Copyright Statement

The digital copy of this dissertation is protected by the Copyright Act 1994 (New Zealand).

This dissertation may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- you will use the copy only for the purposes of research or private study
- you will recognise the author's right to be identified as the author of the dissertation and due acknowledgement will be made to the author where appropriate
- you will obtain the author's permission before publishing any material from the dissertation.
SPACE, AND A LEGIBLE CITYSCAPE
A DESIGN PROPOSAL FOR VICTORIA SQUARE
CHRISTCHURCH, NEW ZEALAND

A Major Design Study
submitted for
The Diploma in Landscape Architecture
in the
University of Canterbury
by
N. A. Aitken, N.D.H. (N.Z.)

Lincoln College
1970
ACKNOWLEDGMENTS

The author wishes to sincerely thank the following persons, for their assistance so readily given:

Mr George B. Malcolm, Senior Landscape Officer, Ministry of Works, for his perception of Landscape Architecture in the broadest sense, and his encouragement and understanding during this course.

Mr S. Challenger, Reader in Landscape Design, Lincoln College, for his invaluable and patient guidance.

Mr Frank D. Boffa, Lecturer in Landscape Design, Lincoln College, for his unobtrusive but essential presence and guidance.
Mr Robin Gay, fellow student, for his willing and invaluable assistance with photographic reproduction.

The District Architect, Ministry of Works, Christchurch, for providing architectural drawings of the proposed Law Court Complex.

Messrs Warren and Mahoney, Registered Architects, Christchurch, for providing architectural drawings of Stage I of the Civic Complex, and also for supplying further invaluable information on the site.

The City Engineer, Christchurch City Council, for supplying essential, comprehensive engineering drawings of Victoria Square.
The Director of Parks and Reserves, Christchurch City Council, for his assistance with information on urban space under his jurisdiction.

Miss Elizabeth Hynes for typing this study.

Mr V. C. Browne for so patiently searching his voluminous photographic archives and supplying all air view photographs.
<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I BRIEF</td>
<td>THE BRIEF</td>
<td>1</td>
</tr>
<tr>
<td>II INTRODUCTION</td>
<td>INTRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td>III HISTORICAL INFORMATION</td>
<td>HISTORICAL INFORMATION</td>
<td>6</td>
</tr>
<tr>
<td>1. The Original Concept</td>
<td>The Original Concept</td>
<td>6</td>
</tr>
<tr>
<td>2. Selecting the Site</td>
<td>Selecting the Site</td>
<td>6</td>
</tr>
<tr>
<td>3. The First Survey</td>
<td>The First Survey</td>
<td>7</td>
</tr>
<tr>
<td>4. Christchurch in 1850 - A Reality</td>
<td>Christchurch in 1850 - A Reality</td>
<td>8</td>
</tr>
<tr>
<td>5. The Pattern of Urban Development</td>
<td>The Pattern of Urban Development</td>
<td>8</td>
</tr>
<tr>
<td>6. Public Open Space</td>
<td>Public Open Space</td>
<td>10</td>
</tr>
<tr>
<td>7. The &quot;English&quot; City</td>
<td>The &quot;English&quot; City</td>
<td>11</td>
</tr>
<tr>
<td>IV THE CONTEMPORARY CITY</td>
<td>THE CONTEMPORARY CITY</td>
<td>14</td>
</tr>
<tr>
<td>1. Geology and Soils as a Development Influence</td>
<td>Geology and Soils as a Development Influence</td>
<td>14</td>
</tr>
<tr>
<td>3. Zoning Influences</td>
<td>Zoning Influences</td>
<td>19</td>
</tr>
<tr>
<td>4. Traffic Influences</td>
<td>Traffic Influences</td>
<td>22</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>A VISUAL SURVEY AND ANALYSIS OF PUBLIC SPACE IN URBAN CHRISTCHURCH</td>
<td>PAGE</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>V</td>
<td>1. Passive Recreation</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>2. The Space Pattern as an Element of Urban Form</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>3. Integration of the Whole</td>
<td>62</td>
</tr>
<tr>
<td>VI</td>
<td>DESIGN PHILOSOPHY</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>APPENDICES</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>REFERENCES</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>BIBLIOGRAPHY</td>
<td>85</td>
</tr>
</tbody>
</table>
LIST OF ILLUSTRATIONS

No. | Description | Follows Page No.
--- | --- | ---
1. | View to the south east of Cathedral Square, showing High Street as a diagonal interruption to the gridiron street pattern. Latimer Square is in the middle background and the Avon River is in the foreground. | 10
2. | Oxford Terrace, showing St Michaels Church | 22
3. | View to the west of Christchurch showing Latimer Square in the immediate foreground. Cathedral Square is in the centre and Hagley Park is in the background. | 34
4. | Looking across Victoria Street to the Bowker Fountain. | 42
5. | The pedestrian area in the centre of Cathedral Square, by the statue of John Robert Godley. | 44
6. | Rolleston Avenue and Park Terrace, by the Armagh Street Bridge. | 54
<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>Poplars beside the Avon River between Madras and Manchester Streets.</td>
<td>57</td>
</tr>
<tr>
<td>8.</td>
<td>Bridge of Remembrance, Cashel Street.</td>
<td>57</td>
</tr>
<tr>
<td>9.</td>
<td>High-rise apartment block, Cambridge Terrace.</td>
<td>58</td>
</tr>
<tr>
<td>10.</td>
<td>Cathedral Square, with Christchurch Botanic Gardens in background.</td>
<td>60</td>
</tr>
<tr>
<td>11.</td>
<td>The Cathedral from Latimer Square.</td>
<td>63</td>
</tr>
<tr>
<td>12.</td>
<td>Old Christchurch City Council Chambers, corner of Oxford Terrace and Worcester Street.</td>
<td>67</td>
</tr>
<tr>
<td>13.</td>
<td>Victoria Square, showing Civic Complex under construction.</td>
<td>68</td>
</tr>
</tbody>
</table>
CHAPTER I
THE BRIEF

Current public architectural activity in Christchurch, excluding the new Central Police Station, is focused upon sites adjacent to the public open space of Victoria Square.

The two building complexes concerned will fulfill extremely divergent roles:

(1) A civic complex comprising town hall, theatre, restaurant, banqueting hall, library and administrative buildings.

(2) A law court complex, comprising Supreme, Magistrates and Children's Courts, library and administrative facilities.

Both complexes will cater for intensive public use, and, therefore, their influence will extend far beyond their immediate environs.

Both complexes are beside the Avon River, a lineal element which unifies the public space of urban (1) Christchurch. Their architectural influence will be profound.

NOTE: (1) Throughout this study, the word 'urban' defines the central city area, as distinct from suburban.
The need, therefore, arises for:

(1) A visual appraisal of the public open space of urban Christchurch (refer Drawing No. 2 "Central Christchurch Study - Public Space Appraisal") to determine:

(2) The elements which constitute cohesive spatial design qualities.

(3) How these elements inter-relate and contribute in integrating the whole urban space pattern.

(4) What functional pressures these spaces are subjected to.

(5) And through the collation and analysis of this information, a detailed site survey and analysis shall be conducted of the spatial volumes which relate directly to, or are under the direct precinctual influence of the two architectural complexes, resulting in a design concept for:

(6) The preparation of a detailed re-design of Victoria Square, as a whole, providing for maximum social and environmental amenity.

NOTE: (ii) Throughout this study, "public open space" is defined as, "those spaces which are available for passive recreation as well as pedestrian movement", thus distinguishing them from purely utilitarian urban streets.
CHAPTER II
INTRODUCTION

We magnify the city we know and this is what horrifies us - Kevin Lynch.

Most of our cities were built during very different eras of social and physical development within themselves, but with one major factor in common - they did not foresee the intrusion of the motor vehicle. We face this gargantuan problem today, ill-prepared; the flexibility of urban social structure having, apparently, accommodated the change. This is not so with the rigid physical structure.

The fundamental difficulty which the motor vehicle presents in urban areas is that it has rendered the street out-of-date as a form of urban layout.

Its incongruity as an urban form is graphically illustrated when it is allowed to penetrate the classic squares and spaces of ancient European cities. Their disruption is virtually complete; their social purpose is nullified. Admittedly, sentimentalism is not going to solve immediate problems. We should not, and cannot, attempt to re-create urban spaces in a neo-classic tradition.
but this does emphasise the intrusive, ubiquitous and disruptive qualities of motor vehicles.

Attempts to reconcile the problem with gigantic urban motor-ways have been carried out in most major cities throughout the world. The structures by their very nature and purpose are so dominating, that their disruption of urban form can also be complete.

The increased mobility of the urban population has led to decentralisation. Man has assumed a somewhat migratory role, as witness the mass exodus from the central business district every evening. The social pressures imposed on urban facilities fluctuate dramatically, ascending to extremely high load peaks for very limited periods.

There is, in general, an increase in the urban proportion of the total population exceeding total population increase. In the United States of America, 70% of the population is classed as urban. In New Zealand, between 1945 and 1961, the total urban population increased by 50%.

This has caused intense interaction between social and physical forces, resulting in unimaginative standardisation and uniformity in visual urban form, merely to "hold the tide" of uncontrolled urban growth. The result is a lack of coherence, thereby decreasing human perception and "legibility" - a term used by Kevin Lynch, in "The Image of the City", which describes the situation admirably.
This phenomenon is particularly evident within certain areas of Christchurch, primarily though, because the flat landscape readily surrendered to a gridiron pattern. It is, therefore, without any significant internal topographic reference points. Uniform site coverage logically followed in most of the geometrically rigid rectangles, the result being a rather introverted urban form. Subsequent increases in high density development, with the advent of motor vehicles and traffic congestion, within the urban core, have seriously compounded the problem. The element which makes a unique contribution towards urban legibility, is the Avon River, and this, in essence, is the challenge: To be aware of its inherent strength as a unifying form, but to be aware also, of its susceptibility to being overwhelmed by an urban mass it cannot unify.
CHAPTER III
HISTORICAL INFORMATION

The city of Christchurch was named after Christ Church College at Oxford, the college of the colony's first leader, John Robert Godley. Right from the beginning, Christchurch was intended to be the major city for the Province of Canterbury, and in 1847, a comprehensive plan was drawn up for "Founding the Settlement of Canterbury in New Zealand".

1. THE ORIGINAL CONCEPT

One thousand acres were to be provided and set aside for a capital city. Adjoining this, there were to be a maximum of a further one thousand acres for suburban development. The principal streets and squares were then to be defined, with ample reserves allocated for public purposes, and the balance divided into quarter acre sections.

2. SELECTING THE SITE

The New Zealand Company sent Captain Joseph Thomas, a surveyor, to New Zealand in 1848. He was to choose a site for a Church of England settlement, and his final decision of the
Port Cooper Plains, (as the Canterbury Plains were then known), met with the approval of both church and company.

He was probably influenced by the Deans Brothers, in the detailed choice of a site. They had settled in Riccarton, (now a Borough immediately west of Christchurch), in 1843. Another factor which influenced him, was the presence of the Avon River, which he considered to be navigable, and therefore, important for trade. The Avon had already been named by the Deans Brothers after a river in their native Ayrshire. Apparently Thomas considered that the potential of the river outweighed the development problems posed by the very swampy nature of the adjacent terrain.

3. THE FIRST SURVEY

The first survey was commenced by Edward Jollie in 1849, and he encountered no major difficulties. His superior, Thomas, approved the survey in principle, but was initially opposed to Jollie's proposals for a street width allocation of more than one chain, to allow for tree planting. Although Thomas later agreed to this proposal, it was, unfortunately, only possible to construct certain sections of Cambridge and Oxford Terraces to Jollie's recommendations, for the other streets were already built to Thomas' earlier requirements.

The original town boundaries were Salisbury, Barbadoes, St Asaph, and Antigua Streets. Beyond these, public reserves, comprising approximately four hundred acres, extended to the four town belts.
4. CHRISTCHURCH IN 1850 - A REALITY

To the first settlers who arrived in 1850, after ascending the steep hillside from Port Cooper (now Lyttelton), the view looking down from the summit, no doubt inspired mixed feelings. Distant alpine grandeur, forming the skyline of the plains landscape, contrasted sharply with the foreground - the desolate and dreary swampland which was Christchurch. It was devoid of major timber trees, apart from limited indigenous forests at Riccarton and Papanui. There were stretches of raupo swamp to the north and east, and further east, near the sea, were long lines of sand dunes. Along the banks of the Avon, which appeared to be only a stream, there were colonies of tutu, flax, and toe toe. Scattered throughout, were clumps of cabbage trees and manuka.

5. THE PATTERN OF URBAN DEVELOPMENT

The early settlement of Christchurch was organised by the Canterbury Association, a self-supporting and non profit-making body.

(1) Selling of Reserves - An Environmental Tragedy

By the year 1855, the association was overcome by grave financial difficulties, and its affairs were taken over by the Provincial Government. There were liabilities of £29,000 which were also taken over by the Provincial Government, who, in an effort to
improve the financial situation, initiated the sale of four hundred acres of reserve
to private purchasers during that year. They were sold in five acre blocks at £50 per
acre, and by 1858, all four hundred acres were sold.

(2) The Town Belts

The four belts were laid out two chains in width, and the existing gridiron was
extended to them, although there were no cross-streets as existed in the original
roading pattern.

(3) The Need for Drainage

During this period, the most pressing need was for a drainage system. The
perpetual swamp conditions retarded residential development, limiting it to the higher
portions of the undulations adjacent to the river. In 1862, a Sanitary Commission was
formed to investigate the problem, and it recommended that channels should be constructed
at the road edges, the excavated material being used for fill in the public squares.

(4) The Diagonal Streets

The diagonally-placed High and Victoria Streets (as they are now known), were not
included in the original plan. The gridiron plan had been approved when it was realised
that there was no provision for transport between Ferrymead and Papanui. Ferrymead was
diagonally south-east of the settlement, and with its wharf facilities, provided the only major cargo link. Papanui, situated diagonally north-west, was the principal source for timber used in construction. This was, of course, no oversight on Jollie's part, because when he made his survey, there was no Ferrymead and no necessity to use the bush at Papanui.

6. PUBLIC OPEN SPACE

(1) Hagley Park and Botanic Gardens

In their profound wisdom, the Canterbury Association had set aside Hagley Park, four hundred acres to remain as open space for recreation, immediately west of the settlement defined by the four belts. The first trees were planted near the Christchurch Public Hospital in 1858-59. The Domain Board started work in 1864 and the first tree, an oak, was planted during that year. The major planting did not begin until 1869, when chestnuts and silver birch were planted in Rolleston Avenue. This was originally intended as a mill race. Plans for a public garden within Hagley Park, were carried out by the first curator, J. F. Armstrong.

(2) The "Squares"

Ridley (now Cathedral), Latimer, and Cranmer Squares had been marked out during the original survey, and named by Captain Thomas.
I. View to the south east of Cathedral Square, showing High Street as a diagonal interruption to the gridiron pattern. Latimer Square is in the middle background, and the Avon River is in the foreground.
The Market Place (now Victoria Square)

In the mid-nineteenth century, this was a centre of great activity. It housed the post office, immigration barracks, and the first gaol, in addition to the numerous stalls for the sale of merchandise, and the livestock yards. To illustrate this, one report, taken at random on a day in 1862, states that: Ten bullock drays with fifty-eight bullocks; fifty-one horse drays with sixty horses; thirty-six carts with fifty-one horses; one hundred and ninety-nine saddle horses; twenty cattle; two hundred and four sheep; one solitary donkey and cart; and one thousand foot passengers crossed over the Market Bridge. The few Canterbury milestones that existed were also measured from this site. After some years it was re-named the Market Square.

7. THE 'ENGLISH' CITY

By 1876, the flax and toe toe growing on the banks of the Avon had been replaced by weeping willows, the original cuttings reputedly taken from Napoleon Bonaparte's grave on the island of St Helena.

By now, many of the principal buildings were completed. These were: The Provincial Council Chambers, the Public Library, and the original portion of Christs College. Many were in an advanced stage of construction, such as: Canterbury College (now the University of
Canterbury); the Canterbury Museum; the Anglican Cathedral; the Chief Post Office; and the Supreme Court.

To commemorate the diamond jubilee of Queen Victoria in 1897, the Market Square was developed with lawns and flower beds, while silver birch were planted around the perimeter. The newly formed beautifying association carried out this work, as well as the mill island garden by the Hereford Street Bridge, and many of the triangles throughout the city.

By this time, development had been carried out in Hagley Park, and its characteristic form of grassed open space, viewed through the trunks of fine peripheral trees, began to emerge.

In 1903, the Market Square was changed to Victoria Square, with the unveiling of the Queen Victoria Statue. During that year, the New Zealand Yearbook described Christchurch as being "surprisingly English in its appearance, architecture, and surroundings." The character and form of contemporary urban Christchurch was becoming firmly established. The "most English city in New Zealand" was a reality. This title, however, is in many aspects a misnomer. The gridiron street pattern is more American in character, as are the detached houses of the outer urban area, constructed predominantly of wood with iron roofs on their own plots of land.

Although significant changes have occurred in building throughout the city, with architecture typically being expressed in more dominant and "cuboid" form, the urban pattern
which had evolved at the turn of the century, is still essentially intact. This is, however, of questionable importance.

There is no doubt that this will constitute a major impact on the social and physical structure of urban Christchurch.
CHAPTER IV
THE CONTEMPORARY CITY

1. GEOLOGY AND SOILS AS A DEVELOPMENT INFLUENCE

The whole structure and growth pattern of the Christchurch metropolitan region has been facilitated by one fundamental factor; its flatness. There are, therefore, no physical limitations to growth. The greater metropolitan region now extends to the coastal extremity of the Canterbury Plains. These were formed basically by fluvio-glacial and alluvial deposits of greywacke carried down by the braided river systems from the Southern Alps. The southern margin of development is situated on the northward-trending spurs of Banks Peninsula, to an altitude of approximately 1,200 feet. Although Banks Peninsula is a major topographic restraint, the more equitable climate, and the mere fact of "being on a hill with a view" has promoted relatively uniform and dense residential development. The over-all pattern of development, therefore, has been of a concentric circular nature, with certain finger developments preceding the general fringe. There are, however, subtle variations in physical factors, such as minor differences in elevation; and structural differences in soils, which have influenced the pace and direction of development. There are alluvial gravels
from the Waimakariri River, to the north and west, and for many years, suburban residential
development did not extend into this area. With flanking development reaching saturation
point, the area has become, in recent years, the most active growth zone, with major state and
private housing blocks, and associated servicing facilities.

Between the gravel fan and Banks Peninsula, the elevation is lower, soils being basically
composed of marine and alluvial silts, with swamp deposits of peat and loessial sand. This
whole region is drained by the Heathcote and Avon Rivers, but certain areas within it are still
excessively wet. This is seen in Bexley, Woolston, and Heathcote, where there are open swampy
paddocks, surrounded by clearly defined zones of residential and industrial development.
Further north, there are large areas of peaty loam, used intensively for orcharding and
market gardening.

There is sand dune development along the sea-coast, and also in the north-western area,
where they were formed from wind-deposited, Waimakariri alluvial sands, and extend in linear
patterns into Papanui and Fendalton.

Between urban Christchurch and the sea are two remnant sand-dune formations, parallel
with the coastline. One formation is in Linwood, the other in Aranui, and it is only there
that one may see houses overlooking the normal residential elevation.
The total effect of these factors then, is in the nature of a restraint rather than a control, and with the reclamation that is now under way, the final over-all pattern of development will be uniform.

2. SIZE AND POPULATION TRENDS

The original urban core is still the nucleus from which the growth pattern radiates. Over 250,000 people live in the metropolitan area, 3 of these living within the Christchurch City limits. The growth rate of the metropolitan population is 2.15% per annum, and it is expected that by 1986, the population will reach 378,000, and by the year 2,000, it is expected to exceed 500,000.

Within the City of Christchurch, there is a growth rate increase of 1.3%, and on this basis, the population would reach 250,000 by the year 2,000. However, due to an increasing shortage of land within the city, this is unlikely to be achieved. Nevertheless, with the present pattern of housing, in less than one generation, there is an expected population increase of over 130,000 people, living within 10 miles of Cathedral Square. In 1966, there was a decline in the inner city (urban) population of 7.7%. 


This has been attributed to:

- The expansion of industry and commerce;
- Ageing family structure and the movement away of younger people to outer areas;
- Building obsolescence.

This trend is quite obvious in some of the older residential areas of urban Christchurch, and is typified by many of the "once gracious" two-storey homes becoming offices for predominantly professional activities, such as law and accountancy practices. Many of the workers' cottages have become workshops and storerooms for light industrial and manufacturing concerns. While this practice may be a satisfactory interim measure on economic grounds, the visual result is far from satisfactory, and one would hope that "interim" is the keyword.

The movement of population from areas adjacent to the city centre is of considerable importance in determining a residential zoning policy. There is a clear movement of population away from the older inner areas of the city and a continuation of this trend must ultimately have a detrimental affect upon the economy of the city and steps must be taken to reverse this trend.

The only positive steps to counter this trend would be the creation of a more meaningful urban environment. Space for passive recreation, and well-designed town houses, or high-rise apartment blocks, related positively to a spatial pattern, should all contribute to clarity of form.
Cities tend to develop suburb by suburb and so obsolescence seems to occur suburb by suburb. New districts are popular but as they age they become less fashionable and values tend to drop. To counter this the larger houses are often converted to flats.

The City Council has undertaken a residential urban renewal programme in the Salisbury/Peterborough Streets area. There are also very expensive but limited "town house" and high-rise apartment blocks, typically built on land adjoining "high quality" public open space, particularly in association with the river. Conversely, long rectangular blocks of single-storey ownership flats are becoming increasingly ubiquitous in residential sections where old dwellings have been demolished. These are usually not in association with public open space.

(1) The Central Business District

The Central Business District contains forty-seven street blocks, of varying sizes, of which the largest are five and a half acres in area. In 1965 total floor space was ten million square feet, more than half being at ground level. The rate of floor space increase is estimated to be 1.5% per annum. However, the rate of site renewal is estimated to be only 0.05% per annum, and this will not overcome increasing building obsolescence.
3. **ZONING INFLUENCES**

(1) **Types of Land Use**

There are four broad uses for land within an urban area:
- Residential
- Commercial
- Industrial
- Public (open space, public buildings, roads).

More land is required for residential purposes than for any other use.

The central business district is the most intensively used area and consequently has the highest land values.

The future allocation of land for various purposes can be determined from knowledge of its present uses and estimates of future population and development trends. 16.

(i) **NOTE:** In this context, "urban" is defined as the Christchurch City area.
Diagram 1. Present Land Use in the Christchurch City Area.

The zoning for Rural, Residential, Commercial, Industrial and Recreational purposes is estimated to provide for the city's needs over the next twenty years.

The following zoning provisions are of relevance to this study:

**Residential 'C'**

This is a special zone adjoining the Central Business District, so controlled to attract multi-storey residential development, and provide for cultural and social institutions.

To relieve the imbalance between the rate of urban floor space growth and the rate of site renewal (p. 19 of this study), the Christchurch City Council has imposed a commercial zoning structure based primarily on control by "Plot Ratio". (Refer Appendix B)
Schedule - Central Commercial Zones

<table>
<thead>
<tr>
<th>Zone</th>
<th>Area of Zone</th>
<th>Plot Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. 3</td>
<td>36.6 acres</td>
<td>1.5 : 1</td>
</tr>
<tr>
<td>C. 4</td>
<td>64.8 acres</td>
<td>3.5 : 1</td>
</tr>
<tr>
<td>C. 5</td>
<td>24.3 acres</td>
<td>5.0 : 1</td>
</tr>
</tbody>
</table>

The District Scheme then states:

Plot ratio controls are designed to have the following effects:

(a) Grade the density of buildings in C. 4 and C. 5 zones so that the greatest investment is still in the city centre, but at densities compatible with traffic congestion and the capacity of the streets. (Refer Appendix A).

(b) Encourage the renewal of older buildings which at present contain considerable vacant floor space, and which, in general are in poor condition.

(c) Encourage the amalgamation of titles in the C.B.D.

(d) Encourage the provision of more open space at ground level by requiring larger sites and by introducing a system of floor space bonuses for the provision of plazas, arcades and service lanes.
(e) Provide some control over building design by providing bonuses for tower block designs. The resulting taller, less bulky buildings should reduce the ill-effects of shading and wind funnelling. (Refer Appendix C).

(2) Existing Land Use in Urban Christchurch

The grouping of shops, offices and other uses is generally well defined in the "core" of the business district around Cathedral Square but in the fringe areas there is an ill-defined mixture of land uses. This is particularly true to the east where the central business district adjoins a residential area, but less so to the west, where the River Avon has tended to obstruct the spread of commercial uses into a mixed residential and educational precinct.

Ill-defined land use patterns are usually associated with an absence of clarity in urban form. This is certainly true of the eastern area described by Johnston (1965) above. There is confusion and lack of orientation. However, the distinction between this and an odd assemblage of interesting forms and uses, is very fine. Certain areas have an indefinable disjointed charm, such as southern Oxford Terrace. (Page 58 of this study).

4. TRAFFIC INFLUENCES

There is little doubt that the flood of motorcars will continue to increase, and that come what may, it will change our city and our way of life - E. J. Bradshaw, Chairman, Christchurch Regional Planning Authority.
2. Oxford Terrace showing St. Michaels Church on the corner of Lichfield Street.
The most pressing problem which faces urban Christchurch is that of a rapidly increasing traffic burden. To merely maintain traffic flow, is a very superficial approach. Fully realising this implication, and that the traffic problem must be closely integrated with development and re-development possibilities as a whole, the Christchurch Regional Planning Authority was given the responsibility for preparing a transportation plan for Christchurch. Due to the complex nature of the task, the authority embarked on a full-scale investigation, in an endeavour to resolve traffic growth and requirements in terms of the future pattern and growth of urban activities.

The work fell into two main phases. First, that of establishing the necessary design data as a basis on which to evaluate the problems and prepare the plan. Second, that of devising a solution to meet the problems that were disclosed.

It is beyond the scope of this study to describe in any detail, the methods of approach and analysis used. The first phase is described in detail in "Traffic in a New Zealand City", edited by W. B. Johnston, and published by the Christchurch Regional Planning Authority. The book covers the studies of urban activities and the trips they generate, the processes used, projections, and initial discussion. A brief description of this, is of relevance though, because it indicates the depth of investigation that was undertaken.
In terms of the daily rhythm of urban traffic, the study was initially divided into four groups:

(1) Survey and analysis of basic factual material related to movement, loading, carriage of goods, existing street capacities, traffic generation points, population distribution, etc.

(2) Forecast of future travel by people and movement of goods and destination of resultant traffic volumes.

(3) Design of solutions to overcome deficiencies - as estimated by future traffic volumes.

(4) Analysis and assessment of alternative solutions and recommendations. (Refer Appendix D).

The analysis and collation of all this information was the conceptual basis for the Master Transportation Plan.

As a matter of interest, in 1959, the year the survey was undertaken, there were 500,000 individual trips made by people in the normal course of their duties, on an average weekday. Less than 10% was by pedestrians, over 40% by car, 1/3 by bicycles, and less than 1/5 by public transport. In the same year, there were an estimated 90,000 bicycles, but these are not increasing with the current rate of population and motor vehicle increase.
(1) The Current Situation

After 120 years, the basic plan still functions reasonably, but within a gridiron structure, comprising blocks 6 chains by 11 chains, there are too many intersections for modern traffic. 26

Open spaces have been severed by heavy traffic or turned into traffic islands or round-abouts. 27

The problem of parking is acute in the central business district. There are approximately 13,000 spaces used daily, of which 6,000 are on the street. 28 The pressures on parking space are basically responsible for a change in shopping patterns. There is the point where attraction becomes detraction: this point has been reached in central Christchurch. 29 Increasingly, the consumer is subjected to something of an endurance test when shopping. In addition to the sheer difficulty of parking a car, the pedestrian/traffic conflict is overwhelming. The central business district is readily accessible to moving traffic, particularly via the radial streets which lead directly to Cathedral Square. This has definitely aggravated the situation. Even during off-peak hours, some streets are overtaxed to such an extent, that one double parked vehicle can cause serious delays and congestion. Some streets with all vehicles correctly parked are obviously excessively narrow, particularly Colombo and High Streets.
The city centre was planned for a different age and for different conditions, and it is only the generous street layout planned by the Canterbury Association that has allowed the city to function well until now. It is becoming increasingly clear, however, that the concept of segregation of pedestrians and vehicles must soon be applied – there will simply not be sufficient room for both in busy shopping streets.

Both the Christchurch City Council and the Christchurch Regional Planning Authority have been aware of the increasing gravity of the situation for some time, and in 1959, the two bodies collaborated in producing the Christchurch Master Transportation Plan.

(2) Future Proposals – the Master Transportation Plan

The Master Transportation Plan is based on data assembled (p.24 of this study) and estimates made on urban and traffic growth by considering land use and transportation needs for the year 1980.

The plan recommended the creation of new traffic routes and the improvement of many miles of existing streets. Although this plan has been modified in the light of new research it still remains the basis of regional traffic planning.

As part of the comprehensive plan, the council has already declared certain streets exclusively one-way. These frame the central business district and provide ready access. The council has also formulated a parking policy in line with the commercial zoning. (p. 21 of this study).
The city has been divided into three areas in which a parking policy appropriate to the overall needs of the area will be followed:

(a) A central core for which off-street parking is the responsibility of the council and in which the amount private developers may provide will be strictly limited. This area corresponds to the C. 5 zone.

(b) An intermediate area where responsibility will be shared by the developer and the council. This corresponds to the C. 3 and C. 4 zones.

(c) An outer area where developers must provide the total expected requirement. This area corresponds to all other zones.

It is physically impossible to obtain sufficient traffic access and parking facilities right at the urban core, and, therefore, these functions must be spread over a larger area. It is expected that by 1985, the number of vehicles entering the central business district will increase by about 75%. To accommodate this, it will be necessary to provide at least 10,000 more parking spaces.

The Master Transportation Plan provides for an established roading hierarchy, comprising: (Refer Appendix E)

(a) Motorways
(b) Arterial Roads
(c) Limited Access Roads
(d) Primary Roads
(e) One-way streets.
(f) Secondary Roads.
(g) Local Roads
(h) Service Lanes
(i) Pedestrian Malls, which are of particular relevance to this study.

High Street, from Cashel Street to Hereford Street, and Cashel Street from High Street, across Colombo Street to almost Oxford Terrace have exceptionally heavy pedestrian volumes and lend themselves to conversion to pedestrian malls. These would be closed to normal traffic between 10 a.m. and 11 p.m.

The basic difficulty in converting a normal traffic street to a pedestrian mall is in changing its character and scale to that which is typically pedestrian. This, in essence, necessitates the removal of carriageway, kerbing and channelling, and the complete urban floor restructured in terms of pedestrian scale and use. In this situation, only service and emergency vehicles could use the mall legally. To exclude normal traffic, would require careful signposting, and an alternative vehicular circulation system, perhaps of a
peripheral nature. Douglass (1969) is rather skeptical of the success of this type of conversion, and points out, that with the relatively cool New Zealand climate, and the corridor streets, designed originally for horse and carriage, a successful conversion is extremely difficult. He regards the usual pre-conditions as being inflexible, and with the lack of human scale, this can result in one of the coldest and most uncharitable places for pedestrians. From a functional parking aspect, he points out that if a street is closed, and is successful in terms of pedestrian usage, it will be necessary to have three times the amount of parking there used to be at the kerbside, to fill the street again.

His comments are certainly valid, and further reinforce the necessity for careful microclimatic and functional analyses, and a sensitive visual appraisal, before a step of this nature is undertaken.

(3) The Urban Motorway

Traffic, with the paved surfaces that carry it, is the most formative of all influences on design in the central areas of towns.

In a flat city, such as Christchurch, the impact of an elevated motorway is particularly awesome. It is never subservient to natural physical features, and may be in conflict with dominant architectural features. In urban Christchurch it may well be an omnipresent structural element, and, therefore, its scale relationship, its form, its proportion will be critical. The task of integrating it with the urban structure will be
extremely challenging. There is potential to strengthen and define the total structure, through positive space articulation, and the creation of expressive nodal areas. The flat terrain should be interpreted as a strength rather than a weakness.

Turbott (1968) states: If the motorway is to be in character with the overall Christchurch Landscape it should have these characteristics:

(a) Heavy planting with large trees.
(b) Spaciousness.
(c) Exploitation of minor features of natural man-made landscape.
(d) Changing views of the Port Hills.
(e) A complementary system of planting on both public and private land.

On the urban section he advocates:

(a) Redevelopment of the land under and over the elevated structure to provide a revenue-producing land-use compatible with the motorway and the adjoining areas.
(b) A median strip 50 feet wide for reduction of visual dominance.

(c) Creation of an Avon Node Park by the river, incorporating the Barbadoes Street Cemetery and the existing riverbank reserves (refer Chapter V of this study).

(d) A continuous paved tree-lined plaza along Barbadoes Street from Bealey Avenue to Moorehouse Avenue, linking with an extended Latimer Square (Refer Chapter V of this study).

(e) The creation of a Salisbury Avenue Plaza, which would tend to form a barrier between the residential area and the inner commercial area. Here, allowance would be made for an arcade on the residential side of the carriage-way, and a tree-lined walkway would form the link with the Avon Node Park and Hagley Park.

It is proposed that as a first stage, motorway construction should stop at about the "belts", and that the one-way pairs should act as distributors for motorway traffic. When the motorway system is completed in the central area, the one-way pairs will provide direct connection to the motorway ramps.
The space pattern of suburban development has been well restricted to developed
transportation.

- More leisure time
- Increased mobility
- Higher living standards.
- E.g., water sports
- Development of new sports.

Changes in recreational habits have been
changes in recreational habits have been
evolution of new trends. In recent years
the structure of the population and the
environmental needs of the society
pose the most important factor in

5. AMENITY AND RECREATION PROVISIONS

Central City Center. It is hoped that the central section will not be needed before 1990.

Avenue X may be grade-separated from Park Terrace to link with the elevated
the one-way street system and ease congestion at the I-11/Fair Park Terrace intersection.

The western section of the pedestrian-vehicle system is needed to attract traffic to

32.
coast, undeveloped sand-dunes, and the estuary. The developed suburban parks are typically rectangular, with active recreation space in the centre, surrounded usually by deciduous trees. Although they are developed primarily for organised sport, many children use them for passive and informal recreation. The river banks, due to their gradient, are used for adventure play and passive recreation, rather than organised activities.

The passive open space available in Christchurch is generous by both overseas and New Zealand standards, but it tends to be concentrated in specific sectors of the city.

In the city, there are about 2.5 acres per thousand population and in the metropolitan area about 2 acres per thousand population.

The existing space in urban Christchurch is, by its very nature and placement essentially passive, although certain areas are used in a limited sense, for active recreation. This will be dealt with more fully in Chapter V of this study.

In terms of development in the near future, the Christchurch City Council hopes to have the pedestrian malls completed by 1975, in association with a policy of off-street parking to serve such areas.
The stopping of streets and landscaping in conjunction with the new Town Hall complex in Victoria Square will proceed over the same period.

In addition to zoning controls, certain areas of a special nature will be protected against development which is contrary to the proposals for the area. For example, Cathedral Square, Victoria Square, Oxford Terrace, and the west side of Latimer Square, justify particular consideration. In these Special Areas, the council can refuse to issue a building permit on the grounds of lack of integration.

Presumably, these developments would coincide with the re-designing of Cathedral Square. This provides for increased pedestrian use, by creating a precinctual development between the Cathedral and the buildings which enclose the Square. (Refer Appendix F).
View to the west of Christchurch, showing Latimer Square in the immediate foreground, Cathedral Square in the centre, and Hagley Park in the background.
CHAPTER V
A VISUAL SURVEY AND ANALYSIS OF PUBLIC SPACE IN URBAN CHRISTCHURCH

More than the buildings, it is the arrangement and character of the open spaces they define that gives a city its essential quality - John Ormsbee Simonds

The creation of urban space has been an inherent part of city building from the times of such ancient civilisations as Mesopotamia, the Indus Valley, Asia, and Mesoamerica. Even then, the spaces were comparatively highly structured, being enclosed by predominantly architectural elements. They were functional and of the utmost social significance, and evolved on the site by a natural process. The agora of ancient Greece, and the fora of ancient Rome were so much a part of the life of the common people, as well as for the highest socio/political activities.

In Medieval European towns, with the church dominated social structure, the church plaza was the open space. During the Renaissance, the world-famous Italian piazzas were created. The proportion and scale was wonderfully conceived, and great attention was paid to sculpture and
floor detail, as an integral part of the total composition. With the Baroque period, there was more mystery and sequential development with irregular spaces. Space creation influenced the town plan itself. Streets were progressively straightened. More formality was introduced, with more decoration, and the spaces gained more importance in the hierarchy of social values. 46

Previously, urban space had not been consciously set aside; it had been considered as an integral part of urban growth; it had evolved with the town, and it was accepted as living space by the citizens. However, during the 17th century, a barely discernible change was occurring in the social role of space. This may well have been the cause or the result of the introduction of living plant material. It was of the utmost significance, because previously, spaces had been enclosed exclusively by architectural form, which, although rich in toning, texture and "life", was inorganic. Tunnard (1953) 47 stated that green forms were not included in urban planning until the 17th century because cities were considered separate utilities - apart from natural elements.

This must have profoundly influenced the whole concept of urban space, because the existence of turf would allow more active and less contemplative pursuits. With increasing pressure on
urban land, space allocation and development for active recreation became a conscious process. The influence of architectural form, and therefore, enclosure, was diminishing; the use of plant material for various purposes was becoming more sophisticated. During the 19th century there was a world-wide movement towards active recreation resulting in the formation of many famous parks. Spaces were becoming more extensive and more specialised.

It was during this era, that Christchurch was planned, hence the conscious creation of space, based on the English concepts of that time. The gridiron street pattern allowed spaces of a more formal nature, apart from the river banks. Trees and grass were the original media used, but with horticulturally orientated citizens, annual bedding plants, and structural ornamentation were introduced. In the absence of natural internal features, such as hills and valleys, the space pattern was predictable. However, this must be accepted as an element of flat cities, and, therefore, space is all the more meaningful and vital. The question arises; of what present environmental significance is the existing space pattern?

1. PASSIVE RECREATION: A Brief Appraisal of the Characteristics of Space Utilisation

From observation, there appears to be a strong relationship between space utilisation, and the land-use of the immediate area. People do not seem to want to walk for any distance to
reach a space. In a way, this is quite understandable, with limited time at their disposal during the working day. This is one reason why some urban space which is physically available is not used; the other reason being that the spaces lack human appeal. The broad patterns are as follows:

(1) Bealey and Fitzgerald Avenues

These are two of the original four town belts, each with a kerbed median strip about 20 feet wide, containing two rows of mature deciduous trees, planted at fairly even intervals. There is a rather indeterminate gravel path down the centre, but of course, the total median length is discontinuous due to normal 'T' intersections and some intermediate 'U' turning facilities. Due to the relative distance from the true "hub of activity", and sheer confinement through traffic on both sides, which gives a feeling of insecurity, it receives little physical use in terms of the total area. In Bealey Avenue, where adjacent development is predominantly residential, there is the occasional person strolling along the gravel path, and more regularly, but in a more rigid time pattern, the median is used for jogging.

On the other hand, Fitzgerald Avenue is surrounded by a mixture of industrial and
residential development. The workmen from the factories prefer to eat their lunch, sitting on the footpath, their backs towards the solid and secure factory wall, rather than venture to the grassed, tree-lined median strip, which is "whipped" on both sides by the slipstreams of passing cars. Here, a "touch of nature" does not outweigh the desire for security. It is a visual rather than a physical amenity.

(2) **Hagley Avenue**

This is the diagonal boundary between South Hagley Park and older residential development. It has no median strip; but large deciduous trees define the avenue on the park side. Recreation is influenced, essentially, by activities within the park. The wide gravelled footpath, beneath the trees is used for jogging, and as a pedestrian link, between Hagley High School and active sports facilities of the park proper.

(3) **Rolleston Avenue**

This is situated near the urban core, and forms the boundary between predominantly educational and cultural development, and the Christchurch Botanic Gardens. The broad gravelled footpath on the gardens frontage is used consistently by quite heavy numbers of students, as well as pedestrians going to the gardens, museum, and art gallery, and also,
for contemplative strolling. This is particularly evident in the weekends when there is
the leisurely movement of many pedestrians in groups. The avenue has a positive
pedestrian quality, and always seems to contain some activity of an ordered nature.

(4) Park Terrace

This is a continuation of Rolleston Avenue, in a northerly direction, between the
Avon River and high quality residential development. North Hagley Park is on the other
side of the river. The broad gravelled path, and gently sloping grassed riverbank are
used for true passive recreation, particularly during the summer months. People eat
their lunches on the riverbank, and there is a general air of relaxation and leisure,
but due to its distance from the urban core, use in terms of the total area, is not
particularly heavy. The presence of water, as always, attracts children.

(5) Oxford Terrace

This embraces the total length of riverbank on the "town side" within the central
city area and the more residential development to the north-east. The gradient of the
bank is an important factor in the use pattern and in particularly steep sections, this
is usually confined to children's adventure play. Near the urban core, the bank has been
rather formally developed, with brick kerbing, a formal pool and statue, and annual plant bedding schemes. This is used intensively during lunch-time in the summer months by office workers. Where commercial development is not so dense, this lunch-hour peak is not so noticeable, and there is more family involvement with the children feeding the ducks. Horticulturally, the central section of the riverbank is maintained to a high degree, and this in itself tends to attract people. Although maintenance in the north-eastern residential section is, understandably, not so high, this is not significant. It comes back to the adjacent land-use pattern, and being residential there is a lower density of people per acre, and most of these prefer to stay in their own homes, rather than go on to the river bank.

(6) Cambridge Terrace

This covers the same length of river as Oxford Terrace, but on the opposite side. The adjacent development is predominantly commercial within the central city area but this development is more confined to the river. Further back towards Rolleston Avenue, the development (as stated previously) is more educational and cultural. In addition to comparatively lineal commercial development, the buildings are discontinuous, and smaller,
and in the south-west section, there is limited but very specialised residential development. The over-all result then, is a lower commercial population density, and this means a reduced lunch-time recreation density, but another factor may influence this. The mere necessity to cross a bridge appears to be a restraint. To many of these workers in the central business core, Cambridge Terrace, is "on the other side" even though maintenance quality and total area is virtually the same.

(7) **Victoria Square**

This is basically a rectangle facing Oxford Terrace, but through the diagonal bisection of Victoria Street, it has become two triangles. Streets dominate the scene, and it is primarily a congregating and waiting place, with seating and bus shelters. Although the Bowker Fountain attracts children, and while others go there for relaxation, it seems incidental to their main purpose - "waiting for a bus".

(8) **Cranmer Square**

This is a rectangular space, situated within the gridiron system, one block from Park Terrace. It is completely surrounded by residential and educational development, and is used for some organised school sports. These do not require developed playing fields,
4. Looking across Victoria Street towards the Dowker Fountain.
but are more in the nature of training and exercise, with some relaxation. This, however, seems to be sporadic, and the square is usually seen as a space empty of people, or nearly so, and this is its real strength. It is essentially a visual amenity; a pause of high image quality within surrounding development.

(9) **Latimer Square**

Although geometrically similar to Cranmer Square, its placement, immediately east of the central business district, increases its physical significance. During the summer, many people from this side of the commercial sector come here to have their lunch, in preference to encountering the mid-day confusion and congestion of Cathedral Square, to get to the river. There is also more activity through surrounding parking pressures, with numerous private car owners traversing the square after parking their cars, and returning again in the late afternoon. Therefore, there is a definite rhythm, twice daily, with great pedestrian activity moving in diagonal fashion, one way, then the other. People also wait in the central part of the square for public transport.

(10) **Cathedral Square**

This is the so-called "centre" of Christchurch, and is a nucleus of considerable
vehicular/pedestrian conflict. (Refer Appendix F). As a place for passive recreation, it is here that many elderly people congregate and sit, and here that youth also congregates on motor-cycles and in cars. The Square is also the nucleus of public transport, and the pedestrian element is characterised by long queues of people. It is therefore a very "human" area of intense and multi-use; rather like an island of humanity, within a vehicular maelstrom. Around the perimeter there is shopping activity, and this is very distinct from the central pedestrian area.

(11) The Triangles

These occur where the gridiron intersects the diagonal streets, and only the corners of Cashel and High and Hereford Streets could be termed spaces for passive recreation. Their area is strictly limited by the street pattern. Seating is provided, and this is the only use the space really permits. The people using them convey a feeling of being there, merely waiting for someone or something.

(12) The Daily Pattern of Space Utilisation

This is fairly predictable: as already mentioned, Latimer Square is used essentially as a space to walk through; there are more people on the riverbanks between 12 noon and 2 p.m., and there is an increase in sedentary use of Cathedral Square from
5. The pedestrian area in the centre of Cathedral Square, by the statue of John Robert Godley.
11 a.m. until about 3 p.m. Park Terrace shows an increase of people during the middle of the day. Rolleston Avenue is used spasmodically. Depending on lecture times at the university, it can fill quickly, then empty equally quickly. There is a general increase in people visiting the Museum and Botanic gardens in the early afternoon. At night, the only spaces which generate general activity are Cathedral and Victoria Squares. This is basically due to the proximity of entertainment and public transport facilities.

(13) The Weekly Lattern of Space Utilisation

With late night shopping in the city centre on Fridays, maximum density occurs then.

On Saturday, the outer urban spaces are particularly quiet, apart from the axis between Cathedral Square and the Botanic Gardens. Cathedral Square is comparatively busy on both Saturday and Sunday, although there is a rather depressing air about the place. This could be due to a lack of positive pedestrian or vehicular identity, and when both spheres are fairly inactive, this is most obvious. On Sunday afternoon, there is a noticeable increase in family activity along Rolleston Avenue as a pleasant way of getting to the Museum and Botanic Gardens. During the entire weekend, the riverbanks, Latimer and Cranmer Squares are relatively quiet.
14. The Seasonal Pattern of Space Utilisation

The absence of people on the riverbanks is most marked during the winter, even though there may be functional pedestrian activity along the gravelled paths associated with wider sections. This is typical of any hard surfacing; if there is somewhere to sit, and the weather is not too cool, people will use it during the winter, an example being the raised pedestrian area surrounding the statue of John Robert Godley in Cathedral Square.

This brief appraisal indicates the complex and constantly changing use characteristics that urban space must accommodate. To be functionally successful, it must be flexible and receptive to extremely diverse use patterns, catering for all ages, personalities, and socio/economic classes. If it is functionally an extremely human part of the total urban structure, then environmentally, also, it will be an integral part of that structure.

2. THE SPACE PATTERN AS AN ELEMENT OF URBAN FORM

Kevin Lynch in "The Image of the City" sought to find an urban "legibility", meaning the ease with which the parts can be organised into a coherent whole. He applied the term "imageable" or "imageability" to those elements with a high probability of evoking a strong
image. Could they, in retrospect, be conceptualised? He organised urban form into various elements such as:

(a) Paths
(b) Edges
(c) Districts
(d) Nodes
(e) Landmarks

He then applied this basic formula to Jersey City, Boston, and Los Angeles, by questioning people familiar with these cities. He also asked them to sketch various areas, and repeatedly certain areas were left almost blank. He then analysed these areas in depth to find out why they were difficult to conceptualise, and this usually originated from some ambiguity, confusion, lack of contrast, etc. These factors normally arise because of an unhappy or negative relationship between solid and void, perhaps the two most fundamental and all-embracing design influences. In the urban scale, a state of imbalance leads to disorientation, lack of clarity, and sometimes, bewilderment. Although it is not proposed to apply, in its entirety, this analysis to Christchurch, the approach is extremely valid, because certain areas
of urban Christchurch are very difficult to conceptualise.

As a first tentative step, the environmental quality of the spaces discussed in Section 1 of this chapter will be assessed, in terms of the elements which contribute to, or detract from, that quality.

(1) **Bealey Avenue**

This is the northern boundary of urban Christchurch, and runs approximately east-west. It is an important traffic route, because vehicles turning west from any right-angle street are in a position to link with State Highway 1, north and south, and also Christchurch International Airport. Vehicles travelling east are in a position to turn right into most intersecting gridiron streets, or to continue east, and link with Fitzgerald Avenue. This would link them with the industrial south-east of Christchurch and railway facilities:

Travelling west, Bealey Avenue has strong directional qualities, with the median trees uniting visually in the distance to form a strong terminal element. This is of particular significance from the eastern end, because there is a lack of positive flanking
containment due to visually mediocre residential development, and an absence of strong tree-form to complement the median planting. Further west, however, lateral enclosure is more positive due to more two-storey residential development and mature trees forming stronger enframement, and reducing the visual significance of the carriageway. The terminal tree association now has a strong influence and with an abrupt increase in architectural scale, and a major traffic intersection, there is the climactic development of a very positive and vital nucleus of activity. (Described in page 62 of this chapter).

Travelling east, there is a feeling of anticlimax, and this is heightened by an absence of terminal elements. In perspective, the median trees are strong, but their destination is uncertain, and therefore the general feeling of directional orientation is uncertain. With residential mediocrity when the end of the avenue is reached (at the intersection of Fitzgerald Avenue) the composition is lacking in positive scale and even the intersecting of median trees at 90° do not "tie" the spaces together.

(2) Fitzgerald Avenue

This is the eastern boundary of urban Christchurch and is about north-south in orientation. It carries heavy traffic density both north and south, associated with industrial development, railway facilities, and a link via Ferry Road, with the
Christchurch-Lyttelton Road Tunnel.

The northern section between Bealey Avenue and the bridges has an identity of its own. This is largely due to comparatively recent multi-lane re-construction and re-alignment, as a preparatory step to the Christchurch Master Transportation Plan (Chapter IV, page 24 and Appendix D). The median strip has been replanted in a more contemporary plant association of ground cover and deciduous trees, and the carriageway runs above, and directly adjacent to the river, and is supported by a vertical retaining wall. This has introduced a new structural element to the river, and for the first time, there is not a visibly intervening grassed bank between carriageway and river. It is, at the moment, perhaps an excessively radical change visually, although it does give positive identification to this section of Fitzgerald Avenue. Hopefully, with increasing tree size, an element of reassurance will emerge.

At the new twin bridges there is an all too short glimpse of the river. There are distracting elements at the intersection. Tree and structural forms have insufficient scale, in general, to define this space. However, one massive brick building on the right, immediately beyond the bridges, is somewhat incongruous in this context. It is
et beyond the confines of the garden venue.

Get on the road. The route is due, as a general statement, to be
written, and the need for science, open.

...in writing. There is some semblance of unity, if the
outlining is due, when deus is composed, and the Thames
reaches its

...in writing. There is some semblance of unity, if the
outlining is due, when deus is composed, and the Thames
reaches its
termed "episodic". There is a profound sense of relief after being pre-conditioned by the disjointed industry. This space assumes a new quality and significance.

Fitzgerald Avenue has potential, and this lies not only in stringent land use control, but also the environmental control over architecture, as is being provided for under the Commercial zoning (Chapter IV, p.21, and Appendix B).

(3) Hagley Avenue

This is a positive defining element between two widely divergent land use patterns; parkland and residential. It has strong termini at each end; Hospital corner to the north, and the intersection of Moorehouse Avenue to the south. Hagley Avenue carries dense traffic, linking indirectly with State Highway 1, to the south, and also Christchurch rail facilities. Although the termini are strong, and therefore, orientation is strong, the intervening distance lacks a positive scale relationship. The trees provide a definite continuum of enclosure, but this is not complemented by the residential development, which is weak in contrast. This creates the illusion of an excessively wide carriageway, and an ill-balanced lineal space; the houses appear to
"fallaway". Had the tree-form been more fluid, allowing more space penetration, and had the architecture been more expressive, this would have been an urban composition of great power.

(4) Rolleston Avenue

This is the western boundary of urban Christchurch and is orientated approximately north-south. It is a highly structured space with a rich blend of expressive architecture, old and new, trees, and open space. The play of forces between the buildings is strong, particularly so between the Museum and University towers. There is that "old world" charm and indefinable atmosphere that emanates from old buildings. The building materials are predominantly stone with subdued grey tonings and high gabled slate roofs that form a rich and interesting skyline. The new architecture, in both Christ's College and the Museum, is harmoniously integrated with the old, forming a highly textured, continuous facade. Spatial modulation is positive, with deep penetration between the dominant tree-form in the Botanic Gardens, in striking contrast to the architectural enclosure. At the southern end of Rolleston Avenue, the Port Hills are a strong terminal feature above a foreground of deciduous trees, which are also a
delineating element. The configuration of the hills appear as a logical and natural
continuation of the trees. This continuity, however, has been disturbed with the con-
struction of a stark, pre-stressed concrete, cylindrical chimney which pierces the skyline,
and introduces a new scale. Through the trees one can see the rich brick tonings of
Christchurch Hospital, beyond the river. At the north end there is release from the
architectural enclosure, at the beginning of Park Terrace.

Rolleston Avenue has high image quality; as a human space it is reassuring; it
lends itself to detailed observation, and has a strong, cohesive, and unique
environmental character.

(5) Park Terrace

Although physically separated from North Hagley Park by the river, the unifying
spatial character is so strong, that the visual integration of Park Terrace with the park
landscape character is virtually complete. The wide carriageway is quite subservient, and
seems merely an incidental, a place from which to experience a well-balanced and expressive
spatial composition. A curving alignment adds to the flow of grassed bank, and a
constantly changing sequence of tree-form in space. There is a feeling of containment,
6. Rolleston Avenue and Park Terrace, by the Armagh Street Bridge.
strongly defined by the residential development on the north-eastern side. However, this is only successful because the houses are predominantly of two storeys. They have a positive visual unity, and are interwoven with a cohesive element of tree-form. On the opposite side, there is more subtle or implied containment, because there is a feeling of elevation by looking into the water, but this is transient as the far bank is higher than normal observer level. The tree patterns in the park assume a "plastic" quality by receding and coming forward, thus emphasising the significance of deep space penetration, without revealing the true extent of that space. This is the essential quality of Park Terrace; fluidity, a continuing spatial sequence, boldly modulated by dominant groups of Maritime Pine. There are strong termini at each end, with a converging of tree form and architectural enclosure at Rolleston Avenue; and at the northern end an intensification of space defining elements at the Carlton Mill Bridge (described on page 62).

(6) **Oxford and Cambridge Terraces**

The mere fact that these are not segments of the gridiron street pattern gives them an individual quality. They are free-form elements within a predictable and rigid
Turbott (1968) states:

The early surveyors and planners used a small swampy stream called the Avon to solve their drainage problems, but they did so in such a way that it created the future beauty spots of the city.

It is to be doubted whether the full significance was apparent then, but it is certainly the continuum of spatial strength in urban Christchurch now. The containment of the river within clearly defined banks, presents a difference in elevation, and although comparatively small, this is vital to the city. There is something restful and yet dynamic to look down on to and into. The associated trees and the opening out of structural verticality is a constant visual reference point. This strength is inherently greater in the core of dense commercial development.

In the north-eastern area, near the intersection of Bealey and Fitzgerald Avenues, there is a general absence of vertical scale in adjacent land use, which is basically older type, single-storey, residential. Without adequate space defining elements, the river loses its impact, because as a topographic influence, it is not sufficiently dominant. Nearer the urban core, a gradual increase in building scale strengthens
containment to a degree, but as yet this is too fragmentary in form and structure. Further double bridging of the river, in the form of an 'L' at the intersection of Madras and Kilmore Streets detracts from image clarity. It is, beyond this point, that space definition is dramatically strengthened by massive Lombardy Poplars framing and enclosing the river. Adjacent architecture is subservient to this emphasis of extreme verticality, and this situation is unique in the urban structure of Christchurch. Here, undeniably, the trees are not complementary to, but dominate the composition. The river and trees have high emotive image quality, but this is confined to the lineal core, because adjacent architectural form remains nondescript.

Beyond this, the total theme loses clarity because it again lacks positive spatial definition, between Manchester Street and Victoria Square. However, the total remaining length of both Oxford and Cambridge Terraces is clearly defined by a predominantly strong composition of architecture and tree form. There are certain nodal areas of high environmental quality, and this usually coincides with a pedestrian precinctual development in association with old buildings. Typical of this are the existing Law Court complex, the old Christchurch City Council chambers, and the Provincial Council buildings.
7. Poolsars beside the Avon River, between Madras and Manchester Streets.
8. The Bridge of Remembrance, Cashel Street.
The architecture has warmth and human scale; it is surrounded by mature trees, and it is essentially part of perhaps an idealised Avon River concept. There is a strong sense of unity, yet the total composition is quite fluid.

Towards Christchurch Hospital, architectural enclosure has not the same uniformity or dominance of scale, yet, there is no loss of visual quality. The old buildings on Oxford Terrace are highly imageable and have a unique element of quaint charm. They are predominantly wooden, and again have strong historical associations. In general, the new architecture is in scale, and not obtrusive. Discord occurs when the old structures are insensitively "done up" with garish commercial signs and conflicting colour schemes.

Here, a dramatic and new architectural scale is being introduced into Cambridge Terrace. Two very tall (by Christchurch standards) high-rise apartment blocks overlook the river. They are of cuboid form, stark and white, and rise majestically above the surrounding skyline. Although not a block apart, they do not overwhelm their surroundings but rather complement and strengthen them through reorganising and articulating the spatial volumes. From across the river above the rounded banks, and seen through a tracery of branches, they are pure abstract form in space.
(7) **Victoria Square**

This is analysed and described in detail in the Design Philosophy.

(8) **Cranmer Square**

Basic simplicity is the theme and the essence of its high environmental quality. It is unadorned; a large rectangular area of grass, surrounded by a single row of deciduous trees. The adjacent architecture is a mixture of predominantly old, two-storey houses and two schools. With expressive and uncluttered horizontality, strong architectural form is needed to contain any indeterminate continuation. In this context, "strong form" does not imply mass, but rather a continuous facade. The residential development is largely fragmented, and it is here that the square loses its clarity. Space modulation rather than termination is provided by the peripheral trees. The architecture of the schools merely provides restrained, but essential verticality, and also solidarity through the use of brick and stone.

(9) **Latimer Square**

This is geometrically similar to Cranmer Square in overall dimensions, but a busy street bisects it. The square is essentially still an entity; there is enough green
floor space to visually overcome the physical and tonal interruption of the street. Being near the urban core, architectural enclosure is a dominant but disjointed element. The new structures certainly emphasise vertical form and introduce a new scale relationship; but due to their isolation, enclosure is not sustained. It is the basic problem of integration between old and new and if this fails, space definition must also fail.

10 Cathedral Square

The Gothic revival Cathedral, right from the beginning, was to have prominence and pride of place as the "centre" of Christchurch. It was centrally situated within the square to have a dominant centrifugal influence and until comparatively recently, this was certainly the case. The spire was a unique landmark and was constantly referred to for orientation. With the inevitable increase in the height and bulk of adjacent buildings, it became obscured, and lost its singularity. Even within the square, one monolithic cuboid structure has overshadowed, in sheer bulk and mass, the arched form and tapering spire. Future buildings are to have recessed planes to avoid a repetition of this. The Cathedral, associated green space and large plane trees is a composition of
10. Cathedral Square, with Christchurch Botanic Gardens in the background.
high image quality, rich in texture and tone. Sitte \textsuperscript{50} (ca. 1900) stated:

In general the character of a square is determined by one building of special importance.

In Cathedral Square, this essential quality is being gravely threatened.

\textbf{(11) The Triangles}

These are of very little significance in the total urban structure. They are a place to pause, and wait for the "cross now" signal while striving for orientation. It is essentially a question of scale, and the sheer weight of adjacent buildings and the expanse of adjacent asphalt overwhelms them. Certainly, spatial dimension is no criterion of human scale, because some of the finest and most human spaces are small and intimate. It is the disruption through traffic and the axial opening up by streets that destroys the human environment. In this situation, it is just sheer size which can create a pedestrian precinct. The space must accommodate features of human scale such as seats and differing forms and textures, to give security and reassurance. This applies to one triangle, which had the size to accommodate these elements. Ornamental retaining walls and the use of annuals are essentially of home garden scale and can never
equate the urban and human scales.

3. INTEGRATION OF THE WHOLE

The paths, the network of habitual or potential lines of movement through the urban complex are the most potent means by which the whole can be ordered. - Lynch 51

With the characteristic lineal space form of urban Christchurch, the nodal areas or joints which connect and articulate these spaces are vitally important. This is the particular strength of the Carlton Mill Bridge-Papanui Road/Bealey Avenue area, and also Hospital Corner. They are all focal points of convergence and divergence in traffic flow. In each case there is a theme which concentrates nodal enclosure, that of a strong association between trees and architecture. Lynch points out that if paths enter at a defined joint then ties can be made - the observer feels the presence around him. The presence of dynamic activity is characteristic of all and also there is an intensification and channelling of space, from the large-scale composition of Hagley Park to the characteristic lineal form of the river. These nodes are readily conceptualised and related to the urban form which precedes and follows them. Lynch (1960) 52 states:

Such linkages can structure substantial city regions.

Apart from the triangles, the urban space pattern has a very special cohesive influence
on the total urban structure. Understandably this varies considerably in significance, but even the very mediocre section of Fitzgerald Avenue has a definite sky-line influence with the tracery of branches above the disjointed roofline. To cross the avenue is an episodic stage on the journey into or out of the city.

The Cathedral is a strong and legible focal point from both the eastern and western sections of Worcester Street. In fact, between Latimer Square and the Cathedral, the spatial inter-relationship is particularly strong. This is due, in part, to a linkage between tree form, but more to the highly structured nature of Worcester Street near the square. Expressive facades form an interconnecting corridor, which has its own very distinct quality. To the west, although the distance is far greater, the museum is a strong terminal feature, at the end of Worcester Street and there is a definite linkage between the architectural form and tonings of both the museum and cathedral. Inflection is very important in street design and when there is a terminal feature, the street frontages become a frame. 53

Inflection is also a very important quality of Latimer and Cranmer Squares. Their strength is fully realised when they are looked into and of course the more positive the enclosure, the greater the power of inflection. Sitte (ca. 1900) points out that, "parks need the benefit of
II. The Cathedral from Latimer Square.
enclosure just as buildings do".  Although Latimer and Cranmer Squares fit within the grid-iron, their placement across an axis allows their spatial influence to be disseminated beyond their confines. This is typified by the spatial cohesion between Cranmer Square and Lark Terrace. Although this weakens containment, if the inter-axial enclosure is positive, the square will retain its essential quality.

Hare (1968) observed:

A study of urban spaces in Salzburg, Innsbruck, Bern, Murat, Gegenbach, and many other cities indicates that the architectural quality of the individual buildings framing the spaces is not of major importance. The whole feeling of the space - the sense of enclosure - results directly from the proportions of the spaces and the outline and silhouette and colour of the building groups. Individual buildings can be replaced without any loss of character, provided that the form and colour of the whole group of buildings is respected.

There is the unique and essential quality of the old buildings as perceptual anchor points.
It is certainly not dominance in scale and skyline one associates with new structures of high image quality. Their presence is perhaps more memorable and less physical, more thought provoking and human. This is exemplified in Rolleston Avenue, and in the old building groups by the river.

Lynch states:

> When two strongly contrasted regions are set in close juxtaposition and their meeting edge is laid open to view, then visual attention is easily concentrated.

This is the basic strength of Park Terrace, a stimulating line of demarcation between free, and structured geometric form, thereby introducing a unique environmental quality to the total urban pattern of the western city.

The Avon River introduces a unique environmental quality to the inner city. This is a continuing theme of spatial sequences varying from stark simplicity to highly structured intricacy; it is punctuated by sculptured tree-form and rich architecture. The real essence of its singularity is, however, the water itself.
Garret Eckbo alarmingly, yet perhaps realistically, sees the process of urbanisation as being:

Today the final criterion of the quality of our physical environment must be the relations it establishes between the primary elements:

Structure - buildings, streets, roads, highways, parking areas, utilities above and below ground.

Open space for pedestrians.

Nature, represented by ground forms, rocks, plants, water.

It is well known that the process of urbanisation tends to maximize the first, minimize the second and eliminate the third.  

This would be too harsh a criticism for contemporary Christchurch, but it does show the need for a real awareness of the process of urban conservation. Here the term is used in a progressive sense and not strictly as preservation. The ONLY public spaces in urban Christchurch, not physically separated from enclosing architectural form, are the precincts associated with the existing Law Court Complex and the Provincial Council Chambers. The river
8 small trees on Town Hall site to be removed

Eight small trees along the river banks on the Town Hall site are to be removed, because "by their very position, they are out of scale with the Town Hall building."

The Christchurch City Council decided this last night after hearing a report from its parks committee on the subject.

The committee reported that landscaping around the Town Hall was progressing favourably, and that the large trees, which complemented the building, would be left.

"Most of the trees within the existing Victoria Sq pattern are silver birch, but along the Cambridge Tce side of the river bank immediately in front of the Town Hall are two large trees (a tulip and an elm), two New Zealand cabbage trees, and eight small spring flowering trees.

"Consideration has been given to the impact which the Town Hall has upon the whole scene of Victoria Sq, and of concern is the number of small spring flowering trees, which by their very position are out of scale with the Town Hall building.

"By removing these trees the view of the Town Hall from Victoria Sq will be enhanced and visually the building will appear even more so to be a part of the whole Victoria Sq scene."

[...]

[The rest of the text is not visible in the image]
is contained between Oxford and Cambridge Terraces for their entire length from Fitzgerald Avenue to Hospital Corner. Jollic and Thomas were certainly not aware of the profound influence this would subsequently have. It was, unwittingly, a unique opportunity lost and its loss will always be incalculable. Had the environmental potential of the river been fully realised, the river precinct could have been developed as the social nucleus of Christchurch. It could have been structured with well designed public buildings, entertainment and accommodation facilities, connected by viable spatial sequences, patterned with trees, grassed landform, and paved areas. The old City Council Chambers, on the corner of Worcester Street and Oxford Terrace offer a tantalising glimpse of this potential, but its isolation is mute evidence of environmental potential in the most human sense, unrealised.

Lynch states:

A city is inherently a much richer and diverse habitat than most rural areas but it rarely appears to be so. Objective differences of activity, history and culture are glossed over and submerged.

The one remaining opportunity for comprehensive development lies in Victoria Square as a whole. The Town Hall is in intimate association with the Avon River and the restaurant overlooks the water. Although the scale is less than that visualised on the above page, the inter-relating factors are here: space, trees, sculptured bank, expressive architecture, and water. The vital need, therefore,
I2. Old Christchurch City Council Chambers, on the corner of Oxford Terrace and Worcester Street.
is to seek a unity between them, and the social needs of the complex. With such a close physical relationship to the urban core and Cathedral Square, a re-organising of circulation patterns within Victoria Square is an essential step in any design concept. Stage 2 of the Civic Complex will, in the future, be built over Victoria Street (refer Victoria Square: Drawing No. 1). But to think in terms only of recirculating motor vehicles around Victoria Square is disastrously short sighted. The human scale and purpose must be the guiding principle in the design. This is the only way to achieve an integrated composition, within a space currently subservient to a dominating street pattern
I3. Victoria Square, showing the civic complex under construction.
CHAPTER VI
DESIGN PHILOSOPHY

In the early stages of the design process for Victoria Square, it became very evident that the basic determining factor was the mode and alignment of access to the Civic Complex. Victoria Street in its existing form does give direct access, and this certainly offers distinct advantages from a functional viewpoint. However, when this was carefully equated with the immeasurable environmental cost to the total composition, it was clear that this diagonal bisection was the one element which would negate all those factors associated with a unified design. The movement of vehicles to and from the Civic Complex, and a parking conglomerate in front, would be quite incongruous. The space would become one of the innumerable civic spaces subject to intrusion. This would destroy, in particular, the visual impact and clarity of architectural form. To maximise this, the design must be a statement of utter simplicity in all respects.

Thus, an unobtrusive, more fluid, and exclusively pedestrian circulation system was designed.
Although grade separation was initially considered, where it intersected Oxford Terrace, this would have detracted from the essential foreground element of horizontality. The absence of cross-vehicular traffic also makes possible a more continuous enjoyment of the architecture by motorists using Oxford Terrace.

Main vehicular access to the Law Court Complex is from Armagh and Durham Streets; and to the Civic Complex, from Kilmore Street. Here also, a pedestrian entrance of high design quality replaces that section of Chester Street West.

The resultant absence of traffic conflict and congestion within the central part of Victoria Square, has allowed fulfilment of its rich potential. Pure architectural form, bold, stark, precise and dramatic, rises from uncluttered horizontal green space and sculptured river bank, soaring gracefully above predominantly rounded tree-form.
APPENDICES

APPENDIX A  Some Further Information on Commercial Zoning within the Study Area: as outlined in the "District Scheme".

C.3 Zone  "Physically this zone lies in an arc along the north-western side of the Avon River, and embraces the proposed Government and Postal Centre, the Supreme Court and associated buildings, and the complex of Civic Buildings including the proposed Town Hall, Concert Chamber, and Library site. The predominant character of the zone is intended to be office/institutional, although a full range of other type predominant uses are provided for. A plot ratio of 1.5:1 and a site coverage of 70% are imposed, the express intention being to encourage open type developments of limited intensity which will blend with the special amenity areas, and act as a transition between the intensive C.B.D. commercial activities and the Residential 5 zone west of Montreal Street.

C.4 Zone  This zone surrounds the core, or C.5 zone, but less intensive development is permitted than in the C.B.D. core. Pure retail uses are expected to be less significant than office, warehouse, manufacturing and showroom types of development. The plot ratio control is 3.5:1 and in order to encourage developers to provide more space at ground level as plazas, arcades and setbacks for the use and convenience of pedestrians, provision has been made in the Code for a special floor area bonus. Off-street loading and service lane provision is encouraged on the same basis.

C.5 Zone  This zone embraces the core of the C.B.D. and is designed to provide for a great variety of retail, office, administrative, entertainment, institutional, residential, manufacturing and associated functions which serve the entire metropolitan region. The plot ratio at 5:1 is intended to maintain the high density of development in the C.B.D. while encouraging better design and better distribution of multi-storey buildings. Floor space bonuses for the provision of tower blocks or free space at ground level are provided for.
Special Shopping Streets: Suburban shopping centres are able to offer easy access, lower costs, modern premises, pleasant and safe surroundings, and the segregation of cars from pedestrians. In order to bring these advantages to the city centre, certain streets within these zones have been designated as Special Shopping Streets. On re-development, the provision of retail frontages at ground level will be compulsory, and it is envisaged that plot ratio bonus provisions will encourage the development of pedestrian courts in conjunction with such retail activities.
AFFENDIX B

Some Further Information on Plot Ratio Control

The publication "Christchurch Development", states: "The density of a building is expressed as a ratio of the total floor area built on a site to the area of the site. For example, a building one storey high covering the whole site would have a plot ratio of one; a building four storeys high covering the whole site would have a plot ratio of four, but a building four storeys high covering only half a site would have a plot ratio of two. In the last case, the floor area is twice the ground area".

Burren (1969) in "A Businessman's Guide to Town Planning", states that:

"The last and often dominant requirement which governs the location and volume of a building is that of the maximum permissible "Plot Ratio". He then goes on to say: "The basic reasons for a council establishing such a plot ratio, whatever the figure may be, are two fold; in the knowledge that building volume is created for people to work in and visit, means that vehicular traffic will be used by many of those people. The generation of such traffic and the space required for parking stationary vehicles must be controlled as much as possible in order that the street pattern can cope efficiently"."
APPENDIX C The Bulk and Location of Central City Buildings

The publication "Christchurch Development" states: "A concentration of all new office space in a few large buildings, however, has very detrimental affects upon the centre generally. An office block of 100,000 square feet can generate a demand for 200 parking spaces. A whole city block developed to 8 stories can generate a demand for almost 3,000 parking spaces. Concentrations of large buildings can overload utility services; they can funnel wind down 'canyons' at speeds up to three times that of the prevailing wind; they tend to get more than their fair share of light and air and keep streets in almost permanent shadow.

The total bulk or density of buildings can be controlled by restricting their 'plot ratio' without restricting height. Lot ratio control can:

- encourage development of cheaper sites a little further from the heart of the city;
- check the loss of value in outer central business districts;
- spread the growth of office space;
- reduce traffic congestion; and by encouraging tall, slimmer buildings, rather than bulky buildings, reduce the shading effect and domination of surrounding property."
APPENDIX D  Some Further Information on Traffic Analysis and Forecasting as described in the Publication: "Traffic in a New Zealand City"

Survey

Basic information gathered at this stage concerned the origin and destination of all journeys; the mode of transport; time of day, and purpose of the journey. This was treated in the broad sense, and included pedestrians, passengers in private cars, and all modes of public transport. A representative portion of the data was selected and processed in such a way as to simulate the total, average weekday, pattern of movement. The results indicated areas of major traffic flow, with relevant data on parking. From this current information, an assessment was made of the variety, scale and type of facilities that were thought to be required for a particular time in the future.

It is unsatisfactory to directly multiply the present number of movements as it does not allow for the inevitable fluctuations in urban growth. In addition to this, modes and purposes of travel may alter with urban growth and advances in transport technology. A valid forecast requires the description of the quantity, direction, mode and purpose of future traffic.
A daily rhythm in the movement of people and goods is inevitable where there are work places, shopping facilities, and recreation spatially separated from one another. It was, therefore, assumed that in estimating future traffic, there is a direct relationship between traffic density and distribution and land use. An inventory of land use was the second part of the survey, because future land use patterns and expansion are closely inter-related with future traffic patterns. Finally, there was an analysis of the capabilities of existing public and private transport facilities to handle increased loads. A comparison of predicted traffic patterns, with existing street capabilities indicates what additional transport facilities will be required.

Forecast

This required the projection of population and employment, the estimates of which were related to the distribution of current land uses, in order to locate the future distribution of residential and other activities. The type, density, origin, and destination of future traffic depends upon the location of land uses. As a result of detailed and complex analyses of this information, the predicted trip generation, expressed as the number of person/trips, then had to be applied to the various parts of the city. This therefore, revealed the inadequacies and conflict points and laid the basis for future traffic planning.
Appendix E  Information on the Future Roading Hierarchy, as outlined in the "District Scheme"

(a) Motorways
These will be the backbone of the network and will be designed for motor vehicles only. All intersections will be grade separated and there will be no direct property access on to the carriageway.

(b) Arterial Roads
These will have high design and lighting standards, primarily for vehicles making longer trips. The intersections will not be grade separated, and there will be limited access from private property. The construction of a median strip will be normal practice.

(c) Limited Access Roads
Certain arterial and primary roads may be declared as limited access roads, and for private properties, it would be necessary to provide alternative access.

(d) Primary Roads
These will still carry traffic of a reasonably high density on long trips. The engineering standards will be high, but there will be less stringent requirements on access, loading and parking.
"Wherever possible, these roads form the boundaries of 'environmental areas' and efforts will be made to avoid the severance of facilities from the communities they serve".

(e) One-Way Streets

This will eventually involve eight streets, comprising four pairs; each pair carrying opposing traffic, encompassing the central business district.

(f) Secondary Roads

These will be local distributors, quite often bus routes, and will include many suburban roads.

(g) Local Roads

These will account for the remainder of city streets.

(h) Service Lanes

Between buildings.
APPENDIX F  Cathedral Square Proposals

The following information is from the publication, "Christchurch Development"

"Several years ago the city council held an architectural competition for the beautification of Cathedral Square, and accepted a design which maintained the gyratory traffic system but eliminated the central north-south road. During the detailed design stage, it became apparent that the subways which the winning designers recommended as an ultimate requirement should be constructed during the major construction work, but the provision of an adequate subway system was not publicly acceptable. Consequently, a further proposal is submitted which is in accordance with the concepts outlined by Professor Colin Buchanan in his "Review of Planning in Christchurch".

Accepting that traffic should have a more limited function in Cathedral Square, the possibilities for re-development are very great. Large areas freed from traffic can be landscaped and made more attractive to citizens and visitors. The Square can become a true city centre; a place of relatively free pedestrian movement; a meeting place; a place to sit and relax; a place to hold meetings and celebrate great occasions.

Pedestrian precinct schemes have been implemented overseas, but frequently criticised as being vast expanses of pavement with little to hold the interest of pedestrians in the absence of liveliness and activity. This cannot happen in Cathedral Square. The layout proposed retains some traffic, especially buses and taxis, has a strong pedestrian movement and incorporates features of interest: stalls, fountains and small buildings. The large space is broken up into smaller, more intimate areas by changes in level made possible by the 4 feet east to west crossfall, by changes in texture in paving, by planting and seats. The 'Four Ships' motif suggested in the competition design is incorporated in a different way."
REFERENCES


6. Ibid., p. 44

7. Ibid., p. 12


10. Ibid., p. 9


12. CHRISTCHURCH CITY COUNCIL (1968) District Scheme C.C.C., Christchurch. p.2
14. Ibid., p. 10
15. Ibid., p. 43
17. CHRISTCHURCH CITY COUNCIL (1967) Christchurch Development, C.C.C., Christchurch. p. 74
18. Ibid., p. 12
19. Ibid., p. 14
20. CHRISTCHURCH CITY COUNCIL (1968) District Scheme. C.C.C., Christchurch. p. 6
21. Ibid., p. 10
23. Ibid., (In the Foreword)
24. Ibid., (In the Foreword)
25. Ibid., (In the Foreword)
27. Ibid., p. 67
28. CHRISTCHURCH CITY COUNCIL (1968) District Scheme. C.C.C., Christchurch. p. 19
29. CHRISTCHURCH CITY COUNCIL (1967) Christchurch Development. C.C.C., Christchurch. p. 6
30. Ibid., p. 68
31. CHRISTCHURCH CITY COUNCIL (1968) District Scheme. C.C.C., Christchurch. p. 14
32. Ibid., p. 19
33. CHRISTCHURCH CITY COUNCIL (1967) Christchurch Development. C.C.C., Christchurch. p. 59
34. CHRISTCHURCH CITY COUNCIL (1968) District Scheme. C.C.C., Christchurch. p. 16
35. CHRISTCHURCH CITY COUNCIL (1967) Christchurch Development. C.C.C., Christchurch. p. 72
40. CHRISTCHURCH CITY COUNCIL (1968) District Scheme. C.C.C., Christchurch. p. 20
41. CHRISTCHURCH CITY COUNCIL (1967) Christchurch Development. C.C.C., Christchurch. p. 37
42. Ibid., p. 41
43. CHRISTCHURCH CITY COUNCIL (1968) District Scheme. C.C.C., Christchurch. p.21
44. Ibid., p.22
47. CHRISTOPHER TUNNARD (1953) The City of Man. Quoted in Urban Landscape Design by
52. Ibid., p.103
   Conservation of Historic Cities in Europe by Richard Hare. From: Conservation and Development


Scientific American Inc., N.Y. p. 209
BIBLIOGRAPHY


ANGLIN, WILLIAM J., AYERS, COLLIER G., BOFFA, FRANK D. (1968) Revitalization Project for Conee River, Athens, Georgia. A Terminal Iroblem presented for the Degree, Bachelor of Landscape Architecture, University of Georgia.


CHRISTCHURCH CITY COUNCIL (1968) District Scheme. C.C.C., Christchurch.


OILYNEIN, R. S. (1969) Planning the City - A Sociological View. From: Town Planning and It's Effect on Our Environment. Proceedings of a Seminar held at the University of Waikato.


