

Christchurch City Centre 40 Years of Change, Traffic, Planning 1959 - 1999

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Compiled by
Malcolm Douglass



CHRISTCHURCH
CITY COUNCIL · ENVIRONMENT

CHRISTCHURCH CITY CENTRE
40 YEARS OF CHANGE, TRAFFIC, PLANNING
1959 TO 1999

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PREFACE

This publication records the planning and changes in the Christchurch City Centre, in particular to the transport system, over the 40 years 1959 to 1999. It is both a description and an assessment of the surveys, planning and development of the city centre i.e. the area within the four avenues. It attempts, in a few pages and with photographs and charts, to encapsulate 40 years of the results of all the Council's decisions and actions, together with those of the many developers, businesses and institutions that occupy the city centre.

While focussing on traffic management and the public open spaces these changes cannot be seen separately from the host of activities occurring in the complex metropolitan city centre of Christchurch.

The overview recognises:

- all the land uses (shops, offices, industry, entertainment, education, institutional and residential activities).
- all the public open spaces (streets, squares, reserves, pedestrian areas, traffic areas, parking) and
- all the modes of travel and access (cars, trucks, buses, taxis, bicycles, pedestrians).

These activities and functions occur within economic, employment and investment contexts, and the dynamics of growth affecting environmental and heritage issues. All these matters must be considered together and policies developed and balanced as a whole for successful city centre planning and development.

The Christchurch City Centre now contains 26% of Christchurch's employment. Over 60% of Christchurch citizens visit this area during a typical week. The area is attractive to a large proportion of citizens, national and international visitors. The city centre contains institutions, businesses and activities, which are representative of the whole community. For all these reasons, it is essential that it remain healthy, active, accessible and attractive.

September 1999 was the 40th anniversary of the first comprehensive transportation and land use study undertaken in Christchurch (and New Zealand.) This was recorded in the book "Traffic in a New Zealand City" (1965) which is a unique resource enabling review of the "science" of traffic surveys, modelling and the "art" of transport planning. In Christchurch there is the opportunity for 40 years of hindsight and the measurement of development and travel changes on the same scientific basis. Such a background must bring added confidence to the technical conclusions as well as the public recommendations arising from such work in 2000 and beyond.

This review is not in isolation. Historically, the record of growth, change and traffic planning for the city centre is very extensive. In 1959 Nancy Northcroft and her regional planning staff surveyed the land uses and traffic situation in great detail. The work of Harold Surtees, Bob Critchley and Peter Scouler in the 1960s and 70s was followed by that of Bill Williams and Mike Gadd (who has assisted in preparing this publication). In 1987 the City Council published an excellent booklet edited by Bill Williams "The Christchurch Central Area Traffic Plan 1960 - 1986".

This report has been prepared by Malcolm Douglass who has had an association with the work since 1964 and is uniquely placed to ensure consistency of information over the 40 years covered. He has been assisted by past and present planners and transport engineers of the Council, in particular Stuart Woods and Paul Roberts. It is seen as part of the ongoing research and reports associated with the central city improvement plan envisaged in the Christchurch City Plan and being actively pursued by the Council at this time.

The result of all these changes, planned and unplanned, is the city centre as we see it today. It is a measure of success of the efforts of many people that the city centre both functions well and looks more attractive as each year passes.



J.G. Dryden
Environmental Policy and Planning Manager
Christchurch City Council

October 2000

PART 1 - SETTING

Introduction

Christchurch is built on flat land, with no geographical barriers except the sea to the east and the Port Hills to the south. As a result, the city is generally circular in plan, and is balanced about its centre, more so than most cities of similar size. The metropolitan area is 16km across with radial roads like the spokes of a wheel leading toward the central area. This radial street pattern does not extend into the very centre. Within the four avenues (Bealey, Fitzgerald, Moorhouse and Rolleston) which define the centre city, the road pattern is a rectangular grid interrupted only by the Avon River and occasional squares, reserves and pedestrian malls.

Forty years ago the land use pattern in the city centre was established, with a commercial core north and south of Cathedral Square, and an industrial area toward the railway to the south. An arc of residential land fringed the commercial area to the northwest, the north and the east. However on the southern margin parallel with Moorhouse Avenue the industrial area has, in the past 20 years, been replaced by the development of supermarkets, car sales and the Polytechnic.

By the late 1950s the traffic congestion problems in the city centre were becoming serious, with accidents and air pollution problems much worse than in other New Zealand city centres.

Major proposals for development of a Central Christchurch Traffic Plan (the area within the "four avenues") including motorways and one-way streets were proposed in the late 1950s. Since then, the plans have gradually been developed and refined as a result of public debate and changes in traffic management techniques. The plan adopted for the city centre in 1967 included one-way street systems, linked traffic lights, improved parking areas, open reserve spaces and new pedestrian precincts which have been introduced in stages.

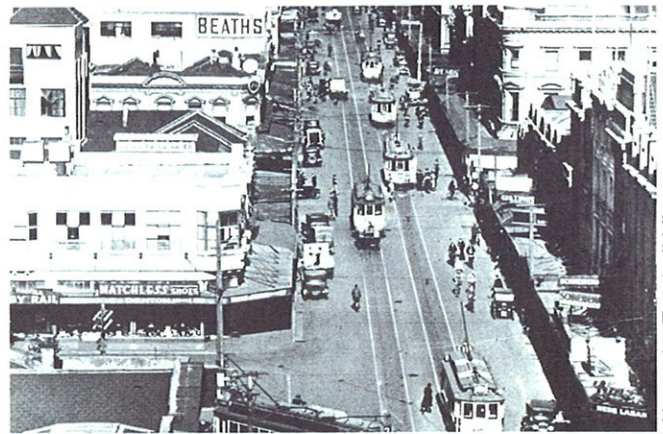


1990s



1900

Canterbury Museum



1920s

Alexander Turnbull Library



1950s



1960s

Canterbury United Council

An Overview

No traffic improvement is warranted unless it brings with it commensurate environmental improvements. In the Christchurch City Centre the traffic and environment have been improved immensely through a "win-win" programme of improved traffic accessibility and enhanced pedestrian and environmental treatment.

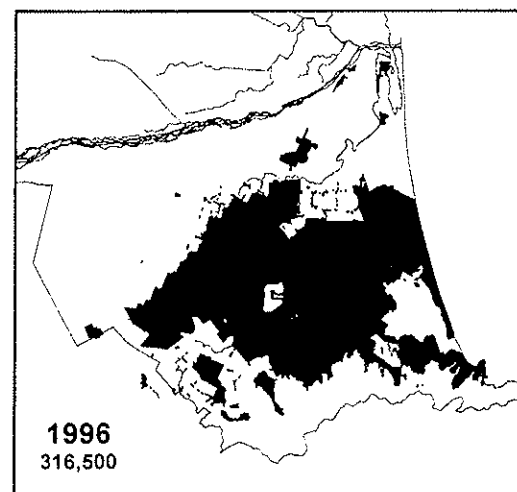
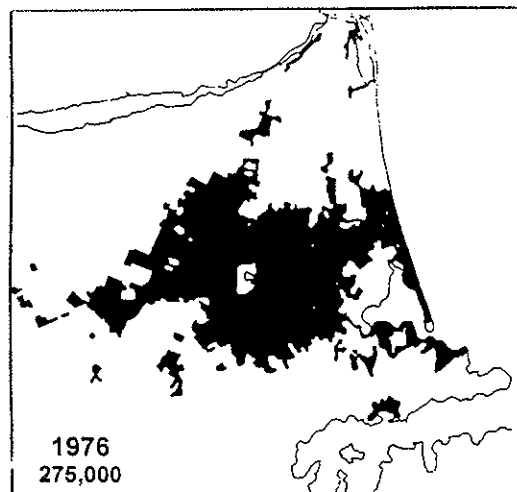
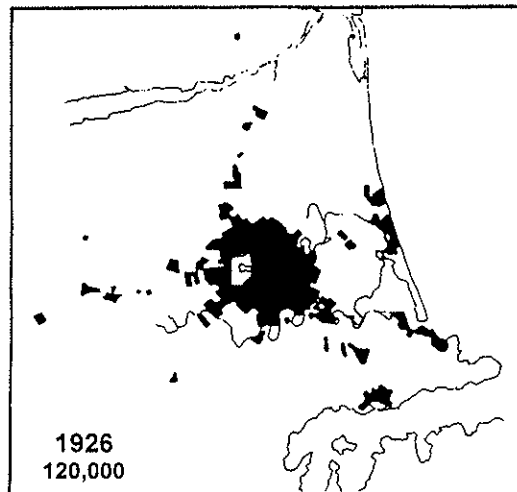
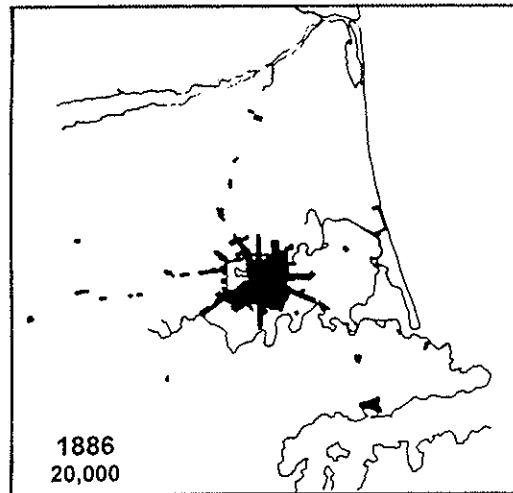
Over the 40 years (1959 - 1999) the Council has consistently supported the central business district development with planning, open space enhancements, traffic management, parking facilities, pedestrian malls and Cathedral Square redevelopment.

The aims of the developments have been to support continued growth and a vital city centre by making the central area safer, accident free, less congested, reducing traffic noise, vibration and pollution, creating new pedestrian areas, new open space recreation areas and to free the commercial heart of unnecessary traffic movements. A major objective was to support the centre against increasing competition from new suburban shopping centres. Evidence summarised in this report shows that over the past 40 yrs. this objective has in large measure been achieved, in spite of a trend where many activities have become more dispersed.

Traffic accidents have been reduced by nearly two thirds, new city centre shopping malls, pedestrian precincts and parks have been created with no direct or significant ill effects to business. The central area, relative to other cities, has retained its vigour. Most importantly the new developments and redevelopments of both public and private spaces have been of a high and sustainable quality. This enhances the city's position and provides resources and facilities that bring greater benefits to this and successive generations. It provides a standard and a benchmark as an example for future planning and development.

Past efforts have focussed on the inner core, Cathedral Square and the Central Business District. It is timely to extend these programmes and improvements in the wider framework of city centre development and traffic management over the city centre fringe area as well.

In the future the outer one-way arterial routes of Salisbury, Barbadoes and St Asaph Street outside the commercial core provide opportunities for enhanced property frontages, landscaping and expanding the view of Christchurch as the garden city. The northern and southern pairs of one-way streets are adequate to carry their increased traffic loads in the future. The eastern pair of Barbadoes and Madras are the spine of the distribution system and will require further traffic capacity management and landscape enhancement in the future. The potential enhancement of these streets to become avenues with substantial planting in both the street and in property frontages, is a challenge for this generation of property redevelopment and the City Council's street tree planting programmes.



Historic Growth of Christchurch
1886 to 1996

City Centre Functions.

The activities and land uses in the city centre are complex and reflect the activities of the whole of the metropolitan area. For convenience land use definitions can be divided into shops, industry, offices, administration, hotels and entertainment in the commercial areas. These uses and their diverse needs are permitted in a wide mix of activity in the centre city zone.

The central activities in turn are complimented by the surrounding open space, river areas and the residential fringe in particular on the north west, the north and the east. To the south the industrial uses of the past are being replaced by motor oriented and wholesale-retail activities, car yard display areas and institutional uses such as the Polytech and other educational uses.

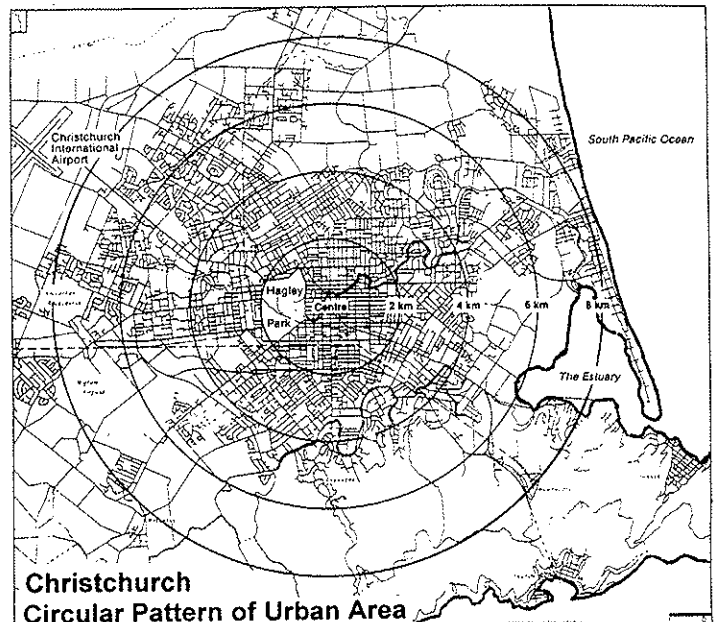
The central business district represents the inner core of city centre blocks and contains the bulk of the retail office and commercial floor areas. For many years this CBD floor area was about 1 million square metres. However in the mid 1980's this floor space began to expand and by 1999 the expanded city centre zone had lifted to 1.6 million square metres. There is a further 1 million square metres in the fringe areas within the four avenues bringing the total city centre commercial, industrial and institutional floor area to about 2.6 million square metres. In summary the total floor area within the four avenues has increased from 1.9 million square metres in 1959 to 2.6 million square metres in 1999.

Much of this additional floor area has been a mixture of retail and wholesale-retail activities in the southern part facing Colombo Street and Moorhouse Avenue, new buildings along the Victoria Street corridor and about half of the increase has been in the form of new office and hotel buildings within the traditional central business district.

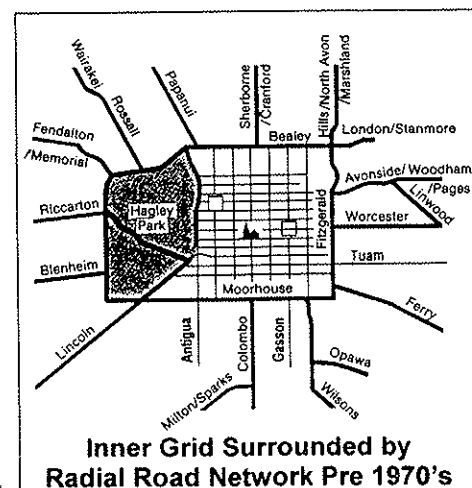
Across the lower margin of the city centre between St Asaph St and Moorhouse Avenue there has been a major exodus of industrial activity in the past 40 years. The balance of shops, industry, offices and other uses have, however, remained constant elsewhere, as set out in the graphs on page 6. In the central business district about 40% of the ground floor space is used for shops and retail activity and about 20% for offices.

The centre city retail zone floor area is about 30% of that in metropolitan Christchurch as a whole, (ie. incl. suburbs). The total floor area, (retail, office, institutions, commercial and industrial) accommodated 37,000 employees in 1999. In contrast the 30 suburban district shopping centres comprise a total of about 0.5 million square metres. The largest, Papanui and Riccarton each have a total floor space of 0.07 million square metres with an employment of 3,500. Thus the city centre employment is ten times larger than any of the individual suburban locations.

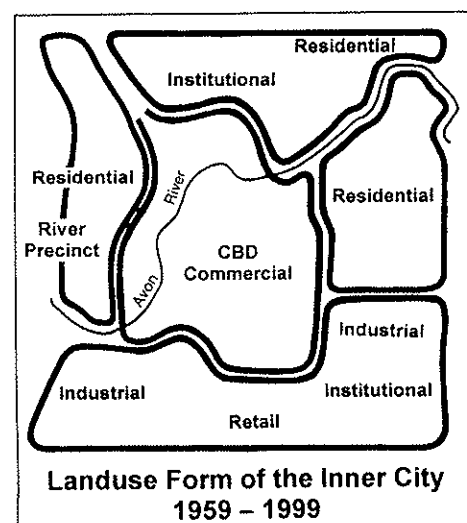
Access to the Christchurch city centre to facilitate this level of activity requires the comprehensive one-way distribution system within the four avenues.



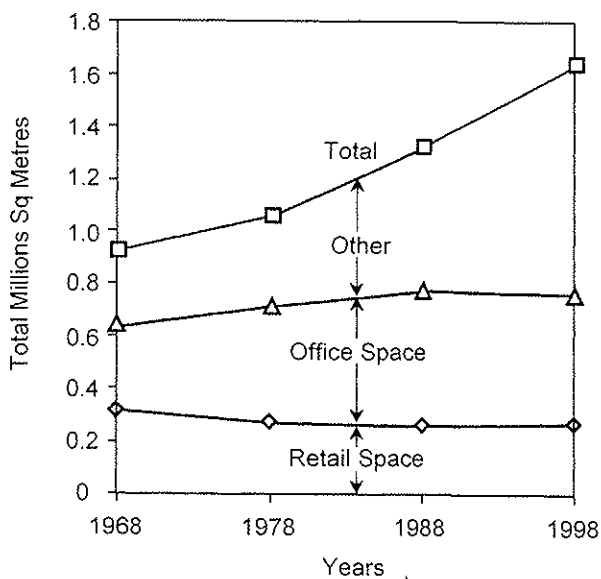
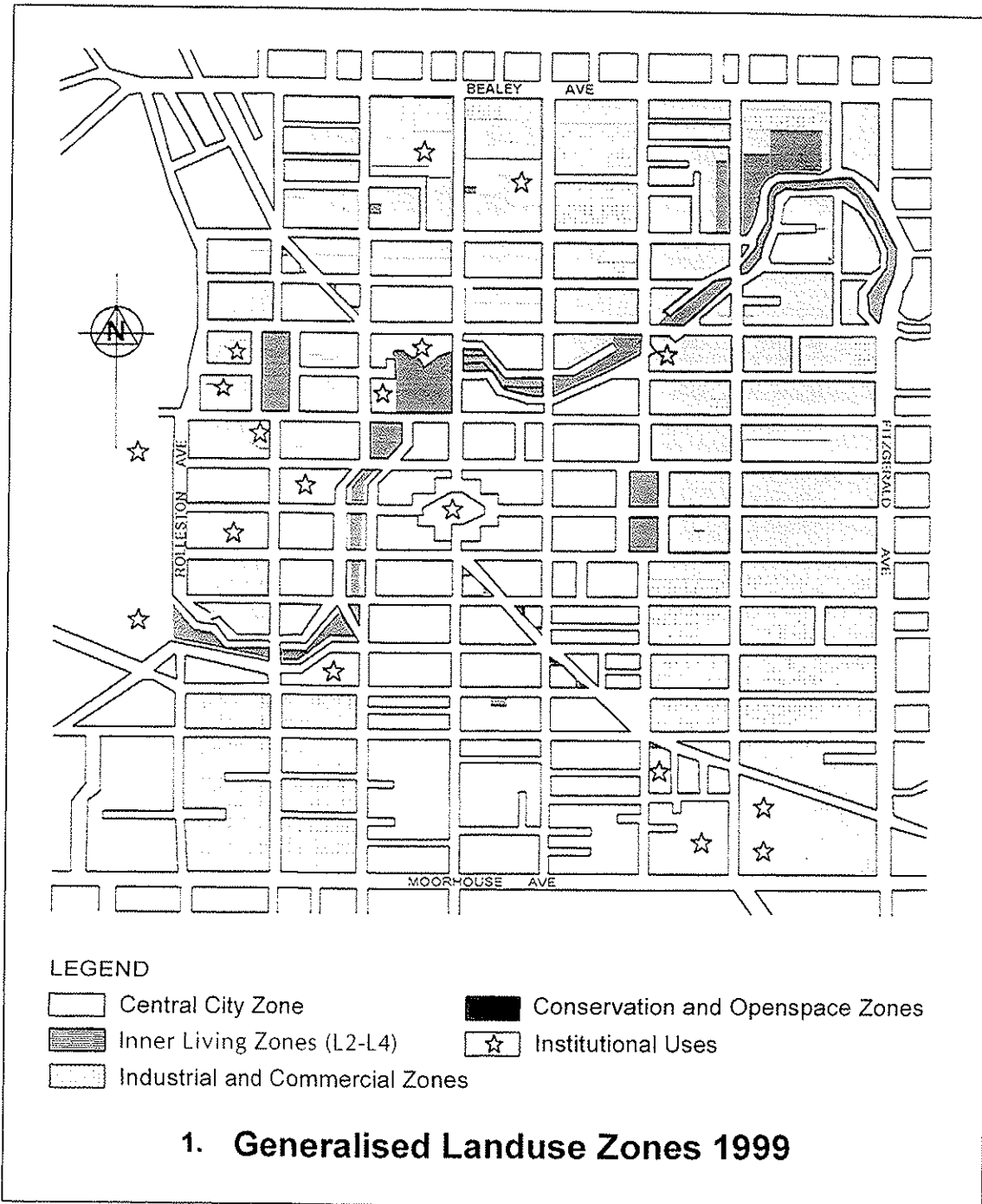
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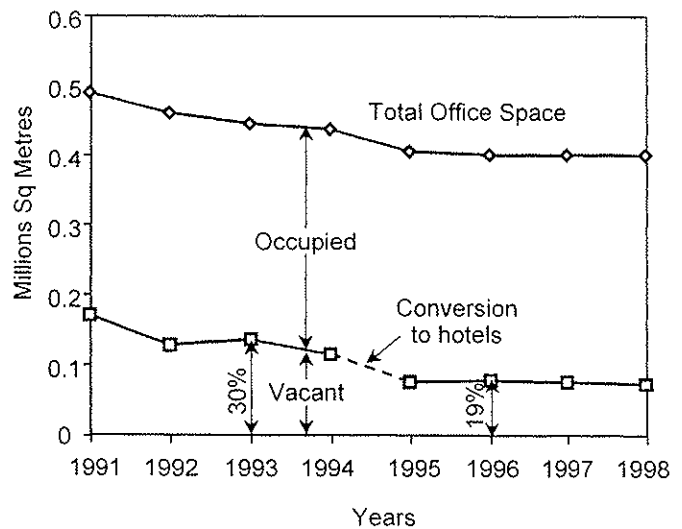
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2. Growth in Commercial Floor Space City Centre 1968-1998



3. Total Office Space and Vacancy City Centre 1991-1998

City Centre Employment.

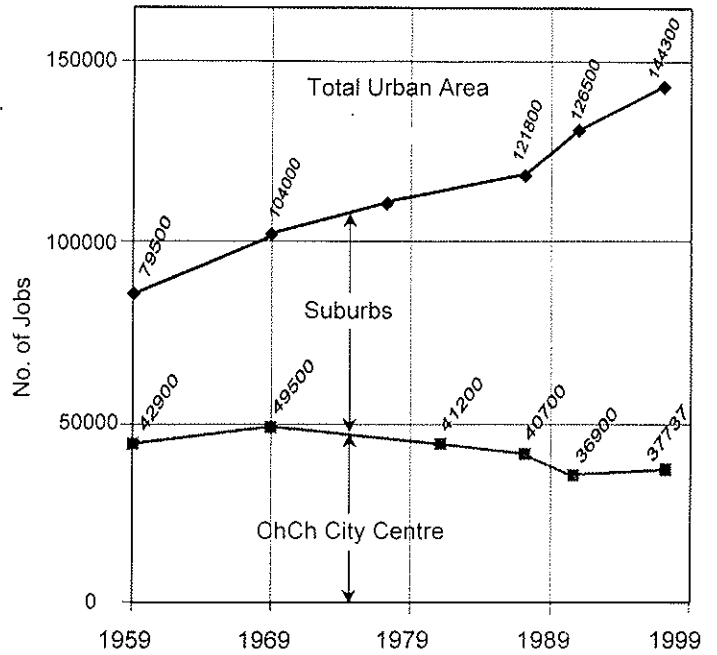
The total employment in 1959 had reached 42,000 in the central area. The 1996 employment in the same area had dropped to 31,000. This is due to three major factors. The relocation and exodus of a lot of commercial and office activity the relocation of industrial activities away from the areas between St Asaph Street and Moorhouse Avenue and changing technology e.g. communications. Some of this industrial employment has been replaced, of course, by new retail activity whilst others have moved to make way for student populations at the Polytech. The Polytech in 1956 occupied a site of some 2 hectares and now the site is 8 hectares. In the west educational and office employment which has relocated e.g. from the old University and the old Post Office has been replaced with employment located in several new offices in the Cambridge Terrace, Kilmore and Cashel Street areas and by the expansion of the Cathedral Grammar School

Thus the spectrum of employment activities has altered and the total employment in the central area has declined. This is in a period of closures major relocation of industrial and office activity from Christchurch city centre to the suburbs, migration to Auckland, Wellington and offshore. Offsetting these shifts there are, of course, those who relocate from the rest of the South Island to Christchurch and new start up ventures.

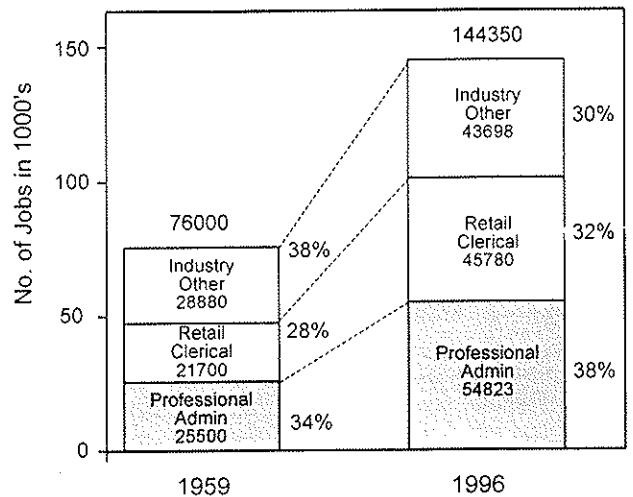
In spite of the national and metropolitan redistribution of employment the city centre has generally held its own. After a period of decline from 1969 to the late 1980's employment has recovered and over the five years 1991 to 1996 the CBD again increased to 37,700. The major decrease was the loss of 10,000 industrial jobs. These have been offset by plus 4,000 retail and professional positions.

Because of the tendency for bus transport to be favoured by central city employees. It is the northern bus routes from Merivale, Bryndwr, Papanui, St Albans, Shirley complimented by Spreydon and the hill suburbs of Cashmere and Mt Pleasant where buses tend to carry the larger number of city centre employees.

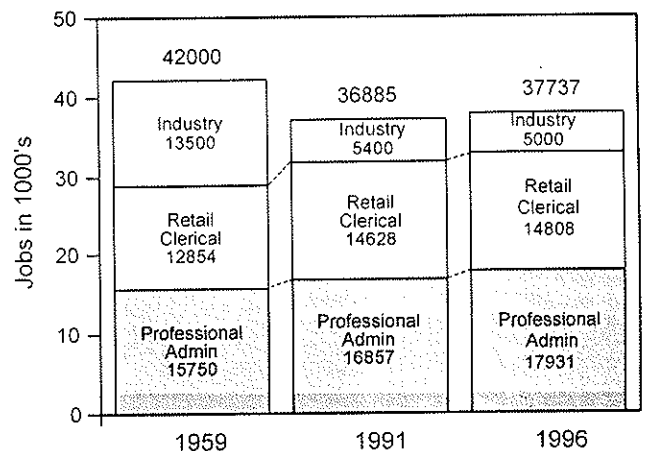
It is the activities occurring in the buildings which give rise to demand for travel. Whilst the total employment in the central area has reduced by 5,000 since 1959 the occupations and activities occurring in the buildings has increased and given rise to a steady increase in the traffic generated by the city centre. The trips generated by retail uses are several times greater (typically 10 vehicle trips per employee per hour) compared to offices (3/emp/hr) and industry (1/emp/hr). Thus the decrease in industrial employment trip making has been more than offset by growth in the retail, professional and administrative sectors.



1. Christchurch Employment



2. Jobs in Christchurch Urban Area



3. Jobs in the Central City

Vehicle Growth

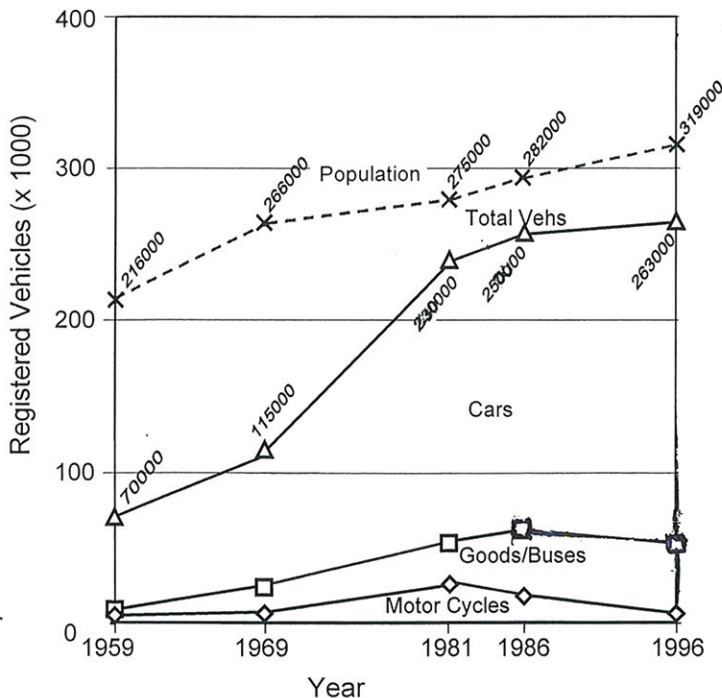
New Zealand has always had a high ratio of car ownership and still ranks fifth in the world. For Christchurch in 1959 there were 3.35 vehicles per 10 people rising to 8.2 in 1981 and 8.4 per 10 people in 1996. In 1959 Christchurch's population was 210,000 with 70,000 motor vehicles. Eighty percent of these vehicles were private cars.

The proportion of commercial vehicles has risen. In 1959 there were 10,000 goods vehicles and this has grown to 37,000 by 1996 i.e. a 3.7 times increase. Motorcycles and powercycles grew from 10,000 in 1959 to 24,000 in 1981, but with the advent of Japanese imported cars this motorcycle figure has fallen in 1996 to only 6,500 for the Christchurch area. The number of omnibuses and taxis has doubled from a modest 900 in 1981 to 2000 in 1996. This is, in part, due to taxi and bus deregulation.

The continuing growth of cars and car use is a consequence of lower prices, availability and population growth. In Christchurch from 54,000 cars in 1959 to 209,000 in 1996, represents a 3.8 times increase. Obviously the community and government has not been seriously concerned to reduce the number of cars or the extent of car use.

In Christchurch there is no practical method of introducing any "traffic collar" around the centre city or rely on congestion to regulate traffic. In any event such extreme action would not be appropriate in view of the economic viability, in this city centre, to continue the present level of access and ability to provide parking.

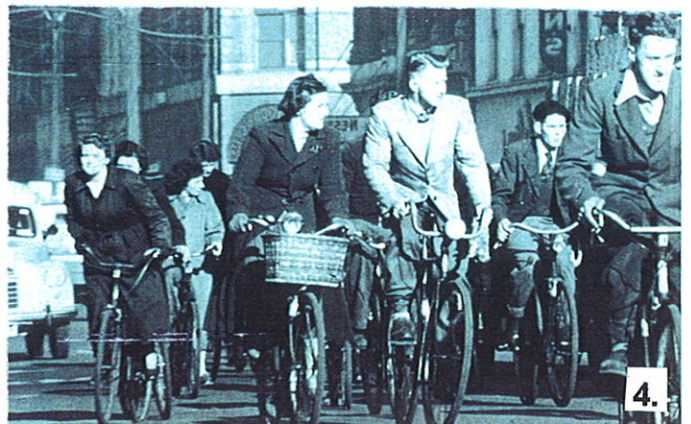
Predictions from the 1960s of traffic growth (which have proved remarkably accurate) show that the traffic volumes and associated problems will continue to grow in the future and the need to develop good suburban traffic corridors will remain.



5. Registered Vehicles in Christchurch

The photos illustrate the range of travel modes in central Christchurch.

1. One-way street progression for heavy vehicle flow: Madras Street.
2. Colombo Street mixed access for cars and buses.
3. Shuttle bus for central circulation.
4. Cycling an important city centre option. (1959)



Planning Precepts

Much town planning effort was put into the study of the city centre in the 1960s and 1970s. and it is appropriate to record here some of the key precepts that were established at the time.

'CHRISTCHURCH MASTER TRANSPORTATION PLAN' September 1962 -. Nancy Northcroft Regional Planner:

Following an agreement in September 1958 the MTP was prepared under the Town and Country Planning Act 1953, jointly and on behalf of all territorial, government and transport agencies in the region. The Plan was adopted for public comment, 4 September 1962, so that all with an interest could examine and comment on it. In summary it identified:-

'The purpose of the Master Transportation Plan is to look to the future and prepare, in advance, the ways and means of developing a roading system more in keeping with technical progress in transport and motor vehicle design and the tremendous increase in their numbers'

'In the past, decisions have been based on little more than information gathered from traffic counts. Changes which occur in a city as it grows, and changes in travel habits as a city spreads, show the need for more detailed and scientific methods based on systematic investigations so as to provide a reliable basis for the Plan.'

'For the Christchurch city centre the plan assumes it will continue as the dominant traffic generator in the region. The central traffic district will require a more radical approach than merely traffic signals placed on the existing (1959) network, and there will be a need to provide access to adequate and well distributed parking and transport terminal facilities.'

'There are three ways of providing for traffic which is in excess of the capacity of the existing system. These are:

- *by widening existing roads*
- *by constructing new all purpose roads*
- *by constructing motorways*
- *(and also one way streets in the city centre).*

'One principle of design for the future system is that traffic from the outer suburbs would leap-frog the areas of potential inner suburban congestion, on routes including some new or improved arterials and some motorways. (This would also keep traffic out of environmental areas.)'

'Parking, alternative access and design (including environmental considerations) are matters for detailed investigation and planning more appropriately carried out as the plan is developed.'

These more detailed environmental aspects were to be dealt with by the City and District Councils in their District Plans. These principles were pursued by all parties for many years.

'PLANNING IN CHRISTCHURCH - A REVIEW' January 1966. by Colin Buchanan and Partners.

This review was commissioned by the Christchurch City Council 'To study the MTP in relation to the general planning of the City of Christchurch (including both traffic and environmental aspects). The report and recommendations included:-

'There is only one principle whereby an urban area can cope with large volumes of traffic and yet preserve acceptable environmental conditions. This is the deliberate canalisation of the longer movements onto a network of roads (corridors) designed for movement; and the deliberate creation of environmental areas (rooms within the network) where the needs of the environment can predominate..'

'There is an important relationship. That if, for an urban area, one fixes the environmental standards then the amount of traffic that can be accommodated is predetermined. If however money can be spent on acceptable physical alterations then more traffic can be accommodated.'

'In respect of access to the centre city shopping and business area, we think that the main approaches should be from the east rather than the west. We have no hesitation in the view that the Rolleston Avenue (river precinct) area "should not be traversed by extraneous traffic and we do not favour the Antigua Bridge."

'In connection with the parking, it is essential for the Council to retain full control over all parking in and near the centre, that is to say control over the amount of parking and where it is provided and how much is charged. These are 'weapons' which the council should be prepared to use to achieve the wider objectives of the plan.'

'The main north-south motorway on the line of Barbadoes St is fully justified as is the line of the Southern Motorway. The programme for the construction of the motorways is much too slow and too far ahead. On a combination of traffic and environmental grounds much of the motorway construction is justified now.'

'Two main studies are required to be made in parallel. First there is the network study to determine in principle the pattern that is required; secondly the study of the whole urban area to reveal the areas which should be treated as environmental areas.'

As a result of these precepts a sound basis for future town planning and traffic planning was established for the city centre and has persisted throughout the 40 years. In this report Part 2 deals with the City Centre Plans while Part 3 covers the City Centre Environment.

Transport - Basic Assumptions.

City centre road networks and the planning for the network as a whole must be cast within assumptions and policy objectives which have been selected, tested, and are supported by the community, councillors and technical experts all together.

The basic assumptions of the 1959 and 1969 regional studies are as set out in the report "Second Transport Study" (CRPA No. 210 1975) and included:

- (a) **Land use development patterns would follow District Plan and established trends within a fixed urban fence over the next 20 years.** *(This held true until 1991 - the urban fence has since been shifted and lifted at some locations)*
- (b) **Vehicle numbers would continue to grow with population plus car ownership steadily increasing.** *(These increases have been dramatic at 5 - 8% per annum for 40 years)*
- (c) **Public transport use would not increase but would hold at the 1959 level in actual patronage.** *(There has been a steady decline down to 42% of the 1959 level)*
- (d) **Traffic could be predicted by consideration of the distribution of individual land uses within the urban area, detailed studies of each travel mode and each trip purpose and household sizes and characteristics.** *(This has been confirmed with reassuring accuracy)*
- (e) **There would be no direct constraint upon, or interference with the use or mobility of the motor car throughout the urban area.** *(This precept continues without constraint)*
- (f) **The community would invest in road improvements ahead of demand and at a rate that would enable the same level of service and travel convenience in the future as existed in 1959.** *(Not achieved and probably not realistic. Only about half of the major projects have been undertaken)*
- (g) **The ease of travel by all modes of transport would continue to be maintained at a similar level to that existing in 1959.** *(This principle continues but congestion militates against all modes including car, bus and cycle)*
- (h) **All road authorities would be prepared to make capital improvements in conformity with one agreed plan.** *(This held until 1991 when Transit and CCC withdrew from their commitment to the SH and urban motorway programmes)*

Other Primary Policy Issues considered at that time included

- (i) There should be a limit on the total size of the Christchurch urban area thereby encouraging high density within that area and additional growth should be accommodated in the outlying settlements such as Rangiora, Kaiapoi, Rolleston and Ashburton.

- (ii) The establishment of appropriate "corridors" for major traffic movement so as to provide a stable framework for community planning and thereby protect communities from the environmental maleffects of through traffic is an essential strategy.
- (iii) Achieving a balance in the planned level of traffic service in the central, suburban and rural area, and consequent road improvements in due time for all parts of the region should be the basis of the road programmes.
- (iv) There should be general encouragement of a balanced distribution of total employment and of residential development within each urban area.
- (v) Control of individual visitor attracting land uses so as to reduce frontage traffic conflicts of the abutting arterial road network is essential.
- (vi) Traffic management, traffic regulation and community education in road use should be part of an ongoing public communication programme.
- (vii) The contribution of public transport, more specially in travel to the central area, should be encouraged by providing priorities for bus movement and improved use of demand systems.
- (viii) Development of more segregated routes for pedestrians and cyclists, the provision of pedestrian precincts and local areas designed to segregate vehicles completely is to be encouraged.
- (ix) A forward property purchase programme for major arterials and motorway improvements is necessary and should be separate from and not compete with other road expenditures.

It is concluded that there were no major errors of identifying the issues, in forecasting or judgement in the underlying assumptions of the concept of the Master Transportation Plan. The basic principles and assumptions underlying the 1962 MTP have been confirmed by the results of subsequent reviews and studies. However the policy on levels of service were lowered, the central and urban motorways omitted and the programme of network improvements stretched out. Subsequently since the late 1980s this strategic programming has been further eroded by a low population growth rate, an economic down turn and national adherence to Transfund's short-medium term cost benefit policies.

While many of the primary policies have been pursued in part they have not been applied consistently or over the whole network. One unfortunate result has been the loss of level of service and environmental qualities on some heavily trafficked routes e.g. Papanui, Riccarton, Ferry and Marshland Roads not intended to serve as major arterial through traffic roads. The assumptions were explicit but the recommendations have been compromised by expediencies, funding shortages and economic changes.

In respect of the city centre, however, the policies and proposals of the 1960s have been steadily implemented and largely achieved.

Regional Traffic Proposals.

The "Regional Transportation Report" of 1962 laid down sound principles of access which have been confirmed and remain part of the basic concept to the present day. It defined a major traffic corridor running north-south to the east of the city centre, with links to the Airport in the west, to the port of Lyttelton to the southeast and to the Southern motorway. Traffic into the city's commercial centre was to be channelled onto one-way streets off the main north-south and east-west corridors. The major difference between the original plans and the present system is the scale of construction. The 1962 plan envisaged a continuous motorway system, elevated viaduct sections and ramp accesses. This was to involve considerable property purchase and substantial disruption to existing land use. These grade separated elevated motorways were subsequently omitted from the city centre.

Several other features of the plan were highly controversial and have since been deleted or modified. A controversial element was the proposed use of Rolleston Avenue and Park Terrace as a north-south central city arterial route. This would have meant a new bridge to link Rolleston Avenue and Antigua Street. In 1966, it was agreed that this "river precinct" area was environmentally sensitive and should not be intruded upon by arterial through roads and the Antigua Bridge was dropped.

Another public controversy arose over the proposal to provide a direct link to the Airport and north-west suburbs with a new road across north Hagley Park. The right to construct the road on public reserve was disputed in 1970 when construction had already begun. A local body election the following year resulted in the Council resolving to abandon the idea, and the park was restored to its original state.

The value of the one-way street box in the centre had, by 1967, been firmly established. This central city element was deemed necessary and accepted as a valid concept regardless of the detailed form of the major road improvements which might be applied in the suburban areas to the north, east and south of the city centre.

The sequence of refinement of the whole regional road network is shown by the four maps on page 12 & 13. The 1962 outline plan was developed and became the 1971 Regional Plan still retaining the central motorways. In 1975 these were however deleted from the Regional Plan as published in 1978.

During the 1980s, in spite of continued vehicle growth and the technical evidence in favour of the more ambitious regional master transportation plan the Christchurch City Council made successive reductions to the proposed road network in the suburban areas.

These changes were in response to a combination of other factors including:

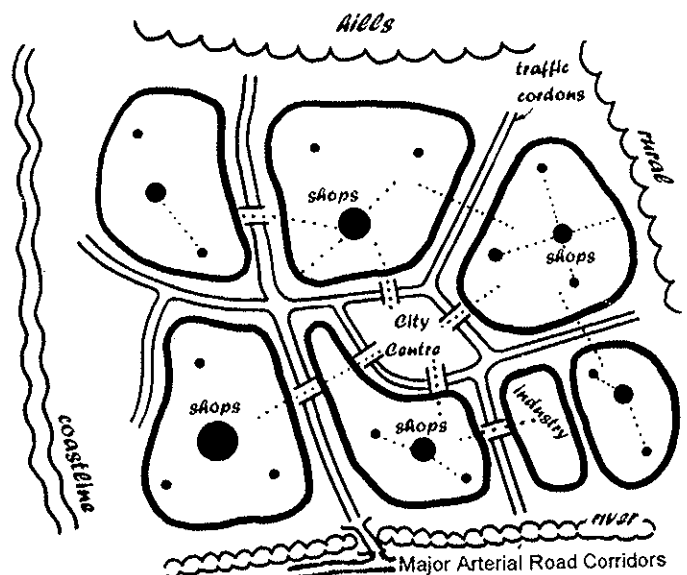
- slower population growth.
- economic down turn, less central employment.
- limited funding based on benefit/cost ratios.
- community acceptance of greater congestion.
- increasing objections from affected residents.
- councillor opposition in the 70s and 80s.

Subsequently in the agreed 1989 regional plan the road network and hierarchy of roads were generally retained but the motorways were deferred still further on the assumption that the arterial "at-grade" road network would suffice. This policy, together with the reliance on benefit/cost for national funding, supported the ongoing construction of major arterial all purpose roads in the suburbs. The process of canalisation using a suburban motorway spine which was originally promoted by the regional plan and emphasised in 1966 by Professor Colin Buchanan, was further set to one side in 1992. This decision however reinforced the necessity for the inner city "one-way box" street distribution system.

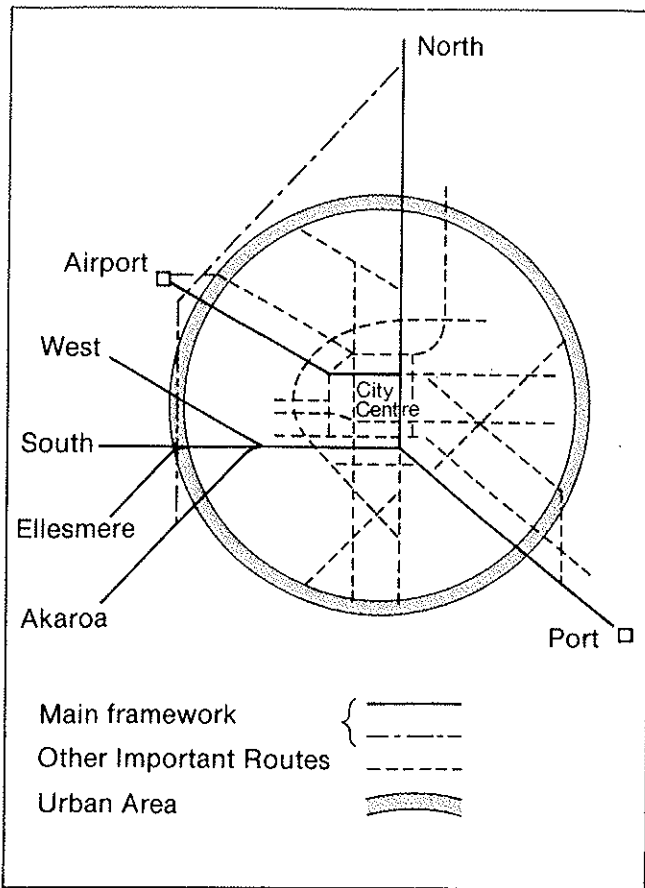
Corridors and Rooms.

Because Christchurch is so flat, several other unique traffic problems exist. The uninterrupted topography gives a comparative ease of vehicle movement throughout most of the city, with a wide choice of routes to any destination. Thus, traffic movements are less concentrated on main roads, and the city has a very high use of vehicles in comparison to other places. Apart from main radial roads, most of the streets are on a grid pattern, with many more accident prone intersections than in other New Zealand cities. There remains a higher ownership and use of bicycles than in other centres.

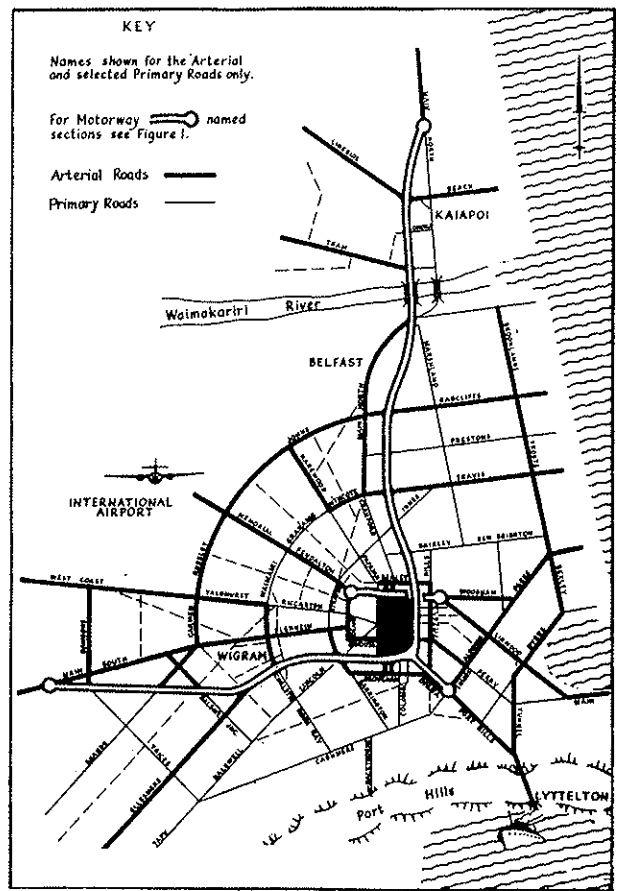
A major objective in the 1962 traffic plan was to identify a hierarchy of major arterial roads and through a process of "canalisation" direct the increasing longer trip traffic onto these "purpose developed" traffic corridors. In this way, the local streets are left for local and environmental area functions. This philosophy applies in both suburban areas and also the city centre.



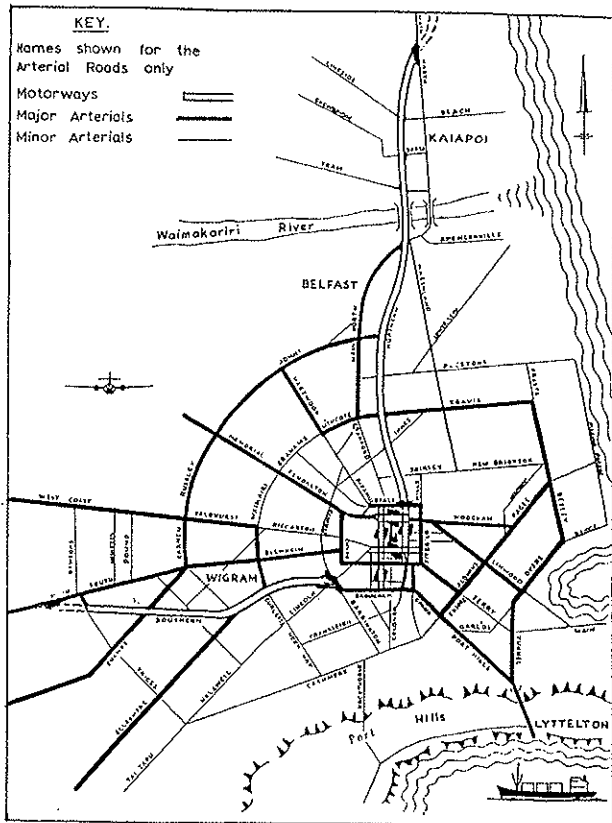
1. Principle of Corridors and Rooms



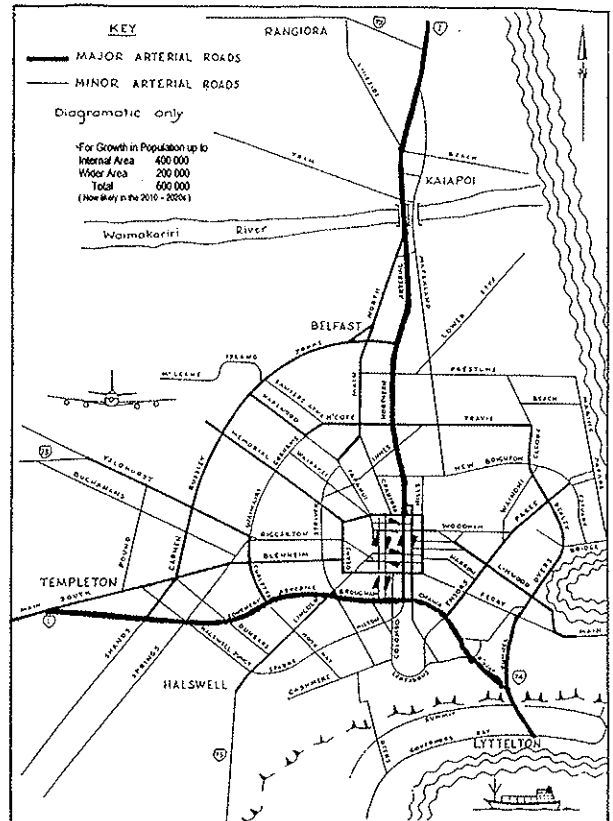
Basic Concept.
1. The 1962 Master Transport Report



2. The 1971 Regional Plan



3. The 1978 Regional Plan



4. The 1986 Regional Plan

PART 2: CITY CENTRE PLANS

Evolution of City Centre Traffic Corridors.

A principle objective in traffic planning is to identify a hierarchy of motorways and major arterial roads so that the increasing volumes of traffic are directed to the major network designed and improved for the purpose.

This philosophy of rooms and corridors was emphasised by Professor Buchanan in "Traffic in Towns" and also in his report to the Christchurch City Council in 1966.

In considering the evolution of the city centre traffic network a wide range of options were contemplated during the 1950's and 1960's. A combination of street improvement, the introduction of at-grade and grade separated motorways at various locations in the city centre were considered during the 1957 through to 1978 investigations. These began simply with improved suburban routes connecting to the corners of the four avenues. That pattern assumed the avenues would be compelled to deal with both cross city traffic as well as distribution to the central area. Further isolated grade separations such as Moorhouse Avenue overbridge at Colombo Street would have been required at several locations around the four "belts."

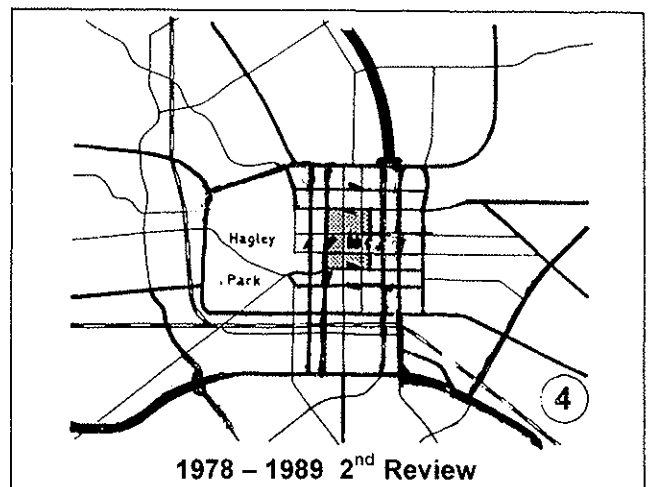
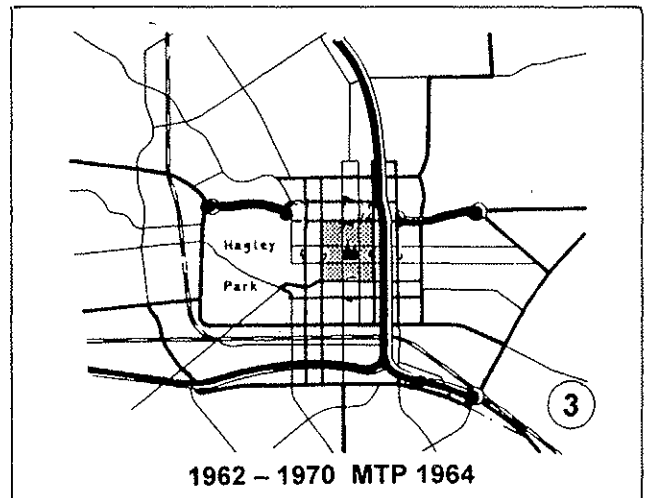
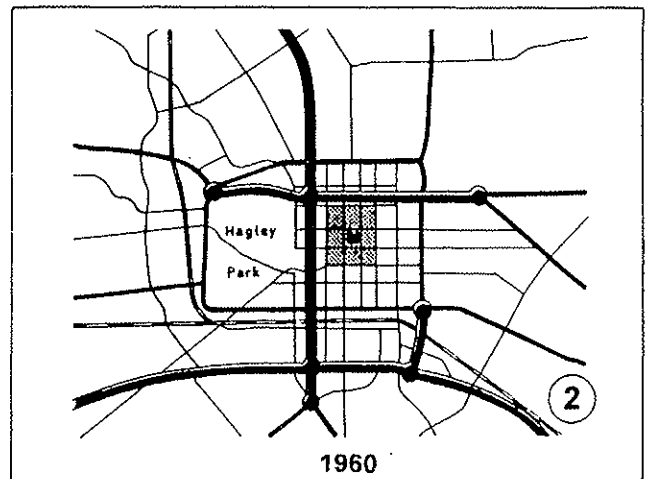
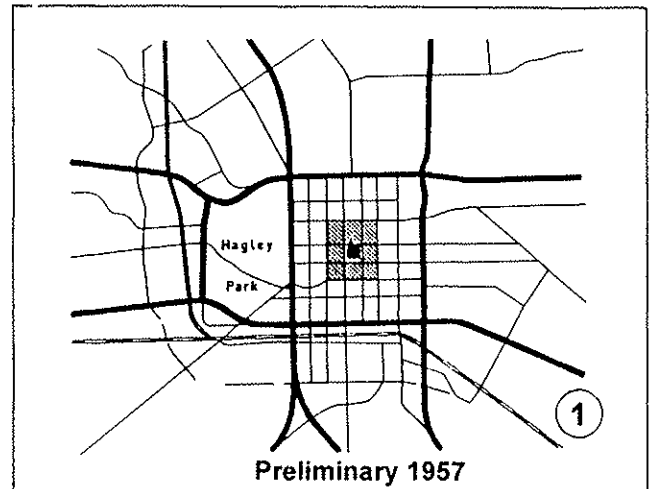
At one stage it was suggested that a box of motorways around the central area might be appropriate and this was included in a proposal which was tested in 1960. The third alternative, which evolved in the 1962 traffic plan, was to provide major improvements with a motorway alongside the line of Barbadoes Street and a second east west motorway of lesser status alongside the line of Salisbury Street. At this stage the traffic plan included the one way streets in order to distribute traffic to and from these two motorways.

The connection from Harper Avenue across Hagley Park to Salisbury Street and thence in the east extending the motorway through to Avonside Drive as far as Linwood Avenue was also proposed at that time. This 1962 plan was the scheme adopted in the 1964. Master Transportation Plan (MTP).

In 1966 it was proposed to introduce the one-way streets first and to delay the construction of the motorways parallel with Salisbury and Barbadoes Streets until that system had shown its value.

Today 80% of the traffic on the one-way streets is related directly to the city centre only. Less than 20% passes through from one side of the city centre to the other. Thus these one way streets serve a unique distribution function to/from and within the city centre.

City Centre Traffic Concepts 1956 – 1978



City Centre Circulation.

Until 1959 cars and truck traffic was encouraged to access and cross the city centre via the diagonal routes of Riccarton Avenue, Hagley Avenue, Victoria Street and High street focussing on Cathedral Square and Colombo Street/Hereford Street corner. This traditional pattern of movement brought a concentration of radial traffic to exactly the wrong spot for the city centre's environment. Traffic from the east had a better group of alternatives providing a tangential approach to the city centre.

A primary objective of the traffic plan is to facilitate the re-distribution of concentrated volumes of radial traffic from all the surrounding suburbs, in particular traffic to the city centre from the north-west and south-west. The one-way street box provides access to all four sides of the inner city centre. Public parking can also be managed so as to attract cars to the east of the inner city using the one-way streets.

Two one-way streets have more traffic carrying capacity than four lanes on a two-way street. Signal co-ordination is more straight-forward and intersection capacity (often four or five approach lanes) is much greater on one-way streets. Traffic management efficiencies yield up to twice the capacity on a regular grid of one-way streets.

The need for the proposed central motorway was ultimately resolved in the regional proposal of 1978. While the suburban motorways to the north and south-west were retained it was assumed that the road network would rely on the one-way streets for distribution and connection to, from and within the central area. At that time the central motorways were abandoned.

The one-way streets were selected following extensive study and testing, as the best way of providing efficient city centre traffic circulation. It provided an even grid of traffic blocks 200 metres square which is superior to all other solutions. This also leaves alternate east west streets for local access and around block trips, bus routes and less traffic oriented functions. The one-way streets create the potential for improved environment using pedestrian malls, slow traffic streets, landscaping and amenities without disrupting city centre activities or prejudicing the redevelopment of Cathedral Square and other areas. They also provide a framework for the establishment of permanent and effective parking buildings.

The one-way system and linked traffic signals draw traffic away from the core area of the City providing a distributor for trips arriving and leaving and also a circulation system for local trips. They channel traffic approaching the central city onto a few, efficient one-way streets, constructed to handle large volumes of traffic. This yields safety and efficiency benefits, reduces pollution, noise levels and needless traffic delays and conflicts.

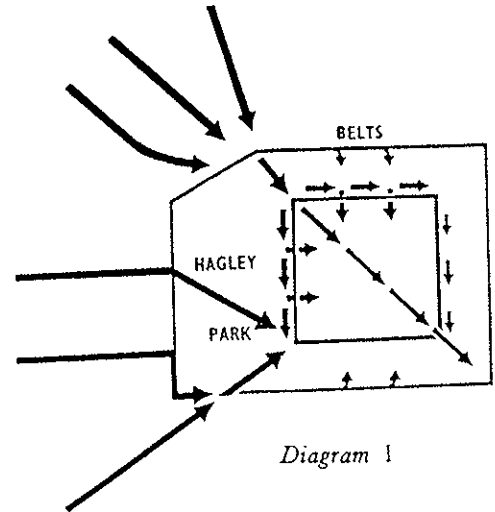


Diagram 1

1. Traffic from the West – Concentrated Approach

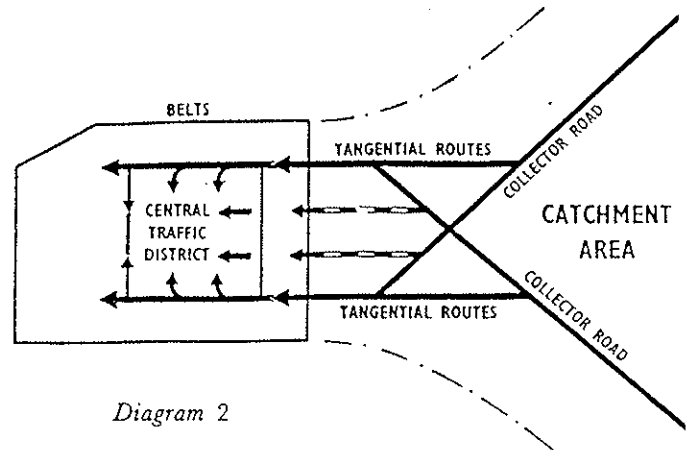
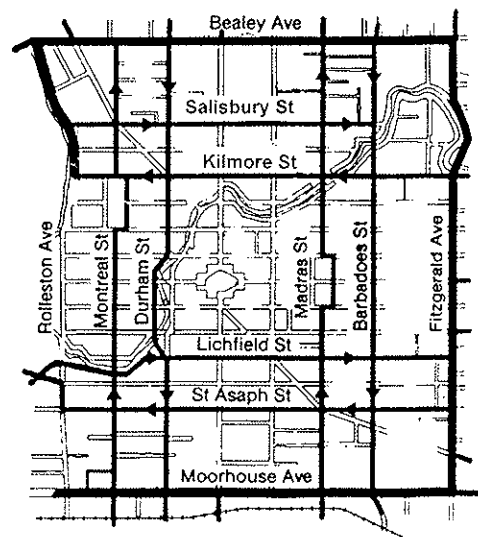


Diagram 2

2. Traffic from the East – Tangential Approach



3. Concept — Plan of Four Avenues And One-way System

City Centre Accessibility.

Analysis of traffic flows across a series of central cordons confirms that the accessibility to the city centre has remained high during the development of the one-way streets and over the past 40 years. The two cordons of greatest interest are those for the streets approaching the four avenues, the "Outer Belts Cordon" and within the three outer one-way streets known as the "Central Traffic District (CTD)".

The belts cordon count has increased from a 156,000 in 1959 to 390,000 in 1998. This is an increase of 2.5 times. It is a matter of interest that it had been assumed in 1959 that the increase up to 1980 would be 2.1 times. This was deemed by some to be an exaggerated figure at that time. For the central traffic district cordon count the figures are similar but with a growth rate from 129,000 vehicles per day in 1959 to 244,000 vehicles per day in 1998 or an increase of 1.88 times.

The present level of accessibility with the one-way system is appropriate for the pattern of land use and employment levels which the city plan and history shows are being supported in this area. It provides a high level of service relatively free of major congestion points.

The graph opposite shows how from 1959 through to 1969 there was a marked increase in travel which then levelled off over a period of several years before again lifting from 1986 through the last ten years.

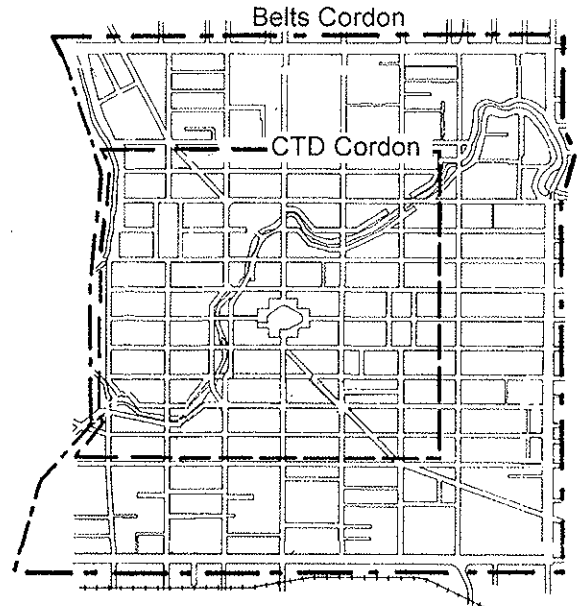
The one-way system has enabled a high level of internal access and distribution within the four avenues. The attraction of the central area is now related to the suburban links in particular from the north and west. Riccarton Avenue, Harper Avenue and Papanui Road average 7 day traffic flows are 21,000, 32,000 and 22,000 vehicles per day respectively and these flows give rise to congestion and delays in travel from the west at the Carlton corner and the Hospital corner.

Modes of Travel.

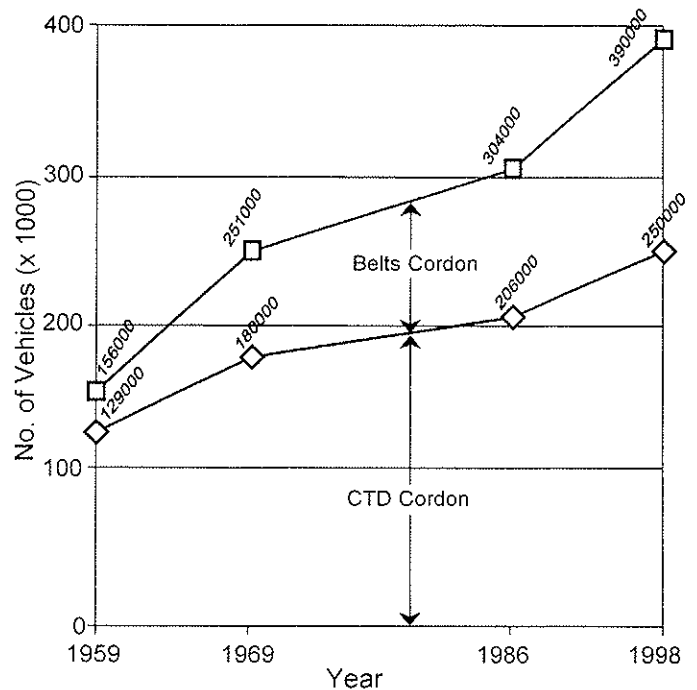
The relative changes in travel modes i.e. car drivers, bus, bicycles and walk trips between 1959 and 1991 are illustrated in the charts.

As shown by the travel mode diagrams on this page there has been a significant increase in vehicle travel and other modes have stayed the same or declined.

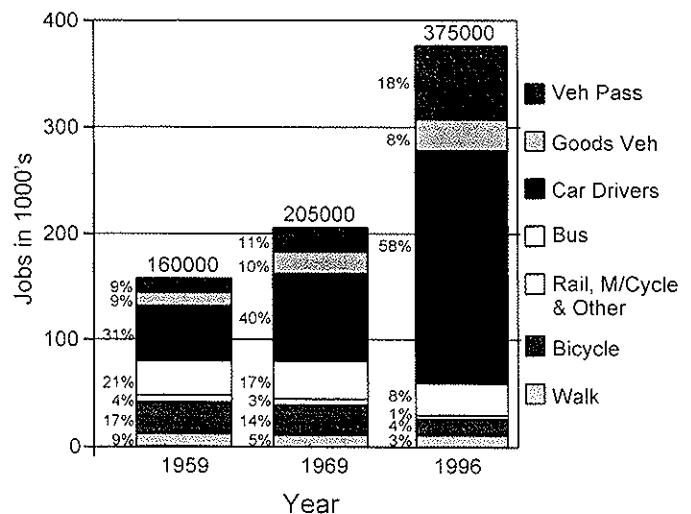
Accessibility by bus is excellent and not materially disadvantaged by the layout of the one-way streets. The original bus axis of Colombo Street has been retained together with the complimentary east-west routes. This will be continued with the establishing of the "cross roads" bus station at Lichfield Street and along Colombo Street.



1. Location of Belts and CTD Cordon



2. Graph of Cordon Counts



3. Travel Mode to City Centre (12 Hour Day)

As identified in the 1967 report "buses and pedestrians are completely inter-dependent in the city centre and the Cathedral Square proposals have been based on this premise. Neither Colombo Street nor several other bus routes lie on major traffic streets and it is appropriate for the buses and pedestrians to share the more local environment of shopping streets."

The total travel by bus has, however, declined dramatically from 21 million trips per annum to 9 million trips per annum over the past 40 years. Bicycle and motorcycle trips have also declined and these minor modes have been taken up by more car travel to the city centre. Walk trips have also declined to about half the number in 1959. Thus the continuing increase in travel to the central city is carried less by the minor modes and increasingly by cars and trucks.

	Cars & Trucks	Other Modes
1959	40%	60%
1969	68%	32%

and the vehicle trips to/from the city centre have increased from 129,000 to 250,000 i.e. 1.93 times over this period.

Purpose of Travel.

Complimenting the different modes of travel there are also the range of reasons why travel is undertaken. Broadly the purpose of travel are reflected in the trip making models for travel and they are divided into:

- Home base to/from work.
- Home base to/from shop.
- Home base to/from recreation.
- Non home and other based to/from business.
- Non home based to/from other.
- Goods vehicle trips.

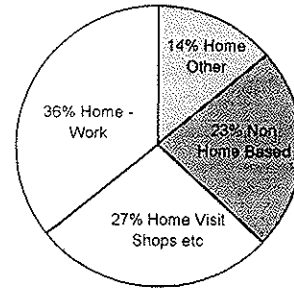
The 1959, 69, and 96 comparisons are shown in the charts.

Whereas in 1959 the car journey to work represented 36% of car trips by 1969 this had reduced to 26% and has now fallen to a 12% share of all car trips in the Christchurch urban area.

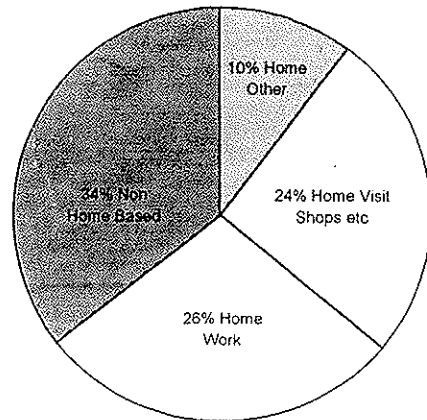
Between 1959 and 1996 there has been a dramatic change in purpose of travel. The growth in non-home based travel has been much faster than trips to work or shops. The following table shows the contrast.

	Trip to Work	Non-Home based
1959	36%	23%
1996	12%	51%
Ratio Trips	1.85	12.15

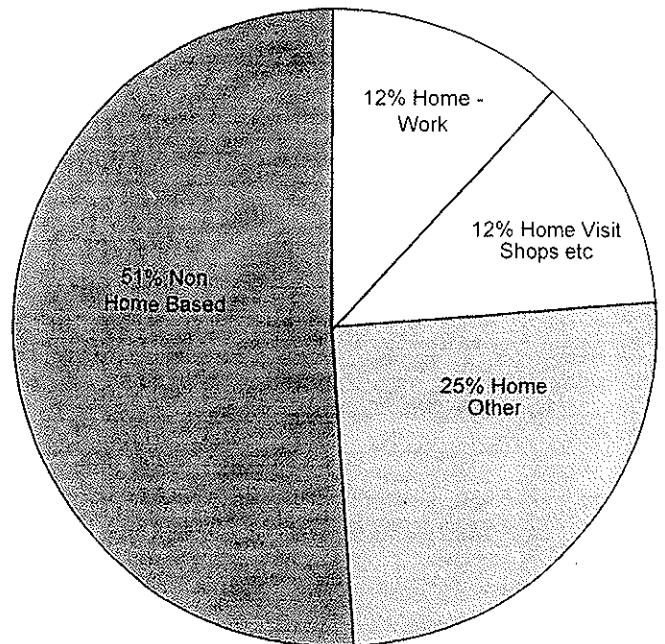
Many trips are multi purpose and this adds incentives for the use of cars as personal transport in order to facilitate this high number of non-home based trips.



1. 1959
(138,000 trips/12 hour day)



2. 1969
(265,000 trips/12 hour day)



3. 1996
(756,000 trips/12 hour day)

Note:- Area of circles represent numbers of trips.

**Purpose of Trips
Car Driver Trips for 12 Hour Day**

Central Area Plans 1967.

As the original regional motorway schemes were scaled down from 1964 onwards, changes had to be made to central area plans as a result. Although the scale of construction was considerably reduced, the main traffic corridor remained the north-south route centred on Madras and Barbadoes Streets. Furthermore, the Buchanan Report of 1966 recommended the deletion of the Rolleston Avenue-Antigua Street link, forcing a rethink of the situation on the west. The omission of the motorways has resulted in the one-way system assuming greater significance, since it was needed in part to replace those earlier proposals.

A crucial reason for the selection of the one-way streets was their location half way between the outer four avenues and the city centre at Cathedral Square. They generally enclose the retail and office core, but do not significantly intrude into residential areas. Only 37% of the one-way system is through residential zones and the remaining 62% is entirely within commercial and industrial land and buildings.

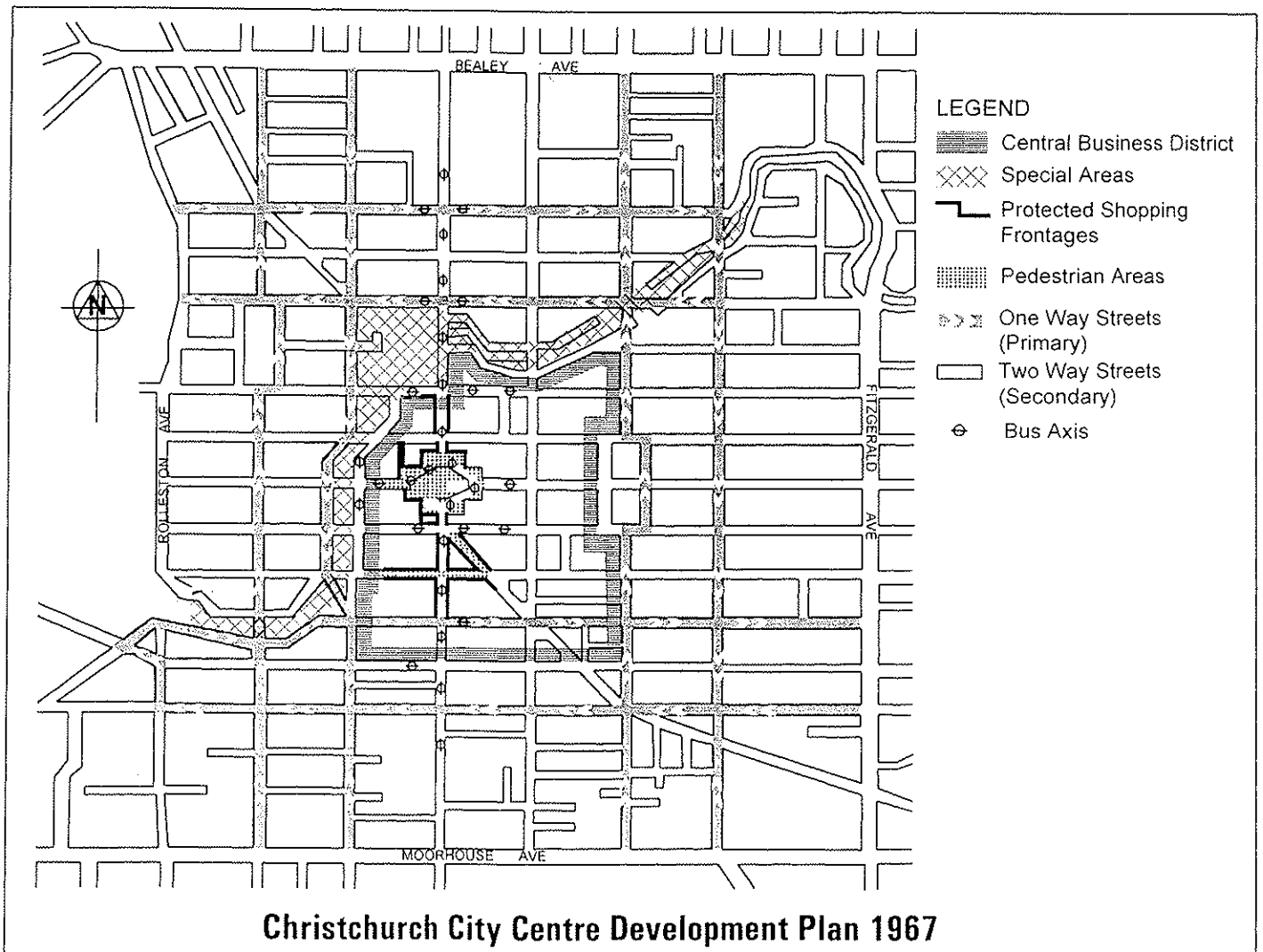
The pattern of streets selected and the general provision of open spaces, pedestrian malls and bus routes are illustrated in the 1967 proposed plan. This was adopted by the Christchurch City Council for inclusion in the District Plan recommended in 1969.

The grid pattern of streets originally surveyed in the central area is oblong (rather than square) and there are twice as many east-west streets (12) as north-south streets (6). As a result, of this grid the choice of north-south one-way pairs was more limited. Most of the decisions about the system were obvious ones and the only difficult choices of the north-south streets were those to the west of Cathedral Square including Montreal and Durham Streets, Cambridge and Oxford Terraces and around Latimer and Cranmer Squares.

One-Way System.

The one-way system is a freely circulating inner ring system inside the outer ring of the four avenues. The four avenues serve a suburban distribution and by-pass function and cannot do the job of the centre city one-ways. The inner anti-clockwise one-way streets tend to carry the heavier traffic flows throughout the day, being closer to the centre of activities. The outer one-way ring with clockwise movement is further but also a little faster.

An important objective is to increase the attractiveness and level of service of Salisbury, Barbadoes and St Asaph Streets through good green wave progression, attractive layout and additional capacity at key intersections. Extensive all day parking should also be developed abutting these outer one-way streets.



At the four corners of the system are one-way boxes which are strategically located to cope with important turning or redistribution movements to and from the city centre. Vehicles are encouraged to stay on this one-way system (even when in actual distance there are alternative short cuts) and peel off only when they are as close to their destination as they can get. A "greenwave" of traffic lights ensures that the one-way system is by far the quickest way to move about the inner city, and the system extends beyond the inner circulation ring to give easy direct links to the four avenues. The roads now used as one-way streets will, of course, continue to handle very heavy volumes of traffic in the future and are designed and managed through the area control system to do so.

Special Pedestrian Areas.

The extensive city centre pedestrian areas have been made possible largely as a result of the one-way streets. Returning to two-way traffic on these streets would have worse environmental effects through more pollution, noise, accidents, conflict with pedestrians and delays. It would also cause environmental deterioration elsewhere (such as Colombo, Manchester and Tuam Streets).

Having identified the main framework of streets the 1967 report went on to consider the special landscape and pedestrian areas as illustrated below and in the following terms.

"Cathedral Square, Victoria Square and the Avon River justify special consideration and in these areas land owners and developers should be asked to give special attention to their buildings. A very high standard should be maintained, but it would be difficult to legislate for this although it may be possible to have all buildings in these areas made conditional uses."

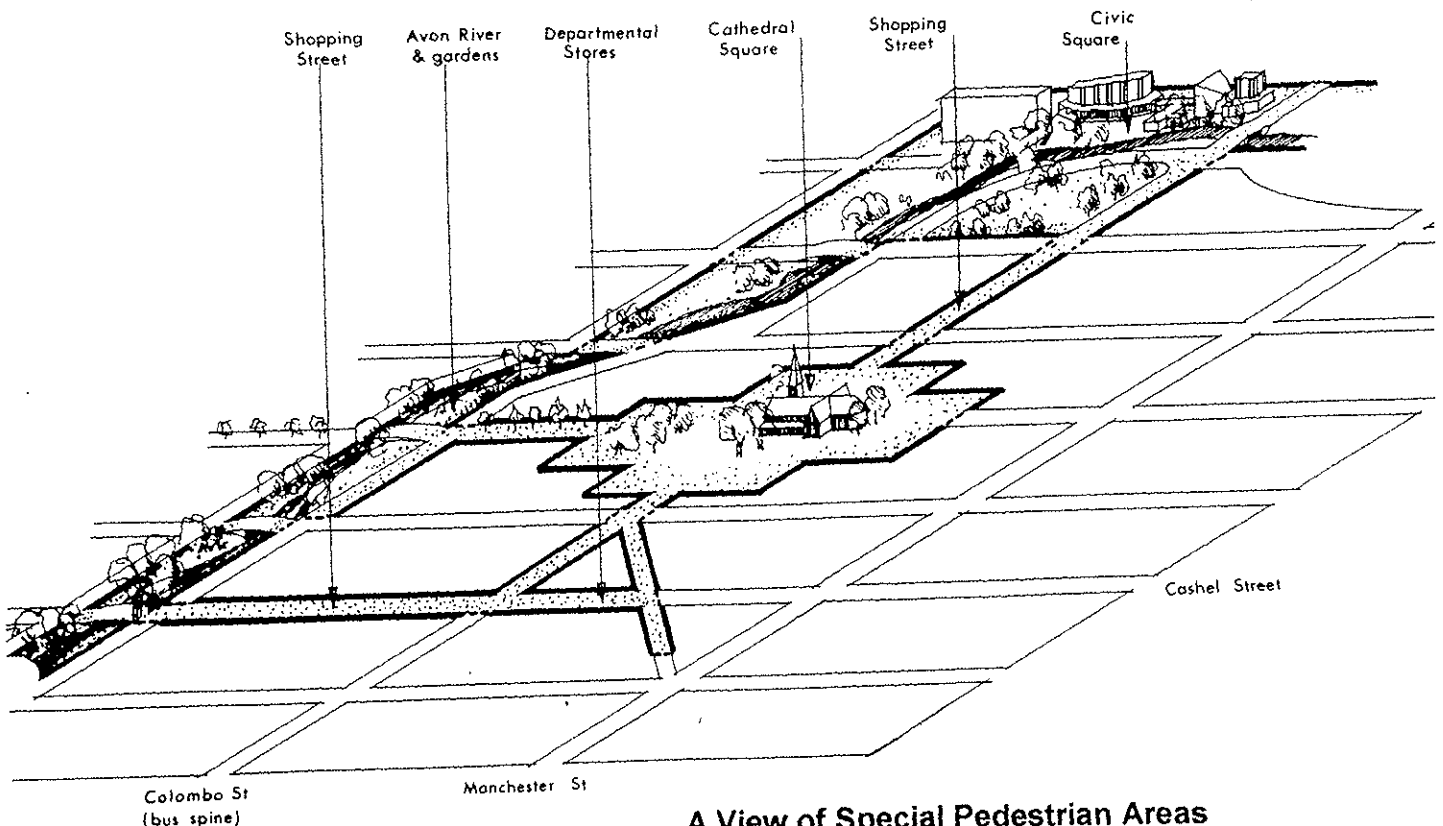
"It should be possible to make these areas as illustrated progressively more attractive and to provide some visual continuity."

All of these proposals have subsequently come to successful fruition.

With this general framework for traffic movement in place, the opportunity was taken over the 25 years 1965 to 1990 to put many significant improvements, street diversions, pedestrian and landscaped areas in place. Four typical examples are illustrated on the following page:

1. the reconstruction of Cathedral Square.
2. the closure of Cashel Street and Bridge of Remembrance.
3. the creation of the Cashel Street section of City Mall.
4. the closure of Victoria Street and creation of Victoria Square.

These are copied from the 1987 City Council report on the central city plan prepared by Bill Williams.

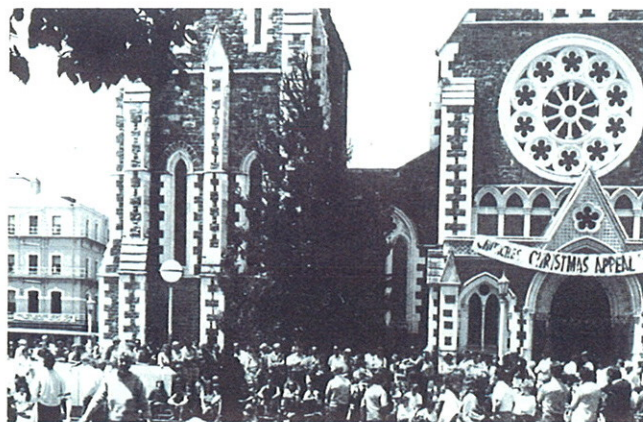


A View of Special Pedestrian Areas
Copied from 'Christchurch Development 1967' (Red Book)



Canterbury United Council

Cathedral Square Before



After 1973

1.



Canterbury Museum

Bridge of Remembrance Before



After 1977

2.

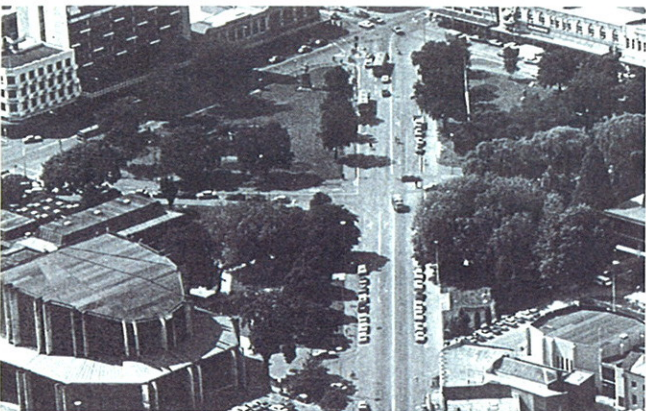


Cashel Street Before



City Mall After 1982

3.



Christchurch Press

Victoria Square Before



Victoria Square After 1987

4.

Pedestrian Area Improvements 1970s and 1980s.

Choice of One-Way System.

The roads selected for the one-way streets were chosen for the following reasons:

- All four one way pairs lie inside the heavily trafficked Four Avenues complementing that outer suburban distribution function with a central city inner distribution system.
- They are generally equidistant from, and surround the CBD retail and office core of the city centre.
- They are not so far away from the city centre commercial core as to significantly affect the convenience of the surrounding residential zones.
- They are close enough to the city shopping business and pedestrian streets to encourage drivers to choose appropriate access routes to the central business district close to convenient off or on-street parking locations and encourage their use for central circulation.
- The eastern pair of Madras and Barbadoes Streets are critically located to match major arterial routes from the north and the south.
- The east-west one-way pairs were left two blocks apart so that the intervening Peterborough and Tuam Streets can provide local circulation service access roads and act as bus routes, so keeping the one-way system free of needless local service vehicles and property accesses. Similarly these streets and Gloucester, Worcester, Hereford are the most appropriate bus routes.
- It is essential for efficient area wide traffic management and control and the equal collection and distribution of the traffic on the one-way system (including relatively equal platooning lengths in the E/W and N/S directions) that the one way grid be equal at about 200 metres in both directions. Thus with an even square an inherently more efficient traffic "super grid" is established.

In summary the major and costly motorway alternatives have been shown to be unnecessary in the city centre in view of the efficiency of the box of one-way streets together with the relative decline of the city centre as the dominant and primary employment area for Christchurch. Employment fell from 42,000 (or 60% of the metropolitan employment) in 1959 reducing to 36,000 in 1991 recovering to 38,000 (or 25%) in 1996. Past estimates had assumed city centre employment up to 58,000 but it now seems unlikely it will rise, in the foreseeable future, to recover to the 49,000 figure of 1969.

The first two pairs of one-way streets were St Asaph/Lichfield and Madras/Barbadoes installed in 1966/67. They were carefully selected to enable a trial of the effectiveness of this new 'area control traffic management' and also to enable a permanent matrix of major square street blocks that best suited the future city centre land use development.

Traffic Flow Patterns Using One-way Pairs

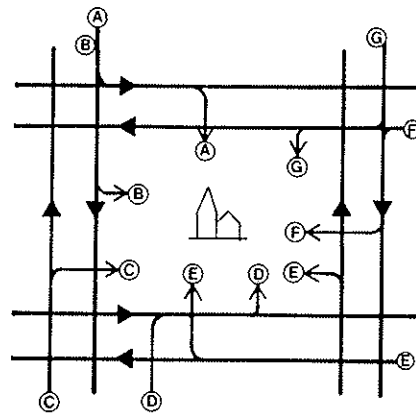
Transport Policy 1972.

Because of the success of the initial two stages in terms of traffic efficiency, travel savings, relief to Colombo and other inner streets and the reduction in accidents, the four stage inner city 'area control' scheme approved by the Christchurch City Council in 1967 was confirmed. The next stage followed in 1971 with the Salisbury Street/Kilmore Street pair and finally the Montreal Street/Durham Street fourth stage in 1973.

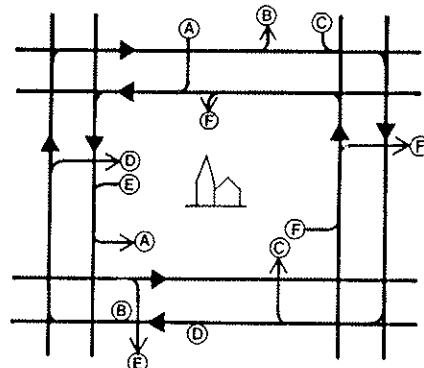
After receiving submissions on the District Plan in 1969 and in the light of further research on parking demand and bus route provisions the City Council adopted a comprehensive policy for the city centre in 1972. This is shown in the map on the following page. This confirmed the traffic circulation, street parking charges, proposed parking building locations and central city bus routes including park and ride and a city shuttle bus route proposal.

This group of policies has now generally been implemented. The major exception is the absence of the outer parking areas/ buildings between Madras and Barbadoes Street, serviced by the city shuttle bus.

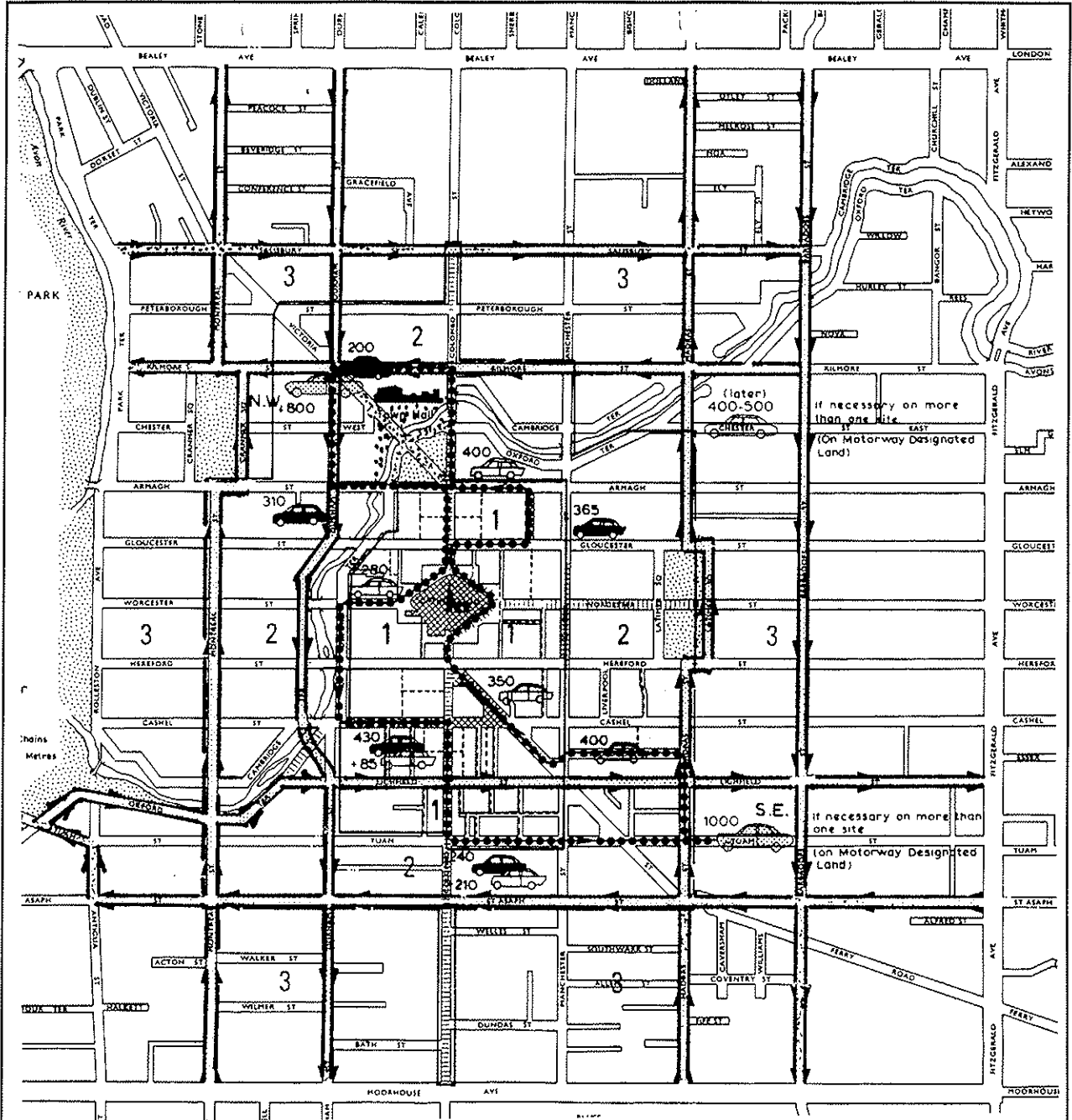
Christchurch was fortunate in being able to 'slip' such a high capacity and convenient distribution system on to its existing grid of streets with minimal street works, widening and bridging. The system is adequate for the level of city centre activity that has emerged in the year 2000 and beyond.



1. Trip origin outside — destination inside one way pairs.

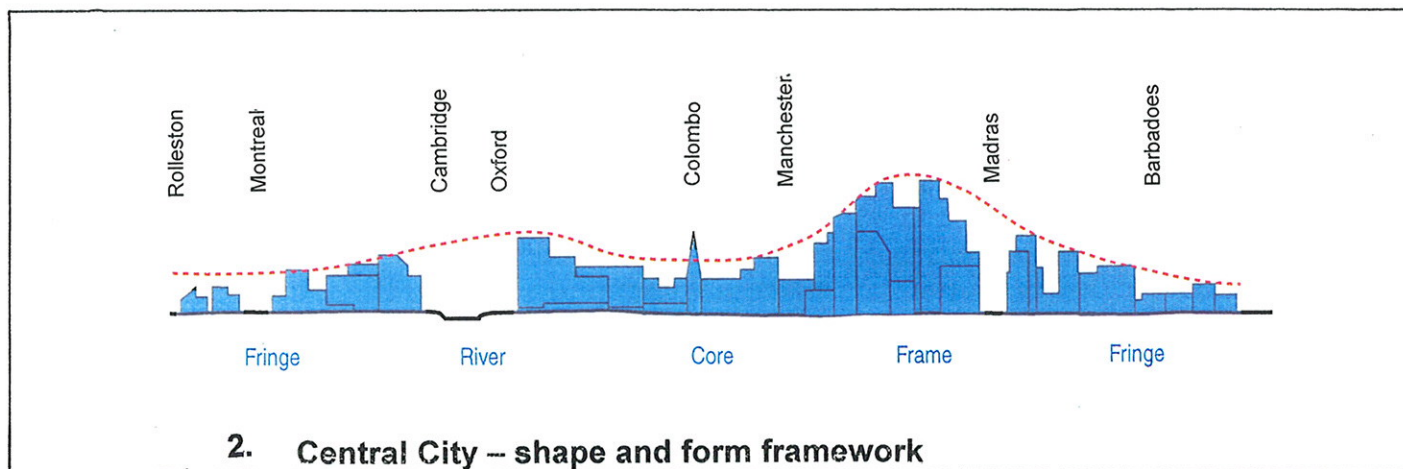
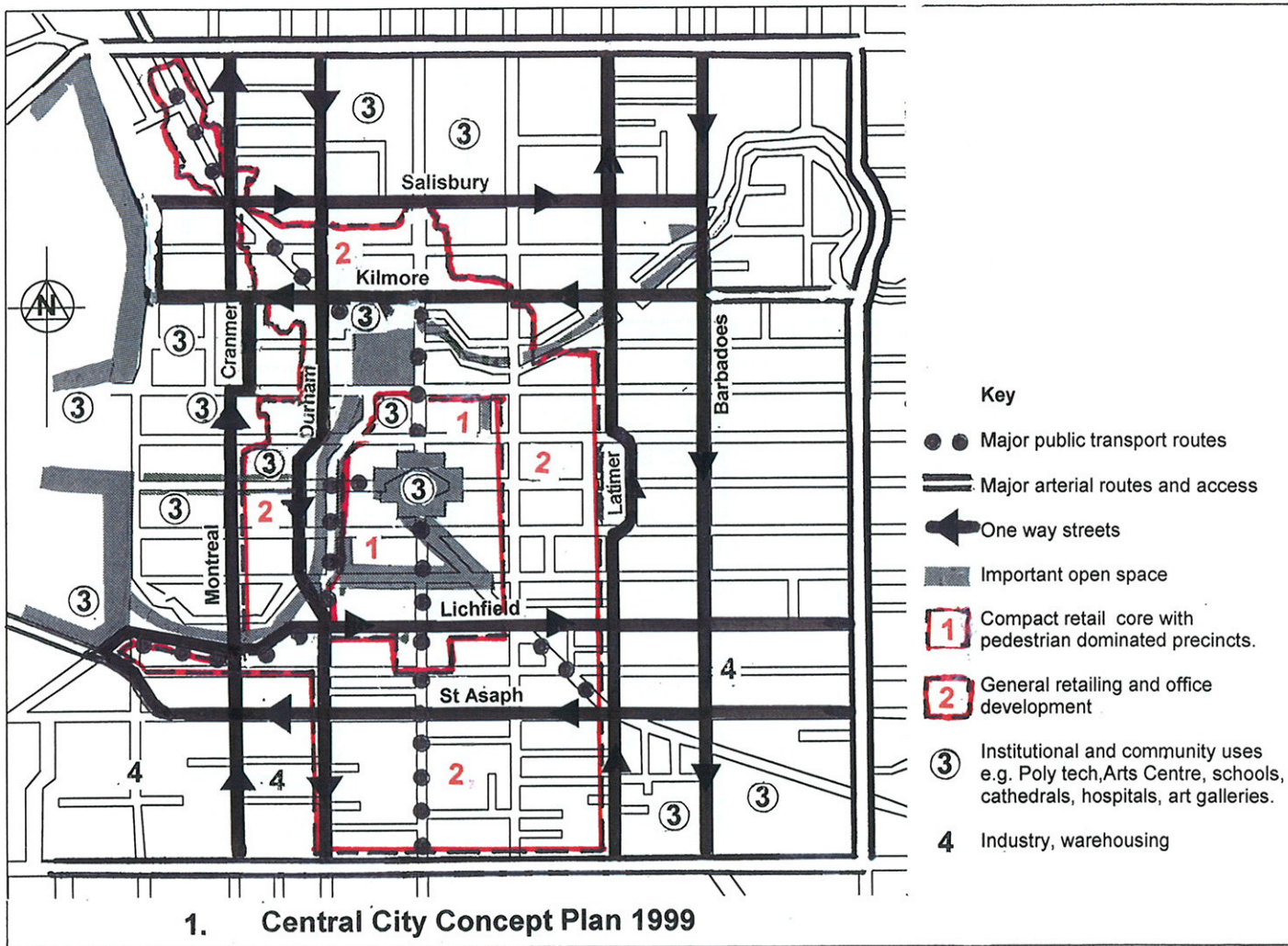


2. Trip origin just inside or outside one way pairs — destination near adjacent or opposite side.



- | | | | |
|--------------------------|--|---|--|
| Parking Zone Boundary | | Special Park, Ride Bus Routes | |
| Existing Car Parks | | Bus Axis | |
| Proposed Car Parks | | Pedestrian Mall | |
| Proposed Major Car Parks | | Pedestrian Routes (not necessarily Rights of Way) | |
| Inner Ring, Two Way | | Zones: 1 from 15c/hr, 2 10c/hr, 3 10c/hr | |
| Outer Ring, One Way | | (no on street charge in Zone 3) | |
| Parks and Reserves | | | |

**A Comprehensive Transport Policy for the City Centre
November 1972**



Concept Plan 1999

The central city concept plan illustrated on this page has crystallised all of the elements that comprise the complex core of a metropolitan area. Issues of circulation, land use, open space and the built environment have been considered and determined together. A great variety of activities are permitted to mix and match in the City Centre (1999) commercial zone subject to performance based rules. These along with all aspects of development and planning are permitted through the objectives and provisions of the District Plan. The reviewed District Plan is summarised in the appendix with the zoning maps in Appendix 1 and the objectives and policies summarised in Appendix 8. The present policies for promoting the Central City are set out in Appendix 9.

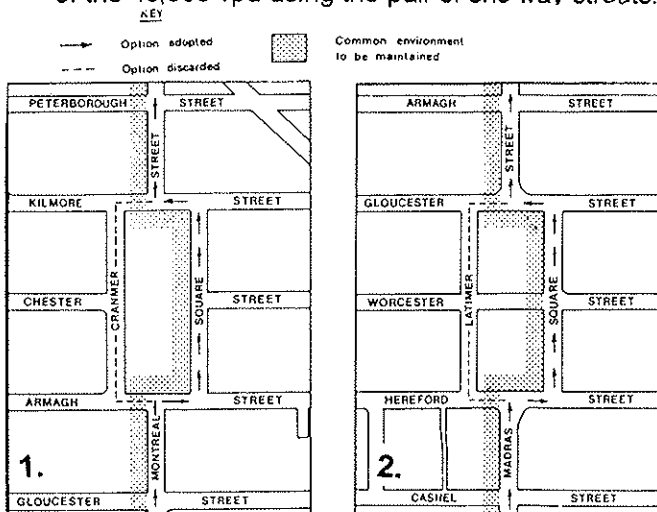
This Concept Plan adopted as part of the City Plan in 1999 is further illustrated in colour in Appendix 6.

Selection of Four One Way Pairs.

It is appropriate to record the requirements and reasons for the selection of the one way streets.

The **Barbadoes/Madras** one-way pair form the main north-south distributor on the east of the city centre. They were chosen for the following reasons:

- The Barbadoes/Madras north/south pair is critically placed to match the needs of the eastern city centre and enable ready access with office and industry on that side and good distribution to and from the Linwood and Waltham fringes. It also matches the traffic needs to and from both the north (St Albans, Shirley, Northcote, Belfast, Waimakariri), including the future northern arterial locations, and the south (Sydenham, Addington, Opawa, Heathcote, Lyttelton).
- This pair holds the correct and only logical location for the "tangential approach from the east" shown by the 1962/64 Master Transportation Plan to be essential to both the city centre's and the industrial/suburban traffic's routing. This is a successful long term solution as multi-lane at grade one-way arterials (or as an elevated motorway if that had been chosen).
- The closure of the railway station and marshalling yards and the ability to get across the Gasson Street level crossing without the viaduct originally proposed, both simplified and confirmed Madras Street as the major north bound axis.
- In determining which side of Latimer Square the one-way street should traverse, the east side was selected because the Square was considered to be part of the open space and pedestrian system for the central commercial district and workers should gain access without the intrusion of a busy street. The road on the west side of Latimer Square was therefore downgraded as a local traffic street.
- This pair will carry the major share of traffic to and from the city centre from the N/E/S suburban and industrial locations which together makes up 80% of the 40,000 vpd using the pair of one way streets.



- This pair also provide the through route on the east of the city centre designed to discourage extraneous heavy traffic and goods vehicles from using Colombo and Manchester Streets, these being inner city business streets.
- Barbadoes and Madras will also ensure the western pair (Montreal and Durham) are not used as the principal by-pass or distributor to the city centre as a whole.
- The growth in the use of Hills Rd, Whitmore Street has allowed Fitzgerald Avenue to be a complimentary distribution system running parallel with the Barbadoes/Madras one-way pair.

The **Salisbury/Kilmore** one-way pair were chosen for the following reasons:

- The Salisbury/Kilmore pair link Park Terrace with Avonside Drive enabling east/west distribution and linkage serving the northern fringe of the city centre with connection to and from the western and eastern suburbs.
- This is the only pair of streets on the northern fringe that could serve the inner city distribution.
- Kilmore is ideally located, immediately north of the Avon River, to enable the completion of the inner one-way anti-clockwise distribution.
- Kilmore links conveniently from Avonside in the east to Park Terrace and Harper Avenue in the west servicing significant parking areas such as the Town Hall, the Conference Centre and Hotels.
- Salisbury provides a convenient west to east route enabling vehicles to access Barbadoes Street and also Avonside Drive and Fitzgerald Avenue.
- This pair of one-way streets possess adequate reserve capacity to provide a high level of service across the northern fringe for the future.
- By retaining Peterborough Street between these two one-way major arterials a convenient local access road is provided for the area.

Originally the Salisbury and Kilmore one-way pair were planned to be extended to the east across the Avon Loop to Avonside and to the west across Hagley Park to Harper Avenue. These major works were omitted in 1971 partly because of the success of the one-way system acting as a box around the whole of the city centre and also to avoid extensive works in both Hagley Park and the Avonside Drive areas.

The **Lichfield/St Asaph** one-way pair has become the main east-west distributor for the city centre, for the following reasons:

- The St Asaph/Lichfield pair have both an east/west distribution role and also in the southern fringe of the central city core provide direct access to high capacity car parks and significant office and warehouse type developments.

- This pair conveniently provides strong connections to the east linking to Fitzgerald Avenue and the range of streets serving the Linwood area.
- They are well located close to the centre of retail activity, especially for access to inner associated short and long term parking buildings.
- Lichfield is critically placed for centre city circulation between Durham and Madras Streets and also provides the city approach from the west (Riccarton, Ilam, Addington) via Hospital corner and Oxford Terrace.
- They have better connection than the northern Salisbury/Kilmore pair at each end, ie to Riccarton Avenue at the west and through to Fitzgerald Avenue and Linwood in the East.
- Lichfield/St Asaph form a natural movement corridor between the highrise central city core surrounding Cathedral Square to the north and the low density car oriented activities that have become established as South City mall etc between St Asaph Street and Moorhouse Avenue.
- Lichfield Street is correctly placed to distribute traffic from the west (ie from the hospital corner/Oxford Terrace) and also the one-way south bound left turning traffic (from Durham Street - Cambridge Terrace) travelling east.
- This one-way pair when twinned with Moorhouse Avenue provide drivers with a choice of east-west approaches to the southern part of the city centre and allow them to select the access route best suited to their destination.
- Oxford and Cambridge Terraces, and the major widening of Durham Street were originally rival candidates for selection in place of the one-way system. The pattern of land use plus the lesser traffic function of Oxford Terrace led to the efficient and best solution using Cambridge Terrace to link the south bound Durham Street traffic.
- Cambridge Terrace with its deviation near the Bridge of Remembrance was wisely and deliberately selected, so Oxford Terrace would be preserved as part of the City Centre pedestrian system and access to both sides of the river could be maintained for city centre pedestrians with Oxford Terrace as a downgraded traffic street.
- The decision to close Victoria Street and Oxford Terrace followed on from these plans. Victoria Square was closed to through traffic and made the attractive precinct on the north of the city retail area, a move which was completed in 1987 and the inclusion of part of Oxford Terrace in the streetside cafe area of the City Mall achieved in 1998. These enhancements could not have been achieved without the one-way streets of Salisbury/Kilmore and Montreal/Durham/Cambridge.
- For Cranmer Square, the east side was selected as the one-way link because the alternative would have led to a directional conflict in Kilmore Street. Cranmer Square was also considered to be more related to the residential zone, the schools, the Park Terrace riverbank area and Hagley Park environment. Consequently the west side of Cranmer Square was downgraded as a traffic street.

The **Durham/Montreal** one-way pair proved the most difficult to plan and design but also brought with them great central city benefits:

- The Durham/Montreal north/south pair are placed to facilitate redistribution of traffic on the west of the city centre to serve the office, shopping, institutional and western river precinct area. They link to the north west (Fendalton, Papanui) and the south (Addington, Spreydon) and provide the city centre circulation between Kilmore and Lichfield Streets.
- This pair avoided the need to link Rolleston Avenue across a bridge to Antigua Street. The area between the Avon River and Hagley Park (ie the River Precinct) is a mixed cultural, recreational and high density residential area, adjoining the Botanical Gardens, Museum, and Art Gallery. This is a special environmental area and unnecessary traffic intrusion should be discouraged from entering this River Precinct.

Area Wide Traffic Control.

Control of the flow of traffic throughout the city centre is managed by traffic signals linked to a central computer. With area wide control, Christchurch's grid street pattern is both safer and more efficient. The Christchurch area wide traffic control was the first such system in New Zealand and was a pioneering and successful facility.

The computer continually monitors traffic volumes and adjusts the phasing of traffic signals throughout the central area to give the best overall travel times both in the peak hours and also off peak periods. This "Area Control System" encourages vehicles to use the one-way rings, freeing the adjacent streets and particularly those right in the heart of the city. It has proved to be highly successful in operation. The computer linkages were introduced from 1968 onwards with the first one-way street beginning in 1967. It was initially controlled from a computer in Victoria Street, this was relocated to the new city offices in 1984.

City Centre Traffic Flows.

The traffic flows measured in the city centre are shown in the three maps for 1966, 1984 and 1998.

1966 was the last year of the old pattern with heavy reliance on Cathedral Square, and the diagonal routes of Victoria and High Streets along with Oxford Terrace. By 1984 the new circulation pattern was well established with dramatic reductions in traffic in the Colombo/Cathedral Square areas, as planned.

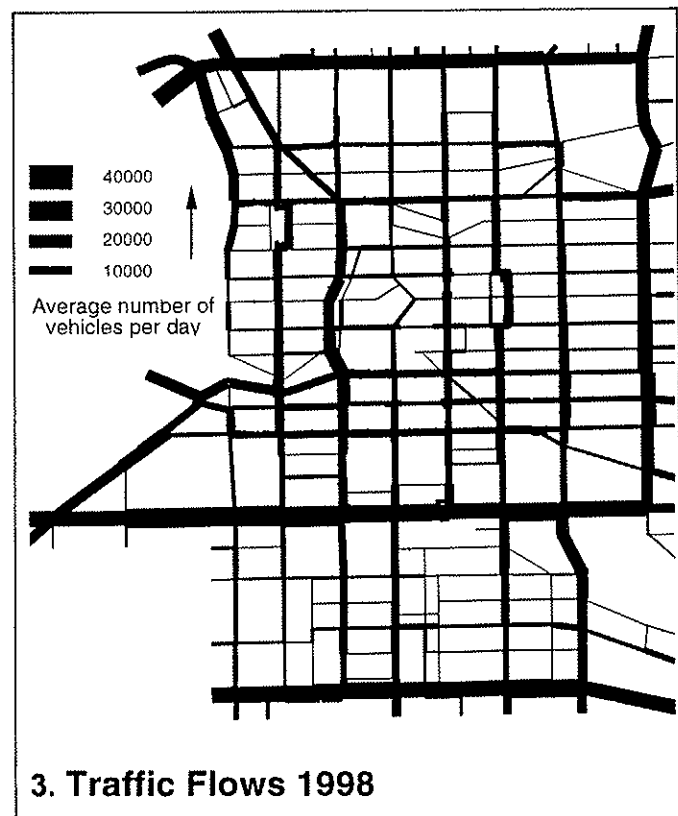
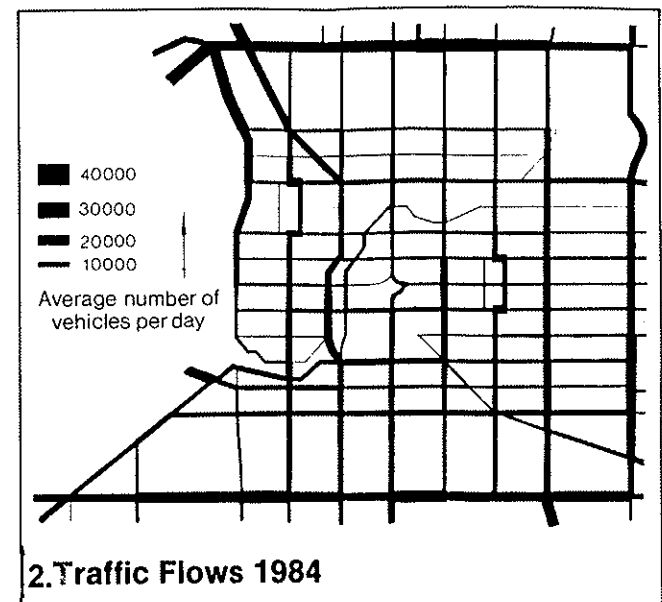
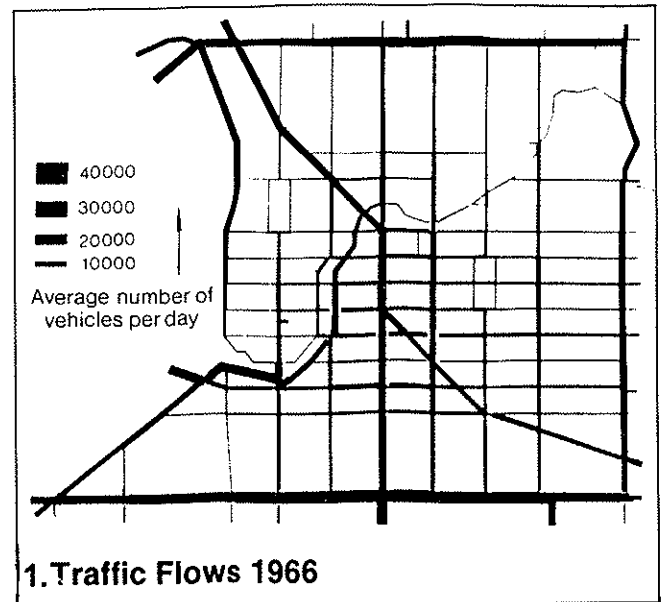
The 1998 central city traffic flows continue and reinforce the planned circulation using the one way streets successfully. This flow map also includes the Sydenham area with Montreal, Durham and Gasson sharing access to and from the south. It can be seen that Brougham Street is now as heavily trafficked as Moorhouse Ave as the east-west trucking route.

Thus the current pattern of travel and traffic flows have developed much as originally planned. There is a balance between the inner one-way streets, the avenues and Brougham Street which reflects their different functions and the arrangement of city centre land uses. Traffic still tends to be too heavy on the west of the city and more active policies to further encourage the eastern one-way pair is a key issue for the future.

In the last 40 years in the inner and outer suburbs, developers have located "supermarket" developments, encouraged by suburban expansion, the arterial network and the relatively low cost of providing abundant, free customer parking. The city centre can never compete with this. It is appropriate for the Council to favour policies which maintain or enhance the more specialist and cosmopolitan activities in the city centre. In our car oriented society this means providing appropriate numbers of off-street carparks, for both all day and short term car parking, as envisaged in the 1972 policy. It is also important to support other modes such as buses and cycling.

In view of the Christchurch city centre accessibility it is questionable whether restricting traffic by regulation, economic restraints, congestion or limiting or making parking excessively expensive, would solve any traffic issues. It could well tend to drive business and employment away.

The one-way streets have been shown to maintain accessibility, to be cost effective and greatly improve traffic distribution. This has enabled all of the other accomplishments and enhancements to the city centre open spaces which would not, otherwise, have been possible. Christchurch is indeed fortunate to have such a feasible and economic solution that makes the city centre so effective and convenient.



One-Way Street Benefits and Issues.

These photos of the one-way streets as they now exist illustrate some of the significant features and benefits:-

1. One-way streets have high capacity and are an efficient way of channelling traffic and provide a convenient means of access to the edge of the city centre as a whole with a "green wave" controlled speed.
2. The opportunity to lane traffic, provide for cyclists and to develop right turn as well as left turn lane exits in the one-way street system.
3. One-way streets do not detract from residential use of central city streets. The simpler situation for pedestrians and the ease of access between traffic platoons means that convenience and safety are enhanced. One way streets are quieter, smoother flowing, with less pollution and fewer traffic conflicts.
4. One-way streets are quite satisfactory for a range of commercial, office and warehousing activities and in particular access to major car parking facilities.
5. The one-way street of Kilmore Street has provided convenient access to the Town Hall area and Conference Centre and new features such as the glassed overbridge have been built to further improve pedestrian convenience on this heavily trafficked one-way arterial.

There are also aspects that give rise to criticism and represent some issues with one-way streets. These include:

- the need for drivers to plan their routes ahead and to navigate around the block(s) to get access to a particular property.
- a perceived loss of convenience for parking and loading to properties fronting these faster arterial one-way routes.
- not so satisfactory for bus route patterns where the return bus stop may be a different road block away.

To overcome these inconveniences requires local knowledge and a keen sense of direction. However the Christchurch system is simpler and more symmetrical than those found in many other cities.



Road Safety and Crashes.

The 1987 City Council publication "The Christchurch Central Area Traffic Plan 1960 - '86" gave information about the changes in the crash rate, consequent to the implementation of the one-way streets plan.

This crash information has been updated to 1996 to include more recent crash information from the Land Transport Safety Authority. Three diagrams show the reported crashes for the years 1966, 1984 and 1996.

The 1987 report noted that the dramatic reduction in crashes (to 38% between 1966 and 1984) was attributable in large measure to the traffic plan. While the minor reduction in pedestrian flows was a contributory factor, the dramatic reduction in pedestrian accidents in Cathedral Square emphasises the benefits of reducing conflicts between pedestrians and vehicles. Simplifying traffic management and area-wide traffic control had a profound and positive benefit in reducing accidents.

The following table gives the reported crashes in the study area for the three significant years:

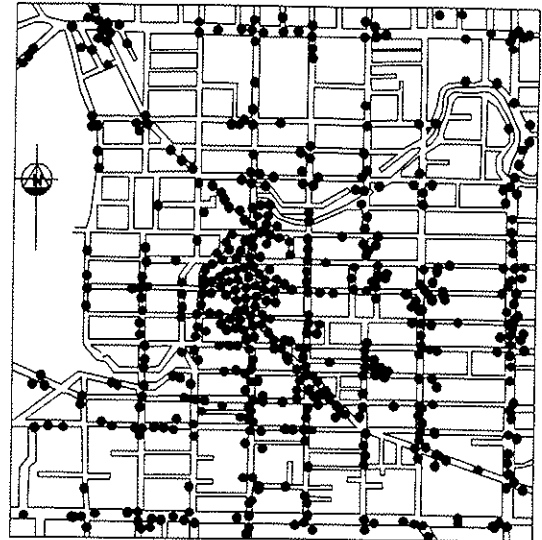
Year	Total Injury Crashes
1966	530
1984	212
1996	148

Crash rates in the city centre.

The accidents are mainly associated with intersections and two way street operations. This is clearly shown in the 1984 comparison of Manchester and Madras Streets. As the one way streets have become accepted and more heavily trafficked vehicle accident levels had by 1996 lifted. However the accident rate is lower than for equivalent traffic in other parts of the network.

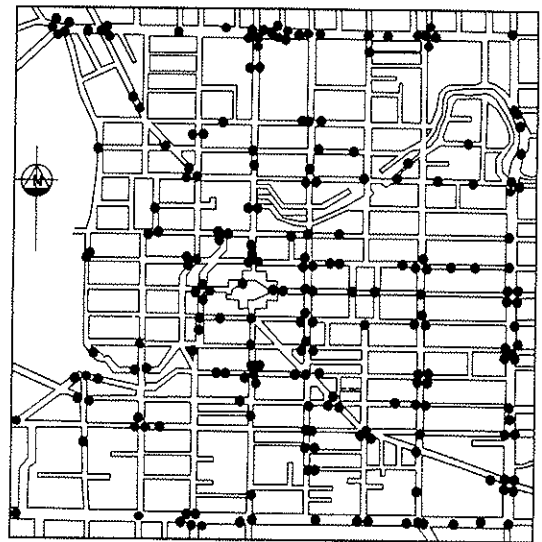
The reduction which accompanied the introduction of the city centre traffic plan has been carried forward to the present day. Overall, the plan has been successful in safety terms, and it has been calculated that the Benefit/Cost ratio from crashes alone was 30:1. No doubt the additional traffic service and "intangible benefits" from the creation of traffic free and attractive landscaped areas, would boost these benefits even higher.

The reduction in inner city streets from 1984 to 1996 reflects continued improvement as the pedestrian areas and the inner city traffic management becomes accepted. There has been a steady city-wide reduction during this period, however the city centre decrease is greater at an average over the period of 4% per annum.



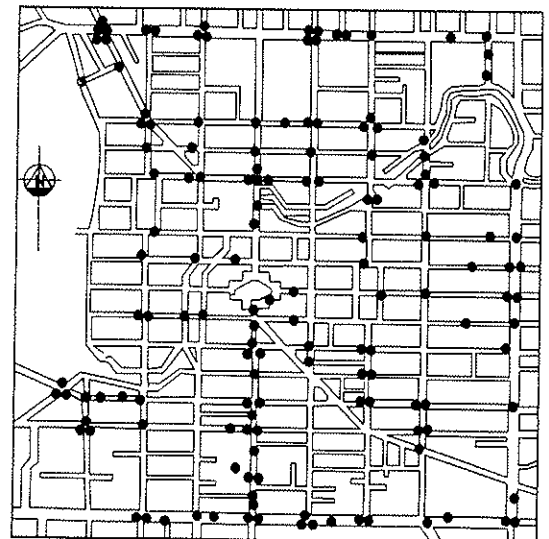
1. Injury Crashes 1966 - Total 530

Prior to One-way Streets



2. Injury Crashes 1984 - Total 212

Following One-way Streets



3. Injury Crashes 1996 - Total 148

Pedestrian Safety

Information on pedestrian flows is available from the surveys taken by the Institute of Valuers. The changes from 1959 to 1997 show a decline in pedestrian flow rates generally to about 62% of the earlier years though there are marked differences at individual counting stations. There has been little change since 1991 on footpath counts, however malls and arcades in the central core have tended to hold their traffic and increase marginally. Another reason for the footpath counts reducing is the closer proximity of on site parking and parking buildings which have been developed over the past 40 years. However many more pedestrians are in the South City Colombo Street area, as well as in the new suburban shopping centres.

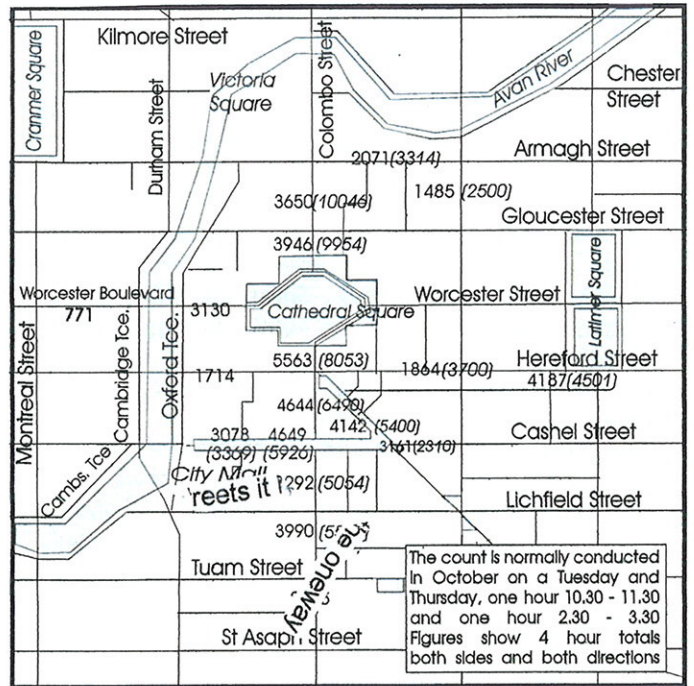
As a result of the one-way streets it has been possible to convert large areas of the city streets in the inner core into pedestrian or non-traffic areas. The system has, therefore, had a positive effect in enabling safe, "traffic free" pedestrian areas to be created. These areas have enjoyed greater pedestrian convenience and removal of vehicle accident risks. This may also have boosted pedestrian flows, which in turn helps arrest any further decline of patronage in those quality environmental areas.

An analysis of records of crashes (1996-1998) involving injury to pedestrians shows the pattern illustrated where each recorded crash is shown by a dot. Of forty nine pedestrian accidents in the study area (bounded by the four avenues) twelve occurred on the one-way system. One was fatal and four serious. The one way streets total 9.6kms. Thus the accident rate is low at 1.3 per kilometre.

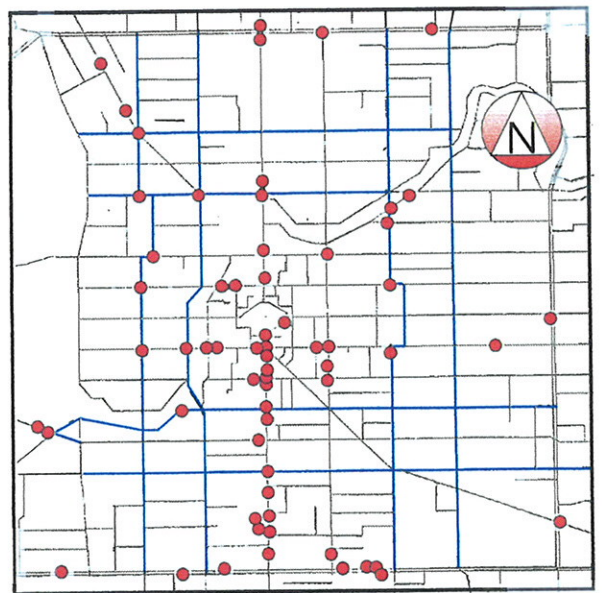
Of the balance of thirty seven crashes, eighteen took place on Colombo Street, a rate of 14 per kilometre, and fourteen on Hereford and Gloucester Streets. These are where there is higher pedestrian /vehicle co-existence and flows. The vehicle speeds in these inner streets are lower and the accidents tend to be less severe. The main shopping streets are the locations where most of the pedestrian crashes took place.

The data leads to the general conclusion that one-way streets have less exposure and are no more risk prone for pedestrians. Regular platoons of traffic following the "green wave", contrasted to the random pattern of traffic on two-way streets, leave vehicle free periods and are usually predictable. There are cyclic periods when there is little or no traffic and it is possible for pedestrians to cross in safety and convenience at the signalled intersections or at mid-block locations.

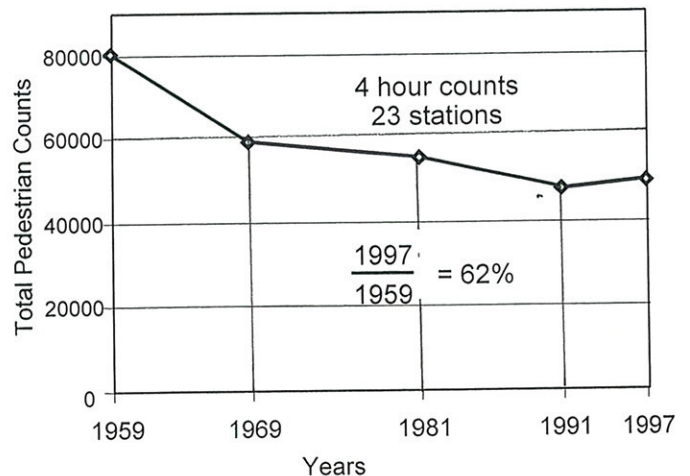
Any claim that one-way streets around the city central core act as a barrier to pedestrian movement, compared to two-way streets is not born out by the facts. The one-way system appears to be neutral to pedestrian convenience.



1. Pedestrian Counts 1997(1959)



2. Pedestrian Crashes 1996 - 1998



3. Pedestrian Counts

Car Parking.

The total parking situation in the city centre grew rapidly in the 1959 to 1998 period. Major off-street provision was made in the 1970s and 1980s. The latter was partly with central parking buildings to provide shopper/visitor parking in the CBD central core and also private land let for use as parking lots.

Centre City Total Carparking

	1959	1969	1984	1998
Street Parking	6,500	8,000	9,500	9,800
Off Street Visitor	1,100	1,650	7,500	9,900
Off Street Staff and Reserved	4,500	4,750	10,000	14,000
TOTAL	12,100	14,400	27,700	33,700

The outer limit of all day parking does not appear to have changed significantly in recent years but it is now tending to coalesce with parking demands outside the 4 avenues. The fringe street parking competes, however, with residents parking. To solve the fringe parking problem and provide workers all day parking, more spaces will need to be provided in the east along the Madras and Barbadoes Street corridor. This will also help to shift the peak hour traffic load to the east. The long term parking areas in the east will need to be extensive (at least 1000 spaces) and associated with the future loop route of a frequent city centre Shuttle Bus service.

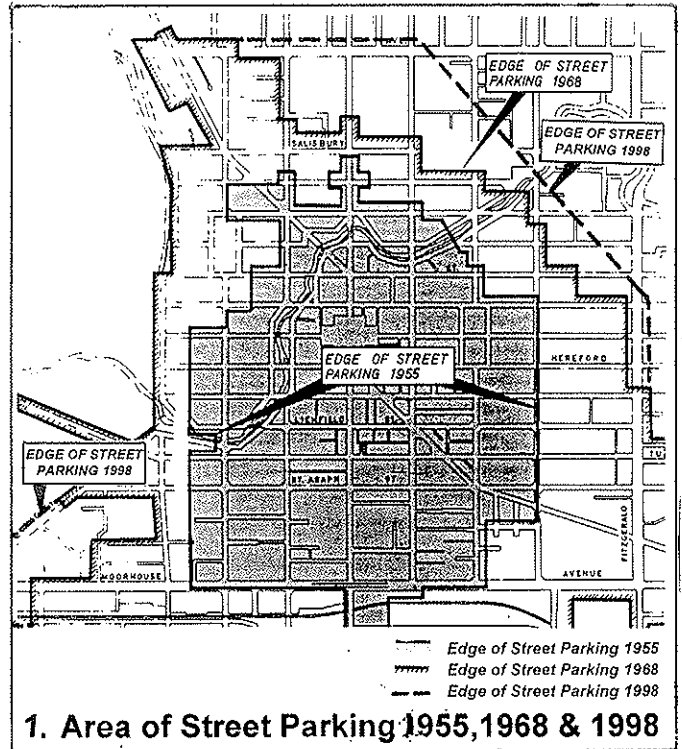
Many buildings have been able to provide significant off-street parking for both staff, and customers. The City Council provides over 2000 off street spaces mostly for visitor parking. Staff off street parking has increased to about 10,000 of the reserved spaces over the period.

Parking location is the critical land use that leads to traffic distribution in the city centre. Chart 2 illustrates the parking density policy adopted in 1972. It shows how lesser densities were proposed in the river precinct (125 car spaces/hectare) compared with the eastern fringe (greater than 250 car spaces/hectare). The latter has not yet been achieved.

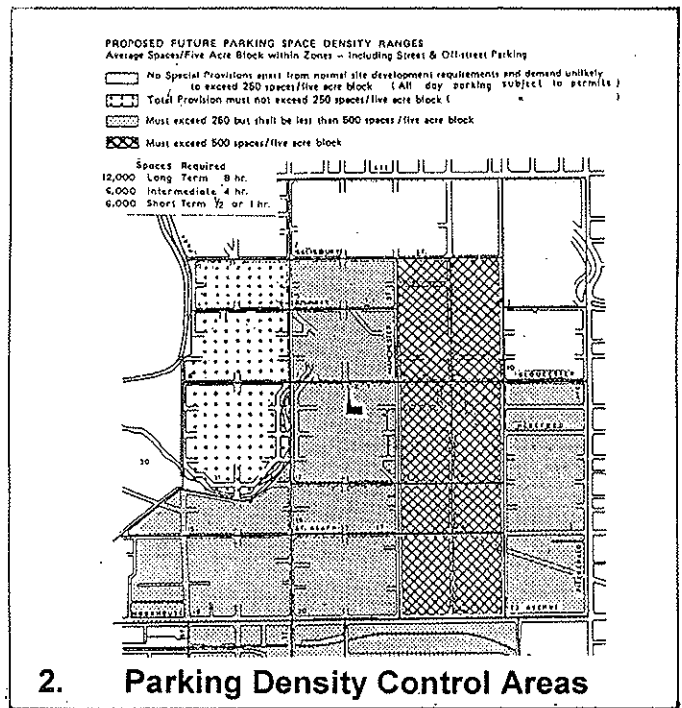
Chart 3 shows a steady decline of about 3% pa in the numbers parking off-street in City Council owned facilities since 1993. This will be partly due to the larger number of charged and leased privately owned spaces now available.

It appears the central street metered parking is being used to a greater extent. The charging rates remained unchanged during the period 1992 to 1998. It is now proposed to increase street rates to obtain a higher rate relative to off-street parking.

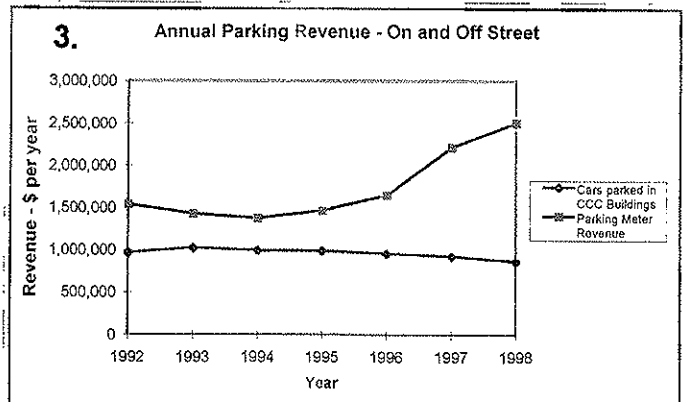
All developments in the central area must now either provide parking on site or contribute "cash in lieu" to the Council's parking fund. Parking for all trade vehicles must be provided on new developments so that public spaces are left free for private cars parking.



1. Area of Street Parking 1955, 1968 & 1998



2. Parking Density Control Areas



3. Annual Parking Revenue - On and Off Street

Bus Patronage.

The chart shows the relentless decline in patronage from 1959 to 1991, with, however, a steady and almost uniform increase from 1992. The total travel by bus has declined from 21 million trips per annum in 1959 to 9 million per annum in 1999. This has coincided with changes in bus funding, altered bus routes and the availability of more and cheaper cars. The slow but steady growth in activity in the city centre since 1992 appears to be supported by recent trends in bus patronage.

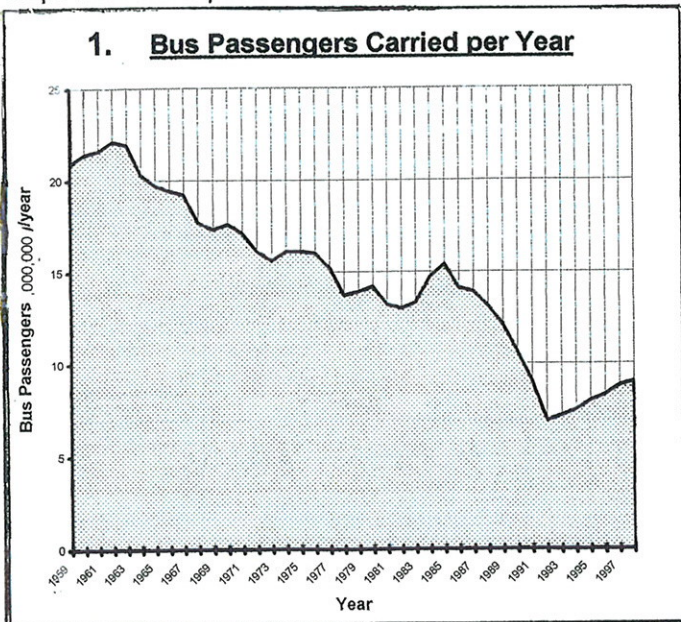
Eighty percent of the total bus patronage figure travel to or from destinations on or within the four avenues, the majority to the central business area. Although a certain amount of cross city or inter suburban travel takes place (as witnessed by the new "Orbiter" service in west Christchurch), the system of terminating routes in, or close to Cathedral Square, both reflects and reinforces the importance of the city centre as a bus destination.

Surveys in 1995 showed the following:

- Bus Patrons using Cathedral Square. 18000/dy
- Bus Patrons passing over 4 Avenues. 26500/dy
- Bus Patrons in suburbs and not to/from City Centre. 5000/dy
- Total trips per day 31500/dy

This pattern shows that 84% of all bus patrons are centre city travellers and 2/3 of these disembark or board in or around Cathedral Square.

As a result of Cathedral Square improvements it became necessary to move many of the bus stops into adjacent streets and the Gloucester Street bus stops were extended in 1998. The success of the pedestrian spaces developed in the Square and the extended use of the spaces for meetings, entertainment, and market kiosks, led on to the view that there was room for a further rearrangement. The 1999 improvements and new paving removed further bus stop areas to the streets outside the Square. The plan is to remove all public transport bus stops from the Square in 2001.



The ramification of changes in tendered services the bus routes, bus stops, use of Cathedral Square and stand by reserve parking spaces are discussed in more detail elsewhere. It is observed that these changes have not resulted in bus routing or a bus system which is any more efficient, or more attractive. These changes had negative effects on patronage, not easily reversed.

The continued pattern of trips by all modes of travel appears to confirm that access to the city centre is of a high standard. There has been no major congestion or other effects hampering the use of buses. The bus services through out the 40 years 1959 to 1999 have always been in excess of bus passenger demands. The current changes to the bus system result in another dislocation of services. Colombo Street is correctly retained as the bus spine but the convenience of the cross links at the Square have been lost. This aspect of through routing of the system needs to be recreated in the future.

It seems likely that any decline in activity (such as in major retail outlets), is more the result of competition from new easily accessed facilities in the suburbs, with their generous free parking, than by any serious shortcomings or restraint on access to the city centre. It is interesting that since 1992 both on-street parking and bus patronage have been increasing again.

Given that the choice of destination is a metropolitan wide choice and that the mode of travel is also a personal preference the city centre will always be competing to retain its relative position and share of business and person trips.

At present the accessibility is high for all modes of travel including buses and relatively free from congestion. The Council appears to seek to support all modes of travel access to the city centre and that philosophy is not compromised by any major economic or physical restraint on transport to the city centre.



Colombo Street main Bus Axis.

City Cycling.

Christchurch has long held a strong tradition for cycling. From the outset the regular network of wide flat streets encouraged the use of this mode of travel. However as indicated in Appendix 7, the percentage of cycle traffic travelling to the city centre has reduced from 19% in 1959 down to 4% in 1996. This dramatic drop in cycling has been replaced by a significant increase in car drivers and vehicle passengers and an estimated 10% of the 38% increase in car travel since 1959 were previously, in the "cycle saddle".

Cycling is a mode of travel where there are considerable individual benefits including increased independence, particularly for school children, enjoyment from cycling as a recreational and healthy activity and for those who are cycling an increased opportunity to observe and experience Christchurch.

As an energy efficient non-polluting form of transport cycles have in the past moved large numbers of people relatively quickly around the city. While this mode of travel, has been preferred for journeys between 2 and 5 kilometres the modern multi-gear high performing bicycle gives the opportunity to travel much greater distances at speeds little slower than that of an urban motor vehicle journey.

In 1998 the Christchurch City Council embarked on a bold endeavour to increase the cyclists proportion of commuter trips hopefully from 8% back to 20%, and also to increase the number of students cycling to school hopefully to 60%. Regrettably the real on the road figures are only a third of these two targets. Human response, transport cost structures and travel behaviour patterns seem to militate against the bicycle again becoming a major mode of travel in the future.

In 1974 a well researched policy report was prepared by the Regional Planning Authority outlining how cycle traffic to the central traffic district had fallen from 12,000 a day in 1959 to 9,000 by 1969 and the number has decreased further since that time. The 1974 report advocated the development of a cycle network which recognised the incompatibility with vehicles sharing congested major arterial road space and also the conflict at intersections and recommended:

- Major arterial roads e.g. Blenheim Road and Fendalton Road, should not be used for cycling and alternative provision on adjacent local streets and cycle tracks must be planned.
- Pedestrians and cycles can share common areas especially when these are segregated from vehicle traffic as in Hagley Park and along the riverbanks.
- A region wide cycle network should be planned for long distance cycle routes. These could parallel the motorway and rail corridors.

1. Rolleston Avenue - shared pedestrian cycle path.
2. Tuam Street - mid-block cycle lanes and parking.
3. Gasson Street - kerbside cycle lane - no parking.

- Grade separation and routes of access adjacent to the city centre across the four avenues, should be provided so as to enable the centre city to remain safely linked with the cycle network as a whole.
- A grid of central streets needs to be developed enjoying cycle preference ahead of vehicles.

Enhancement of the city wide cycling network involves better use of existing road space and making use of off-road alternatives such as through Hagley Park, the riverbanks, motorway and rail corridors where these are appropriate. Some modest progress has been made on these projects during the 1990s. However the principle of establishing a continuous hierarchy of cycle routes has yet to be achieved.



PART 3: CITY CENTRE ENVIRONMENT

Malls, Bus Routes and Parking.

The enhancements of greatest impact have been the conversion of traffic areas to pedestrian places. The relationship and placing of the pedestrian malls, the parking areas and the bus routes is critical to these changes.

The east-west streets, not required as one way streets and with their lower traffic density, had the greatest potential for special treatment. Thus Cashel street was able to be closed for part of its length and transformed into the pedestrian precinct of City Mall, and the Cathedral Square pedestrian area was extended over Colombo Street and part of Worcester Street.

The two diagonal streets (Victoria and High Streets) had always created traffic problems at their complex five and six leg intersections with the grid pattern. The one-way system has allowed them to be down-graded. High Street has been closed to become part of City Mall, and the next block south has become a local access and parking street. Victoria Street (through Victoria Square) has been closed, with part of the area used for a new hotel site, the rest being returned to public pedestrian open space.

The displacement of traffic outwards onto the one-way system has allowed increased use of the Colombo Street spine as a bus route and as the focus for transfer between city bus services. Peak hour clearways and extended bus stops can be introduced, and some traffic lanes can be set aside for buses and taxis.

Parking areas have been placed close to the one-way systems for convenient access to traffic visiting the city centre. Although the provision of parking buildings has fallen behind the schedule proposed in 1972. It is generally adequate for present levels of employment and commercial activity. This has also resulted in private parking areas being placed on vacant land, while these new parking areas are being established many will be temporary uses. There is still a need, against longer term demands for day parking, for some substantial publicly owned parking areas on the eastern side of the CBD.

Thus the city centre now operates better as a series of environmental "rooms" within a matrix of traffic "corridors", as shown by the photos that follow:

1. High Street as a two way traffic street 1971 before redevelopment.
2. High street as part of city mall after 1973.
3. New Regent Street as a traffic street 1970's.
4. New Regent Street as a pedestrian area and city tram route after 1992.



Cathedral Square.

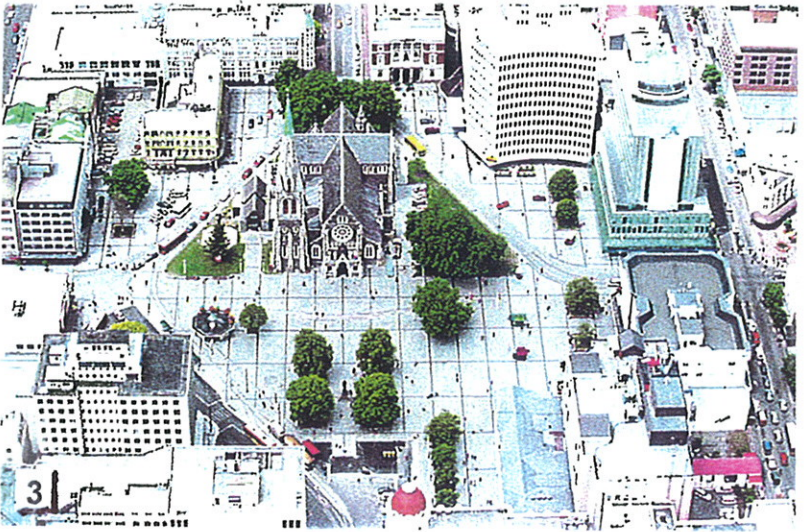
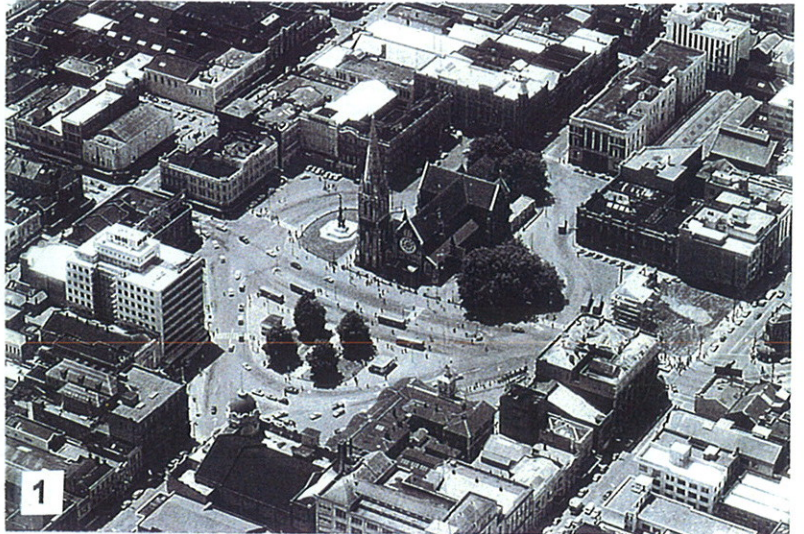
At the heart of the city stands Cathedral Square, an open space in the shape of a broad cross surrounded by buildings many of which in the recent past have been built to a greater height than previously. It contains Mountfort's fine gothic revival Cathedral symbol of Christchurch and showing the earlier colonial link with the Church of England. It also includes the War Memorial and many historic plaques and records of the history of Christchurch.

The history and development of Cathedral Square in the period 1840 to 1960 was closely linked with transport in Christchurch. The Square was one of the first areas paved. It was traditionally the location for horse carriages and cabs. Then from 1905 to 1914 the horse drawn steam trams were replaced by the electric trams

The advent of buses in the period following World War II led in 1954 to the supplanting of the trams by a complete fleet of the "big red" buses. It was assumed in the Regional Traffic Plan and in the City's planning in the 1960's and 70's that the Square and its associated "town shed" bus barn, would continue to serve as the hub of the public transport services.

The aerial photographs of the Square illustrate its form in the 1950s, in the 1970s and now 1999.

1. Until the 1960s the Square was predominantly a link for Colombo Street north and south through the middle of the Square together with the linkage between Worcester Street east and west around the perimeter of the Square. In addition the Square served a variety of functions the major roads were fully occupied by bus stops and taxi ranks and parking in each corner.
2. The plans developed in the 1960s and completed in 1973 provided the extensive pedestrian area in front of the Cathedral and across to the old Post Office with bus stops re-located on the remaining three sides of the Square. The extensive paving and replanting made the Square an attractive place and the spaces in front of the Cathedral became available for gatherings and meetings.
3. Now in 1999 with the upgrading of the paved area and the extensive granite surfaces the Square has undergone a transformation in quality. A further reduction in the length of bus stops and the amount of vehicle traffic has been achieved.



In the early 1960s an architectural competition for the beautification of Cathedral Square was undertaken resulting in the Pascoe plan for a proposed circulating roadway. However this was deemed to over emphasise the traffic role of the Square. As a result of work stimulated by that competition and the planning and design leading to the Christchurch Development Plan of 1967 the layout was dramatically altered. The new layout successfully emphasised the role of pedestrians in the Square. This was confirmed in the 1996 Council report that "the Square should primarily be a pedestrian space" and, while motor vehicles would be permitted, the design should ensure that vehicles are always "visitors in a pedestrian environment".

The development proposals put in place following the 1995 report included these objectives:

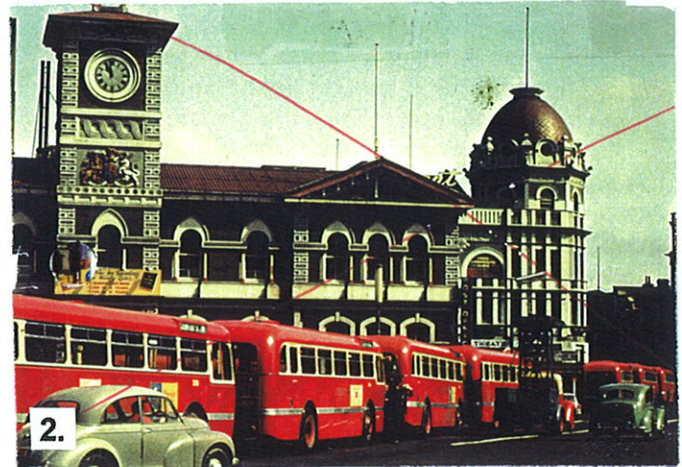
- To strengthen the identity of Cathedral Square as the central focus of the city.
- To provide for and emphasise opportunities within the Square for cultural and pedestrian related activities which will support the objectives of the central city.
- To allow for a spacial organisation within the Square which provides a visually coherent experience.
- To provide road and service access to essential facilities within the Square and its environs.
- To provide perceived and actual safety to people using the Square at all times.
- To provide the maximum opportunity for pedestrians to benefit from the micro-climate within the Square.
- To enable buses to pass through the Square.

These objectives are possible because the one way streets have successfully relieved the streets in the inner core of extraneous traffic.

With the advent of changing land uses around the Square, hotels replacing offices, cinemas, moving out and old buildings being replaced the patterns of use have also altered. It is becoming more of a focus for visitors and incidental use for assembly and "high day" citizen gatherings.

The photos show:

1. General view of central area of Cathedral Square mid 1960's with through road for buses and cars.
2. Buses across the Post Office quadrant about 1967 showing a possible layout of seven buses in each quarter of the Square.
3. Congestion with buses, cars, and pedestrian conflicts at BNZ corner 1964.
4. The Square and central pedestrian areas 1978 and the attractive redevelopment arising from the 1967 plan.



Worcester Boulevard.

A special feature of Christchurch City Centre is the Worcester Boulevard leading from Cathedral Square to the Arts Centre, (formerly the town site of the University 1973), the Museum, the Botanical Gardens and the future Art Gallery. The concept had been proposed in the 1950s and also the 1967 work. It was formally put forward in the 1979 City Plan and completed in 1994.

In 1992 the Council established the tram providing a city loop for tourists, visitors and residents and linking directly from the Cathedral to the museum. This involved the complete reconstruction of Worcester Street using pavers to create a widened pedestrian area of interesting texture along its southern side and linking the features along the route with new planting and street furniture.

The contrast between the traditional street with its continuous parking and the redeveloped form of the Worcester Boulevard sets itself aside as a unique precinct. This helps to create a friendly and interesting city centre with obvious linkages to its heritage and cultural life.

This area has become a popular space for relaxation, education and entertainment in Christchurch.

The photos illustrate:

1. The standard streetscape with parked cars along parallel kerbs and a fourteen metre standard city street circa 1972.
2. The City Loop Tram progressing from Cathedral Square about to cross Montreal Street 1994.
3. A fine setting for the Arts Centre in the Old University Buildings opposite the Museum in Rolleston Avenue 1999.
4. Saturday morning market at the Arts Centre for visitors local and international 2000.

This popular axis of activity greatly increases the visits and patronage of all the historic and cultural features along the Worcester Street Boulevard. It is estimated that up to 20,000 people per week visit the Arts Centre which is also the focus of the Festival of Romance, buskers and other gatherings.

All these facilities and the amenity of the Worcester Boulevard have been made possible and more attractive by the diversion of extraneous traffic to the one way streets.



City Mall and Oxford Terrace.

The decision to use Cambridge Terrace as the south bound one-way street led, in turn, to a new bridge (which involved some property purchase) to provide the link between Cambridge Terrace and Durham Street south near the Bridge of Remembrance at the important intersection of the one-way Lichfield Street.

The property purchase and redevelopment at the Bridge of Remembrance (which in 1979 gave the bonus of the "friendship corner" park area) was the only major disruption needed to put the one-way system into operation. It also increased the open space pedestrian linkage from the Bridge of Remembrance along Cashel Street effectively extending the City Mall. This now proves to be one of the most popular pedestrian areas in the city.

These pedestrian areas function well if there is a good provision of nearby off street parking and parking buildings.

The Oxford Terrace cafes opening onto the footpath with the bus roadway narrowed to enable more space for landscaping and the provision of cafe tables make for a very pleasant aspect. The cafe areas looks out to a sunny aspect during the afternoon and the Avon River with all its substantial planting

1. This end of the City Mall leads through along Cashel Street to Colombo Street, High Street Mall and is deemed the centre of Christchurch's retail activity.
2. The rearrangement of the street to play down the traffic functions for buses and cars as a one-way north link has enabled a wide pavement and landscaping for the cafe fraternity.
3. Within this environment of the City Mall and Oxford Terrace many a good joke and many a civic issue may be debated.
4. The Bridge of Remembrance with its arch leading onto the levelled paved pedestrian area is now well placed as an important civic monument adding interest to an area full of charm and many urban qualities.
5. The Colombo Street end of City Mall where people and buses share space and the heart of pedestrian activities cross.



Choice Locations.

The four sites shown here represent choice locations where the removal of traffic from many city centre streets together with the creation of a new link between Cambridge Terrace and Durham Street have all led to a high standard of redevelopment, paving, landscaping and surfaces that greatly enhance the city centre.

The scale and location of taller buildings and the variety of open spaces adds immeasurably to the variety, interest and success of this suite of city centre improvements.

1. For the shopper and office worker the closure of High Street to traffic and the quality redevelopment of this paved area has greatly enhanced its amenities and improved the retail environmental area.
2. The closure of the Cashel Street Memorial Bridge to traffic and its inclusion in the pedestrian City Mall was a significant statement of principle about the place of pedestrians and amenity in this heart of the city centre with new office and hotel developments adding a vertical dimension.
3. For the motorist the gentle curving nature of Cambridge Terrace's link back to Durham Street including the new bridge across the River Avon is a most attractive curvilinear feature in what is generally, a rigid grid street pattern.
4. The closure of Victoria Street through Victoria Square not only enabled a much improved design for the Town Hall precinct including the Park Royal Hotel but also created a space for those civic occasions, and of great historic significance, with landscape variety flowing naturally down to the Avon River.

The impact of these areas and a dozen other spaces has enabled many attractive and smaller areas and landscaped corners to be established.





1.



2.

Moorhouse Avenue.

Over the years Moorhouse Avenue has served many functions and been reconstructed on several occasions. It is a very important part of the road network and has consistently carried over 30,000 vehicles per day providing a very important redistribution and access function for the city centre.

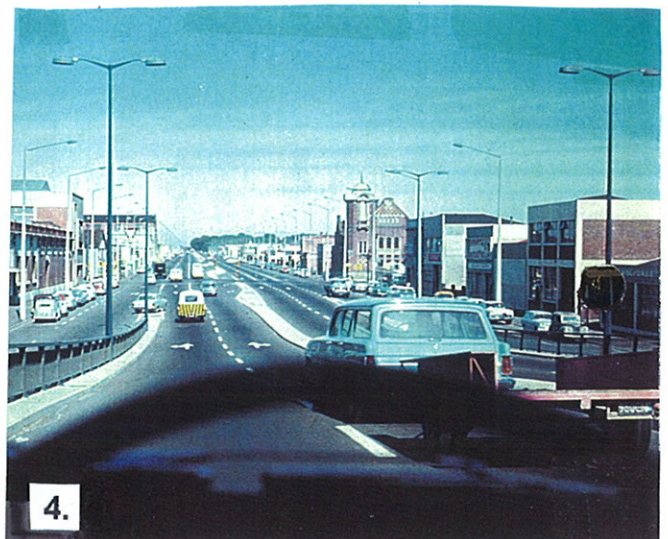
1. Moorhouse Avenue in 1964 was already suffering congestion in peak hours in the vicinity of Colombo Street.
2. The Moorhouse Avenue/Colombo Street overbridge was constructed in 1966 and has provided a very convenient grade separation which leaves the distributing traffic at grade with Colombo Street and lifts the traffic with longer destinations on the overbridge so helping both local and circulating city centre traffic.
3. Moorhouse Avenue viewed from the overbridge looking east shows the continuous nature of traffic movement and the distributive functions of this eastern section 1999.

4. Moorhouse Avenue has undergone major land use changes in the past 20 years with the establishment of car sales, supermarkets and major wholesale/retail outlets. While this western length has 3 mid-block lanes the kerbside parking lane and outer lane on each side is effectively absorbed in servicing the retail activity along the avenue. The abutting properties 20 years ago, were predominantly manufacturing, wholesale and wool store frontages with very low traffic generation. In those days it was also free of multi coloured wall sided advertising! The median planting and further tree planting in property frontages is now being developed. Photo 1967.

The function of Moorhouse Avenue is not, as one might expect, to get from one end to the other. It was shown, even as early as 1963, that of the 20,000 vehicles a day then entering each end only 3-4,000 actually went right through. This Avenue is heavily involved in redistribution of traffic to and from the city centre and Sydenham. In 1998 of the 250,000 vehicles a day entering and leaving Moorhouse Avenue only about 20% are passing straight through Moorhouse Avenue and not stopping within the 4 Avenues. It serves both as a major traffic distributor and also for frontage access.



3.



4.

Colombo Street.

1. Colombo Street is the bus spine and will always fulfil the major vehicle and pedestrian access requirements of its retail and commercial frontages. Its role as a bus access route will increase with the new bus station in 2000.
2. The value of the overbridge in lifting cross traffic above Colombo Street enabling improved linkage to Moorhouse and south to Sydenham has long been established. The rail overbridge continues as an essential segregation of vehicle and train traffic. The elevated view of Sydenham, Cashmere and the Port Hills is an important "window" on the Christchurch environment in a generally flat city.



Bealey Avenue.

3. Bealey Avenue continues to serve its suburban distribution functions for the north of the city centre. The 4 mid-block lanes for travel and the predominantly residential frontages provides generally sufficient capacity along the route. A wide median has been retained in keeping with the heavily planted landscape. Additional lanes have been taken out at key locations. Bealey Avenue will continue to be heavily loaded at Carlton and Papanui intersections. A widened bridge crossing from Park Terrace may ultimately gain favour.



Fitzgerald Avenue.

4. The southern section of Fitzgerald Avenue compliments the development of the Madras/Barbadoes Street one-way pairs. Like Moorhouse it is capable of continuing to serve its fourfold functions of property access, redistribution, some through movements, and an attractive landscaped avenue, into the future.
5. The attractive curving section of Fitzgerald Avenue was reconstructed with the placing of the twin bridges on the Avon River in 1964. The landscaping continues to grow and enhances the scene in 1999.





Nearby Arterials.

This report would not be complete without reference to some new nearby arterials such as Brougham Street, Jerrold Street, Waltham Road. The improvements to these roads and the creation of a continuous route from Opawa to Sockburn with its linkage to the city centre has been a great success. The quality of design, the capacity and landscaping make for a very attractive city scape. The before and after photos say it all.

This has all occurred successfully because of the comprehensive planning and simultaneous redevelopment of the adjacent areas. The lesson is simply "road improvements can only be achieved if the environmental enhancement brings greater overall benefit than the existing situation" and "such improvements must be part of a comprehensive process of city renewal including the roads and adjacent land". These photos show these principles:

1. Brougham Street looking east before widening 1971.
2. The same length of Brougham Street after housing redevelopment and landscaping at Brougham Village 1999.
3. Brougham Street at James K. Baxter Place where the Norman Kirk council housing and the new road were jointly part of a comprehensive development plan about 1972.
4. Brougham street extension an excellent layout, integrated with adjacent housing and good landscaping 1976.
5. Waltham Road prior to widening and reconstruction 1971.
6. Waltham Road following reconstruction and sympathetic adjacent re-development and landscaping.





River Precinct Residential Renewal.

In 1967 it was decided that Montreal Street and Durham Street would be a one-way pair and the other roads in the river precinct would not continue to be used as major traffic access to the city. Since then this area has continued to redevelop in a natural and very satisfactory manner. The institutional and residential uses in the area co-exist in an acceptable manner. All add a unique interest and dimension to this environmental area conveniently placed so close to the city centre and Hagley Park.

1. The Christchurch City Council's Conference Street development has proven a great success in inner city low to medium density housing.
2. Recent redevelopment surrounding Cranmer Square includes a variety of red brick and concrete two to four storey buildings.
3. An interesting four storey building on the corner of Salisbury and Park Terrace replaced a single residence in the 1990's.
4. An early innovation in the 1960's was the construction of Cambridge Court. It nestles alongside earlier two storey timber apartment buildings.
5. The ten storey apartment building in Gloucester Street amongst residential housing caused alarm in 1988. It has become accepted as part of the river precinct scene.
6. The construction of additional apartments in Park Terrace and Salisbury Street continues the natural redevelopment of this area.





2.



1.

Variety in Redevelopment.

Residential renewal is taking many forms and has become a natural part of the regrowth of the city centre. As the housing stock is replaced and accommodation level increases this mixture of house styles provides variety, an interesting urban landscape and meets the varying needs required socially and by the market.

The residential growth in the centre city has begun to climb slowly since 1986. It has now reached 6,500 but has not yet caught up to the 1959 situation of 8,000. It is of interest that "Traffic in a New Zealand City" projected that the household numbers would remain constant in the centre city and this indeed is the case. Increased density on existing sites through the replacement of houses by apartments, together with a possible replacement of industrial and some commercial floor space by centre city apartments could lead to at least a doubling of the number of residents in the foreseeable future.

1. The former Training College on the corner of Peterborough Street now converted to flats.
2. Chateau Blanc new apartments in Montreal Street.
3. Interesting medium density housing Chester Street East.
4. A variety of housing occurring in Kilmore Street east.
5. St Mary's Court attractive village housing Salisbury Street.
6. The Normal School is a successful recycling of an old building for residential units including the sympathetic construction of new apartments Montreal Street.



3.



4.



5.



6.

Heritage Sites.

Heritage protection is part of the city identity recognised in the District Plan. There are many heritage sites which receive varying measures of protection in the city centre. The traffic plan and the one way streets have not required the demolition or removal of any heritage buildings. In some cases these buildings do face major streets e.g. the Provincial Buildings in Durham Street, the old Normal School in Kilmore Street and the Roman Catholic Cathedral in Barbadoes Street.

For the ongoing sustainability and retention of these buildings it is necessary to find viable activities and uses for them. Generally the operation of the one-way street system does not affect the protection of the buildings or the activities which have located within them. This is illustrated by the following examples:

1. The Provincial Buildings in Durham Street have both historic, heritage and community significance.
2. The former Normal School now converted to apartments has an extensive frontage to the one-way of Kilmore and Montreal Streets.
3. In St Asaph Street there are former industrial buildings including P. & D. Duncan and R. Buchanan and Sons foundry that provide a good basis for internal renovation and alternative future use.
4. The Roman Catholic Cathedral and its environs adds a valued heritage aspect to the southern end of the much used Barbadoes Street.
5. In Lichfield Street there are several larger buildings and frontages which are protected as heritage buildings and continue to serve a wide range of functions.

The one-way streets and traffic improvements have directed traffic away from the heritage sites in the river precinct and the core of the city centre. The listed heritage buildings in the city centre are unlikely to be affected by any major traffic works in the future.



Landscaping and Streetscape

The quality of landscaping in the central city has improved immeasurably in the last 40 years. In the inner streets, especially those providing pedestrian areas and malls adjacent to the river, the city mall and Cashel Street, Cathedral Square, Victoria Square and also the kerbside planting in Colombo and other streets, the landscaping has been a great success.

The best skills of horticulture and street scape have led to the establishment of a new and softened appearance. This is in sharp contrast to the situation up to the 1950's where for the central city streets there were few street trees, there were deep roadside gutters with high crowned roads and of course prior to 1956 the tram rails and wires had been a major feature of some city streets.

Another aspect is the removal of the "wirescape". The undergrounding of overhead wires within the commercial area is now completed, but areas remain to be done particularly in the residential areas of the east.

The Council has an adopted policy of extending the tree planting throughout the centre city street system. Already some of the local streets e.g. Chester Street East have received planting and the rearrangement of grass berms and carriageways.

There is still much work to be done in this area and it is important that tree planting proposed for the one-way streets should be undertaken in a manner that integrates both street planting, and front yard planting of residential and commercial properties.

There is, of course, a difference between the treatment of major one-way streets in the middle of the built commercial area from that in residential areas. However the principles of street-scape design are now well understood and have been well tried in the Christchurch situation. The illustrations show the varying styles of treatment.

1. The City Mall with mature deciduous trees providing dense and welcome shade in the summer.
2. Oxford Terrace and the riverbank with the recent addition of trees in the paved cafe area.
3. Fitzgerald Avenue a major arterial with central median planting providing a traditional Christchurch avenue of trees.
4. Chester Street East, a local residential street, with its improved appearance resulting from altered curved berms and street plantings.
5. An example of planting and treatment provided by the property owner, Fuji Xerox, which greatly enhances an industrial frontage in Falsgrave Street.
6. Madras Street South a major arterial one-way street showing the beginnings of both street side and private planting which will lead to an improved environment and streetscape amenities.



PART 4 - CONCLUSIONS

Summary of Changes 1959 - 1999.

In summary the past 40 years has seen changes in travel modes and travel patterns just as dramatic as those which occurred in the first decades of Christchurch's existence.

As set out in the appendices there have been dramatic increases in vehicle ownership, in car trip making while the other modes such as bus, bicycles and motorcycle have all reduced significantly. This is a consequence of the ongoing increase in the ownership and use of private cars the expansion of the urban area and the greater variety of trips being made.

In summary the situation between 1959 and 1999 is:

Whole City	1959	1999	Ratio
Population	216,000	319,000	1.48
Households	61,000	115,000	1.81
Employment	76,000	144,000	1.93
Registered Cars	54,000	213,000	3.94
Goods Vehicles	10,300	39,000	3.78
Bus Trips (p.a.)	21 mil	9 mil	0.42
Internal Car Trips (vpd)	189,000	756,000	4.0
Internal Goods Trips (vpd)	51,000	109,000	2.1
Cordon Count (4 Aves vpd)	156,000	390,000	2.5
City Centre			
Population	8,800	6,500	0.74
Households	3,000	2,800	0.93
Central Jobs	42,900	37,700	0.88
Central Cordon Count (vpd)	129,000	250,000	1.93
Central Bus Trips (trips pd)	52,000	24,000	0.46
Pedestrians (4hrs x 23sites)	80,000	50,000	0.62
Car Parking Street	6,500	10,000	1.53
Car Parking Off Street	5,500	23,900	4.27
Total Parking	12,000	33,900	2.83
Whole City			
Mode of Travel	1959	1996	
Car Drivers	31%	62%	
Goods Vehicles	9%	9%	
Passengers	11%	19%	
Bus	13%	4%	
Motorcycle and other	4%	1%	
Bicycle	24%	3%	
Walk	8%	2%	
Total all trips (24 hrs)	600,000	1,500,000	2.50
Purpose of Trip (Car Drivers only)			
Trip to Work	36%	12%	
Home to Shops	27%	12%	
Home Others	14%	25%	
Non Home Trips	23%	51%	
Total Car Trips (24 hours)	189,000	756,000	4.0

The most significant changes for a given population increase of plus 50% have been the increase of registered cars (by plus 294%) and goods vehicles (by plus 278%.) Bus trips have dropped to 42% of the 1959 patronage. The end result of these changes in terms of the cordon count of the avenues is plus 150% increase whilst that at the central traffic district is plus 93% increase.

The dramatic changes in internal trip making has been mostly in "home other" and "non home based" trip purposes in the off peak periods. These trips now represent 25% and 51% respectively in contrast to 14% and 23% in 1959.

For the whole city the modes of travel have also altered greatly with car drivers plus passengers increasing from 42% of the total in 1959 to 81% in 1996.

In the trip to work car drivers and passengers now represent 87% and bus passengers have dropped to 4% only with bicycle trips to work holding at 8%.

The heavy domination of travel by cars and trucks continues unabated. The effect of other modes is not very significant in the demand and supply of transport or the use of total road space. The general support of modes, other than cars, has not been effective.

Job distribution has also altered markedly with the city centre share of the total urban area dropping from 57% in 1959 to 26% in 1999. However in absolute numbers the city centre has held its own dropping only from 42,000 to 37,000. Since 1959 76,000 new jobs covering all employment types, have been created throughout all the suburbs.

The city centre continues to be the largest single concentration of economic and employment activity. It is 10 times greater than even the largest district centre e.g. Riccarton or Papanui.

The recovery of the City Centre from the 1991 employment 36,000 to 37,700 in 1999 is a sign of restructuring and growth of new high tech, retail, communication, education, cultural and transport activities. These are largely in place of earlier industrial and warehouse type employment.

The return to growth in new residential opportunities at a rate of 200 new residential units per annum will bring residents back to the city centre and is to be encouraged. This could lead to the next census showing an increase of 3000 bringing the city centre resident population to 10,000 for the first time since early 1950s.

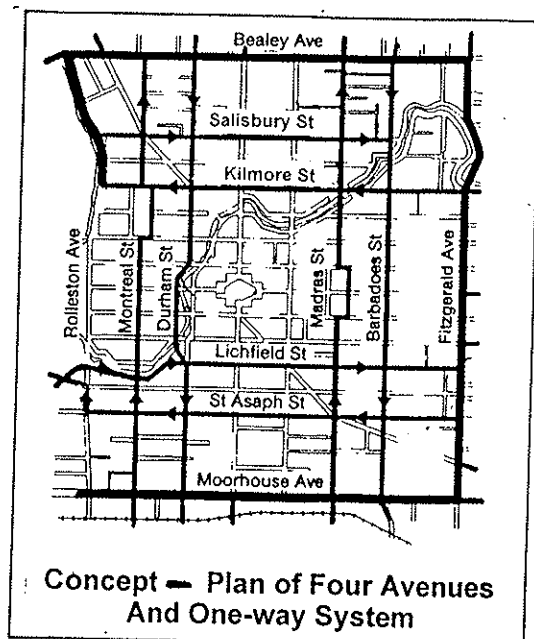
Overall the dynamic nature of the city centre represents considerable change. These changes are within its existing structure rather than as the result of major growth in employment or floor area.

Traffic Principles Achieved.

This review and assessment shows that the city centre traffic management objective to maximise safety whilst minimising vehicle congestion and delays is being achieved. The environmental objectives of reducing exhaust pollution, vibration, noise, and driver frustration have been met. The reduced effects of traffic on adjoining property also benefit from the one way system. A feature of the system is the phasing of signals along the one-way pairs so that vehicles move in platoons and have reduced delay from red signals. The "green-wave" co-ordinated signals of the one-way system have enabled greater traffic volumes to be accommodated without the need for expensive and disruptive road widening works or the loss of environmental standards in the city centre. The one-way streets also meet acceptable environmental standards and their impacts are somewhat less than two-way streets carrying the same volumes of traffic.

Thus, the original objectives and purposes of installing the one-way street area wide control has largely been achieved. In particular the tests of traffic, safety, environment, development and economy have been achieved. There is no reason why this cannot continue in the future provided these facilities are well managed and their operations are not compromised.

The significance of the one-way street system as an effective central city traffic circulation system is great. The health of the city centre and the metropolitan area is dependent on this system and the confidence that it will be ongoing. The pattern of land use in Christchurch is changing and in the absence of an efficient city centre traffic system there would be even more "suburban flight" by retailers and other business and residential interests.



Criteria for One-Way Streets.

There are seven prerequisites to the one-way streets continuing to meet the city's needs and return their high economic benefits into the future:-

- (i) The present location and arrangement of the box of one-way streets must be retained as the major central city arterial traffic system with the grid of one-way streets continuing as an optimum grid spacing of 200 metres equally in both directions.
- (ii) The efficiency of all four one-way pairs must be maintained through the area wide traffic management system so that the level of traffic services (i.e. speeds of 50 kph and travel convenience) are higher on these one-way streets than other streets in the inner city.
- (iii) No local congestion should be caused from intense traffic generators, conflicting vehicle access designs, or intense pedestrian attractions being developed along the one-way street frontages that would compromise the capacity of the system, which requires protection through the City Plan.
- (iv) The roles of Madras and Barbadoes Street should be reinforced with some special improvements including lane widening for turning traffic, left and right turn lanes and improved access to all day public parking areas on adjacent land.
- (v) Future off-street all-day vehicle parking should continue to be placed with easy access from the one-way pairs especially on the east of the city centre off Madras and Barbadoes Streets in association with a potential Shuttle bus route.
- (vi) The landscaping of the outer lengths of street and street frontages of Salisbury, Barbadoes, Madras, St Asaph and Lichfield Streets should be planned and developed to achieve a "planted avenue" environment using both public areas and the front yards of re-developed properties.
- (vii) While encouraging increased employment in the city centre, to ensure that re-development is located sympathetically so as to favour accessibility by all modes of travel. In particular the vehicle use of the one way streets and access to public all day parking facilities managed as part of the whole central traffic system. Designated bus routes and cycle routes and pedestrian areas should also be enhanced.

The pattern of traffic movement in and around central Christchurch has been stabilised within the four avenues. From the east, the south and the west the central system is readily accessible. The system is also flexible to accept future changes in traffic patterns from the north when they have been determined.

Above all else, the one-way box linking within the four avenues provides efficient distribution throughout the central core. This has provided the opportunity to have increased pedestrian precincts, wider footpath areas, give buses and cyclists a better deal and enable more 'human scale developments' in the rest of the inner city network.

Landscaping

There has been considerable re-development of properties in the inner areas of Kilmore Street, Cambridge Terrace, Lichfield street in the past 40 years. This will continue in the outer lengths of Salisbury, Barbadoes, Madras and St Asaph in the next four decades. There is a lot of vacant land and many buildings are due for re-development along these frontages. The opportunity should be taken to re-consider the bulk, location, set backs, landscaping and parking provisions for these re-developments. One important objective is to match and enhance the attractive landscape patterns both of the private properties and also the complimentary street design and landscape planting by the City Council.

Outside the city centre the equivalent streets in Sydenham e.g. Waltham Road, Gasson Street, Montreal Street and Durham Streets should also be included in this programme. This landscape enhancement would give Sydenham an improved image as well as provide improved street scenes and avenues for these southern approaches to the city centre.

System Carefully Conceived.

The present central city traffic system has been derived from three comprehensive transportation studies (1959, 1969, 1979) and a whole series of detailed traffic and vehicle assignment studies.

Great care must be taken in any reconsideration or alteration in the concept of the one-way and area wide control system. It has served the city well, and continues to achieve an important range of goals. There has been significant private investment made within the framework and confidence of the present one-way system.

While the original effort and resources used in planning, these one-way streets may now tend to be forgotten, and many of the benefits resulting from this work be taken for granted, this does not lessen the bold and successful concept that was put in place. Arbitrary tinkering with the system could lead to widespread costs and loss of benefits thereby diminishing the value of this work. Any refinements should only be proposed as part of a comprehensive strategic overview that maintains the integrity and level of traffic service of the system as a whole.

Apart from minor widening at key intersections along the lengths of Madras and Barbadoes Streets, the possible introduction of right and left free turns elsewhere, and developing their boulevard landscapes, there is little that need to be done to develop the system further. But the one-way streets system must be maintained and protected from adhoc adjustment or bowing to the needs of isolated or local developments. The City Plan should protect this one-way system so that it is not compromised by over development or poor design of vehicle access, or the placing of high intensity visitor attracting uses, or major access too close to major intersections.

No Dramatic Changes Envisaged.

For the central area there does not appear to be any new choice of travel mode, or any dramatic change of direction, warranted in the foreseeable future. Obviously the accomodation of vehicle access through a good one-way system plus adequate parking provisions will continue to be a major Council concern during the next 40 years.

More flexible bus routing and bus services could be investigated. Cycle route provisions should be extended so as to encourage greater use of cycles by improving cycle access to, and within, the city centre. Apart from these and other minor adjustments no new major strategic investment is envisaged at this time for vehicle access and transport to the city centre. A list of detailed matters warranting further investigation is included in Appendix 10.

For most Christchurch suburbs it is not considered that a new light rail or other fixed route systems are appropriate. In a circular city of this size and shape, and at the foreseeable population of the main suburban areas, such a solution is not appropriate. This solution is favoured, however, in the context of longer term strategies for linkage to major external settlements and connections from outside Christchurch. Good rail routes already exist linking to north, south and central Canterbury.

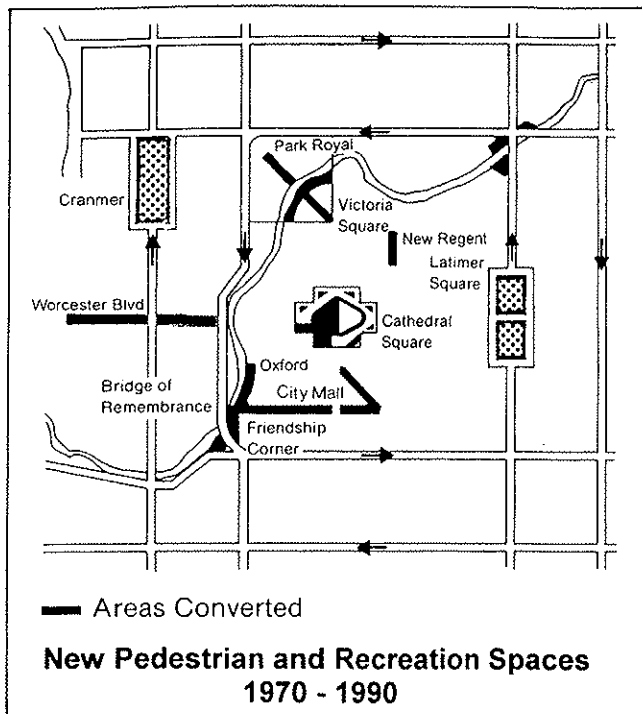
Summary of Issues

Most of the central area traffic plans conceived in 1962 - 1976 have now been carried out, and in almost every way the changes have been extremely successful:

Environment: Because traffic intrusion into the central core has been greatly reduced, the area is much pleasanter for those who work and shop and for pedestrians than it was in the 1960s. Average noise levels have been lowered, and the air pollution from vehicles has dropped significantly in many places. Some of this saving results from the freer movement of traffic around the one-way system, with less waste of time and fuel from inner city intersection delays.

Accidents: The most dramatic success is in the saving of human life and injury. Traffic injury accidents in the central area have dropped sharply from 530 a year in 1965 - 66 to 212 in the 1980s, and 148 in the 1990s. Accident figures for the rest of the city (outside the four avenues) during this period remain virtually unchanged. Since traffic density has increased in both the central area and the remainder of Christchurch, the saving in accidents can be largely credited to the better traffic management of the central area. It can be realistically estimated that the improvements have saved up to 5,000 injury accidents (including about 100 deaths) since they were introduced. This translates to a monetary saving of well over \$300M over the period.

Pedestrian areas: The plan has allowed the creation of eight new pedestrian precincts and pedestrian malls with no serious problems of access or congestion. New malls, parks and pedestrian areas have been created in Cathedral Square (1.55 hectares), Bridge of Remembrance/Friendship Corner (0.5 hectares), Cambridge Terrace/Madras Street (0.25 hectares), City Mall (0.9 hectares) and Victoria Square (1 hectare) Oxford Terrace footpath cafes, New Regent Street and Worcester Boulevard (0.5 hectares). The total new pedestrian and recreation space is about 5 hectares or about the area of Latimer Square and Cranmer Square together. These many spaces subtly extend landscape and areas of interest throughout the central core of the city.



Traffic Density: The plan has been very successful in freeing the centre of the city from unnecessary traffic. Although daily traffic volumes to and from the City Centre across the four Avenues have increased. The system has managed this flow in a much more efficient way, economising on time for all movements. Access to the central area is probably easier than it was in the 1960s, even though traffic volumes have increased. There is now much less traffic in the inner streets because of a great reduction in circulating traffic (especially commercial vehicles) and a reduction of time-wasting search movements for parking. The travel time on entering and leaving the city centre is about half (six minutes) of what could have been expected without the one-way streets. (ten minutes)

Parking: Parking remains generally satisfactory, with increasing shopper parking in the retail core of the city and in turn the linking of it to retail developments. More off-street spaces should be added in the east of the city centre, for all day parking, in the future. The spread of

all-day parking is a trend that has not been solved, and the usurping of long term residential parking places by the all-day commuters has become a growing problem for business on the fringe of the central area. This issue of more off street parking for all day users should be addressed by the City Council as well as private parking area investments, with access to Shuttle buses.

Public Transport: There has been a steady decline in bus patronage since the 1960s, but an upward trend commenced in 1992. The city's bus system has maintained a better level of service and patronage than some other cities. However the loss of Cathedral Square and the "bus barn" storage nearby, together with the de-routing of cross trips and the loss of continuity with tendering and reduced subsidies, have all militated against the level of patronage. With a loss of 60% of the 1959 patronage there is a need to encourage greater patronage by all means possible.

Bicycles: Only modest effort has been made to plan and provide for improved or segregated cycle facilities for access and progress around the city centre. Improved and safer routes are required to encourage increased cycle transport. The one-way system has not been designed to cope with cycle traffic however with no parking and more cycle lane space on either side there could be an advantage to cycling. Only 4% of traffic entering the central area is by cycle, and nearly half of this is pupils to the schools in the area. In the trip to work the bicycle is still used by 8%. More effort is required to improve cycle access to the city centre, especially from the north, west and south. This could be assisted with grade separation on Deans Avenue and Harper Avenue. Cycle parking facilities have been improved but the demand is now less than previously.

Economy and Little Disruption: A unique feature of the centre city traffic plan is that it has been carried out with very little need to purchase land or disruption to property except for the deviation by the Bridge of Remembrance. This is a considerable achievement particularly when compared to the earlier motorway plans. The success has been made possible by vastly improved techniques of traffic planning and management, giving an efficiency to existing streets far beyond that considered possible in the 1960s. The one-way street system is a very economic and efficient use of road space for accommodating the traffic needs in central Christchurch. With present trends in employment and residential growth there is unlikely to be any need for the construction of elevated motorways in the centre city even in the distant future.

Residential Growth: The stability and confidence resulting from an agreed and successful transport system brings confidence in the centre city residential redevelopment. This renewal has climbed to a healthy growth of about 200 apartments per annum in the city centre and seems likely to continue. This will lift centre city residents from the present 6,500 by about 400 per year or 7% p.a.. Such central growth is overdue.

Industrial Access: Movements between the industrial areas and the port, airport and city centre remain satisfactory. Improvements will be needed in the near future as traffic volumes continue to grow but they will be particularly necessary on the three main suburban corridors i.e. North (St Albans), South East (Opawa/Heathcote), South West (Addington/Wigram), including the direct connections to Madras, Barbadoes and Brougham Streets. In this way goods vehicle traffic is encouraged to travel around rather than pass through the core of the CBD.

Tourism: The increased open space and the attractive landscaped areas of the city centre are a permanent amenity and benefit for tourists. A healthy and vigorous city centre is a pre-requisite to ongoing tourism as part of the Christchurch economy. A logical road network helps visitor drivers and reduced congestion gives overseas visitors a relaxing time. Good city centre planning assists the promotion of Christchurch as a tourist destination and longer stays by visitors.

Economic Activity: The central business district has remained economically viable in spite of rapidly increasing competition from the suburbs and a general downturn in the economy. There is a reduction in business activity since the 1960s, but less so than in many other city centres. There has been, since 1991, evidence of recovery and growth. It is reasonable to assume that central area planning has helped to lessen this decline. This might otherwise have been much more serious, as is the case in many other cities.

Research and Planning. It is important that Council maintain strong support for its city centre development. This includes the technical, planning and design work for transport, landscape and civic design. In the past some decisions made have been second best, notably the reluctance on peak hour clearways, bus routing, segregation of cycle routes, long term parking. Design planning and promotional work must be undertaken by a committed team of the Council's most experienced technical and management professionals. Only in this way can the best qualities be retained in the future, so the City Centre will continue to hold its status and functions in the decentralised Christchurch city of the 21st century.

Consultation and Design: The community has been much involved in the public discussion and Council's decisions over the 1957 to 1999 years. Advice and criticisms, have also been volunteered by visiting commentators. These tend to be "off the cuff" and not related to the facts or the Christchurch situation or the detailed work on the ground. Overall this has been a very successful plan, an effective design and 40 years of implementation of major public works which were originally envisaged in the mid 1960's. The community and the Council can be justly proud of the end result. It has enabled the city centre to withstand the recession of the 1970s and 80s and has retained a vitality and a positive Christchurch image.

Précis

The city centre of Christchurch has a much improved environment compared with that existing 40 years ago including:-

- a) New pedestrian areas and landscaping have made the city centre a much pleasanter place in which to work, live, recreate and shop.*
- b) Tourist activity, both national and international, has increased in numbers, length of stay, and surveyed satisfaction.*
- c) The city's heart remains by far the most important business, cultural and entertainment centre in the South Island.*
- d) Residential renewal is occurring through both private and public sector redevelopment process. It has a variety of house styles, and potential growth to match demand.*
- e) Traffic accidents, noise and pollution are significantly lower than in the 1960s, as a consequence of the success of the one way traffic streets and other measures.*
- f) The one-way street system is a stable and adequate distribution system matching present and future city centre traffic demands.*
- g) The four oneway pairs are a proven success and must be retained. They are correctly placed, meet the full needs of traffic to/from and within the city centre. The evenly spaced N/S and E/W one way streets should continue to be protected in their present form and at their present locations within the City Plan.*
- h) To have achieved this successful long term central traffic system using existing streets with only modest additional expenditure, with little property purchase, with little disruption to business or residential development, is quite unique.*
- i) Only a short list of projects is necessary to refine the traffic system, public spaces, and pedestrian areas of the city centre. Improved surfaces, and landscaping of streets and private property around the fringes of the citycentre is the next phase. This should be as part of normal street, residential and building redevelopment in the next forty years.*
- j) Ongoing vigilance and careful policy analysis of land use, good urban design, landscaping and consultation must continue to be pursued, so as to enhance the special qualities of the city centre.*

The past 40 years of city centre change reported here has resulted in a successful traffic system, stable and appropriate city centre development and an active central city promotion. Christchurch has benefited from Captain Thomas' original town plan and its regular and generous central street grid. Building onto those plans of the 1800s the plans of the 1960s have been equally effective. This must be one of the most successful and economic city centre enhancement programmes in Australasia. It is now time to review and agree the plans for the next 40 years.

CHRISTCHURCH CITY CENTRE
40 YEARS OF CHANGE TRAFFIC PLANNING
1959 – 1999
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A set of all these references are held in the CCC Environment and Planning Dept Library

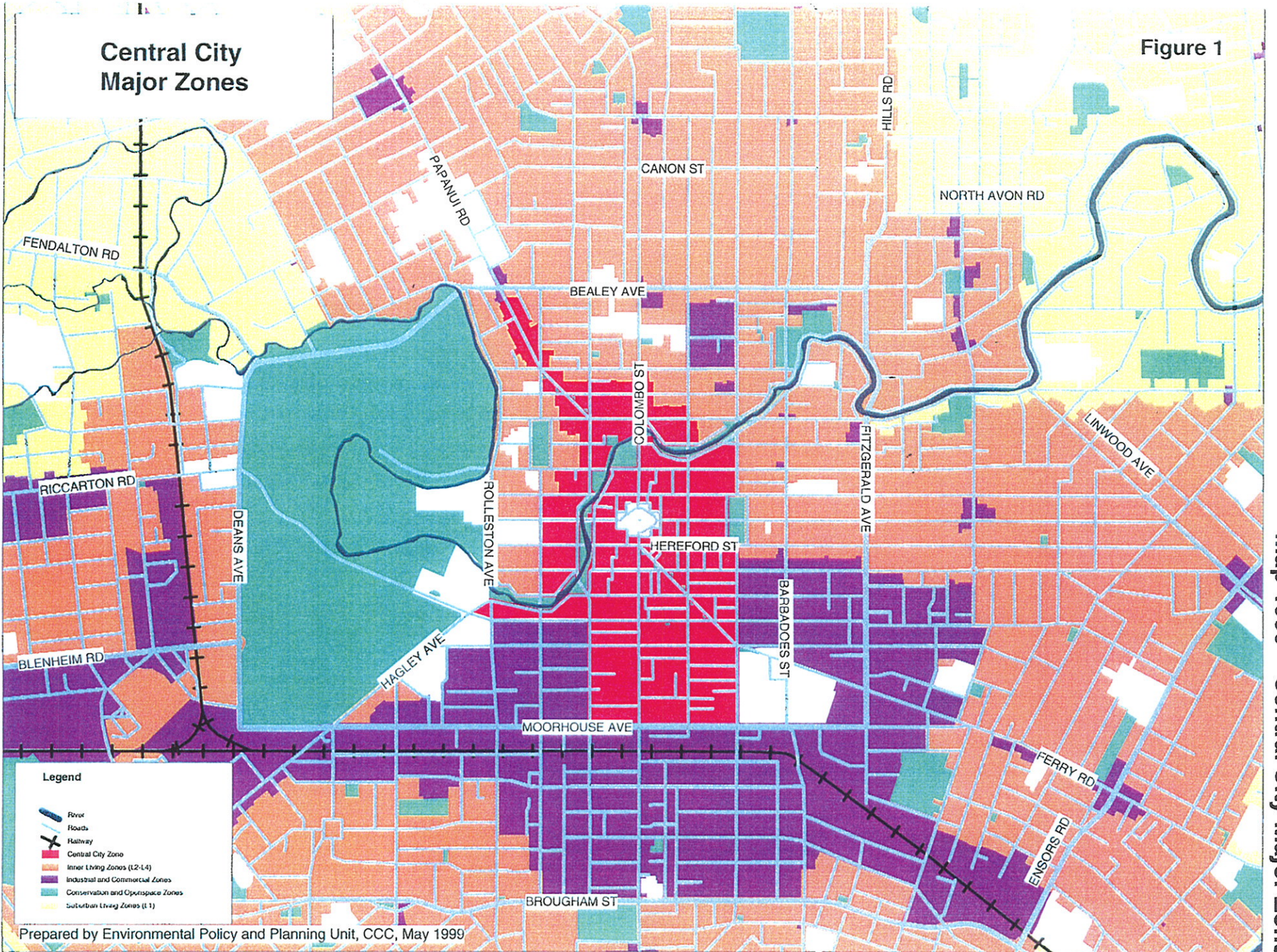
APPENDICES**CHRISTCHURCH CITY CENTRE****40 Years of Change, Traffic, Planning****1959 – 1999**

Published by the Christchurch City Council - April 2000

- APPENDIX 1** Map -- Central City Major Zones – 1999.
- APPENDIX 2** MAP – Land Use Inner City – 1956.
- APPENDIX 3** MAP – Christchurch City Road Hierarchy – 1999.
- APPENDIX 4** MAP – Christchurch Development - (Red Book) – 1967.
- APPENDIX 5** MAP – City Centre Comprehensive Transport Policy - 1972.
- APPENDIX 6** MAP -- City Centre Concept Plan – 1999.
- APPENDIX 7** Schedule - City Centre Facts and Figures - 1959 to 1996.
(5 pages)
- APPENDIX 8** City Plan – Central City Objectives and Policies – 1999.
(7 pages)
- APPENDIX 9** Present Policies to Promote the City Centre – 2000.
(3 pages)
- APPENDIX 10** Schedule - Transportation Matters for Investigation Beyond 2000.
(5 pages)

Central City Major Zones

Figure 1



Legend

- River
- Floods
- Railway
- Central City Zone
- Inner Living Zones (L2-L4)
- Industrial and Commercial Zones
- Conservation and Open-space Zones
- Suburban Living Zones (L1)

Prepared by Environmental Policy and Planning Unit, CCC, May 1999

APPENDIX 2
 MAP 1956 – Land Use Inner City

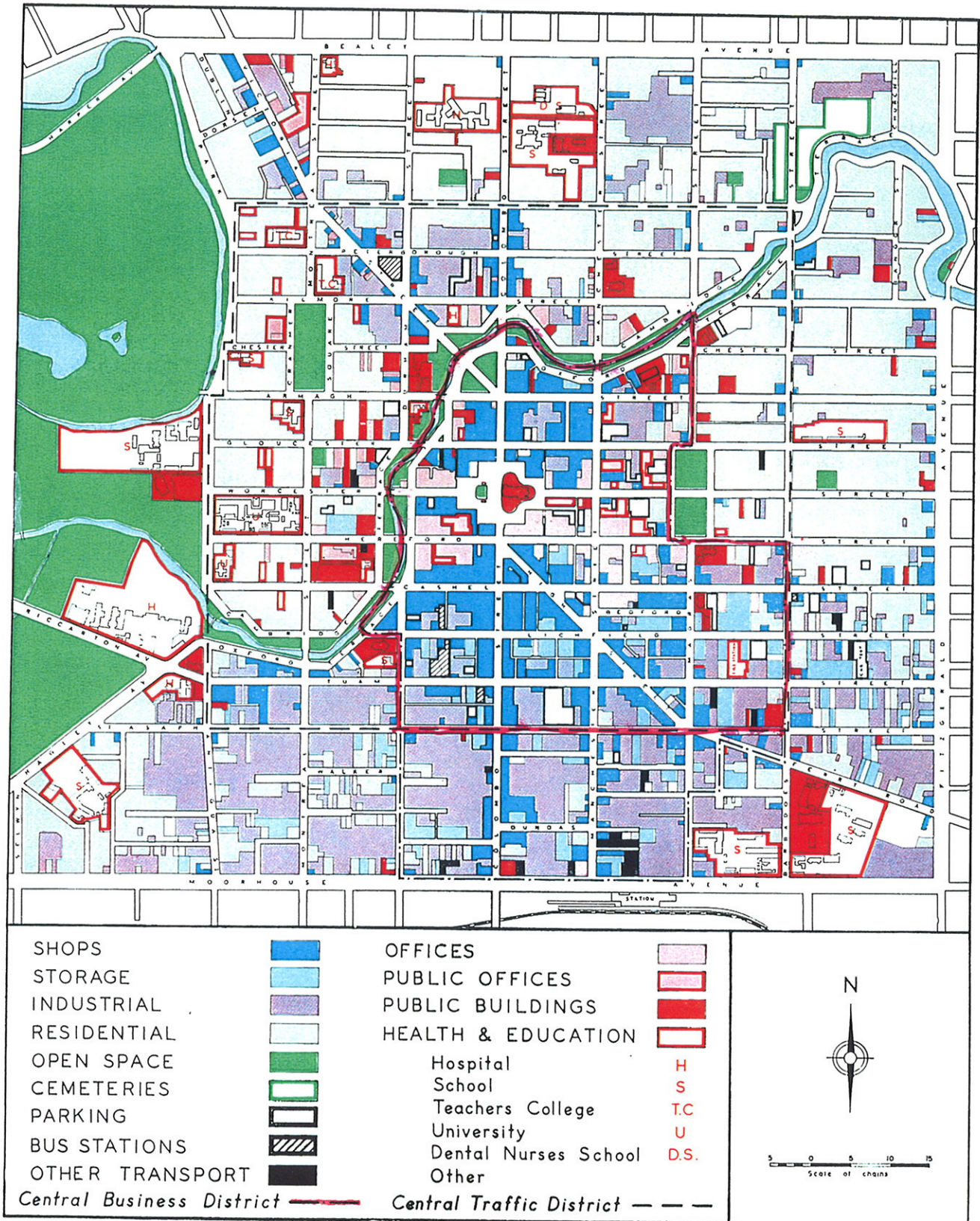
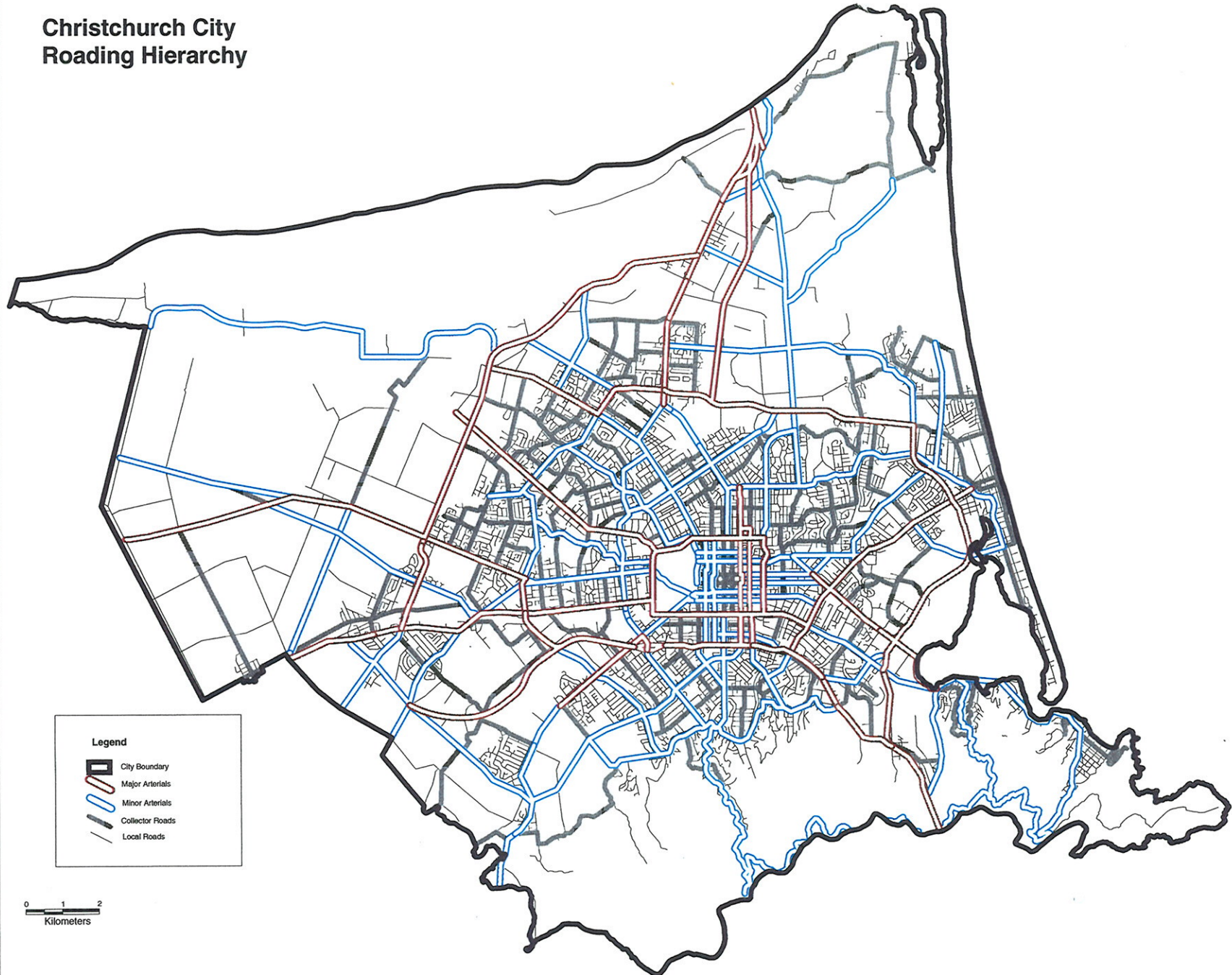


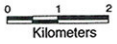
Fig. 70. LAND USE IN THE INNER CITY, 1956.

Christchurch City Roading Hierarchy



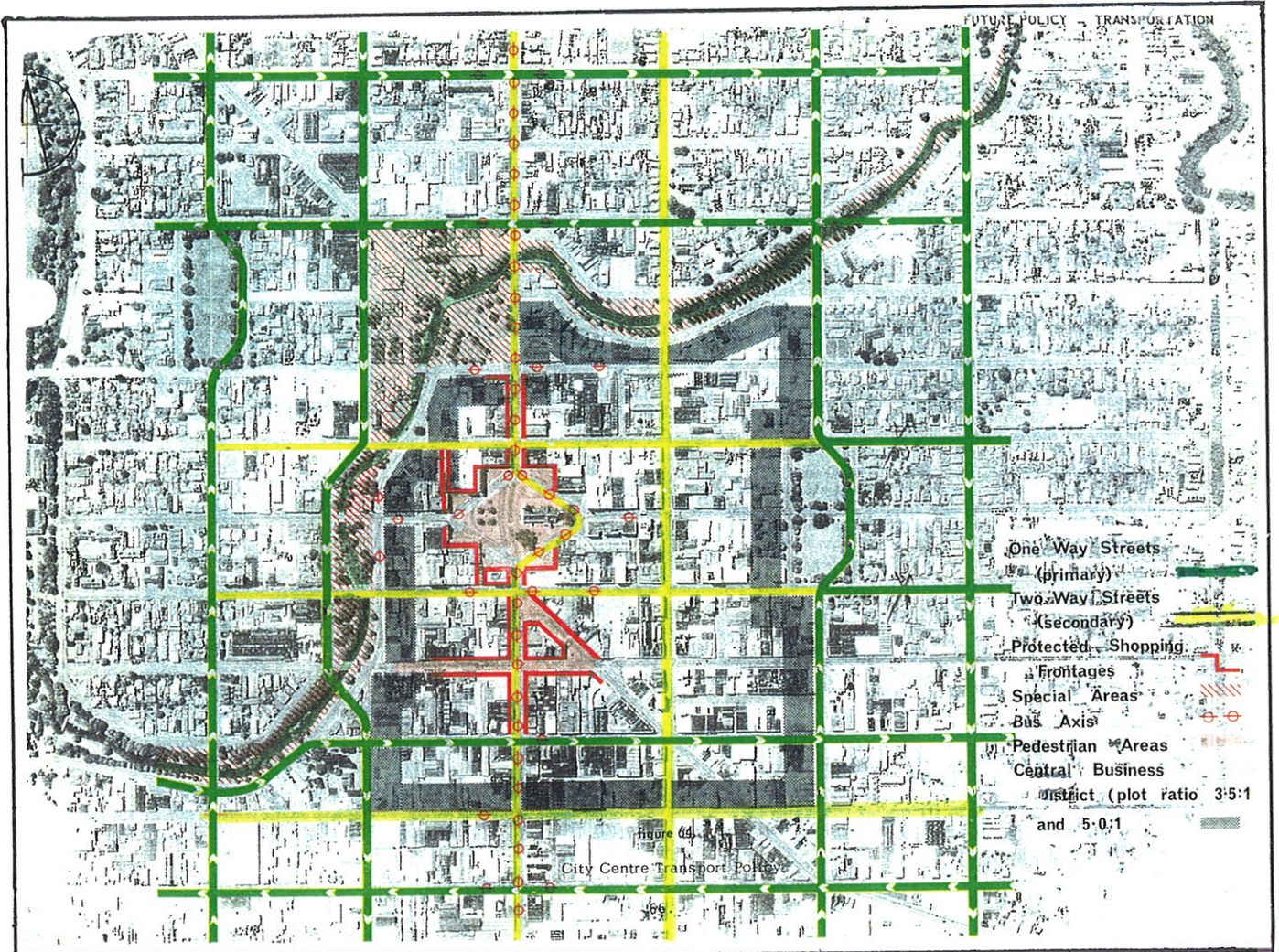
Legend

- City Boundary
- Major Arterials
- Minor Arterials
- Collector Roads
- Local Roads

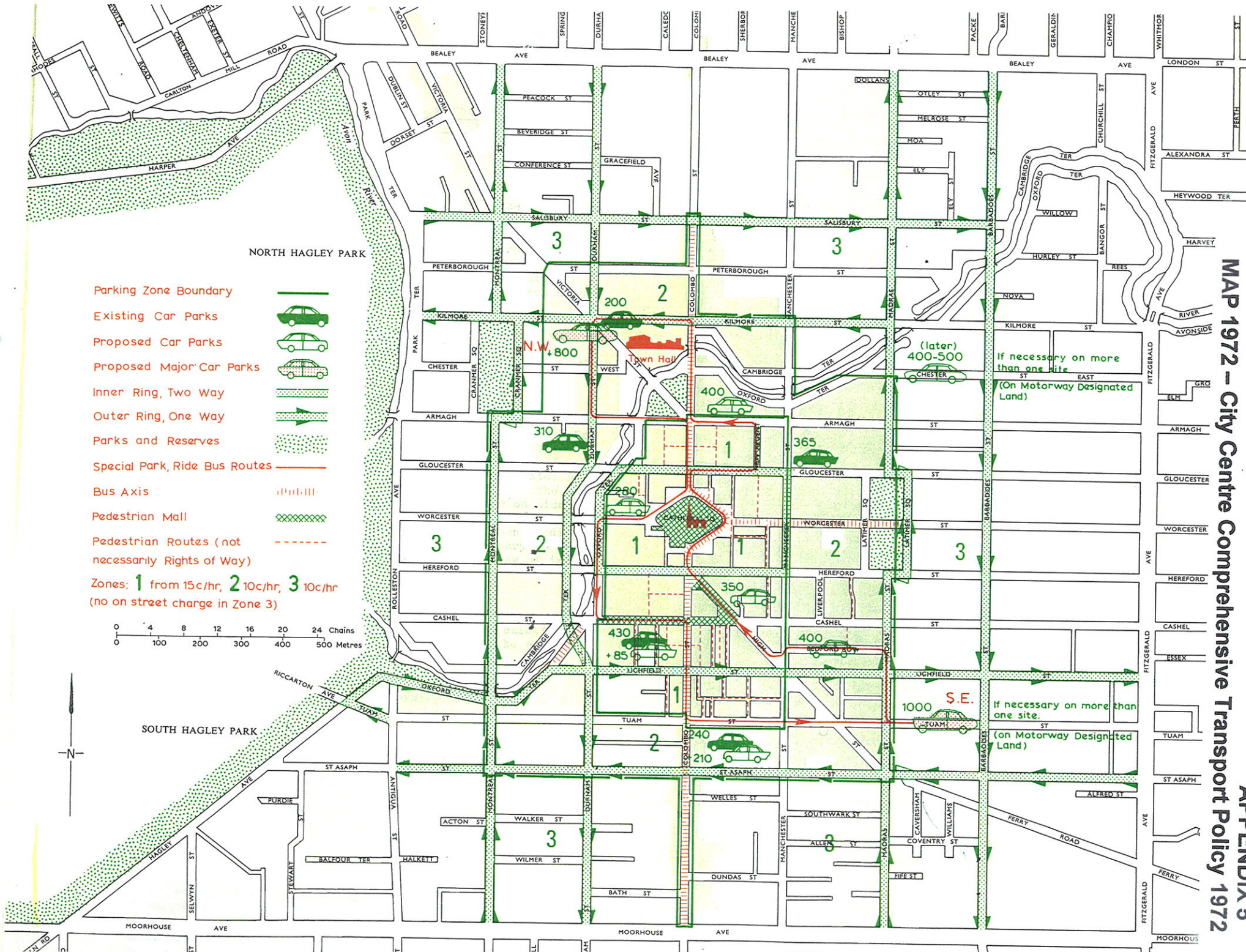


APPENDIX 4.

Christchurch Development – (Red Book) 1967. Future Policy – Transportation.



MAP 1972 - City Centre Comprehensive Transport Policy 1972
APPENDIX 5



Parking Zone Boundary

Existing Car Parks

Proposed Car Parks

Proposed Major Car Parks

Inner Ring, Two Way

Outer Ring, One Way

Parks and Reserves

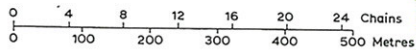
Special Park, Ride Bus Routes

Bus Axis

Pedestrian Mall

Pedestrian Routes (not necessarily Rights of Way)

Zones: 1 from 15c/hr, 2 10c/hr, 3 10c/hr
(no on street charge in Zone 3)



SOUTH HAGLEY PARK

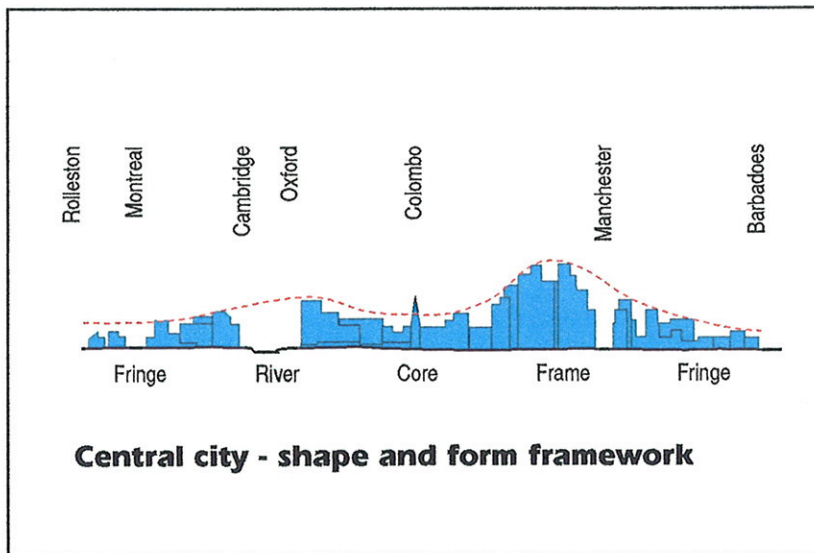
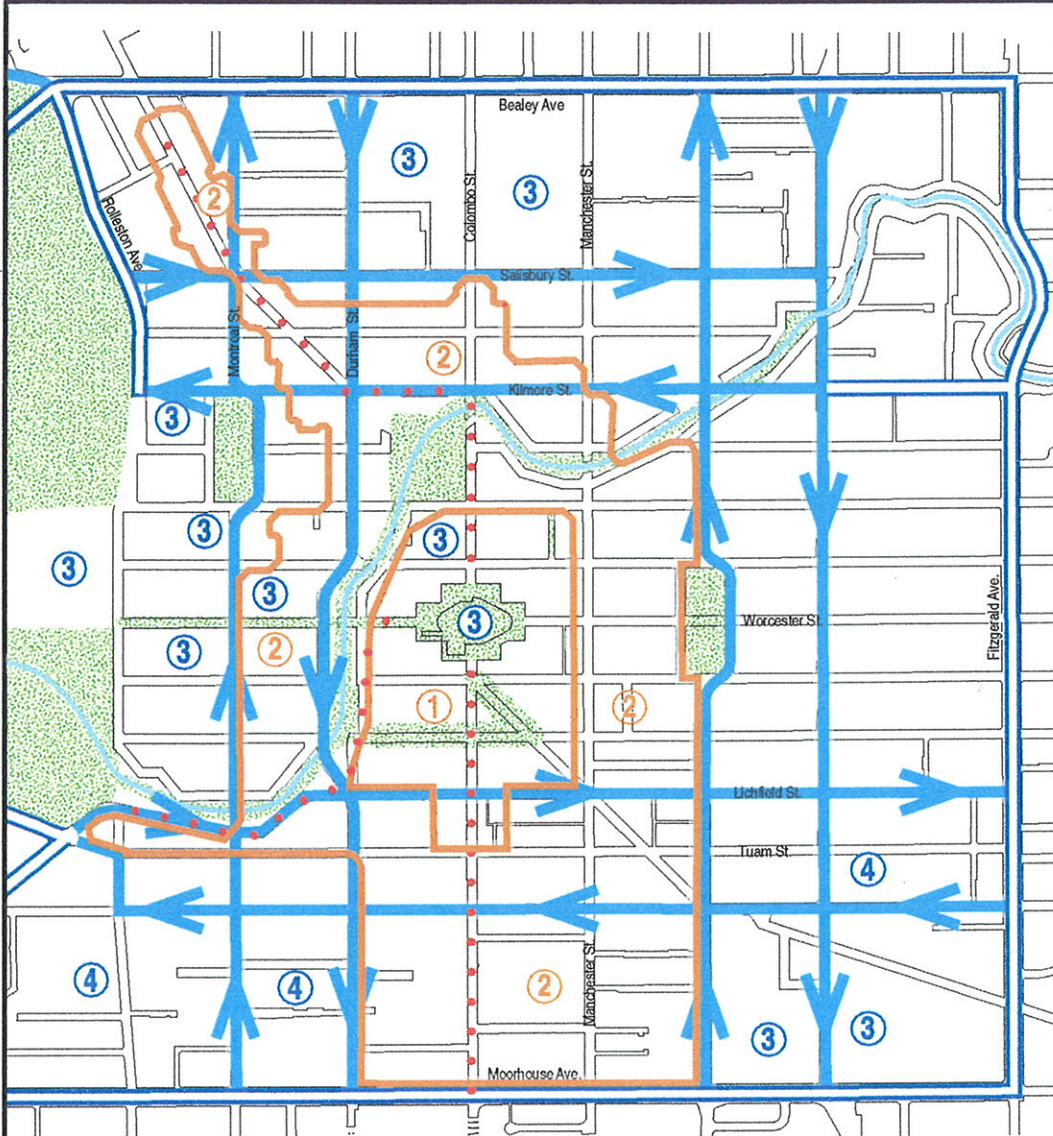
NORTH HAGLEY PARK

If necessary on more than one site
(On Motorway Designated Land)

If necessary on more than one site
(On Motorway Designated Land)

1000 S.E.

Central city concept plan 1999



Key

- • Major public transport routes
- Major routes two way access
- Major routes one way access
- Important open space
- ① Compact retail -core with pedestrian dominated precincts and office development.
- ② General retailing and large scale office development
- ③ Institutional uses eg Polytech, Arts Centre, Cathedrals, Hospitals, Arts Centres and Schools.
- ④ Industry, Warehousing

APPENDIX 7.

SCHEDULE - CITY CENTRE FACTS AND FIGURES 1959 - 1996

BASIC STATISTICS 1959 - 1996

This set of statistics gives a clear summary of the changes over the 40 years. A map is attached which shows the 1969 boundary of the Transportation Internal area which generally coincides with the present Christchurch statistical main urban area. The map also shows the city centre area, within the 4 Avenues, and the Central Traffic District (CTD).

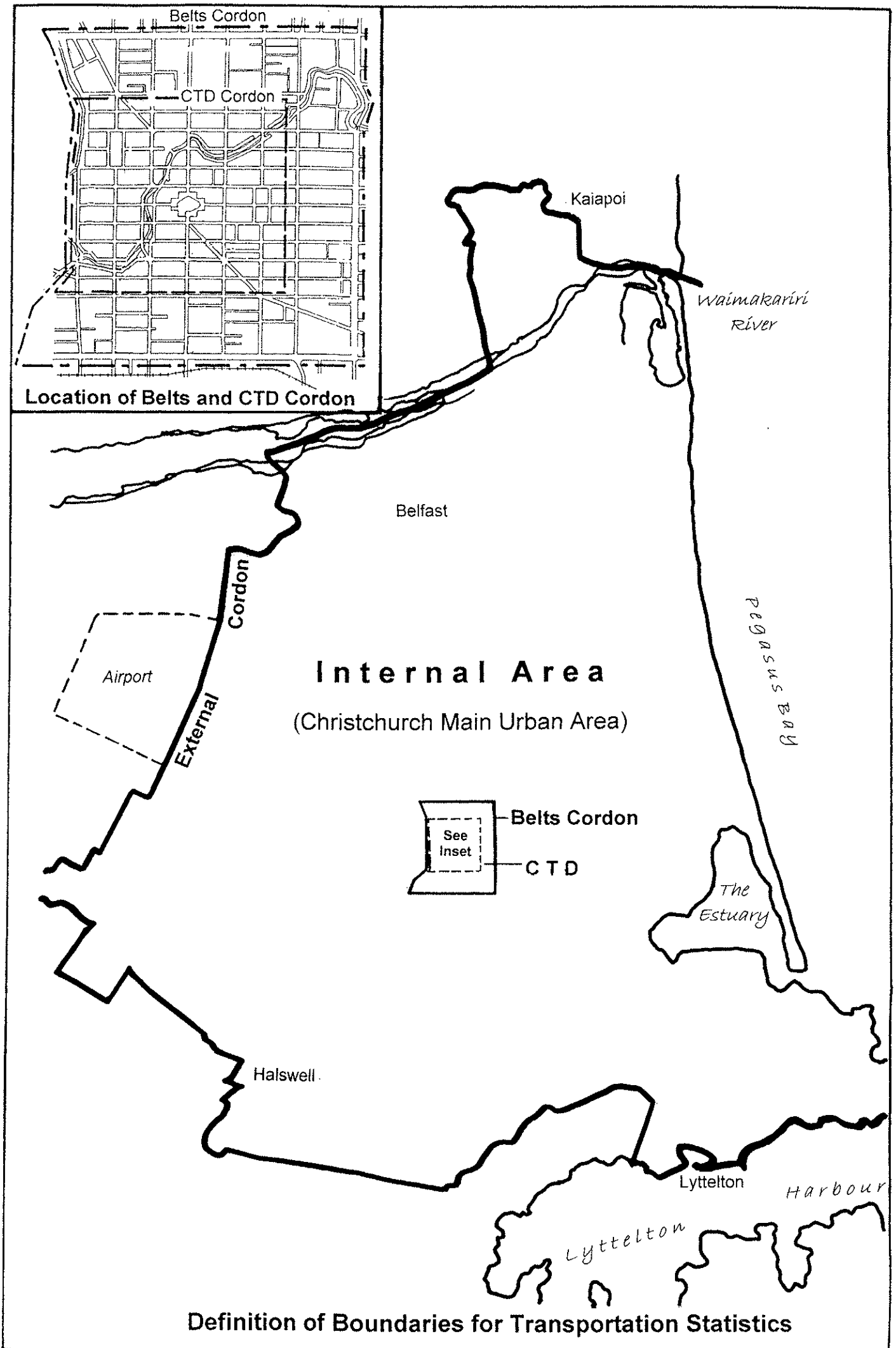
Christchurch Urban Area	1959	1969	1986	1996	Change 1996 Ratio 1959
Population	216,000	266,000	282,000	319,000 ⁽¹⁾	1.48
Household Units	61,000	82,000	102,000	117,000 ⁽¹⁾	1.91
Number of Jobs	76,000	104,000	126,000	144,000	1.93
Registered Vehicles ⁽²⁾	70,000	115,000	250,000	263,000	3.75
Registered Cars	54,000	89,000	191,000	213,000	3.94
Registered Goods Vehs	10,300	15,000	35,000	39,000	3.78
Registered M/Cycles	5,400	9,800	24,000	6,500	1.20
Vehicles at Household	55,000	91,000	132,000	161,000	2.92
Household Characteristics					
Whole Urban Area					
Population/Household	3.46	3.18	2.82	2.77	0.80
Emps/Household	1.25	1.27	1.26	1.25	1.00
Vehicles/Household	0.90	1.10	1.32	1.40	1.55
Households 0 cars ⁽⁴⁾	33.5%	20.5%	14.2%	12.2%	0.36
1 car	54.0%	53.0%	46.5%	40.2%	0.74
2+ car	12.5%	26.5%	37.0%	44.3%	3.54
City Centre and Suburbs Jobs					
Professional Admin.					
Central	15,500	20,200	16,800	17,900	1.15
Suburb	10,000	11,200	30,100	36,900	3.69
Total	25,500	31,400	46,900 ⁽⁵⁾	54,800	2.15
Retail and Clerical					
Central	12,800	15,000	14,600	14,800	1.16
Suburb	8,900	16,800	24,000	30,900	3.47
Total	21,700	31,800	38,600 ⁽⁵⁾	45,700	2.10
Industry and Other					
Central	13,500	12,900	5,400	5,000	0.37
Suburb	15,400	28,200	35,400	38,700	2.51
Total	28,900	41,100	40,800 ⁽⁵⁾	43,700	1.69
Total Number of Jobs -					
Central	42,900	49,500	36,800	37,700 ⁽³⁾	0.88
Suburb	33,100	55,500	89,500	106,500 ⁽³⁾	3.22
Total	76,000	104,000	126,300 ⁽⁵⁾	144,000 ⁽³⁾	1.89
City Centre Commercial Zones					
Commercial Floor space M/sqms	0.764	0.932	1.170	1.633 ⁽⁶⁾	2.13
Office Space M/sqms	0.25	0.38	0.53	0.40	1.6

Christchurch Urban Area	1959	1969	1986	1996	Change 1996 Ratio 1959
24 Hour Traffic Counts - Christchurch Urban Area					
Four Avenues Cordon (vpd)	156,000	251,000	304,000	390,000 (7)	2.50
Central Traffic District(vpd)	129,500	180,000	206,000	250,000(7)	1.93
Suburban Radial (20)(vpd)	94,500	178,000	-	-	-
Suburban Ring (21)(vpd)	53,500	103,000	-	-	-
External Cordon (9)(vpd)	14,150	27,350	70,000	104,000	7.43
Total Vehicle Movements 24 hour (8) (9)					
Within Internal Area					
Car Trips	189,000	341,000	544,000	756,000	4.0
Goods Trips	51,000	80,000	95,000	109,000	2.1
<i>Total</i>	<i>240,000</i>	<i>421,000</i>	<i>639,000</i>	<i>865,000</i>	<i>3.6</i>
External to Internal Areas					
Car Trips	12,000	22,000	59,000	88,000	7.3
Goods Trips	4,500	6,000	8,000	12,000	2.4
<i>Total</i>	<i>16,500</i>	<i>28,000</i>	<i>67,000</i>	<i>100,000</i>	<i>5.9</i>
External to External Area					
Car Trips	400	800	1,300	1,900	4.7
Goods Trips	100	200	200	300	3.0
<i>Total</i>	<i>500</i>	<i>1000</i>	<i>1,500</i>	<i>2,200</i>	<i>4.4</i>
<i>Total Vehicle Trips 24 hour</i>	<i>257,000</i>	<i>450,000</i>	<i>707,500</i>	<i>967,200</i>	<i>3.8</i>
City Centre Parking					
Street Parking	6,500	7,960	9,500	10,000(10)	1.53
Customer Visitor and Casual Charged	1,100	1,650	7,500	6,777 3,189(11)	9.06
Reserved/Leased and Staff	4,500	4,750	10,000	9,217 4,772	3.10
(Sub Total Off Street)	(5,600)	(7,790)	(17,500)	(23,955)	(4.27)
<i>Total (11am or 3 pm)</i>	<i>12,100</i>	<i>15,750</i>	<i>27,000</i>	<i>34,000</i>	<i>2.83</i>
Modes of Travel Whole Christchurch Urban Area(12)					
Car Driver	31%	43%	56% (13)	61%	2.0
Goods Vehicles	9%	12%	11%	10%	N/C
Passengers in Vehs	11%	12%	17%	19%	1.72
Bus Passengers	13%	9%	7%	4%	0.30
Motorcycle and Other	4%	3%	2%	1%	0.25
Bicycle	24%	13%	4%	3%	0.12
Walk	8%	8%	3%	2%	0.25
<i>Total Person Trips 24 hr(14)</i>	<i>600,000</i>	<i>800,000</i>	<i>1,200,000</i>	<i>1,500,000</i>	<i>2.5</i>

Christchurch Urban Area	1959	1969	1986	1996	Change 1996 Ratio 1959
Modes of Travel All Purposes⁽¹²⁾ To/From City Centre					
Car Drivers	31%	40%	57% ⁽¹²⁾	58%	1.87
Goods Vehicles	9%	10%	9%	8%	N/C
Passengers in Vehs	11%	12%	13%	18%	1.63
Bus Passengers	21%	19%	9%	8%	0.38
Motorcycle and Other	4%	3%	2%	1%	0.25
Bicycle	19%	11%	6%	4%	0.21
Walk	5%	5%	4%	3%	0.6
<i>Total Person Trips 12 hour</i>	<i>187,000</i>	<i>212,000</i>	<i>320,000</i>	<i>380,000</i>	<i>2.03</i>
Modes of Travel to Work For City Centre⁽¹⁵⁾					
Car Drivers	22%	32%	46%	60%	2.7
Goods Vehicles	6%	7%	8%	9%	N/C
Passengers in Vehs	8%	8%	7%	6%	N/C
Bus Passengers	24%	18%	21%	9%	0.37
Motorcycle and Other	8%	6%	5%	3%	0.37
Bicycle	28%	14%	11%	8%	0.27
Walk	4%	5%	2%	5%	N/C
<i>Total Person Trips - One Way</i>	<i>38,000</i>	<i>45,000</i>	<i>32,000</i>	<i>33,000</i>	<i>1.32</i>
Purpose of Travel Whole Urban Area (By Car Drivers Only)⁽¹⁶⁾					
Home to/from Work	36%	26%	19%	12%	0.33
Home Visit Shops etc	27%	24%	17%	12%	0.44
Home to/from Other	14%	16%	15%	25%	1.78
Non-Home based	23%	34%	49%	51%	2.22
<i>Total Car Trips 24 hour</i>	<i>189,000</i>	<i>341,000</i>	<i>544,000</i>	<i>756,000</i>	<i>4.00</i>
Pedestrian Counts Sample City Centre⁽¹⁷⁾					
23 Stations for 4 hours ⁽¹⁸⁾	80,139	59,274	55,156	49,792	0.62
Vehicle Accidents City Centre⁽¹⁹⁾					
No. of Reported Injury Accidents ⁽²⁰⁾	-	530	212	148 ⁽²¹⁾	0.28
Centre City Residential					
No. Households	3019	2628	2466	2826	0.93
Avg Occupants	2.9	2.6	2.2	2.3	0.79
No. of Residents ⁽²²⁾	8800	6800	5520	6456	0.73
No. of Visitors Incl. Hotels	2200	3000	1977	3291	1.49

Note: A major concern in this report has been the accurate reconciliation of 40 years of numerical comparisons. The figures have been drawn from a range of different surveys and have been reconciled to provide a constant definition as a basis of comparison. This includes having a common boundary for the surveyed areas. Statistics shown for year or nearest year as noted below.

- (1) 1999 for Christchurch urban area including Kaiapoi.
- (2) For consistency these statistics exclude trailers, caravans and tractors (i.e. 1996 -41506 - 2412). (For 1986 trailers/caravans, tractors and exempt are all excluded i.e. - 47324 - 6755.)
- (3) Includes full and part-time jobs.
- (4) Based on Household surveys 1959, 1969 and census 1986 and 1996.
- (5) These are 1991 figures.
- (6) In 1996 was 1.579 m/sqms. Figure shown is for 1998.
- (7) Figures for 1996 were measured in 1998. The Four Avenues (Belt) cordon and the Central Traffic District (CTD) cordon are illustrated on the maps page 7/5.
- (8) **Note:** ratio of 12 hour to 24 hour vehicle flows over all the vehicle trip purposes was generally 0.71 (1959), 0.75 (1969), 0.83 (1996) and 0.9 (for Goods Vehs).
- (9) Excludes "intra trips" within zones which amount to 15% to 20% of internal trips in suburbs (up to 35% in CBD).
- (10) These figures all exclude residential off-street parking and loading bays. The street parking shown is the actual demand on a typical weekday within the limits of the fringe parking. The figures shown in the 1996 column were actually surveyed in 1998.
- (11) The City Council provides some 2200 off street spaces in building and on open space. About half of the street parking is unrestricted (about 5000 spaces). In 1998 3000 of the 9966 customer spaces were charged - 4772 of the reserved figure of 14,000 are staff parking.
- (12) Based on 12 hour screen line Surveys and Counts at Belts and CTD Cordons. Excludes short intra-zone walking, cycling, car trips.
- (13) 1991 Screen Line Survey - 4 Avenues and Suburbs based on 11 hours expanded to 24 hours. Other years based on transportation surveys.
- (14) The total person trips by all modes are interpreted from trip surveys and modelled information expanded (and rounded) to 24 hours and typical week day.
- (15) For 1986 and 1996 these figures are derived from census information. The 1959 and 1969 figures are from the transportation surveys for one way trips to work.
- (16) Derived from modelled base of internal car trip productions expanded (i.e. within main urban area to 24 hours.)
- (17) These surveys are undertaken by the Institute of Valuers every two years. They are the joint figure for 4 hours of surveys on a Tuesday and Thursday in October. The 23 stations counted here include Nos 1,3,4,5,7,10,12,13,17,18,19,22,24,27,28,29,30,32,34,37,38,41,42. which relate to footpaths in Colombo Street and other cross streets including the Cashel and High Street malls. There are also "through" shops and arcades which are not counted.
- (18) Years recorded here are 1959, 1981, 1991 and 1997. The 1999 surveys have shown an increase for the first time in some years.
- (19) These injury accidents are for the years 1966, 1984 and 1996.
- (20) The more recent counts have suffered from an unfortunate reduction in the reporting rate and inadequate information on hospital admissions. The best information suggests that the latest total (1996) of 148 crashes should be increased by 15-20% to give fair comparison to 1984, giving a total of approximately 180 crashes.
- (21) Until the last year, there had been a continuous reduction over the whole city (with rural crashes remaining stubbornly high), so the drop to 1996 from 1984 is, in part, following the city-wide (and National) trend. However this trend alone would not contribute more than half, say 30 of the decline 1984 to 1996.
- (22) During the period 1926 - 1945 there were a total of 16,000 residents in the centre city. In 1956 this had dropped to 10,000 with 2,000 visitors and that decline continued until 1986.



Christchurch City Plan – Central City Objectives and Policies – 1999.

Proposed City Plan Central City

Objectives and Policies

Introduction

Volume 2 of the Proposed City Plan contains objectives and policies. The following is a selection of the key objectives and most important policies that relate to the Central City. It should be noted that accompanying these objectives and policies there are *'explanation and reasons'* and *'environmental results anticipated'*, however for the purpose of this summary these have not been included.

Volume 2 Objectives and Policies

City Identity

Objective: Form

4.1 The maintenance and enhancement of natural and physical features and characteristics contributing to the distinctive form of the City.

Policy: Central business areas

4.1.1 To maintain and enhance the central business areas as the principal physical focus of the City.

Objective: Amenity

4.2 A pleasant and attractive City.

Amenity values are defined in the Act as meaning, "those natural and physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence and cultural and recreational attributes".

Amenity values have positive effects which improve the City's environment and enhance people's lives. This may be more a perception of well-being rather than a conscious recognition of what causes it.

Amenity is concerned with the quality, harmony and coherence of elements in the City landscape. People's perception of these features such as the Port Hills, the rural area around the urban parts of the City, its quality of open spaces, and accessibility, is that the City is an attractive and pleasant place in which to live, work, play and visit. The policies accompanying this objective aim to promote those values which are of most direct relevance to residents of the City, visitors and their quality of life.

Policy: Garden City

4.2.2 To promote, and where appropriate, ensure the harmony and compatibility of buildings.

Policy: External appearance of buildings

4.2.3 To ensure the development and protection of the quality of public open spaces.

Policy: Public space

4.2.4 To promote appropriate cultural development and the expression of art in buildings and areas accessible to the public.

Policy: Art in public places

4.2.5 To ensure the display of outdoor advertisements does not detract from the visual amenities of the City, or cause potential danger to public safety.

4.2.6 To enhance the landscape quality of the City and encourage sensitive landscape design and the retention of appropriate vegetation and new planting.

4.2.7 To encourage public safety in the design and layout of development, particularly of public open space and facilities.

4.2.8 Public Safety

To achieve a low ambient level of noise in the City and the protection of the environment from noise that can disturb the peace, comfort, or repose of people to the extent that this can be controlled by limiting levels of sound.

4.2.10 Impacts of noise

To provide maximum acceptable sound levels to enable uses emitting noise to design activities to reach the desired ambient levels, and recipients to protect themselves against such levels.

4.3 Heritage Protection

The conservation and enhancement of heritage items and values.

Urban Growth

6.1.1 Population Densities

Objective: Business activity and urban growth

6.1 Patterns of land use that promote and reinforce a close proximity and good accessibility between living, business and other employment areas.

Policy: Central City

6.1.1 To promote the central city as the principal focus for commercial, administration, employment, cultural and tourism activities.

Transport

7.1 A sustainable transport system

7.1.1 To promote the use of public transport, bicycles and walking as alternatives to the private motor vehicle.

7.1.2 To encourage efficiency in the utilisation of the private motor vehicle.

7.1.3 To minimise the number and length of vehicle trips.

7.1.4 To encourage the use of renewable energy forms in transportation.

7.1.5 To design new roading works to visually complement or improve the area.

7.1.6 To maximise planting and landscaping associated with roading improvements, to minimise their impact on the environment.

7.1.7 To provide for the protection of street trees of high quality, recognising their contribution to the character of areas and to reinforce the "Garden City" image of Christchurch.

7.1.8

7.2 Road Network

An efficient and effective road network that allows the City to function and develop with minimal conflict between land uses, traffic and people.

7.2.1 To continue to maintain and build a hierarchical network of roads by investing in arterial road improvements and the use of local area traffic management.

7.2.2 To protect the function of the road network and the environment of adjacent land uses from the adverse effects of high traffic generators.

- 7.2.3 To plan legal and paved road widths to reflect the differing functions of various elements of the road hierarchy.
- 7.2.4 To take account of social and environmental impacts as well as economic benefits when planning changes to the road network.
- 7.2.5. To control the establishment of land use activities to achieve compatibility with the roads they front.

Policy: Central city access

- 7.2.7 To provide a high standard of access for people to, from and within the central city.

Objective: Public transport

- 7.3 Recognition of the public transport needs of people throughout the City and provision for meeting those needs.

- 7.3.1 On street facilities

To provide on-street facilities, where appropriate, to encourage the more efficient operation of public transport, including pull-in areas, taxi stands, clearways and areas for exclusive use by buses and taxis.

Policy: Planning

- 7.3.3 To plan and develop an efficient pattern of public transport routes and associated terminus facilities which best serve the public's needs.

- 7.3.4 Preferential Traffic Management

To investigate measures to give preference to public transport, particularly during peak hours.

Policy: Park and ride

- 7.3.5 To investigate the opportunities for park and ride facilities within the City.

- 7.3.6 Tourist Transport

To support the development and operation of various types of tourist transport.

Policy: Cycle network development

- 7.4.5 To continue to develop a clearly identified cycle network through out the City by:

- (a) providing safe, convenient cycle routes for school children;
- (b) using the secondary road network and using and creating vehicle free routes where possible; and
- (c) making special provision for cycle commuters on some arterial roads to allow direct access tot he central city.
- (d) selecting cycle routes and enhancing additional routes to increase the safety and pleasantness of the network.

- 7.4.6 To design roading improvements to take account of cyclists and their needs.

Objective: Pedestrians

- 7.5 The safe movement of pedestrians in a pleasant environment.

Policy: Facilities

- 7.5.1 To improve and develop pedestrian facilities throughout the City.

- 7.5.3 To ensure that access and movement throughout the City for people with impaired mobility is not unreasonably restricted.

Policy: Safety

- 7.5.4 To reduce the conflict between vehicles and pedestrians throughout the City by providing pedestrian facilities.

Objective: Off street parking and loading

- 7.6 Sufficient and accessible off-street parking and loading facilities meeting the normal anticipated demands for each activity, while minimising the adverse effects of such facilities on the safety and efficiency of the transport system.
- 7.6.1 To set minimum parking requirements for each activity and location based on parking demand for each landuse, while not necessarily accommodating peak requirements.
- 7.6.3 To set minimum design standards for car parking spaces and car parking areas.
- 7.6.4 To ensure all business uses have provision for suitable areas for loading vehicles on site.
- 7.6.5 To control the number, size and position of access points to each property and land use to minimise the adverse effects of manoeuvring and queuing vehicles.

Transport Safety

- 7.7.1 To continue a substantial programme of traffic improvements, principally for safety reasons.
- 7.7.2 To continue to implement and support road safety education campaigns.
- 7.7.3 To assist and co-operate with Police Department safety enforcement measures.
- 7.7.4 To support and co-ordinate traffic safety measures initiated by concerned organisations within the City.
- 7.7.10 To control the display of outdoor advertising on, and adjacent to, city roads.
- 7.8.3 To ensure bus termini and interchanges are located to enable convenient linkages within and beyond the City, whilst minimising adverse effects on the roading network.

Community Facilities and Identity

- 9.1 Local community tributes
The provision of accessible community facilities to meet educational, spiritual, health, and other local needs.
- 9.2 The provision of community facilities which serve metropolitan needs for educational, cultural and specialised services.

Policy: Cultural facilities

- 9.2.1 To promote the maintenance and establishment of metropolitan cultural facilities, particularly in the central city, and in other locations where appropriate.
- 9.2.2 Educational facilities
To recognise and provide for the operation and growth of educational facilities at a primary, secondary and tertiary level in the City.
- 9.2.3 Health facilities
To recognise and provide for the operation and growth of large scale medical facilities in the City.

Living

Objective: Diverse living environments

- 11.1 A diversity of living environments based on the differing characteristics of areas of the City.

11.1.1 To conserve and enhance the character of living areas identified as “special amenity” areas .

11.1.3 Change

To promote change in the character of selected living areas through encouraging infill and site redevelopment .

Policy: Densities

11.1.4 To provide for various levels of building density within living areas, taking into account the existing character of these areas, the capacity of infrastructure and strategic objectives of urban consolidation.

11.1.5 Heights

To provide for different heights of buildings in living environments based on the existing character of an area, on strategic objectives of urban consolidation, and to provide for a diversity of living environments.

11.3.2 Metropolitan Facilities

To provide for metropolitan activities in limited, defined locations within living areas of the City.

11.3.4 Travellers accommodation

To provide for the accommodation needs of travellers and visitors to the City in limited, defined locations and on arterial roads in medium density living areas, whilst safeguarding the amenity values of adjoining living areas.

11.4 A living environment that is pleasant and within which adverse environmental effects are minimised, while still providing the opportunity for individual and community expression.

11.4 Quality building and site design to achieve a high level of amenity throughout the living areas of the City.

11.6 The conservation and enhancement of living areas and improvement, and where appropriate, replacement of existing housing.

Policy: Buffers between living and business areas of the City.

11.6.1 To establish buffers between living and business areas of the City.

Business

Objective: Role of the central city

12.1 To maintain and enhance the central city as a focus for the City, to provide for the greatest diversity, scale and intensity of activities, and to avoid remedy or mitigate the adverse effects of such activity on the city as a whole.

Policy: Compact Pedestrian area

12.1.1 To ensure that a core pedestrian area is provided in the central city which is compact, convenient and safe for workers, shoppers, visitors and tourists.

Policy: Consolidation

12.1.2 To encourage intensification of activities and development of sites within the existing area of the central city.

Policy: Building density

12.1.3 To provide for the greatest concentration and scale of buildings to occur in the central city.

Policy: Diversity

12.1.4 To provide for the wide range of activities within the central city.

Policy: Residential activity

12.1.5 To encourage residential activity within the central city.

Policy: Retail areas

12.1.6 To provide for a retail environment which maintains the character of the central city, the diversity of opportunity it provides, and minimises adverse effects.

Policy: Leisure and recreation

12.1.7 To promote leisure and recreational activity within the central city.

Policy: Visitor accommodation

12.1.8 To encourage visitor accommodation within the central city.

Objective: Central city access and parking

12.2 A highly accessible central city for people and all forms of transport.

Policy: Access

12.2.1 To provide a high standard of access for people to, from and within the central city.

Policy: Parking

12.2.2 To ensure adequate and balanced provision of off-street vehicle parking for short-term visitors and business needs in the central city.

Policy: Cash in lieu of parking

12.2.3 To provide for a financial contribution in lieu of car parking on sites in the central city where it is not practicable to provide car parking.

Policy: Pedestrian linkages

12.2.4 To develop a comprehensive network of pedestrian linkages within the central city.

Objective: Central city amenity

12.3 Enhancement of the amenity values, character and image of the central city, while avoiding, remedying or mitigating the adverse effects resulting from activity and development within this area.

Policy: Public open space

12.3.1 To improve and enhance the quality of public open spaces within the central city.

Policy: Character groups

12.3.2 To promote building development in important parts of the central city which respects the natural and historic character of the area.

Policy: Amenity linkages

12.3.3 To recognise, develop and improve amenity linkages within the central city.

Policy: Daylight and sunlight

12.3.4 To ensure a reasonable level of access for daylight to public spaces, and a maximum level of direct sunlight access to important pedestrian streets in the central city.

Policy: Weather protection

12.3.5 To ensure that adverse climatic effects are minimised in areas of high pedestrian movements within the central city.

Policy: Urban Form

12.3.6 To ensure that the shape, scale and physical form of the built environment in the central city appropriately reflects the environmental qualities of the area.

Policy: Layout

12.3.7 To reinforce the elements which provide the underlying pattern of the central city.

Policy: Transition to living areas

12.3.8 To ensure that the scale of development in the central city does not adversely affect the amenity values of adjoining living areas.

Policy: Effects on amenity

12.3.9 To control the adverse effects of development and activity within the central city, consistent with maintaining amenity values.

Policy: Heritage items

12.3.10 To encourage the protection of heritage items within the central city.

Policy: Cumulative effects

12.4.4 To take into account the cumulative effects of new commercial activities and development.

Christchurch City Council



Existing Policies to Promote the Central City

Policy	Action
1. Recognise and identify a core retail area as the major focus of retailing in the Central City.	<ul style="list-style-type: none"> • Partly through identification in City Plan • Partly through promotional activities • Partly through physical features such as entranceways, signs etc • However, RM Act not helpful
2. But acknowledge there will always be some retailing outside of core, some with distinctive character.	<ul style="list-style-type: none"> • Identify character areas such as Colombo Street (near Town Hall), Victoria Street, Worcester Boulevard, New Regent Street, High Street, City South • Identify, promote, improve links.
3. Within the retail core, give priority to the ease and pleasantness of pedestrian movements.	<ul style="list-style-type: none"> • Includes City Mall (renovated 1990, due for another) • Redevelopment of Cathedral Square, 1999 • Widen Colombo Street footpath between Armagh and Lichfield Streets (complete south of Gloucester) • Improve crossing of Hereford Street for pedestrians • Oxford Terrace footpath widened (complete in part) • Various City Plan requirements in place to ensure daylight and sunlight into public spaces and verandahs.
4. Promote activities within public spaces that attract people	<ul style="list-style-type: none"> • Continue programme of entertainment, events in Cathedral Square, City Mall and Victoria Square.
5. Ensure retention of Department Stores	<ul style="list-style-type: none"> • Rebuilding of Farmers complete in 1998 • Arthur Barnett corner under reconstruction in 1999 • Public carparking with both.
6. Ensure bus stops and/or terminal are located within retail core and improved.	<ul style="list-style-type: none"> • New terminal in Square and Gloucester Street completed in 1998 • New central terminal under construction in 2000 • Better design of bus stops.

Policy

7. Continue improvement to the public spaces of the Central City.
8. Market and promote retail core as a comprehensive shopping centre.
9. Ensure major activities and attractions are located in Central City.
10. Ensure adequate short term visitor carparking within walking distance of retail core.
11. Promote, by policies in City Plan:
 - A compact and convenient form
 - A diverse range of activities
 - The concentration of large scale buildings
 - Pedestrian linkages
 - Access to and from CBD
 - Balanced parking requirements
 - Enhancement and protection of public spaces
 - The shape and form of buildings
 - Distinctive character building groups
 - Heritage protection
 - Edges with residential areas
 - Minimisation of wind, shadowing, noise congestion.
12. Limit growth of suburban shopping centre to that necessary to serve suburban needs through policies in the City Plan.
13. Maintain street frontages so as to add life to the Central City and avoid buildings turning their backs on the street.

Action

- City Mall, Victoria Square, Worcester Boulevard, Colombo Street, High Street, New Regent Street, completed 1982- 1996
- Cathedral Square, 1998 - 99
- Oxford Terrace, 1998
- Victoria Street planned.
- Council has sponsored marketing team since 1997 but could be phased out over the next few years.
- Casino (1994), Convention Centre (1996), new Regent Theatres (1996).
- Lichfield, Oxford Terrace, Manchester Street, Tuam Street existing
- Farmers completed in 1998.
- Arthur Barnett's under construction 2000.
- All now within City Plan (except that the limiting of retailing to central core not achieved).
- Achieved in part only. RM Act makes it difficult to directly achieve this.
- Rule in City Plan requiring shopping on ground floor within retail core.

Policy

14. Identify and recognise the characters of the different parts of the City Centre (precincts) and to provide strong links between these various parts.
15. Retain of heritage buildings, a point of different with suburban centres.
16. Promote new hotels as the tourist market grows.
17. Promote new visitor attractions in the Central City.
18. Promote more residential accommodation in the Central City.
19. Maintain high standards of cleanliness of public spaces including street furniture and signs
20. Promote the Central City for civic occasions, ceremonies, march passes, welcomes, and the like
21. Provide works of art in public places within the Central City.
22. Improve feeling of safety and security in Central City.
23. Improve signage around Central City.

Action

- Developing, eg Town Hall retail, lower High Street, City Mall, Oxford bars, but can be developed further.
- Listing in City Plan
- Assistance and incentive grants are available.
- Support for major renovation and reuse proposals including the Arts Centre, Government Buildings, The Coachman, Provincial Council Buildings, Municipal Council Buildings etc.
- Six new hotels opened in Central City over past five years.
- Tourist tram in 1994
- Southern experience
- Renovation of Museum
- New Art Gallery in 2002
- 700 units built within residential zones within 4 belts since 1991
- 200 units built within the Central City zone since 1991
- Bedford/Ridley Square renewal project
- Increased rubbish collection
- Increased rates of cleaning
- Super 12, America's Cup, RNZAF charter parades.
- Stewart Fountain, complete 1998
- Cathedral Square will have a major work of Art in 2000
- Children's art in Cathedral Square planned.
- 15 surveillance cameras installed
- Police Kiosk supported in Cathedral Square
- Alleyway gates and lights
- Six finger signs erected in 1996
- Overhead signs for carparking buildings.

TRANSPORTATION MATTERS FOR FURTHER INVESTIGATION
2000 AND BEYOND

CHRISTCHURCH CITY CENTRE

40 YEARS OF CHANGE, TRAFFIC, PLANNING

In the course of undertaking this review a number of matters have been identified for further consideration. These suggestions do not necessarily represent Council's policy or intentions at this stage. Some items are subject of current study while others are for future consideration. The list is comprehensive but not exhaustive. In an overview report of this nature space does not permit detailed consideration of these individual items. The items included here are a checklist of matters which all warrant further investigation and review.

1. One Way System Integration.

- 1.1 Continue monitoring the one way system and refinements of Area Wide Control and its extension to adjacent areas, so that these carry the bulk of traffic growth and allow the lesser streets to better serve their local functions.
- 1.2 Place greater emphasis on the eastern one way pair as the major arterial system for north/south distribution and access to the CBD and also access to eastern parking facilities, especially for long term parking.
- 1.3 Consider the use of clearways, improved laning, turning bays/lanes, and the removal of parking from selected lengths of the one way system particularly along the major arterial routes of Madras and Barbadoes Streets and the intersection of the more important traffic streets crossing them.
- 1.4 At key intersections along Madras and Barbadoes Streets and the approaches on key cross roads identify appropriate minor corner splays and road widening now for future traffic needs.
- 1.5 Review the alignment of St Asaph Street at Antigua Street and Tuam Street for west bound traffic approaching the hospital corner. This includes road corner easing and options for the rearrangement of Tuam/St Asaph Street intersection layout to give preference to the St Asaph Street west bound traffic approaching the hospital corner. This corner easing would make the one-way arterial linkage have greater continuity and down play the vehicular traffic role of Tuam Street.
- 1.6 Rearrange the intersection of Victoria Street at Kilmore Street to permit the entry of north bound movements only and redirect south bound traffic from Papanui, Bryndwr, Fendalton and Riccarton via Bealey Avenue and Salisbury Street to Durham Street and the one way system.

- 1.7 Plan, in the future, to remove the counter flow lane in St Asaph Street opposite High Street for capacity and safety reasons. Review the Ferry Road link at Polytech to enable additional land and parking in the area and replace access into St Asaph Street from Ferry Road further to the east nearer Barbadoes Street.
- 1.8 Consider the extension of the Madras and Barbadoes one way pair north to and from Warrington Street. Establish Gasson Street as one way northbound only from Brougham Street. These extensions to the one way pairs enhance the continuity of the Madras/Barbadoes Streets one-way system to the suburban network distributors.
- 1.9 Consider extending Montreal and Durham Streets as one way streets or twin lanes north and south to and from Brougham Street with three traffic lanes. (i.e. a 2 + 1, balance similar to that existing at present in Gasson Street.)

2. Capacity Enhancement.

- 2.1 Review the long term traffic capacity of the Bealey Avenue, Harper Avenue, Park Terrace, Carlton Mill intersection with the current bridge improvements now proposed at the Harper Avenue/Park Terrace corner. This would be to provide two lanes for west bound traffic from Park Terrace to Harper Avenue.
- 2.2 Continue traffic management of Bealey Avenue, including green wave continuity, intersection laning, the removal of parking from selected lengths and longer median right turn bays so as to achieve capacity and level of service improvements.
- 2.3 In Fitzgerald Avenue consider additional median closures and intersection improvements at key intersections including Kilmore, St Asaph Street, Ferry Road and Moorhouse Avenue.
- 2.4 Review planning for Kilmore Street and the possibility of widening in its length from Barbadoes Street to Fitzgerald Avenue to accommodate a two way four lane arterial road and intersection improvements, so as to provide improved access via Barbadoes and Madras/Kilmore Streets to the city centre from Fitzgerald Avenue.
- 2.5 In Moorhouse Avenue continue to encourage the tree planting where wide medians permit it. Review parking provisions to enable improved left laning at intersections and also review the area control and green wave traffic signals for improved capacity and continuity. Consider the possibility of extending the overbridge east to pass over the Manchester Street intersection and so improve the traffic distribution and cycle access to and from Manchester Street.
- 2.6 Review the future possibility of a grade separation in Madras Street under Latimer Square, and in Montreal Street (south of Moorhouse Avenue) to anticipate the need for rail grade separation in the event of establishing future rail (or light rail) passenger services from the west to central Christchurch.

2.7 Undertake a comprehensive capacity and planning review of Brougham Street between Waltham Road and Antigua Street with a view to achieving increased and balanced capacity including possible widening and/or grade separation in the length from Durham Street to Gasson Street.

3. Planning ,Landscaping, Access and Parking.

3.1 Further study be made of the traffic capacity and the environmental capacity of the city centre as a whole. Integrated land use and transport studies should be initiated now to anticipate how any increase could be accommodated without conflict with the identified qualities of the city centre environmental areas - (See below - Note 1.)

3.2 Planning investigations of land use changes should include the potential for residential renewal or replacement of industry by residential redevelopment and new institutional developments e.g. health, education, and cultural developments. The studies would include a consideration of the alternative location of areas for both these developments and also future off street long term public parking and private parking space and identify new areas for open space landscape treatment.

3.3 Continue the city centre street planting and under-grounding of overhead wires programmes which are already established by Council, to the relevant standards for each road type in the centre city street network.

3.4 Review the City Plan's front yard and landscape provisions for the one way streets outside the central city core commercial zone. This is with a view to achieving integrated front yard landscape and council's streetscape development. This applies particularly to the lengths of one way streets in the residential and the industrial zones.

3.5 Undertake a comprehensive study of the City Plan's existing "road zone" in the city centre to identify those lengths where minor corner easing and local widening should be "designated" in the City Plan so as to meet future traffic pinch points, cycle and pedestrian requirements.

3.6 Review existing City Plan provisions including the policies and rules for new private development so as to identify and protect the efficiencies of the one way street system. This includes reviewing the rules related to the location and form of vehicle accesses for activities permitted fronting the arterial road network and one way streets.

3.7 The future provision of long term, large (500 to 1000 spaces), and all day public parking should be reviewed so as to re-establish the concept of identifying land for large periphery car parks (in the fringe area to the east and north of the city centre.) This would be between Barbadoes Street and Madras Street located in the St Aspah to Cashel Street area in the east. A similar provision in the north adjacent to Salisbury/Peterborough/Colombo Streets should also be secured. These proposed long duration public car parks would be placed adjacent to future shuttle bus loop/routes so serving the whole city centre.

Note 1 - It appears that the present street system, with the modest improvements outlined, has a threshold central access environmental capacity of approximately +80,000 vehicles per day (i.e. increasing from 250,000 to 330,000 vpd at the CTD cordon.) This could enable varying scenarios (e.g.say +10,000 employees and +4,000 apartments.) and other combinations to be tested.

4. Specific Bus and Cycle Provisions

- 4.1 The City Council continue to work with Environment Canterbury in the development and enhancement of the bus system including city centre routing, bus stops, the development of the "Cross Roads" bus interchange and additional bus stops in Colombo Street and also improved facilities for bus patrons.
- 4.2 The City Council continue the work on its cycle strategy. In particular in the city centre continue research and planning to devise an acceptable and effective means of defining and improving cycle routes, cycle roads for access to the city centre. Cycle routes across and within the city centre are also required.
- 4.3 Investigate specific cycle Infrastructure improvements including:
- grade separation on Harper and Deans Avenues, to provide overpasses or underpasses and so enable access free from vehicle conflict (for cycles and pedestrians) to Hagley Park.
 - identifying routes and possible grade separation locations on the North, East and South edge of the city centre (i.e. Bealey, Fitzgerald and Moorhouse Avenues) where cycle routes can be placed, for convenient and relatively vehicle free access for cyclists.
 - It has been suggested that Armagh, Hereford and Tuam Streets could make up a strong E/W set of city centre cycle routes while Rolleston/Antigua and Manchester Streets could provide the N/S parts of the cycle network. On these routes preference for cycles would be developed both mid-block and at the intersections and vehicles would be managed to enable cycle preference.
- 4.4 The City Council initiate implementation of its pedestrian strategy, including research and policy development and the implementation of projects, programmes for improved pedestrian facilities.

5. Ongoing Research and Studies.

This report is by way of an overview. It cannot provide detailed analysis of all the policy issues or improvements referred to. It is hoped this summary has highlighted issues that can be pursued by the Council, officers and other researchers.

Amongst the topics where ongoing research is to be encouraged are:

- 5.1 Transport by all modes and including integrated land use and transportation modelling and traffic assignment for each - *C.C.C and E. Can*
- 5.2 Continue regular 5 year monitoring of traffic growth, modes of travel and change by street traffic counting and roadside surveys. In particular prepare traffic flow maps for 5 day week day (and also weekend recreation flows) in 2001 and 2006 so as to calculate growth and changes at the railway screenline, 20 radial stations, 21 ring stations, the Belt cordon and the CTD cordon.

- 5.3 Land use analysis including:
 - 5.3.1 Floor area by activity, growth and utilisation - *Valuation - Statistics - C.C.C.*
 - 5.3.2 Employment grouping and changes - *Statistics - C.C.C. - E. Can.*
 - 5.3.3 Turnover and Activity - Retail etc - *Retailers Assn - Statistics - C.C.C.*
- *Industry - Manufacturers Assn - Statistics - C.C.C.*
 - 5.3.4 Residential development - *Developers - C.C.C. - E. Can.*
 - 5.3.5 A survey of central city residential trip making and parking demands.
 - 5.3.6 Educational, Health and other Institutional Users in the City Centre -
- *Agencies - C.C.C.*

- 5.4 Road Safety and Accidents:
 - 5.4.1 Motor Vehicle Accidents - *LTSA - C.C.C.*
 - 5.4.2 Pedestrian Accidents - *LTSA - C.C.C.*
 - 5.4.3 Bicycle Accidents - *LTSA - C.C.C.*

- 5.5 Public Transport:
 - 5.5.1 Bus Operations - *E. Can - C.C.C. - Operators.*
 - 5.5.2 Bus Patronage - *E Can. - C.C.C. - Operators.*
 - 5.5.3 Taxi patronage and operations - *E. Can. - C.C.C. - Operators.*
 - 5.5.4 Other City Centre public transport systems (Tram, Shuttle, Tourist Vehicles).
 - 5.5.5 Longer term Rail services to/from Ashburton/Rolleston/Rangiora/Kaiapoi/Belfast
- *E. Can - C.C.C. - Transit.*

- 5.6. Cycle Use and Routes - *Cycles Steering Group - C.C.C. - Spokes.*
 - 5.6.1 Survey and develop a cycle trips computer model so as to analyse the cycle density and cycle routing options within the centre city and the Central Business District.
 - 5.6.2 Develop further the cycle network throughout all suburbs so as to provide convenient and effective cycle routes free from the vehicle traffic and congestion of the major arterial roads for both short and long trips.

- 5.7 Pedestrians, Malls, Landscaping - *Valuers - C.C.C. Landscape - Planning and Design.*
 - 5.7.1 Continue the programmes for Mall and footpath paving and landscaping in the city centre.
 - 5.7.2 Review the road widening provisions improved footpath and pedestrian facilities and also bus stop and bus lanes along the main bus axis routes. This applies particularly along Colombo Street, between Hereford Street and Moorhouse Avenue and at other locations.
 - 5.7.3 Investigate the extension of further first floor pedestrian accessways and overbridges in the higher density retail areas.

The City Council continue through its environmental, infrastructural and district planning responsibilities to provide leadership and co-ordinate such research and studies.

