulated water supplies are not available for fire fighting, and with difficult access;
- those areas to the west and north-west more subject to drought;
- hill slopes; and
- areas containing flammable vegetation, particularly in proximity to dwellings

3.4.7 Summary of natural hazard issues

Updated 29 June 2012

a. the relationships and responsibilities of the Council and the Canterbury Regional Council.

b. sea level rise will potentially have wide ranging environmental impacts, although the nature and extent of these impacts is uncertain given current scientific knowledge.

c. management of the coastline within the City in order to avoid serious erosional problems and management of the banks of the rivers.

d. recognition of the particular erosion difficulties of development and land use on parts of the Port Hills.

e. the effects of further development on the capacity of the rivers to avoid future flooding, particularly the Heathcote, and appropriate waterway management techniques.

f. recognition of the relationship between ground condition and susceptibility to damage to buildings from earthquakes.

g. the balance between the desire to retain heritage buildings and the need to ensure that these buildings are safe from significant damage from earthquakes.

h. the risk to property from fires in the rural parts of the City.

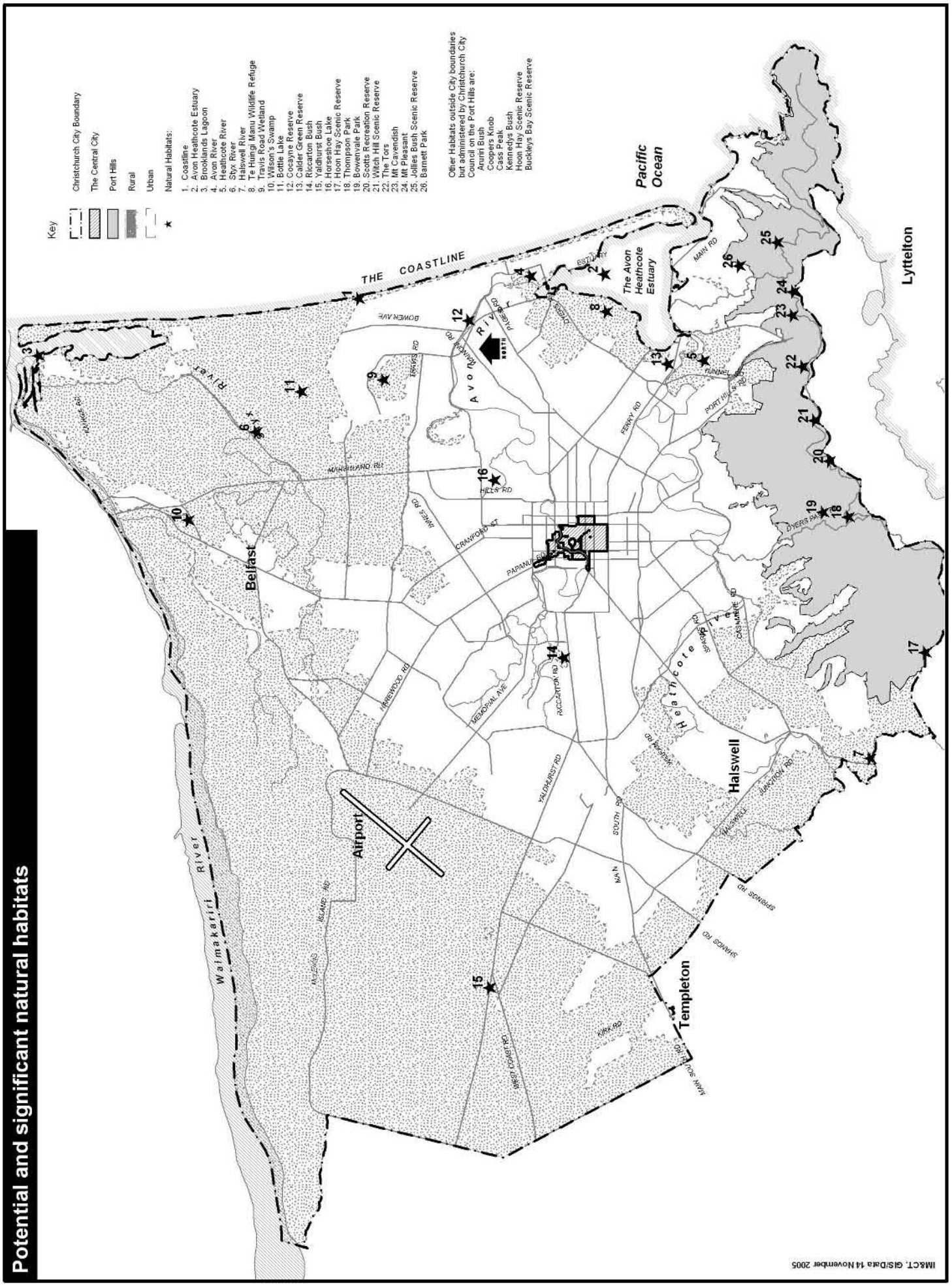
i. the effects of flooding and erosion on waahi tapu and other taonga.

j. the effects of flooding on people and their safety, well-being and property.

(Plan Change 32 Decision)

3.5 Natural habitats

Updated 14 November 2005


Potential and significant natural habitats
Key
Christchurch City Boundary
The Central City
Port Hills
Rural
Urban
Natural Habitats:
1. Coastline
2. Avon Heathcote Estuary
3. Brooklands Lagoon
4. Avon River
5. Heathcote River
6. Styx River
7. Halswell River
8. Te Hurinui Manu Wildlife Refuge
9. Travis Road Wetland
10. Wilson's Swamp
11. Bottle Lake
12. Cocayne Reserve
13. Calder Green Reserve
14. Riccarton Bush
15. Yaldhurst Bush
16. Horseshoe Lake
17. Hoon Hay Scenic Reserve
18. Thompson Park
19. Bowenvale Park
20. Scotts Recreation Reserve
21. Witch Hill Scenic Reserve
22. The Tors
23. Mt Cavendish
24. Mt Pleasant
25. Jollies Bush Scenic Reserve
26. Bannett Park
Other Habitats outside City boundaries but administered by Christchurch City Council on the Port Hills are:
Aruriri Bush
Coopers Knob
Cass Peak
Kennedys Bush
Hoon Hay Scenic Reserve
Buckleys Bay Scenic Reserve
THE COASTLINE
The Avon Heathcote Estuary
Pacific Ocean
Lyttelton
Belfast
Airport
Halswell
Templeton
Waimakariri River
Avon River
Heathcote River
IM&CT, GIS/Data 14 November 2005

Since settlement, habitat destruction and modification has accelerated to the point where some habitat types are no longer represented or are reduced to one example (such as Riccarton Bush, the last remaining fragment of swamp podocarp forest in the City). Many species of animals have been severely reduced in number or are now extinct.

Retentions and enhancements (where appropriate) of natural habitats within the City can have several benefits. Natural areas provide important habitat for fauna, provide a contrast to the human dominated built environment and have value irrespective of those related to human use, that is, intrinsic worth. In the City, a great variety of habitats exist, from the tussock lands on the Port Hills, to water based habitats such as along the coastline, estuaries, rivers and their banks, and wetlands. Overall however, there are few ‘natural' habitats remaining within the City. The scarcity of these resources makes it increasingly important that those that do remain are protected and enhanced where possible.

Pressures which in the past led to habitat destruction have not abated totally. Today, conflicts are numerous between active conservation and other land uses which detrimentally affect natural values. They can be broadly divided into those activities which compete with habitats and those where activities affect the quality of the habitats, for example, polluting the habitat.

3.5.1 Summary of natural habitat issues

Updated 14 November 2005

a. identification and where appropriate protection and enhancement, of significant areas of natural habitat and indigenous vegetation.

b. the most appropriate level of protection after consideration of alternative land uses and values associated with natural habitats.

c. how to control the effects of neighbouring or upstream activities which have detrimental impacts on areas of natural habitat.

d. the most appropriate and effective means of establishing links between areas of natural habitat.

3.6 Energy

Updated 14 November 2005

Christchurch, like the rest of the country, is largely reliant on non-renewable primary energy sources such as oil, gas and coal.

Table 3. New Zealand Primary Energy Consumption (PJ)					
Year	**Coal and wood**	**Oil**	**Gas**	**Hydro**	**Total**
1974	41	151	7	58	257
1988	55	147	52	94	358
1991	69	160	41	102	372

(PJ = Petajoules (=1015 joules)

Source: Ministry of Commerce

Annual energy consumption is increasing, and although the country produces enough energy to meet current needs, this will not necessarily be the situation in the future. It is in recognition of the future costs and availability of energy and the environmental effects of energy use that there is an increasing awareness of the need for energy efficiency and conservation. Existing rates of energy consumption cannot be maintained in the future. As global supplies of non-renewable resources become more scarce and New Zealand uses up its own known reserves, energy prices will increase. This may lead to pressure for exploration and investigation of sources. The costs of development of alternative sources will ultimately be reflected in the price to consumers. There are likely to be significant environmental issues arising due to these changes, for example the impact of hydro development on river ecology and river users.

Total energy consumption in Canterbury increased by about 2.7% per year between 1982 and 1992, an overall increase of about 31%. Transportation fuel is both the largest and the fastest growing energy consumption sector; it currently accounts for about 54% of regional energy consumption and increased by about 3.8% per year during the period (note transport includes vehicle, aviation and marine uses). Industrial/commercial energy consumption is the second largest energy consumption sector and currently makes up about 27% of regional energy consumption; it increased by about 1.4% per year. The domestic sector currently accounts for about 19% of regional energy consumption and increased by about 1.5% per year.

It is clear from these trends that with regard to energy consumption and issues of energy sustainability, transportation energy consumption is the most important sector.

3.6.1 Energy consumption in Canterbury by sector

Updated 14 November 2005

Transportation energy consumption increased by about 45% during the 1982-1992 period. Growth among transportation energy consumption sectors included: vehicle 18%, aviation 150%, rail (-3%), marine 300%. Thus the fastest growing sectors in transportation energy consumption are aviation and marine transport, both of which are heavily involved in transporting goods and passengers into and out of the Canterbury area.

Motor vehicle use is increasing in Christchurch. This is reflected in the increase in petrol sales over the eight years prior to 1993. Petrol sales in that part of the Canterbury region between the Waimakariri and the Rakaia Rivers increased by 18 million litres to 1993 to a total of 230 million litres over this period. Diesel sales have also increased to 97 million litres sold in the year to June 1993.

Industrial/commercial energy consumption is dominated by electricity (44%) and coal (26%). Electricity was the fastest growing source increasing by 47% during the 1982-1992 period (LPG and wood also significantly increased but they are far smaller portions of industrial/commercial energy consumption). Coal consumption showed a moderate increase of about 10% during the period.

Domestic energy consumption is dominated by electricity (75%), wood (16%) and coal (7%). Electricity and wood were the fastest growing sectors at 21% and 24% respectively between 1982 and 1992 (coal energy consumption declined by about 23%).

Table 4. Means of Heating for Christchurch Dwellings 1991

Types	Electricity Only	Electricity and Others	Gas Only	Wood Only	Coal Only	Wood and Coal	Oil Only	Other	Total Dwellings
Number	54,927	41,394	585	3,963	330	1,011	135	4878	107,223
%	51.2	38.6	0.5	3.7	0.3	0.9	0.1	4.6	100.0

Source: Statistics New Zealand, 1991 Census of Population and Dwellings.

3.6.2 Land use and pollution

Updated 14 November 2005

Recent studies have quantified the relationship between transport fuel use and land use patterns. This shows that low fuel use correlates strongly with high population density, highly mixed land uses, high use of public transport, low traffic speeds, and restricted provision of parking places and other facilities for the motor car. (Newman & Kenworthy, 1989)

Land use planning and controls relating to urban form represent important mechanisms in reducing transport needs (and hence energy use) in the City. However, land use planning on its own is unlikely to achieve efficiencies in the short term, and other more direct factors such as advances in technology will also have a significant impact.

Apart from their high energy demands, motor vehicles are a major source of smog and carbon dioxide emissions, so making a significant contribution to the build up of greenhouse gases in the atmosphere.

Estimated emissions from on-land transportation dominate the emissions released in urban Christchurch for carbon monoxide, oxides of nitrogen and hydrocarbons. As more and more fuel was burned for on-land transportation, estimated emissions continued to rise for these pollutants.

The industrial/commercial sector dominates emissions of sulphur dioxide, although emissions have declined due to a decline in the use of fuel oils.

The domestic sector dominates emissions of smoke, attributable to wood and coal fires. Estimated smoke emissions have declined slightly, most attributable to declines in the use of coal as a domestic heating source. There was an increase in estimated domestic smoke emissions in 1992 due primarily to increased coal consumption (coal sales increased corresponding to the power shortage and a decline in domestic electricity consumption).

There is a growing awareness in the community that there needs to be more effective and committed promotion and implementation of energy efficiency measures in all aspects of the City's business and domestic life. Recent power shortages aptly served to highlight the fact that energy resources are not limitless and that the revision of present levels of energy consumption may be needed. Savings made by consumers in mid 1992 when hydro lake storage dropped to an all time low reveal that conservation measures can be implemented and that significant reductions in consumption levels can be achieved.

While policy directives on energy related matters are largely the concern of central government, the City Plan can assist in the promotion of greater energy efficiency within the community, in particular in areas of city form and transport.

3.6.3 Summary of energy issues

Updated 14 November 2005

a. the effects of increased use of fossil fuels for home heating and transport on a local and global environment, particularly air quality and global warming.

b. how to achieve long term energy efficiencies in a manner that does not impose unsustainable short term costs on businesses and households.

3.7 Waste management

Updated 14 November 2005

In the year 1994/95 Christchurch produced 249,000 tonnes of waste. About 52% of the waste was from commercial sources and 48% from domestic sources. The recent trend has been for commercial waste to increase, partly attributable to an increase in business activity in the city and partly to households using commercial collectors. The waste stream can be broken down into:

7,800 tonnes green waste diverted to the compost plant;

37,900 tonnes domestic collection;

9,700 tonnes Council operations;

126,300 tonnes commercial operators;

67,000 tonnes domestic vehicles to transfer stations.

The present system of refuse disposal in Christchurch, consists of three refuse transfer stations at Sockburn, Redwood and Bromley and a single landfill site at Burwood.

A weekly refuse collection service for bagged refuse is provided to all Christchurch households and businesses. Where this is not sufficient householders and businesses may take their refuse to one of the three stations by private vehicle or use one of a number of private collection companies. The weekly refuse collection currently also collects newspaper for recycling.

The single largest component of the City's refuse is garden waste. In 1994 the first stage of a planned 46,000 tonne per year garden waste composting facility was completed on land adjacent to the Eastern Transfer Station on Metro Place, Bromley. When fully developed the composting facility could take up to 20% of the City's total refuse from landfill disposal. A city-wide kerbside recycling collection will also be implemented. It will collect newspaper, glass, aluminium cans, steel cans, and selected plastics each week from all City households.

There are a number of recycling schemes operating within Christchurch. These include the Resource Recovery centres at the transfer stations, and a number of community ‘drop-off' points, currently collecting various types of glass, plastic, aluminium and clothing around the city. There are a number of private recycling companies in the City collecting metals, glass, papers and plastic from predominantly commercial/industrial sources or the transfer station recycling centres.

Approximately 70% of metal waste is recycled while only 25% of paper and 30% of glass wastes are recycled.

In 1993/94 just under 30,000 tonnes of material was either reused or recycled in Christchurch. Information is currently not available as to the composition of this material.

During 1993 the Council developed a Solid and Hazardous Waste Management Strategy for Christchurch. The strategy was developed through extensive community consultation. The strategy's target is a 25% reduction in the weight of solid waste to be landfilled over 5 years. This target will be achieved through the promotion of source reduction/cleaner production, composting and recycling, including appropriate collection systems.

3.7.1 Summary of waste management issues

Updated 14 November 2005

a. the need to reduce the actual amount of waste generated in the City.

b. the need to increase the amount of material recovered and recycled in the City;

c. the continual search for the best methods of waste disposal and the particular problems of dealing with hazardous wastes.

d. the future capacity of the present landfill site at Burwood.

3.8 The population of the City

Updated 16 November 2009

The total population of the City at the 1991 Census was 292,854 people of which 287,304 were New Zealand residents in the City on census night and 5,553 were overseas visitors. This was an increase of 6,258 or 2.1% from the 1986 Census and compares with an increase of 8,640 or 3.1% during the previous 5 years (1981 to 1986).

Statistics New Zealand's estimate of total population for March 1993 was 297,600.

Of the total Christchurch resident population of 288,246:

- 148,896 or 52% were female.
- 81,222 (28%) were aged 19 years or under, 155,178 (54%) were aged between 20 and 59 years and 51,855 (18%) were 60 years or over.
- 259,767 (90%) were European, 15,300 (5%) Maori, 4,920 (2%) Pacific Island and 2,832 (1%) Chinese.
- 245,337 (85%) were born in New Zealand and 20,646 (7%) in the UK.

The City's future population is influenced by changes in fertility, mortality and migration. Variation in these components alter the rate of population growth and the size of the population in various age groups at different points in time.

Since 1983 there has been a minor resurgence in New Zealand's fertility rate. In 1983 the national rate was 1.92 births per woman and this had risen to 2.19 in 1991. Current rates, however, are barely sufficient for the population to replace itself, without migration. In the short term it is expected that the trend of increasing fertility will continue. This reflects the making up of births by women in their late twenties and thirties who deferred child bearing at younger ages. In the longer terms it is expected that national fertility rates will decline.

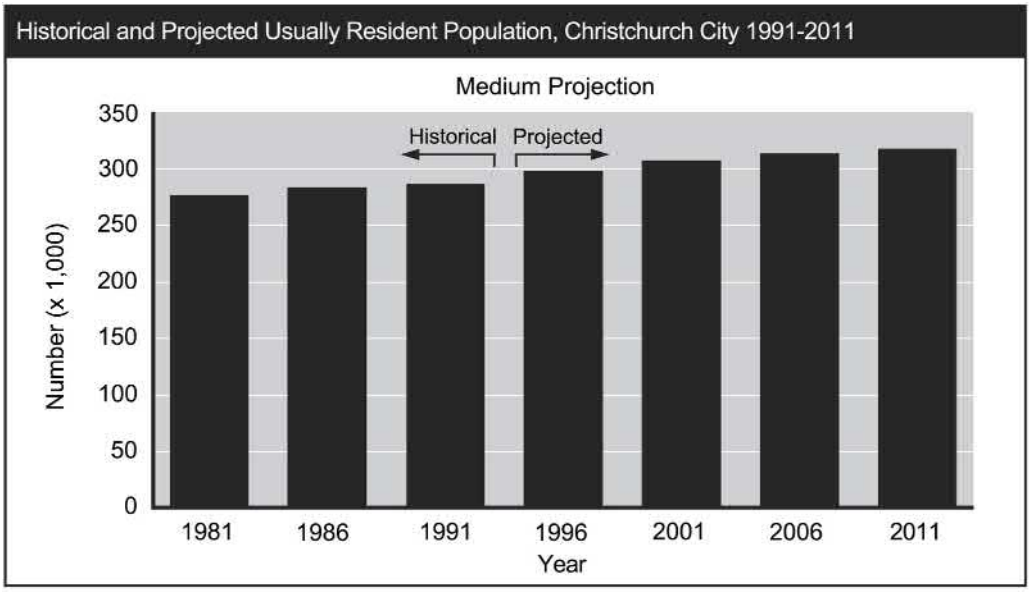
The fertility level for Christchurch was 1.7 births per woman in 1991. According to 1991 projections, the fertility level for the City will increase slightly until 2001 then decrease from 2006.

Christchurch has a mobile population; 87,765 (33%) of its residents moving to other addresses within the City over the 5 years to 1991. During the same period, 18,720 residents moved to locations elsewhere in the South Island, 12,765 moved to the North Island and it is estimated that about 17,500 people moved overseas. People moving into Christchurch over the same 5 year period totalled 48,684; 23,343 from elsewhere in the South Island, 13,743 from the North Island and 11,598 from overseas.

Christchurch also attracts a number of overseas immigrants. Between 1986 and 1991, 6,495 settled in the City. The majority of immigrants were from Asia, the UK, Australia, and the Pacific Islands.

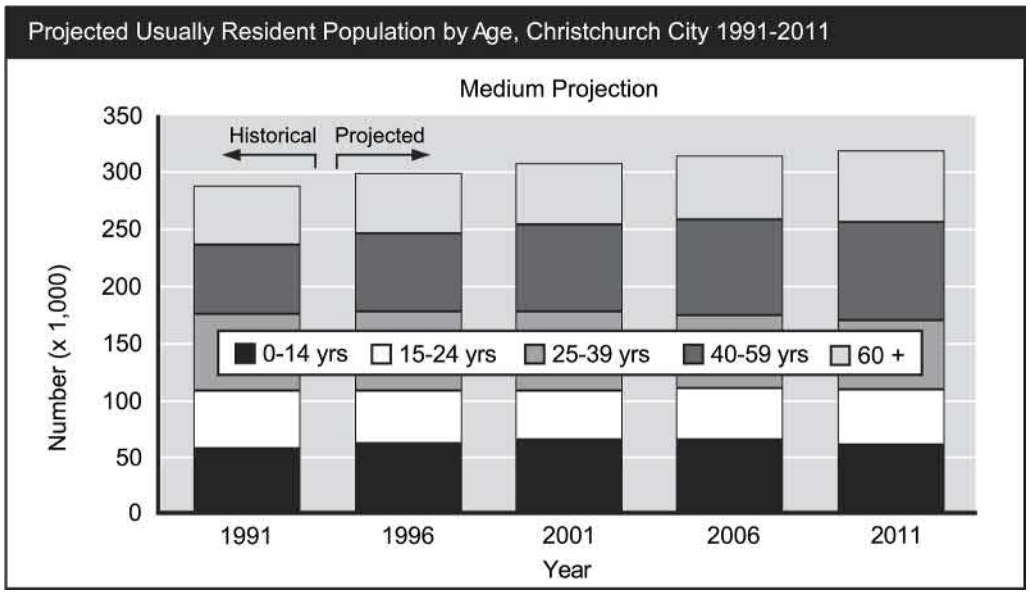
Population projections (medium series) for Christchurch show an increase in the City's usually resident population over 20 years from 1991. Projections based on the 1986 census estimated an increase of 10,000 people between 1991 and 2011 from around 288,000 to 298,600. However, growth exceeded estimations during this period and the City's resident population increased to over 316,000 by 2001. Additionally, significant population increases were experienced in the City's neighbouring Districts. Projections based on the 2001 census estimate Christchurch City's population will increase to 358,000 by the year 2021 [(1)].

(1) Statistics New Zealand Sub national population projections, November 2002, Medium projection

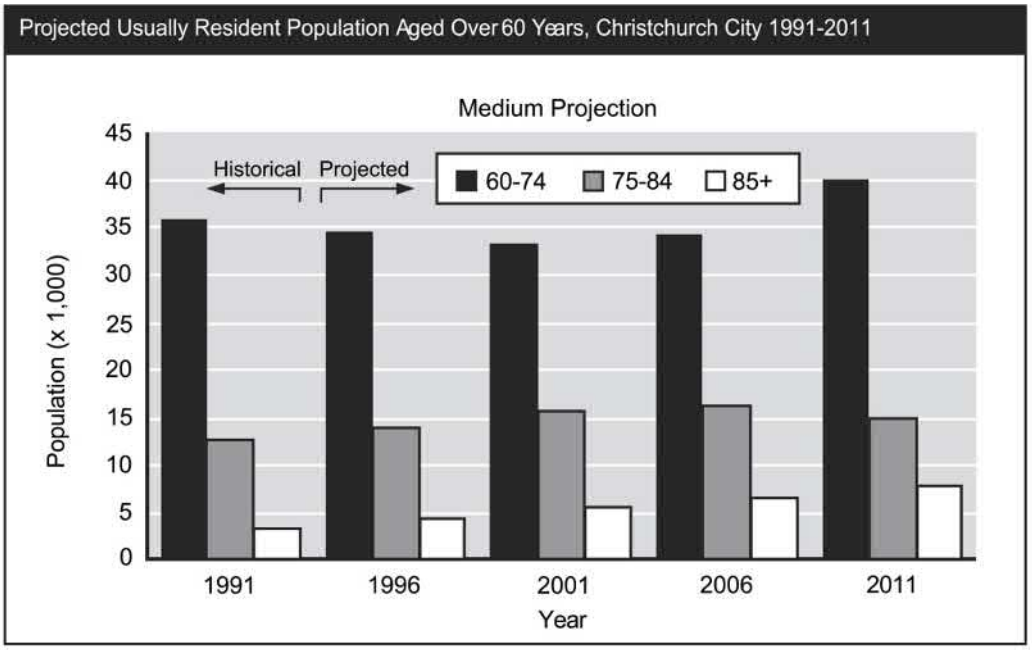


Source: Statistics New Zealand, 1991 Census of Population and Dwellings and Population Projections (1991 Base)

It is important to note that population projections are not exact forecasts; they illustrate what the changes in population size, growth rate and age-sex structure would be if the stated assumptions apply over the projection period.



Life expectancy will also rise. Women's life expectancy will increase from 77.9 in 1991 to 81 years in 2011 while the life expectancy for males will rise from 71.8 to 75.2. Another significant feature of the ageing population is the increase in the number and proportion of elderly people in the very old age group (85 years plus). They will represent 12.5% of the total elderly population in 2011 compared to 6.5% in 1991.



Source: Statistics New Zealand, 1991 Census of Population and Dwellings and Population Projections (1991 Base)

The projected changes in age structure are brought about by the movement of the 1950's and 60's baby boom population through the life cycle, increased longevity and the general trend towards lower birth rates. The post war baby boom individuals will reach retirement age about 2010 and it is during this period that Christchurch and New Zealand will begin to see the effects and the needs of its ageing population.

The ethnic make-up of the City in 1991 is shown in Table 5.

Table 5. Ethnic Makeup of the City (%)		
European	259,767	90.1
Maori	15,300	5.3
Pacific Island	4,920	1.7
Chinese, Indian	3,576	1.2
Other	4,686	1.6
	288,249	**100.00**

Source: Statistics New Zealand, 1991 Census of Population and Dwellings.

3.8.1 Summary of population issues

Updated 14 November 2005

a. a steady increase in the numbers of people living within the City over the next 20 years.

b. the increasing median age of the population as a whole, and an increase in immigration from Asia.

c. whether there is sufficient residential land to cater for anticipated increases in population and its suitability for elderly persons' accommodation.

d. the adequacy of the City's resources and services to absorb population changes.

e. the most appropriate places for residential expansion.

3.9 The Maori people and resources

Updated 14 November 2005

In 1991, 5.3% (15,300) of the City's population specified belonging to the Maori ethnic group. Of this figure, around 5,000 indicated that they also had European, Pacific Island and/or other ethnic origins. Youthfulness is the central characteristic that distinguishes the Maori from the European population age structure. Its youthful age structure is reflected in the high proportion of the Maori population in the under 20 age group (49.2%) compared to the European population in the same age bracket (26.4%). In contrast, elderly Maori (age over 60 years) comprise a significantly smaller proportion of the Maori population (2.7%) compared to the European (19.5%).

According to the 1991 Census, the highest concentrations of Maori population within the City are in Aranui, Hillmorton, Hornby, Linwood, Phillipstown, Sydenham and Parklands.

The Act acknowledges the significance of the Treaty of Waitangi and requires those managing the use, development and protection of natural and physical resources to take into account the principles of the Treaty.

The Ngai Tahu have set out their beliefs and values and have suggested policies for District Plans in "Te Whakatau Kaupapa" (Ngai Tahu Resource Management Strategy for the Canterbury Region, November 1990) and in a report prepared for the Council (Ngai Tahu and Ngai Tuahuriri input to Christchurch City Council Plan Review, December 1992) from which much of the following has been taken.

Prior to Ngai Tahu migration the two principal tribes in the South Island were Ngati Mamoe and Ngati Waitaha. However, both of these more ancient tribes, now merged with Ngai Tahu, have well recognised genealogical and historical connections with older tribal entities in the far north of the North Island and some other northern tribes. A number of much smaller early tribal groups are also known in the traditions of Ngati Waitaha and Ngati Mamoe, as being Tangata Whenua groups who preceded them in even more ancient times in Te Wai Pounamu. Today, Ngai Tahu Whanui represents the three principal historic tribes of Te Waitaha, Ngati Mamoe and Ngai Tahu.

In pre-European times, the wider Christchurch area included a number of tribally important sites. For example, Opawaho (present day Opawa) was a resting place for Ngai Tahu travelling between Kaiapoi and Banks Peninsula. The Christchurch area has traditionally been a mahinga kai of the Kaiapoi Ngai Tahu. Although Ngai Tahu have always been present in Christchurch, their numbers began to increase during the 1930s. Ngai Tahu came from Tuahiwi and Rapaki. Others came from Wairewa, Port Levy (Koukourarata), Akaroa and Murihiku.

Otautahi was formerly the name of a specific site in central Christchurch and it was this name that was adopted by Mr Te Ari Taua Pitama of Ngai Tuahuriri as the general name for Christchurch in the 1930s. Before this, Ngai Tahu generally referred to Christchurch as Karaitiana.

Later in the 1950s and 1960s, Christchurch became a settlement for North Island Maori who migrated to Te Waipounamu to work in the freezing industry.

Consultation with the Tangata Whenua in the Maori world is complex. The consultation process (depending on the resource) may involve individual representatives of families, a mixture of families, a Kai Tiaki, a collection of Kai Tiaki, the Hapu and for certain resources the Tribe of Ngai Tahu. Such a process is based on the history of the resource and its associated people.

The area covered by the City lies within the Takiwa of Ngai Tuahuriri. The identification of Tangata Whenua rights to this region are identified by succession to an ancestor who was allocated lands to the area in 1868 by the Native Land Court. Such land allocations identify the ancestors who possessed turanga waewae at that time and provides for the identification process of their descendants and future descendants. Such persons are referred to as Tangata Whenua and within the City are of family groupings belonging to the Hapu of Ngai Tuahuriri.

Te Runanga O Rapaki is a hapu of Ngai Tahu and has tangata whenua status. The Runanga represents the interests of the Maori residents and landowners focusing on the Lyttelton Harbour and surrounding lands up to the ridge line of the Port Hills. Te Runanga o Rapaki is therefore a body to notify on issues of mutual concern.

Waahi taonga is the word that Ngai Tuahuriri uses to convey the meaning and intent of waahi tapu. Waahi taonga is defined as all those resources that sustain life and that are culturally and historically important to Ngai Tuahuriri and Ngai Tahu whanui. It is the term used to identify those resources that require consultation with the Council about their use and future management.

Locations and features which have been identified in this context include:

- the coastline;
- the Styx, Avon, Heathcote and Halswell Rivers;
- the Avon-Heathcote Estuary and Brooklands Lagoon and their environs;
- the Waimakariri River, including the South Branch;
- Horseshoe Lake (Te Oranga);
- Travis Swamp;
- South Brighton Domain (Te Kai A Te Karoro);
- Waitikiri, Bottle Lake and Spencer Park area;
- Otukaikino (Wilsons Swamp); and
- the Coringa area;

Of great significance are urupa (burial sites) which contain the bones of celebrated ancestors, gone but not forgotten. Knowledge of urunga is often only retained by certain individuals within iwi who may not always be willing to disclose locations of urunga for fear of disturbance.

Apart from the natural resource and heritage matters, referred to above, the social and economic well-being of Maori people is important to the City as a whole. Ngai Tahu have identified a number of areas which they are interested in developing including tourism and housing. Proposals covered include developing resources returned from the Crown as settlement for Treaty claims and joint ventures with the Council.

Christchurch has two urban marae. The first of these, Te Rehua in Springfield Road was established in the 1950s when Christchurch became a settlement for North Island Maori who immigrated south to work mainly in the freezing works industry. (This marae also includes a hostel which supports newly urbanised Maori learning trades in the City. Roseneath House in Papanui Road and Te Kaihanga in Riccarton are hostels only, catering for the young, working and predominantly Maori.)

Nga Hau E Wha National Marae, developed in the 1980s in Pages Road, has been established as a national Marae. The land on which the Marae is situated is set aside as a Reserve under the Maori Affairs Act 1953. Its purpose is described "... for the common use and benefit of a National Marae .. and ... for the people of New Zealand." It has important social, cultural and religious uses and serves as a gathering place for all people and their visitors. The Marae is also a multiple resource centre providing training for employment and (market gardening) a marae based tourism venture.

Te Rau Oriwa in Phillipstown and Te Rangimarie in Gloucester Street have religious affiliations and should be regarded as Maori community centres.

There are currently twelve Kohanga Reo in Christchurch. Two kura kaupapa (Maori-based) schools have been established in Christchurch. The kura at Opawa being the first of its kind in the South Island. Te Wai Pounamu Maori Girls' College, formerly a school and later a college hostel for Maori school girls, is now a Maori cultural centre incorporating a hostel and educational facilities.

3.9.1 Summary of issues of concern to Ngai Tuahuriri

Updated 14 November 2005

a. the youthful nature of the Maori population.

b. the drainage of wetlands and river courses.

c. the disposal of wastes, discharges to waterways and the maintenance of water quality.

d. access to, and along, waterways and the coastline.

e. the protection of burial sites.

f. development with the Council of policies and projects for tourism and housing.

g. provisions for the Nga Hau E Wha National Marae.

h. consultation when developing policies and projects affecting the above.

3.10 Housing

Updated 16 November 2009

Christchurch's housing stock represents one of the City's most important resources. The capital value of residential properties totalled $12.5 billion in 1992, 68% of the total value of the City. Some 73% of the land within the urban part of the City is given over to residential activities and related uses.

In 1991, the City contained 107,223 private dwellings of which 79,128 (74%) were separate houses and units and 27,711 (26%) were units joined together within blocks. The average occupancy of all dwellings was 2.7 people per unit. There has been a steady reduction in this figure since 1971 which reflects the trend towards smaller households and the increasing proportion of smaller units now being built.

Of the 107,223 dwellings, 79,371 (74%) were owned and 24,396 (23%) rented. One family households occupy 73,290 (68%) of the dwellings and single person households, 24,560 (23%). In terms of family structure, of the 75,288 families in the City, two parent families make up 34,155 (45%), one parent families 13,161 (17%) and couples 27,972 (37%).

According to the 1991 household projection (medium series), the number of households living in permanent private dwellings in the City was projected to increase by 17,218 or 16% between 1991 and 2011. Significantly, however, private dwellings increased by over 15,500 in the decade from 1991 to 2001, with building consents and other indicators pointing to ongoing City growth of a similar magnitude. In addition to this growth, the most recent household projection based on the 1996 Census estimates that by 2021 the number of households in the City will reach 146,800. (2)

In addition, the steady decline in the average number of people per household is expected to continue next century. By 2011, the average occupancy rate is expected to fall to just under 2.6 persons per household.

3.10.1 Historic patterns of housing

Updated 14 November 2005

Christchurch has expanded outwards from the centre, suburb by suburb. Exceptions have been where settlements had become established earlier around localities such as Papanui, Belfast, New Brighton, Woolston and Sumner. After 1945, outward development accelerated particularly to the west and north of the metropolitan area, with some loss of good agricultural land.

Until the 1950's, the predominant housing form was the single detached dwelling. In the 1950's and 1960's, a trend to multi-unit development emerged with the conversion of dwellings into apartments in the inner suburbs of Christchurch. Here, the older housing stock, particularly large one and two storey wooden buildings, lent themselves readily to modification and alteration. Gradually, as the market for this type of accommodation became satisfied, the trend towards new apartment units began to develop.

The significant trends of the 1970s and 1980s included slower peripheral expansion of housing onto the plains and hill suburbs, increasing infill within existing areas, some high rise development and a move towards upgrading and adapting existing houses as an alternative to replacement. There was also a demand for some housing in rural areas, evidenced by the number of applications for permits to build dwelling houses beyond the current periphery of the urban area.

Over the past 30 years, outer expansion of the urban City has been contained by regional "green belt" policies. The urban form which has now developed is still therefore relatively compact. An indirect effect of the "green belt" policy is the creation of more infill housing.

During the 1970s and 1980s, there was growth in the number of second units added to sites in the outer suburbs and the continued redevelopment of the inner suburbs. What this illustrates is a change of emphasis from the urban sprawl of the 1950s and 1960s to more infill developments during the 1970s and 1980s.

The overall residential density of the urban part of the City is now 16 persons per hectare, but within that area, densities range from 35 persons per hectare in inner city areas such as St Albans, to 15.6 persons per hectare in suburban areas such as Hillmorton. The greatest density of development is found around the

(2) Statistics New Zealand Sub national Household Projections January 1999

central city. The remainder of the City is suburban in scale and density with some increase in residential densities occurring in the vicinity of a few of the suburban shopping centres, such as Riccarton and Papanui.

Residential housing patterns of inner city population loss, ageing inner city housing stock and peripheral urban sprawl were the major issues in the 1960s and 1970's and provided the key to residential policies adopted at the time. Essentially, those policies set out to:

- contain the uncontrolled outward spread of the City, while still providing some opportunities for new suburban housing;

- stabilise and enhance the amenity of the older residential areas located around the central city; and

- provide increasing opportunities for infill redevelopment throughout the City and encourage renovation of existing dwellings.

To a large extent, these policies have achieved what they set out to do; outward spread is now quite tightly contained to the extent that there is now little undeveloped land left within the urban fence; the population of the inner city has stabilised and progress has been made with improving the general amenity of these areas; and infill is now increasing to the extent that for some years, more units have been built than houses. Of course there are other factors other than planning policy affecting such trends including changing social patterns resulting in smaller households, changes in lending policies which no longer favour new housing, and changing life styles.

Between 1945 and the early 1980s, there was recognition of the need for more public effort in residential urban renewal within older parts of the City. It was anticipated that an expanded public residential renewal programme would provide a catalyst for private redevelopment in the older and less attractive areas. The Council (aided by Government subsidy) undertook a major urban renewal programme in Salisbury Street, and in the suburbs of Sydenham, Waltham and Addington. This has brought some confidence back into older residential areas that were on the fringes of the city centre. Since 1983 however, Government support for these programmes has been withdrawn and Council activities have been limited to improving public spaces such as roads and parks.

Apart from these Council efforts, a very large amount of private redevelopment has taken place in the inner city. Over 8,600 new units have been built since 1957 and it is estimated that half of the households in the inner city are now apartment units. Nevertheless, 6000 dwellings remain and the conservation of those in sound condition is important to retain a social balance, provide some choice of housing types particularly for family groups and to retain some of the open landscape character.

3.10.2 Some of the consequences of post 1945 housing patterns

Updated 14 November 2005

During the period 1945 to 1966 a 30% decline in population (12,788 people) occurred in the inner city areas. This was due to a combination of reasons, some connected to the absence of planning controls at that time, and included:

- reduction of family size and the ageing of population in the inner areas;

- outward growth of central city industrial and commercial activities;

- little restraint on outer suburban growth and availability of flat, well drained land on the periphery of the City; and

- low interest rates for new family housing loans, 3% in the 1950s and 1960s;

The effects of outward growth, the ageing of inner city housing stock and loss of inner area population had the following effects, relevant to planning issues connected with housing:

- housing obsolescence began to occur in the inner district with little natural renewal;

- the reduction in the proportion of the population living close to and using inner city public services and facilities such as schools and churches, reduced;

- the proportion of the population using central shopping facilities reduced considerably as suburban shopping centres established and expanded in areas where people were living;

- the proportion of the population employed in the central area reduced as other places of employment established in the suburbs;

- those employed in the central area tended to have longer journeys to work, and this resulted in a progressive build-up of traffic at peak times particularly on the inner roads;

- public transport service patronage declined because of the increasingly dispersed nature of the City and the rise in popularity and accessibility of the motor car;

- the overall population density of the urban area tended to reduce; and

- pressure to expand commercial and industrial activities into older housing around the inner city continued.

3.10.3 Recent housing trends

Updated 14 November 2005

The proportion of houses erected compared with flats has changed markedly since the 1960s. In more recent years (since 1985) the number of units erected has increased to the extent that they exceed the numbers of houses built. Units are usually smaller dwellings sharing a site with other units.

Of the 14,900 houses and units built since 1985, 5,700 were traditional houses on their own lots. Most of these were within new subdivisions in the suburbs. 9,200 were new units of which 2,300 were on new allotments, 3,600 were units added to existing sites, and 2,300 were redevelopment of a site where a house previously stood or conversion to residential use.

Table 7. Residential development 1986-1994

Year	Houses%			Apartments %				Grand Total
	New Sites	Redevelopment	Sub Total	New Site	Added Unit	Redevelopment	Sub Total	
1986	44	2	47	31	9	13	53	100
1987	45	1	34	24	29	13	66	100
1988	29	2	31	19	39	11	69	100
1989	31	2	33	17	37	13	67	100
1990*	41	1	43	23	17	17	57	100
1991	33	1	34	24	29	13	66	100
1992	29	2	31	19	39	11	69	100
1993	31	2	33	17	37	13	67	100
1994	32	1	34	13	34	19	66	100
Average	**38**	**2**	**39**	**23**	**23**	**15**	**61**	**100**

Source: CRC 1986-1990 (March years), CCC 3 months to June 1990, 1991-1994 (June years)

Notes:

*1990 - 15 months

Redevelopment	- where a house or one or more apartments are built on a site where a house previously stood or where commercial or industrial buildings are concerted to residential use.
Added Unit	- where one or more apartments are added to a site where there is already a house.

3.10.4 Design and siting of housing

Updated 14 November 2005

The design and siting of many of the early units which were built in the inner residential districts was of a low standard. Development was on narrow sites mainly because older housing stock, ripe for demolition and redevelopment, occupied such sites. Planning controls were introduced in the late 1960s to prevent the "barrack" type design; that is, the siting of long narrow blocks of units at right angles to the road on similar shaped sites. These controls penalised narrow sites by reducing their capacity to accommodate more than one or two units. Apartments were required to be stepped in plan, the frequency of steps depending upon the width of the site. Physically separated units could also be built and still be classified as apartment units.

Subsequent policy reviews sought to encourage development which was free from the restraints imposed by existing title boundaries. Comprehensive development allowed the amalgamation of existing titles within which the normal requirements of siting could be waived and a greater range of building relationships introduced. Some schemes introduced a range of performance standards in substitution for the traditional bulk and location requirements. Developments were required to meet standards for private open space, parking, servicing, privacy and utility space.

Residential amenity to a very large extent is determined by the layout of housing on a site and the relationship of houses to each other. This is the reason for the traditional requirements of site coverage (the proportion of a site on which development is permitted), distances to boundaries (yard requirements), maximum building height and provision of outdoor living space and service areas. They are designed to achieve some privacy for residents, protect outlook and some views, and to ensure adequate open space and room for street planting.

The increasing amount of infill throughout the City and redevelopment within the inner city, has had an adverse effect on many people's perceptions of amenity. In suburban areas, the addition of units behind existing houses and the relocation of garages to front yards can have this affect. The removal of existing houses and replacement typically by 4-5 units can have similar effects on the inner city environment.

3.10.5 Vacant land

Updated 14 November 2005

An analysis of vacant land in the City has shown that, at 30 June 1994, there was approximately 1060 ha of vacant land zoned for residential use. Of this total, 260 ha has already been subdivided yielding 2,700 allotments, 700 ha is capable of subdivision, and 100 ha is under some form of restraint, which limits immediate subdivision. Of course at any one time not all this land would be available for development. This land does not include existing developed residential sections, which are potentially available for infill development or redevelopment to greater densities.

The number of large blocks of land available for subdivision is decreasing as the City develops within the constraints of the urban fence. At 30 June 1994, there were only 9 remaining vacant blocks greater than 10 ha in area. The major areas still available for subdivision are concentrated around the Port Hills, Bexley, Travis Swamp and Parklands. Additional land has become available within the City from time to time, for example by way of zoning changes, minor extensions to the urban fence, the removal of redundant industrial uses or the replacement of non residential uses in areas currently zoned residential.

There is also potential for infill and redevelopment within the existing urban area of the City as discussed. The limits of this potential would not be reached during the next 20 years. Such infill and redevelopment can take various forms, such as:

- adding to an existing house, perhaps joined by a garage;
- adding a unit separate from the existing house;
- demolishing the existing house and replacing it with say, 2-6 units; or
- staged development, adding a new unit initially with the intention of eventually replacing the old house.

If the present distribution of development between houses and flats, and between infill and new subdivisions was to continue, approximately 61% of the new households expected in the next 20 years would need to be accommodated on newly subdivided allotments over this time.

The future demand for "greenfield" residential land depends on three main factors; the rate of household growth, whether these market driven households are developed utilising existing sections, and average housing density. Assuming that;

- household growth will be at the rate projected by the Statistics New Zealand (1991 base) using its medium growth assumptions;

- 55% of households are created on greenfield sites, ie. less than the 61% in the past due to a greater proportion of small households likely to be created; and

- the average density is 14 households per hectare for "greenfield" development;

then around 600-700 hectares of vacant land could be expected to be taken up during the period 1991-2011. This is equivalent to 30-40 hectares per year, significantly less than the 50-60 hectares over the 1986-91 period. However, the rate of take up could vary depending on how the factors described above evolve in the future.

The key issue is whether the Council should intervene to control or influence the manner in which more urban land is made available to replace that being taken up. If it does intervene then decisions are necessary on how much land should be made available and where it should be located.

Less vacant residential land would be required if increases in the numbers of small and ageing households are accommodated in units, particularly if these are developed as infill or redevelopment in existing areas. Similarly, less land may be required if the numbers of people living in a single household increases, due for example to economic circumstances. More vacant residential land will be required if substantial growth, of which the level of internal and external migration are factors, continues to occur.

3.10.6 Summary of housing issues

Updated 22 May 2006

a. the increasing number of people, the changing nature of households and the diversity of lifestyles expected within the City over the next 20 years;

b. the location of new housing in relation to places of work, leisure and shopping and the resulting transportation and energy consequences;

c. maintenance of the coherence of established residential areas in terms of activities and visual character, while at the same time providing for change;

d. the availability of network infrastructure such as roading, water, drainage, power supply and community infrastructure to new areas of housing and the ability to provide for redevelopment within existing areas;

e. avoidance of the adverse effects of the outward growth of housing on the natural and physical resources of rural areas;

f. the general effect on amenity of the increasing "infill" within suburban housing areas and redevelopment of older areas close to and within the City centre;

g. the identification of areas of special amenity which need additional attention in order to retain character in relation to building height, set-back, and appearance;

h. the relationship between protecting character and coherence of established housing areas on the one hand and outward growth and its affect on natural and physical resources, on the other;

i. reduction in the stock of boarding houses in the inner city and the implications for tenants with little housing choice;

j. the extent to which opportunities for higher density housing are provided;

k. the balance between the development and redevelopment of land for housing and the need to respect matters of local amenity as they affect neighbours, including access to daylight and sunlight, outlook, privacy, views, and car parking;

l. how best to cater for aspects of amenity within sites which affect future occupiers of housing including minimum standards of open space, service space and layout;

m. the need to avoid, remedy or mitigate adverse effects which can result from the development of greenfield sites around the city for future housing;

n. the scope for medium density housing in association with new areas of greenfield urban development;

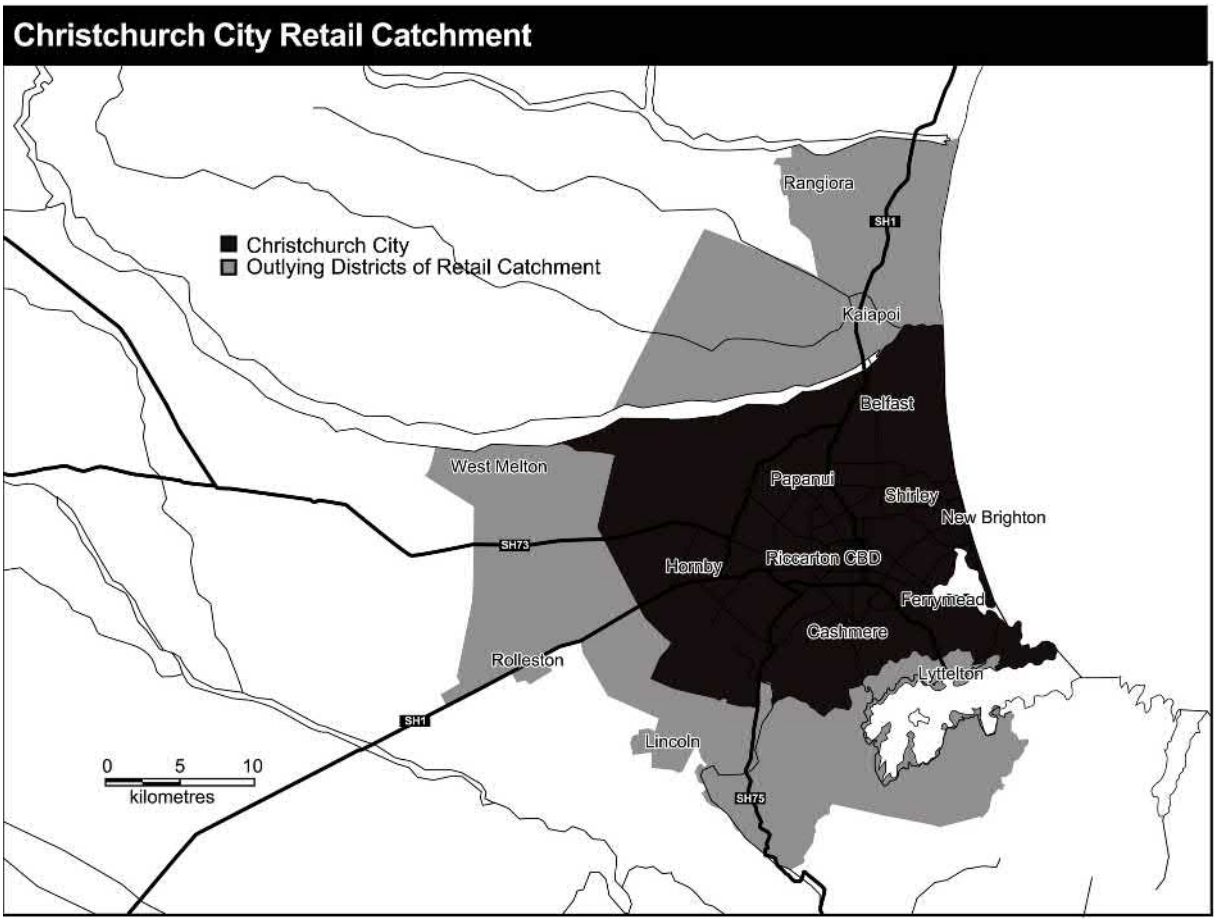
o. The energy efficiency of housing.

3.11 Business activity

Updated 16 November 2009

Commercial and industrial activity utilises major resources of the City in terms of land and buildings. In 2002, these resources were valued at some $5.8 billion, 21% of the capital value of the City as a whole.

The Christchurch economy is a diverse one. The City [(3)] and its surrounding districts contain over 400,000 people, with the City the dominant venue of employment and business activity (refer map: 'Christchurch Retail catchment').



Estimated economic production figures for Christchurch are described in Table 8.

(3) ‘Christchurch City' or ‘the City' refers to the Christchurch Territorial Authority area.

Table 8. Gross Domestic Production Christchurch 2002				
Industry (ANZSIC)	**Christchurch City**			
	2002 $million	**% Total**	**% Canterbury's Total GDP**	**% NZ**
Manufacturing	1781	18	72	11
Property and Business Services	1230	12	80	9
Wholesale Trade	893	9	84	10
Communication Services	747	8	94	13
Health and Community Services	714	7	80	12
Retail Trade	600	6	74	10
Imputed rent	590	6	69	8
Finance and Insurance	528	5	85	8
Transport and Storage	525	5	69	10
Unallocated	402	4	72	9
Construction	366	4	70	9
Education	363	4	72	9
Government Administration	307	3	68	7
Cultural and Recreational Services6	207	2	79	9
Electricity, Gas and Water	182	2	71	9
Accommodation, Cafes and Restaurants	174	2	70	10
Personal and Other Services	114	1	79	10
Agriculture, forestry and fishing	71	1	8	1
Mining	69	1	76	5
Total	9863	100.0	72	9.1
Total Canterbury	13781			
Total New Zealand	104989			

Source: Infometrics Ltd, 2002

The manufacturing sector continues to be the largest single sector contributing just under 20 percent of the City's GDP followed by property and business services, wholesale trade, communication services, health and community services and retail trade. Together these industries make up 60 percent of the local economy. At February 2002 there were 2,188 manufacturing businesses in Christchurch employing 28,880 people [(4)]. The main domestic market for manufactured goods is Auckland, but many firms are highly specialised and have developed niche export markets. Other important activities are as follows:

- Tourism: Short term international visitor arrivals at Christchurch International Airport have increased by almost 300 per cent between 1982 and 2002 to adjust under 400,000 per year [(5)]. The number of international visitors to the City is higher than this as many will travel to the City by other means. The only projections for future tourism growth available are for the Canterbury Region which is expected to experience a 3.7 percent annual average growth in visitor numbers between 2001 and 2008 in tourist visits [(6)]. This will equate to a total of 4.3 million visitors per annum. Christchurch contains a number of major attractions, such as the Antarctic Centre, the Botanic Gardens, the two Cathedrals, the Wigram Air Force Museum and the Christchurch Art Gallery. Several existing facilities have been upgraded, including Jade Stadium, the

(4) Statistics New Zealand, Annual Business Frame Update 2002

(5) Statistics New Zealand, Short-term International Visitor Arrival Data, 1982 - 2002

(6) Tourism Research Council of New Zealand, New Zealand Tourism Regional Forecasts, 2002-2008 - Canterbury Region, 2002

Westpac Centre and the International Terminal at Christchurch International Airport. It is expected that further visitor attractions will continue to be developed in and around the City.

The attractions are complemented by major hotels and a large number of restaurants. The retail, wholesale, accommodation, cafes and restaurants industries employ some 44,490 people (7).

- Education: Christchurch has three major tertiary institutions, i.e. Canterbury University, the College of Education and the Polytechnic. In addition, Lincoln University is nearby. The City also contains a significant number of English Language Schools.

- Knowledge-based industries: A number of internationally recognised companies are located in Christchurch employing highly skilled staff.

The Christchurch economy is expected to continue growing, although this is dependent upon fluctuations in the national economy.

Economic indicators continue to show increasing confidence in the City with building consents and retail, motor vehicle and farm sales increasing, however this growth is subject to fluctuations in international trade, immigration, and local property markets.

As at 2002 there were 313 hectares of land set aside in the City for full commercial activity. This accounted for only 1.8% of total urban land in the City. In addition there were 2,095 hectares of land zoned for industrial purposes; 1,908 hectares within the urban area (11.3% of urban land) and 187 hectares for rural industrial purposes.

Within the commercial zones, in June 2000 the total floor space was 2.3 million m^2 and within the industrial zones, 4.5 million m^2. While most of the land (and buildings) within commercial and industrial zones is used for business activity of some kind, it also includes a range of community activities such as churches, libraries, the art gallery and smaller community facilities.

Christchurch is the dominant economic centre for Canterbury and an important centre for the country. It retains its role as a major rural servicing centre with a wool centre, market garden and flower auction services, A and P showgrounds and saleyards and agricultural supply and processing companies.

As a traditional manufacturing centre Christchurch employs some 28,880 people. Although the importance of manufacturing has continued to decline in line with national trends over recent years, the manufacturing sector remains an important component of the Christchurch economy and has developed a strong export focus.

Significant employment changes over the period 1997 to 2002 were (8):

- Property and Business services - employment increased by 22% to 21,500.

- Health and community services - employment increased by 18% employing an additional 3,700 people to 20,160.

- Communication services - employment increased by 87.5% from 2,960 to 5,550. The majority of this increase was in part time employment where it increased significantly from 510 to 3,540 people. Full time employment declined 18% during this period.

- Electricity, Gas and Water Supply - employment decreased by a third from 876 to 570.

- Retail Trade; Accommodation, Cafes and Restaurants: and Education - employment increased in all of these areas by over 1000 people. The majority of growth in each of these industries was in part time employment.

- 60% of the employment growth in the City has been in part time employment, with an increase of 8,850 people.

(7) Statistics New Zealand, Annual Business Frame Update 2002

(8) Source: Statistics New Zealand, Annual Business Frame 2002. Note the business frame classification changed in 1997 resulting in a break in time series from the previous NZSIC industrial classification to the current ANZSIC industrial classification. Also employment data when it is not stated otherwise refers to the total workforce, which is the number of Full time employees plus the total number of part time employees.

• Manufacturing industries are still the largest employer in the City employing 17% of the City's total workforce [(9)]. However, employment in manufacturing has declined slightly by 642 or 2.2%.

Table 9. Employment in the City, 1993

Activity	No. Businesses	Working Owners	Full Time Employment	Part Time Employment	Total Employment
Agricultural, Hunting, Forestry and Fishing	194	210	297	C	C
Mining and Quarrying	19	30	C	C	63
Manufacturing	2,033	2,544	21,557	2,468	26,569
Electricity, Gas and Water	16	0	C	C	C
Construction	2,178	2,783	3,841	455	7,079
Trade/Restaurants/ Hotels	5,448	6,394	15,238	10,929	32,561
Transport/Storage/ Communication	1,116	1,085	6,676	1,288	9,049
Finance/Insurance/ Real Estate and Business Services	3,239	3,176	7,799	2,665	13,640
Community/Social and Personal Services	2,950	2,921	22,325	11,254	36,500
Totals	17,193	19,143	78,581	29,201	126,925

C = Confidential

Source: Statistics New Zealand, Annual Business Directory

(9) Total workforce is the sum of Full-time and Part-time employees

Table 10. Christchurch City employment changes by industry type 1987 - 1993.

Activity (NZIS)	Year	No. of Businesses	Working Owners	Full Time Employment	Part Time Employment	Total Employment
Agricultural, Hunting, Forestry and Fishing	1987	144	139	401	64	604
	1988	154	147	425	63	635
	1989	153	160	415	95	670
	1990	143	151	419	114	684
	1991	156	173	476	105	754
	1992	176	185	311	104	600
	1993	194	210	297	C	C
Mining and Quarrying	1987	12	22	62	2	86
	1988	17	23	76	4	103
	1989	20	23	79	6	108
	1990	21	25	54	5	84
	1991	20	27	47	6	80
	1992	24	32	47	3	82
	1993	19	30	C	C	63
Manufacturing	1987	1,978	2,099	29,052	1,633	32,814
	1988	2,014	2,285	26,729	1,697	30,711
	1989	1,992	2,398	22,690	2,080	27,168
	1990	1,937	2,277	23,023	2,216	27,516
	1991	1,963	2,334	21,942	2,299	26,576
	1992	1,992	2,407	21,200	2,433	26,040
	1993	2,033	2,544	21,557	2,468	26,569
Electricity, Gas and Water	1987	19	0	1,178	8	1.186
	1988	24	0	1,384	8	1,392
	1989	23	0	1,257	22	1,279
	1990	20	0	1,103	25	1,128
	1991	19	0	805	22	827
	1992	16	0	799	14	813
	1993	16	0	C	C	C
Construction	1987	1,820	2,096	4,856	345	7,297
	1988	1,926	2,313	4,920	399	7,632
	1989	1,903	2,303	4,448	367	7,118
	1990	1,876	2,336	4,480	423	7,239
	1991	2,040	2,518	4,275	415	7,208
	1992	2,100	2,618	3,678	435	6.731
	1993	2,178	2,783	3,841	455	7,079
Trade/Restaurants/ Hotels	1987	4,950	5,017	18,716	8,406	32,139
	1988	4,771	4,966	17,372	9,026	31,364

	1989	4,909	5,313	15,575	9,910	30,798
	1990	5,036	5,680	15,492	10,505	31,677
	1991	5,214	5,768	15,468	10,349	31,585
	1992	5,310	6,070	15,032	10,507	31,609
	1993	5,448	6,394	15,238	10,929	32,561
Transport/Storage/ Communication	1987	904	739	8,928	505	10,172
	1988	957	803	8,043	672	9,518
	1989	1,011	931	7,635	910	9,476
	1990	982	897	8,288	1,189	10,374
	1991	1,034	930	7,498	1,145	9,573
	1992	1,130	1,068	6,820	1,120	9,008
	1993	1,116	1,085	6,676	1,288	9,049
Finance/Insurance/ Real Estate and Business Services	1987	2,312	1,856	21,870	9,654	33,380
	1988	2,366	2,022	21,898	10,374	34,294
	1989	2,464	2,215	21,088	9,104	32,407
	1990	2,495	2,363	21,526	10,027	33,916
	1991	2,663	2,483	22,368	11,359	36,210
	1992	2,788	2,797	22,104	10,661	35,562
	1993	2,950	2,921	22,325	11,254	36,500
Totals	**1987**	**14,165**	**13,811**	**93,327**	**21,977**	**129,115**
	1988	**14,520**	**14,739**	**89,698**	**23,831**	**128,268**
	1989	**14,907**	**15,743**	**81,802**	**24,579**	**122,124**
	1990	**14,966**	**16,212**	**83,358**	**26,344**	**125,914**
	1991	**15,764**	**16,883**	**81,374**	**28,193**	**126,450**
	1992	**16,558**	**18,205**	**78,542**	**27,871**	**124,618**
	1993	**17,193**	**19,143**	**78,581**	**29,201**	**126,925**

Prepared by Environmental Policty and Planning Unit, October 1991. Updated 1993

Source: Statistics New Zealand, Annual Business Directory

C = Confidential

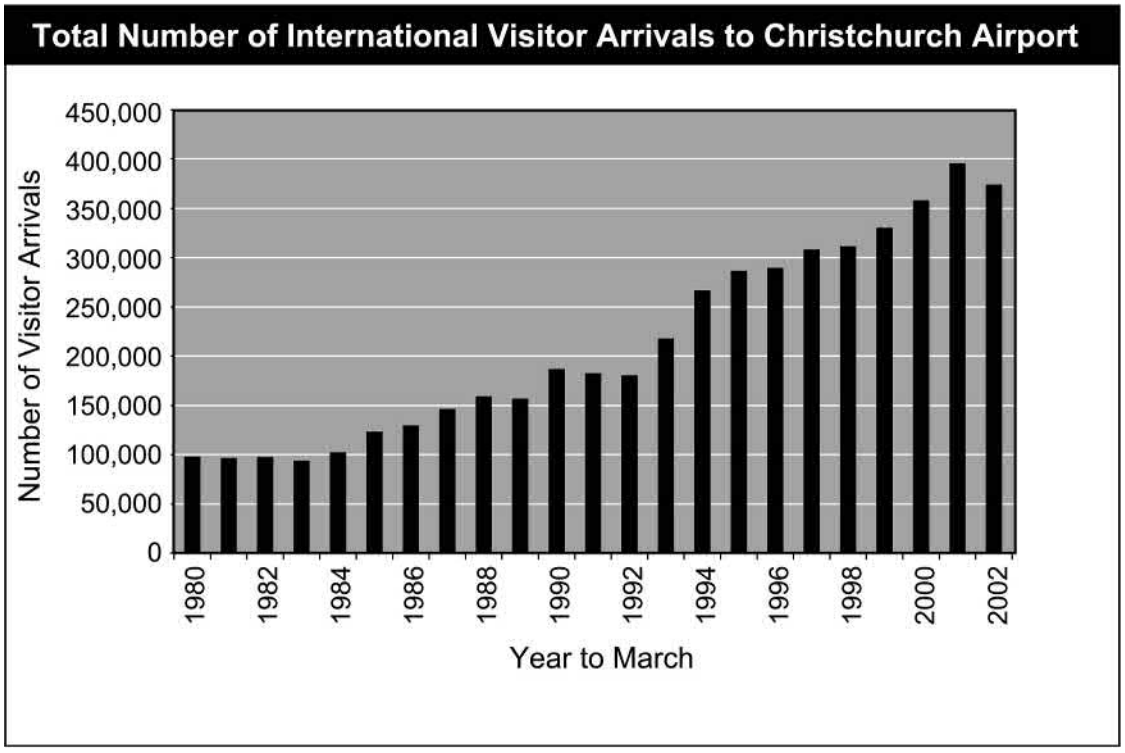
3.11.1 Tourism

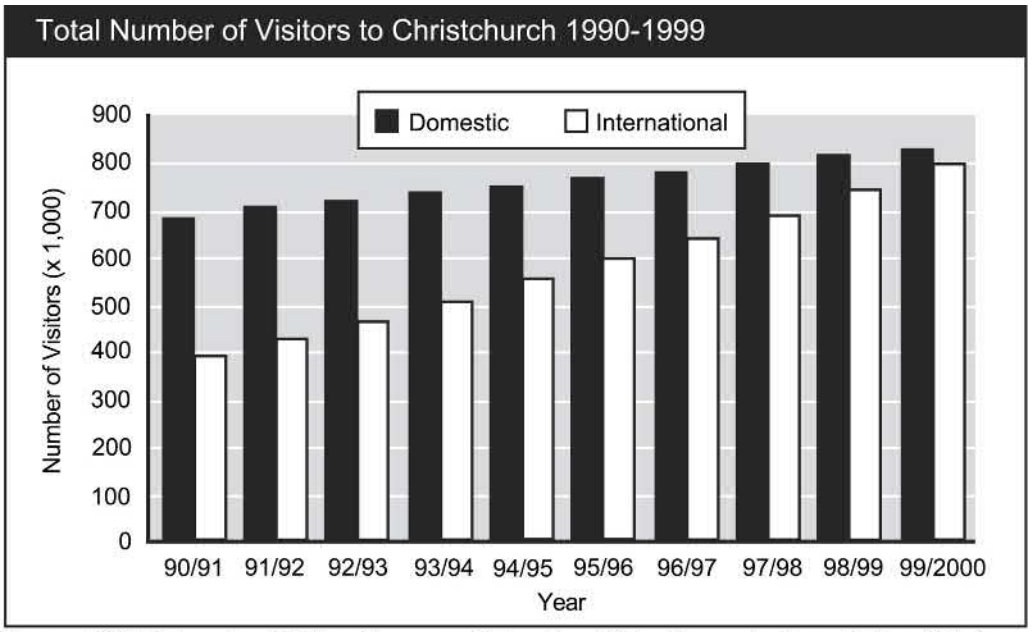
Updated 16 November 2009

Christchurch is a nationally important and well established domestic and international tourist destination. The City also provides a gateway for visitors to Canterbury and the South Island, particularly through the Christchurch International Airport.

The money spent by visitors on goods and services together with accommodation and attractions provides a substantial and growing source of income and employment for the City. With expected increases in tourist numbers (mainly from overseas) the City must provide the suitable infrastructure in terms of accommodation, transport and attractions to take full advantage of this expected growth.

The total number of domestic trips and international visitors to Christchurch has grown steadily over recent years. Domestic and international passenger movements at Christchurch Airport have doubled in the 15 years to March 2002 (10). Projections by the New Zealand Tourism Board also indicate that international visitors to the Canterbury region will increase by nearly 6.5% per annum, and domestic visits by 2.3% per annum between 2001 and 2008 to a total of 4.3 million visitors from 3.3 million visitors in 2001 (11)





Source: NZTD, International Visitors Surveys and International Visitor Forecasts, Domestic Travel Study and Domestic Visitor Forecasts.

Christchurch possesses numerous attractions and natural features to offer visitors. Some of these are unique in national and international terms. Attractions can be summarised by type as follows:

Buildings: The two Cathedrals, Arts Centre, Town Hall, Provincial Government Buildings, Riccarton House, Mona Vale, and Sign of the Takahe are examples.

(10) Christchurch International Airport, Passenger Movement Data, 2002

(11) Tourism Research Council of New Zealand, New Zealand Tourism Regional Forecasts, 2002 - 2008 - Canterbury Region 2002

Museums: Canterbury Museum, Wigram Air Force Museum, Robert McDougall Art Gallery, Ferrymead Historic Park, Yaldhurst Transport Museum.

Open Space: Hagley Park, Cathedral Square, Victoria Square, Botanic Gardens and Riccarton Bush are examples.

Recreation: Sumner and Brighton Beaches, Avon River and surrounds, City walks and coastal walks, Bottle Lake Forest, Port Hills/Summit Road, and QEII Park, Lancaster Park and other stadiums.

Wildlife: Orana Park, Willowbank, Estuary birdlife.

Other: City shops, restaurants and entertainment, Canterbury University, Nga Hau E Wha National Marae, art galleries, Antarctic Centre, Science Centre, Mt Cavendish Gondola and the Christchurch Tramway.

The high quality of the natural environment within the City and throughout the South Island is a vital element of the tourist holiday experience. Increasing global environmental awareness and concern will improve the ability of New Zealand to attract ‘green' tourists who are seeking largely undisturbed clean natural surroundings and adventure experiences. However, with increases in tourist numbers comes an increase in demand for tourist facilities and activities which place pressures on the environment.

Development of a wider range of tourist attractions and facilities is an important requirement for the ability of the City to attract tourists and to encourage longer stays. The location of new activities will in part be determined by the nature of the attraction and its proximity to major tourist, transport and accommodation facilities.

The effective marketing of Christchurch as a tourist destination depends upon recognising and developing the essential character and image of the City. Christchurch has often been promoted as the most English city in New Zealand, arising from its Anglican foundation and early settlement. The "Garden City" image, historic buildings and heritage elements contribute to the City's attractiveness as a unique urban experience.

Christchurch has potential development areas for the ‘green' tourist market. The estuary, coastal areas, Travis Swamp, Bottle Lake, amenity linkages, walkways and historic buildings have the potential for a unique niche market and will encourage longer stays in the City. Opportunities for farm stay holidays, farm visits, rural resort developments and outdoor recreation activities exist in rural areas of the City and beyond including the Southern Alps, Akaroa, Kaikoura and Hanmer Springs.

There is a wide range of visitor accommodation in the City ranging from large hotels, motor camps, motels, hostels and backpacker hostels. Accommodation is concentrated around the City centre (apart from camping grounds and motor camps) thereby encouraging tourists to stay in the City centre. The supply of accommodation in the City is currently meeting demand although supply may come under pressure as tourist numbers increase into the next century.

A limited market exists for visitor accommodation at Christchurch International Airport. The distance between the airport and the City centre is very short by international standards, therefore encouraging tourists to stay in the City centre will assist in supporting the many visitor attractions and facilities there, as well as providing convenient access to many of those facilities.

Major transport routes significant to tourism include the major roads into the City from the north, west and south, Memorial Avenue and Fendalton Road (Airport to City), Ferry Road, Tunnel Road (City to Lyttelton) and scenic routes such as the Summit Road. Rail services north, south and west provide alternatives for long distance travelling and trains are increasingly focusing on the tourist market, such as the trans alpine service.

Tourism is very dependent upon factors operating beyond the control of the City or Council. Government policy targets concerning tourist growth together with associated marketing strategies will influence the number of international tourists coming to New Zealand and consequently to Christchurch. The City must be equipped with the capacity required to accommodate further growth in tourist numbers.

Christchurch tourism is also dependent on global economic factors. International exchange rates, business confidence and discretionary spending levels will always affect levels of tourist activity. Fluctuating social and economic conditions overseas may not adversely influence New Zealand's share of international tourism if promotional strategies are effective in key markets. Airline policies are crucial to the future of tourism. The

number of carriers and flights to Christchurch, along with airfare pricing structures, will largely determine the number of international visitors to the City and requirements for tourist related development.

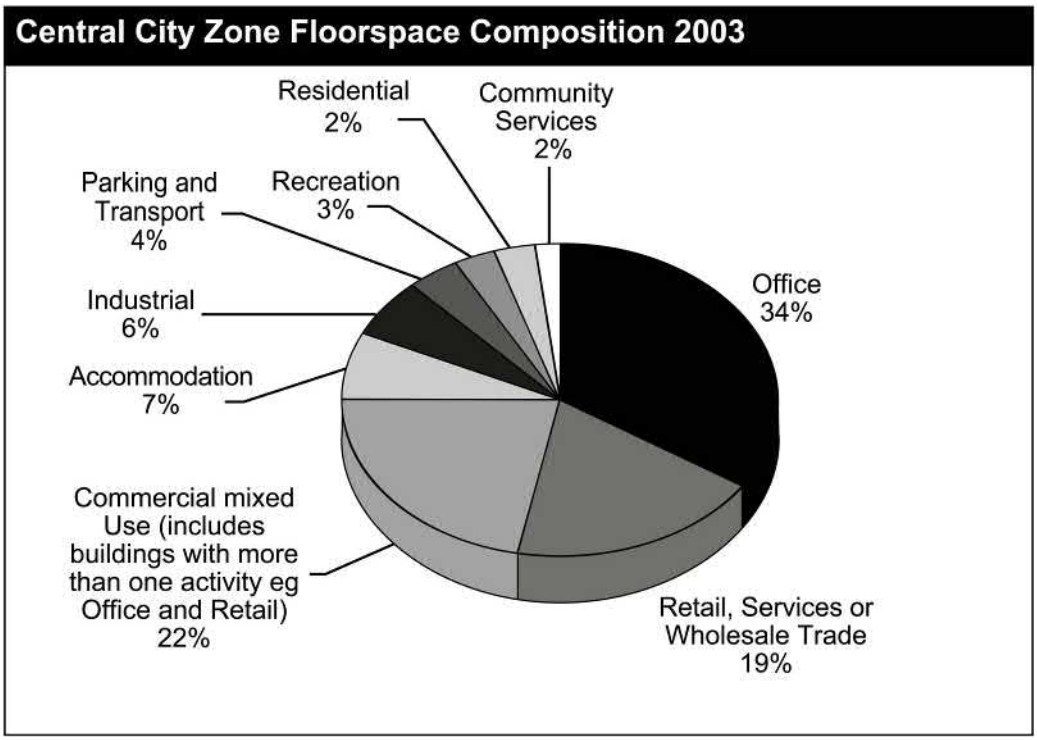
3.11.2 The central city

Updated 16 November 2009

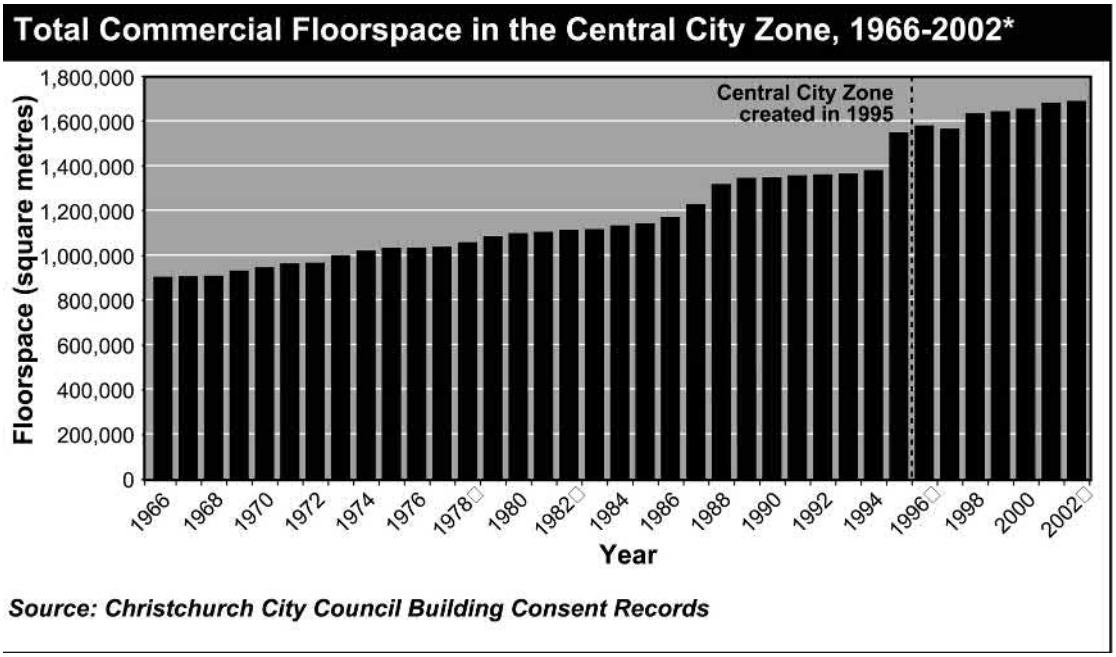
The central city is the largest commercial centre in the City and contains a total floor area of 1.69 million m^2 which is in the order of three times greater than the combined floor area of all the city's major shopping centres. The capital value of this resource is $1,270 million, (22% of the City's commercial and industrial value as a whole) (12). The amount of commercial floorspace in the central city is almost twice as much as there was in the 1960's.

Of the floorspace within the central city, some 300,000 m^2 (25%) is used for retail and wholesale trade. In addition there is 350,000m^2 of floorspace within the central city in buildings that comprise more than one commercial activity; a proportion of this floorspace is retail (perhaps as much as 30 percent).

Retail activity has tended towards increasing specialisation in areas of comparison shopping and limited convenience shopping to serve tourists, visitors and city workers. Older shops and stores have been redeveloped, such as the redevelopment of Arthur Barnetts and adjoining sites, the Ballantynes redevelopment and the Farmers building. Although the central city appears to be remaining stable or slightly increasing in retail floorspace and workforce, the growth in suburban centres means that, as a proportion of the City's commercial activity, the central city is gradually declining. For example, the retail workforce in the central city declined between 1997 and 2001 before starting to grow back to a level slightly higher than the level of employment in 1997. However, as a proportion of Christchurch retail employment, the central city has declined from 20.3 to 18.6 percent between 1997 and 2003.



(12) Christchurch City Council, District Valuation Roll, 2002



Refer to footnote (13)

Other activities such as financial, professional, community services, accommodation, restaurants and cafes have become more significant.

The location of commercial activities within the central city has also changed. Concentrations of specific activities have emerged such as on Oxford Terrace where a strip of restaurants and cafes has developed.

The first carparking buildings in the Central City were developed in the mid-1960s. Since then, a supply of parking building facilities have developed. The most recent parking facilities, being at Farmers, The Crossing, and the Christchurch Art Gallery, have contributed approximately one thousand additional off-street carpark spaces to the current parking supply. Some carparking buildings offer free parking on an hourly basis to encourage shoppers into the Central City.

At the southern end of the city, a number of carbased activities have developed around supermarkets and large format retail stores; these are linked to the city centre by the Central City Shuttle.

The continuing growth of tourism is bringing increasing numbers of people to the City and to the central city. Shopping attractions, hotels, tourist activities, amenities and heritage play an important and growing role in this growth.

3.11.3 Commercial activity outside the Central Area

Updated 16 November 2009

In 2000 there were 28 suburban centres within the City identified as being, or with potential to be, of a major size, serving a wide catchment area. These centres in terms of floor area, ranged in size from over 80,000m ^{2} down to under 3,000m ^{2}.

In addition, at this time there were a further 120 local shopping centres typically about 1,000m ^{2} in floor area and of a strip character, spread throughout the City.

There are also a significant number of dairies in the City, either stand alone ‘corner' shops or as part of local centres. The number of dairies has however continued to decline in recent years.

(13) * In 1995 the City of Christchurch City Plan was Notified. At this time the central city zone was expanded to its current extent. This resulted in an increase in the commercial floorspace in the Central City due to existing building being included as well as new building activity.

Table 11. Suburban Commercial Floorspace (June 2003) in Commercial Zones							
District Centres	Total Floorspace (sqm)	Local Centre	Total Floorspace (sqm)	Local Centre	Total Floorspace (sqm)	Local Centre	Total Floorspace (sqm)
Papanui/ Northlands	123,062	Beckenham	6,949	Opawa/ Raycroft	880	MacKenzie/ Hopkins	470
Riccarton	106,097	Bealey/ Papanui	6,546	Wairakei/ Aorangi	860	Highstead/ Sawyers Arms	460
Sydenham	50,201	Bealey/ Colombo	6,030	Cranford/ Westminster	860	Gore & Nottingham	460
Linwood (Eastgate)	45,794	Holmwood/ Rossall Street	4,892	Waterloo/ Carmen	850	Westminster/Cranford	450
Church Corner/Bush Inn	43,900	Main North Rd/ Prestons Rd	4,690	Kilmore/ Barbadoes	840	Grampian/ Jocelyn	450
New Brighton	40,369	Selwyn/ Rosewarne	4,510	Springs Road	840	Harris Crescent	443
Hornby	38,387	Colombo/ Milton	4,472	Colombo Street	820	Hoon Hay/ Lewis	440
Shirley (Palms)	31,142	Normans/ Wairakei	4,370	Burnside Cres/ Kendal Ave	820	Harewood/ Trafford	420
Merivale	27,782	Lincoln/ Sylvan Street	2,950	Main North/ Dickeys Rd	800	Yaldhurst/ Nortons	420
Bishopdale	20,773	Bealey/ Papanui	2,640	Marshlands Road	793	Langdons/ Morrison Ave	420
Barrington	19,030	Hills/ Shirley	2,490	Creyke/ Ilam	790	Isleworth/ Leacroft	420
Richmond	17,200	Ferry/ Barbour	2,270	Remuera/ Colombo	780	Beach/ Bower	410
Woolston	9,534	Ferry/Aldwins	2,240	Northcote/ Main North	760	Soleares Avenue	410
Addington	8,500	Woodham Rd	2,020	Burwood Road	750	Garvins/ Main South	400
Edgeware	7,343	Maidstone/ Waimairi	1,960	Main North/ Johns Rd	740	Cashmere/ Hoon Hay	390
St Martins	7,158	Woodham/ Gloucester	1,940	Edgeware/ Barbadoes	730	Wentworth/ Waimairi Rd	390
Sumner	6,108	Wharenui/ Riccarton	1,900	Bowhill/ Keys	730	Vancouver Crescent	390
Worcester/ Stanmore	5,443	Opawa/ Hawford	1,840	Pine/ Caspian	730	Milton/ Selwyn	390
Wairakei/ Greers	4,560	Ferry/ Smith	1,840	Main North/ Belfast	720	Nancy Ave	390
Ilam/ Clyde	4,530	Hampshire St/ Portsmouth	1,718	Clearbrook/ Briggs	710	Nayland/ Herberden	386
Halswell	4,400	Main North/ Daniels Rd	1,710	Racecourse/ Yaldhurst Rd	700	Parnwell/ Cossar	360
Parklands	4,250	Racecourse/ Epsom Rd	1,690	Westminster/ Hills	690	McGregors/ Walcot	330

Avonhead	4,190	Main South/ Trents Rd	1,690	Moffett/ Waterloo	680	Albert/ Centaurus	330
Aranui	3,770	Wycola/ Manurere	1,660	Innes Road	680	Nash Rd	321
Belfast	2,690	Queenspark Dr/ Radiata Ave	1,530	Major Hornbrook	660	Dyers/ Hackthorne	320
Hillmorton	2,270	Hills/ Nth Avon	1,510	Bower/ New Brighton	650	Euston/ Riccarton	300
Redcliffs	2,250	Ensign/ Balcairn	1,380	Barbadoes/ Armagh	650	Beechwood/ Saracen	292
Fendalton	2,150	Centaurus/ Palatine	1,371	New Brighton	640	Memorial Ave/ Clyde Rd	280
Ferrymead (2008)	22,000	Lyttelton/ Lincoln	1,370	Witham/ Blankney	630	Gayhurst/ McBratneys	280
Total	**664,883**	Kendall Ave/ Charlcott St	1,355	Hills/ Westminster	600	Ilam/ Rountree	280
		Ferry/ Hart	1,270	Halswell/ Sparks	570	Lyttelton/ Stourbridge	260
		Station/ Flavell	1,300	Barrington/ Somerfield	570	Martindales Road	240
		Main South/ Greenhurst	1,200	Bower/ Travis	561	Marshall/ Radley	210
		Emmett/ Acheson	1,180	Staveley Street	560	Hoon Hay/ Rose Street	200
		Bowhill/ Marine	1,080	Valley Road/ Cashmere	560	Blighs/ Tillman	160
		Malcolm/ Birdwood	1,020	Waltham/ Hastings	550	Warrington/ Barbadoes	150
		Hoon Hay/ Sparks	1,010	Effingham/ Pacific	550	Tuam/ Mathesons	
		Peer/ Yaldhurst	999	New Brighton/ Queensbury	520	Vanguard/ Malabar	
		Rowley/ McCarthy	980	Bridge St/ Estuary Rd	510		
		Main South/ Marshs Rd	970	Lillian Street	500		
		Breezes/ Avondale	940	Hawkesbury/Rutland	480		
		Kirk/Railway Road	927	Barrington/Bewdley	470		
		Cranford/ Innes	923	Bickerton/ Wainoni	470	**Total**	**139,308**

Current and planned shopping mall redevelopments indicate that demand for expanded and updated retail facilities in suburban locations is continuing. Planned developments involve the expansion of retail area and car parking to accommodate large ‘major' stores and supermarkets, together with a greater number of speciality stores.

Some suburbanisation of office activities has occurred in the last ten years, largely by banks, public service organisations and social services. Office development has largely been confined to major centres, notably Papanui, Riccarton and Sydenham, expanding employment opportunities in these areas. Office parks have been established in suburban industrial areas

Commercial activities in small local centres provide goods and services to surrounding neighbourhoods, but have been under pressure from larger and more comprehensive suburban centres with extended shop trading hours, and from new out of centre retail developments. Many will survive in strategic locations with trading hours which provide convenient service; some may experience growth, while others may decline.

Commercial activities, including retail and office uses, have progressively occurred outside recognised commercial areas. A combination of changes in consumer preferences, a rapid trend among goods distributors (from wholesalers through to retailers) to embrace larger store formats than previously utilised, and evolving changes in industrial activity (including a reduced emphasis on manufacturing activity) have created favourable conditions for the establishment of substantial trade supply and large format retail outlets in industrial areas. Some have relocated to industrial areas where floorspace is cheaper than in commercial centres and good access and parking is available. These areas have primarily attracted large format stores, including discount retail warehouses and trade supply outlets also selling a wide range of goods direct to the public, and supermarkets. Between March 2000 and April 2003, approximately 66% of all commercial floorspace added to the City was in industrial zones.

This trend was more pronounced during a period of liberal planning provisions which resulted in new commercial centres, primarily associated with large format retail outlets, establishing in light industrial zones.

While the location of retail activities outside of existing suburban centres may potentially improve access to goods, services and other community needs, it can also have adverse effects. These effects may include:

- impacts upon the road network, particularly where high rates of vehicle generation result in pressure upon the network capacity;

- impacts upon the efficient use of other infrastructure associated with existing centres, including use and planning for public transport and pedestrian/cycle access should retail activities not locate on the radial network of roads that support public transport;

- impacts associated with dispersed retail activities rather than consolidated retail centres, including: increased use of private motor vehicles and their associated adverse effects; reduced access for those with limited access to private motor vehicles; and reduced pedestrian/cycle accessibility;

- economic impacts upon existing centre(s), affecting the range of goods and services offered by the centre (including community facilities), and potentially resulting in a consequential decline in function and amenity and in the overall physical resources associated with the centres;

- the potential for disenabling people and communities who rely on existing centres for their social and economic wellbeing, and associated loss of community identity;

- a reduction in confidence in the future of existing centres and in the potential for some of those centres to be a successful focus for consolidation through higher density residential development, with ease of access via alternative modes of transport; and

- a change in character of areas (particularly if located in residential areas), the potential for reverse sensitivity effects (particularly if located in heavy industrial areas), and an opportunity loss for activities that could otherwise establish in these locations (particularly industrial activities that may not have many options for establishing elsewhere).

These effects often only become apparent in the long term, by which time they may be irreversible even with public investment.

In addition to industrial areas, commercial activities operate throughout other parts of the City. Many service stations are located in living areas, offering an expanded range of goods and services to local residents and car borne customers. Taverns, dairies and medical centres for example, are also often situated in non-commercial areas to serve the local community. In many cases, the scale and extent of these activities is increasing. Home occupations occur in residential areas of the City, allowing for small-scale business activities appropriate in nature to the surrounding neighbourhood. In addition to living areas, commercial activity is established in many other areas of the City, including industrial zones, at the Christchurch International Airport, and in cultural areas such as the Arts Centre.

Note: in respect of Rural Selling Places, refer section 3.12.9.

3.11.4 Trends in commercial activity

Updated 16 November 2009

The following trends are becoming apparent:

- A continuing focus on the central city as a diverse 'hub' of entertainment, tourism, cultural, civic and commercial activity.
- specialisation and concentration of retail activities within the central city.
- ongoing redevelopment, expansion and refurbishment of existing suburban shopping malls.
- the increasing addition of leisure and entertainment facilities (eg foodcourts, cinemas and licensed premises) in multi-level development, including multi-level and/or rooftop parking in or associated with major suburban centres.
- local centres, ribbon strip centres and stand-alone shops repositioning, redeveloping with carparking or in decline. Service stations offering convenience goods and services.
- some retailers and trade suppliers moving out of traditional commercial areas to drive-in large format retail complexes or to new or existing stand-alone premises in industrial areas.
- innovations in trade and banking procedures such as EFTPOS, direct mail ordering TV shopping, and internet retailing and banking.
- extended shopping hours.
- increased development in and refurbishing of office and other commercial buildings, largely dependent on demand arising from the state of the domestic and international economy.
- relocation of some public, commercial and professional offices and activities (including medical centres, motels, preschools, resthomes, office parks) to major suburban centres or arterial roads closer to the people they serve or to specialised out-of-centre locations.
- changes in technology and email services, enabling professional and other business activities to operate from home or within living areas.
- increasing tourism and leisure activities including motel and hotel accommodation, bars, restaurants and cafes.
- continuing changes in the products carried by retailers, in particular, by supermarkets.

3.11.5 Industry

Updated 16 November 2009

The industrial base of Christchurch includes a broad range of primary product processing, manufacturing, high technology activities, transport, storage and communications industries. These activities have played a significant role in the development of Christchurch and are important for its continuing prosperity. However, over the past two decades, industry has changed in its make-up and traditional strengths. Until the early 1980s, manufacturing was encouraged by Government policies of product protection and incentives. Today, firms have to compete both domestically and internationally without the benefit of incentives.

Manufacturing (including primary produce processing) is Christchurch's major industrial activity involving some 2,180 business units and employing 17% of the total workforce. The City is relatively strong in the production of textiles, fabricated metal products, chemicals, rubber, plastics, wood and wood products.

The software development, databank and computer consultancy businesses continue to show increased in employee numbers. There are no reliable figures available but it is estimated that in 2003 there were around 250 to 300 software companies employing around 1000 people in the City. Communication services have had a significant increase in employment with an increase of 2,960 to 5,550 from 1997 to 2002, although the number of businesses has stayed constant. The transport and storage industries have declined since 1997.

The number of businesses have decreased from 987 to 980 over the same period, and employment has decreased by 115.

Industrial land has traditionally been located close to the railway lines with pockets being added throughout the City close to other transport routes and where people live. With the growth of road transport, access to rail is no longer a key influence on industrial location.

In 1994 there were about 3,792,000m ^{2} of floorspace within the industrial areas of the City. Between 1994 and 2002, just over 1 million square metres of new floorspace have been added to the central area at an average rate of 145,000m ^{2} per annum (14). Further analysis of this activity reveals a trend away from traditional factory construction to small business units, recreation, shops and entertainment and retail developments.

Over the past 20 years some large manufacturing concerns have moved from the old inner city industrial areas to more spacious suburban locations. Other businesses, both centrally located and suburban, have closed down leaving land and buildings vacant, under-utilised, or converted to support retail activities. Smaller units and warehousing have replaced to some extent these larger manufacturing operations.

The location of industrial areas throughout the City is seen as an important factor in enabling people to have the opportunity to live close to where they work to minimise travel demand. People may need or choose to travel further to obtain a job. However, it is still important to provide opportunities for local employment for less mobile people.

While in 2002, 417ha (20%) of industrial land, including rural industrial land was vacant, some new activities often require bigger sites than those available under present land ownership patterns. There could also be difficulties with large one-off industries locating within existing industrial areas due to current subdivisional patterns and amenity standards. A number of the vacant areas also have landfill and stormwater difficulties. In marketing terms, the image of some of the older industrial areas does not encourage new development or re-use for current ways of doing business. A combination of an increased take-up of vacant industrial land, servicing difficulties, and use of industrual land for non-industrial purposes may result in pressure for further industrial zoning in the future.

Associated with areas of industrial activity are important amenity issues. These issues relate to matters such as noise, traffic generation, safety and hazardous substances and their effects within and beyond industrial areas.

Visual amenity is also an important consideration, particularly at the interface of industrial activity and more sensitive activities (such as living areas). Although it is appropriate to improve amenity across all parts of the city, some areas of industrial activity seek higher levels of visual amenity than others, depending upon the nature of the activity and the importance of visual image to its operations and client base.

Amenity in industrial areas has become more of an issue where retail and office types of development have established in those areas. Those activities sometimes lead to reverse sensitivity effects by placing pressure on industrial activities to reduce the levels of effects they produce, making their continued operation difficult or forcing them to move. If these incompatible activities occur in industrial areas to any significant degree, the heavier industries in particular will have difficulties finding locations where the effects they produce are acceptable.

Non-industrial activities establishing within industrial areas can result in a loss of opportunity for potential new industrial activities. This is most apparent in the uptake of industrial land for retail activities, and could contribute to pressure for additional industrial land to be zoned elsewhere.

3.11.6 Trends in industrial activity

Updated 16 November 2009

Industrial activity has an important role in the future of the City. New products and markets are being developed. There are continuing improvements in labour productivity and a move from manufacturing to service and information based employment. The distinction between office and industrial activities has become blurred. A new concept, "high technology", has emerged for enterprises involved in the research and

(14) Christchurch City Council, Building Consent Records, 2002

development of advanced technology. As yet these businesses constitute a small proportion of the supply of business accommodation but trends would indicate that their share of the market will increase.

Two other main trends have emerged. Firstly, there is an increasing number of retailing activities in industrial areas. The traditional manufacturer/wholesaler /retailer chain still exists, but many manufacturers now sell directly to the public. Importers also are purchasing bulk overseas orders and selling directly to the public from warehouses ; in addition, retail activities selling general merchandise from both large and small format retail stores are establishing in some of the suburban industrial areas. Secondly, the number of small scale and office based activities setting up in living areas as home occupations, is increasing.

While there seems to be an adequate quantity of vacant industrial land to cater for any immediate industrial needs (refer 3.18.1), the very occasional demands for large sites unencumbered with existing buildings and ownership patterns, and having a pleasant environment, will need to be specially considered. In addition, vacant land in preferred locations has a higher level of take-up; as a result, pressure for additional industrial land in certain locations may arise despite the existence of vacant industrial land elsewhere in the city.

Overall, the nature of industry and industrial areas is continuing to change, and any policies need to be flexible to adapt to the changing demands.

3.11.7 Summary of business issues

Updated 16 November 2009

Existing Commercial Centres

a. existing commercial centres, in particular the central city and district centres, represent an agglomeration of significant resources , play important roles in providing for the economic and social well-being of the city and have an associated value and range of benefits to the community; this presents challenges for the identification of appropriate mechanisms to ensure that such resources are sustainably managed for existing and future communities.

b. retailing in new localities, or the expansion of existing centres, may improve access to goods and services and better enable people and communities to meet their social and economic needs. However, any change in the pattern of distribution of commercial centres can result in particular adverse effects or require consideration of linkages with other aspects of urban form, including the following:

- relationship to living areas, transport routes and community facilities;

- efficiency of use of existing resources including public infrastructure and the ability to access goods and services by a variety of transport modes;

- impact upon existing centres, the significance of the impact, and whether there is a likely reduction in social and economic function and amenity of those centres;

- consequential impacts upon the ability of existing centres to function as focal points contributing to the wellbeing of people and communities; and

- whether affected centres have outlived their original historical function and whether the rate of transition is such as to maintain an appropriate level of function and amenity.

c. growth and expansion of suburban centres and retail parks has the potential to incur local effects on residential activity and roads, and cumulative effects on the classified roading network.

Central City Issues

d. the central city, as a diverse urban environment providing the greatest scale and intensity of business activities, may struggle to maintain its role if there is significant dispersal of retail/commercial activity even with alternative methods of support.

e. the central city, as a location promoting a diversity of activities (including residential activity), presents difficulties for reconciling different expectations for amenity, particularly in relation to noise, traffic and visual amenity.

Commercial and Industrial Activities

f. commercial and industrial business activities are changing their character, with less traditional manufacturing activity, retail activity locating outside of commercial centres and changing its method of delivery of goods and services, and the growth of "white collar" commercial activities and tourism. This poses a challenge of providing an appropriate flexibility for such changes, while addressing both local and city-wide adverse effects (including those associated with urban growth and the transport network).

g. business buildings and activities can, if not appropriately managed, give rise to adverse effects on the visual and other amenities within and adjoining areas of business activity, including effects of building height, form and design, and effects of an activity's noise production, hours of operation and traffic generation.

h. the growth of tourism poses challenges for managing the effects of visitor growth upon the network and community infrastructure of the City (such as pressure for more conference venues, the provision of attractions, further accommodation, and the effects upon the airport, port and roads), without impacting negatively upon the ability of the City to attract visitors.

i. many heritage buildings are located in commercial areas and pose challenges for identifying appropriate mechanisms to ensure their retention, without inhibiting the commercial development of the city.

j. traditional manufacturing activity has moved away from some older industrial areas, resulting in an uncertain future for these areas.

k. some existing industrial areas pose difficulties in relation to their servicing requirements for continued or future development.

l. "High tech" or "office parks" have special needs in terms of access, servicing, site size and amenity standards, which pose particular challenges in relation to methods for meeting these needs.

m. any distribution or location of industrial activity that does not relate to where people live, shop and recreate, is likely to have adverse consequences for transportation planning, particularly in relation to effects of the increased use of private motor vehicles.

n. the city has experienced growth in small businesses, the self employed, and home based employment, following the advent of "high tech" communications; this poses a challenge of recognising and accommodating this growth, while addressing limitations associated with both local and city wide adverse effects.

o. new, large-scale manufacturing companies need locations that suit their requirements for access, amenities and site areas; this presents challenges for the identification of appropriate locations and associated planning provisions, in order to avoid ad hoc proposals that may not make the most efficient use of the city's infrastructure.

p. some industrial processes are hazardous and if not managed in relation to their extent and location, may result in significant adverse effects on the environment, particularly groundwater.

q. some activities, such as retailing and residential activity, have the potential to restrict the opportunities for industrial activity to operate and expand within industrial areas and may unnecessarily put pressure upon those industrial activities to reduce the nature of their operations or relocate.

3.12 Rural activity

Updated 14 November 2005

Christchurch City includes some 30,000 hectares of land zoned rural of which about 27,000 hectares are being farmed in some way. Information based on Valuation Department statistics and used by the Canterbury Regional Council produced the following data relating to land use in 1994:

Arable	399ha
Dairying	1,132ha
Horticulture	1,922ha
Small holdings	5,589ha
Grazing	8,151ha
Other	10,393ha

Under the 1992 Agricultural Census, there were 872 agricultural units in the City, of which 40% are under 5 hectares in size, 60% under 10 hectares, 75% under 20 hectares and 88% under 50 hectares.

The main farm types are horticulture (261 units), sheep (142) and beef (63). Other farming accounts for 406 units.

Direct employment is provided for 707 working owners, leaseholders and sharemilkers as well as for 528 permanent workers, and 452 casual workers.

A total of 8,112 people or approximately 3% of the City's population live in rural zoned areas. Of these, 56% were male and 44% were female. Proportionately there are fewer elderly people aged 60 years and over in rural areas (12%) than in the built up area of the City (18%). There are however, more people aged 15-24 years in rural areas (21%) compared to the remainder of the City (18%).

There are 2,121 dwellings beyond the urban fence. The tenure of rural dwellings is similar to the urban areas, with 75% of dwellings owned either with or without a mortgage and 20% rented.

The City's rural areas assume national significance in terms of a few key land uses. These are apples, berryfruit and horses (particularly standard-breeds and recreation horses). Of regional importance are market gardening, flower growing and to a declining extent, town supply dairying. Intensive livestock management is likely to assume greater significance, particularly pigs and to a lesser extent poultry, were urban pressures to encroach on existing productive units. The potential for conflict between urban activities and intensive livestock management would, as a consequence, increase.

The rural area contains important recreation areas, both active and passive. The Port Hills, McLeans Island and the Council owned commercial exotic forests, are examples. Also, important public utilities, necessary for the efficient functioning of the urban area, are found in the rural areas. Examples are the International Airport, the Paparua Prison, the Bromley Sewage Treatment Works and the Burwood Landfill.

Current land use is influenced by past planning schemes. The Regional Scheme aimed to control the physical size of the urban area and retain high quality land for agricultural purposes. Excess population growth would be directed to Kaiapoi, Rangiora or Rolleston. This regional objective has been put into effect by the establishment of a "green belt", extending from the City's urban boundary for a distance of approximately 20 kilometres to the north and 10 kilometres to the west and south. The whole of the rural component of Christchurch City lies within this green belt. No urban development is permitted and subdivision and building is restricted to farming or other appropriate rural uses.

Nevertheless, there has been some subdivision in the rural zones, sometimes without any need for dwellings but usually with a requirement for a house. There is an increasing demand for small blocks of rural land for "lifestyle" purposes and for small agricultural holdings of various descriptions. Research has indicated that subdivision as such, may not cause a decline in production compared to the original larger unit. However, it is becoming increasingly difficult to generalise because of the wide variety of land uses and changes to land uses on these small units. This raises the question as to whether the real issue is the need to sustain production, or the need to sustain resources.

Past planning provisions have tended to limit subdivision of rural land within the City. The reasons have been protection of high quality soils from urban uses (i.e. protect for food production), and avoiding the high cost of providing water and sewerage services to scattered residences. There has also been a desire to limit development between the International Airport and the urban fence for airport protection purposes. Further, the use of land in the rural area is subject to a range of other issues which combine to act as restraints, such as the acceptable density of septic tanks, the presence of conflicting rural land uses, and the location of floodplains.

3.12.1 Intensification of land use

Updated 14 November 2005

The rural parts of the City were, until comparatively recently, regarded as traditional rural areas. Farms were large and used for traditional pastoral and arable farming activities such as grazing sheep, town milk supply dairying, or growing wheat and barley as well as some orcharding and market gardening. Over recent years, there has been a steady demand to subdivide rural properties into smaller units. There are a number of reasons for this trend; provision of extra capital for existing farmers, providing opportunities for small investors in new horticultural or orcharding ventures, creating more manageable units and meeting rural "lifestyle" requirements. The average lot size for blocks within the City has been decreasing, reflecting further subdivision particularly in the Marshlands and Harewood areas. The average "farm" size is 33 hectares (1992 Agricultural Census). There has also been an increase in the numbers of dwellings in association with farming/horticultural uses in the City's green belt.

Subdivision of these large farms has led to changing settlement patterns, with part-time farms, or what are in essence rural lifestyle blocks, becoming a feature of these subdivisions. There is the potential for this more intensive settlement pattern to impact upon traditional rural uses. This could ultimately have an effect on traditional open landscape values.

Application of pesticides in orchards and market gardens, factory farming operations, fertiliser application, silage, bird scarers, hail damage prevention and helicopter use for frost dispersal are other examples of established rural practices; the effects of which are not entirely accepted by those living in rural areas.

Intensification of the density of dwellings in rural areas is also happening outside Christchurch, partly the result of Christchurch people seeking the small blocks they cannot obtain within the City. In 1990, of 1,350 hectares zoned for rural residential in the "green-belt" (all but 24 hectares outside the City), 358 lots (26%) of 876 were vacant. However, there remains pressure for further subdivision and new dwellings outside these zones.

Concerns about the intensification of rural land use are that:

- it will increase the risk of contaminating the groundwater supply from rural dwellings with septic tanks, animal waste, fertilisers, herbicide and pesticide sprays;

- it may create water shortages through intensification of land use, resulting in increased irrigation, especially in dry years;

- it may lead to lots which are small and over-capitalised for production of other than a small number of highly specialised crops;

- it may adversely affect rural landscape values;

- it may affect the operation of rural facilities such as the International Airport, and rurally based activities such as intensive livestock farming;

- it may limit future options for agricultural production and efficient land use; or

- it may cause rural land values to rise beyond their rural resource value, and instead be based on their residential values making such land unlikely to be used for rural activity.

3.12.2 Aquifer protection

Updated 14 November 2005

Christchurch residents have long taken pride in the quality and availability of their domestic water supply. It is still provided untreated but there are some seasonal restrictions on its use. Water for industrial purposes is taken from the same source as that for domestic purposes. Indications are that the limits of supply could be reached, i.e. the growth in demand for water is not sustainable at present rates. There is considerable scope for existing water users to improve water conservation practices, e.g. by not spray irrigating in the middle of a summers day.

The Regional Council has identified zones of varying importance for the natural recharge of the aquifer. Different types of land use have varying potential to contaminate the aquifer, and once contaminated, it is difficult and costly to use that water for public supply purposes.

At the individual property level there is potential conflict arising from the designation of a water "plume" around a well. The conflict is between water abstraction, disposal of effluent and the co-ordination of consent processes.

3.12.3 Versatile soils

Updated 14 November 2005

There are approximately 8,300 hectares of Class V1 and 2 soils, (as classified under the Potential Horticultural Versatility System (Landcare)) in the City. This represents about 25% of the total rural land **.** Under the regionally classified Land Use Capability (LUC) system, there are approximately 140,000 hectares of Class I and II soils in Canterbury of which 8,000 hectares are in the city. Such soils are regarded as limited in occurrence both regionally and nationally, and accordingly may be treated as a strategic asset for the City. They are valued for their productive potential and their location for city markets and the airport.

These soils have traditionally been used in Christchurch for market gardening, berryfruit production and town supply dairying. Horse breeding and training has also been of particular significance. Recently however, markets have changed and the range of crops produced has increased dramatically. The most obvious expansion has been in apples. Despite these changes, the actual area of land used for primary production that requires versatile soils has not been noticeably increasing. There also appears to be a trend for such activities to establish in areas outside the city boundaries. For these reasons it is unlikely that the full capacity of these soils for primary production is likely to be required in the foreseeable future.

Changes in land use have led to changes in land value, and greater pressures for subdivision. Many planning applications include requirements for subdivision and a dwelling unit. There is potential for conflict between the rural-residential type uses of these soils and the strictly production orientated uses.

Demand also exists for the use of such soils for urban growth. Christchurch is largely surrounded by land with versatile soils or land with other significant values or limitations. The consequences of using versatile soils for urban growth must be weighed against the consequences of using those other areas or restricting the growth of Christchurch.

3.12.4 Rural industry

Updated 14 November 2005

Rural industrial zones totalling 282 hectares (in 1991) exist in three locations. These were provided to limit the spread of rural related industry throughout the rural area, to cater for activities inappropriate for the urban area, and to recognise major existing industrial activities such as freezing works.

In recent times there has been a slow take-up of vacant rural industrial land, and at August 1990, about 150 hectares (53%) remained vacant. In addition, sites once occupied by rural based industries, which no longer exist, also remain empty.

There has been a change in the type of industry wishing to locate in the rural area namely those that will benefit from the particular image and ambience of the area. Those companies concerned with limited and clean processing, adding value, export market and integrated marketing concepts, are seeking well-located rural land to maintain year-round demonstration units and research areas.

Problems that are beginning to manifest themselves as far as rural industry is concerned include:

- most rural industries are intensive users of water, and the question of the availability and servicing for future supplies is an issue;

- those industries seeking to locate in the west and south of the City need to address the problems of stormwater removal into rivers already approaching their capacity;

- industries which have been able to use soakage or septic tanks to dispose of harmful contaminants are no longer able to do so and the question of extending the sewerage network to the rural industrial zones will need to be considered. Some industries have water rights to discharge to rivers with only primary treatment; it is unlikely that this will continue and the question of secondary or tertiary treatment arises; and

- the question of contamination of groundwater as the result of industrial land use activities, particularly in aquifer recharge areas, is becoming important in the Johns Road area.

3.12.5 Flood protection

Updated 29 June 2012

A considerable amount of rural land is likely to be affected by flooding and ponding should the Waimakariri River burst its stop-banks. This affects areas in the lower Styx River catchment as well. The Heathcote and Halswell Rivers also influence significant areas of rural land. Both rivers are prone to flooding, and ponding areas in rural zones to ameliorate the downstream effects of any such flooding have been considered.

~~Management plans are being prepared by the Canterbury Regional Council, assisted by the Council. These will provide a basis for identifying the precise areas that could be affected by flooding and by ponding.~~ **(Plan Change 32 Decision)**

3.12.6 Non rural uses

Updated 14 November 2005

There are a number of facilities, essential to the efficient functioning of the City, which are located in the rural areas. These include the International Airport, the two Paparua prisons, three sewage treatment plants and a landfill site. These require quite large amounts of relatively inexpensive land plus buffer zones so that they are a reasonable distance from residential areas. There are also transmission lines, power generation equipment and telecommunication facilities. In addition, there are facilities and activities which require, or benefit from, a rural location such as parks, forests, the McLeans Island recreation area, a number of camping grounds, and uses which are inappropriate to urban areas, e.g. the motor racing complex at Ruapuna, catteries and dog pounds.

There are some potential land uses which have a strong urban as well as rural connotation. Examples are a new showgrounds site (possibly combined with saleyards), the "produce park" type of development for integrating processing and marketing, private tertiary educational institutions, tourist projects, demonstration farms and rurally-orientated "enterprise zones". Opportunities to establish retirement villages have also been sought in rural zones close to main roads or recreation facilities.

Such uses do not always require high quality soils or even a rural location, but are likely to be of significant economic benefit to the City. The problems with such uses relate to servicing and the potential for contamination of the groundwater unless carefully designed and operated. Servicing aspects to consider are power and water reticulation, sewage connections, adequate transport routes and stormwater disposal. Some uses, such as demonstration farms and the new showgrounds, may require soils of reasonable quality in order to provided demonstration areas and live exhibits.

Links with tourism activity arise through farm visits and farm-stay holidays, farm parks, where there is a greater emphasis on tourism and education than on production, and other ventures such as specialised catering.

3.12.7 Quarrying

Updated 14 November 2005

Christchurch is regarded as fortunate in having a good supply of reasonable quality metal for roading and other purposes. Most of this comes from dry land quarries and there is at least 20 years supply available from this source. There is scope to remove a greater amount than at present from the Waimakariri River which is steadily building up. Each year over 1,000,000 cubic metres of metal are removed from land quarries and 200,000 cubic metres from the river. The river could sustain a much greater removal figure; indeed this is necessary to reduce flood risk. The main reasons for favouring dry-land quarrying are that the quality of the metal is reputedly better for most of the roading work, and equipment does not need to be moved when not in use.

Transport routes to dry land quarries are a major concern to residents living around them as are nuisances such as noise and dust arising from these activities.

3.12.8 Forestry

Updated 14 November 2005

Christchurch is ideal for a range of forestry practices. It has a mild climate, evenly spread rainfall and a range of generally suitable soils with a high water table.

The City contains less than 2000 hectares of commercial exotic forest in three main areas. These include the Council's coastal forests plus other privately-owned forests in the north east of the City, the Regional Council owned and managed forest on the south bank of the Waimakariri, and the privately owned forests on the Port Hills. Apart from the Port Hills area, the other forests have significant protection and recreation uses. All these forests are a potential fire hazard. There are few private woodlots of any size. The cutting rights to the Council's commercial forests are owned by the Selwyn Plantation Board Ltd. The scope for additional commercial forest areas is not great, although woodlots may become a feature in some places in the rural area, depending on the scale of landholding.

The combination of soils and climate have created an environment ideal for trees, particularly exotic species. Historically, a great diversity of species have been planted with an emphasis on European hardwoods in the City. The success of these species has been demonstrated in various areas throughout the City and could form the basis of an ongoing small scale urban forestry business in special purpose species producing high quality, high value timber. Areas where this diversity is apparent are the major parks and old homestead sites, Victoria Park and the Botanic Gardens.

The value of shelter provided by trees has been amply demonstrated throughout Canterbury. In rural parts of the City, shelter planting has been carried out in some areas, but other areas could well follow the example. This could have the effect of reducing the amount of irrigation water needed.

Soil protection and erosion control is another area in which tree planting has demonstrated its important advantages on the national stage. There are areas in the City such as Mary Duncan Park, where trees have a very definite soil protection role, but there are many other areas where this sort of treatment would be beneficial. The use of trees as "carbon sinks" is one option to counter the "greenhouse" effect.

The Port Hills is an area of the City where forestry in its broadest sense, is a possibility. Because of landscape values and the different colour and texture of different tree species, particular care needs to be taken, but there is scope to add to the diversity and the economy of some parts of this area.

3.12.9 Rural selling places

Updated 14 November 2005

Rural selling places, also variously known as "roadside stalls" or "gate sales", have been a feature of rural areas around the City for many years. They provide farmers with an alternative to the central market system by allowing sale of produce direct to the public. Many growers operate roadside stalls to dispose of surplus produce but in recent years a large number of growers have found it to their advantage to sell all or most of their produce through stalls rather than the market system. In addition to selling their own produce, a significant number of growers buy in produce from other growers in the district and further afield, or from the markets in the City.

There is no doubt that rural selling places are important for the operation and survival of produce growers. The main issue concerns whether stalls should be restricted to selling produce grown on the property or whether buying in from elsewhere should be permitted. Buying in produce changes the nature of stalls from being directly related to the use of the land for farming, into a retail activity in direct competition with produce retailers in zoned commercial areas of the City. Buying in has been viewed as unfair competition on growers who offer only their own produce for sale, especially when produce bought in is not from the district.

Rural selling places, other than those with existing use rights, have not been permitted on arterial roads. The concern is that such visitor attracting uses tend to distract drivers, leading to unsafe traffic manoeuvres on busy, high speed routes.

3.12.10 Summary of rural issues

Updated 14 November 2005

a. the intensification of land uses within the rural parts of the City including horticultural and life style developments.

b. the expansion of urban activities onto versatile soils.

c. the growth of demand for aquifer water which is not sustainable at present rates, and the potential contamination of aquifer recharge areas.

d. pressure for subdivision and development on high quality soils and the impact on their continued potential for production.

e. ensuring that industries seeking rural locations do not have significant adverse effects on rural resources, or character and amenity values.

f. the extent to which it is necessary to control the use of rural land for the purposes of its protection from future flooding of the Waimakariri River.

g. the role of the rural areas in providing localities for activities which support the urban area but which are difficult to locate within the built-up parts of the City, including airfields, tourist features, recreation areas and disposal sites.

h. the extent and conditions under which the quarrying of gravel, sand and rock should be carried out.

i. avoiding, remedying or mitigating the adverse effects of forestry on landscape or ecological values, particularly on the Port Hills.

j. the location and extent of rural selling places or roadside stalls within rural areas.

3.13 Neighbourhoods, communities and facilities

Updated 14 November 2005

New Zealand has undergone change from a highly protected economy and social welfare state to one based on more open economic policies and a greater community and individual approach to social issues. With this general background, when planning Christchurch, recognition needs to be given to:

- the development of communities within the City;
- the provision of community facilities such as schools, medical facilities and churches; and
- the social impacts of development proposals.

Community facilities include a wide range of activities and buildings and their provision is the responsibility of many Government, Local Government, community, voluntary and business organisations.

The Council, through its role of monitoring development and administering the development process, can help to co-ordinate such facilities. It can influence their location to reinforce communities and focal points such as the central city and suburban centres, minimise environmental impacts of these facilities, and suggest that land is set aside in new housing areas for future community activities.

3.13.1 Cultural diversity

Updated 14 November 2005

One of the standards of a fair society is acceptance of the identity and cultures of different people within the community, and understanding and respect for cultural diversity. The City benefits from ethnic diversity in a variety of ways that extend beyond the simple opportunity to enjoy cultural performances and national dishes, to include trade and economic development.

Compared both to New Zealand as a whole and to other major cities, Christchurch has always had a strong European heritage. Over 90% of the City's population is of European descent compared with 79% of the country, and 71% of Auckland and 75% of Wellington. Nevertheless, there is a growing ethnic and cultural diversity which is to be recognised and provided for. In 1946, non-Europeans made up under 1% of the City's population, but by 1991 had grown to almost 10%.

The diversity is experienced in a number of ways, including different approaches to housing, differing recreation and religious interests, a greater diversity in shopping and other business activities and differing perceptions of urban design concepts.

3.13.2 Communities within the City

Updated 14 November 2005

The quality of life experienced by residents of the City depends to a large extent on the informal supportive networks found at a neighbourhood level. The growth of such networks involves a process of community development. Community development refers to the ability of communities to identify their own needs and priorities and select the appropriate means for achieving them.

There are forces at work within the City which on one hand tend to foster community development, while on the other hand discourage it. Forces which tend to discourage community development include:

- increased personal mobility;
- development of mass communication such as telephones, television and the like;
- wider range of entertainment and sporting activities;
- separation of places of work and home;

- decline of traditional focal points such as corner shops and possibly churches;
- continuing residential movement within the City and beyond; and
- development of some of the major roads.

On the other hand there are some forces which tend to support the development of local communities within the City and these include:

- the stages in family life cycles which encourage commitment to, for example, local plunkets and schools;
- the homogeneity of some residential neighbourhoods in terms of age, incomes and attitudes;
- the desire of some communities to have a greater say in the development of their areas;
- the tendency for local people to unify through some common cause or threat affecting their neighbourhood;
- clearly defined boundaries, for example, communities established by physical features or major roads; and
- the positioning of key focal points.

People use various community facilities in the City in different ways and the catchments overlap in a complex manner. People may have acquaintances in their street, but many of their important social contacts may be with old friends, work-mates and relatives who are scattered over the City. In a City such as Christchurch, accessibility is very easy and surveys show that the majority of people's contacts for activities such as shopping, working, services, education, leisure, religious, medicine and visiting friends and relations, take place beyond the boundaries of what could be defined to be their local areas. Other surveys show that the vast majority of people prefer to shop at the larger shopping centres rather than in a smaller local centre.

There are many parts of the City which do not fall within easily defined suburbs, but a pattern of residents' groups has emerged over the last ten years based on local perceptions of community and varying in size. There are now 93 residents' groups in the City, but there are still areas without them.

The City is divided into 12 wards for electoral reasons. Each include about 24,000 people and, where possible, recognise communities of interest as well as taking into account travel patterns and provision of services.

3.13.3 Cultural activities

Updated 14 November 2005

Christchurch has a strong and popular framework of artistic and cultural organisations. The City's image is as both a garden city and centre of cultural excellence. It boasts a symphony orchestra, ballet company, opera, professional and fringe theatre and in the CSIM an internationally renowned institution for the teaching of music. The Arts Centre and the Cranmer Centre for example, are the home for practising artists and crafts people, and have become synonymous with Christchurch. The Town Hall and Theatre Royal stage many performances. The Waitaha Maori Cultural group is also well respected.

The recently completed Nga Hau E Wha Marae is now recognised as a national urban Marae and may be further developed for a variety of purposes. Te Rehua and Te Rau Oriwa Marae are smaller and more local in their focus.

The Council is actively involved in supporting and assisting cultural activities. Apart from the provision of the Art Gallery and Libraries, grants are made to various cultural organisations, festivals and the operation of city promotions, such as the ‘SummerTimes' programme, which provide employment for city artists.

Many of the buildings used to support cultural activity are of heritage value in their own right, and outdoor spaces suitable for the display and performing of events need careful design and a pleasant environment within which artists may perform. Occasional nuisances that arise from in the main, one-off concerts, are noise and car parking difficulties.

3.13.4 Community care of people with special needs

Updated 14 November 2005

A number of community groups are working in the field of providing community care for the mentally and physically disabled, and prisoner release programmes. An important aspect of the process is the integration of these people back into the community, on the basis that people are best treated in their own environment supported as necessary by health care professionals. This is seen as a community responsibility.

Many mentally and physically disabled people and released prisoners are able to live in houses as family units throughout residential areas. For these groups it is important for housing and community activities to be close to public transport and shopping centres.

3.13.5 Local employment opportunities

Updated 14 November 2005

Local employment is important for community development. In periods of low economic growth and high unemployment, there is a need to support business initiatives by providing opportunities for people to work from home or close to where they live. This can be important for women considering a return to the workforce as well as for people starting up new businesses.

Existing small shopping centres and suburban industrial areas sited within or close to residential areas are important as local employment centres.

Past policies have provided for people to work from home as a "home occupation". In parts of the City, employment of one person is also permitted. To date there have been relatively few problems. It is important however, that any adverse environmental impact of permitted activities is minimised. Some occupations which are noisy, such as motor vehicle repairers, are not suitable. The cumulative effects of such activities on the general amenity values of living areas also need to be considered.

3.13.6 Community facilities and buildings

Updated 14 November 2005

Community facilities include a wide range of both public and private facilities and services. They may include schools, medical and health practices, community centres and organisations assisting the community in areas of social need. They may have a statutory base such as the Department of Social Welfare, responsible for the care and protection of children under the Children, Young Persons and Their Families Act 1989, or voluntary such as Presbyterian Services, targeting special areas such as teenagers or parenting. Some facilities may require confidentiality and anonymity as in the case of women's refuges.

Education facilities include private, public and religious, pre-schools, primary and secondary schools and tertiary learning at the Polytechnic, University, the Medical School and the College of Education. Public schools and pre-schools are well distributed throughout the City, while private schools tend to be concentrated in the north and west of the City.

National trends indicate that during the 1990's, secondary schools will experience falling rolls while there will be growth in primary school enrolments. Early next century it is anticipated that this situation will reverse with growth in secondary schools rolls and decline in the primary schools.

Abolishing school zoning will give parents greater choice of schooling for their children but it may lead to growth of some schools and a decline and under utilisation of others. There is some demand for a range of pre-school facilities including Pacific Island language nests and Kohanga Reo.

Health facilities include private and public hospitals, doctors and dentists, medical centres, veterinary clinics, nursing practices and non-traditional health care. While some are scattered throughout the City, others like specialist health services have tended to concentrate in the central city, on its fringes or around the two large private hospitals in the City.

Health authorities are streamlining their services, reducing hospital stays, relying more on outpatient clinics and families for convalescent care, and contracting health care for the elderly to the private sector. As the

ageing population grows in number, there will be increasing need for geriatric health care. Acute hospital treatment is being centralised at Christchurch Hospital located near the City centre.

Demand for private hospitals is likely to continue with the contracting of public services, the growth of private medical insurance and specialisation and targeting of profitable medical services. Demand for specialist services is growing, for example, in the case of nursing practices, child health and alternative health practices such as acupuncture.

Justice facilities include prisons, probation services, detention centres, police stations and courts. The future of Addington Prison as a remand centre within the urban area is under review. Paparua Prison is situated within 800 hectares of farming land and contains men's and women's prisons, a special needs unit for psychiatric inmates and single cell accommodation. Paparua can accommodate up to 448 inmates, and another 60 cells have been planned.

Christchurch contains a High Court and District Courts including the Family Court which deals with young offenders. The police is decentralised to suburban areas with four main facilities located at Papanui, Sydenham, New Brighton and Hornby in line with the community policing concepts. Probation and periodic detention centres may be extended into new suburban areas in the medium term.

Welfare services include a wide spectrum of Government and voluntary agencies responsible for family group conferences for the care and protection of children. They have in some cases decentralised services into shopping centres. A number of voluntary agencies provide a wide range of social services. Although often based within central offices, the groups' work extends well into suburban areas with parental guidance, counselling, elderly care and support.

There are around 40 religious groups within Christchurch. Significant growth does not appear likely for the traditional religious groups. There has however, been a growth in minor religious denominations and the conversion of inner city buildings for this purpose. Examples include the former Majestic and Odeon theatres, and houses such as the Hare Krishna in Bealey Avenue.

Over the past few years, a number of churches have permitted a wider use of their facilities by community groups. Churches themselves are also extending their activities into halls and house groups. Use of these facilities in this way can generate noise and parking issues.

Access to buildings for people with disabilities needs to be addressed in order to ensure that not only are adequate community facilities provided, but also that people are able to enter buildings to use these facilities.

3.13.7 Civic and metropolitan facilities

Updated 14 November 2005

Council-run community facilities include major metropolitan assets such as the Town Hall, Canterbury Public Library, Botanic Gardens and Art Gallery. They are centrally sited and reinforce the City centre, add life for both tourists and locals as well as being readily accessible to the metropolitan area as a whole.

The Council supports the operation of 36 community centres ranging from small community cottages like Richmond, community halls like Aranui, to purpose-built multi-functional complexes like Bishopdale. A number of privately owned community centres also operate within residential areas such as the community cottage within the Avon Loop.

The Council supports 15 community crèches from St Albans to Woolston to Hoon Hay. These offer casual care as opposed to private childcare centres which operate as a business for longer term care.

The Council's Library Services consists of 1 central, 10 community, 2 part-time children's and two mobile libraries. In addition, it gives support to 15 neighbourhood libraries operated by autonomous committees of volunteers spread throughout the City. Small book deposits are maintained in over sixty retirement homes/hospitals. To ensure an even distribution of resources, Riccarton/Avonhead and St Martins are priority areas for new libraries. A new Linwood library was opened in 1993.

Public toilets are located in areas of high recreation use such as sports parks and the foreshore or where high numbers of public congregate such as Cathedral Square.

Other Metropolitan facilities, many of which are not the direct responsibility of the Council, include the Arts Centre within the central city and dispersed facilities such as Ferrymead Historic Park, Queen Elizabeth II Park, Orana Park, Willowbank Wildlife Reserve and the Air Force Museum at Wigram. These attractions are also important for their recreational functions and as focal points with influence beyond the local community. One major facility that the City currently lacks is a major indoor entertainment and convention centre.

3.13.8 Location, accessibility and use of community facilities and services

Updated 14 November 2005

While some community facilities, such as schools and churches, are scattered throughout the city, others, like specialist health services, have concentrated in the central city, on the fringes of the central city or around the two large private hospitals. While central locations such as Bealey Avenue offer easy access from the City as a whole because they serve a metropolitan rather than a local function, continued growth around these non-residential facilities can begin to threaten the character and cohesion of adjoining living areas.

Community facilities such as crèches, doctors and churches have traditionally been dispersed throughout suburban areas and may have long historical association with local areas. Others tend to locate on major roads and especially in or on the periphery of shopping centres, well located for access by car as well as by public transport. The larger shopping centres are obvious focal points as not only are they visited often for shopping, but they already contain many community facilities such as libraries, community halls, taverns and branch offices of banks and welfare organisations and the like, close to the communities they serve. On the other hand there have also been examples such as closure of Post Banks where the opposite has been the case.

Multiple use of community-funded and non-profit making facilities is seen as a wise use of resources where a variety of groups can share the same building, e.g. for a crèche and as a hall for meetings, craft classes and the like. This may occur within buildings which have an on-going principal function such as schools, but are able to be used outside school hours. This joint use must, however, be practicable for all parties.

There is a need not only to ensure that there are adequate facilities to enable all groups in the community to have access to community facilities and services, but also to have the ability to enter the buildings where the facilities are provided and to use them. This will include the ability to access buildings in accordance with the specific requirements of relevant legislation.

3.13.9 Effects of community facilities

Updated 14 November 2005

Environmental effects from community facilities which can cause nuisance to neighbours include noise, vehicle movements, visual detraction (including signage) and loss of residential coherence. Impacts could be caused by either one large scale activity or a concentration of several smaller activities. One example is club rooms with liquor licences which are hired out for private functions.

The scale and height of buildings and their external appearance can also have an impact on the coherence and character of residential areas, particularly where they are grouped together. Some community facilities can be quite large and disruptive of the coherence of local communities, particularly where they serve an area wider than the local neighbourhood.

While access to major roads may be desirable for community facilities to be accessible and easily recognisable, this location can conflict with major transport objectives to maintain the efficiency of these roads.

3.13.10 Summary of community issues

Updated 22 May 2006

a. building on and further developing the European cultural traditions of the City while recognising its growing cultural diversity and the changing ethnic mix of its people.

b. the recognition and the further development of the differing geographical communities which make up the City.

c. the range of local and metropolitan buildings and facilities that will satisfy the wide cultural needs of the City.

d. the needs of new areas of urban development and areas subject to significant redevelopment for community facilities, including provision through development contributions.

e. the recognition of people with special needs that are best treated within their own environments within the community rather than within institutions.

f. opportunities for local employment initiatives particularly in times of high unemployment within the City.

g. the recognition of the changing needs of the education and health sectors.

h. the decentralisation of some community services to suburban centres and the concentration of others in certain parts of the City.

i. the role of suburban centres in providing a focus for local community activities and buildings accessible to the community.

j. the effects of community and cultural activities and buildings on local amenity and the coherence of living areas, particularly those facilities servicing needs wider than those of the local area.

k. recognition of Maori culture and traditions, and delivery of services within Maori communities.

3.14 Recreation and open space

Updated 14 November 2005

In a growing city, the role of open space and recreational facilities is one of vital importance. Also important is the need for diversity in the size and type of space and facilities provided, in recognition of personal recreation preferences and different levels of ability. Open spaces range from those providing for active recreational activity, such as sports fields, to those primarily focused on conservation and passive use.

Christchurch provides its people and visitors with a wide range of recreational opportunities. The natural environment, consisting of the plains, Port Hills, coastline, rivers, estuary, lagoon and sea, provides the basis for a wide variety of outdoor recreational activities. The City's climate is conducive to most outdoor activities and the built environment provides numerous venues for indoor recreational activities.

Recreation patterns and preferences are related to a whole range of factors including cultural and educational background, financial resources, climate and geography, work patterns, social expectations, community values and social status, population structure and gender.

While there are many parks and sporting facilities that are provided by the Council, there are also many privately owned sports grounds, clubrooms and indoor recreation facilities within the City.

Associated with the provision of recreational opportunities and open space is the issue of esplanade reserves. The Resource Management Act includes a clear presumption in favour of esplanade provision, in protecting conservation values, enabling recreation opportunities and access to and along the margins of rivers and the coast. Matters to be considered in this regard are whether or not reserves and/or strips should be taken for esplanade purposes and under what circumstances.

3.14.1 Recent trends in recreation

Updated 14 November 2005

The demand for recreation is changing, both in scale and type. Many factors have caused the increased demand for more diverse and improved facilities. These include an increase in leisure time, increased mobility, better health and greater life expectancy, improved disposable income and changing social attitudes

toward recreation. A further influence is exercised by modern technology which has made possible a much wider range of sporting equipment and facilities.

Recreational preferences and trends are continually changing with new activities being introduced and the popularity of others increasing or decreasing. Some of the trends include:

- An increased use of the outdoors for activities that involve interaction with the natural environment. This includes pursuits such as walking, photography, wind surfing and mountain biking.

- An increased professionalism both in terms of professional sportsmen and women and greater numbers of specialists, such as gym instructors. Increased involvement of the business sector is becoming apparent, in terms of providing facilities, training and sponsorship.

- The 65 plus age group is increasing, and this should be recognised as an area of growing need for recreation. Careful planning will be required to provide for the new recreation needs of this group, while still meeting the needs of the wider population.

- An increase in the number and types of recreation and leisure facilities provided by the private sector, ranging from gyms and fitness centres to indoor cricket and bowls. Although some of these activities cater for the whole community, some are quite specifically targeted to the younger and more affluent sectors of the population, for example, the fitness centres.

- An increasing need for daytime use (through the whole week) and informal use of recreational and leisure facilities, reflecting the changing work patterns of the community.

The combined effect of growing demand for recreation facilities and changing recreational preferences has led to changes in the number, type and range of facilities and open spaces required.

3.14.2 The function of public open space in the City

Updated 22 May 2006

Open space and recreation areas serve many functions. They provide areas such as those used for organised sports, or passive areas used as gardens, planted areas, walkways, children's play areas, picnic grounds and other less organised activities. Areas of open space also fulfil an amenity function in that they add to the pleasantness of the urban setting by creating visual relief from the repetitive appearance of city buildings and roads. Roads also serve an important open space function, providing a contribution to local amenities, as well as offering areas where people can meet and interact.

Parks and reserves provide opportunities for large trees to grow to maturity and this will become increasingly important as housing densities gradually increase over time. These matters of amenity are of particular importance in a mainly flat city such as Christchurch.

The protection of and access to, natural features and landscapes is an important reason for the retention of areas of open space within the City, particularly along the coastline, around the estuary, lagoon, wetlands, along rivers and over parts of the Port Hills.

Public open spaces can be defined according to their size, the areas they serve, their particular physical characteristics and existing patterns of use, as follows:

- Local parks are usually under 0.5ha in area and are designed for informal recreation and passive relaxation for local residents, particularly children. They also provide a local visual amenity and are valuable sites for the planting of large trees either singly or in groups. There would be few, if any, buildings in these parks.

- District parks are usually larger, about 5ha in area, serving wider areas, and catering for active sports such as rugby, netball, cricket and hockey. They may also serve as a local park and act as important visual amenity and open space for nearby residents. Often there would be buildings such as clubrooms located in these parks.

- Metropolitan parks are the large reserves often over 20ha in size, which provide for a wide variety of activities both passive and active serving large parts of the City. Often they contain large stadia and other

similar indoor facilities. Open spaces located in the central city such as Victoria Square, are included in this group.

- Conservation parks can be very large or quite small in area and reflect the physical character of the area in which they are situated. This can include the coastline, the rivers and wetlands and the scenic landscapes of the Port Hills. The emphasis of these reserves is to enhance the natural characteristics of the area while providing for casual outdoor recreation. Buildings are limited.

The Council can acquire land for recreational open space in four ways:

- it is given to the Council;
- it is set aside on new subdivisions;
- it is acquired by the Council using development contributions accumulated from past subdivisions and building development; or
- it is bought by the Council using general funds.

Most local and district parks are acquired when new subdivisions are laid out, while metropolitan facilities are usually built on land bought specifically for their purpose.

Open space and recreational areas are an essential requirement of any pleasant and healthy community. If communities continue to grow in size and population without providing for recreational and open space needs, adverse environmental effects would become apparent. These effects include a lack of visual relief and space for large scale plantings, and overcrowding of existing recreational areas. The taking of development contributions towards reserves as communities grow and expand is a means of avoiding such adverse effects. Key issues in this regard are associated with the actual contributions for recreation upon development in the City. These include the amount of development contribution for different types of development, the form of contributions and the purposes to which contributions are put.

3.14.3 Existing public open spaces

Updated 14 November 2005

Overall, some 2300ha or 15% of the urban part of the City, is used for recreation and open space. In addition, there is some 1000ha or 3.5% of the rural areas of the City set aside for this purpose. In total, some 3300ha is set aside for recreation and open space, 7.6% of the total area of the City.

Existing open spaces are grouped in Table 12.

Table 12. Parks in the City

Type	Numbers	Total Area (ha)	Average Area (ha)	Ha/1000 Pop
Local	346	134	0.5	0.5
District	112	891	5.4	3.1
Metropolitan	29	417	28.1	1.5
Conservation	76	1,871	24.4	6.5
Total	**563**	**3,313**	**-**	**11.6**

Over the years a standard of 4 hectares per 1000 people has been accepted and embodied in planning policies. This includes all types of recreational open space, from small neighbourhood parks to conservation and large metropolitan facilities. Though useful as an overall measure, the standard does not identify the differing characteristics of each category of park. Provision of metropolitan parks, for example, is commonly driven by the desire of the community to provide extra facilities such as stadia, in order to perhaps attract major sporting events. Acquisition of conservation parks is usually triggered by the characteristics of the local environment and the value communities place on the retention and enhancement of natural, scenic and heritage values. Local and district parks are driven in part by additional people living in local areas and the demands of various sporting codes.

In terms of the urban part of the City, at 8.7ha per 1000 people and 15% of the urban area set aside as open space, the overall needs of the City are very well provided for. Private recreation facilities such as Lancaster Park, and the two race courses and privately owned golf courses are not included in these figures. Beaches and riverbanks and playing fields within school grounds are also excluded.

There are however, some deficiencies in terms of local and district parks in parts of the City, particularly when taking into account the following:

- the existing amount and type of open space relative to the local population;
- the location of open space in relation to where people live, or are likely to live in the future;
- the existing and future population and structure, particularly the increasing number of people in the 65+ age group, and the numbers of children;
- the existing and future form of housing that can be expected, particularly medium density housing; and
- existing landscape qualities and features which should be protected and enhanced.

3.14.4 Private recreation facilities

Updated 14 November 2005

Apart from publicly owned reserves and open spaces, the City contains many private facilities such as golf courses and sports grounds which contribute greatly to the quality of life of the community as a whole. These areas often provide visual amenity adding to the character of built up areas as well as providing needed recreation facilities which otherwise would have to be provided on public areas. Similarly, the many schools within the City provide an open space and recreation resource.

Facilities such as Lancaster Park, Orana Park, and the golf courses, are examples of significant recreation facilities and open spaces owned or operated by private organisations. In addition, there are a host of indoor recreation activities such as indoor cricket and bowls, which are carried out in warehouse type buildings throughout the City.

The effects of recreation carried out on privately owned land are basically the same as similar activities carried out on public reserves. However, one feature of private recreation facilities that is different to public reserves is that they can come and go depending upon the circumstances of the owners. For example, indoor cricket venues within what are essentially warehouses can change quickly and the subdivision of golf courses for housing can occur. The rationalisation of some of the existing facilities is probable over time.

Another aspect of private recreation facilities is the extent to which they should be located on public reserves and the extent to which these clubs should provide their own grounds and land for clubrooms. Many clubs already fall into this latter category, for example the Linwood Football Club facilities in Kearneys Road.

3.14.5 Impacts of recreation activities

Updated 14 November 2005

For the most part, open space and recreation grounds have a positive impact on the amenities of the areas in which they are situated. There are however, a number of circumstances where impacts need to be carefully considered, including:

- potential conflicts between recreation activities such as active sport and passive enjoyment of the open space;
- the car parking and increased traffic movement generated by users of recreation areas;
- the visual impacts of large buildings associated with, in particular, major facilities;
- the social behaviour associated with the use of clubrooms on reserves, particularly later in the evening;
- the extended hours of recreation activities, including the glare from lighting for night time events;

- the height and location of trees on open spaces in relation to housing;
- the location of public toilets on parks; and
- the use of environmentally sensitive areas for recreation.

3.14.6 Summary of recreation and open space issues

Updated 14 November 2005

a. the provision of additional local and district parks within those parts of the City which are deficient in open space;

b. the provision of additional local and district parks in areas of increasing housing and infill redevelopments and within new areas of housing;

c. the provision and development of new metropolitan facilities and stadia to cater for future development of sports in the City;

d. the provision of additional areas of open space to protect, enhance and provide access to, important natural features of the City and landscape qualities which reinforce the ‘Garden City' image;

e. the role of management plans outside of the City Plan, in developing policies and plans that reflect the purpose, function and character of each open space area in the City;

f. the design and layout of open space and integration with housing and roading, cycle and pedestrian routes;

g. the retention of important private facilities for continuing recreation activity and the local amenity they can provide; and

h. the impacts of the use of open spaces upon local amenities and the roading system.

3.15 Transport

Updated 14 November 2005

Transport and land use are both interconnected and interdependent. This is especially the case in urban areas. Transport produces environmental impacts, and these must be explicitly considered when developing and implementing transport strategies and proposals. Land use policies have effects on transport. For both these reasons, land use policies need to be considered as part of transport planning and implementation.

Transport is usually not an end in itself but is a means of meeting the need for communication. A key role is to move people and goods needed for the City's economy and society.

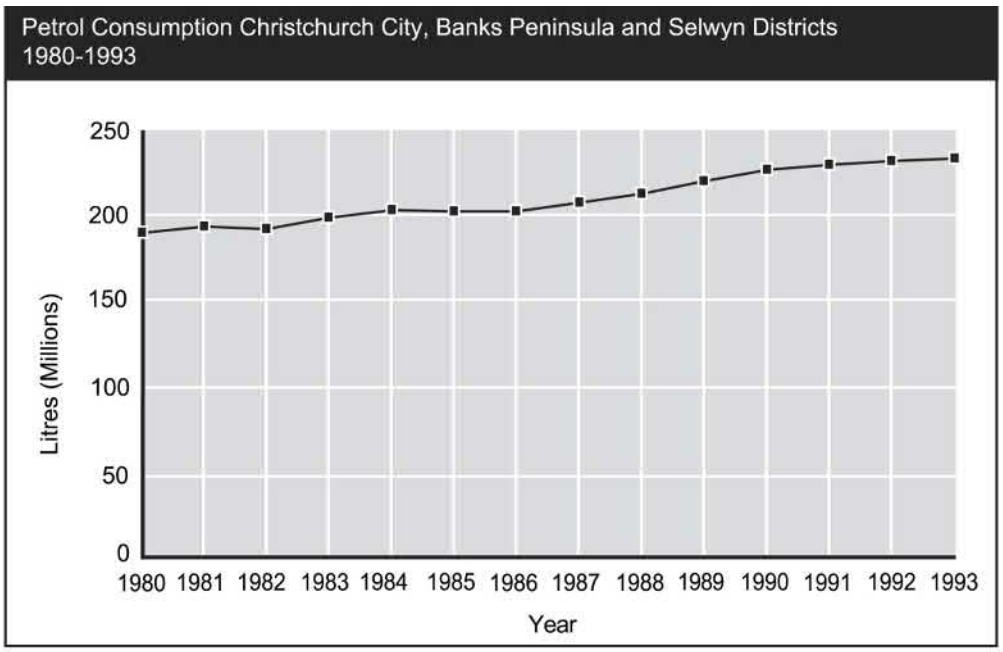
The demands for the services provided by transport are generated by people who live in the environment which is served by particular transport systems. The location and intensity of those demands therefore, has a direct effect on the means by which they are supplied. Whether transport systems should or can supply services to meet all demands is an issue to be faced in transport and environmental policy making.

To some extent at least, the nature of the demands for transport services can be shaped by the distribution of people and the location of production and consumption activities. In particular, the distribution of people and activities in the City has a major effect on transport demands. Policies which affect the distribution of people and activities will therefore have effects on transport.

3.15.1 Motor vehicles

Updated 14 November 2005

In 1991, Christchurch had approximately 151,600 cars; 526 vehicles for every 1000 people. Vehicle numbers have increased by 2% pa over the 10 years to 1981 and by 3% pa over the 10 years to 1991. Some 85% of households now have access to at least one vehicle, and 41% to two or more vehicles. The level of motor vehicle use can be illustrated by the growth of petrol sales although these must be interpreted carefully due to changes in fuel efficiency and diesel use.



Source: Canterbury Regional Council and Christchurch City Council

Traffic counts taken at over 100 sites have shown the growth of traffic movement throughout the City continuing at about 2.7% per annum.

National figures show that the car accounts for the vast majority of trips made (70%) and the distance covered (90%). The average household makes 2140 trips each year (6 per day) and travels some 17,000km.

Christchurch has a high level of dependence upon the motor vehicle and car ownership and use has increased substantially in the last decade. While future trends are hard to predict, there is little to suggest that growth will not continue for the next 10 or so years. Heavy vehicle traffic is also increasing, illustrated by growth in road user charges. The level of heavy vehicle traffic is strongly influenced by the level of economic activity, and the recent upturn in the economy suggests that it is likely to continue to increase.

Continuing growth of motor vehicle traffic has a number of serious impacts upon the community and the environment. One is upon the safety of road users. In 1992, 29 people were killed on City roads and 1547 injured. The cost of these accidents has been put at $200m. While there has been some recent success in reducing road deaths, there is a considerable need for improvement in the City's safety record.

Motor vehicles also impact adversely upon the atmosphere, both locally and globally, through the emission of lead, "greenhouse" gases, dust and other materials. Comprehensive information about air quality and the current level of emissions is difficult to obtain. Local monitoring is now the responsibility of the Regional Council. However, motor vehicles are a major source of air pollution in urban areas. Motor vehicle traffic can also have a significant impact upon water quality through the discharge of contaminated stormwater run-off.

Exposure to traffic noise is another problem associated with motor vehicle use. Noise can also result from growth in traffic levels over time and is likely to have a particular impact where traffic diverts onto residential roads to avoid congestion on arterial roads. Motor vehicle traffic also has a number of other effects that are not easily measured or quantified but which have a significant impact upon the safety and quality of the environment, for example, community severance, vibration, visual intrusion, and impacts upon flora and fauna.

Nevertheless, there are considerable benefits from the ownership and use of motor vehicles, for example, a high level of mobility for a significant portion of the population, and the efficient movement of goods. The motor vehicle has an important place and role to play in society and those benefits need to be recognised. The reconciliation of the costs and benefits of continuing motor vehicle use is a major issue for the Plan.

3.15.2 The roading network

Updated 14 November 2005

Christchurch City is the controlling authority for 1,490 kilometres of roads within its boundaries classified as follows:

	km	**%**
Major arterials	84	6
Major arterials	237	16
Collectors	193	13
Local	943	63
Unsealed	33	2
	1490	100

In addition there are approximately 100 kilometres of state highway within the city; 90 kilometres of these are major arterial and 10 minor arterial roads. New Zealand Transport Agency is the road controlling authority for all State Highways.

There are two basic approaches to managing the road network. The first is the "sponge" approach where traffic is allowed to travel without restraint along any street and all roads are built to a similar design. The second is the "rooms and corridors" approach where traffic is encouraged to use particular roads which are designed to a higher standard to cope with heavy traffic and larger traffic volumes. This leaves the local streets to act as property accesses only and not through routes. The "rooms and corridors" approach is presently used in the City.

Roads within the City are currently classified in accordance with their planned roading function, traffic carrying capacity and the zoning of adjacent land. This hierarchy of roads is comprised of two basic categories; the primary road network and the secondary road network.

The primary road network comprises the major and minor arterial roads, some of which are motorways or limited access roads. Part of the primary road network in the City is made up of state highways which are regionally and nationally important and also provide access to and from Christchurch and also Canterbury. These roads serve to carry large volumes of traffic and high concentrations of heavy vehicles.

The secondary road network has little regional significance other than the loads they place on the primary road network. It is comprised of collector roads and local access roads. The function of the collectors is to collect and distribute traffic within and between neighbourhoods, whereas the local roads provide access to properties and have little through function. As well as a local traffic function, local streets offer opportunity for environmental improvement.

The road network contributes a significant land area to the area of public spaces throughout the City. The concept of roads as public places is unique in that roads are used by people on a daily basis and make a significant contribution to the visual amenity and outlook from people's homes and places of work. The landscape treatment of road corridors is therefore a significant factor in enhancing the amenity values and pleasantness of the City.

3.15.3 Land use

Updated 14 November 2005

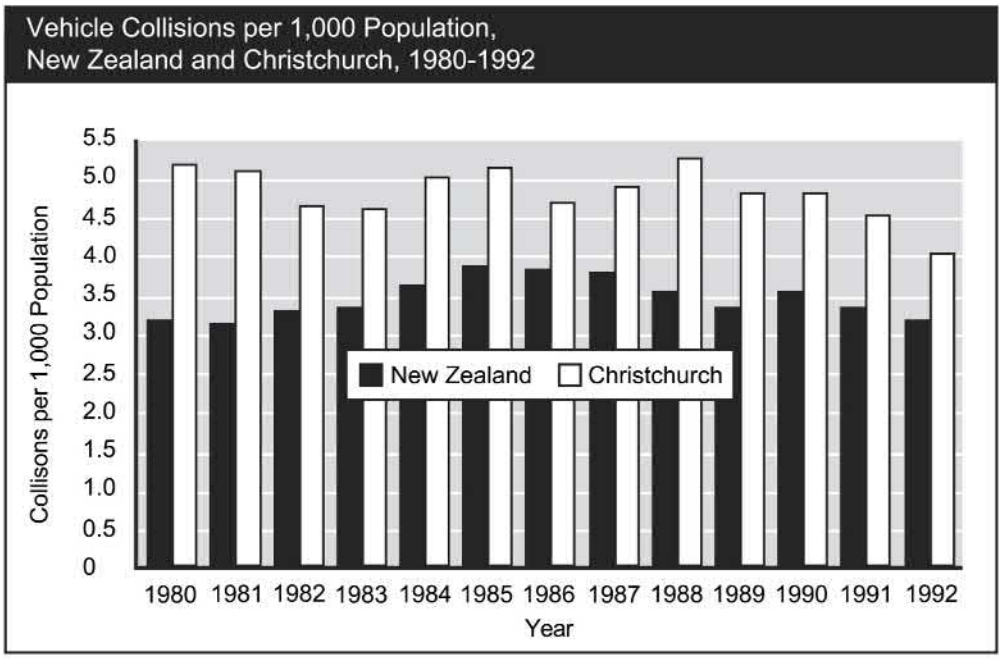
The pattern of land use affects the quality, length and mode of trips made by individuals. Dispersion of places of employment closer to people's homes shortens journeys, but reduces their choice of transport modes. However, the use of individual transport such as walking, biking and private cars becomes more attractive than public transport. Conversely, concentrating employment and commerce in the central city can encourage a greater use of public transport, particularly if residential density is high along transport corridors.

The issue of where high traffic generating land uses, such as shopping centres, should be sited is becoming increasingly important as they become more popular and traffic flows on existing roads increase. These land uses require access to arterial roads in some form, as these are the roads designed to cope with high flows and heavy traffic areas. The effect of manoeuvring and queuing vehicles, and the location and proximity of access points, are an issue in respect of the function of the road and the efficiency of intersections. Therefore, both the location of access points and the level of traffic generation on to each type of road needs to be carefully considered.

3.15.4 Traffic safety

Updated 14 November 2005

New Zealand has a poor performance in road injuries and fatalities compared to most other western countries with a 1 in 5 chance of being killed or injured before the age of 25 years. There are several contributing factors for this and among them are the comparative lack of investment in high standard roads, careless or aggressive driving attitudes and opposition to safety road-works. The collision rate in Christchurch has been consistently higher than the national figure but has declined steadily from a rate of 5.2 collisions per 1,000 population in 1980 to 4.1 collisions per 1,000 population in 1992. Traffic safety is a consideration in a range of transport objectives, policies and rules in the plan, including such matters as vehicular access and outdoor signs.



Source: Ministry of Transport and Christchurch City Council

Traffic safety can be influenced to varying degrees by education, enforcement and engineering measures.

The education of drivers is not only the learning of basic road rules, but also the changing of attitudes as to what is acceptable behaviour on the roads. A classic example of this is the change in attitude by the public to drinking drivers over the past ten years.

The enforcement of road rules is mostly undertaken by the Police with parking enforcement by the Council.

Engineering measures involve physical changes to the roading system in response to identified problem areas. These normally involve reducing speeds and giving drivers a limited choice of manoeuvres through the use of such measures as roundabouts, traffic signals, islands and medians. These measures do not always receive overwhelming support from the public, due to a perceived removal of individual freedom of motorists.

3.15.5 Parking and access

Updated 14 November 2005

The central city is the centre of commerce and employment in Christchurch and parking plays an important role in maintaining its commercial viability. The number of car parks available within the "four avenues" is approximately 29,300, with 21,350 off-street and 7,950 kerbside, of which 4,600 are all day parks.

The balance of on-street parking between all-day and short term parking is an important issue in the central city. A high demand exists for all-day parking by commuters which conflicts with the demand for short and medium term parking for shoppers and residents close to their destination. A restriction on short and medium term parking weakens the central city as a business centre, particularly compared to suburban commercial centres where parking is free and access generally easier.

Off-street parking and loading is a requirement for all new developments to cater for both employees and business callers or customers. In the past there have been both minimum and maximum limitations in some areas on the number of short and long term parks provided. A minimum limit ensures a reasonable amount of both short and long term off-street parking is supplied to maintain the viability of businesses. A maximum limit was set for employee parking in some areas to favour public transport usage and to limit traffic activity in the central city which can cause congestion leading to a weakening of the business viability of the area. A difficulty exists in balancing the desire to encourage use of public transport and at the same time making the central city attractive to the predominantly motorised consumer.

Industrial and commercial areas are often large generators of traffic and therefore require large areas of parking. The provision of adequate parking and loading facilities by landowners and developers ensures that the capacity of surrounding streets is not unduly reduced by parked or manoeuvring vehicles. The minimum number of car parks required needs careful consideration as provision of car parking involves significant costs and over-provision may detrimentally affect public transport.

The majority of suburban commercial areas are sited on major or minor arterial roads. This does not generally present a problem with new developments, as adequate access and off-street parking and loading facilities are provided. However, older commercial areas have formed as strip development with very little off-street parking and loading facilities. The extra on-street movements of both vehicles and pedestrians exacerbates the effects of any traffic congestion, particularly at peak periods.

In some situations, large district centres include a mix of both old and new development spanning two or more intersection quadrants. In these circumstances, parking and access are often able to be improved with the concentration of these centres in one quadrant of the intersection, also assisting integration of activities within the centre.

As private vehicles are stationary for most of the time, parking and garaging are an important feature of any residential development. There is also the need for visitor parking, and garages can act as a workroom area or for extra storage. Urban densities are increasing slowly and this trend is likely to continue, putting residential land at a premium. Careful evaluation therefore, needs to be made of residential parking requirements so that unreasonable demands are not placed on developers and home builders while excessive on-street parking does not compromise the functioning of the road.

Controlling the number, position and width of access points on a property frontage should ensure safe entry and egress by traffic without unduly interfering with traffic flows. Access needs to be flexible enough to allow sites to develop while protecting pedestrian safety and road users from unnecessary distractions from manoeuvring vehicles.

3.15.6 Public transport

Updated 14 November 2005

The use of buses and taxis as an alternative form of transport to the private motor vehicle has the potential to reduce accidents, pollution and congestion in the City, but this is at some sacrifice of personal freedom. Although taxis are being used increasingly by the public, bus patronage has steadily declined from a recent peak in 1985 of 15.4 million passenger journeys to 7 million passenger journeys in 1993.

Planning of bus routes is the responsibility of the Canterbury Regional Council with the Council responsible for the on-street infrastructure. Cathedral Square is currently the focal point for passenger transport.

Parking policies, particularly those limiting the amount of all-day parking available to commuters, can have an effect on bus patronage. A side effect of limiting parking could be the moving of businesses out to the suburbs where parking is readily available and where it is more difficult to service by public transport.

Land use policies can also affect public transport patronage. Higher residential density along transport corridors, with employment and commerce concentrated at the ends of these corridors, encourages the use of public transport, whereas dispersed development encourages other forms of transport.

3.15.7 Cycling

Updated 14 November 2005

The single largest group of cyclists in Christchurch is school children, particularly in the 10-14 years old age group. School cycle surveys show that approximately 75% of school children in this age group use bicycles. The cycle network was originally evolved to service school cycle traffic in the City but is now being developed to serve all cyclists and encourage bicycle use. This includes cycle routes off main transport routes including through "green arteries" and open spaces.

Surveys indicate a rise in the proportion of the workforce cycling to work from approximately 8% in 1976 to 11% in 1981 falling to 9% by 1991.

Commuters will normally travel along the routes which they perceive to be the quickest and most direct. These routes normally involve travelling on arterial roads which are generally not ideal for cyclists and are not part of the cycle routes in Christchurch. The traffic management measures used to increase vehicle capacity on existing arterial roads decrease safety for cyclists as the amount of carriageway available to them is reduced to a minimum. Arterial roads which have been widened to four lanes can accommodate cyclists in the parking lane or in associated cycle lanes. Other arterial roads such as Colombo Street and Papanui Road which cannot easily be widened may need to consider other options including clearways during certain hours or banning parking totally.

Cycling is a non-polluting, energy efficient, healthy form of transport which makes little demand on road space or parking, and therefore makes an attractive alternative to the private motor vehicle. However, the benefits of cycling need to be weighed against the fact that it is significantly more dangerous than travelling by vehicle (it must be said mainly because of these vehicles) even with the recent benefits of compulsory cycle helmet usage. Bicycles can essentially only carry one person, large loads cannot be carried easily and they are not readily utilised by elderly or less mobile persons. On the other hand, not everyone has access to a car and many vehicle trips are made by one person also.

3.15.8 Pedestrians

Updated 14 November 2005

Walking is the most basic form of movement available and as such, pedestrian movement is important to community well-being. It forms a portion of any trip undertaken. Even so, the majority of footpaths and other pedestrian facilities, other than in large commercial areas, are greatly under-utilised. As such, the development of some pedestrian facilities has had a low priority, but with vehicle traffic volumes increasing recognition of the requirements of pedestrian movement including the need for facilities to increase the safety of pedestrians, particularly on arterial roads, is apparent. These facilities include central traffic islands, pedestrian blips and strategically sited pedestrian crossings. Safe pedestrian access is also an important element of sustainable land use development.

One area in which the pedestrian environment has been improved considerably in recent years is the central city. Open spaces safe for pedestrians have been introduced with the redevelopment of Cathedral Square and Victoria Square, and the development of City Mall and Worcester Boulevard. A pedestrian mall has also been created in New Brighton.

Walking is also a popular form of recreation for a lot of people. To cater for them, a large number of walkways have been constructed on the Port Hills. Walking tracks have also been constructed in other recreational areas. Most of these tracks are also used by joggers and more recently by cyclists on mountain bikes.

3.15.9 Rail, air and sea

Updated 11 July 2011

International access to Christchurch for both passengers and freight is provided by Christchurch International Airport and the Port of Lyttelton, with regional and national access also being provided for by rail and road.

Christchurch International Airport lies 10 kilometres to the north-west of the City centre and was used by over 3 million travellers in 1993, comprising 2.4 million domestic and 0.6 million international. The airport is also the base for the New Zealand and United States Antarctic Research Programmes and is used by other national programmes to service research bases in the Ross Sea Region. Large land requirements, noise and traffic generation are significant impacts.

Lyttelton Harbour is 12 kilometres from the centre of Christchurch within the area of the Banks Peninsula District Council. It is linked to the City and the rest of the South Island by both road and rail. The Port provides international shipping services to more than 30 countries and has well established coastal links with other New Zealand ports. Lyttelton Port provides a vital link for manufacturers, importers, and exporters, and efficient port operations are essential to the economic wellbeing of the City and Canterbury region. The cargoes being moved through the Port include coal, meat, timber, fruit and vegetables, fish, petroleum products, manufactured goods, motor vehicles and metals. In the year ended to June 1995 a total of 4.8 million tonnes of cargo was handled which was a 20% increase on the previous year. During the year ended

June 1995 a total of 1484 visits were made by vessels to the Port, an increase of 14% over the previous year. It is also a port of call for some passenger liners, limited now to occasional cruise voyages.

New Zealand Rail, as part of a major restructuring process, has rationalised its Christchurch operations. In particular this involved the relocation of marshalling facilities from Waltham and Christchurch to Middleton and providing a direct link between the north and south lines at Addington. As a consequence, the passenger station has moved from Moorhouse Avenue to a new location in Addington.

The rail network is important as a major inter-regional transport link, in terms of transporting particularly freight, but also passengers. The continued operation of the rail network has benefits in respect of energy use and in minimising adverse environmental impacts of transport generally.

It is essential for industry, commerce and tourism in Christchurch that a high level of access is maintained between the rail, road, airport and port facilities and the City to provide access for passengers, freight, employees and visitors. It is also important to protect these transport facilities from outside uses, and vice versa, by provision of adequate land in appropriate areas and protection of transport corridors.

3.15.10 Summary of transport issues

Updated 11 August 2011

a. the continuing growth of motor vehicle traffic over the next decade and provision for this growth to ensure that acceptable levels of safety, amenity and mobility are maintained. In the longer term the development of a more sustainable transport system will be required, having regard to safety and congestion, and its other related adverse effects on the environment.

b. appropriateness of the "rooms and corridors" approach to the management of the network of roads in the City that has been the preferred approach over the past 30 years.

c. the completion of the roading network that has been progressively developed over the past 30 years in accordance with the "rooms and corridors" approach, including:

- northern outlet
- Fendalton Road
- Avonside Drive
- Travis Road - Bexley Road link
- southern outlet

d. the relationship between land use and activity trip generation and travel patterns.

e. the encouragement of measures that increase traffic safety.

f. the adequate provision for off-street parking, loading and access to and from the road for activities generating vehicle trips.

g. the parking requirements of the central city and other areas need to strike a balance between the demands of all-day commuter parking, short term parking for shoppers and visitors, business and loading trips, and the avoidance of adverse effects of low occupancy motor vehicle use including support of public passenger transport services.

h. the provisions that need to be made for the special needs of cyclists and pedestrians.

i. the facilities needed to service public transport throughout the city.

j. the facilities to serve rail and sea traffic and access to and from these facilities.

k. the provisions that need to be made for the future operations of Christchurch International Airport, including intensification within, and outward growth of, the airport, and the impacts of traffic and noise on the roading network and residential areas.

l. the future operation of flying activities at the New Zealand Defence Force land at Wigram.

m. the environmental impacts of the increasing traffic on roads and use of the Christchurch International Airport including noise and pollution.

n. the need to acknowledge the effects of roads on visual amenity values and to provide for the enhancement of road corridors through landscape treatments such as tree planting and local road improvements.

o potential effects upon the transport network of new commercial activities, centres and (out of zone) expansion of existing centres.

p the costs of upgrading the road network to safely and efficiently accommodate activities generating high levels of vehicle trips, where necessary and where it is appropriate.

3.16 Utilities

Updated 14 November 2005

This section is concerned with those works required to maintain and service the needs of the City. Utilities include telecommunications and radio communications, electricity operation, water supply, drainage and sewerage. There are other uses which could be said to fall within the general definition of public works or facilities including roading, airports, community facilities, public transport, schools and reserves. These are dealt with in other sections.

The main providers of utilities are local authorities and Central Government, including State Owned Enterprises (SOE's), Local Authority Trading Enterprises (LATE's), and more recently private providers. Traditional providers of utilities and services may now no longer enjoy monopoly status and competition by the private sector is likely to increase in the 20 year planning period.

The public service orientation of many providers of public utilities has undergone major transformation in recent times. Local authorities and Central Government are increasingly operating in a way more consistent with the business practices of the private sector. The Act makes some changes to the existing provisions for public works, recognising this change in philosophy.

Ministers of the Crown and private approved network utility operators are able to require the Council to designate land for their purposes.

Land use implications of infrastructure for utilities include:

- aerials, masts, wires, satellite dishes, poles, telephone boxes.
- power, pylons, sub-stations, wires.
- protection of broadcasting airspace/corridors, transmitter sites, satellite dishes.
- "street furniture" e.g. post boxes.

New communication facilities (e.g. cable TV and satellite dishes) are likely to have environmental and other effects which will need to be addressed.

Utilities that are the responsibility of the Council are:

- water supply;
- sewage disposal;
- drainage;
- solid waste management;
- works depots; and
- electricity supply (through Southpower).

3.16.1 Water supply

Updated 14 November 2005

The supply of water to the City as a resource has been considered in a previous section. The public utility aspect of water supply is more concerned with the system of distribution including the wells, pipes and pumping stations.

An extensive supply system has been built throughout the City since the early 1900's. Today, there are approximately 1300km of mains beneath the City. This system has sufficient capacity to accommodate increased densities of development in the inner city. Higher densities improve the efficiency of supply and it is generally cheaper to service areas for redevelopment rather than to serve new areas, particularly isolated

communities. The relative efficiency in obtaining water for different parts of the City is likely to influence its future development. Because of the nature of the aquifer system, water is more easily obtained in the south and east of the City than the west. In addition, it is relatively more expensive to service the hilly areas of the City than the flat.

The north-west area of the City has been identified as an area with particularly high demands placed on the water supply by some rural activities. The Yaldhurst - West Melton area has at times experienced very low water levels and ground water users have had restrictions placed on their water rights. An important reason for these irrigation restrictions is to protect the City's public water supply wells from which urban domestic water is supplied.

The quantity of water consumed by domestic users does vary significantly according to the capital value of the property, the class of soil (for example clay and sand), and the topography.

3.16.2 Sewage disposal

Updated 14 November 2005

The developed urban area of the City is entirely reticulated, but some areas outside this are not. The sewer mains generally have capacities equal to or greater than that required for their design flow, but the lower end of most trunk sewers do not. This lack of capacity has little effect on dry weather flows, but causes gorging and overflows in storm conditions. The planned renewal and repair of the sewerage system has been started. It needs to continue to avoid the high future expenditure and crisis situations that arise from neglect.

In some industrial areas, for example, Halswell Junction Road, sewer capacities are limited to the domestic equivalent and some "wet industries" would need to be located where sufficient trade-waste flow capacity has been provided, such as at Woolston.

Redevelopment of the inner city area to higher population densities could be accommodated by the existing reticulation in these areas. The additional load on the trunk sewers would tend to be offset by the reduced storm and groundwater inflows resulting from ongoing sewer renewal. However, upgrading of the downstream trunk sewers and pumping stations is likely to be needed in the longer term.

The City is served by three treatment plants located at Bromley, Templeton and Belfast. A fourth plant, located at Spencer Park, treats sewage solely from the camping ground.

The main treatment works is situated at Bromley. Treatment is essentially a controlled biological process involving "trickling filters" and oxidation ponds for the liquid component and the "digestion" of solids followed by pasture application of the resultant inert sludge. Sludge from the sewage treatment plant is spread as a fertiliser on the City's farm at Bromley. The land area available is limited and has reached its capacity to absorb the sludge. Productive use for forestry is being investigated.

The Bromley plant is capable of serving a population equivalent of 400,000 or an increase in flow of 30% comprising both domestic and industrial waste. The Templeton works would not be able to accommodate an increase in population. An option may be to connect Templeton and Islington to the main sewer.

The Belfast plant is capable of receiving a limited increase in population, but expansion of the pond system would be necessary to cater for full development of the Belfast township.

Further land has been owned at Chaneys for many years for the purpose of a second major sewage treatment works. Such provision has been found not to be necessary yet, because of the increased capacity now provided at Bromley.

Two of the treatment works listed above discharge into natural receiving waters:

- from the Bromley Treatment Plant into the Avon-Heathcote Estuary; and
- from the Belfast Treatment Plant into the south branch of the Waimakariri.

Available data relating to the water quality of the estuary suggests that although water quality does vary, it is generally good and complies with standards for water sports although eating uncooked shellfish will be discouraged in most parts.

The capacities of the treatment plants and the associated reticulation system are important determinants of the future development of the City. The Bromley plant has the potential to accommodate an increase in residential development of 40%. Belfast could accommodate limited incremental development and Templeton is limited in terms of any future development unless it is connected to the Bromley plant. The land remains at Chaneys, although it is currently leased for forestry purposes.

3.16.3 Drainage

Updated 14 November 2005

Most of Christchurch City, Belfast and Kaiapoi lie on the floodplain of the Waimakariri River. The alluvial floodplain is flat and gently undulating and the flooding potential of the river poses a significant threat to the City.

In terms of drainage and surface runoff, Christchurch is serviced by an extensive drainage system which discharges principally into the Avon, Heathcote and Styx Rivers. Were it not for this network of drains, the high water tables would revert much of Christchurch back to swamp. The extensive drainage system is maintained by the Council and is continually undergoing extension, maintenance and improvement.

The general issue of flooding from rivers has been considered in an earlier section. From a utility point of view, the drainage system is more than the rivers themselves though, and includes a complex pattern of streams, drains, culverts and pipes to individual properties.

The drainage of individual properties to kerb and channel in roads and therefore ultimately to the rivers, has long been practised in the City. This is one reason why minimum section and building levels are set for new developments.

The retention of some of the stormwater within properties rather than discharging it directly to the road, is now receiving more attention particularly within large properties such as those used for industrial and recreation activities. On a larger scale, the development of retention basins to temporarily store stormwater from whole catchments, is now being developed, such as at Wigram.

3.16.4 Solid wastes

Updated 24 November 2011

The present system of refuse disposal in Christchurch, consists of three refuse transfer stations at Sockburn, Redwood and Bromley and landfill sites at Burwood and Kate Valley in North Canterbury. Each transfer station operates a resource recovery centre which collects newspaper, glass, bottles, aluminium cans, metals, selected plastics, waste oil and clean, sorted household goods. Two of the stations are located within industrial areas and one on the northern edge of the urban area.

Access to the landfill site at Burwood and Kate Valley is restricted so that all refuse, except that which is classed as hazardous or difficult to handle, must go to the transfer stations.

Burwood landfill was the principal refuse facility for Christchurch from July 1984 until its closure in May 2005, after which Kate Valley was established as the City's principal refuse facility. In November 2010, Environment Canterbury approved a consent variation to re-open Burwood Landfill for a limited period of time and allow for the disposal of building demolition material resulting from the Canterbury earthquake of 4 September 2010 and its subsequent aftershocks. The variation was strictly limited to building demolition material and as such would not allow for the disposal of silt and hardfill from the City's sewer and water network. The 2011 Order in Council for the Burwood Resource Recovery Park, including the Burwood Landfill site, allows for the storage, sorting, and processing (including recycling) of earthquake waste until the expiry of the Canterbury Earthquake Recovery Act 2011.

3.16.5 Works depots

Updated 14 November 2005

After recent rationalising, there are now three works depots in the City in Sydenham (Milton Street), Aranui (Pages Road) and Mairehau (Westminster Street). They are located to efficiently service the City, and

represent a considerable investment in land and buildings. Because they are located within living areas, the environmental effects of their operation need to be carefully considered.

3.16.6 Electricity supply and communication facilities

Updated 14 November 2005

The provision by Transpower NZ of the major substations at Islington and Bromley and the distribution network of mainly overhead pylons is part of the electrical supply infrastructure to be provided for.

Southpower has three classes of substation for the reticulation of electricity throughout the City: kiosk substations, building substations and district substations. Identifying appropriate sites for substations and conditions of development is an issue for consideration.

Southpower has developed priorities for undergrounding cabling. First priority is given to the commercial, shopping, tourist and scenic areas, second to arterial routes and third to living areas. Southpower also has a policy of undergrounding within the "four avenues" and new living subdivisions are required to lay services underground and to provide substation sites. There are high costs involved in transferring overhead electrical supply to underground. Undergrounding is seen as desirable, principally for aesthetic reasons.

Some older substations and kiosks, apart from their functional or utility value, have been identified as having an important historical value to the City.

Communication facilities, including towers and dish antennae, can have major visual impacts depending on the scale and nature of structures, and the type of aerials required. Whilst some utilities require larger ancillary buildings or structures, communication facilities have tended to become less conspicuous with changing technology, particularly telecommunications. The impact of such facilities is related to the sensitivity of the local environment, especially when considering visual impacts.

3.16.7 Summary of utility issues

Updated 14 November 2005

a. the special provisions that need to be made within the City Plan to recognise and provide for the operations of the diverse range of utilities needed to service the City now and in the future.

b. the changing nature and ownership of many providers of utilities and the release of large areas of land previously set aside for public works.

c. changing technology particularly within the telecommunications field.

d. the environmental effects of utilities, particularly visual effects, in sensitive locations within the City,

e. the co-ordination of existing and proposed utility services with areas of urban growth.

f. discharges from the sewage disposal treatment plant at Bromley.

g. the future capacity of the Burwood landfill site.

h. the environmental effects of work depots operating within residential parts of the City.

i. the speed at which the undergrounding of the older overhead services can be carried out.

3.17 City form and design

Updated 14 November 2005

City form is concerned with matters of size and shape, the arrangements of activities, transport routes, and visual aspects. It embraces natural elements like rivers and topographical features, and the setting of the City within the surrounding rural environment. In essence, city form is a product of:

- corridors - rivers and local and arterial routes;
- edges - the boundaries between contrasting environments such as rural and urban and commercial and residential;
- districts - segments of the City having a similar character such as residential neighbourhoods;
- nodes - strategic points in a City where there is a focus of activity such as the city centre and suburban centres; and
- landmarks - points of reference, usually tall buildings or landform features such as the city centre and the Port Hills.

These elements interact with each other to produce a city form and are design elements which can be used to create a certain image, not only for the City but also for local neighbourhoods.

City form is interrelated with many other issues including economic development, protection of the natural environment, recreation, transport and population growth. In particular, the form which the City develops will affect how efficiently services are provided and energy is consumed, and whether the urban environment is sustainable in physical and social terms.

There are numerous individual buildings, sites and other objects and areas which contribute towards the intrinsic character of Christchurch. These include areas of ecological significance, historic buildings, neighbourhoods of special character and the Port Hills.

City form also affects the way in which we relate to our social environment, the distance we need to travel to work or school, or for recreation and the viability of public transport. Through its planning policies, the Council is able to exert considerable influence in these matters and contribute to the well-being of the community.

3.17.1 Past influences on the form of the city

Updated 14 November 2005

Christchurch was established as a colony in 1850. The settlement was intended to be self-supporting and was sponsored by the Canterbury Association, a non-profit making body set up to spread the ideals of church inspired colonialism and to transplant the English Church and social order. Edward Gibbon Wakefield persuaded John Robert Godley, a young moderate churchman educated at Christ Church College, Oxford, to become the colony's leader. Godley's drive and initiative was largely responsible for the successful establishment of the settlement.

The site on the Cooper (later Canterbury) Plains was chosen largely on the recommendation of the Company's first agent and surveyor, Captain Thomas, The Deans brothers, successfully established at Riccarton, probably influenced Captain Thomas' recommendation. The surveyor, Jollie, drew up a plan for the settlement which has now become the central part of the City.

The original boundaries of the residential city were to be Barbadoes, St Asaph, Antigua and Salisbury Streets. Beyond these the public reserves extended to the town belts. The expectations of the Canterbury Association as to the value of these reserves were not fulfilled and they were all sold to private purchasers by 1858.

By about 1870, the image of a clean, orderly, English-style town had been created with well built houses, trees and pleasant gardens. However, good roads and proper drainage were still lacking and the earliest settlers often had to provide their own facilities.

While settlement was progressing in Christchurch, development had also been occurring beyond the boundaries of the City. Small communities sprang up at intervals along important routes leading to or from the town. Wherever traffic was heavy and business was likely to be brisk, there people found their work and built their homes. But until the introduction of a transport system, residential location was generally limited to walking distance from places of work, and this effectively prevented the outward spread of the City. Thus the opening of railways to Ferrymead (1863) Lyttelton (1867) and to Papanui (1872) and then the construction of steam and horse tramways from 1879 to Papanui, Addington, Linwood, Woolston, Sumner, New Brighton

and North Beach, had a significant effect on the future growth of the City. As well as opening up new areas for settlement, the introduction of public transport played an important role in consolidating development at particular nodes, the nuclei of today's suburban centres.

Towards the end of the 19th century, on the lands surrounding Christchurch, small communities were growing up at Richmond, Linwood, Woolston, Opawa, the Heathcote Valley, parts of St Martins, Sydenham, parts of Addington, St Albans, Papanui, New Brighton and Sumner.

The second fifty years in the history of Christchurch saw consolidation of the existing pattern and a continued radial growth. The total population of the urban area increased from 57,041 in 1901 to 174,221 in 1951.

The development of a relatively speedy electric tramway system from 1905, with lines spreading radially from the City centre, reinforced the earlier suburban nodes and encouraged residential and commercial growth in a ribbon form along the tram routes, and a concentration of employment in the central area. Widespread use of the bicycle enabled some residential infilling between the radial public transport routes. However, it was the trend towards universal motor car ownership, which had begun by 1950, that was to accentuate this infilling as well as encouraging growth on the perimeter of the urban area.

It was not until the end of the 1950s that modern planning practice began to exert some direction over the built form of the City. The need to place some limit on the outward sprawl of the City became accepted through the "urban fence" and "green belt" policies developed through the 1960's. The growth of suburban shopping centres and effects on local amenities, roading and the central city, became an issue. The strong growth of traffic movements in the City led to the development of a roading hierarchy and network. The number of multi-unit dwellings intensified and required design responses to avoid "barrack" layouts. In the central city, proposals for an "amenity linkage" from Victoria Square, through Cathedral Square, to High and Cashel Streets along the Avon River and back to Victoria Square were developed. Important elements have since been implemented (Cathedral Square, one-way traffic patterns, Victoria Square, City Mall), and further ideas have evolved, such as Worcester Boulevard. In other parts of the City, other initiatives included a landscape study of the Port Hills, assessment of the landscape values of the rural areas and special recognition of the character of areas such as Fendalton.

3.17.2 City character

Updated 14 November 2005

Character is "the combination of traits or qualities which distinguish the individual nature of a thing or place". A credible objective for any city is to develop its own distinctive identity based on its inherent characteristics. The City has a generally circular shape resulting from its relatively unrestricted progressive growth from the original City centre (bounded by the "four avenues") along a network of radial roads, engulfing early outlying settlements like Fendal Town, Papanui and New Brighton. Generally, suburbs have become progressively newer in successive rings away from Cathedral Square.

Another characteristic feature of Christchurch is its road network. The historical, central grid street pattern is bisected by diagonal routes to Lyttelton via Ferry Road and Sumner and Victoria Street and Papanui Road to the early Papanui Bush. A modern transport network has superimposed a ring road network and a one-way system around the City centre to carry traffic more safely and efficiently and overcome traffic impediments associated with the original grid pattern.

Many of Christchurch's characteristics derive from its location on a flat plain flanked by the Port Hills, a long coastal boundary and a major river. Within this picture however, a number of fine details emerge such as the river systems of the Avon, Heathcote and Styx Rivers and a linkage of significant open spaces including wetlands, parks, recreation areas, forests and sand dunes. The underlying drainage and soil patterns are also fundamental to shaping the character of certain parts of the City.

At another level again, the rivers can be viewed as having many distinctive characteristics from small streams, formalised banks and planting treatment, to a more open character through suburban areas. The development of open spaces and home gardens of the City to a generally regarded high standard has earned it the "The Garden City".

3.17.3 Architectural styles

Updated 14 November 2005

Early forms of housing in Christchurch consisted of simple wooden cottages, either single storey or with first floor dormer windows. The wooden bay style villa was popular from the 1880s and towards the turn of the century, the "Arts and Crafts" or "English Revival" influence was seen, particularly in many of the larger houses, in a mixture of brickwork, tile cladding, half-timbering and broken roof lines. However, the average family home from 1915 through to the late 1920s was built in the "Californian Bungalow" style with decorative elements such as verandahs, lead lights and shingled gables of which there are still many examples in Christchurch today. The 1930s and the depression returned to a simpler, more conservative overall building form. Interludes during this time included the "Art Deco" influence with many plastered, flat-roofed houses and also multi-storied apartment buildings such as Victoria Mansions and St Elmo Courts. The 1950s and 1960s saw the introduction of brick and summerhill stone veneer houses and flats, and also a return in the early 1960s to simplified building forms. These various building forms have continued up to the 1970s in residential flats and dwellings. Use of concrete slabs, mirror glass and plaster wash are all more recent trends.

Commercial buildings from the 1950's mirrored the residential building forms on a larger scale. Many buildings were shops with living accommodation above. During the 1860s and 1870s, stone was used for important public buildings such as the University, Museum and Cathedral. The Gothic Revival style was popular during the Victorian era, particularly for churches, natural history museums and schools. Christchurch has lost many of the brick and stone commercial buildings within the inner city that date back to the 1870s and 1880s, however, some still survive such as Fisher's building on the corner of High and Hereford Streets and the group in lower High Street between Tuam and St Asaph Streets. These buildings were generally 2 to 3 storeys in height. During the latter part of the 19th century, building styles were more varied with Neo Classical and Neo Georgian styles used for banks, and the Queen Anne style used in the Old Municipal Chambers in Oxford Terrace. Within Cathedral Square, Venetian, Gothic and Italianate styles are also evident.

After the 1931 Napier earthquake, structural building codes were introduced and brick and stone were replaced as materials for commercial buildings by steel-framed or reinforced concrete structures. These new materials allowed a building to not only reflect its function, but also allowed scope for individual expression when designing a building's facade, and this is evident in the large range of styles for multi-storied developments in the City today.

3.17.4 The heritage of the City

Updated 14 November 2005

Christchurch contains many buildings, places and trees which have special historic, architectural and community value, that helps to give the City a distinctive character and serve as reminders of its past. There are about 600 buildings and over 1400 trees which might be considered to be in this class.

Reasons why buildings, places and trees might have heritage value are varied and would include consideration of matters such as:

- historical and social significance;
- archaeological significance;
- community, character or landmark importance;
- combined significance of groups of buildings or trees;
- scientific and technological interest;
- educational and recreational value; and
- natural beauty and scenic values.

It is important that buildings which contribute to the City's environment be conserved, protected and recorded. Significant links with the past and features of the former life of the City need to be identified and retained so that as the City continues to grow and its built environment changes, the richness and variety of

the City is maintained. Archaeological sites, although often not highly visible, do provide links with the past, particularly prior to 1900. These sites in Christchurch are predominantly associated with early Maori occupation.

With redevelopment, buildings of historic importance can be lost or other special features may be destroyed. The City can only be the poorer by the loss of such buildings and features. However, the need for the retention of existing features must be weighed against the need for new growth and development and the community costs of such retention.

3.17.5 Urban design and form

Updated 14 November 2005

The form the City takes in a horizontal or vertical plane affects people's perception of where they are. For example, in a vertical plane, tall buildings facilitate orientation within the flat landscape. Similarly, views of tall buildings down key roads, such as Papanui Road, indicate the City centre and views of the Port Hills indicate a southerly direction.

The central city building boom of the 1980's created a rapid increase in building scale. It introduced a wide range of building materials, resulted in the loss of some older buildings, and stimulated public interest in the quality, harmony, coherence and sense of place in the built environment. This interest resulted in the introduction in 1989, of an urban design strategy to determine building scale and height in relation to important central city elements such as the squares, the Avon River, and to better recognise historic buildings and precincts. It also aimed to achieve a better relationship between the scale and appearance of residential buildings and their immediate environment.

Limits on the size, location and content of advertising signs, particularly within residential areas, have long been in place. Within commercial and industrial areas, more freedom has been allowed, but even here there are currently limits on advertising in places such as Cathedral Square and City Mall. Hoardings (i.e. display of signs unrelated to activities within a site or building) are only provided for in limited situations within industrial areas. Within commercial areas in particular, there is a view that well designed and located signs could be permitted on a wider basis in order to add life and colour to those centres, particularly at night, provided important historic and architectural buildings and areas are considered.

3.17.6 Open spaces and form

Updated 14 November 2005

Parks and other open areas are an important feature of the City's form. Hagley Park in particular makes a distinctive landscape feature and has had an important role in shaping the City form from the beginning of settlement.

Urban form includes the many types of open spaces in and around the urban part of the City, each performing its own particular function. For example, open areas can be used to act as "breathing spaces" for suburbs, provide visual relief along major transport routes, or simply to add to the variety of streetscape in built up commercial centres. The size, distribution and use of these open areas all contribute towards the overall urban form.

The rural area forms an important part of the City's open space resources. The rural landscape is valuable as a visual and natural habitat resource as well as for food production and other activities. Its value also lies in the contrast between urban and rural landscapes, and the prominent natural features of the rural landscape. Past and present planning policies aim to maintain a clear and sharp distinction between urban Christchurch and its surrounding countryside, through controlling, for example, housing and subdivision in the "green belt", and retaining the open tussock character of the Port Hills.

The sense of difference between town and country could be further enhanced by creating a peripheral parkway or "green linkage". This could be achieved by linking natural and recreational environments, such as coastal and wetland areas, Travis Swamp, Bottle Lake Plantation, the Groynes, Styx River Basin, Nunweek, Tullett and Harewood Parks, Halswell Quarry and the Port Hills.

Road reserves, particularly along major arterials and riversides, can also provide an important "green linkage" between core habitats and open space, as well as routes for cycleways and walkways.

A sense of arrival into the City may be reinforced by the definition of "gateways" through special treatment such as tree planting along main roads. Design concepts for the City could seek to utilise these contrasting (urban and rural) open spaces.

3.17.7 Summary of city form and design issues

Updated 14 November 2005

a. the shape and form of the future City and the distribution of activities within it, that will best minimise resource use, promote enhanced amenities and assist with the long term sustainability of the City;

b. the definition of the outer edges of the urban area by rural and recreational activities, open space networks, forests and the Port Hills;

c. within the urban area, the definition and identification of the city centre, suburban centres and communities by the groupings of tall buildings, the intensification and diversity of activities and the roading network;

d. within the rural areas, including the Port Hills, the value of open landscapes, natural features, planting patterns and the definition of entranceways to the City;

e. within the central city in particular, the role of the original 1850 grid pattern of the streets and open spaces, in determining future city form;

f. the contrast to the formal grid pattern provided by the natural sinuous pattern of the city's streams and rivers, in particular the Avon and Heathcote rivers;

g. the external design and appearance of new buildings erected in the City, particularly large buildings in the city centre, buildings close to heritage buildings and places and new apartments within established areas of housing;

h. the identification and protection of buildings, places and objects having particular heritage values for the City, including the re-use of heritage buildings, the setting of earthquake standards, the degree of protection possible within the available resources of the community , development contributions, incentives, and o ther assistance that might be provided for the owners of these buildings and places;

i. the role of the "Garden City" image in setting standards for new developments within the City and the kinds of landscapes and planting that are appropriate in promoting this image;

j. the location and extent of outdoor advertising that is consistent with the enhancement of the amenities of the City; and

k. the identification and promotion of new projects for improving the qualities and amenities of the public spaces of the City, particularly within the central city and older housing areas and shopping centres.

3.18 The growth of the city

Updated 14 November 2005

There are three ways of looking at the future growth of Christchurch. These are:

- population and household growth;
- physical growth, such as buildings, roads and other structures and services needed to accommodate population growth; and
- economic growth - the general growth in the economy relating to increased employment and investment opportunities which will have an influence on property development and land use.

These distinctions are important for understanding the main influences on the future development options for Christchurch, and their impacts on the physical development of buildings will depend on the City's economic prospects relative to other centres in New Zealand. Household growth is also influenced by other demographic factors such as age structure and lifestyle preferences. Underpinning any growth in the future will be considerations of environmental sustainability and this is a cornerstone of the Act.

In considering future development options for Christchurch, it is important to acknowledge the effect of such options, not only within the area of Christchurch, but also beyond its boundaries. This is of particular significance for adjoining districts when considering options for both rural and urban development, recognising the relationship the City has with other districts and the region.

3.18.1 Recent changes and future prospects

Updated 16 November 2009

Some of the significant changes affecting the growth of Christchurch can be summarised as follows:

- An increase in the present population by between 26,700 and 50,600 over the period from 2001 to 2021, depending upon whether a medium or high population projection is assumed, (from 332,100 to 358,800 or 382,700) (15).
- An increase in the number of households by between 21,600 and 34,200 over the 2001-2021 period depending upon whether a medium or high household projection is assumed (from 125,200 to 146,000 or 159,500) (16).
- Based on residential development 1985 - 2002, approximately 57% of new households are being created on new lots, with the remainder as infill or redevelopment on existing lots.
- The changing structure of Christchurch's population, particularly the number of people entering the older age brackets, will lead to changes in the housing ‘mix' i.e. more smaller sections and/or units.
- Between 1994 and 2002, residentially zoned land has been taken up at an average rate of around 95 hectares per annum (17). At this rate of development, all currently zoned vacant residential land will be in use within 12 years. Additional zoned land will need to be known well in advance.
- Since 1994, industrial land has been taken up at an average rate of around 22 hectares per annum 18 . At this rate, currently zoned vacant industrial land will be sufficient to meet anticipated needs over 20 years and longer. However, take-up is not consistent throughout the City as preferred locations have higher levels of take-up than other less desirable areas or areas with servicing difficulties. This may result in pressure for additional industrial land in particular areas of the City.
- The expansion of specialist land uses such as medical facilities, retirement villages and agri-business.

(15) Statistics New Zealand, Sub National Population Projections (2001 Base)

(16) Statistics New Zealand, Population Projections, Medium Household Projection (Adjusted 1996 base)

(17) Christchurch City Council, Residential Vacant Land Register, 2002

18 Christchurch City Council, Residential Vacant Land Register, 2002

3.18.2 Opportunities for growth

Updated 14 November 2005

Christchurch can accept present trends and the modest growth outlook, or it can seek to influence them. Many of the factors that will affect the future growth are outside the City's control, for example Government and international economic policy. Nevertheless, Christchurch and its surrounding region have many advantages and other strengths that can be further developed to promote growth. Some of the opportunities include, amongst many others:

- a developing horticultural sector, and sound export base generally, including potential for further resource development such as forestry;
- a well established and expanding tertiary education sector;
- an environment, lifestyle and relatively low cost structure conducive to attracting new industry and migrants;
- a well established infrastructure including an international airport and port; and
- land for urban expansion.

The Council can play an important role in fostering economic growth and is currently committed in a number of areas. Initiatives include:

- identifying and removing unnecessary impediments to growth and investment;
- maintaining and improving the environmental quality of the City;
- assisting organisations in promoting Christchurch in New Zealand and overseas for tourism and business development.
- actively encouraging New Zealand and overseas migrants to move to the City; and
- ensuring there is an adequate supply of serviced land to accommodate new housing and other growth.

To a significant extent, Christchurch's future growth will depend on how these and other opportunities and initiatives can be retained and developed, so that as the nation's economy recovers, the people of Christchurch will receive maximum benefit. The Council will have an obligation to ensure that the impacts of growth are environmentally acceptable and sustainable.

3.18.3 Some growth options

Updated 14 November 2005

It is not possible to be precise as to the growth needed to be planned for. One way of coping with this uncertainty is to examine a number of possible futures that the Council could consider. As time progresses, the Council will be able to identify with more certainty the option that is emerging and adjust its planning accordingly.

Possible future growth options for Christchurch can be simplified as shown in the accompanying table. Table 13 identifies the kinds of assumptions that need to be made in order to reach a stated future population. It also identifies possible ways of accommodating this growth in the column headed "Possible Planning Outcomes".

Table 13. Possible Growth Options			
Population By 2011	**Economic Assumption**	**Population Migration Assumption**	**Possible Planning Outcomes**
Low 300,000	Little or no improvement in urban economy.	Population increase of 16,000 since 1986. Migration loss of 500 per annum.	Main focus on redevelopment and infill. Limited expansion at urban edge.
Low/Medium 312,000	Some noticeable improvement.	Retaining its population and attracting new migrants at about 300 per annum.	Expansion at urban edge and/or higher densities in existing urban areas.
Medium/High 300,000	Significant growth in urban economy.	Increasing levels of immigration at around 1,000 nett gain per annum.	Major expansion at the urban edge and redevelopment to higher densities. Diversion of Growth to other growth centres, redevelopment.
High 350,000	Sustained growth with major expansion in all sectors of the economy	Migration at around 2,000 per annum nett.	Significant growth diverted to other centres as well as expansion and redevelopment in Christchurch

The outcomes suggested in the table, are a combination of one or more of three broad growth options for the City. The three options are:

- consolidation of existing urban area (which could be undertaken in a number of different forms);
- expansion of the City at the edge; or
- diversion of growth to other urban centres, e.g. Rangiora. West Melton, Rolleston, Woodend, Kaiapoi or Lyttelton.

The final selection of these options will depend on the particular paths being followed, and in turn will depend on the scenario that appears to be the most realistic. Each of the options may be taken up at different times.

The following diagram explains possible localities for growth in and around the City for each option. It opens a number of alternatives which can be used to form the basis of future growth policy. The final choice can only be made once each option has been assessed in terms of the major issues to be considered.

Possible Growth Location Options				
		Broad Options (not mutually exclusive)		**Specific Areas for Growth (examples only)**
Existing Urban Area	⇨	Consolidation (infill and redevelopment)	⇨	Inner City Throughout City Corridors or focal points
		Expansion at the urban edge	⇨	Port Hills Mairehau Bottle Lake vicinity Waimairi Beach area Islington Hei Hei Halswell Templeton Prebbleton Heathcote Valley
		Diversion to other settlements beyond the City	⇨	Rangiora, Kaiapoi, Woodend West Melton South-West, Rolleston, Lincoln Lyttelton Harbour Basin Beyond the region

3.18.4 Some restraints on growth of the City

Updated 14 November 2005

The options discussed in the previous section need to be assessed in terms of the resource management issues and constraints that affect or would be affected by the growth of the City.

City growth, in its various forms, will result in changes to our natural and built environment. Neighbourhoods, the central city skyline, traffic volumes and a whole range of other things affecting people's daily lives, will alter. Unless appropriate safeguards are put in place, there could be reductions in air and water quality, an unwarranted increase in the use of non-renewable energy, and a greater threat from urban development on soil resources, wildlife habitat and other environmental values. The fundamental question for the people of Christchurch is the level of change that is acceptable and sustainable.

As previously mentioned, Christchurch's growth, unless artificially stimulated, is likely to be relatively modest over the next 20 years. Nevertheless, significant changes to city form and environment may occur through, for example:

- surges in economic activity, such as occurred in the commercial property market during the mid 1980's;
- increasing numbers of tourists visiting the City and the need for attractions and accommodation; and
- changed housing preferences ranging from inner city living to rural life style blocks.

Possibly the greatest single cause of rapid change likely, will be from an influx of migrants. High immigration has the potential to affect the present character of Christchurch. It may, for example, result in much larger ethnic communities than those found at the present time, increase the ‘pace' of the City, and lead to greater housing densities.

Future growth will need to be provided for in a manner which respects the physical restraints and intrinsic values of the City's land, air and water resources.

These include the following:

- Christchurch is reaching the limit of the water it can sustainably draw from its underground aquifer resources. Alternative water supplies are available, such as from the Waimakariri River, but at considerable

cost and of lesser quality. Water conservation could be practised to a much greater degree. Alternatively, additional households could be encouraged to locate in other centres which have spare water supply capacity.

- The density and design of development in some areas may need to be controlled to ensure the capacity of the surface drainage systems are not exceeded. Development on the Port Hills, for example, would need to be carefully designed to ensure that flood peaks in the Heathcote and Halswell catchments are not increased.

- Most remaining areas of highly versatile horticultural land within the City occur immediately beyond the existing urban boundary. They occur mainly in the north and northwest of the City from Belfast through Harewood, to Avonhead and Yaldhurst, with smaller areas from Templeton to Halswell and to the southeast of Wigram aerodrome. The Marshland peat soils are also highly productive, but their versatility is limited by wetness. Large areas of highly versatile horticultural land are relatively scarce close to the City. However, simply because soils are of high quality, this should not, in itself, necessarily preclude development for urban purposes. Rather, this needs to be balanced against such other factors as desirable urban form and access to transport and other facilities.

- Christchurch is built on the flood plain of the Waimakariri River. This is a potential constraint to development both within and beyond the urban area of the City. Significant parts of the City, particularly in the north and west, could be inundated if the Waimakariri River overtopped its banks upstream of the City. Such a flood could follow old flood channels into the City, including the paths of the Avon, Styx and Halswell Rivers. Localised flooding and ponding already periodically occurs in the Avon, Heathcote, Halswell and Styx River catchments.

- The recharge area for the groundwater aquifers, from which the City obtains its water, extends into the City in the north-west. Substantial existing urban development is located over the recharge area. More information is required about the risks to the groundwater aquifer of serviced residential development being located over the recharge area. It may be that serviced residential development is a safer use of this land than some forms of agriculture or horticulture.

- Some areas of the Port Hills are unsuited to residential development, due to steep slopes, erosion potential and effects on the Heathcote and Halswell River catchments. Further residential development on the Port Hills could occur on the ridges, in parts of the valley floors, or on the hills to the south west of Hoon Hay Valley. Some low density residential development is possible on other hilly slopes and on small areas of the valley sides, subject to site by site investigation. Any future development should be sensitive to landscape and ecological values. While there are some areas where development could occur without causing adverse effects, there is a need to retain the remaining relatively unmodified areas of the valued Port Hills environment, and this constitutes a major constraint to urban development in this area.

- Small areas of remaining wetland occur around the Avon-Heathcote Estuary, Travis Swamp, the Waitikiri area (Bottle Lake) and Brooklands Lagoon. Any development which would affect these areas needs to be balanced against their ecological, educational and recreational value for the City.

- Changes in atmospheric concentrations of various gases (known as "greenhouse gases") are believed by some to be altering the climate of the earth and leading to, among other effects, rises in sea-levels.

- The NZ Meteorological Service has developed some possible scenarios on the effects of climate change in the Canterbury region. These scenarios suggest possible rises in sea-levels of 20-60cm by the year 2030. The consequences of this could include inundation of low lying areas of the City and increased flooding due to high spring tides coinciding with high rainfall. Some low-lying areas of the City may no longer be suitable for residential development. In other areas, ground level requirements for filling of residential sections and floor level requirements for houses may need to be increased. This could significantly constrain the potential for further development in coastal and low lying parts of the City.

- The future growth of Christchurch needs to be assessed in terms of the use of non-renewable energy resources, the costs and impacts of energy use and the generation of air pollutants, and other wastes.

The design of the City and the forms and densities of development it contains have a significant impact on the consumption of energy. The degree to which this affects the form of the City's growth needs to be determined.

Increased use of public transport can be encouraged by increasing the densities of households within walking distance of public transport routes. Travel distances between home and work might be reduced, and the likelihood of walking or cycling increased, by increasing the numbers and density of households close to centres of employment, and by providing more opportunities for people to work in suburban areas.

Assuming the central city area remains the dominant employment centre, then edge of town expansion is likely to increase travelling times and, by implication, energy use. It is also more difficult to provide convenient and cost efficient public transport. Consolidation and infilling may encourage energy efficient forms of transport, such as cycling and public transport.

The key urban growth issue concerning energy is the potential conflict between expansion at the edge of urban Christchurch or beyond and the extra energy costs it could generate.

Any new development and redevelopment must be able to be serviced efficiently and economically with public utilities, such as water supply, stormwater, drainage, sewage disposal and roading. Decisions regarding the merits of peripheral expansion of the urban area of the City, internal consolidation or restriction on city growth must take into account the capacities of existing utilities and the costs of extensions or upgrading. Decisions regarding the growth of the City must take into account the limited nature of the underground water resource and the cost of providing alternative supplies.

There are no anticipated difficulties in providing public utility services to a city of the size projected or targeted. However, localised problems may occur, for example:

- Water is more easily obtained from aquifers in the east and south of the City than in the west. It is relatively more expensive to service the hilly areas of the City for water supply than the flat. Approximately twice as much water is used by properties on sandy soils compared with those on clay soils. It is generally cheaper and more efficient to provide water to redevelopment of existing areas than to new areas. The existing water reticulation system has sufficient capacity to accommodate significantly increased densities of development in the inner city.

- The Bromley sewage treatment plant has the capacity to accommodate effluent from a population of 400,000. The Belfast plant could accommodate limited increased growth, but may need to be upgraded anyway to meet Waimakariri River water quality standards. The Templeton plant could not cope with much further development and this area would need to be connected to Bromley if significant new development occurred. Connection to Bromley may be necessary anyway to overcome environmental difficulties with the existing disposal system.

There are limitations on sewerage capacity in the north west area (airport vicinity) due to high groundwater infiltration. Also, further development on the Port Hills would require some upgrading of the sewerage system. There are no major sewerage constraints to redevelopment of the inner city, although there may be some local reticulation upgrading required.

The diverse lifestyle and housing preferences of the City's population are likely to change over the next 20 years as the structure of the population alters. The preferred growth strategies should consider making sufficient provision for a range of allotment sizes and orientations, housing types, tenure options, locations, price levels and access to public facilities. If housing and land for new residential development are available in sufficient quantities, artificial inflation of land prices may be avoided, development lead-times provided for, and the image of Christchurch maintained as an attractive city in which to live and purchase property.

The social environment being influenced by expanded residential areas or increasing residential densities needs to be considered. For example, the proximity, availability and capacity of shopping centres, schools and other community services and facilities; the desirability of creating identifiable and cohesive neighbourhoods with identifiable focal points; and, accessibility to and within residential areas, are all matters that are likely to be affected by City growth. Also, the impact that different growth options could have on recreation and landscape values of affected areas. As densities increase the availability of open space per person is likely to diminish in some areas. Loss of private open space will need to be compensated through acquisition of public open space as and when the opportunity arises.

City growth, whether peripheral or internal, needs to complement the image and form desired for the City. Policies to promote the growth of the City have the potential to alter significantly the image and form of the City. Different growth strategies will have varying impacts on City form. For example, growth strategies which aim to confine urban Christchurch within strict boundaries are more likely to lead to increased densities and more high-rise development. Peripheral expansion could lead to derelict land and buildings in the central and

inner city areas, although these areas provide different opportunities for residential development and lifestyle. Thus, while such a strategy retains sharp urban-rural interface as at present, the form of the inner suburbs could significantly alter.

While it is likely that the petrol or diesel powered private motor vehicle will remain the dominant form of transport over the next two decades, it is by no means an absolute certainty. The use of other forms of energy, such as electricity, or even new types of transport, such as a new mass transit system, are possible changes that will need to be considered when opting for a particular growth strategy. Conversely, a deliberate policy to encourage rapid growth may create opportunities for new transport systems.

The extent and rate of Christchurch's growth will have major implications for the road network.

A variety of significant public uses are located in the rural area of the City, such as the airport, Wigram aerodrome, the landfill site, the sewage treatment works and recreational areas. Their continued use is dependent on freedom from restraints due to the proximity of residential development. For example, the airport needs to continue to operate 24 hours per day in order to remain a viable international airport. Retaining a buffer area, as at present, prevents undue noise nuisance, associated complaints and possible restrictions on night-time activity. Similarly, the landfill site requires a substantial buffer.

Many recreational uses have located in the rural area, because they were incompatible with urban uses, such as Ruapuna raceway. The continued functioning of these activities would be compromised by the future proximity of residential development, and this needs to be balanced against the need to provide additional residential land in the City.

In some locations, new housing development has located close to rural areas, such as poultry farms, which may smell or have other noxious elements. Consequently, the Council has been asked to ‘zone out' the offending rural use even though that use was established first. Future growth should seek to avoid this conflict where possible.

The issues discussed above relate to mitigating against the undesirable effects of development on the environment. However, it is also the Council's policy to adopt a positive approach to encouraging economic growth and job opportunities in the City to the extent that it is able to. Provision for growth of the City is an essential component of such a policy.

3.18.5 Summary of growth issues

Updated 16 November 2009

a. the levels of population growth and economic activity within the City that generate further demands for the use of land, buildings and structures for housing, community and business purposes.

b. the changing population mix and new economic directions that are leading to different forms of housing, community and business facilities.

c. the natural physical restraints on urban development including water availability, stormwater disposal, versatile soils, flood-prone areas, groundwater recharge areas, steep slopes and erosion potential, wetlands, sea level changes and air quality standards.

d. the effects on energy use of different forms of urban growth.

e. the present and future availability of public utility services such as water supply, stormwater disposal, sewage treatment and disposal, power and telecommunications.

f. the present and future availability of roads to serve additional areas of urban growth.

g. the life style preferences of the City's present and future population.

h. the availability of community facilities, including shops and schools, to serve additional residents.

i. the effects on the identity, image and general amenity of the City, of different forms of urban growth.

j. the effects on future growth directions of a number of important existing activities, such as the airport, sewage treatment works and major recreation facilities and some agricultural activity.

k. the effects of urban growth, including intensification of housing, on the demand for open space of a size and location necessary to provide for a widening range of active and passive activities.

l. the potential effects of any dispersal of retailing and related activities on any local or wider community, in terms of reduced access to consolidated shopping and communal facilities.

3.19 Subdivision

Updated 14 November 2005

The Act distinguishes subdivision as a category of activity distinct from land use activities. Subdivision and land use are nevertheless closely related. As a process to create title to land and therefore provide a framework for the establishment of land use activities, subdivision is a key matter in respect of the use of land and is also clearly linked to subsequent land use expectations of land owners.

In addition, subdivision is closely related to:

- the influences of hazards in determining the suitability of land for anticipated uses;

- the conservation and management of natural features in providing a mechanism for the provision of esplanade reserves and strips. These are also major factors in providing public access to and along waterways and the coast.;

- the association between land use activities, site areas, dimensions and related standards for buildings and surrounding space; and

- providing the framework of services for land uses, such as roading, energy and water supply, sewage disposal and stormwater. Subdivision is also a mechanism for the provision of land for open space and recreation.

3.19.1 Summary of subdivision issues

Updated 14 November 2005

a. the control of subdivision in respect of its impacts on the ultimate use of land.

b. the role of subdivision with regard to services provision.

c. the effects of subdivision on subsequent patterns of land use in the City.