

SQUAMISH INDIAN BAND CAPILANO RESERVE NO5 URBAN DESIGN STUDY

**DEPARTMENT OF INDIAN AFFAIRS
B. C. REGIONAL PLANNING**

**E. J. GABOURY & ASSOCIATES
ARCHITECTS-URBAN DESIGNERS
NORTH VANCOUVER, BRITISH COLUMBIA**





Indian and Northern Affairs
Affaires indiennes et du Nord
Indian Affairs ~~Affaires~~ indiennes

Alain M. Cunningham
Regional Planner, B.C.-Yukon

P.O. Box 10061
Pacific Centre Ltd.
700 West Georgia St.
Vancouver, B.C. V7Y 1C1
666-1709



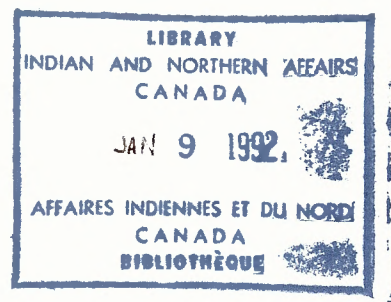
Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

LIBRARY - BIBLIOTHÈQUE

10-482 (1-88)
73
109
E54
Squawish Indian
Band Capilano

10-482 (1-88)

E 78
.B9
E54



SQUAMISH INDIAN BAND CAPILANO RESERVE NO5 URBAN DESIGN STUDY

**DEPARTMENT OF INDIAN AFFAIRS
B. C. REGIONAL PLANNING**

**E. J. GABOURY & ASSOCIATES
ARCHITECTS-URBAN DESIGNERS
NORTH VANCOUVER, BRITISH COLUMBIA**



SQUAMISH INDIAN BAND

345 WEST 5TH STREET, NORTH VANCOUVER, B.C.
TELEPHONE 985-7711

The Squamish Indian Band has experienced a period of unprecedented growth and development over the past ten years. During this period, the Band Council assumed a greater degree of control and responsibility over every aspect of Band affairs. Today, a wide range of programs, community services and development projects are now administered by a large and dynamic organization. A practical result of this activity has been the development of the Band's organizational, managerial, negotiation and financial skills. The most significant result of this process, however, has been the development of the Band Council's ability to set goals, determine policy, make plans and provide direction for the social, political, legal and economic advancement of the Squamish Indian Band.

In terms of economic development, the Band Council decided to place a freeze on the undeveloped and unleased lands of the Band. This policy has been in effect since 1964. The purpose of the land freeze was to enable the Band to develop its legal and local government powers under the Indian Act. To a large extent, this aim has been realized and a number of by-laws, regulations and permits have been passed by the Band Council, primarily in the field of economic and land development. Another reason for the land freeze was to enable the Band Council to develop policy in the areas of land use planning and land development.

In this regard, the Band Council commissioned the URBAN DESIGN STUDY for the purposes of examining the land use planning and potential of CAPILANO INDIAN RESERVE NO. 5. Both the Band and the Department of Indian Affairs shared in the cost of the study.

PREFACE

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

The development of "Indian Lands", of course, attracts attention and generates much discussion. Especially, if those lands happen to be the lands of Capilano Indian Reserve No. 5. The Band Council recognizes this reality. In recent years, for instance, we have heard and received the views of local politicians, citizen groups, planners, developers and promoters about the future use of our land. We have considered and examined these views with interest. The fact remains, however, that the future of Capilano Indian Reserve No. 5 rests with the Squamish people. And the future of the Squamish people depends, to a large extent, on the development of a solid economic base. While our ten year land freeze was in effect we witnessed the rapid growth of the entire North Shore. We can no longer remain docile and dormant and watch other municipalities take advantage of this growth. The needs of our people are too great and many. Although the URBAN DESIGN STUDY may not be the answer to all our problems it represents a step in the right direction and is consistent with our view of improving the economic, social, legal, and political conditions of the Squamish Indian Band.

SIGNATURES OF SQUAMISH BAND COUNCIL:

Chief Philip Joe

Chief Philip Joe

Chief Joe Mathias

Chief Joe Mathias

Daniel Baker

Simon Baker

Simon Baker

Charles Billy

Charles Billy

David Jacobs

David Jacobs

Tony Moody

Tony Moody

Percy Paull

Percy Paull

Chief Norman Joseph

Chief Norman Joseph

Chief David G. Williams

Chief David G. Williams

Sam Baker

Sam Baker

Chief Gordon Band

Gordon Band

Ross George

Ross George

George Jacobs

George Jacobs

Glen Newman

Glen Newman

Frank Rivers, Sr.

Frank Rivers, Sr.

E. J. GABOURY & ASSOCIATES
ARCHITECTS & URBAN DESIGNERS

September 30, 1976

Chief Philip Joe
Economic Development Officer
Squamish Indian Band

Mr. Alain M. Cunningham
B.C. - Yukon Regional Planner
Department of Indian Affairs
B. C. Regional Planning

Gentlemen

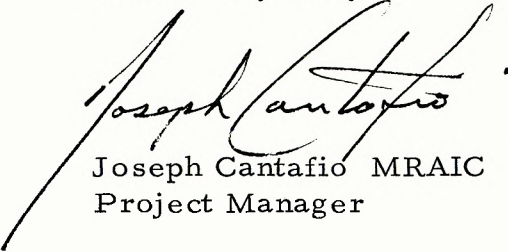
We are pleased to submit this report on the planning and urban design study for Capilano IR5.

Consistent with the objectives of our mandate, we have endeavoured to respond to the needs and aspirations of the Squamish people and to give dimension to the development potential inherent in Capilano.

The land resources of IR5 together with the Band's human resources are very considerable. An opportunity exists for the Squamish Band to finally establish their rights, reveal the beauty and strength of their heritage and demonstrate with startling conviction, the wisdom and sensitivity of the first citizens of this land.

We have found our involvement most challenging and stimulating, and trust that the concepts detailed in this report will prove fruitful in the meaningful development of the subject lands. We acknowledge with thanks the assistance given us by various individuals, agencies and consultants, but especially members of both the Squamish Band Council and Committees, and the Department of Indian Affairs Planning Office.

Yours very truly



Joseph Cantafio MRAIC
Project Manager

TABLE OF CONTENTS

PREFACE - By The Squamish Indian Band Council

Cover Letter

① INTRODUCTION

Glossary of Terms and Abbreviations.....	1
Acknowledgements.....	2
Project History.....	3
The Planning & Design Process.....	4
Bands Statement of Intentions & Development Objectives.....	5

② REGIONAL CHARACTERISTICS

Unique Features.....	6
Areas of Influence.....	7
G.V.R.D. Concepts & Observations.....	8
Developing North Shore Centres & Implications for IR5.....	10
Existing Movement Systems.....	11

③ CAPILANO IR5 SITE

Site Description.....	12
Site Photographs.....	13
Natural & Man-Made Determinants.....	16
Land Availability.....	17
Legal Encumbrances.....	18

④ CONCEPTUAL RESPONSE

Initial Conceptual Response.....	19
Further Refinement.....	20

⑤ DEVELOPMENT OPTIONS

Variables and Description of Main Options.....	21
Selection.....	22

⑥ OVERALL DEVELOPMENT PLAN

Major Land Use Concept.....	23
Qualifications & Elaborations.....	24
Development Strip Cross-Section.....	25

⑦ SECTOR THREE DEVELOPMENT PLAN

Major Land Use Concept.....	26
Component Areas.....	27
Housing Cross-Section.....	29
Office-Commercial & Community-Recreation Cores.....	30
Complete Sector Three Development.....	31

⑧ DEVELOPMENT PROGRAM

Overall Program Summary.....	32
Major Land Uses & Land Use Comparison.....	33
Detailed Overall Development Program Charts.....	34
Service Facilities.....	35
Zone Program Summary for Sectors 2, 3 and 4.....	36
Sector 3 Detailed Program.....	37

⑨ PHASING

Short Term Circulation.....	38
Long Term Circulation.....	39
Phasing.....	40

⑩ IMPLEMENTATION

Proposed Plan.....	42
Confirmation and Adoption of Plan.....	43
Broad Issues.....	44
Specific Sector Issues.....	45
Development Controls.....	46
Further Technical Studies.....	47

BIBLIOGRAPHY

APPENDIX

A. Program Research.....	A1
B. Description and Assessment of Development Options.....	B1
C. Non Residential Support Facilities.....	C1
D. Technical Research Summaries.....	D1
Geotechnical.....	D1
Utilities.....	D2
Transportation.....	D3
Environmental.....	D5
Structural - Airspace.....	D6
Economic - Airspace.....	D6
Education Facilities.....	D7

CHAPTER I INTRODUCTION

GLOSSARY OF TERMS

A. DEFINITIONS

Cut-Off Lands (DL5521)

Refers to a 132 acre parcel of land that was taken away from the Capilano Indian Reserve No. 5 in 1921 by Provincial and Federal legislation as a result of the 1913-16 McKenna-McBride Royal Commission on Indian Affairs. This action was executed without the Squamish Band's consent and they are currently pursuing the return of the subject lands.

Floor Area Ratio (F.A.R.)

For purposes of this study, floor area ratio is defined as the total usable area (commonly referred to as net floor area) of all floors or storeys, divided by the area of the site. Amenity spaces such as pedestrian malls and plaza are not included.

Net Acres (Used in tables on pages 33 and 36)

The land area required to accommodate a group of buildings and their associated open space and service areas. Not included are common space (ie major parks, landscape buffers, etc.) and common service areas (ie. local roads and throughways, utility easements etc.).

Gross Acres (Used in tables on page 33)

The entire land area required to accommodate all of the components of a particular land use.

Lower Level Road

A new east-west road which is proposed to extend from West Vancouver to the Second Narrows Bridge and be located between Marine Drive - Third Street and the B.C. Railway line.

A report on this proposal was prepared by Phillips Barratt in October, 1975 titled, "Report on a Lower Level Road on the North Shore of the Burrard Inlet".

Mass Transit

Any publicly or privately operated transportation system that delivers more than 3 persons per vehicle.

Rapid Transit

A mass transit facility which is operated on an exclusive right-of-way and is capable of delivering at least 5,000 persons per hour, per lane, in any one direction.

B. ABBREVIATIONS

ARP	- Air-Rights Potential
B.C.R.	- British Columbia Railway
D.O.E.	- The Federal Department of the Environment
DU's	- Dwelling Units
F.A.R.	- Floor Area Ratio (see Glossary of Terms for definition)
G.V.R.D.	- Greater Vancouver Regional District
G.V.S. & D.D.	- Greater Vancouver Sewerage and Drainage District
IR5	- The Capilano Indian Reserve Number 5
MSF	- Million Square Feet
R.O.W.	- Right-of-way (e.g. railway, road, etc.)
S.F.	- Square Feet
S.F.D.	- Single Family Detached Dwelling Unit

ACKNOWLEDGEMENTS AND STUDY PARTICIPANTS

PROJECT CO-ORDINATORS

Squamish Band	Chief Philip Joe
Department of Indian Affairs	Alain M. Cunningham
E. J. Gaboury and Associates	Joseph Cantafio

STUDY TEAM- PRIME CONSULTANTS

E. J. Gaboury	Partner-in-charge
Joseph Cantafio	Architect-Urban Designer
Garry Nielsen	Planning Consultant
Daniel Chow	Assistant Architect

STUDY TEAM- SUB CONSULTANTS

Initial Site Analysis	Mr. Philip Tresch - Landscape Architect (D.I.A.)
Traffic	Zoltan Kuun Associates
Utilities	Associated Engineering Services Ltd.
Geotechnical	Klohn Leonoff Consultants Ltd.
Environmental	Tera Consultants Ltd.
Structural	Boque Babicki and Associates Ltd.
Economic	Department of Indian Affairs Mr. David G. Sparks Mr. Lewis Wong

PHOTO CREDITS

Site Photographs	Philip Tresch
Model Photographs	Joseph Cantafio
Graphics and Charts	Daniel Chow
Typing	Rachelle Dupas Lucille Conrad

Graphic Symbol on Cover by Artist STAN JOSEPH, courtesy of the Squamish Indian Band.

BAND COUNCIL AND COMMITTEE MEMBERS

The Following list, taken at time of printing, details in alphabetical order the individual members of both Band Council and Committees. Their valuable contribution to this study is gratefully acknowledged.

LOCAL GOVERNMENT COMMITTEE

Band Manager - Percy Paull	Chief Philip Joe
Legal Adviser - J. Paul Reecke	Chief Joe Mathias
Consultant - Jack Egger	Simon Baker
	Jack Egger
	Dave Jacobs
	J. Paul Reecke
	Frank Rivers Sr.

LIST OF COUNCILLORS

Chief Philip Joe
Chief Norman Joseph
Chief Joe Mathias
Chief David George Williams
Daniel Baker
Sam Baker
Simon Baker
Gordon Band
Charles Billy
Ross George
David Jacobs (Chairperson)
George Jacobs
Tony Moody
Glen Newman
Percy Paull
Frank Rivers Sr.

DEVELOPMENT COMMITTEE

Chief Philip Joe (Chairperson)
Chief Joe Mathias
Peter Baker
Simon Baker
Jack Egger
David Jacobs
Melvin Nahanee
Vernon Nahanee
William Nahanee Jr.
Percy Paull (ex-officio)
J. Paul Reecke
Frank Rivers Sr.

SOCIAL ACTION COMMITTEE

Chief Philip Joe
Chief Joe Mathias
Frank Baker
Lance Baker
Peter Baker
Simon Baker
Jack Egger
Lois Guss (Chairperson)
Andrea Jacobs
David Jacobs
Gordon Jacobs
Virginia Jacobs
Frank Rivers Sr.
Pauline Spence

HOUSING COMMITTEE

Chief Philip Joe
Chief Norman Joseph
Chief Joe Mathias
Chief David George Williams
Dennis Baker
Simon Baker (Chairperson)
Jack Egger
Albert Guss
Andrea Jacobs
David Jacobs
George Moody
Glen Newman
Gordon Newman
Frank Rivers Sr.

PROJECT HISTORY

Throughout the past years, the Squamish Indian Band has demonstrated both great interest and concern over the future use of Capilano IR5. The land has been the subject of numerous reports, proposals and briefs. The more noted and recent of these are perhaps the Acres Report (1968), the Capilano Comprehensive Development Report (1969), and the West Vancouver Development Concept (1971). Further, a Capilano Development Study Committee was formed in 1970 as a vehicle for exchanging views and information pertaining to IR5.

ACRES REPORT (1968)

Acres Western were retained to determine and evaluate the highest and best use of all three Squamish Reserves on the north shore of Burrard Inlet (Capilano IR5, Mission IRI and Seymour IR2). Two-dimensional land use plans were outlined together with minimum and maximum development programs for the Band's consideration.

CAPILANO COMPREHENSIVE DEVELOPMENT REPORT (1969)

Due to a common interest in IR5, both the Squamish Band and Park Royal Shopping Centre formed a joint Development Committee to consider the development and administration of IR5, the Cut-Off Lands and the Park Royal lease lands. The Vancouver office of Wade Stockdill Armour and Blewett was retained to produce a comprehensive three-dimensional program and concept focussing primarily on the Capilano River and the lands north of the B.C. Rail right-of-way.

A positive outcome of this endeavour was the formation of Kapilano Salish Ltd., which involved both the Band and Park Royal. The first project realized was Kapilano 100, an 11 storey office building constructed on the banks of the Capilano River.

WEST VANCOUVER- DEVELOPMENT CONCEPT FOR IR 5 AND DLL552I (1971)

West Vancouver's planning staff was instructed by their Municipal Council to prepare a comprehensive development plan for Capilano IR5. The original intent was that the plan would form the basis for a By-Law on Indian Lands. A schematic plan was drawn up along with a three-dimensional model. The plan illustrated the desirable types of development over a 15 to 20 year period. For various reasons outlined in the general objectives of their report, the majority of new development was placed on the east side of the Capilano River.

CAPILANO DEVELOPMENT STUDY COMMITTEE (1970- Present)

The Committee, formed on March 11, 1970, originally consisted of the three North Shore Municipalities and the Squamish Indian Band. Their aim is to discuss and promote satisfactory development of IR5 and DL5521 (Cut-Off Lands). The Department of Indian Affairs and the B.C. Government's Department of Lands were therefore invited to participate. The Committee continues to meet when a specific need arises.

CURRENT STUDY

The Squamish Band Council has been constantly approached by developers from across Canada, the U.S.A., as well as outside the North American continent. Each of the developers was interested in the larger undeveloped parcels of land on IR5.

Band Council, however, recognized that certain questions and issues remained unsolved in both the previous reports and developer proposals. In March of 1973, with the cooperation of the Department of Indian Affairs, the Band initiated a comprehensive planning and urban design study of the entire lands within IR5.

The Winnipeg office of Gaboury Lussier Sigurdson, Architects and Urban Designers (presently known as E. J. Gaboury and Associates) were retained with a specific mandate to produce both a comprehensive concept and three-dimensional development plan that reflected the aspirations and priorities of the Squamish people. What follows is a 3½ year evolution of that concept and plan.

PLANNING AND DESIGN PROCESS

The Squamish Band's conscious desire to control the future of their lands, and the comprehensive nature of the terms of reference, were the two main factors responsible for the establishment of a process whereby the study evolved through a series of well defined stages and routines. The process, which involved the Squamish Band, the Department of Indian Affairs, and the Prime Consultants, has been a stimulating and rewarding one, with constant debate, assessment and refinement of issues and priorities, and a welcomed exchange of views between all individuals concerned.

The study was divided into a number of steps which reflected sound, methodological practices, and also facilitated effective Band leadership in critical decision making. Beginning with an appreciation of the Band's views, aspirations, and priorities, (Statement of Intentions), the Consultants were able to progressively focus down from regional considerations, through varied site, program and technical determinants, to an initial conceptual response. This initial response, after being thoroughly reviewed, was then refined via an examination of certain development options and additional technical information, into a comprehensive development plan for IR5, and finally into a somewhat more detailed plan pertaining to the Band's uncommitted lands.

Participation was assured by establishing a tripartite coordination team, which reported directly to the Band's Economic Development Committee, and, when appropriate, to Band Council. In this way, all the key personnel remained aware of the study's progress. Actual Band membership participation resulted from a series of periodic presentations, held at all three of the Band's residential reserves, (Capilano, Mission and Squamish). Other Band membership participation at an individual level was fostered by the Social Action Committee. Finally, at the close of every study step, Band Council approval was required before proceeding further.

The study has on specific occasions, been presented to other groups for their information. The initial concept was presented to the Department of Indian Affairs in Ottawa (June 21, 1973), as well as to representatives of West Vancouver, North Vancouver City, and the Provincial Department of Lands (November 29, 1974). A further presentation of the initial concept was made to West Vancouver Council on February 27, 1975 in connection with the Park Royal expansion. The current concept, plan and program, has to date, been viewed by the Band Council and Committees, the Band Membership, the Department of Indian Affairs, West Vancouver Council and Planning Department, the Federal Department of Public Works, and Park Royal Ltd. The entire study is to go once more to the Band Membership, who will have an additional opportunity of reviewing and debating the direction in which their lands are to be developed. Following this process, and at the discretion of Band Council, it is anticipated that the study and report will be made public.

During the course of the study, the Consultants have had occasion to review many and varied issues with a great number of individuals and agencies. Included are the Federal Departments of Environment, including Fisheries and Public Works, the National Harbours Board, the Provincial Department of Highways, and the Provincial Bureau of Transit Services, the Greater Vancouver Regional District, the three North-Shore Municipality Planning Departments, as well as others. A team of Sub-Consultants assisted greatly by providing both expertise and technical data for the study. Further, valuable information was derived from the sources listed in the bibliography. It should be noted, however, that the views, conclusions, and recommendations expressed within this report, are those of the Prime Consultants, following their review with the Squamish Indian Band and the Department of Indian Affairs.

BAND'S STATEMENT OF INTENTIONS

An appreciation of the Band's views, aspirations and priorities resulted from examining and interpreting the broad objectives originally stated by the Band Council in their "Statement of Intentions". Approximately one year ago, these objectives were restated, reconfirmed and/or clarified. The six major objectives and their agreed interpretation by the consultants are as follows:

1. "TO DEVELOP THE LAND TO ITS MAXIMUM POTENTIAL WITHIN THE SOCIAL AND ENVIRONMENTAL GUIDELINES PROVIDED BY THE SQUAMISH BAND"

- a) To respond to the Vancouver and North Shore market so as to attract a significant amount of development in keeping with the Reserve's strategic location.
- b) To overcome obstacles to sound development such as piecemeal and short term projects, and existing physical and legal barriers.
- c) To consider progressive actions such as utilization of air rights and land reclamation so as to increase the band's development area and potential.
- d) To formulate a concept for the entire reserve with additional focus on the Band's "uncommitted" lands.
- e) To design each stage of the plan so that it may be developed independent of the whole but yet in complete harmony with the overall concept.

2. "TO ADVANCE SOCIAL AND ECONOMIC CONDITIONS OF THE SQUAMISH BAND"

- a) To develop opportunities whereby individual projects may be undertaken specifically by Band Members, or the Band or Band Owned Corporations.
- b) To develop plans and projects which afford jobs and job training opportunities for the Squamish people.
- c) To ensure that recreation, shopping and educational facilities which are developed on IR5 will afford the Squamish people better access to such facilities.

3. "TO CREATE A COMMUNITY BASED ON SOUND PLANNING PRINCIPLES WITH AN EMPHASIS ON PEOPLE"

- a) To show how a development system could be created and administered by the Band, in cooperation with the Department of Indian Affairs, in a manner which will achieve the overall aims of the Band for economic and social growth and development consistent with sound environmental principles.
- b) To plan for and encourage the development of a balanced community containing a viable mix of housing, commercial, employment and recreational opportunities.
- c) To encourage an extended and varied activity cycle encompassing a range of uses from active/public to passive/private (commercial, office, residential, entertainment, recreation).
- d) To preserve and make accessible the existing natural amenities of the site.
- e) To encourage the development of adequate transportation facilities (present and future modes), so as to accommodate the proposed development.
- f) Wherever and whenever possible, to separate pedestrian and vehicular movement systems and spaces.

4. "TO ENSURE A COMMUNION BETWEEN MAN AND NATURE"

- a) To retain, expand where possible, and make accessible the natural features and amenities of the site.
- b) To provide extensive open space in conjunction with new developments.

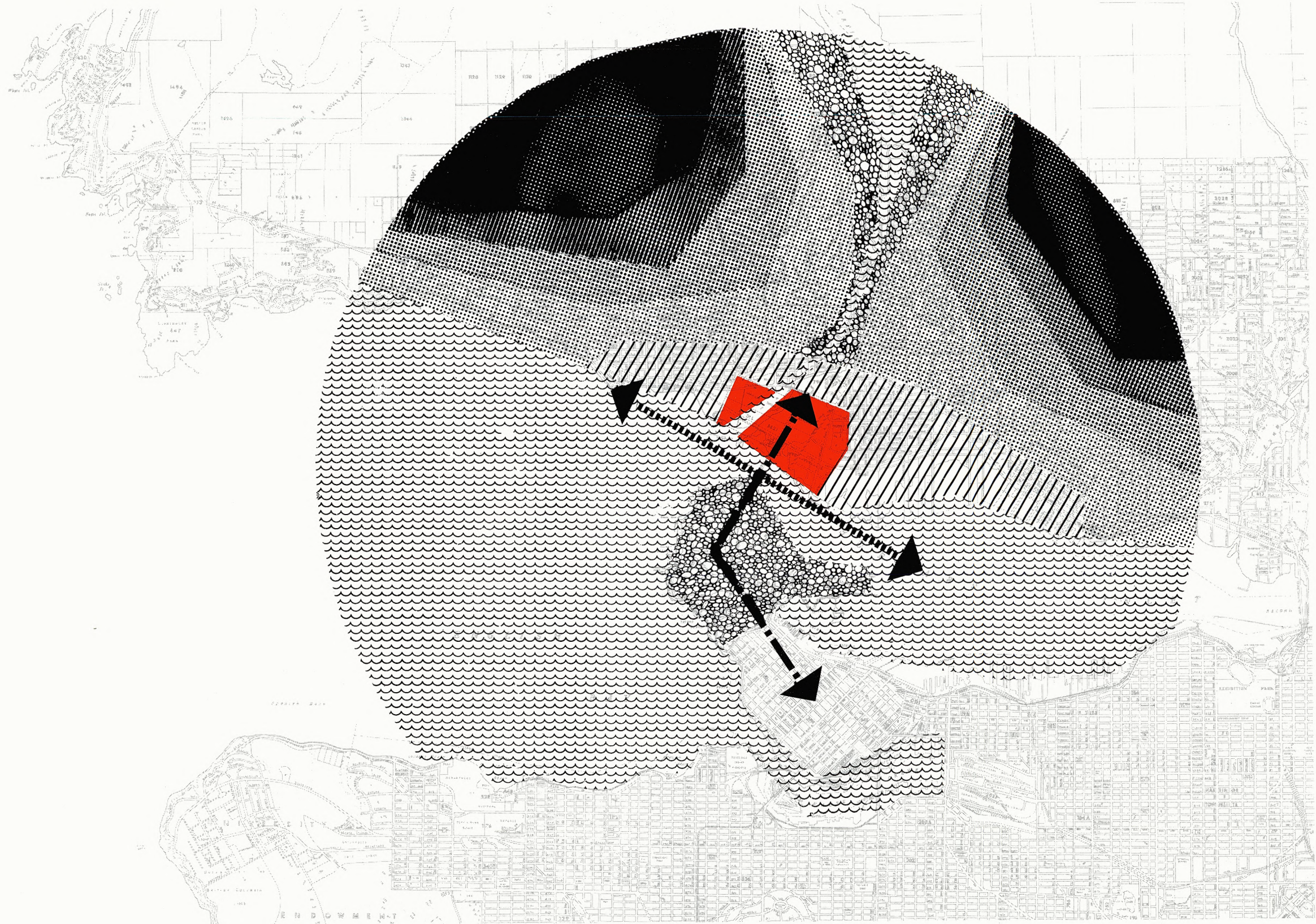
5. "TO SET AN EXAMPLE FOR ALL CANADA"








- a) To give visual and physical form to the Squamish Band's aspirations of initiating a comprehensive and well planned, large scale development.
- b) To prepare a plan which is socially, economically and environmentally responsive.

6. "TO CONTRIBUTE TO CANADIAN CULTURE"

- a) To ensure that the Indian Culture is retained, and indeed, highlighted, within the context of IR5's large scale development.
- b) To prepare a plan which will encourage interaction between Indian and non-Indian cultures.

These objectives formed the basis and direction for a short and long term development concept that embraces the entire reserve lands of IR5.



- | | | |
|---|---|---|
|  MOUNTAIN SLOPES |  CAPILANO I.R. 5 |  WATER |
|  FLAT LANDS |  FOREST & PARK |  WATER GATEWAY |
| | |  VEHICULAR GATEWAY |

REGIONAL CHARACTERISTICS

SQUAMISH INDIAN BAND-CAPILANO I.R. 5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

CHAPTER 2 REGIONAL CHARACTERISTICS

UNIQUE FEATURES

The natural regional characteristics of the West Coast are unique in Canada. Lofty snow-capped mountains, dense evergreen forests, ocean inlets and bays, mountain rivers and streams, as well as a temperate climate, combine to provide a dynamic and most desirable environment.

These unique features are very much a part of the Capilano Reserve. Strategically located on the North Shore, 'Capilano' enjoys a splendid backdrop of mountains and a panoramic view of English Bay, Stanley Park, Burrard Inlet and the downtown Vancouver skyline. Further, the Capilano River, which flows through the Reserve, offers an additional natural amenity.

VALUABLE IR5 ATTRIBUTES

Capilano has other valuable attributes. It is both central to the North Shore and in close proximity to downtown Vancouver. It consists of relatively flat land that is ideal for development. It has considerable commercial, river and inlet frontage. It draws on a significant and expanding residential area and is in an excellent position to benefit from a future Third Inlet Crossing and/or other major transportation development on the North Shore.

SYMBOLIC ENTRANCE

Conceptually speaking, the Capilano Reserve is at the symbolic entrance to Vancouver and the North Shore.

The First Narrows, framed to the north by the Capilano Reserve, to the south by Stanley Park and overhead by the delicate web of Lions Gate Bridge, constitutes a symbolic "water gateway" to one of the world's largest natural harbours and to Vancouver. The Lions Gate Bridge constitutes the original and still most impressive vehicular gateway to the North Shore.



ACTIVITY CENTRE



NATURAL AMENITY



WATER-ORIENTED POTENTIAL



PEDESTRIAN-MOVEMENT SYSTEM

AREAS OF INFLUENCE

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

AREAS OF INFLUENCE

Continuing at a regional level, various areas influence and add significance to Capilano IR5.

From an amenity standpoint, the North Shore features such attractions as the Capilano Canyon Park, Cleveland Dam, Ambleside Park and Beach, Grouse Mountain and the Cypress Bowl, all within minutes of the site. Also, a series of urban concentrations have formed at Dundarave and Ambleside in West Vancouver, the Park Royal area in Capilano IR5, and the Lonsdale commercial strip in North Vancouver City.

Across the inlet, Stanley Park, Robson Street, the Vancouver Business District, Granville Mall, Gastown and the emerging False Creek area add to the array of exciting urban and West Coast experiences.

All these areas offer both constraints and opportunities for the development of IR5. Perhaps the most important influence, however, is the linear waterfront area of Burrard Inlet. It is anticipated by the consultants that Burrard Inlet holds an inherent potential to add yet another dimension to the Greater Vancouver area. The comprehensive redevelopment of the Inlet to include offices, commercial, housing and parks, as well as industry, would permit a more meaningful and intimate relationship between the West Coast urbanite and the significant body of water that presently surrounds him--at a distance. Furthermore, over a period of time, it should be possible and feasible to link the various areas previously described by continuous pedestrian-oriented systems such as walkways, cycle paths, pedestrian walks, and more sophisticated rapid and mass-transit systems.

One can therefore appreciate the significance of Capilano IR5, strategically located on prime waterfront land at one of the potential crossroads of the North Shore.

G.V.R.D. CONCEPTS AND OBSERVATIONS

The Greater Vancouver Regional District (G.V.R.D.) represents and adjudicates regional planning concerns of 17 member municipalities and electoral areas.

In an effort to develop a better balance between the distribution of population, jobs, regional centres, transportation and open space throughout the Region, the G.V.R.D. in its recent (1975) report, "The Livable Region", outlined a five-part strategy for managing growth in the Region. The five parts are:

- 1) To control residential growth targets in each part of the Region for the period between now and 1986;
- 2) To promote a better balance of jobs to population in each part of the Region;
- 3) To create Regional Town Centres in suburban locations in order to bring jobs, shopping and cultural opportunities closer to where people live;
- 4) To provide an appropriate transportation system linking the distribution of residential areas, Regional town centres and major work areas; and
- 5) To protect and develop regional open space in association with other uses.

It should be noted that as the Squamish Band is not represented by the G.V.R.D., the calculations and projections did not include Capilano IR5.

Applying these coordinated policies to the North Shore has the following implications for the development of IR5:

Population Targets

Population targets for 1986 were outlined for the North Shore. In general, these short term targets seek to slow the residential growth rates to a level that can be served by existing and planned transportation services. Recognizing this, any substantial residential development on IR5 will require coordination with regional transportation developments.

Job Targets

In order to improve the balance between the labour force and employment opportunities on the North Shore, job targets for an increase in employment between now and 1986 were outlined by the G.V.R.D. If these short-term targets are achieved, the current ratio between jobs and population on the North Shore will be improved slightly. However, a substantial imbalance will still exist. Accordingly, this suggests that IR5 has a significant potential to be expanded as an employment centre, particularly given its location and the fact that it has already established itself as a major centre of employment within the North Shore.

Regional Town Centres

Because of the following suppositions, the G.V.R.D. have not proposed a Regional Town Centre on the North Shore between now and 1986:

- a) The high cost and difficulty of providing new transportation access over and above the proposed 'cross-inlet' ferry service, particularly in the context of other Regional transportation priorities;
- b) The long term limits imposed on population growth by the need to conserve much of the North Shore mountain slopes for recreation and scenic purposes; and,
- c) The existing linear development pattern which presently provides little in the way of a base upon which to concentrate new facilities.

The G.V.R.D. have suggested however, that in future, "...there may be significant new opportunities to focus development on the North Shore in a few locations rather than continuing the linear form". In this regard, we recommend that IR5 be planned as one of the major centres on the North Shore (see also discussion of Developing North Shore Centres, page 10).

Transportation

As previously mentioned, it is suggested by the G.V.R.D. that growth on the North Shore between now and 1986 be limited to that which can be served by the existing and planned transportation services.

Short-term improvements planned for the North Shore include the following:

- a) To reorganize the North Shore transit service with the introduction of the cross-inlet ferry service;
- b) To introduce a rush-hour suburban rail passenger service on the B.C. Railway line from Horseshoe Bay to the Lonsdale transit terminal;
- c) To establish good regional transit to North Shore recreation areas;
- d) To upgrade the Fastbus service to and from the North Shore; and
- e) To expand the local bus service on the North Shore.

All of the above suggest a de-emphasis on the car and a greater emphasis on transit-oriented transportation services for the North Shore. Accordingly, IR5 should be planned in accordance with these short term transit-oriented proposals and provisions should also be made for future regional transportation facilities.

Open Space

According to the G.V.R.D., "...as the number of people living in the Region grows, the North Shore will become even more important as a recreation area....". Therefore, they have proposed a policy to preserve substantial amounts of open space on the North Shore for general recreation use. In addition, greater public access to the waterfront on the North Shore is suggested. The priorities on the North Shore for recreation development by 1986 are the Capilano Regional Park and the proposed Lynn Canyon Regional Park. The G.V.R.D. propose to acquire all important riverbank strips along the Capilano River.

Given the above, it is recommended that linkage through IR5 be coordinated with the Regional Park Proposals for Capilano River. It is also recommended that, as far as possible, the waterfronts of IR5 along Burrard Inlet and the Capilano River be developed to encourage public access.



A AMBLESIDE
MUNICIPALITY OF W. VANCOUVER

B CAPILANO I.R. 5
SQUAMISH INDIAN BAND

C LOWER LONSDALE
CITY OF N. VANCOUVER

D FUTURE SEYMOUR CENTRE
DISTRICT OF N. VANCOUVER

DEVELOPING NORTH SHORE CENTRES

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

LOWER LONSDALE AREA - CITY OF NORTH VANCOUVER
(see 'C', illustrated on left)

The Lower Lonsdale area was assessed in light of the proposed ferry service that is now being built in the area. The ferry will provide 10 minute access between Granville Square in downtown Vancouver and Lower Lonsdale.

Accommodation for one million square feet of office space by 1986 has been recommended. Other proposed uses include: a variety of housing types; small scale commercial facilities; entertainment and public oriented waterfront activities.

Implications for IR5

The office development proposed for Lower Lonsdale will reduce, but not eliminate, the potential for IR5 to develop as an office employment centre.

The scale of development proposed for Lower Lonsdale is that of a major node, as opposed to a Regional Town Centre. This acknowledges the linear development pattern of the North Shore and suggests that IR5 also, can be developed as a major focus.

Residential land in Lower Lonsdale is somewhat limited. New housing development will therefore be on a much smaller scale than is possible within IR5 and, accordingly, Lower Lonsdale should not represent any more competition than it does at present.

SEYMOUR CENTRE - DISTRICT OF NORTH VANCOUVER
(see 'D', illustrated on left)

This study which is still underway, is examining the feasibility of developing a commercial centre near the Burrard Inlet waterfront and east of the Seymour River. It is also proposed that municipal buildings and a limited amount of office space be accommodated.

Since only a small number of people presently live close to this potential centre, initial development is not anticipated to be large. However, substantial potential does exist for future residential development east of Lynn Creek.

Implications for IR5

This centre, if built east of the Lower Lonsdale centre, will not significantly affect nor compete with development on IR5 because of distance.

DEVELOPING NORTH SHORE CENTRES

Concurrently with the Urban Design Study of IR5, other developing North Shore centres were studied by the respective municipalities. These studies and their implications for IR5 are as summarized below.

AMBLESIDE STUDY - DISTRICT OF WEST VANCOUVER
(see 'A', illustrated on left)

The future development of Ambleside was examined. Preliminary recommendations included:

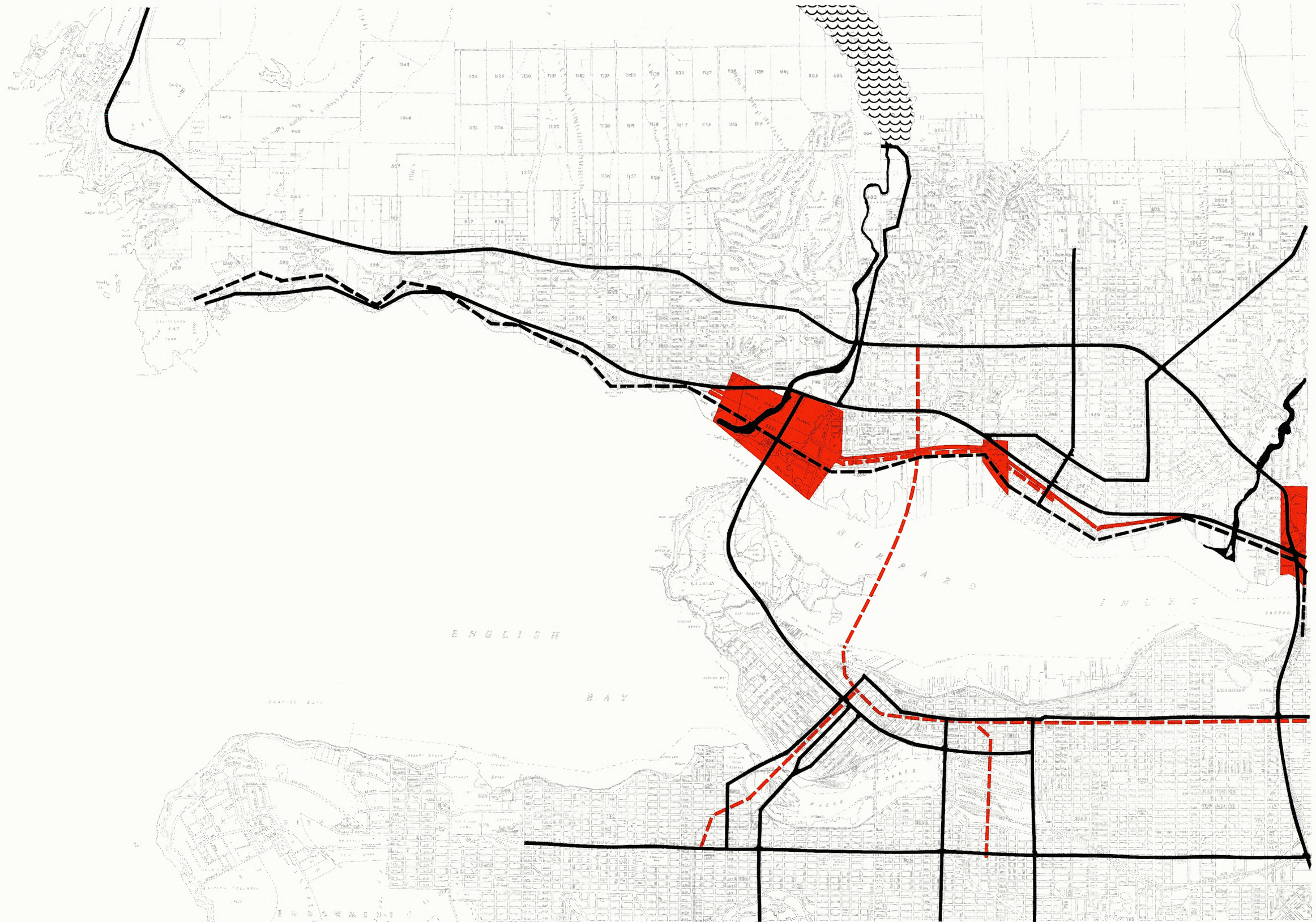
- a) Building form - that no future building be higher than three or four floors;
- b) Transportation and pier - that a waterfront transportation pier be developed over the B.C. Railway at the foot of 14th Street;
- c) Parking - that off-street parking facilities be developed;
- d) Landscape - that a major landscape program be initiated;
- e) Traffic - that Marine Drive (west) and Bellevue (east) be utilized as one-way roads;
- f) Zoning - that mixed-use building be encouraged; and
- g) Life Styles - that housing be provided for a variety of life styles.






Implications for IR5

An improved quality of environment in Ambleside will also increase the attractiveness of IR5.

The resolution of traffic problems in Ambleside will mean less congestion. This, coupled with a future Lower Level Road, could result in the elimination of much congestion in the area of IR5.

The Ambleside study suggested passenger ferry access to a proposed 14th Street pier. If such expansion of the ferry system were implemented, a direct connection to IR5 in the future would be possible. This would greatly enhance the development potential of IR5.



- | | | | | | |
|--|---------------|---|----------------|---|-------------------|
|  | HIGHWAYS |  | RAILROAD | | |
|  | PROPOSED ROAD |  | PROPOSED METRO |  | SQUAMISH RESERVES |

MOVEMENT SYSTEMS

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

MOVEMENT SYSTEMS

EXISTING ARTERIES

A brief look at the movement systems on the North Shore, reveals again the strategic position of Capilano.

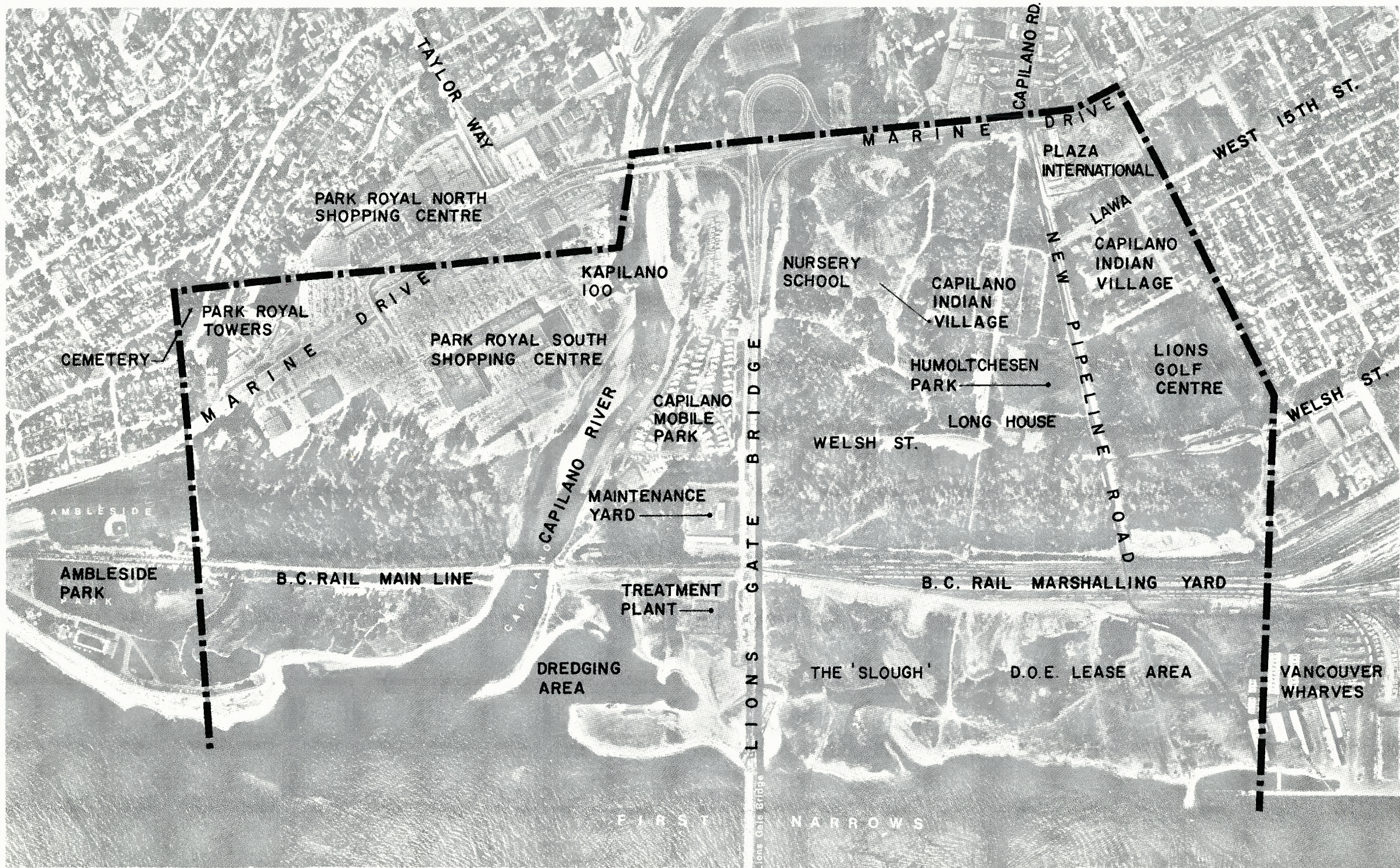
The main arteries affecting the site are Marine Drive, Lions Gate Bridge, Taylor Way and Capilano Road, all of which are presently reaching congestion levels. (The site is also crossed by the B.C. Rail, running east-west beneath the Lions Gate Bridge).

MISSING LINKS

Some pertinent missing links, which for the short term would alleviate the congestion, are a direct connection from the Lions Gate Bridge to the Upper Levels Highway, a Marine Drive by-pass involving a Lower Level Road, the necessary North-South connections between the Lower Level Road, Marine Drive, and the Upper Levels Highway, and grade separated intersections at key locations. This aspect is dealt with at greater length further on.

PUBLIC TRANSPORTATION

A complete re-orientation of the North Shore bus system is currently being undertaken to coincide with the passenger ferry service being built between the Lower Lonsdale and Granville Square areas. An additional proposal involves a suburban commuter rail service, running east-west, along or on the B.C. Rail tracks and connecting to the ferry terminal. Mass transportation in the form of a more sophisticated rapid transit system, can only be discussed in connection with a future Third Inlet Crossing. Both are highly controversial topics which are receiving praise and criticism by various groups. They are considered by the consultants to be anywhere from 10 to 20 years from realization. Needless to say, these facilities would have far reaching effects on both Capilano IR5 and the North Shore in general.



CAPILANO IR5

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

CHAPTER 3 CAPILANO IR5 SITE

SITE DESCRIPTION

The site involves approximately 499 acres of land and water, in addition to a significant portion of the Capilano River. (See Page 17 for details.) This figure includes the Cut-Off Lands.

With the exception of the northwestern corner of the Reserve, the topography is gentle, declining gradually from a high point at the northeastern corner to the river and to the waterfront. The general slope is broken by the Capilano River and by two defunct channels, one in the east central area and a smaller one at the western boundary.

Throughout the years, the site has been disturbed in a variety of ways and indeed it contains some questionable land uses and unattractive areas. Specifically, the waterfront south of the B.C. Rail has been completely stripped of its natural vegetation. The area has been filled with a variety of debris and is bounded by an irregular and eroding shoreline. In the estuary zone east of the Capilano River, major dredging has taken place further altering the shoreline. On the positive side, approximately 1/3 of the reserve contains natural vegetation, a smaller portion of which is of sufficient quality to warrant retention.

The following site photographs illustrate the major areas and features of IR5. More specific natural and man-made determinents are detailed further on Page 16.



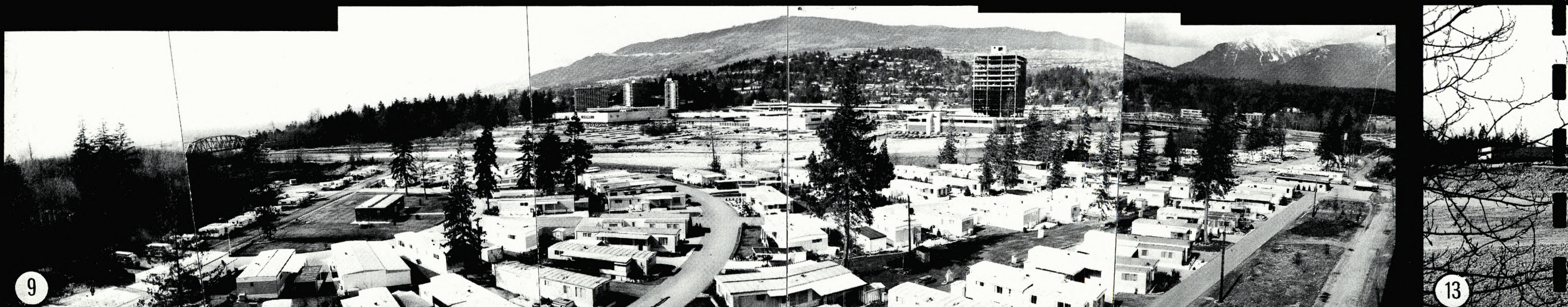
SITE PHOTOGRAPHS

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

- ① VIEW NORTH FROM PROSPECT POINT
- ② CAPILANO RIVER ESTUARY & DREDGING AREA
- ③ DREDGING AREA & CAPILANO RIVER



- ④ MARSHALLING YARDS & DOE LEASE
- ⑤ VIEW FROM INTERNATIONAL PLAZA
- ⑥ VIEW NORTH FROM STANLEY PARK SEAWALK



SITE PHOTOGRAPHS

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

7

AMBLESIDE PARK - B. C. RAIL MAIN LINE

8

AMBLESIDE PARK

9

TRAILER PARK



10

CAPILANO RIVER BED

11

EXISTING FOREST TRAIL

12

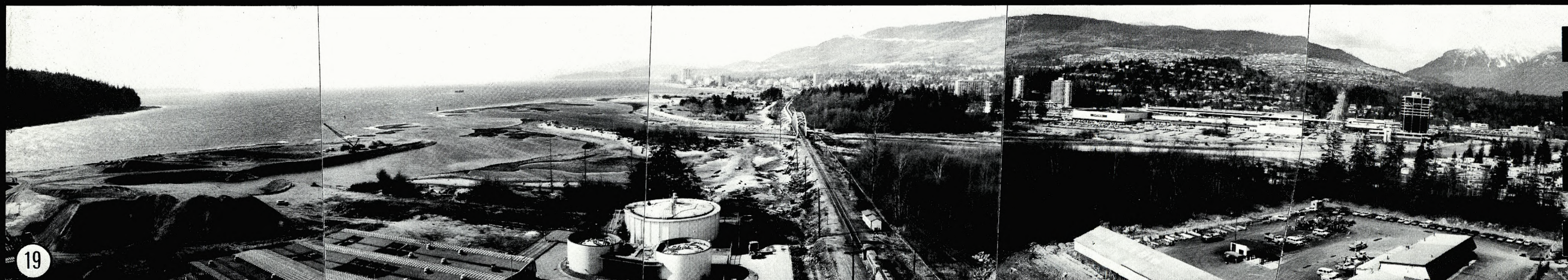
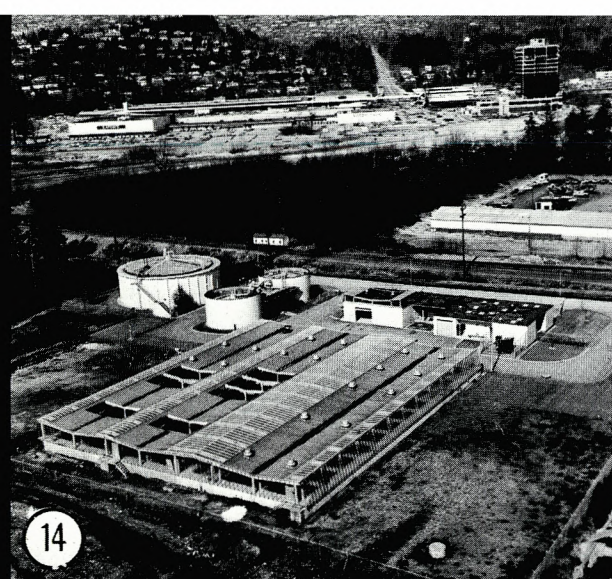
EXISTING FOREST TRAIL

13

CAPILANO RIVER - KAPILANO 100 - TRAILER PARK

14

E. J. GABOURY & ASSOCIATES
ARCHITECTS & URBAN DESIGNERS



SITE PHOTOGRAPHS

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

14

TREATMENT PLANT

15

PARK ROYAL APARTMENTS

16

MAINTENANCE YARD

17

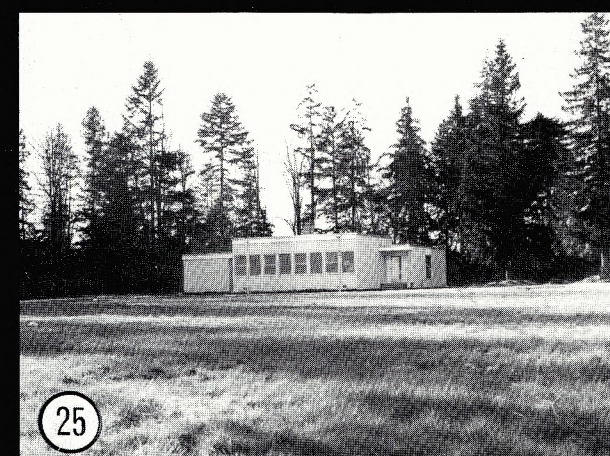
AMBLESIDE PARK

18

PARK ROYAL PARKING

19

VIEW WESTWARD



20 PLAZA INTERNATIONAL

21 LONG HOUSE

22 WELSH STREET

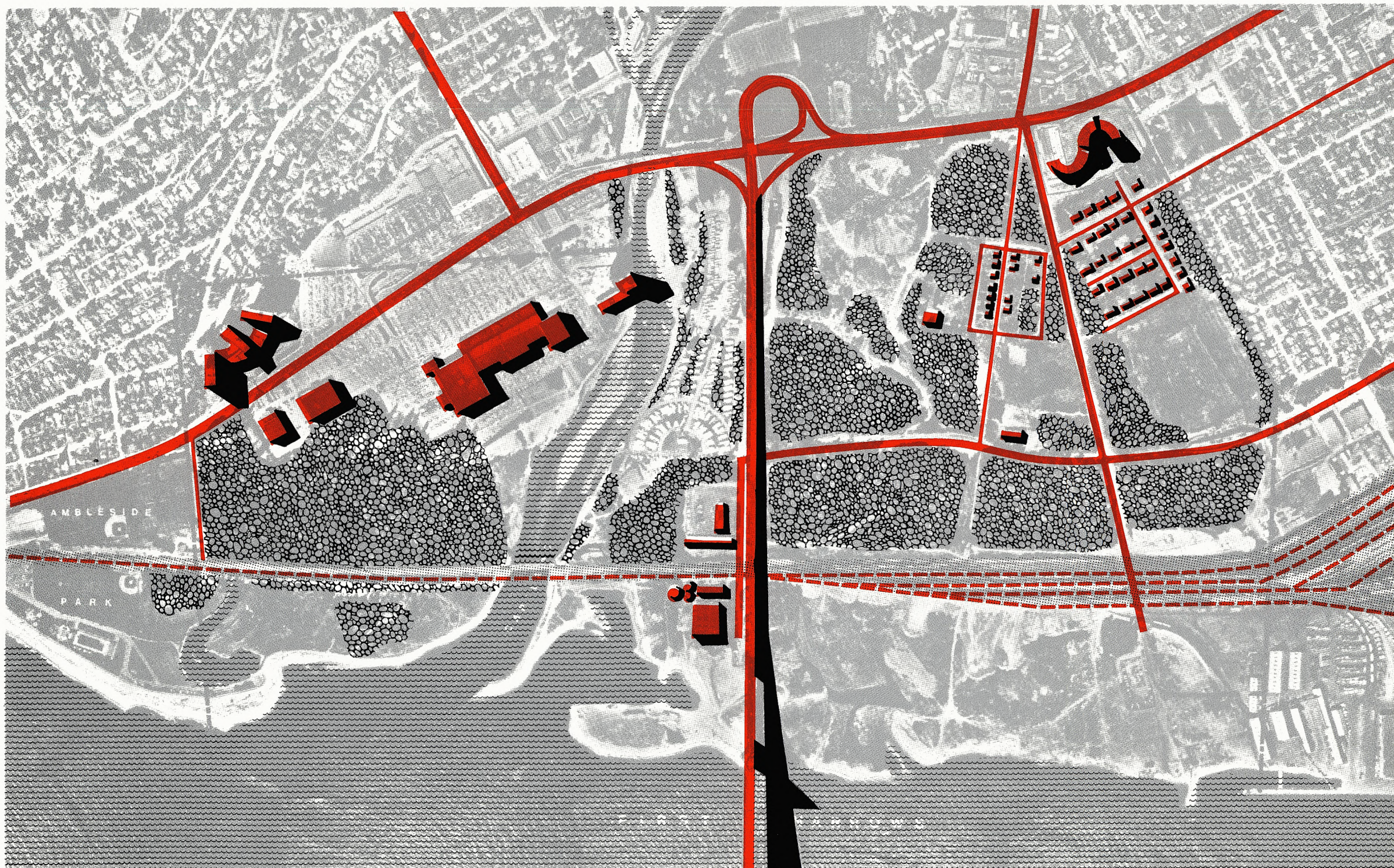
23 HUMOLCHESUN PARK

24 CAPILANO INDIAN VILLAGE

25 NURSERY SCHOOL

15

E. J. GABOURY & ASSOCIATES
ARCHITECTS & URBAN DESIGNERS



NATURAL & MAN-MADE DETERMINANTS

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

NATURAL DETERMINANTS

The recognized natural assets of the site are Burrard Inlet, Capilano River, a significant amount of vegetation, and some outstanding views.

Capilano River

Historically the Squamish Band was attracted to the Capilano River because of its abundant salmon and shellfish. Today the Band still has strong cultural ties with the river, but, because of the distance between it and the present village, this relationship is not being reinforced.

Burrard Inlet

Burrard Inlet influences approximately 1/3rd of the Reserve, along a frontage of some 6,500 linear feet. With the possible exception of the western tip which forms part of Ambleside Park, the choice waterfront area is under and poorly utilized.

Forest Areas

A large amount of vegetation exists throughout IR5. The more significant stands of Red Cedar, Hemlock and Fir occur primarily south of Park Royal. Additional pockets of significant growth exist alongside the Lions Gate Bridge, the Nursery School and the B.C. Rail.

Outstanding Views

It may truly be said that the Capilano Reserve enjoys some outstanding views. North of the existing vegetation, from the sportsfield and longhouse area, there is a panoramic view of the North Shore Mountains, (Hollyburn, Goat, Crown, Grouse and Seymour). Along the waterfront and directly across the 1st Narrows, is a majestic view of Stanley Park involving water, land, trees and sky. Along a 45° axis to the east, is an impressive view of the Vancouver City skyline. To the west is an equally impressive view of English Bay, the Gulf Islands, and the setting sun.

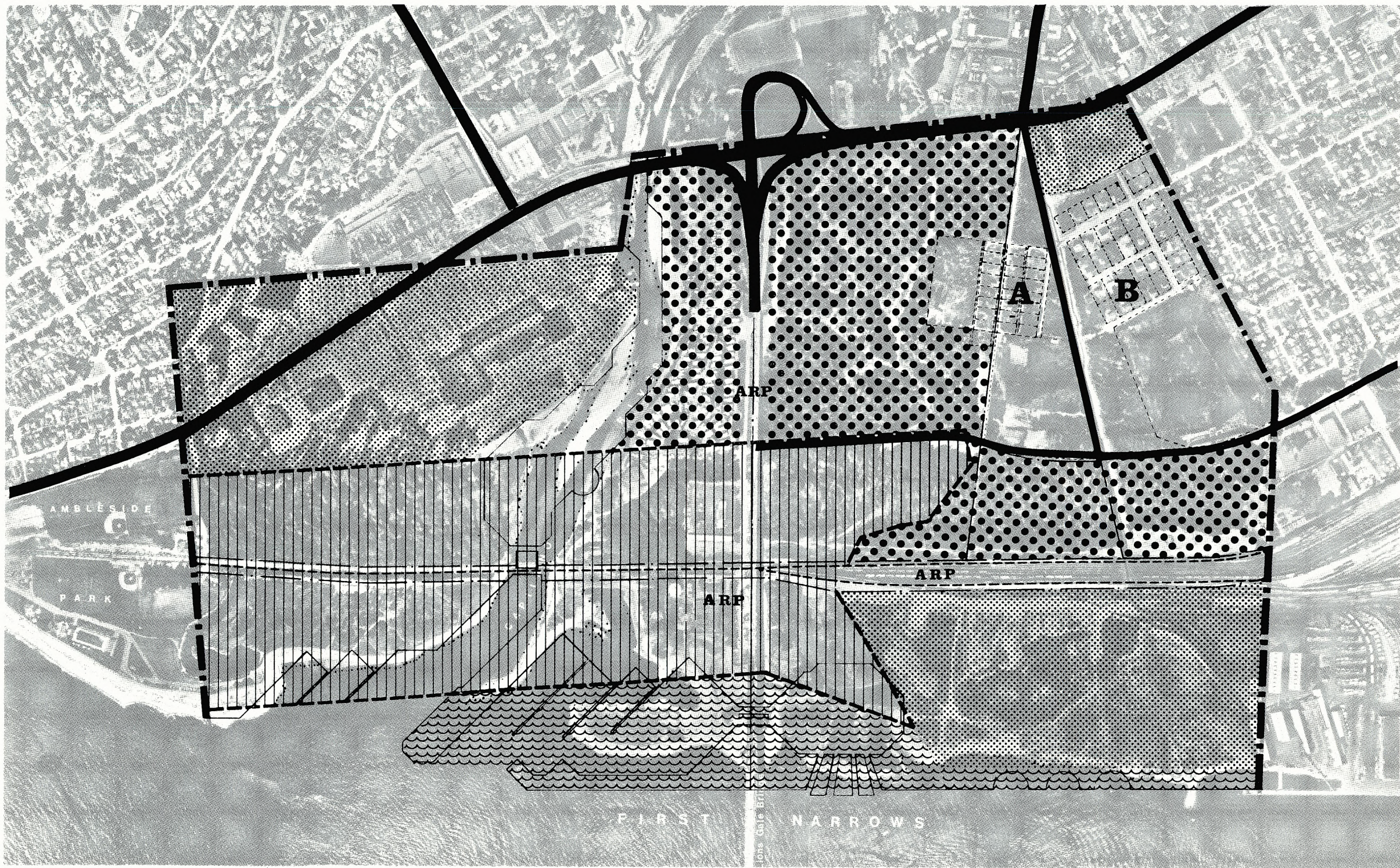
As will become evident later in the analysis, these natural features and assets provide a strong basis for formulating the development concepts.

MAN MADE DETERMINANTS

In examining what man has done to the reserve lands, the picture is less encouraging. In addition to the natural division created by the Capilano River, the major physical elements built by man divide the site into four quadrants.

The Lions Gate Bridge is visually a beautiful form, but legally and physically it divides the reserve east and west. The B.C. Railway tracks and marshalling yards divide the reserve north and south and are perhaps the most difficult barrier to overcome in terms of traffic circulation, and visual and sound pollution. Other vehicular roads penetrate the site but with the exception of Marine Drive, do not provide proper access to the various quadrants.

Several existing leases and buildings have been developed in a piecemeal fashion, thus further cutting up the land while ignoring its natural attributes. There is a wide range of uses from single family residences to commercial and high-rise apartments. Park Royal Shopping Centre, in relating to Marine Drive and vehicular traffic, features large parking areas on grade, and has basically turned its back to the Capilano River. (The current Park Royal expansion has been planned to partially overcome this by utilizing structured parking garages and providing public access to the river). Plaza International Hotel was under construction during the study period and subsequently became a fixed element in the design. The Treatment Plant is unfortunately located at the mouth of the Capilano River, on perhaps the most impressive portion of the Bands' waterfront. The Capilano Mobile Park and Lions Driving Range are short term uses that are not expected to deter development proposals. The two Indian Villages have special status and as such will be dealt with separately.



<div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> </div>	UNCOMMITTED LANDS	106.62 Ac.	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	CUT-OFF LANDS	* 101.12 Ac.
A B	CAPILANO VILLAGE 'A' and 'B'	58.78 Ac.	ARP	AIR RIGHT POTENTIAL	40.62 Ac.
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	LONG TERM LEASES	128.28 Ac.	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	RECLAIMABLE LANDS	64.43 Ac.

LAND AVAILABILITY (TOTAL = 498.85 Acres)

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

LAND AVAILABILITY

The total area of IR5 is approximately 499 acres. To this should be added the area occupied by the Capilano River and its estuary. It should be noted that no complete site survey exists and that different sources stated different figures. For purposes of this study, the subject land is comprised of the following:

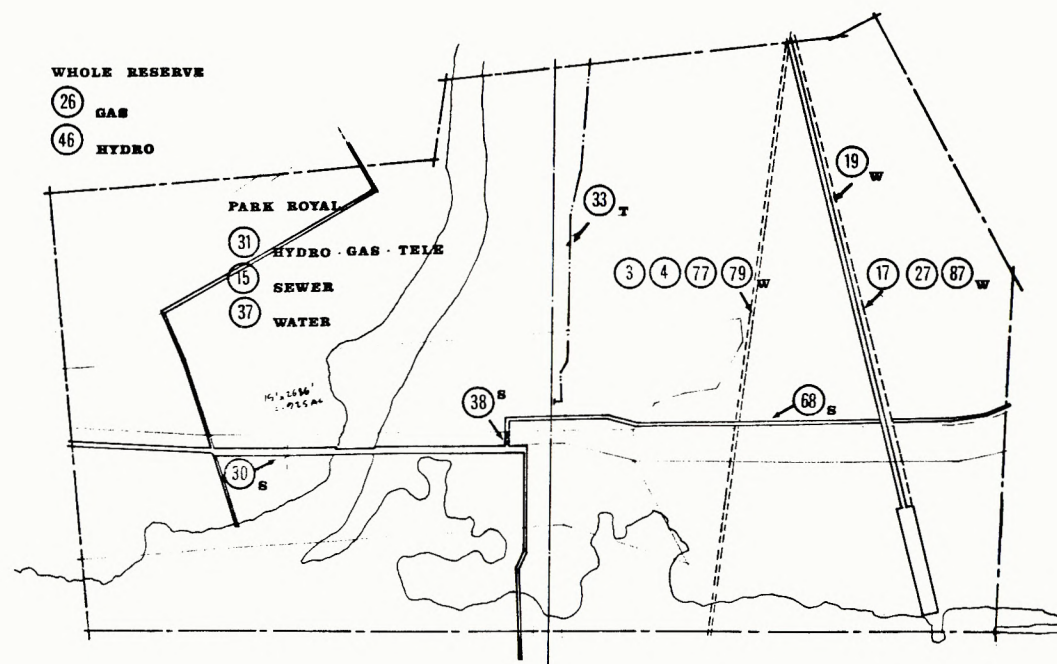
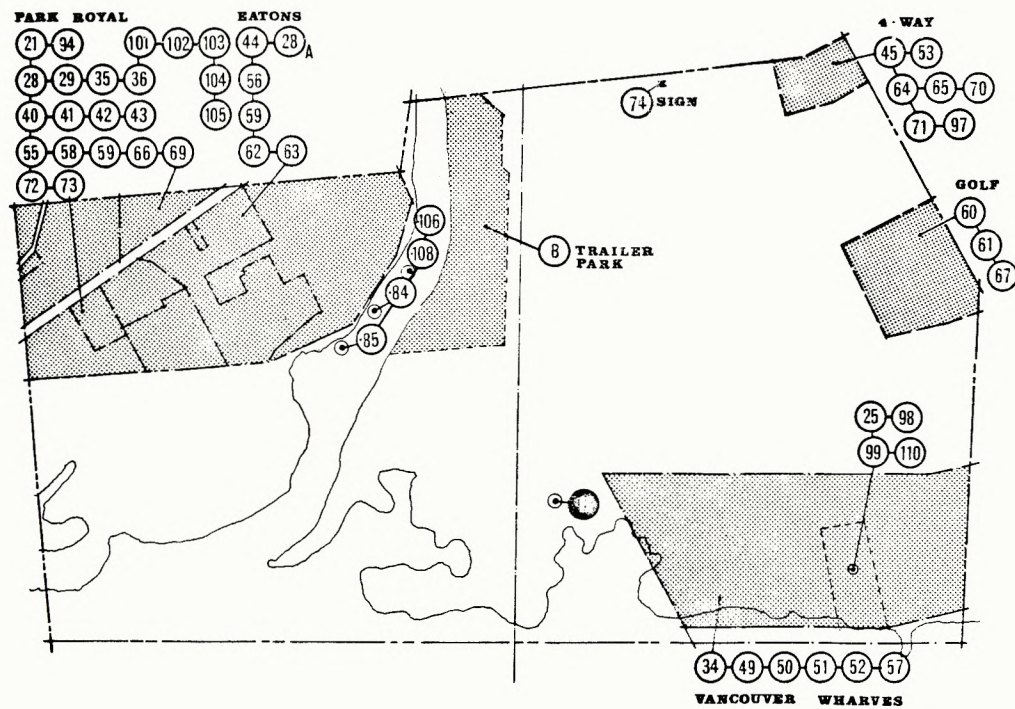
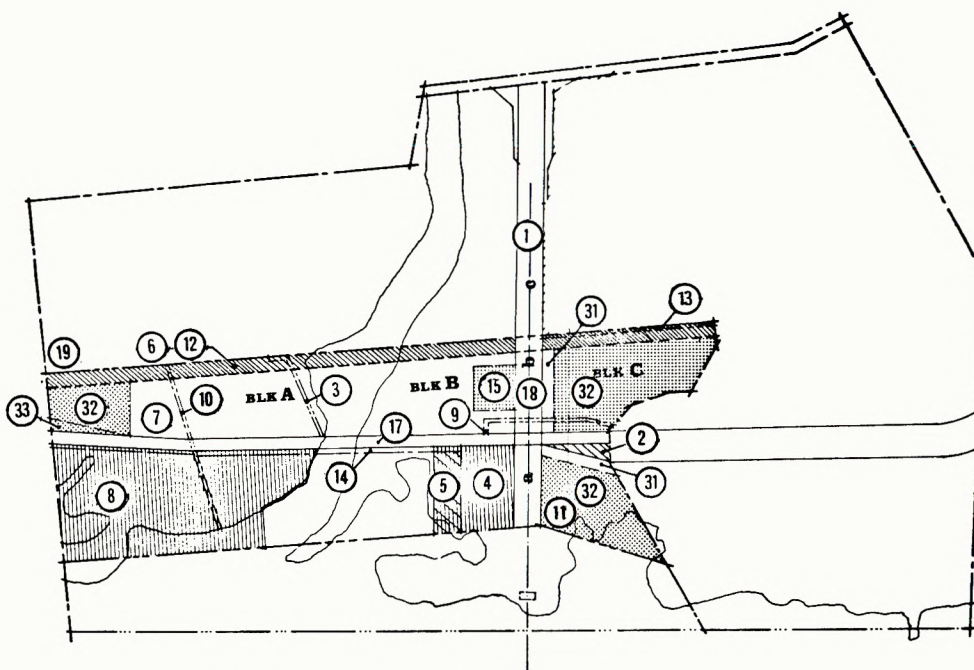
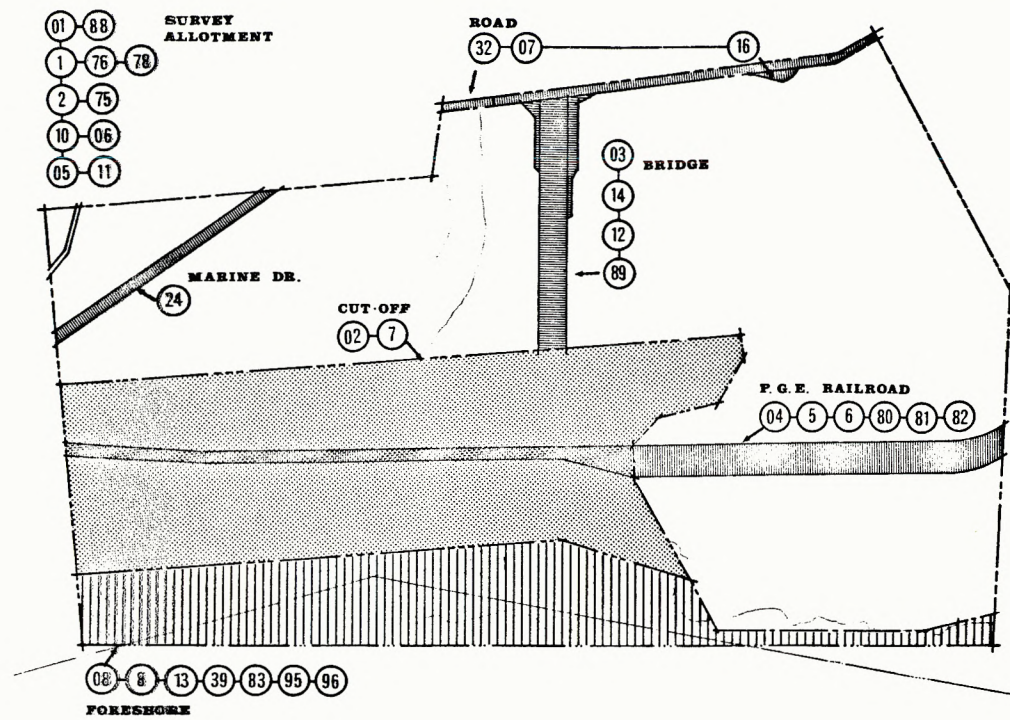
Long Term Leases	27%	135 acres
Special Status Lands	12%	59 acres
Cut-Off Lands	20%	*101 acres (see note)
B.C. Rail	4%	20 acres
Lions Gate Bridge	3%	14 acres
Vacant-Uncommitted	21%	107 acres
Reclaimable (presently underwater)	13%	63 acres
Total	100%	499 acres

One can quickly appreciate the small amount of land that is readily available to the Squamish Band. The largest such block (heavy black dots) lies east of the Lions Gate Bridge and west of Capilano Village A. To this area has been added that of the Capilano Mobile Park (short term lease) and the wooded area south of Welsh Street.

There is potentially reclaimable land along the waterfront of Burrard Inlet and on both banks of the Capilano River. Further, an air right potential (ARP) is noted over the Lions Gate Sewage Treatment Plant, the B.C. Rail Marshalling Yard, and under the Lions Gate Bridge. Such measures are deemed necessary to both improve the development potential of the land and integrate the overall site.

Note *

It should be noted that the Cut-Off Lands (DL5521) is actually 132 acres. The difference between 132 and 101 results from some of the area being allocated to the B.C. Rail and Lions Gate Bridge figures. Further, the area involving the Capilano River was not included in the area breakdown.



LEGAL ENCUMBRANCES

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

LEGAL ENCUMBRANCES

The subject land has more than its fair share of legal encumbrances. Numerous long term leases, rights of way, and utility easements, carve up the site, making it difficult to unify it into a comprehensive whole.

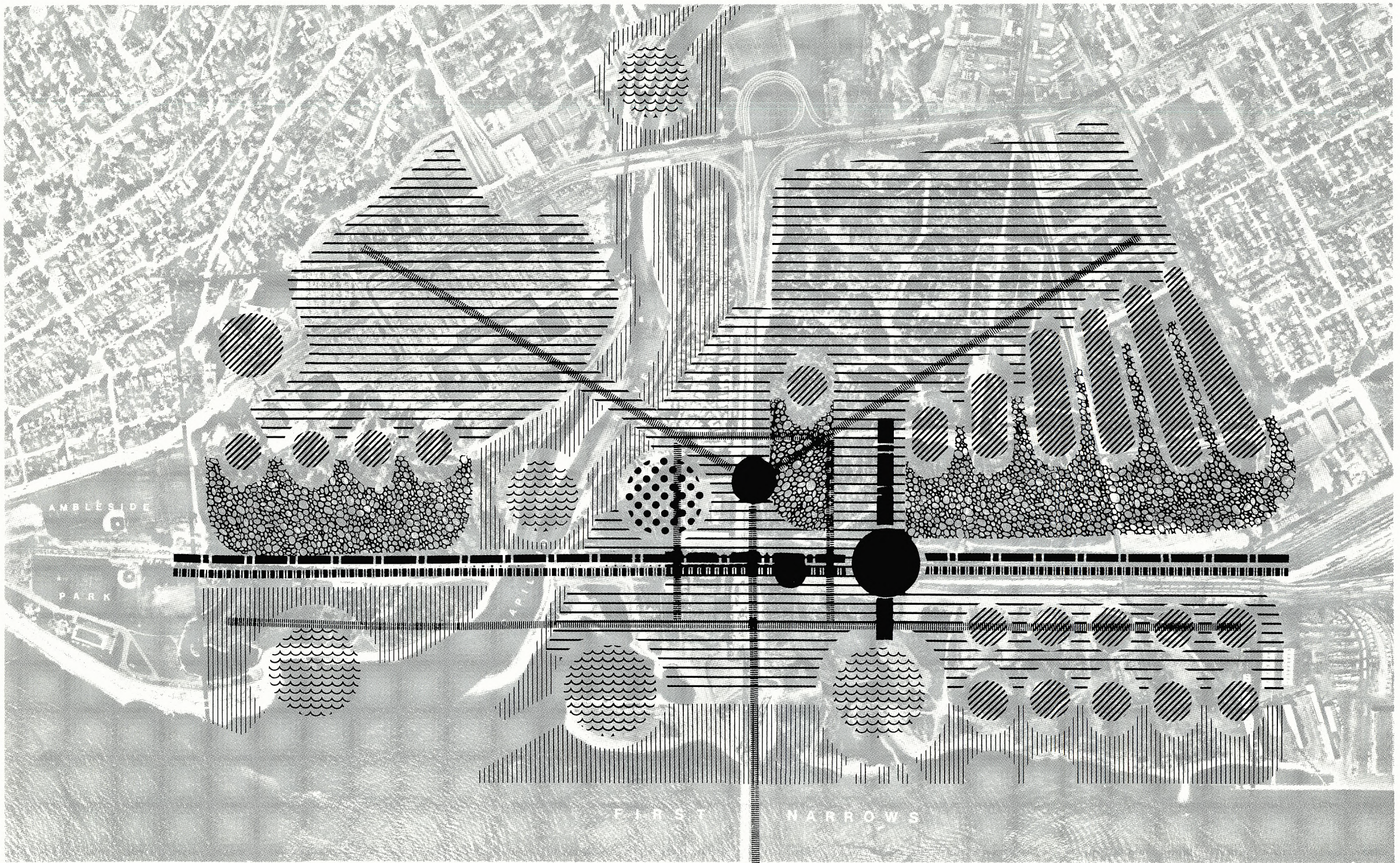
The current land encumbrances include Marine Drive, Lions Gate Bridge and B. C. Rail (formerly PGE).

The current long term lease encumbrances include Park Royal Towers and Shopping Centre, Eatons Department Store, Kapilano 100 Office Building, Plaza International Hotel, and the DOE lease area (formerly Vancouver Wharves). Two short term leases include the Capilano Mobile Park and the Lions Driving Range.

Within the Cut-Off Lands, a variety of uses presently exist (a portion of Lions Gate Bridge and B.C. Rail, the eastern portion of Ambleside Park, a Maintenance Yard and the Lions Gate Sewage Treatment Plant). In addition, a number of other uses have been identified. It should be noted, however, that all of these existing and identified uses are the subject of current discussions and negotiations being held between the Federal and Provincial Governments and the Squamish Indian Band.

The utility encumbrances include a full range of services with the exception of a storm sewer system (see Page D-2).

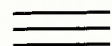
Substantiating details for the various diagrams illustrated on the left page are included within a separate report provided for the Band Council.



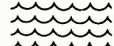
PUBLIC



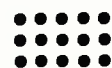
RESIDENTIAL



COMMERCIAL



WATER



CULTURAL



FOREST



NODE



TRANSIT



VEHICULAR



PEDESTRIAN

INITIAL CONCEPTUAL RESPONSE

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

CHAPTER 4 CONCEPTUAL RESPONSE

INITIAL CONCEPTUAL RESPONSE

Having analyzed the reserve, first on a regional basis and then by its various local determinants, one is better able to appreciate the constraints and opportunities available to the Squamish Band for Capilano IR5. As previously mentioned, there are inherent qualities that merit enhancement, as well as some serious obstacles requiring resolution. In general, the present site is fragmented, and has through the years been developed in piecemeal fashion. The most pressing need is that of unifying the segregated land areas through a comprehensive development approach.

The adjoining diagram illustrates the Consultant's initial conceptual response to the site, which was directly influenced by an appreciation of the Band's Statement of Intentions and the various forces acting on the site. The potential is evident - the challenge is pressing. The conceptual diagram recognizes the natural determinants of inlet, river and forest, as amenities to be highlighted and integrated with development. It features optimum development, while retaining the desired communion between man and nature. The concept embraces the entire site and offers a mixed program including housing, office, commercial, cultural, entertainment, recreational, and public oriented facilities. Through utilization of air rights over the B.C. Railway marshalling yards, the GVS and DD Treatment Plant, and under the Lions Gate Bridge, the previously segregated quadrants are unified. Through land reclamation along the banks of the Capilano River and the Burrard Inlet waterfront, the site is enlarged. The assortment of black lines indicates various circulation systems, with a strong emphasis on the pedestrian.

This initial reaction was presented to the Band Council, the various Committees and the Membership. In general, the Band responded favourably and the Band Council awarded agreement in principle. The Consultants were then able to proceed to the subsequent stage including a series of more detailed studies which augmented the available technical and economic information. This input was then utilized in the preparation of three major development options and various sub-options.

FURTHER REFINEMENT OF THE CONCEPT

In response to the Band's input and in order to a) test the validity of the initial conceptual response and b) establish more detail for purposes of preparing development options, research was undertaken into the following major uses:

- a) Office;
- b) Residential; and
- c) Service Facilities.

The following is a summary of recommendations based on the analysis in Appendix A, Program Research:

In general, it is recommended that the building of a "balanced community" within IR5 should be pursued. Accordingly, living, working and recreational opportunities should be provided on the site for a broad range of people. Also, as far as possible, development should harmonize with surrounding areas and complement regional development policies.

Office

Reflecting that a high percentage of the North Shore residents are office workers and to reduce the deficiency of office jobs that exists on the North Shore, it is recommended that plans for IR5 be developed to ultimately accommodate approximately 10,000 new office jobs. This recommendation is in keeping with G.V.R.D.'s policy of decentralization for the location of office space throughout the region. (See G.V.R.D. - Concepts and Observations, Page 8).

Fulfillment of this policy in the context of IR5, will require the strong support of all levels of Government. Government initiatives, such as B.C. Telephones decision to locate their new offices in Burnaby, are required for IR5 as well as other parts of the North Shore.

Residential

Given the continued demand for housing on the North Shore and the potential for IR5 to be developed as a high quality living environment, it is recommended that housing form a major component of the program. In addition, it is recommended that a broad range of housing opportunities be developed for both families and non-families.

Service Facilities

Based on an assessment of existing facilities on the North Shore and the needs of existing and future residents, recommendations for the major service facilities are as follows:

a) Commercial

Park Royal should continue to provide a high proportion of regional commercial service. Additional commercial services should be distributed elsewhere on IR5 to serve both the future occupants of the Reserve and other nearby residents.

Other commercial development on unique sites such as the Capilano River bank and the Burrard Inlet waterfront is recommended (e.g. water and pedestrian oriented uses, marinas, etc.).

b) Education

It is recommended that only elementary level educational facilities be developed on IR5 because:

- a) There is a growing surplus of North Shore secondary school facilities; and
- b) It is not anticipated that IR5 development will generate a large enough secondary school age population to justify a separate facility of its own.

Recreation

It is recommended that a full range of active recreation facilities be provided for the future residents of IR5. In addition, development of the natural amenities of the Reserve for passive recreation use is also recommended.

In conclusion, refinements of the initial concept pointed to certain desirable components to be included in any plan for IR5. Many options regarding emphasis still remained, and these are considered in the next section, Development Options.

CHAPTER 5 DEVELOPMENT OPTIONS

Based on the Band's initial Statement of Intentions and an analysis of both the regional context and the site itself, an initial conceptual response was prepared. As previously described, this initial concept generated a great deal of Band input after which various refinements were recommended. There were however, a number of trade-offs still to be considered by the Band. Therefore, in order to ensure continued Band participation in the design and decision-making process, the Development Options and Sub-Options outlined below were prepared. These include three main options ranging in development quantity and various sub-options. In summary, the purpose of preparing these options was:

- a) To increase the awareness amongst the Band as to the alternatives available and implications for the development of their lands and thereby enabling the Squamish people to decide how these lands should be developed; and
- b) To establish the basis for preparing detail plans based on Band participation and consensus.

VARIABLES

The following variable conditions were represented in the development options:

- a) Variation in the long term status of the existing Indian Villages on IR5. Options ranged from one of extensive Village expansion to one with the Villages being entirely phased out; and
- b) Other variations in the amount of land to be utilized for new development. Options included:
 - 1) Whether or not to pursue concepts of building over portions of the B.C. Railway line (later referred to as the "Development Strip") and over the existing G.V.S. and D.D. Lions Gate Primary Treatment Plant?
 - 2) Whether or not to preserve certain land areas as park and forest?

- c) Variation in the quantity of development. Options ranged from high to low;
- d) Variation in transportation alternatives. Here, consideration was given to a future Lower Level Road, Capilano River crossings, and major north-south arterial roads; and
- e) Variation in family mix. Alternatives ranged from minimum accommodation for families with children to extensive family accommodation.

DESCRIPTION OF MAIN OPTIONS

Patterns of the above variables were arranged into combinations of three main options and sub-options. The three main development options are described below. A more detailed description is also provided in Appendix B.

Option 1

- maximum quantity (18.5 million square feet of building)
- emphasis on high-rise buildings
- involved the eventual phasing out of existing Indian Villages
- involved a large amount of land area for new development of the three main options.

Option 2

- medium quantity (12.6 million square feet of building)
- greater emphasis than Option 1 on low-rise buildings
- involved the eventual phasing out of existing Indian Villages
- involved same land area as Option 1

Option 3

- lower quantity (10.5 million square feet of building)
- same emphasis on low-rise buildings as Option 2
- involved not only retention, but expansion of Indian Village accommodation on IR5. In accordance with this option, the Village west of Pipeline Road (Village "A") is to be phased out when new Band housing is provided elsewhere on the Reserve.
- involved the smallest land area for new development of the three options.

SELECTION

To assist the Band in reviewing these development alternatives, the main options were evaluated in relation to a number of criteria. As evidenced by the assessment, the Band is not only concerned for its own interest but also the interests of the broader community. The evaluation criteria is as follows (see Appendix B for detailed assessment):

- a) Socio-economic impact on the Band;
- b) Land requirements for new development;
- c) Compatibility with regional development policies;
- d) Breadth of marketability;
- e) Amenability to public option;
- f) Community diversity;
- g) Responsiveness to natural features of the site;
- h) Demands on service systems;
- i) Staging flexibility for immediate and long term development; and
- j) Transportation comprehensiveness and diversity.

Based on this assessment and the selection of particular development options, the Band established the basic direction for the future development of IR5.

Below is a summary of main options and sub-options with an indication (*) and note regarding those selected by the Band.

MAJOR DEVELOPMENT (MAIN OPTIONS)

- | | | |
|--------------------------------|-------------|---------------|
| 1 Highest Quantity Development | (18.5 M SF) | (F.A.R. 1.00) |
| 2 Medium Quantity Development | (12.6 M SF) | (F.A.R. .68) |
| 3 Lowest Quantity Development* | (10.5 M SF) | (F.A.R. .57) |

The selected Option 3 involves the least amount of development and represents a decision by the Band to promote low-rise and moderately intense land use on IR5 as opposed to opting for a maximum return solution only. Also represented in the Band's selection of Option 3 is their concern for the environment and desire to preserve and integrate extensive areas of open space and vegetation.

CAPILANO VILLAGES (SUB-OPTION)

- 1 Village 'A' and 'B' remain
- 2* Village 'A' relocate, Village 'B' remain
- 3 Village 'A' and 'B' relocate to 'C'
- 4 Village 'A' and 'B' relocate outside IR5

Village 'B' will be both retained and expanded south into the area of the Golf Driving Range. It is also planned that a new Indian Focus and housing area will be established on the bank of the Capilano River (Village 'C'). The selected sub-option 2 reflects the fact that the Band still sees the Reserve as a place to live but also is mindful of the need to assemble sufficiently large sites for meaningful development.

NORTH-SOUTH ARTERIAL (SUB-OPTION)

- 1 Tatlow
- 2 McGuire
- 3* Pipeline

The Band's selection of Pipeline Road as a north-south arterial is a short term commitment. The long term use of Pipeline Road will depend on further consideration.

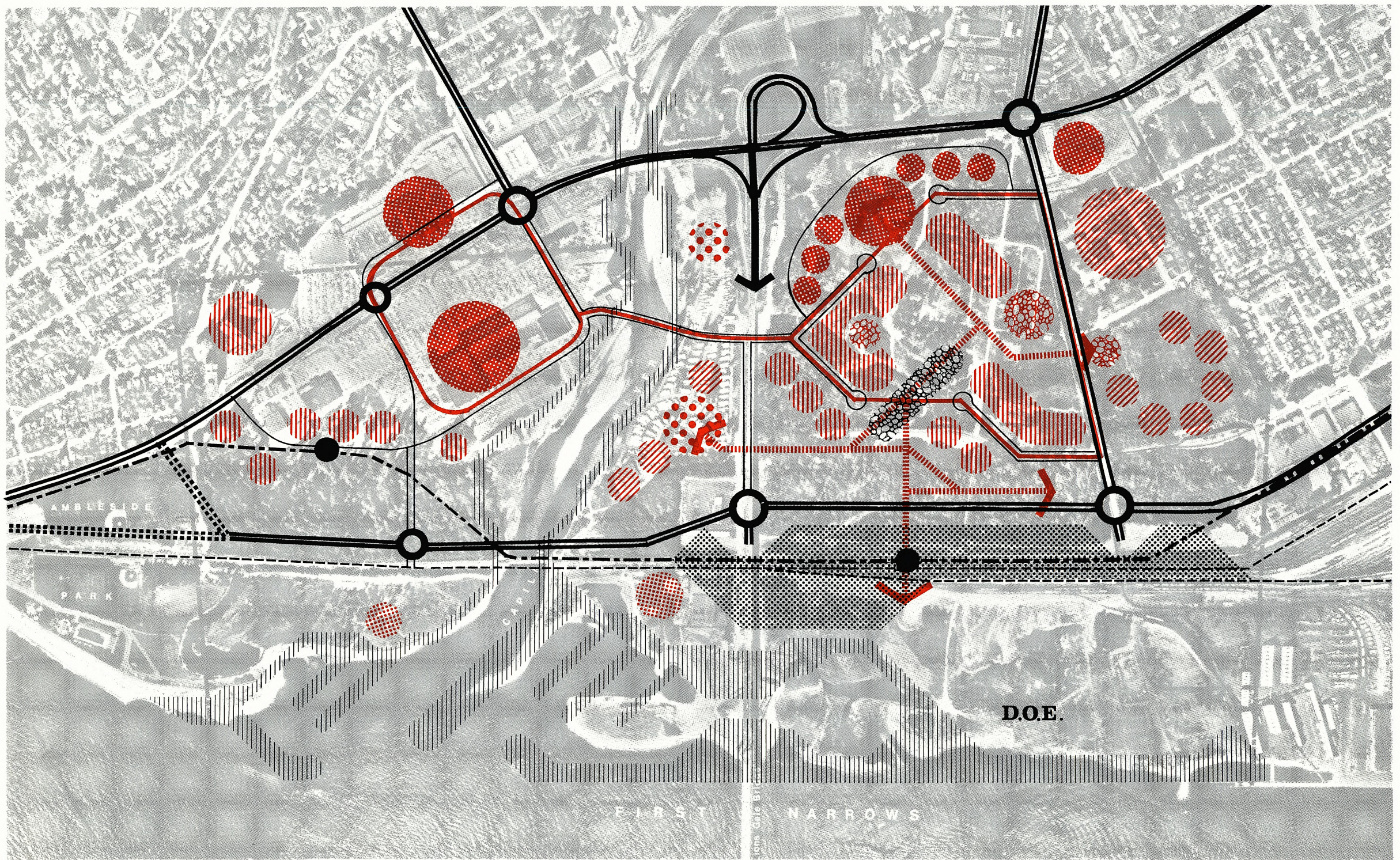
DEVELOPMENT STRIP (SUB-OPTION)


- 1 No Development Strip
- 2* Development Strip

The selection of Option 2 recognizes the future potential for utilizing airspace over the B.C. Railway. This selection also reflects the Band's desire to interconnect various parts of the Reserve. For example, if the railway tracks are bridged over in accordance with the "development strip concept", a connection between the waterfront and northern portions of the Reserve will be achieved.

To summarize, Band Council's choice of Option 3 and the associated Sub-Options noted above, demonstrates their desire to undertake development which is compatible with regional development policy and respectful of local conditions of the North Shore. Further, it represents a harmonious and balanced development for IR5 in relation to site conditions, amenities, and economic requirements, and, is responsive to the needs of the Band.

Based on these selected options more detailed plans were developed as described in the following sections of this report.



	OFFICE - COMMERCIAL		INDIAN FOCUS		WATERFRONT WALKWAY		GRADE SEPARATED INTERCHANGE
	HOTEL - MARINA		DEVELOPMENT STRIP		PEDESTRIAN NETWORK		RAPID TRANSIT CORRIDOR
	RESIDENTIAL		EDUCATIONAL		BUS TRANSIT CORRIDOR		RAPID TRANSIT STATION
	SQUAMISH BAND HOUSING		RECREATION		TRAFFIC NETWORK		B. C. RAILROAD

MAJOR LAND USES

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

Consistent with the Bands' desire to ensure a strong tie between man and nature, a significant amount of vegetation is maintained for linear parks and buffers. The water's edge along the Capilano River and Burrard Inlet is devoted to pedestrian use free from vehicular traffic. Water-oriented features include a series of pools and basins along the Capilano River and at the 'Slough' east of Lions Gate Bridge.

Consistent with the Bands' cultural ties with the Capilano River, the entire east bank between the B.C. Railway and Marine Drive is to be developed as an Indian focus. This unique centre would include cultural and social facilities, a new longhouse, an Indian language centre, commercial outlets for Band crafts and projects, a specialized Coast Indian restaurant, as well as a new administration centre and Band housing units. The existing village located south of Plaza International is to remain in single family use, with additional Band Housing to take place possibly in smaller clusters throughout the Golf Driving Range.

The area west of the river features an expanded Park Royal Shopping Centre, as well as additional housing units both alongside the river and nestled into the forest area.

The exciting opportunity of integrating varied types of urban development with the Burrard Inlet waterfront is recognized and promoted. The zone from Ambleside to Vancouver Wharves contains two marinas at the mouth of the Capilano River, two hotels and a convention centre, office and commercial space, housing and recreation space, as well as the Pacific Environment Centre proposed by the Department of the Environment (D.O.E.). The use of air-rights is suggested both over the treatment plant and the marshalling yards, so as to overcome what was previously described as the most serious obstacle to comprehensive development. The cross-section which follows on Page 25 helps illustrate the wide range of options and activities possible along the waterfront.

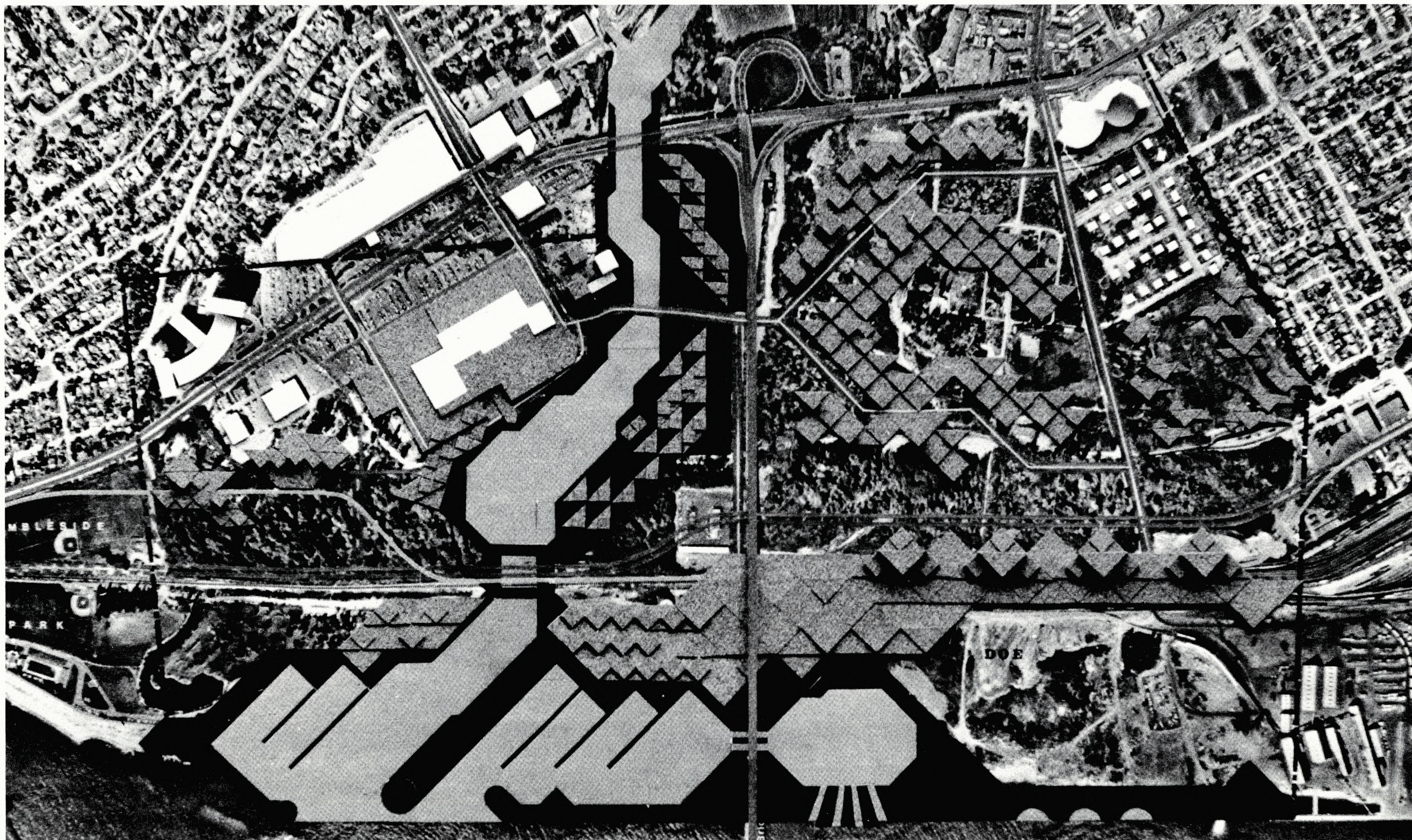
The remaining area bounded by Lions Gate Bridge, Pipeline Road, Marine Drive, and a future Lower Level Road has received additional and more detailed attention and as such will be dealt with separately.

Circulation patterns are such that through traffic is regulated on major arteries and grade separated interchanges. Local traffic has ready access to all destinations, and an extensive and continuous pedestrian system unifies every single activity within the confines of IR5.

CHAPTER 6 OVERALL DEVELOPMENT CONCEPT

MAJOR LAND USE - CONCEPT

Following Band Council's selection of Main Option No. 3 and associated Sub-Options, the concept was further refined into a more concrete and three-dimensional form. The result is shown on the adjoining land use graphic and the following model photographs.



OVERALL DEVELOPMENT CONCEPT

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

QUALIFICATIONS AND ELABORATIONS

Before continuing, it is appropriate to review some pertinent qualifications affecting the development plan. The concept has been formulated on assumptions about present and future conditions and reflects the current thinking of both the Squamish Band and their consultants. A change in any one condition will have repercussions to the overall concept. The main broad assumptions are as follows:

- Successful return of the Cut-Off Lands.
- Eventual implementation of a Lower Level Road and its North Shore connectors.
- Integration of the current leased lands with those to be developed by the Band.
- Acquiring of air-rights.
- Eventual enlargement of transportation capacity across Burrard Inlet.
- Eventual implementation of a Rapid Transit System.
- Resolution of other broad and specific issues detailed under the Implementation section.

Any change of events and conditions would be analyzed first for their significance, and then for the implications that they may hold for the development plan.

Phasing

The ultimate concept is designed to be realized over a series of stages that reflect the Band's current views and priorities. A tentative phasing schedule over a 20 - 25 year period is detailed in a separate section on Page 40. It is to be taken as a guide in that the factors affecting it are many and varied. Nevertheless, each phase is to be related to the prevailing market, to specific infrastructural changes in the transportation systems, and to the implementation schedule favoured by Band Council and the Membership.

Village East of Pipeline (Village B)

It has already been mentioned that the village area east of Pipeline is to remain as is, with additional Band housing to occur in the Golf Driving Area.

Village West of Pipeline (Village A)

The village area west of Pipeline is also to remain as is, but only until the uncommitted lands around it are developed. This is to assure that adequate financing as well as alternate sites and housing units are both feasible and available for the Band members presently living in that village. It is expected that the new units would be located in the Golf Driving Range and/or the Capilano River site.

Uncommitted Lands

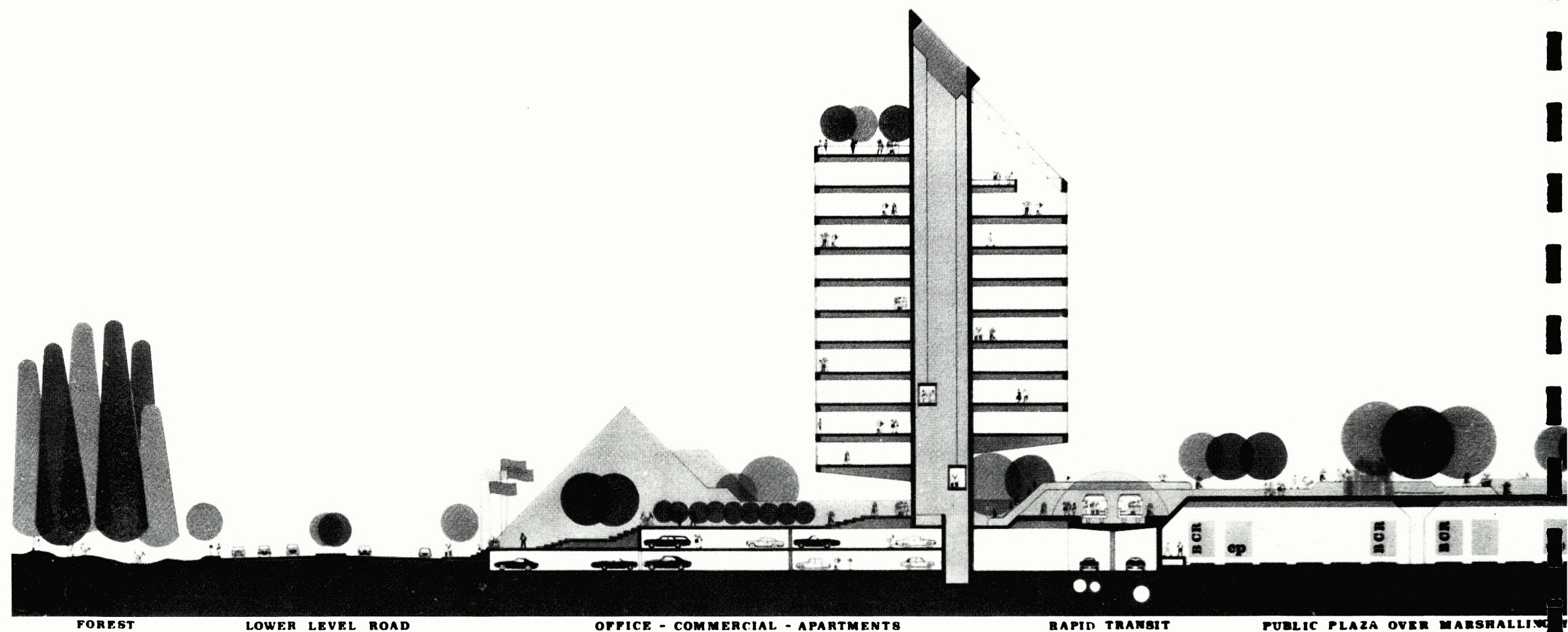
Because of the current situation with long term leases and cut-off lands, etc., the Band is looking mainly to the uncommitted land parcel bounded by Lions Gate Bridge, Marine Drive, Pipeline Road and B.C. Railway, to achieve their development objectives. More detailed consideration was awarded to this area and will be reviewed shortly.

Lower Level Road

The Lower Level Road will have considerable significance for the mid to long term development of IR5. However, the initial development is not contingent on its implementation. As detailed in the sub-consultant traffic studies, a specific amount of additional development is deemed possible with the construction of the Capilano River Mid-Crossing Bridge. Additional increments will be possible with the construction of a Lower Level Road. It should be pointed out that the proposed road requires multi-party negotiations, and as such its phasing is difficult to project. No doubt, its significance will be reinforced by the forthcoming transportation study covering the entire North Shore.

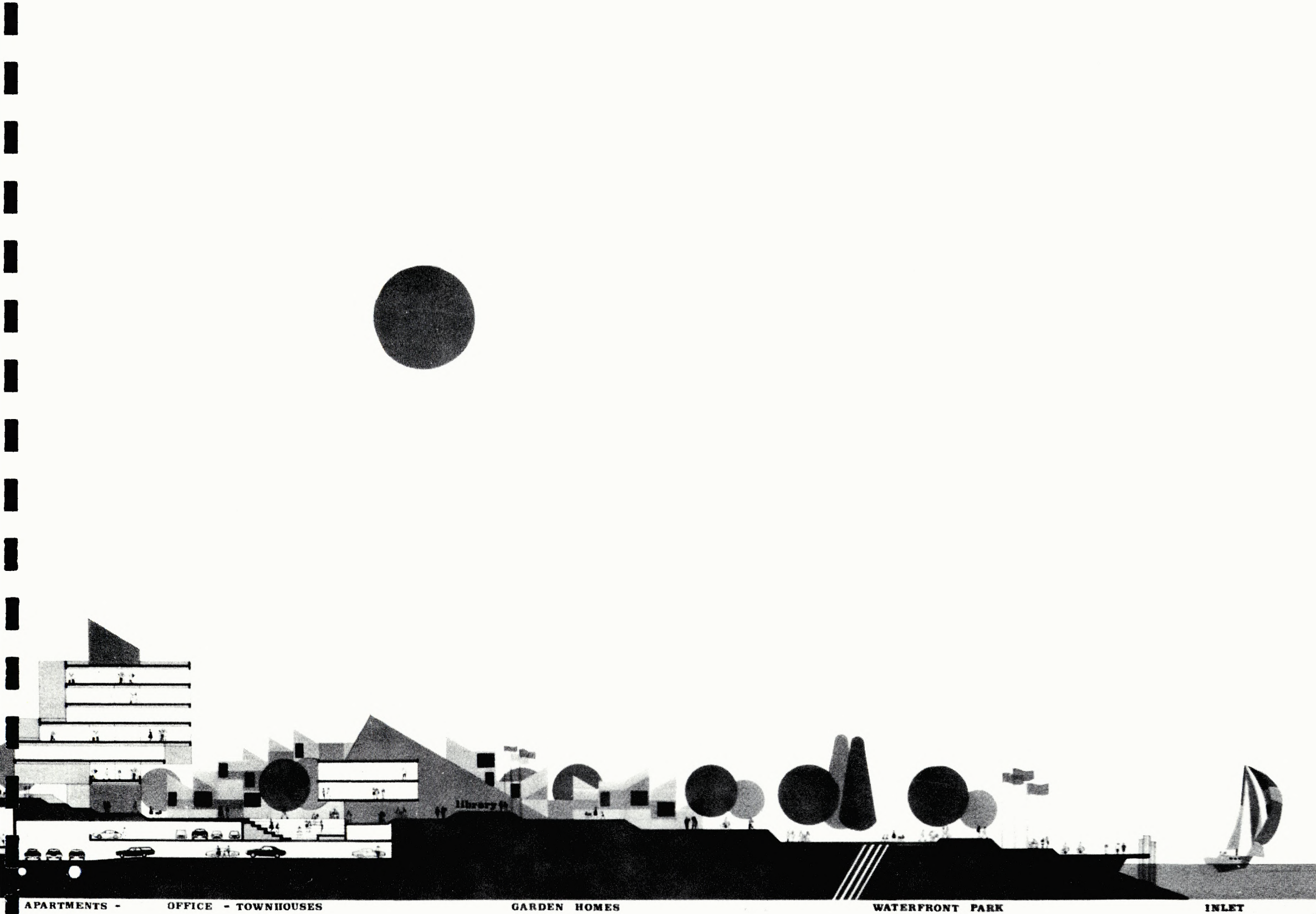
Waterfront Development Strip

As previously stated, there is an exciting potential inherent along the Burrard Inlet waterfront. The area has been the subject of detailed analysis as indicated in the technical reports listed in the bibliography (soils, foundation, structural, traffic and economic). Comprehensive development of a varied nature is considered both economically and physically possible. However, the majority of this development is a long-term objective as the main concentrations of the proposed buildings involve many complex factors, (the Lower Level Road, the B.C. Railway marshalling yards, the D.O.E Lease, the Cut-Off Lands, and the GVS and DD Treatment Plant, and a more sophisticated system of mass transit). These considerations strongly suggest that total development would be from 20 to 25 years away. The typical cross-section which follows, illustrates the wide range of activities possible while taking into full consideration the requirements of a major Lower Level Road and the marshalling yards. The tentative program is outlined in the program charts under Sector 7/8.



DEVELOPMENT STRIP-CROSS SECTION

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

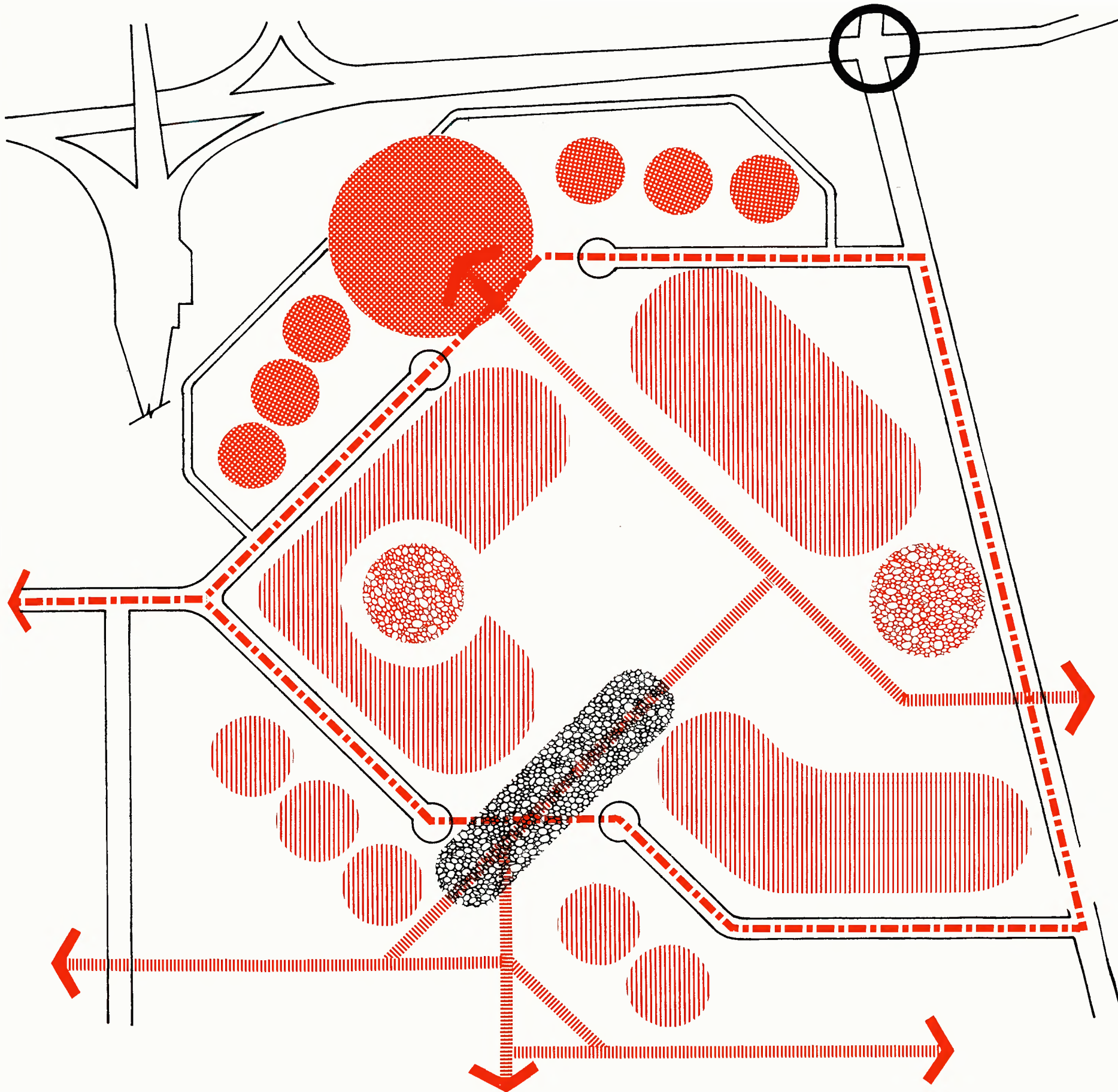


APARTMENTS - OFFICE - TOWNHOUSES

GARDEN HOMES

WATERFRONT PARK

INLET



- OFFICE – COMMERCIAL
- RESIDENTIAL
- EDUCATIONAL
- RECREATION
- PEDESTRIAN NETWORK
- BUS TRANSIT CORRIDOR
- TRAFFIC NETWORK
- GRADE SEPARATED INTERCHANGE

SECTOR 3 MAJOR LAND USES

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

CHAPTER 7 SECTOR THREE DEVELOPMENT PLAN

SECTOR THREE - MAJOR LAND USE

Concept

The greatest portion of the Bands uncommitted land lies within Sector Three. As such, that sector is to receive the first series of developments. Total site area is approximately 105 acres. It should be noted that this area is bounded by some serious perimeter conditions. They are:

- West Perimeter - Lions Gate Bridge
(noise, visual and physical barrier)
- North Perimeter - Marine Drive
(noise, limited access)
- East Perimeter - New Pipeline Road, Indian Village
(traffic, single family housing)
- South Perimeter - Future Lower Level Road
(noise, visual and physical barrier)

This suggests both a need and an opportunity to create a somewhat inward looking community complete with an integrated and mixed program. Such a program would offer a variety of living, shopping and employment opportunities within the confines of a strategically located development but with strong linkages to the rest of the site.

As illustrated in the adjoining graphic, the major land uses within Sector Three include:

Office-Commercial Core

Located so as to act as a buffer between the residential areas and the Marine Drive - Lions Gate Bridge traffic.

Residential Areas

An assortment of housing opportunities from studios and walk-ups to townhouses and garden homes. Also included are some high-rise apartment towers nestled in the existing forest areas.

Community - Recreation Core

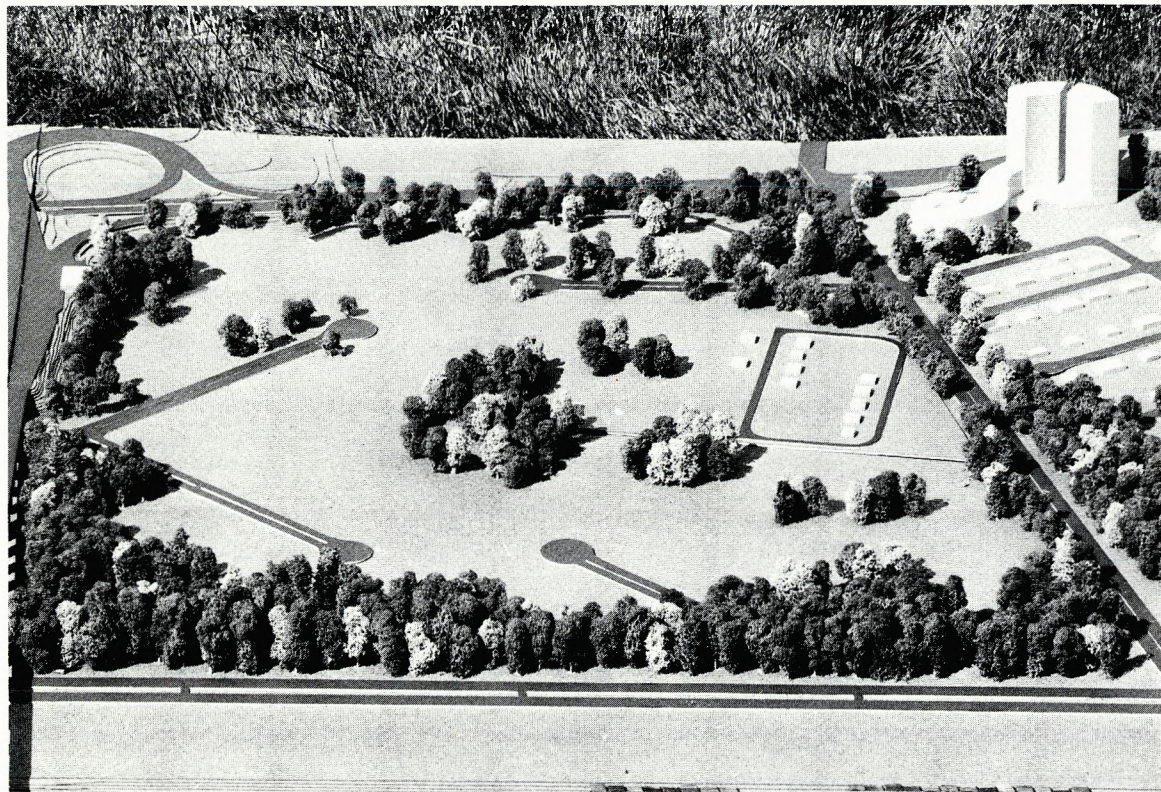
A variety of leisure time amenities and support facilities located near the greatest concentrations of housing units.

Education Facilities

Two separate zones offering educational and additional recreational facilities.

It should be noted that there is a hierarchy and separation of all circulatory systems. The emphasis is on controlled vehicular access, convenient transit corridors and a continuous pedestrian system, open-ended so as to grow and connect to other key areas of the Reserve. As previously stated in the short and long term circulation notes, traffic within Sector Three is intended to be of a 'local' nature. Through-traffic is limited to transit and emergency vehicles on a controlled corridor. The routing of the service lane for the Office-Commercial area is not expected to offer a convenient bypass or shortcut opportunity for 'non local' traffic. As a convenience to both residents and daily visitors to Sector Three, the parking structures beneath the various activities will be interconnected. This will allow the user to enter from any point and exit in the direction of his choice, but again, without encouraging through traffic.

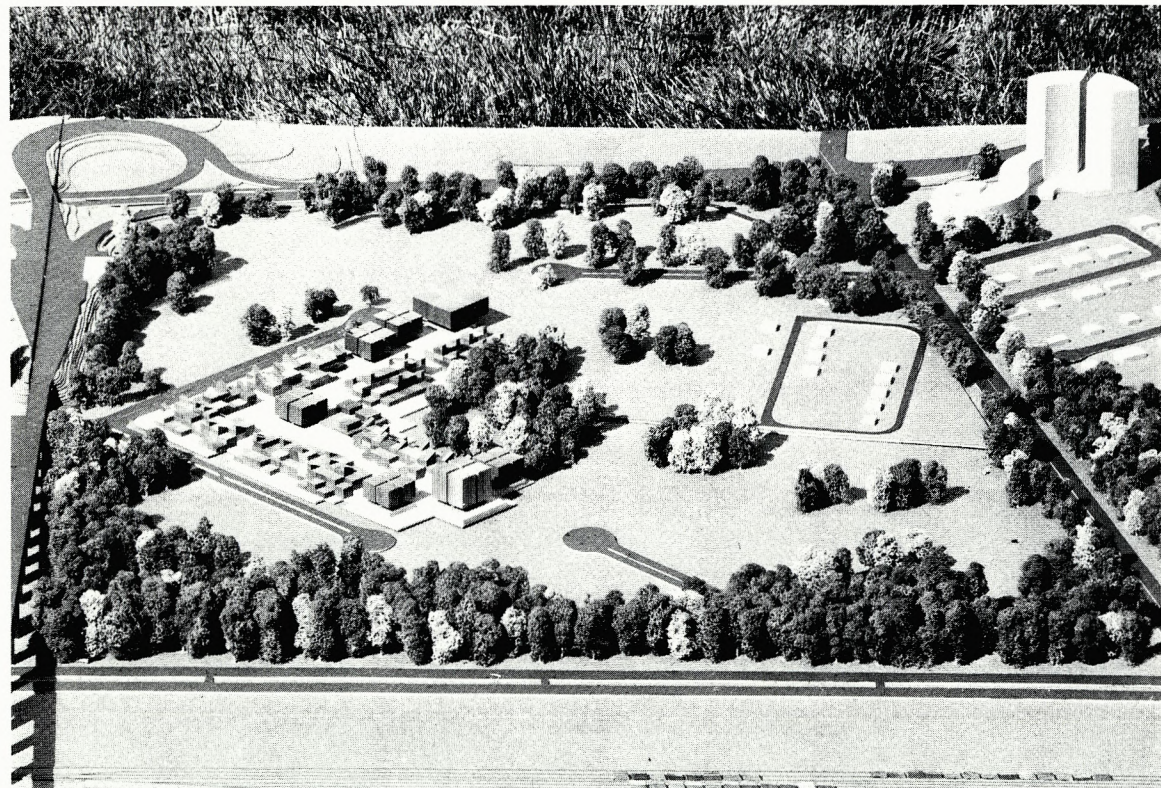
Implementation of the Sector Three concept is proposed to occur in stages following the upgrading and extension of the various circulation systems. As well, the prevailing market conditions will require further examination. The following photos illustrate some of the three dimensional characteristics of the concept as well as the proposed component areas.



SECTOR THREE - COMPONENT AREAS

It should be stressed that the following photos and notes pertain to component areas and not necessarily specific phases of development. As will be appreciated later, certain areas are dependent on infra-structural changes and varying market conditions.

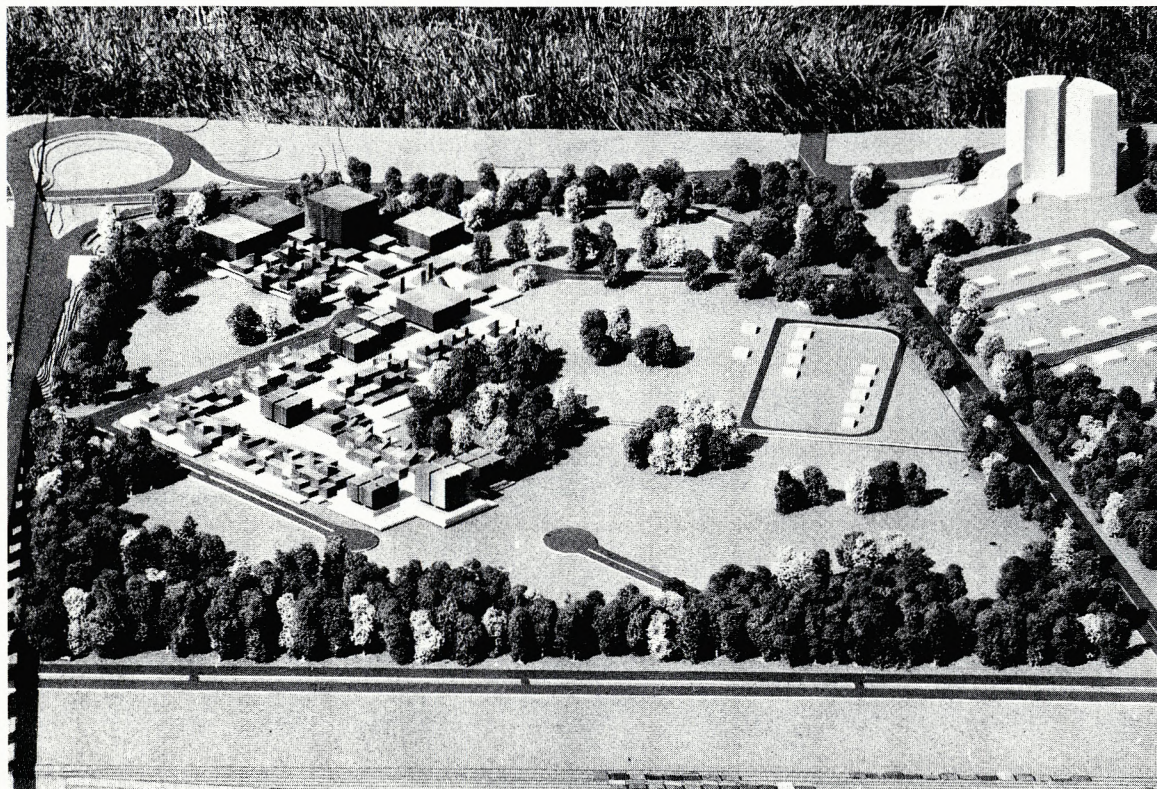
The first photo illustrates the existing vegetation and the complete 'local' road system within Sector Three (included is a converted Welsh St. and Lower Level Road which is actually part of the long term circulation). It should be noted that these roads circumvent the existing Band Village and Nursery School area. The roads connect to New Pipeline Road, Welsh St. and the Mid-Crossing Bridge over the Capilano River.



The first component area is primarily residential (studios, townhouses, garden homes, walk-up apartments and a small six storey apartment). Included with the housing units are the beginning of the support facilities, (nursery school, recreation space, local grocery store). A small three or four storey office building is also possible at the northern tip of the development.

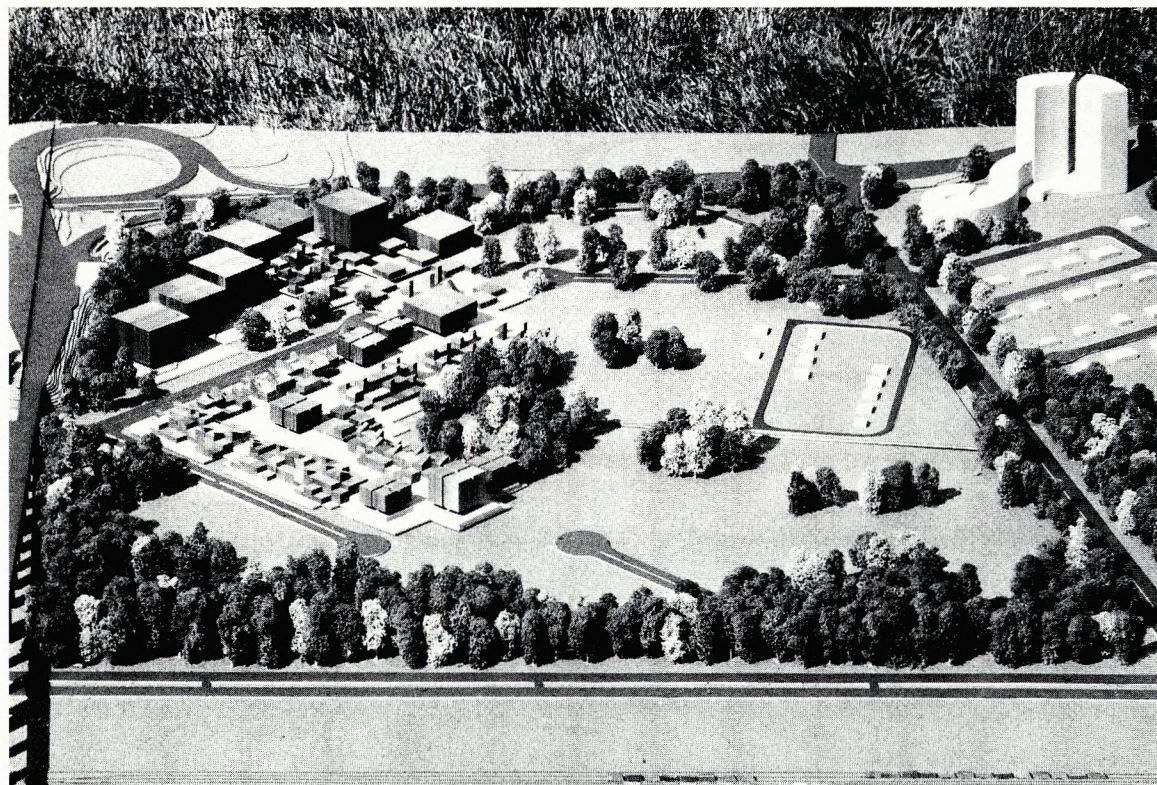
The project, which itself is realizable in stages, provides a variety of development opportunities and experiences for the Band. Further, it establishes a system and sets the scene for the rest of Sector Three. A low human scale is encouraged by what is basically a horizontal-linear development. Approximately one-half of the housing units front on a raised pedestrian street which is actually the roof of the resident parking garage. (See Cross -Section, Page 29). The other half of the units front either on the local road to the west or on the existing forest area to the east. The same forest area acts as a buffer between the development and the Band's village. In so doing, it is anticipated that the Band members living in that village will be inconvenienced as little as possible by their new neighbors.

SECTOR THREE COMPONENT AREAS

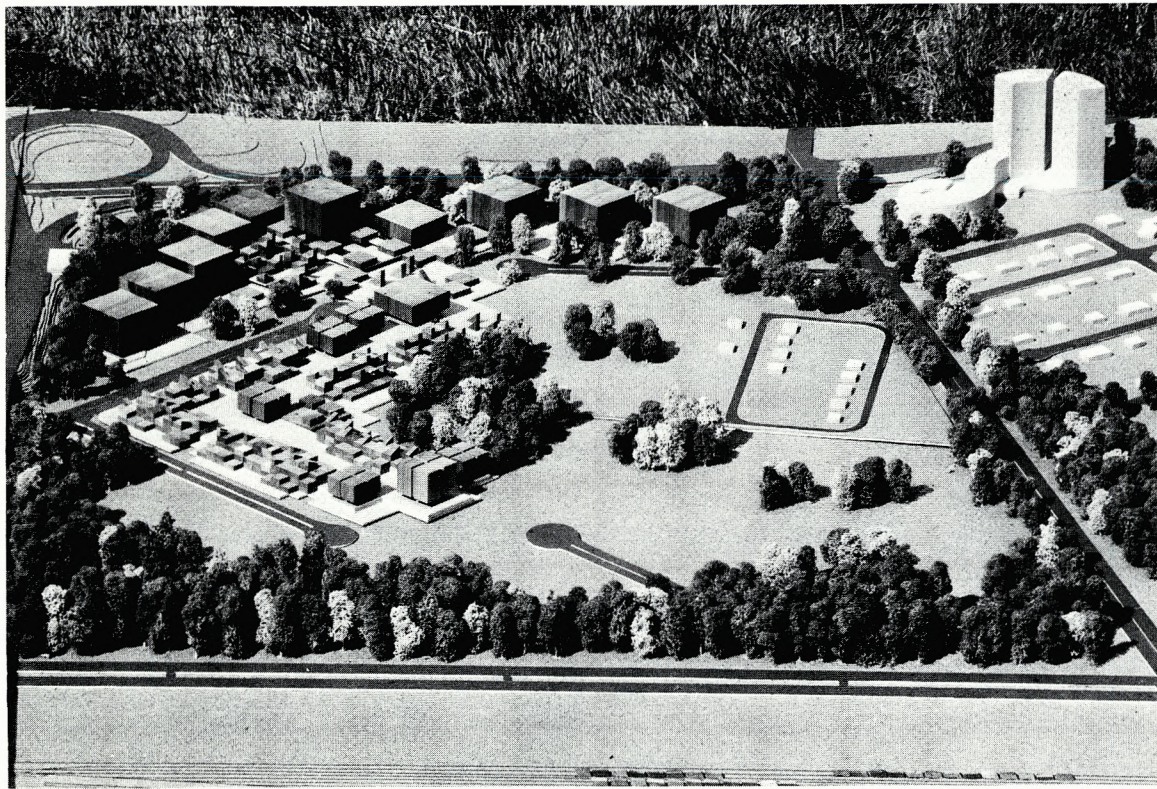


The second component area includes the Office-Commercial Core and features a series of intimate plazas, boutiques, professional offices, convenience shops, and even some housing and motel units to encourage a longer activity cycle. The environment is intended to be intimate in scale and extends over two levels. An important feature is four office blocks varying in height from three to seven storeys above the plaza level. As will be evident later, the height restriction effectively safeguards the panoramic view of the North Shore Mountains. Further, the office blocks establish a much needed buffer between the inter-municipal streets and the internal development areas.

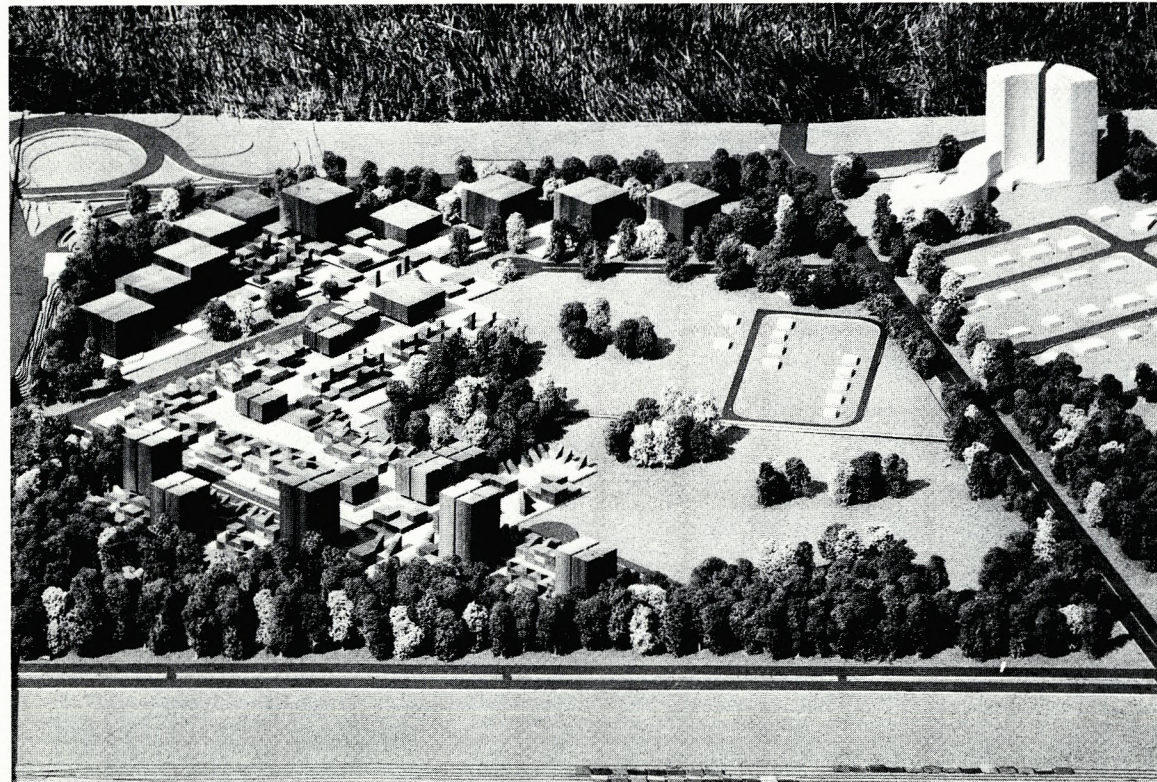
All parking is underground and a private service road circumvents the area. Again, having established a plaza level and overall concept, this component area may be realized over a series of stages.



The core is planned to grow both to the west and east. Three additional towers of five-six storeys augment the office program and extend both the plaza level and the buffer effect.



With the expansion of the office core to the east, the office program is basically completed and the entire Marine Drive frontage is developed. The height restrictions result in a horizontal emphasis leaving the twin towers of the Plaza International as the most dominant vertical element.



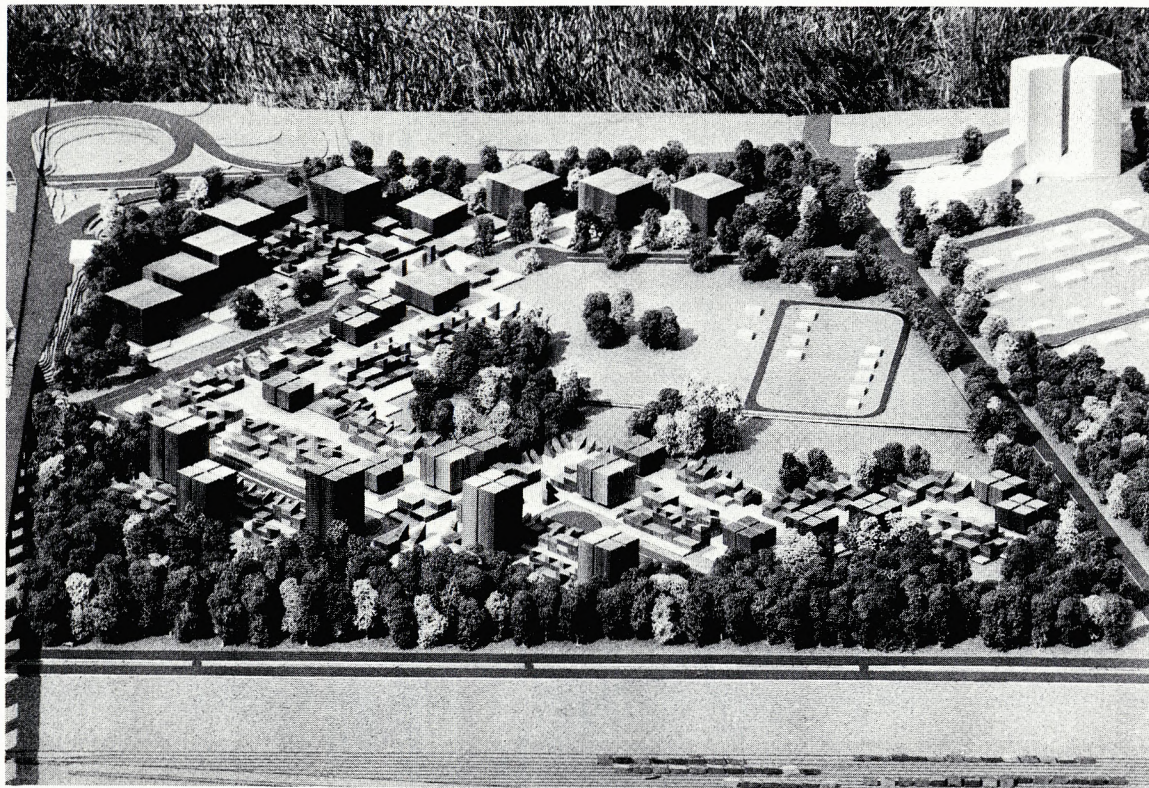
The third major component area includes the Community-Recreation Core on the only high-rise structures within Sector Three. These apartment towers, which vary in height from twelve to sixteen storeys, are integrated at their base with stacked townhouses. The towers are nestled in and against a backdrop of forest, which itself acts as a linear park and buffer strip, between the internal development and the future Lower Level Road.

The Community-Recreation Core is located so as to coincide with an important pedestrian crossroad. Further, in being adjacent to the higher concentrations of housing units, it offers convenient leisure time activities for the residents.

The majority of this component area is independent of the existing Welsh St. However, it may not be fully realized until the Lower Level Road is implemented and Welsh St. is converted to a pedestrian lane.

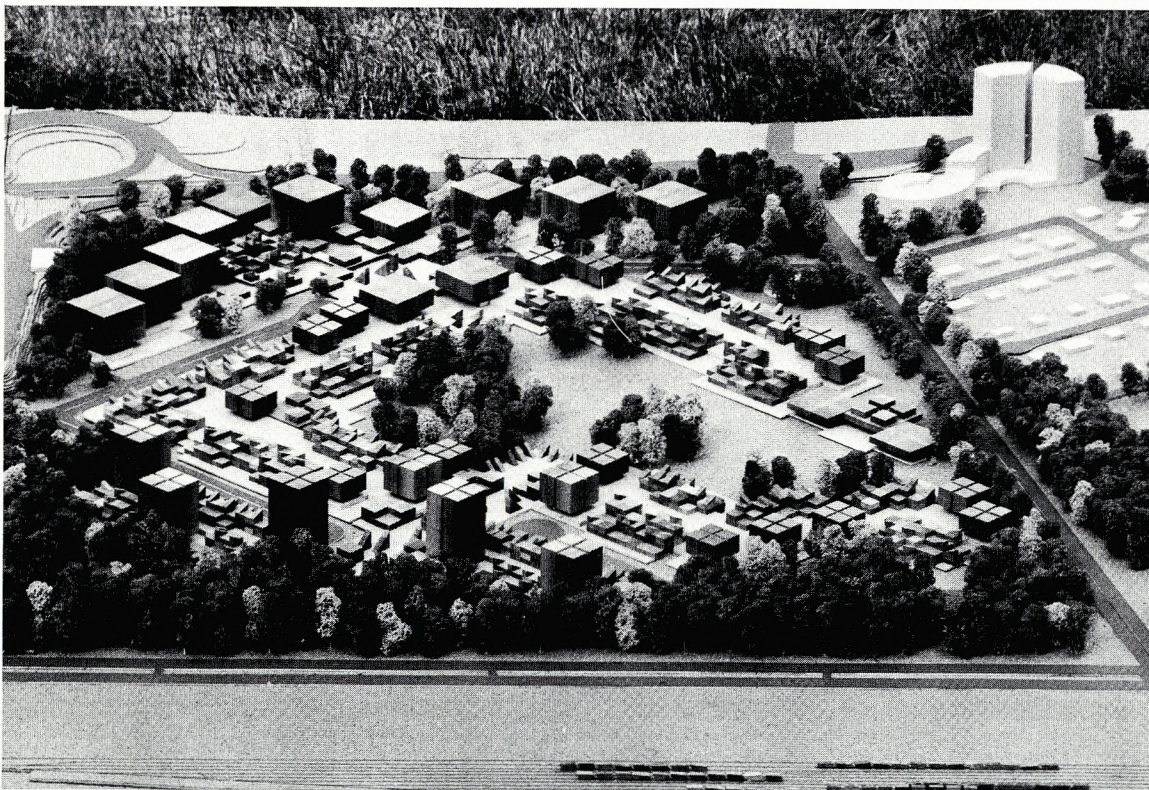
SECTOR THREE COMPONENT AREAS

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

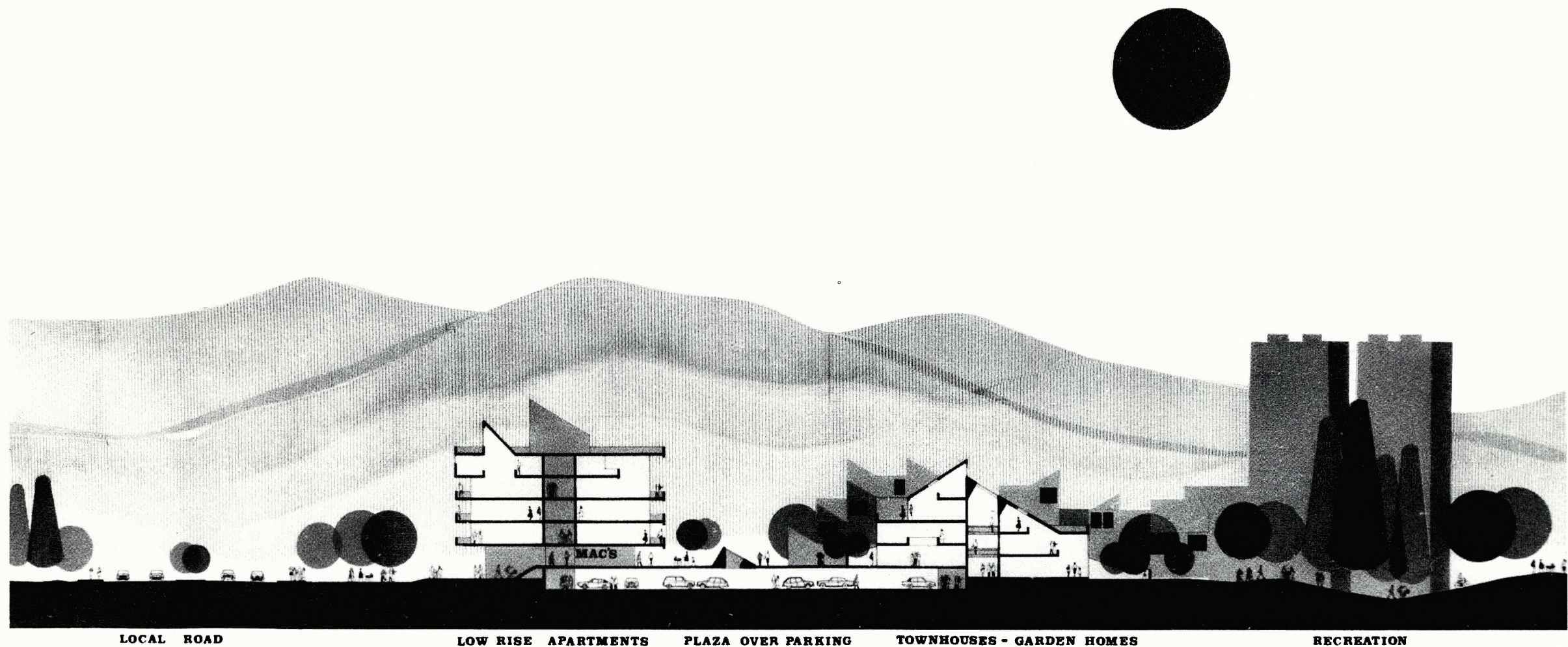


The fourth component area involves the existing longhouse and portions of Humoltchesen Park. It is similar to the first in that it features primarily low-rise residential units. It is assumed that by this time, a new longhouse would have been built possibly on the banks of the Capilano River, making this area available for development.

With the completion of this component, the total of the Band's uncommitted land within Sector Three will have been developed. Up until this time, the existing village and nursery school remain basically undisturbed. It is further assumed that by this time, it will be both possible and economically feasible to relocate the affected Band members to new sites, either in the Golf Driving area or the Capilano River Village area.



With relocation of the village, the last component area within Sector Three may be developed. Included are Educational-Recreational facilities which, because of their location south of the village, could be implemented earlier if it was deemed necessary. A significant portion of Humoltchesen Park remains for the associated exterior recreation spaces.



SECTOR THREE - HOUSING - CROSS SECTION

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

SECTOR THREE - HOUSING CROSS-SECTION

The adjoining cross-section illustrates the type of housing to be found within the central areas of Sector Three.

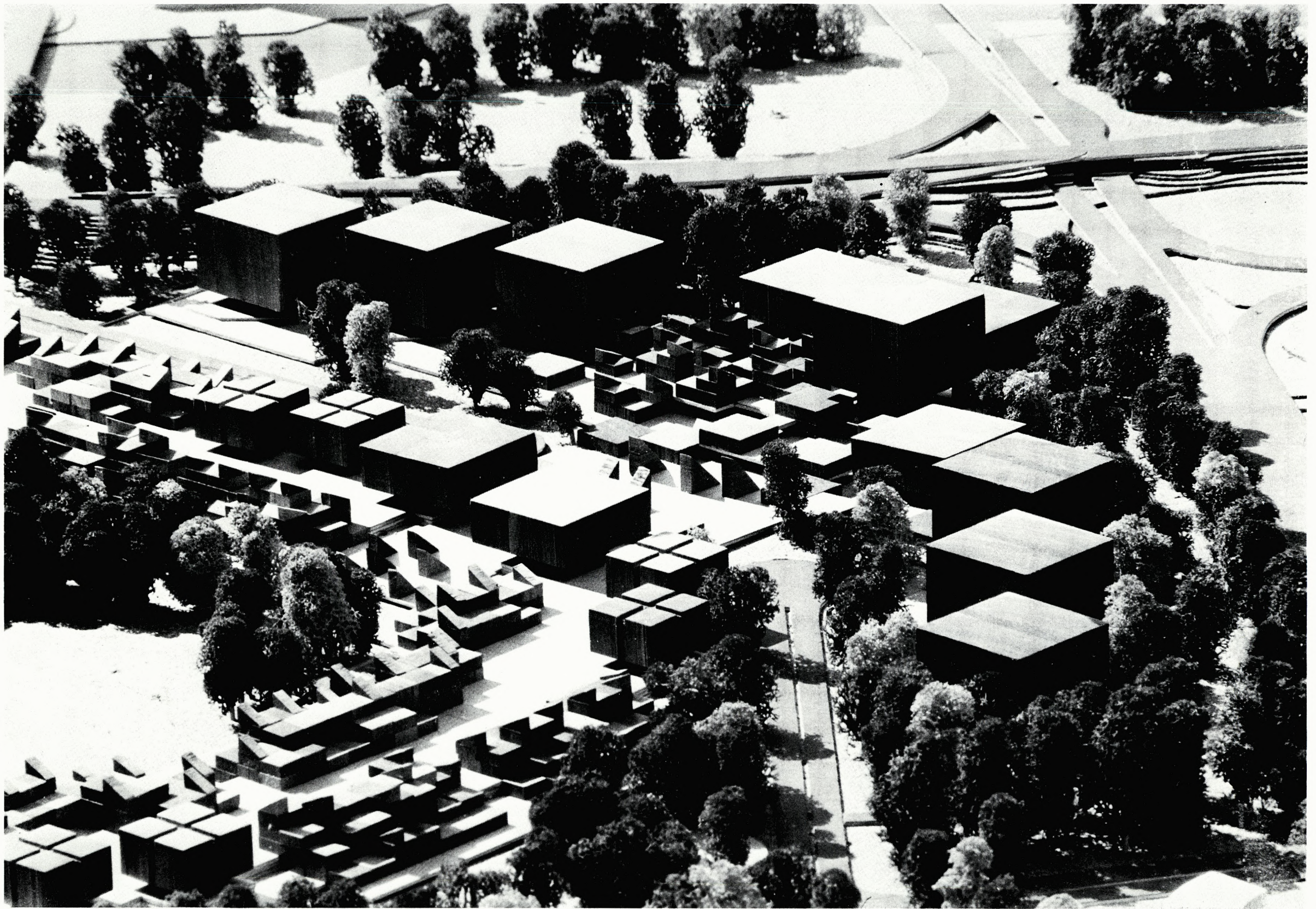
A fully landscaped 'local' road provides access to the major parking areas. In the case of the linear housing zones, one level of structural parking featuring three one-way lanes and diagonal parking, is sufficient to accommodate all the residential parking needs. The one exception is near the Office-Commercial and Community-Recreation Cores, where the additional numbers necessitate a partial second level. Some guest parking is structured but the majority is in exterior parking enclaves throughout the site.

The roof of the parking structure is utilized as a pedestrian street, complete with landscaping and private patios for the residents. Numerous access points along the route connect to both the local streets and the more passive park areas in the interior.

The building section cuts through a low-rise apartment which could include two storey studios on the top floors and convenience shopping facilities at key locations throughout the site. The section through the townhouse-garden homes is only one of many possible layouts. The range includes full two or three storey units with double exposure to both roof-top gardens. Of significance is the low profile which permits a panoramic view of the North Shore Mountains. The tall towers in the background are those of the Plaze International Complex.

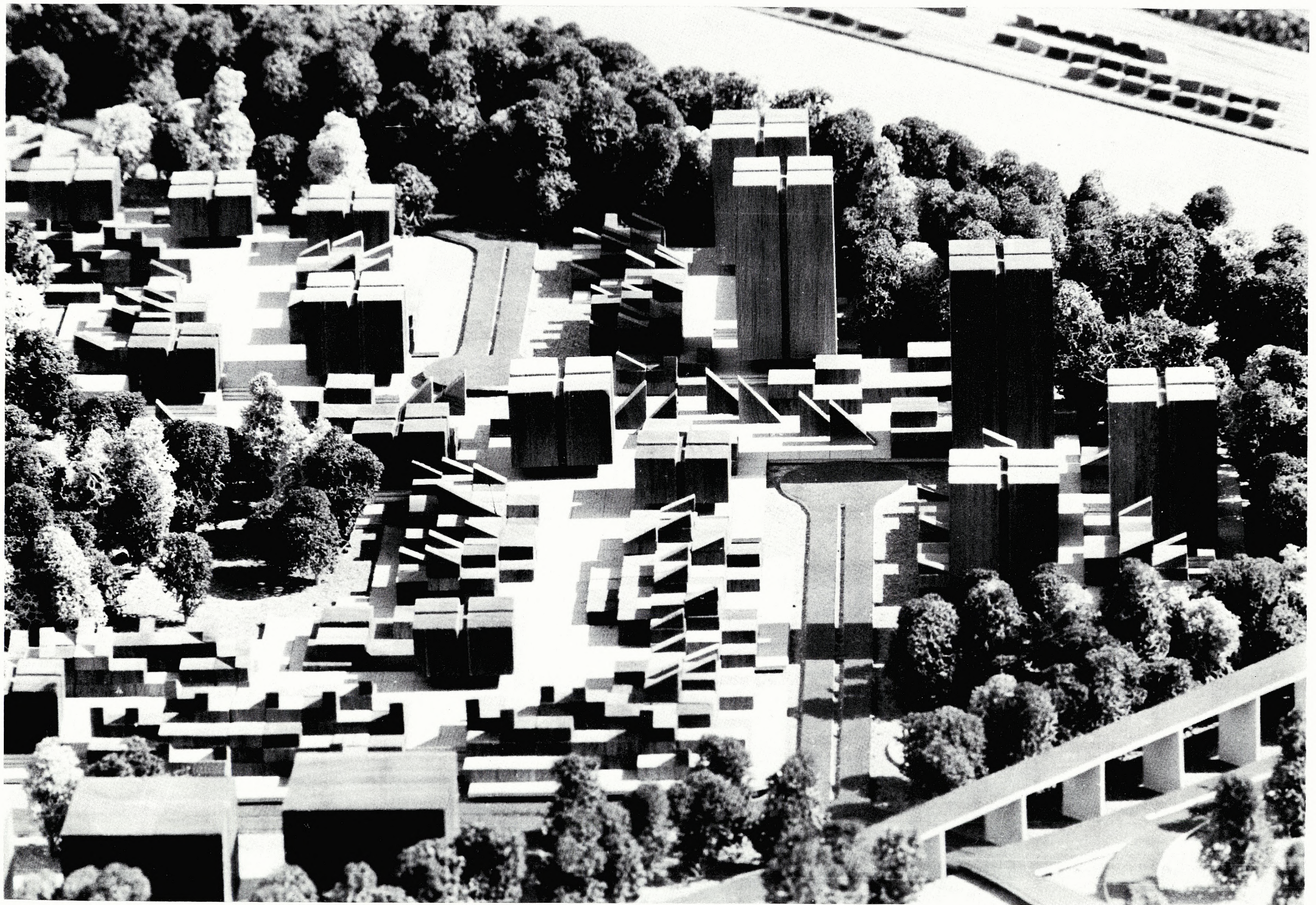
Office-Commerical and Community-Recreation Cores

The following photographs illustrate at a larger scale, the three-dimensional features of the Office-Commerical Core, located south of Marine Drive, and the Community-Recreational Core, located just north of the existing forest areas.

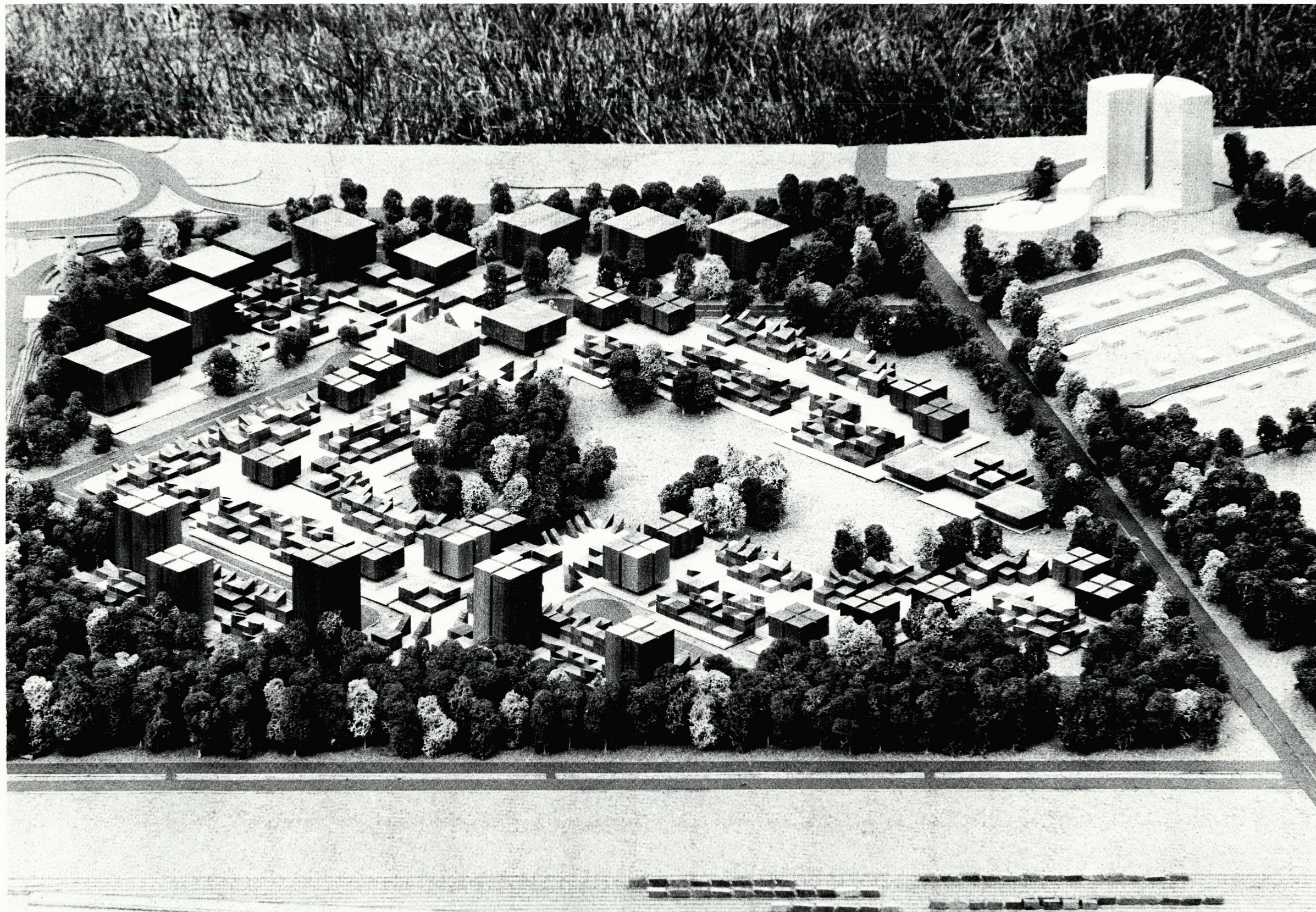


OFFICE-COMMERCIAL CORE

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING



COMMUNITY - RECREATION CORE



SECTOR THREE DEVELOPMENT

**SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING**

COMPLETED SECTOR THREE DEVELOPMENT

With the completion of all component areas, Sector Three offers a viable mixed use community which respects all the natural amenities of the site. The Concept, both for Sector Three as well as the entire IR5, is derived and inspired by the guidelines provided by the Squamish Indian Band. For purposes of review, the highlights are as follows:

OPTIMUM DEVELOPMENT OF A STRATEGIC SITE

SOCIAL AND ECONOMIC OPPORTUNITIES AND EXPERIENCES
FOR THE INDIAN PEOPLE

A PLANNED COMMUNITY WITH AN EMPHASIS ON PEOPLE AND
PEDESTRIANS

RECOGNITION AND IMPROVEMENT OF ALL EXISTING NATURAL
AMENITIES WITH PUBLIC ACCESS TO ALL AMENITIES

PHASED DEVELOPMENT BALANCED BY TRANSPORTATION
IMPROVEMENTS

CONCENTRATED OFFICE DEVELOPMENT FOR NORTH SHORE
JOB OPPORTUNITIES

DIVERSIFIED HOUSING FOR A VARIETY OF FAMILY
COMPOSITIONS

HORIZONTAL LOW-RISE PROFILE

In general, the concept emphasizes a quality living environment, commensurate with the inherent qualities of the site and its strategic location on the North Shore.

OVERALL PROGRAM SUMMARY

In brief, the overall program can be summarized as follows:

- 1) The total existing development is approximately 1.33 million square feet. Total new development is approximately 9.14 million square feet and is anticipated to be realized over a 20 to 25 year time period.
- 2) The largest component of new development is residential, with emphasis on low-rise. A substantial component of office space is also recommended in order to increase job opportunities on the North Shore. These new uses are (Note: M SF = million square feet):

Office	2.36 M SF	(26%)
Residential	4.50 M SF	(49%)
Commercial	.62 M SF	(7%)
Hotel Convention	1.19 M SF	(13%)
Balance (rec'n, educ'n, cultural, etc.)	<u>.47 M SF</u>	<u>(5%)</u>
	9.14 M SF	100%

- 3) The residential program for new housing consists of approximately:

52% low-rise (2,400 units) on 70 gross acres (land area 15%)
48% high-rise (2,200 units) on 16 gross acres (land area 13%)

- 4) The total population is estimated as follows:

Commercial	Existing	253
	New	<u>1,740 *</u>
	Total	1,993 jobs
Office	Existing	710
	New	<u>11,810 **</u>
	Total	12,520 jobs
Residential	Existing	1,257
	New	<u>10,270</u>
	Total	11,527 people

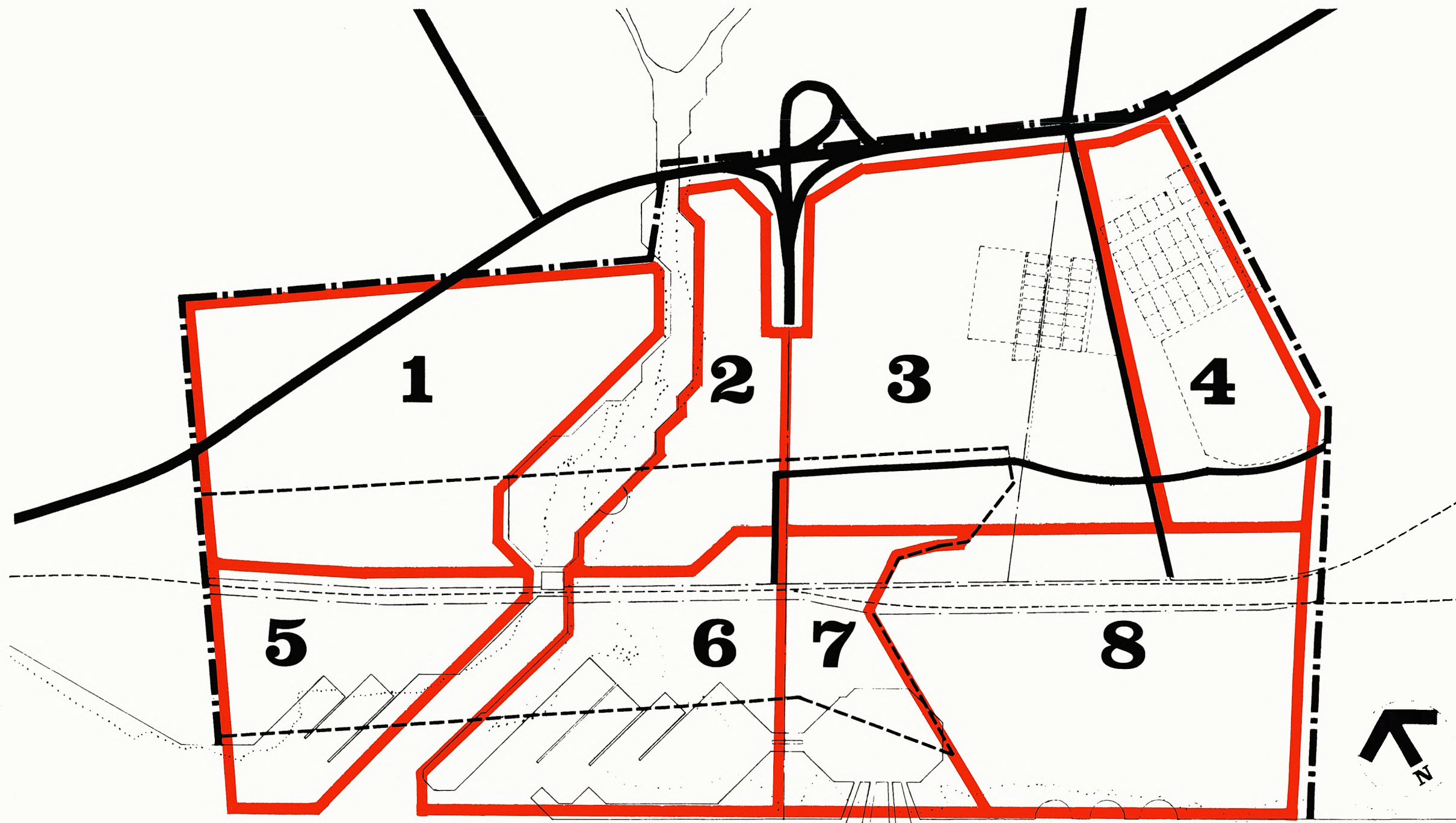
* includes 550 jobs - current Park Royal Expansion.

** includes 1810 jobs - original D.O.E. program.

CHAPTER 8 DEVELOPMENT PROGRAM

It should be noted that the program is predicated on Main Option Three as detailed on Pages 21 and 22. Further, the program is described at three levels.

- 1) Overall development program for the entire site (Pages 33, 34)
- 2) Detailed development program for Sector's 2, 3, 4 (Page 36)
- 3) Specific detailed program for Sector 3 (Page 37)

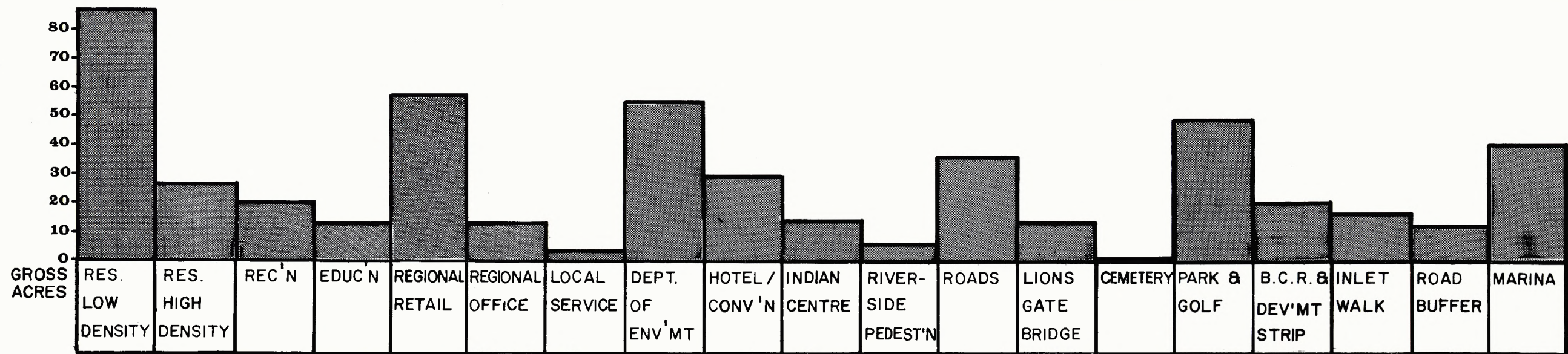


1. PARK ROYAL AND NORTH WEST CUT OFF LANDS
2. EAST BANK OF CAPILANO RIVER
3. BAND'S UNCOMMITTED LANDS AND VILLAGE "A"
4. PLAZA INTERNATIONAL AND VILLAGE "B"

5. SOUTH WEST CUT OFF LANDS
6. TREATMENT PLANT AND CUT-OFF LANDS
- 7/8 THE "SLOUGH" AND D.O.E. LEASE AREA

DEVELOPMENT SECTORS

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING



LAND USE COMPARISON

LAND USE (GROSS ACRES) SECTOR	FOREST	RIVER- SIDE PEDEST'N	LOW LEVEL ROAD	LIONS GATE BRIDGE	CEMETERY	PIPELINE ROAD	McGUIRE R.O.W.	PARK & GOLF COURSE	B. C. R.	OCEAN- SIDE PEDEST'N	EXIST'G DEV'MT (GROSS)	NEW DEV'MT (GROSS)	LOCAL ROADS	BUFFER	MARINA	TOTAL AC
1	7.32	1.23	4.20		.49						67.80	3.44	.56			85.04
2	2.00	1.48	2.47	2.86								24.15	2.15	5.49		40.60
3	12.29		5.31	2.86		2.95					NET	68.05 (46.44)	8.37	5.00		104.83
4	6.12		2.40				2.05				20.48	18.07	3.18			52.30
5		1.15						20.23	4.00			5.50			8.00	38.88
6		1.15		3.45					2.52	6.38		16.05			32.00	61.55
7/8			1.00	3.45					13.22	9.19		88.14	.65			115.65
TOTAL	27.73	5.01	15.38	12.62	.49	2.95	2.05	20.23	19.74	15.57	88.28	223.40	14.91	10.49	40.00	498.85

MAJOR LAND USES

SECTOR		RESIDENTIAL		REC'N	EDUCATION			COMMERCIAL DEV'T		HOTEL/ CONV'N	INDIAN CENTRE	RELIG- IOUS	MARINA	TOTAL	OTHER LAND USES	TOTAL SECTOR ACRES
		LOW DENSITY	HIGH DENSITY		DAY CARE	PRIMARY (K-2)	ELEM.	REGIONAL RETAIL	LOCAL OFFICE SERVICE							
EXISTING 1	DU'S POP'N SF CARS AC		300 690 267 000 300 9.43					(630) 319 330 1 570 56.62	(710) 142 000 355 1.75					300 690 728 330 2 225 67.80		SECTOR F.A.R. = 0.65
	DU'S POP'N SF CARS AC	320 800 352 000 432 —	608 1 064 547 200 668 2.40	14 500 13 .48		(65 pupils) 6 000 3 .44		(960) 476 000 2 400 —	(1420) 284 000 7 10 —	(22) 7 500 18 .12				928 1 864 1 687 200 4 244 3.44	13.80	85.04
EXISTING 2	DU'S POP'N SF CARS AC															SECTOR F.A.R. = 0.20
	DU'S POP'N SF CARS AC	184 700 220 800 268 9.20		3 300 4 1.50							135 000 338 13.45			184 700 359 100 610 24.15	16.45	40.60
EXISTING 3	DU'S POP'N SF CARS AC															SECTOR F.A.R. = 0.62
	DU'S POP'N SF CARS AC	1 204 3 034 1 342 800 1 630 32.95	800 1 400 640 000 880 7.27	76 175 98 12.00	(90 pupils) 4 500 3 —	(127 pupils) 9 562 5 .55	(668 pupils) 50 137 25 6.00	(3 000) 600 000 1 500 5.50	(232) 81 125 203 2.10	(50 Rms) 28 000 50 1.68		10 000 13 —		2 004 4 434 2 842 299 4 407 68.05	36.78	104.83
EXISTING 4	DU'S POP'N SF CARS AC	32 121 38 400 48 15.94	255 446 230 000 255 —							(370 Rms) 330 000 370 4.54				287 567 598 400 673 20.48		SECTOR F.A.R. = 0.34
	DU'S POP'N SF CARS AC	136 516 163 200 198 12.75		3 300 4 2.98	(50 pupils) 2 500 2 2.34									136 516 1 69 000 204 18.07	13.75	52.30

DU'S = NUMBER OF DWELLING UNITS; POP'N= POPULATION; SF = SQUARE FEET (DOES NOT INCLUDE SQUARE FEET OF PARKING); CARS = NUMBER OF CARS;

OVERALL DEVELOPMENT PROGRAM

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

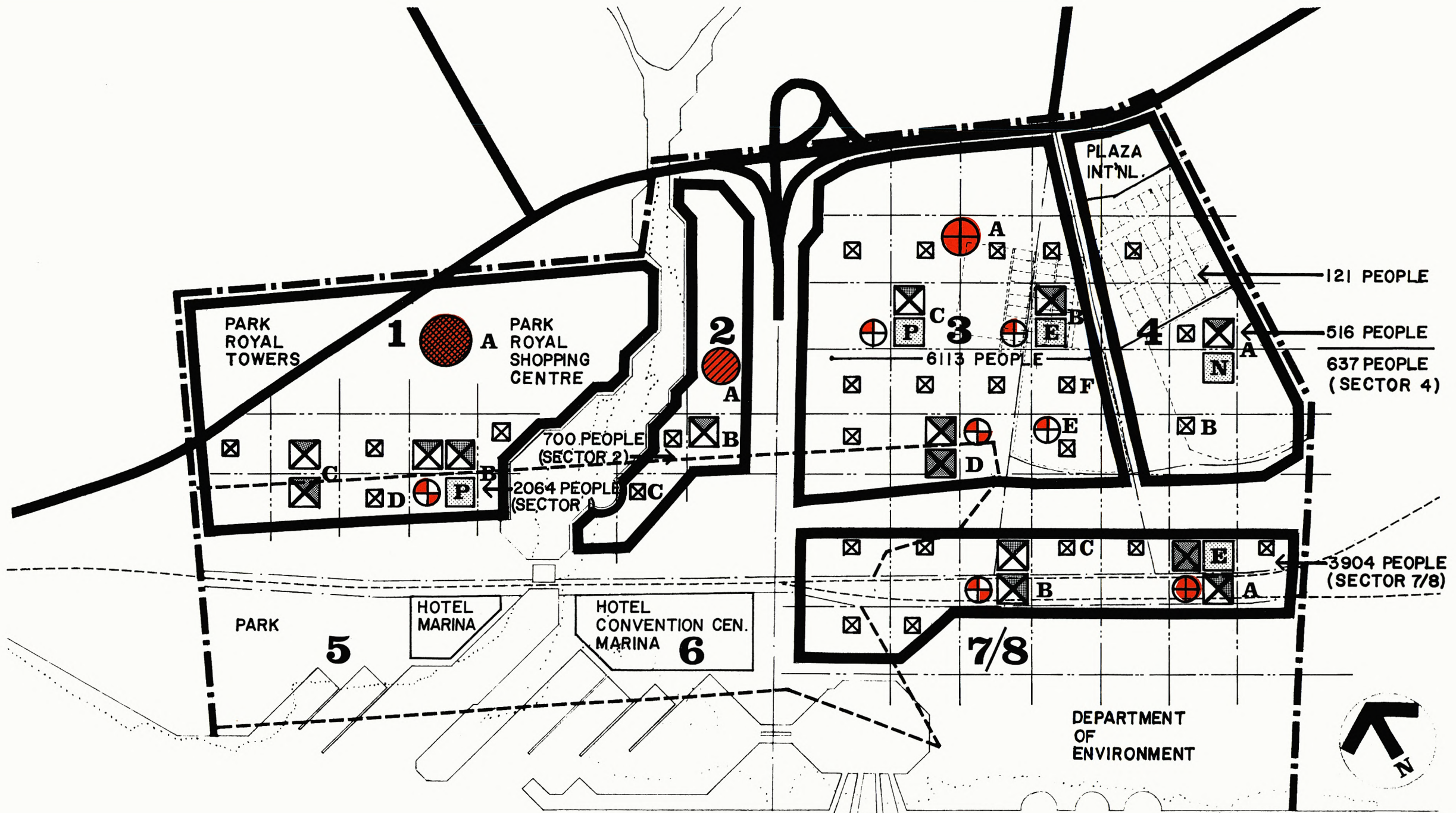
SECTOR		RESIDENTIAL		REC'N	EDUCATION			COMMERCIAL DEV'T			HOTEL/ CONV'N	INDIAN CENTRE	RELIG- IOUS	MARINA	TOTAL	OTHER LAND USES	TOTAL SECTOR ACRES
		LOW DENSITY	HIGH DENSITY		DAY CARE	PRIMARY (K-2)	ELEM.	REGIONAL RETAIL	LOCAL OFFICE	SERVICE							
EXISTING 5	DU'S POP'N SF CARS AC																SECTOR F.A.R. = 0.0001
	NEW DU'S POP'N SF CARS AC										(200Rms) 190 000 200 5.50			(200boat) 50 8.00	190 000 250 13.50	25.38	38.88
EXISTING 6	DU'S POP'N SF CARS AC																SECTOR F.A.R. = 0.37
	NEW DU'S POP'N SF CARS AC										(500Rms) 980000 750 16.05			(800boat) 200 32.00	980 000 950 48.05	13.50	61.55
EXISTING 7/8	DU'S POP'N SF CARS AC																SECTOR F.A.R. = 0.58
	NEW DU'S POP'N SF CARS AC	548 1 370 602 800 740 15.02	792 1 386 712 800 871 6.60	46 700			(161 pupils) 19 612 10 2.75		(7 390) 1498000 3 690 60.12	(149) 56 280 140 .82					1 340 2 756 2 916 192 5 524 88.14	27.51	115.65
EXISTING TOT	DU'S POP'N SF CARS AC	32 121 38400 48 15.94	555 1 136 497 000 555 9.43					319 330 1 570 56.62			(370Rms) 330 000 370 4.54				587 1 257 1 326 730 2898 88.28		OVERALL F.A.R. = 0.48
	NEW DU'S POP'N SF CARS AC	2 392 6 420 2 681 600 3 268 69.92	2200 3850 1 900 000 2 419 16.27	— — 143 975 192 19.79	— (140pupils) 7 000 5 2.34	— (192pupils) 15 562 8 .99	— (161pupils) 69 749 35 8.75	— (400) 476 000 3 400 —	(11 800) 2 362 000 5 900 65.62	(403) 144 905 361 3.04	(750Rms) — 1 198 000 1 000 23.23	— — 135 000 338 13.45	— — 10 000 13 —	(1000boat) — — 250 40.00	4 592 10 270 9 143 791 16 189 263.40	147.17	498.85

AC= ACRES (SITE AREA)

Notes: 1) The land area allocations (gross acres) for various uses are estimates only.

2) The population totals shown are for residential population.

3) The estimated number of jobs associated with regional retail and office development has been illustrated in brackets above the floor areas (SF) of such uses.



GENERAL

- 1** SECTOR REFERENCE NUMBER
- A** FACILITY REFERENCE NUMBER
- DEVELOPMENT AREA IN SECTOR
- 400'x400' PLANNING AREA

COMMERCIAL

- REGIONAL SHOPPING
- RIVERSIDE COMMERCIAL
- MAJOR CENTRE (± 50,000 SF)
- MINOR CENTRE (± 5,000 SF)

EDUCATION FACILITIES

- CORNER STORE (± 2,000 SF)
- ELEMENTARY SCHOOL (K-7)
- PRIMARY SCHOOL (K-2)
- NURSERY SCHOOL

RECREATION FACILITIES

- NO. 1 (serves 3,000-7,000 people)
- NO. 2 (serves 1,500-3,000 people)
- NO. 3 (serves 500-2,000 people)
- NO. 4 (serves 150-400 people)

SERVICE FACILITIES

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

SERVICE FACILITIES

The following together with the diagram on the left provides a summary of the service facilities proposed for IR5. In addition to this summary, a detailed description of these facilities and other uses is provided in Appendix C, Non Residential Uses.

Where appropriate, the sizing and distribution of facilities are organized in a hierarchical system which places commonly used services conveniently close to residences, and centralizes other services which require a larger supporting population.

Briefly, the service facilities diagram on the left illustrates the following:

Commercial:

In addition to the regional centre of Park Royal (Sector 1), major commercial facilities are proposed in Sector 3 and Sector 7/8.

The above are proposed to be supplemented with minor commercial centres and corner store level facilities which will insure that convenience retail facilities are available within easy walking distance throughout.

In response to the historical significance of the Capilano River to the Squamish people and the Band's plan to develop an Indian Village and Focus on the east bank, an Indian inspired commercial development is proposed in this location which would emphasize the pedestrian.

Also, reflecting the uniqueness of the setting, hotel, convention and marina facilities are proposed to be located near the mouth of the Capilano River and Burrard Inlet.

Education

The projected elementary school population for IR5 will ultimately require two new schools. However, in order to locate education facilities for the youngest grade children as close to their homes as possible, the concept of supplementing the regular elementary schools (which accommodate all grades) with primary facilities (for children from kindergarten to grade 2) has been introduced. See also Appendix D, Technical Research, Education (D-7), for further details regarding educational requirements.

A nursery school for pre-schoolers, similar to the existing facility presently operating in the Village area west of Mathias Road, is proposed to be located in Sector 4 in conjunction with the planned expansion of the village located east of Pipeline Road.

Recreation

A full range of recreation opportunities is planned. Facilities have been categorized into four groups and located on the basis of number of people served and proximity to the user. The various categories and location standards are: (*)

	Approximate Number of People Served	Maximum Distance from User
No. 1 (sector)	3000-7000	1/2 mile
No. 2 (sub-sector)	1500-2000	3/8 mile
No. 3 (neighborhood)	500-2000	1/4 mile
No. 4 (housing cluster)	150-400	**400 feet

* Source: report prepared by Schnadelbach Braun titled, "Audubon: Open Space and Recreation", for the New York State Urban Development Corporation, February 20, 1973.

** For purpose of distributing the Housing Cluster Recreation Facilities (No. 4) throughout the development, a 400 foot by 400 foot planning area grid has been superimposed over the Reserve as illustrated on the left.

SECTOR 3		RESIDENTIAL			RECREATION		EDUCATION			COMMERCIAL DEVELOPMENT				HOTEL/	SERVICE	RELIG-	TOTAL
ZONE		TOWN HOUSE	WALK UP	HIGH RISE	REC'N BLDG.	SWIM'G POOL	DAY CARE	PRIMARY (K-2)	ELEM.	REGIONAL RETAIL	OFFICE	LOCAL RETAIL	SERVICE OFFICE	CONV'N	STATION	IOUS	
A (F.A.R.=1.38) (10.72net ac)	DU'S POP'N		30											(50 Rms)			30
	SF		60									(2684)	(70)	(78)			60
	CARS		30000								536 848	35 322	15570	25 000	3000		645 740
B (F.A.R.=1.25) (9.94net ac)	DU'S POP'N	232	160	60													452
	SF	673	320	105				(127pupils)									1098
	CARS	278 400	160000	48 000	3300			9562			(158)	(13)	(11)				539 320
C (F.A.R.= 3.31) (3.01 net ac)	DU'S POP'N	95		400													495
	SF	276		700													976
	CARS	114 000		320 000													434 000
D (F.A.R. = .66) (2.85 net ac)	DU'S POP'N																
	SF																
	CARS				51675	10000	(90 pupils)	4500				(8)	(10)			10000	81925
E (F.A.R.=2.92) (2.36 net ac)	DU'S POP'N	63		280													343
	SF	183		490													673
	CARS	75 600		224 000													299 600
F (F.A.R.=1.16) (8.16 net ac)	DU'S POP'N	142	192	60													394
	SF	412	384	105													901
	CARS	170 400	192 000	48 000								(3)					412 150
G (F.A.R.=.80) (1.76 net ac)	DU'S POP'N																
	SF																
	CARS				7200	4000			(668 pupils)								61337
H (F.A.R.=1.11) (7.64 net ac)	DU'S POP'N	162	128														290
	SF	470	256														726
	CARS	194 400	128 000								(158)	(21)	(20)				368 227
TOTAL (F.A.R.=1.40) (46.44 net ac)	DU'S POP'N	(35%)694	(25%)510	(40%)800	-	-	-	-	-	-	-	-	-	-	-	-	2004
	SF	2014	1020	1400	-	-	-	-	-	-	-	-	-	-	-	-	4434
	CARS	832 800	510 000	640 000	62 175	14 000	(90 pupils)	(127 pupils)	(668 pupils)	-	(3000)	(115)	(119)	25 000	3000	10 000	2 842 299
		1013	617	880	78	20	3	5	25	-	1500	144	59	50	-	13	4407

NOTE APPROXIMATELY 10% OF THE RESIDENTIAL RELATED PARKING IS FOR VISITOR USE

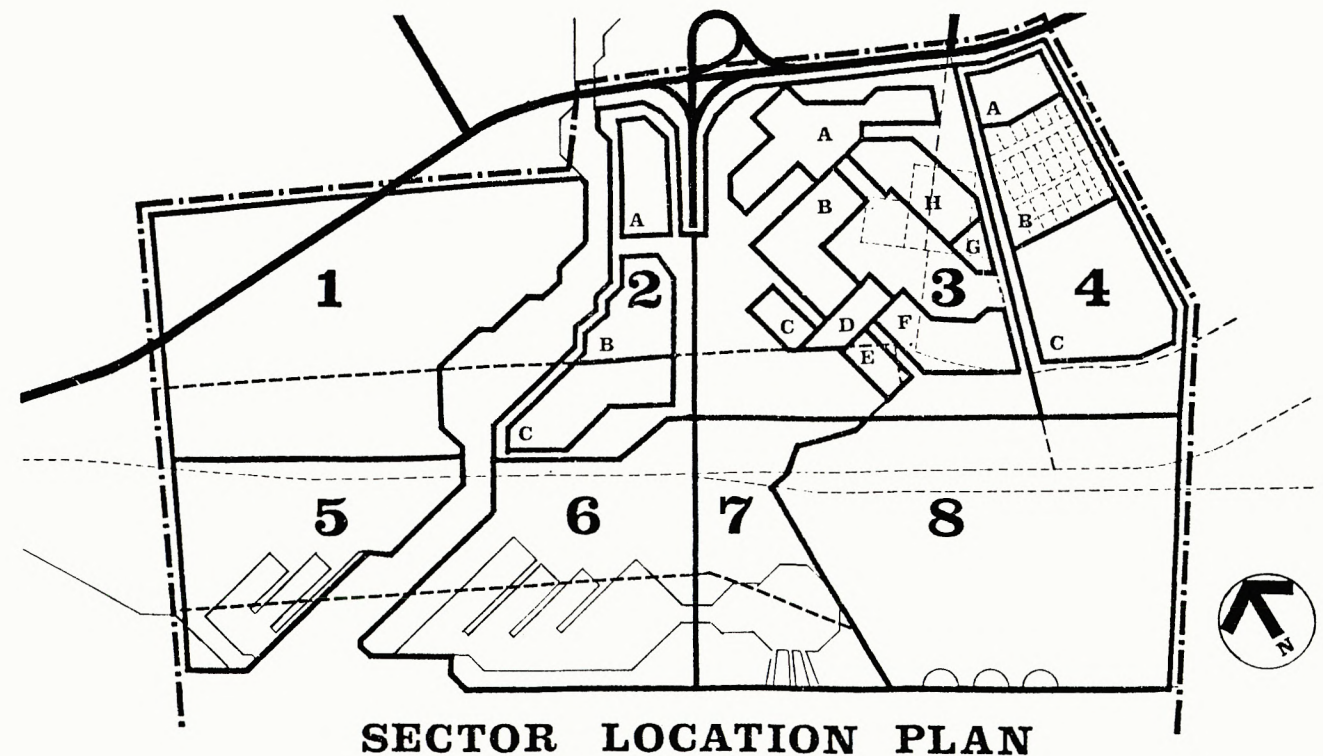
SECTOR'S 2,3 &4 PROGRAM SUMMARY

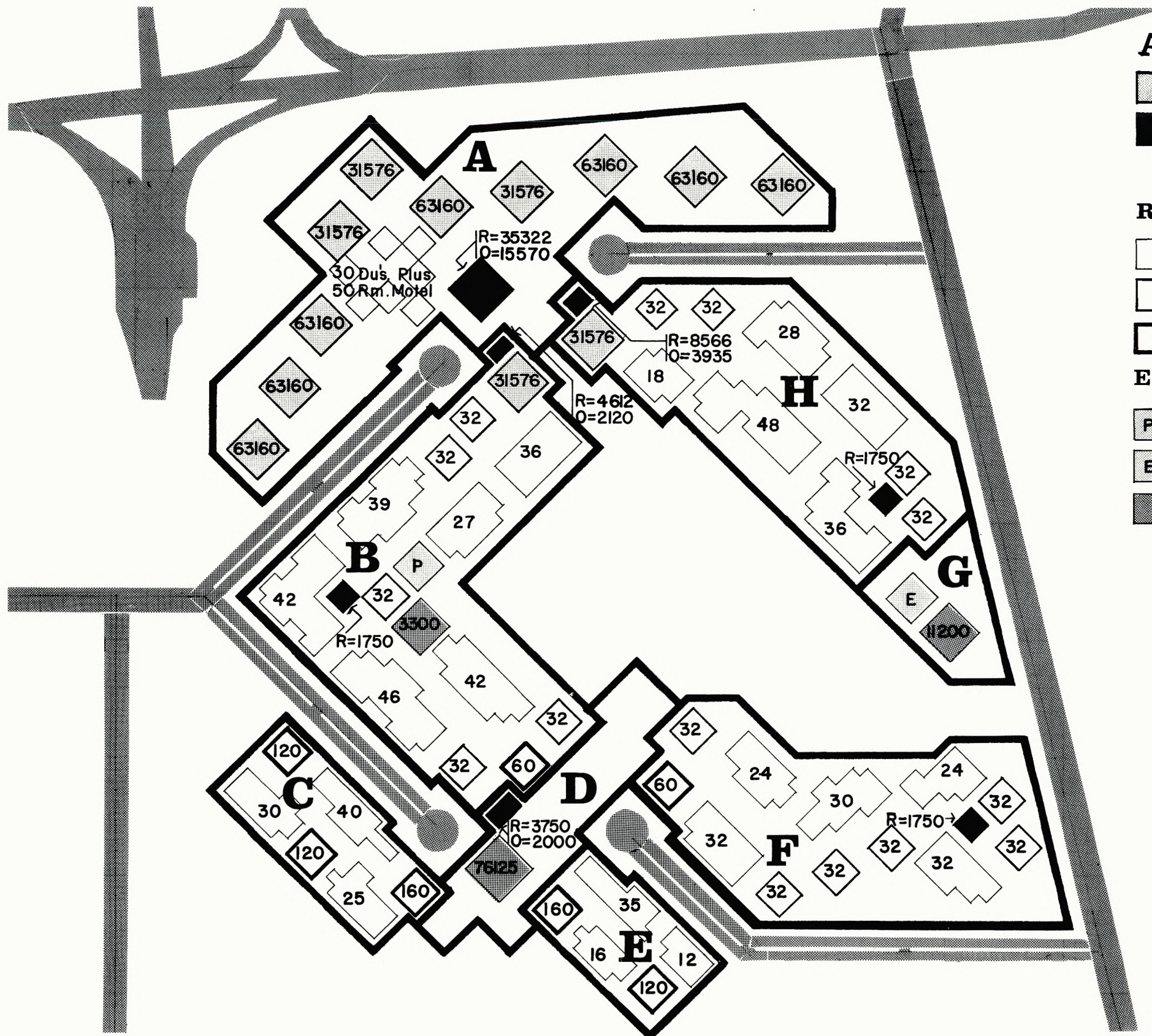
SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

SECTOR 2		RES.	REC'N	INDIAN CENTRE	BAND ADMIN. BLDG.	TOTAL
ZONE						
A (F.A.R. = .44) (6.00 net ac)	DU'S POP'N					
	SF			115 000		115 000
	CARS			288		288
B (F.A.R. = .05) (10.00 net ac)	DU'S POP'N					
	SF				20 000	20 000
	CARS				50	50
C (F.A.R. = .63) (8.15 net ac)	DU'S POP'N	184				184
	SF	700				700
	CARS	220 000	3 300			224 100
TOTAL (F.A.R. = .38) (24.15 net ac)	DU'S POP'N	184				184
	SF	700				700
	CARS	220 800	3 300	115 000	20 000	359 100
SECTOR 4		RES.	REC'N	NURSERY SCHOOL	HOTEL	TOTAL
ZONE						
A (F.A.R. = 2.83) (4.54 net ac)	DU'S POP'N	255			(370 Rms)	255
	SF	446				446
	CARS	230 000			330 000	560 000
B (F.A.R. = .06) (15.94 net ac)	DU'S POP'N	32				32
	SF	121				121
	CARS	38 400				38 400
C (F.A.R. = .21) (18.07 net ac)	DU'S POP'N	136				136
	SF	516		(50 pupils)		516
	CARS	163 000	3 300	2 500		169 000
TOTAL (F.A.R. = .46) (38.55 net ac)	DU'S POP'N	423			(370 Rms)	423
	SF	1 083		(50 pupils)		1 083
	CARS	531 600	3 300	2 500	330 000	767 400
			4	2	370	877

SECTOR 2, 3 and 4 PROGRAM SUMMARY

The program illustrations on the left provide a detailed description by zone, of uses planned for Sectors 2, 3 and 4 (uncommitted land areas which are still under complete control of the Band). The Indian Village components of the programs noted for Sectors 2 and 4 have yet to be finalized by the Band. A separate report dealing with this matter titled, "Band Housing and Recreation on IR5", has been submitted to the Band for their review.





- A** ZONE NUMBER
- OFFICE (Square Feet)
- LOCAL RETAIL (Square Feet)
- (R=Retail O=Office)
- RESIDENTIAL**
- TOWN HOUSE (No. Of DUs.)
- WALK UP (No. Of DUs.)
- HIGH RISE (No. Of DUs.)
- EDUCATION**
- P PRIMARY SCHOOL (K-2)
- E ELEMENTARY SCHOOL
- RECREATION (Square Feet)

SECTOR 3 DETAILED PROGRAM

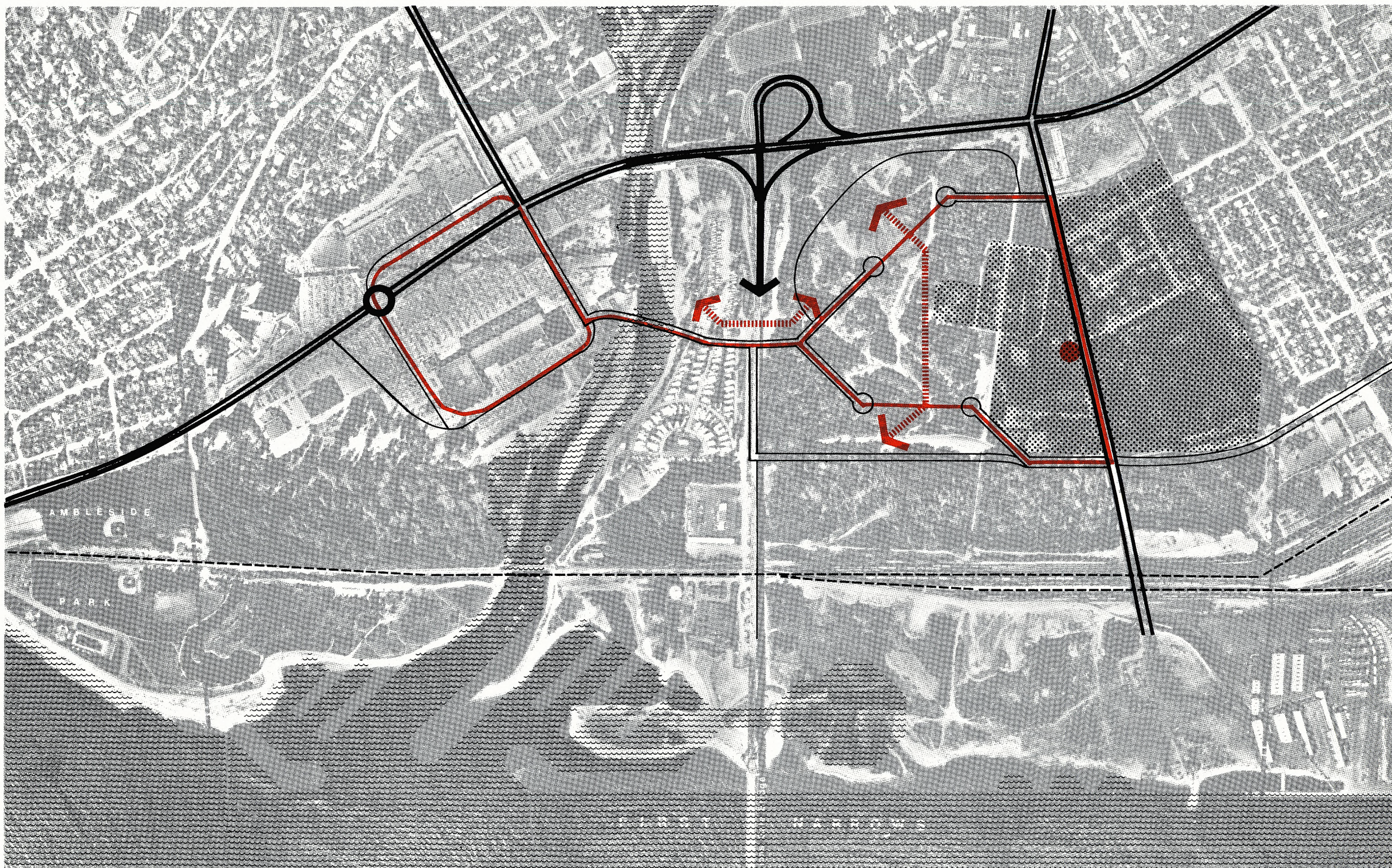
SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

SECTOR 3 DETAILED PROGRAM

The illustration on the left provides a location description of recommended building types and sizes for Sector Three. This summary represents the third of three levels of detail for describing the Sector Three program in this report.

With this level of program detail for Sector Three, the Band will be able to consider both large and small scale development packages with the assurance that each will relate to the entire overall program and concept.

Accordingly, the Band can undertake implementation with a great deal of flexibility and positive direction with respect to the program for initial development.



SHORT TERM CIRCULATION

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

SHORT TERM CIRCULATION

In the early stages of development, it is essential that the existing village areas be disturbed as little as possible. Certainly, additional traffic from the Park Royal expansion and the Band's first developments will utilize New Pipeline Road. This may be partially compensated by a pedestrian overpass linking the two village areas towards the northern portion of Humoltchesen Park (*).

Vehicular Patterns

The short term circulation patterns involve Marine Drive, Pipeline Road, Welsh Street, the Capilano River, Mid-Crossing Bridge and some new local roads. These patterns circumvent both villages and in doing so provide access to the first development area. The local roads that penetrate the uncommitted lands are to be designed so as to prevent through traffic. The one exception being a transit corridor marked in red. (Private and/or Public Buses, and Emergency vehicles only). A separate road is proposed to circumvent and service the new office and commercial area immediately south of Marine Drive.

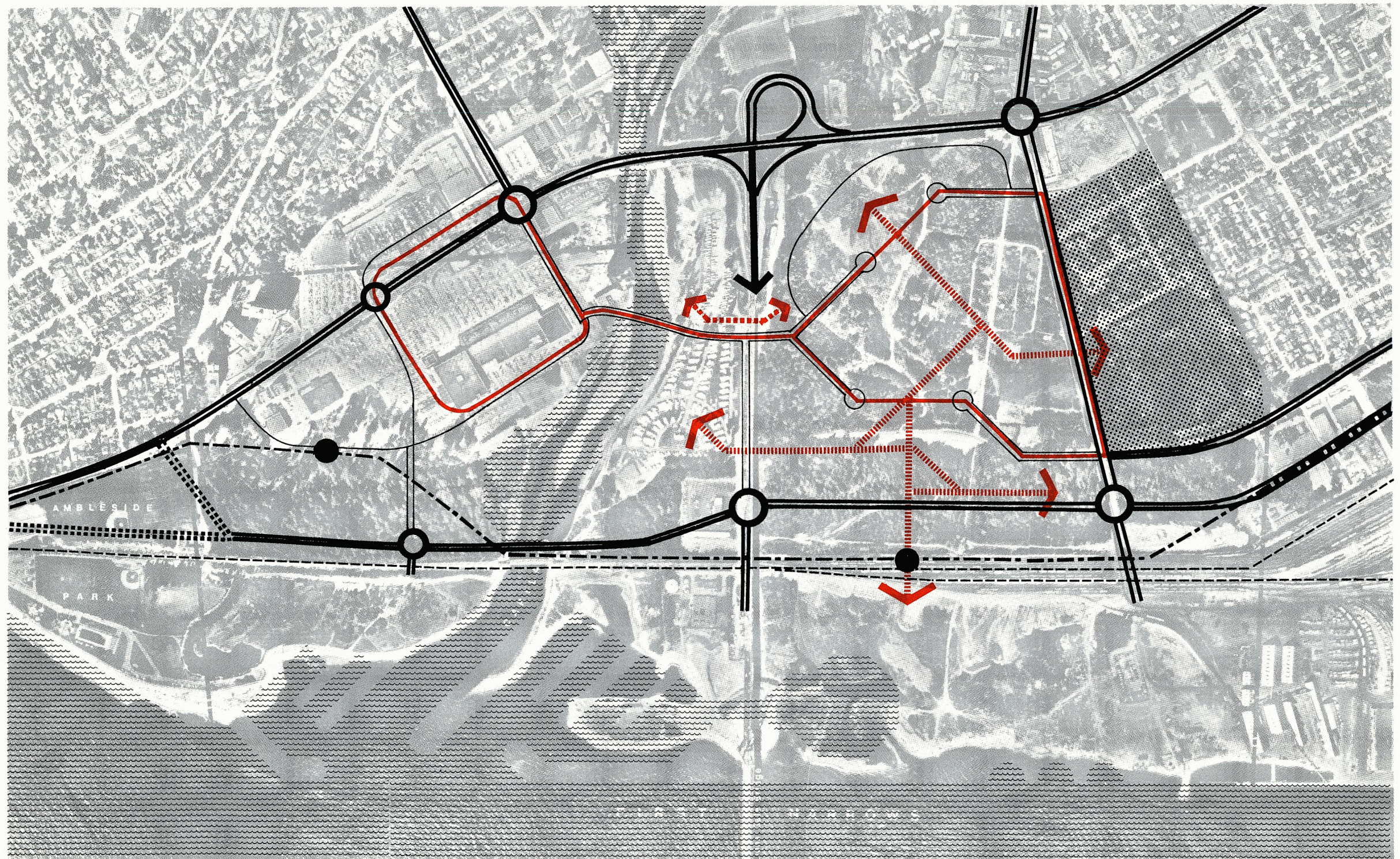
Traffic to and from Park Royal is planned to utilize the Mid-Crossing Bridge, Welsh Street and New Pipeline Road. It should be noted that traffic coming from the Lions Gate Bridge may, via right hand turning lanes, proceed uninterrupted to the Park Royal Shopping Centre.

Transit Patterns

An inner Capilano transit loop (red line) connects the Band's existing villages and new development areas to Park Royal Shopping Centre. This loop could through negotiation be connected to the North Shore Transit System. In any event, a series of strategically located stops and transfer points would effectively service the full development area.

Pedestrian Patterns

The dotted red lines indicate the beginning of the pedestrian system.



LONG TERM CIRCULATION

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

LONG TERM CIRCULATION

Vehicular Pattern

The long term circulation patterns are basically as before with some important exceptions. Following implementation of a Lower Level Road, Welsh St. will no longer be required for vehicular traffic and may be converted to a pedestrian lane linking the Band's development to the Capilano River. Park Royal has additional access directly off the Lower Level Road. This would give the Band the opportunity of reassessing the role of the mid crossing for a variety of other uses.

The Lower Level Road alignment is similar to that outlined in the Phillips Barret report (Oct. 75). The noted modification is between Lions Gate Bridge and Pipeline Road where the route has been shifted northward (\pm 275-300') to accommodate future development. The western portion of the route is dotted and indicates two potential routes i.e. the Pound Road connection or the Ambleside connection. These options and possibly others should be addressed in the current Ambleside study and the proposed North Shore Transportation Study. The final solution would ideally be to the benefit of all the North Shore communities.

The black circles indicate grade separated intersections that are deemed necessary in stages over the development period.

Transit Patterns

Bus transit patterns include the Capilano inner loop and exclusive fast bus lanes incorporated with the Lower Level Road. Again, a high level of transit service is possible throughout the development area.

The previously mentioned commuter rail service may be incorporated, as may a more sophisticated rapid transit system connected to a future Third Inlet Crossing. (See Development Strip Section). Two major stops, one on each side of the Capilano River - Lions Gate Bridge effectively service the entire Capilano Reserve.

Pedestrian Patterns

The dotted red line indicates the basic framework of the exterior pedestrian network (Not illustrated is a complementary network of pedestrian systems integrated with the actual buildings). The system develops uninterrupted within Sector Three and connects the two major activity cores (Office-Commercial Core to the north, Community-Recreational Core to the south). With the conversion of Welsh St. to a pedestrian lane, a significant axis and bond is created between Sector Three and the Band's riverfront lands.

The pedestrian network is illustrated primarily within Sector Three. The concept however is intended to grow with the development of other land parcels so that upon completion, the pedestrian has full access to all activities within the Reserve.

As illustrated, with a minimum of two strategically located overpasses and one underpass, all land areas east of the Capilano River are unified. The first connection is an overpass for New Pipeline Road connecting Sector Three to the Band's village area. The second connection is an underpass beneath the access road to the Mid-Crossing Bridge. The third connection is an overpass spanning the future Lower Level Road, B.C. Rail and Marshalling Yards.

West of the River, a similar continuous network is possible and indeed will begin with the current expansion which features a plaza connection from the shopping walk to the River bank.

Pedestrian connections over the Capilano River are to be incorporated with the Mid-Crossing Bridge and future Lower Level Road Bridge.

PHASING

The phasing plan that follows illustrates both existing development on IR5 and four major stages of development. These stages are a product of specific infrastructural changes that are expected to be implemented over a period of time.

The four major stages of development are:

	Approximate Completion	Amount of Program (M SF)	Related Infrastructural Change
Stage 1	0 - 5 years	1.52 M SF	Mid-Crossing Bridge over the Capilano River
Stage 2	5 - 10 years	1.41 M SF	Lower Level Road (possibly can take place over time through a series of improvements)
Stage 3	10 - 15 years	1.19 M SF	Grade separation of the intersection of Marine Drive with Taylor Way and Capilano Road.
Stage 4	20 - 25 years	4.66 M SF	Rapid Transit

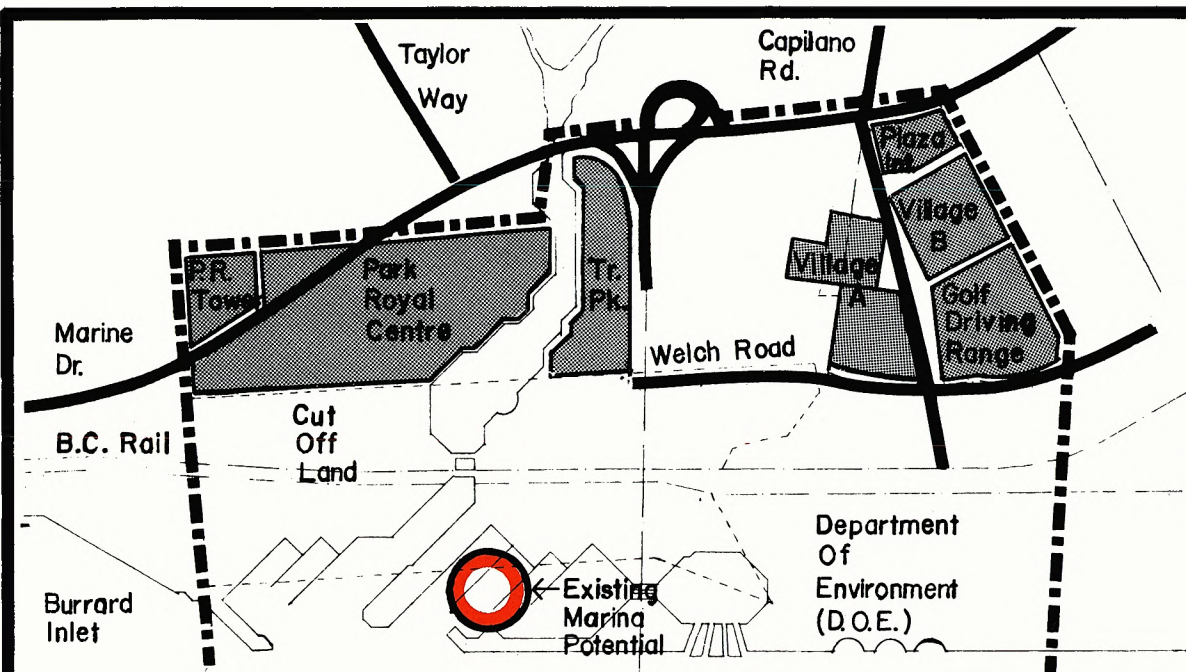
Further to the above, it should be noted that:

- 1) The proposed development for IR5 will form only a small portion of the total development forecast for the entire North Shore over the next 25 years; and
- 2) Many of the transportation changes noted above and in the phasing chart on the next page will be required without any development on IR5 in order to "reasonably facilitate" normal growth on the North Shore.

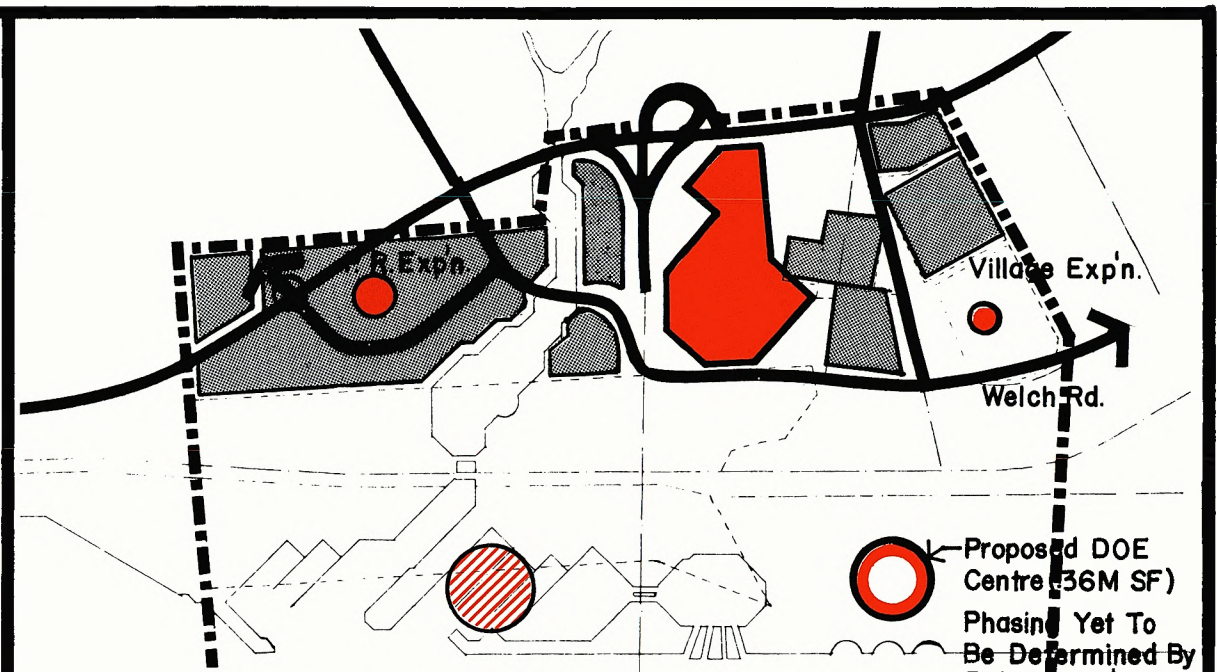
Recognizing this, the proposed phasing of IR5 growth is believed to be compatible with development of the region and represents a major initiative towards insuring orderly growth of the North Shore.

CHAPTER 9 PHASING

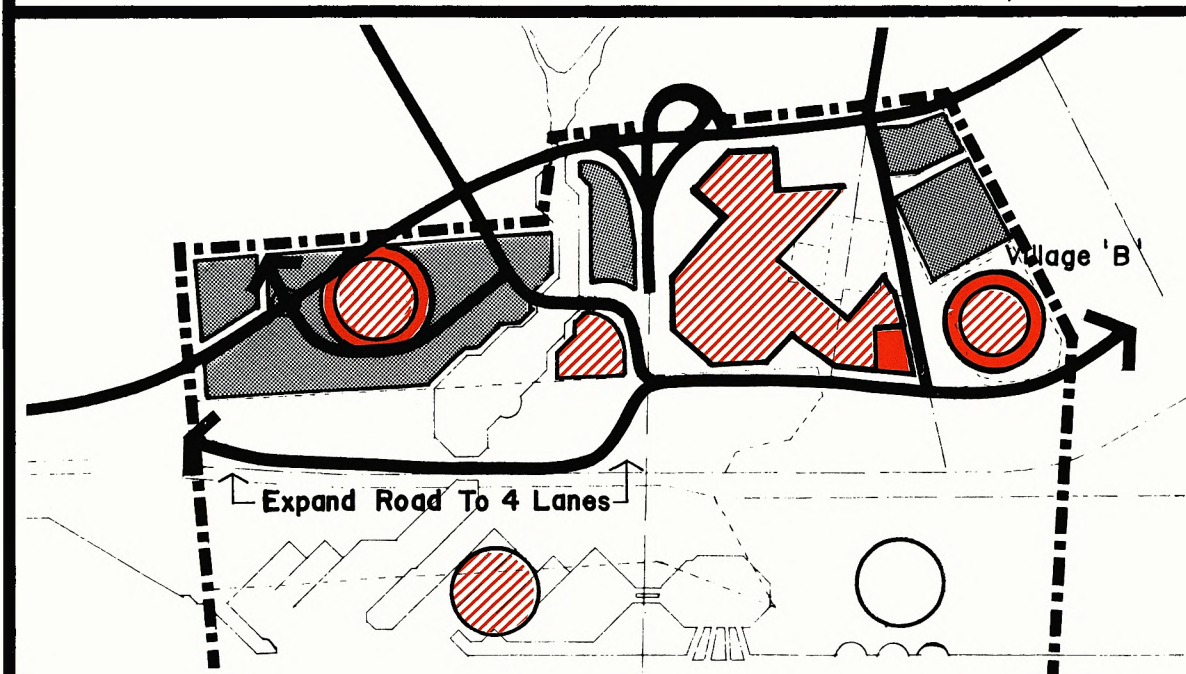
There is a close relationship between the proposed circulation patterns and the phasing schedule. As detailed under the 'Qualifications and Elaborations' (Page 24), the level of available infrastructure directly determines the amount of development potential at that point in time. While there is a range of tolerance (Appendix, Page D-3), ceilings do exist and conditions require careful monitoring so as not to exceed these limits.



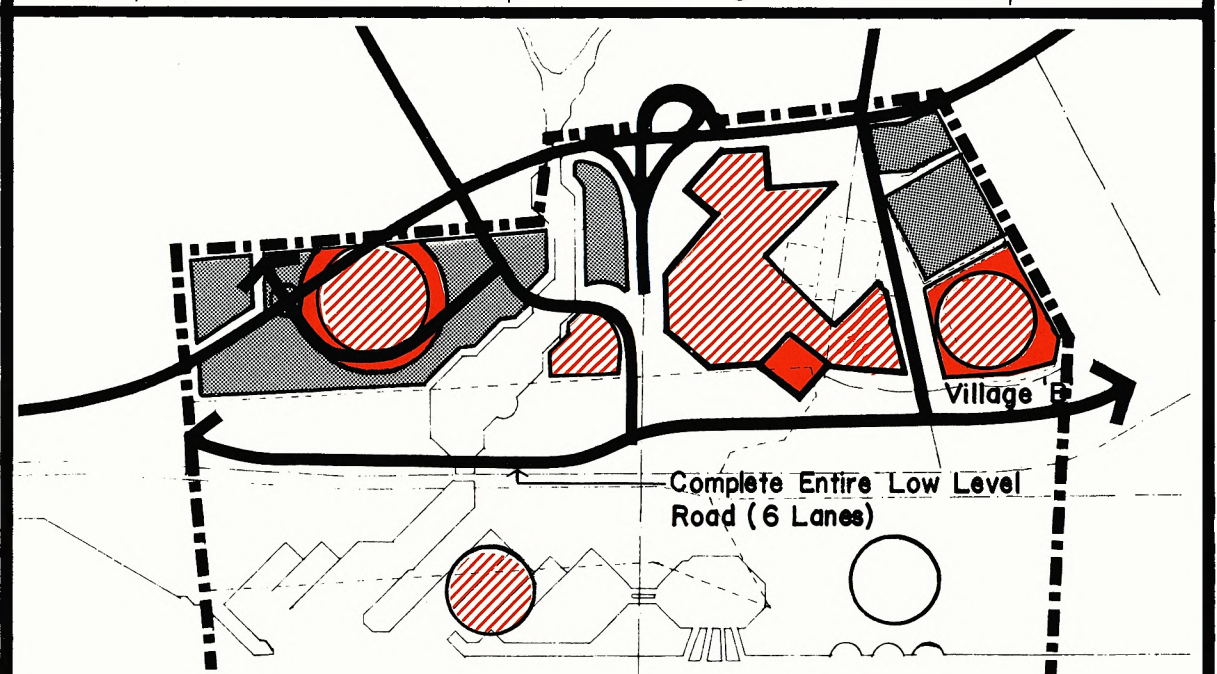
Stage	Total SF
EXISTING	1.33M SF



Stage	Infrastructural Change	Added Development	Total SF
1	New Bridge Cap. River	Park Royal expansion .68M SF	2.85 M SF
		Sector 3 .82M SF	
	Phase out G. D. Range	Sector 4 (Village B) .02M SF	



Stage	Infrastructural Change	Added Development	Total SF
2c	Expand L.L. Road (4 lanes)	Sector 3 .21M SF	3.81M SF
	Phase out Village A	Sector 4 (Village B) .03M SF	
		Park Royal expansion .10 M SF	

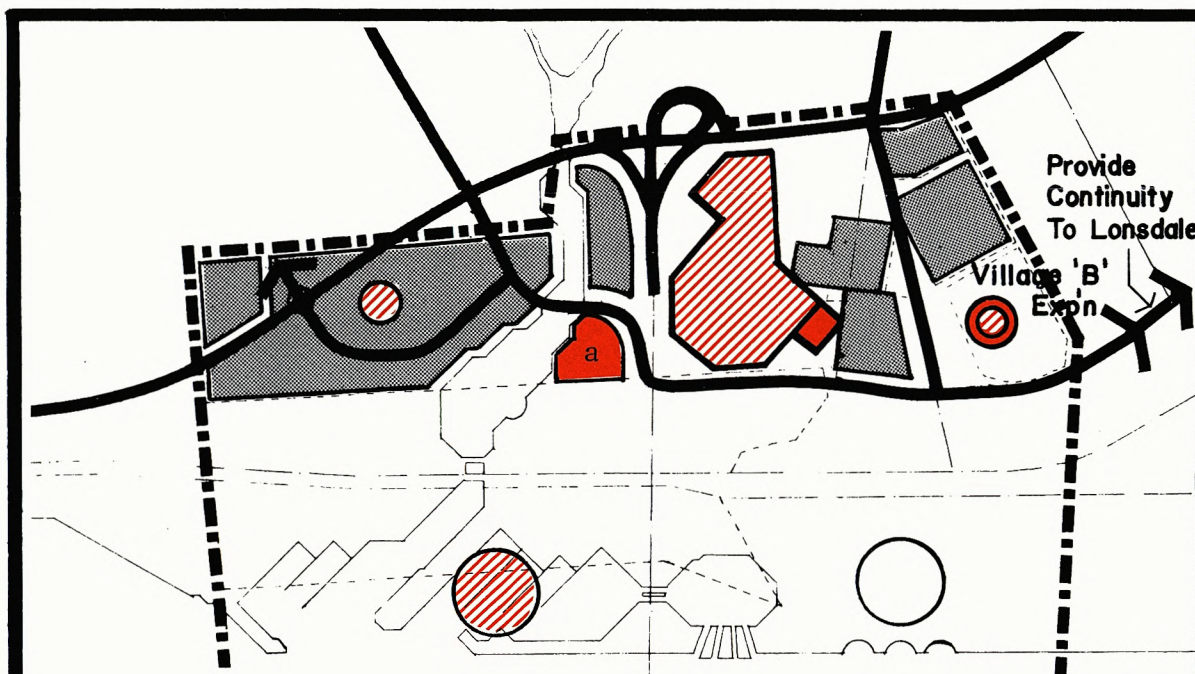


Stage	Infrastructural Change	Added Development	Total SF
2d	Complete L.L. Road (6 lanes)	Sector 3 .27M SF	4.26 M SF
		Sector 4 (Village B) .05M SF	
		Park Royal expansion .17 M SF	

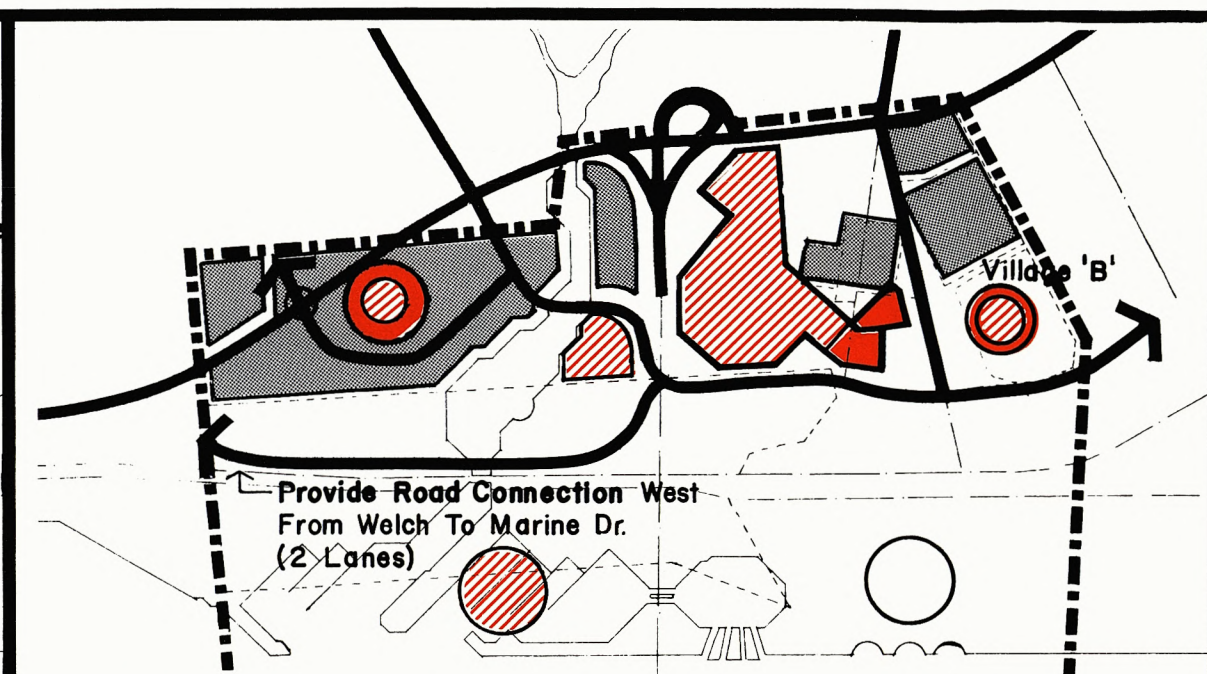
EXISTING
 NEW DEVELOPMENT CURRENT STAGE
 NEW DEVELOPMENT PREVIOUS STAGE

PHASING

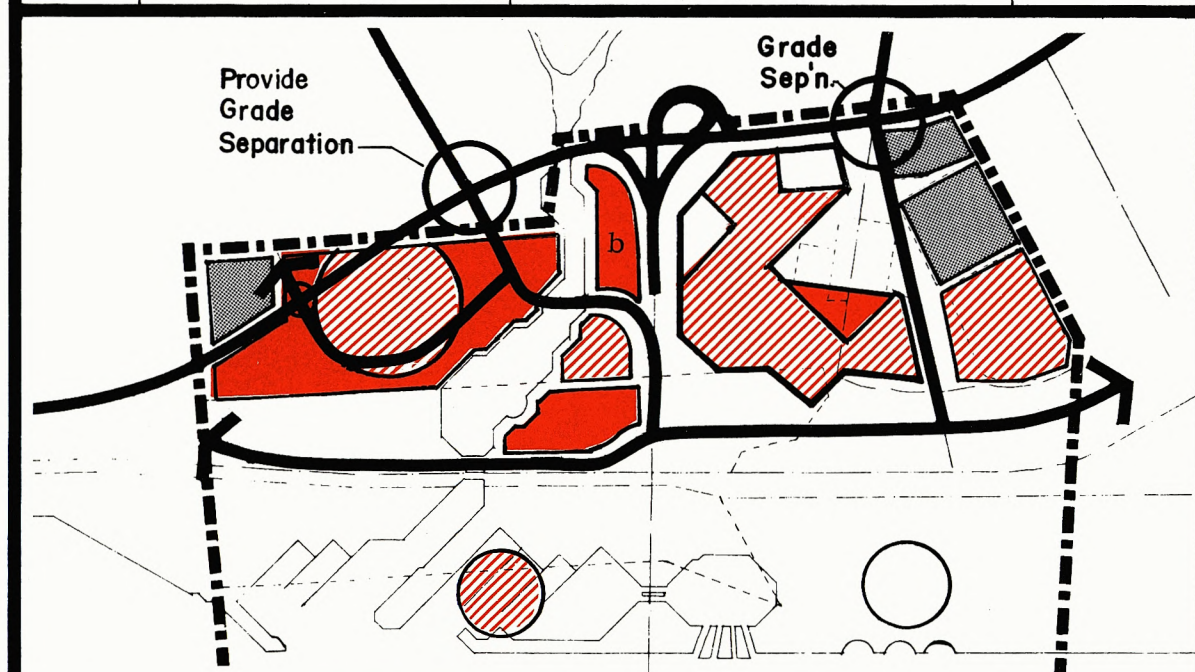
SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
 DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING



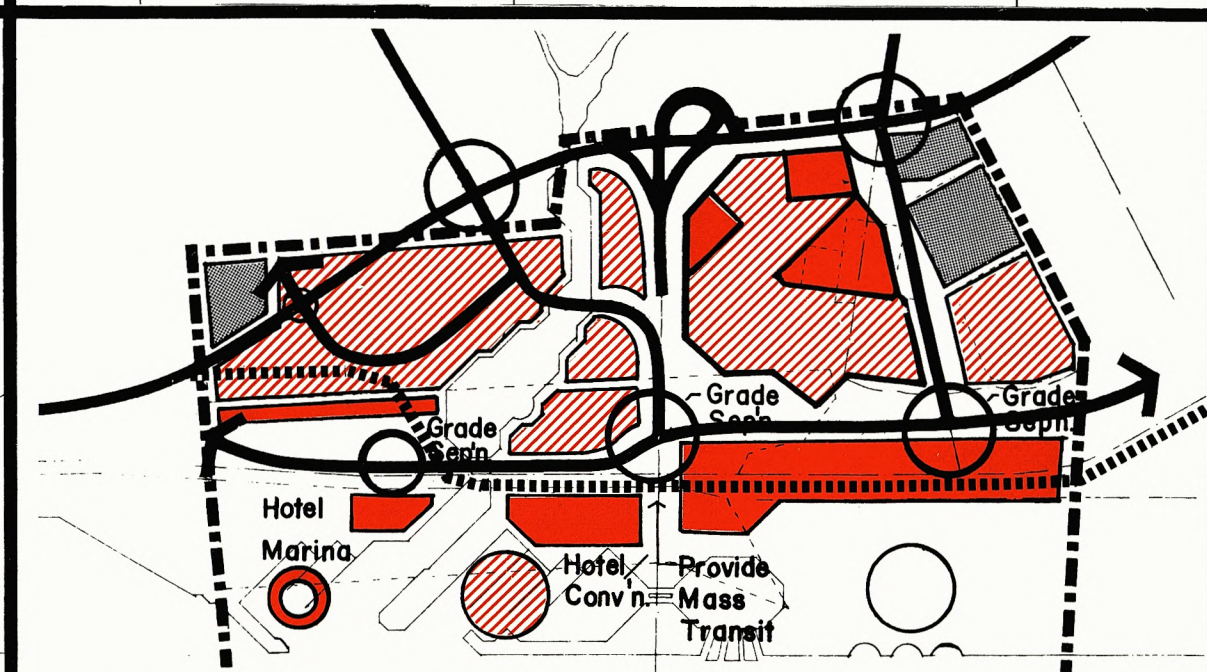
Stage	Infrastructural Change	Added Development	.28M SF	Total SF
2a	Partial L.L. Road to Lonsdale	Sector 2 (Band Focus)	.10M SF	3.13M SF
	Phase out Trailer Pk.(a)	Sector 3	.16M SF	
		Sector 4 (Village B)	.02M SF	



Stage	Infrastructural Change	Added Development	.34M SF	Total SF
2b	Connect Welsh to Marine Drive	Sector 3	.21M SF	3.47M SF
		Sector 4 (Village B)	.03M SF	
		Park Royal expansion	.10 M SF	



Stage	Infrastructural Change	Added Development	1.19M SF	Total SF
3	Grade Separation Taylor Way, Cap. Rd.	Park Royal Area	.40M SF	5.45M SF
	Phase out Trailer Pk.(b)	Sector 2 (Band)	.36M SF	
		Sector 3	.43M SF	



Stage	Infrastructural Change	Added Development	4.66 M SF	Total SF
4	Mass Transit Cross Inlet facilities	Sector 1	.24 M SF	10.11M SF
		Sector 3	1 .10 M SF	
		Balance	3.32 M SF	

- Notes: 1) Based on an F.A.R. of .75 for the Park Royal lease area, an estimated total building program of 1.17M SF remains above and beyond the current expansion plan (.28M SF). This 1.17M SF has been distributed over stages 1, 2 and 3 as illustrated above.
- 2) Due to the current uncertainty regarding the program and phasing for D.O.E., its original program of approximately .36M SF has not been included in the above Total SF figures. When the D.O.E. program is finalized, appropriate adjustments will be required in the Phasing Plan.
- 3) The development of a 4-lane Lower Level Road, as indicated in Stage 2c, is suggested only in the event that construction of a 6-lane facility is delayed beyond the Stage 2 timeframe of 5 - 10 years.

CHAPTER 10 IMPLEMENTATION

PROPOSED PLAN

A properly conceived plan is a vital vehicle that, over a period of time generates and transforms a series of conceptual ideas and objectives into vivid three-dimensional forms. The plan for IR5 has been conceived with an appreciation of many diverse factors and notably with full participation by the Squamish Band. Further, while the plan offers solid direction for the future, it remains flexible so as to survive changing values and conditions.

The degree of flexibility inherent in any plan has fundamental implications for the role that it plays in the over-all development control system. Generally, the more flexible the plan, the more dependence has to be placed on the use of comprehensive and detailed controls (such as zoning by-laws), to deal with all conceivable development situations. Taken to extremes, the disadvantages of this approach are, that in protecting against bad development, it is not conducive to the best. In contrast, a detailed development plan can remove the need for very restrictive control by-laws, but it is sometimes not responsive enough to changing and unforeseeable conditions.

An appropriate amount of flexibility is inherent in Sector Three. It should be pointed out, however, that while some changes may be accommodated they cannot be made lightly without first assessing the ramifications to the numerous and interconnected development factors involved. Flexibility within the plan consists as follows:

Networks

Primary communication and servicing networks as well as the locations of the proposed overpasses and underpass are very rigid, but considerable flexibility is possible with the majority of the exterior pedestrian networks located on grade.

Program

The basic distribution of primary uses, (residential, commercial, office), is largely predetermined. The more detailed program content is fairly flexible - i.e. family mixes, proportion of housing units per type, assortment of activities etc. Further changes are possible within and between phases, but the end result should balance for the entire Sector Three.

Density

The careful distribution of density is a fundamental precept of the plan and flexibility is limited.

Phasing

The rate of phasing cannot be advanced beyond available infrastructure and the current economic situation, but could be slowed down to whatever is considered desirable by the Band.

Volumetrics

Overall height of buildings is fairly rigid so as to preserve the panoramic views and the horizontality of the concept. Massing is flexible within constraints imposed by density.

Architectural Design

A common or complementary design should prevail throughout, but considerable flexibility would be allowed for original creativity.

CONFIRMATION AND ADOPTION OF PLAN

As previously stated, the current plan is a result of considerable input by many individuals and notably by the Squamish Band, through its Council and committee members. There have been numerous meetings and presentations involving the Band Membership at all three of the residential reserves, and generally the reaction has been positive.

A series of workshops, seminars, informal presentations, and coffee parties, has been discussed as an effective method of continuing the communication process with the Membership. Active participation by the already formed 'Social Action Committee' is anticipated. This committee has its roots within Capilano, for there is no doubt that it is they who will be most affected by decisions on IR5. It is hoped, however, that the Committee will grow and expand to encompass all of the Band's residential reserves.

The need for full participation by the Membership in the forthcoming review and assessment period, cannot be over stressed. Band Council has continuously stressed to the Consultants that the final plan must be "an Indian Plan for Indian People", and indeed that very guideline is inherent in many of the decisions and actions taken. The message, however, must be transmitted to the individual members, so that they have full and intimate knowledge of the study's objectives, the rationale behind the directions taken, and the potential that is at stake in the future: a potential that promises to affect each man, woman and child in the Squamish Band.

BROAD ISSUES

In order to meaningfully proceed with development of IR5, it will be necessary for Band Council to establish firm policies and make significant advances in the following broad and vital areas.

Band Participation in Development Process

- How can development be most meaningful to the Band as a whole, and to the individual member?
- Who will develop the land (Band; developers; jointly)?
- When will the land be developed?

Band Involvement in Regional Planning

- Participation on inter-related issues such as sewers, water and transportation
- Coordination with neighbourhood municipalities
- Direct negotiation with Regional and Provincial Planning agencies

Legal Issues due to Special Status of Indian Lands

- Alternatives to land surrender
- Application of development controls on Indian land
- Formation of development corporations
- Financing for Reserve development
- Municipal status of Band and Reserves
- Direct taxation options

Band's Internal Housing Strategy

- Type and location of accommodation
- Timing
- Funding

Waterfront Policy - Capilano River and Burrard Inlet

- Foreshore control
- Land reclamation
- Flood control
- Land Use

Air Rights - Marshalling Yards, Treatment Plant, Lions Gate Bridge

- Securing and utilization of air rights where possible

Cut-Off Lands

- Securing disputed property
- Negotiating future uses

Lastly, if the individual members are to participate, enjoy and benefit from the development of IR5, an extensive training program is warranted - a program that affords them not only employment opportunities but also managerial and executive involvement.

SPECIFIC SECTOR ISSUES

In addition to the previously listed broad issues which apply to the whole of the Reserve, there are issues specifically affecting each of the various sectors. The following list serves to highlight the more important of these, but is not intended to be all inclusive or in order of priority. A reference map outlining the general boundaries of Sector 1 to 8 is included on Page 33.

SECTOR 1 Park Royal and N.W. Cut-Off Lands

- a) Further consideration to the integration options of Park Royal, regional, and other Reserve traffic.
- b) Long term status of the Capilano River Mid-Crossing Bridge.
- c) Three-dimensional control of Park Royal's future expansion potential.
- d) Integration possibilities between Park Royal's future expansion and the Band's projected expansion west of the Capilano River.
- e) Capilano River-Bank - erosion control, land reclamation and possible development of pedestrian systems.
- f) Lower Level Road alignment and its integration with municipal and regional traffic systems.

SECTOR 2 East Bank of Capilano River

- a) Eventual phasing out of trailer park area.
- b) Phasing out of maintenance yard.
- c) Capilano River-Bank - erosion control, land reclamation and possible development of pedestrian systems.
- d) Alignment of Mid-Crossing Bridge access lanes.
- e) On going refinement of the Indian Focus concept.

SECTOR 3 Band's Uncommitted Lands and Village A

- a) Planning for eventual relocation of village housing, nursery school and longhouse.
- b) Internal circulation system to connect to new Mid-Crossing Bridge.
- c) Lower Level Road alignment for future development strip.
- d) Pedestrian overpass over new Pipeline Road.

SECTOR 4 Plaza International and Village B

- a) Buffer strip between Plaza and existing village.
- b) Selection of housing options for Golf Driving Range area.
- c) Elimination of non-resident through-traffic on Lawa.
- d) Examination of 'infill' potential within existing village.
- e) Phasing out of Golf Driving Range.
- f) Realignment of Welsh Street in context of a future Lower Level Road.

SECTOR 5 S.W. Cut-Off Lands

- a) Examination of Marina and Hotel potential.
- b) Vehicular access to future waterfront development.
- c) Foreshore control.

SECTOR 6 Treatment Plant and Cut-Off Lands

- a) Securing of air rights over the treatment plant.
- b) Reserving 'capacity' within facilities for Band's future development.
- c) Foreshore control and land reclamation.
- d) Securing dredging and gravel rights for Band's use.
- e) Examination of Marina, Hotel and Convention Centre potential.

SECTOR 7/8 The 'Slough' and D.O.E. Lease Area

- a) Resolution of the D.O.E. lease.
- b) Consideration of the problems created by the presence and location of B.C. Railway and the marshalling yards.
- c) Short term vehicular access to the waterfront.
- d) Long term integration options of land uses.
- e) Coordination of Westac study with short and long term Band intentions.
- f) Foreshore control and land reclamation.

DEVELOPMENT CONTROLS

In the past the Band has shown an awareness of the need for effective controls for the development of their land. Under existing legislation there are a number of provisions which support the Band's ability to control development. To advance comprehensive development coordination, the Band has undertaken the current planning and Urban Design Study of IR5. Similarly, members are participating at all levels to bring about legislative change which will insure more effective control for the Band.

The overall concept embraces the entire Reserve lands but provides greater detail for Sector Three. The remaining Sectors, although complete in conceptual terms, require further deliberations by Band Council and additional detailed design input at a future date.

In the case of Sector Three, a complete three-dimensional image exists and may be readily scrutinized by the Band. Once it is approved and adopted, the information within this study is viable enough to stand as an immediate precedent to pre-construction design. Further, the model will stand as a visual objective so that each and every project may be compared to it. In this way, the basic integrity of both plan and concept may be maintained barring any need for major changes throughout the development period.

Considering the amount of three-dimensional detail provided for Sector Three, it is inappropriate to attempt control solely by conventional zoning methods. What is perhaps more suitable is a special ordinance, prepared in relation to the overall plan and the three-dimensional plan for Sector Three. Such an ordinance would specify procedures and performance standards for all future development on IR5.

A review process is also required to insure that all development is compatible with overall plans and that the impact of all proposals are properly assessed. Participants in the review process must include Band members, Band administrators, elected representatives of the Band, and professional and technical experts.

1) OVERALL DEVELOPMENT

URBAN DESIGN AND PLANNING

a) Preparation of Detailed Development Plans

In accordance with the phasing plan, detailed development plans should be prepared for all Sectors within IR5 similar to the detail plan presently available for Sector 3. In this regard, priority should be given to Sector 1, including Park Royal, and Sector 4.

Thus, on the Band's initiative, with the fullest participation of Park Royal, a detailed development plan should be prepared for Sector 1. Similarly, following the Band's review and response to the separate report regarding "Band Housing and Recreation on IR5", steps should be taken to prepare a detailed development plan for Sector 4.

b) Determination of Elevations

The establishment of reference elevations for such major elements as roads, parking levels, pedestrian plazas, utility corridors, etc. will require additional analysis in order to insure that all parts of IR5 development are coordinated with respect to horizontal alignment.

TRANSPORTATION

- a) Detailed analysis of the transportation requirements and implications for all major development proposals on IR5.
- b) Detailed internal origin and destination analysis in relation to the overall development plan for IR5.

In addition to the above transportation issues, which are predominately related to IR5, further study is also recommended with regard to the following regional transportation issues:

- Intermunicipal traffic: north-south connectors.
- External origin and destination analysis.
- Marine Drive-Taylor Way grade separation alternatives.
- Marine Drive-Capilano Road grade separation alternatives.
- Mass transit requirements and staging.

Because of the regional significance of all of the above, it is suggested that responsibility for their study rests with representatives of the entire region.

FURTHER TECHNICAL STUDIES

In addition to the 'policy level' planning work that must be undertaken by the Band in order to implement the plan, further study is recommended regarding the following technical aspects. Where applicable, these recommendations are as suggested by participating consultants.

In order to allow for political decision-making by the Band and to insure that adequate time is made available for technical input, sufficient lead-time must be provided to carry out these studies. It is emphasized that development on IR5 should only proceed after completion of all appropriate technical studies.

The recommendations for technical studies, as they pertain to three different levels of the development plan, are:

ENVIRONMENTAL

Capilano River

Because of the importance of stream management, flood control and the complexity of the problem, a study of the Capilano River is urgently required by a multi-disciplinary team consisting of hydraulic engineers, ecologists, and recreational planners.

2) SECTOR THREE DEVELOPMENT

URBAN DESIGN AND PLANNING

For the implementation of specific projects, further study will be required in order to prescribe detailed parameters for the following:

- building design
- landscape and street furniture
- signs and graphics, and
- lighting

TRANSPORTATION

- a) Detailed internal origin and destination analysis for various sub-stages.
- b) Determination of overload criteria.

MARKET ASSESSMENT AND ECONOMIC ANALYSIS

In conjunction with all implementation proposals, it is recommended that detailed market assessments be made by economic consultants. Viable program proposals compatible with the overall development plan and its objectives, can then be derived and pursued accordingly.

GEOTECHNICAL

Due to variation in the soil throughout IR5, detailed geotechnical analysis is recommended in conjunction with all building proposals.

UTILITIES

During the design stage of implementation, it is recommended that preliminary utility designs be produced and the following evaluated:

- legal and legislative aspects
- costs and cost sharing
- potentials for senior government financing
- cash flow requirements
- relationships with government authorities and municipal corporations
- alternative servicing possibilities
- alternatives for waste treatment
- central heating system potential
- easement and utility corridor requirements

3) SPECIALIZED PROJECTS

MARINAS

It is recommended that consultants be retained to evaluate the two proposed marina projects in terms of market demand, technical feasibility and significant environmental implications.

Such a study would enable the Band to apply for funding from the Marine Policy Assistance Act of Smallcraft Harbours, Environment Canada, for up to 50% of the total cost. It would as well, be in accordance with the requirements of the Environmental Assessment, Review and Protection Process of the Federal Government.

LAGOON

It is recommended that geotechnical and hydrological expertise be retained to analyze tide levels, nature of the banks, and desirable water fluctuations of the controlled water lagoon option. However, any final decision as to the implementation of the lagoon, and in turn further study, should be made on the basis of the demands of the surrounding developments (e.g. marina and/or D.O.E.).

BIBLIOGRAPHY

- * Reports prepared by sub-consultants for this study
- ** Other material prepared by the prime consultant during this study
- (R) Reports used for direct reference
- (G) Reports used for general background information

- (G) Acres Western Limited,
"Squamish Indian Band Development Plan",
January, 1970.

- * Associated Engineering Services Ltd. ,
"Squamish Indian Band, Capilano Reserve No. 5, Urban Design Study: Utilities",
March, 1976

- * Bogue Babicki and Associates Ltd. , Consulting Structural Engineers,
"Structural Study of Capilano Indian Reserve No. 5",
March, 1976.

- (G) C.B.A. Engineering Ltd. ,
"Land Fill at North End of Lions Gate Bridge",
September, 1971.

- (G) Community Planning Consultants ,
"Preliminary Report - Multiple Use Development Concept for B.C. Wharves Ltd. - West Vancouver",
1969.

- (G) Crane, David A. and Associates , Architects and Urban Designers ,
"Fort Lincoln New Town - Preliminary Planning Report",
Washington, D.C. ,
1970.

- (G) Crane, David A. and Associates , Architects and Urban Designers ,
"Lysander New Community, Final Planning Report",
New York State Urban Development Corporation,
January, 1971.

- (G) De Leuw Cather of Canada ,
"Greater Vancouver Area Rapid Transit Study",
September, 1970.

- (G) District of North Vancouver,
"Seymour 3 - Seymour and the Livable Region",
September, 1975.

- (G) District of West Vancouver, Planning Department,
"Development Concept for IR5 and D.L.5521",
April 22, 1970.

- (G) District of West Vancouver, Planning Department,
"North Shore Office Space Demand",
September, 1970.

- (R) District of West Vancouver,
"Ambleside Planning Study", as published "Citizen" and "The Times",
October, 1975.

- ** Gaboury Lussier Sigurdson, Architects and Urban Designers ,
"Squamish Indian Band, Capilano Indian Reserve No. 5, Urban Design Study - Part A",
July 30, 1974.

- ** Gaboury Lussier Sigurdson, Architects and Urban Designers ,
"Phase A and B, Text for Slide Presentation",
July 30, 1974.

- ** Gaboury Lussier Sigurdson, Architects and Urban Designers ,
"Development Options",
November 5, 1975.

- (R) Greater Vancouver Regional District,
"The Livable Region: 1976/1986",
1975.

- (R) Greater Vancouver Regional District,
"The Livable Region: 1976/1986, Municipal Background Information",
1975.

- * Klohn Leonoff Consultants Ltd. ,
"Addendum to Geotechnical Study of Capilano Indian Reserve No.5",
March 8, 1976.

- * Kuun, Zoltan J.K. , Traffic and Transportation Consultant,
"Squamish Indian Band, Capilano IR5 Urban Design Study, Traffic Appraisal",
May 31, 1976.

- (G) Swan Wooster Engineering Co. Ltd. , and N.D. Lee Associates Ltd. ,
"Transportation Planning West Vancouver",
1970.

- (G) N. D. Lee & Associates Ltd.,
"Analysis of Traffic and Access to the D. L. Development at Marine and Capilano in North Vancouver",
March, 1972.
- (R) James A. Murray and Henry Fliess,
Canadian Housing Design Council,
"Family Housing",
Date unknown.
- (G) North Shore Planning Departments,
"North Shore Municipal Study",
October, 1970.
- (G) Paish Howard & Associates for Wade Stockdill Armour & Blewett,
"Preliminary Assessment - Ecological and Environmental Implications of the Capilano Indian Land Development",
January, 1970.
- (G) Paish, Howard & Associates Ltd. for Department of Environment-Fisheries Service,
"Recreational Development and Management of the Capilano River",
May, 1973.
- (G) Parkinson, Tom E.,
"A Preliminary Study of Light Rapid Transit in Vancouver, British Columbia",
February, 1972.
- (G) Piteau Gadsby MacLeod Ltd. for McKenzie Snowball Skalbania & Associates Ltd.,
"Preliminary Subsoil Investigation - Property on South-East Corner of Marine Drive, and Capilano Road, North Vancouver, B.C.",
October 28, 1971.
- (R) Real Estate Board of Greater Vancouver,
"Real Estate Trends in Metropolitan Vancouver",
1974 - 1975.
- * Ripley, Klohn and Leonoff International Ltd.,
"Geotechnical Study of Capilano Indian Reserve No. 5",
June 7, 1974.
- (R) Schnadelbach Braun, Landscape Architects, Ecologists, Architects and Urban Designers,
"AUDUBON: Open Space and Recreation", New York State Urban Development Corporation,
February 20, 1973.
- (R) Spaeth, J. Douglas, Staff Consultant, the Greater Vancouver Regional District,
"Regional Town Centres: A Policy Report",
November, 1975.
- * Sparks, D.G. Economist, the Department of Indian Affairs,
"The economic viability of development over the B.C. Railway Right-of-Way",
March 8, 1976.
- (G) Sullivan, Brian E., Consultant, the Greater Vancouver Regional District,
"Intermediate Improvements to Public Transportation in Greater Vancouver",
September, 1971.
- (G) Swan Wooster Engineering Co. Ltd.,
"Appraisal of Southern Portion of Capilano Indian Reserve No. 5",
August 18, 1965.
- * Tera Consultants Ltd., Environmental and Resource Analyst,
"An Environmental Assessment of Three Conceptual Projects within the Capilano Indian Reserve No. 5",
February, 1976.
- * Tresch, Philip, the Department of Indian Affairs,
"Site Analysis - Part 1 and 11, Squamish Indian Band, Capilano IR5",
April 19, 1973.
- (R) Urban Land Institute,
"The Dollars and Cents of Shopping, U.L.I.",
1966.
- (R) Urban Programme Planners Ltd., Consultant, the City of North Vancouver,
"Lower Lonsdale Waterfront Study",
June, 1975.
- (G) Wade Stockdill Armour & Blewett,
"Comprehensive Development - Capilano Joint Development Committee of Park Royal Shopping Centre Ltd., and the Squamish Indian Band",
July 21, 1970.
- * Wong, Lewis, Real Estate Officer, Department of Indian Affairs,
"Appraisal Report of Capilano IR5",
August 21, 1973 and October 21, 1975.

APPENDIX

A. Program Research..... A1

B. Description and Assessment of Development Options..... B1

C. Non Residential Support Facilities..... C1

D. Technical Research Summaries..... D1

 Geotechnical..... D1

 Utilities..... D2

 Transportation..... D3

 Environmental..... D5

 Structural - Airspace..... D6

 Economic - Airspace..... D6

 Education Facilities..... D7

APPENDIX

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

E. J. GABOURY & ASSOCIATES
ARCHITECTS & URBAN DESIGNERS

PROGRAM RESEARCH

Existing development on IR5 occupies only a small portion of the land area. Therefore, on the long term basis, a substantial amount of growth can be accommodated. In order to prepare development options which specify the content of this growth, a brief assessment of the program potential for the following major uses was undertaken:

- a) Office;
- b) Residential; and
- c) Service facilities including:
 - 1) commercial
 - 11) education; and
 - 111) recreation.

This assessment is summarized as follows:

OFFICE

A ratio of approximately one office job per ten persons exists in the Greater Vancouver Regional District, whereas, the ratio between office jobs and population located on the North Shore is only one to twenty-six. Recognizing this, the G.V.R.D. in its recent (1975) report, "The Livable Region 1976/1986", has pointed out the "..... need to bring the resident labour force and the number of jobs available on the North Shore into better balance.....". The question remains, however, how many office jobs should be planned for on IR5?

Again, according to the G.V.R.D., ".....the saturation population on the North Shore is in the order of 284,000 people, unless we build on hazardous slopes, or in locations which are expensive to service, or destroy much of the scenic and recreational value of the mountains and the shore.....". If we assume that office developments on the North Shore should at least reach the current regional average of 1 office job per 10 persons, then 28,400 office jobs should ultimately be provided.

Statistics of the G.V.R.D. indicate that in 1971 approximately 4,945 office jobs existed on the North Shore distributed as follows:


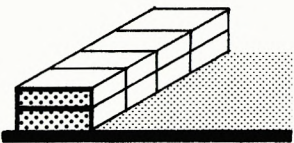
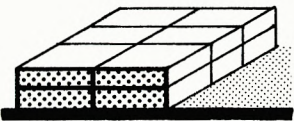
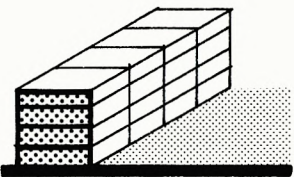
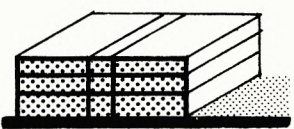
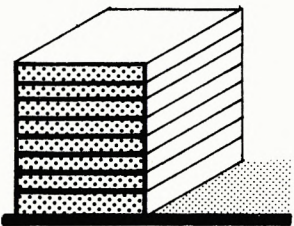
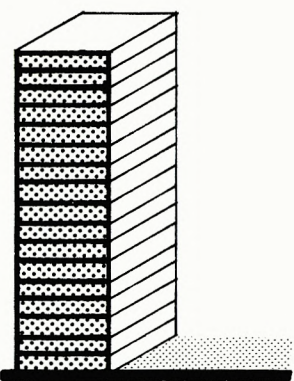
West Vancouver	1,485
North Vancouver City	2,216
North Vancouver District	1,244

The G.V.R.D.'s short term target (1986) is for 11,700 office jobs to be located on the North Shore and distributed as follows (Note: no office job projections were made by the G.V.R.D. for IR5).


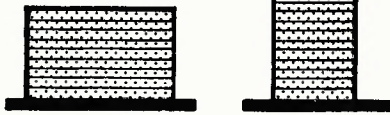
West Vancouver	3,000
North Vancouver City	7,000
North Vancouver District	1,700

According to the "Lower Lonsdale Waterfront Study", prepared by Urban Programme Planners for the City of North Vancouver, space for approximately 5,000 new office jobs is proposed to be built in the Lower Lonsdale area between now and 1986. This would bring the total number of office jobs in the Lonsdale area up to about 7,000 by 1986, ie., the same as the G.V.R.D. target. If it is assumed that this number will eventually exceed 10,000 jobs, and that IR5 and Lonsdale will be the major office employment centres on the North Shore, it is recommended that IR5, be planned to similarly accommodate space for about 10,000 new office jobs.

According to the 1974 - 1975 report of the Real Estate Board of Greater Vancouver, one office job requires about 200 square feet of floor area. Therefore, approximately 2,000,000 square feet of office space would be required on IR5 to accommodate 10,000 new office jobs.

LOW	Single Family Detached		6-10 DU/Ac Net
MEDIUM DENSITY	Town House		20 DU/Ac Net
	Back-to-Back Town Houses		30 DU/Ac Net
	Stacked Town House		30 DU/Ac Net
	Garden Apartment		50 DU/Ac Net
HIGH DENSITY	Apartment - Slab		110 DU/Ac Net
	Apartment - Tower		130 DU/Ac Net

Housing Mix Alternatives

		Emphasis on Family					Emphasis on Non-family				
		1	2	3	4	5	1	2	3	4	5
MED. DENSITY	 30 Housing Units per Acre	100%	70%	50%	30%	--					
HIGH DENSITY	 120 Housing Units per Acre	--	30%	50%	70%	100%					
Average Net Density		30	39	46	63	120					

Example number 2 above is the suggested mix which will satisfy the housing demands for a typical cross-section of the urban population. This example has been taken from the Canadian Housing Design Council's recent study, Family Housing, a study of horizontal multiple housing techniques, by James A. Murray and Henry Fliess.

HOUSING TYPES & MIX ALTERNATIVES

RESIDENTIAL

DEMAND

The following are general observations regarding the demand potential for housing on IR5. Only when actual construction is contemplated will it then be necessary to undertake detailed market analysis of levels and types of housing demands.

At this time, it is reasonable to assume that the North Shore will continue to significantly share in the rapid growth of the Vancouver Metropolitan area. However, various alternatives can be pursued in distributing this growth within the North Shore. It is possible for instance, though clearly not desirable, to extend development up the mountain slopes into ecologically sensitive areas, infill potentially valuable greenbelt spaces, and intensify development in areas remote from effective public transportation. In comparison, Capilano IR5 offers large undeveloped areas within a strategic urban location, rich in natural amenities and all under single ownership. With active support from all levels of government, Capilano has the unprecedented potential for combining a large concentration of residential development with immediate employment and recreational opportunities. Also, high density development together with the potential for mass transportation would be mutually supportive of regional development policies.

Illustrated on the extreme left are the major categories of housing form that exist today. It is from this list that a housing program for IR5 must be derived.

Single Family Detached (S.F.D.), because of its inefficient use of land, is not considered appropriate for new IR5 developments - other than perhaps in the context of Indian villages. Therefore, the housing program should consist of a mixture of medium and high density housing types.

The chart on the immediate left illustrates a number of medium and high density housing mix alternatives. As noted herein, alternative Number 2 would appeal to the widest possible range of people. However, the 3rd housing mix or even a mix which has a slightly higher density is recommended because:

- a) a mixture of both family and non-family accommodation would be provided. This would insure broad market appeal and has the potential to foster variety in design; and
- b) a higher density than the 2nd alternative is considered appropriate due to the strategic metropolitan location of IR5.

○ EXISTING FACILITY - NO FACILITY ● PROPOSED FOR IR5 ① NUMBER OF FACILITIES ② EXISTING BUT "LIMITED" ? OPTIONAL FOR IR5		EXISTING				PROPOSED	
		WVn	NVn	Dist	IR5	IR5	COMMENTS
REC'N	REGIONAL PARK REGIONAL CENTRE LOCAL AREA REC'N	○ ② ○	- ② ○	- - ○	○ - -	● ? ●	See Inlet & Cap. River Optional
EDUC'N	UNIVERSITY COMM'Y COLLEGE VOC. COLLEGE SEC. SCHOOL ELEM. SCHOOL PRIM. SCHOOL	- - - ○ ○ ○	- - ○ ○ ○ ○	- ○ - ○ ○ ○	- - - - - -	- - - - ● ●	See UBC, SFU See Cap. College See NVn See N & WVn
SHOPPING	REGIONAL CENTRE COMMUNITY CENTRE NEIGH'B'HD CENTRE CORNER STORE	- - ○ ○	- ○ ○ ○	- - ○ ○	○ - - -	- ● ● ●	See Existing Pk.Royal
SPECIAL COMMUNITY FACILITIES	MEDIA CENTRE RECORDING STUDIO DAY CARE LIBRARY FIRE STATION POLICE STATION SOCIAL SERVICES POST OFFICE	② - ○ ① ○ ○ ○ ○	② ① ○ ① ○ ○ ○ ○	③ ① ○ ③ ○ - ① ○	- - ① - - - - -	● ● ● ● ? ? ● ●	See Also N & WVn See Also N & WVn
HEALTH SERVICES	DOCTOR'S OFFICE CLINIC HOSPITAL	○ ○ -	○ ○ ○	○ ○ -	- - -	● ● -	See Lions Gate(NVn)
INTEREST FACILITIES	OUTDOOR MARKET CRAFTS CENTRE	- ③	- ②	- ①	- -	● ●	
SPORTS FACILITIES	INDOOR POOL ICE RINK	○ ○	○ ○	- -	- -	● ?	See Also N & WVn

		EXISTING				PROPOSED	
		WVn	NVn	Dist	IR5	IR5	COMMENTS
ENTER TAINMENT	BOWLING THEATRE RESTAURANT CABARETS	- ○ ○ ②	○ ○ ○ ○	② ○ ○ ○	○ ○ ② -	- ● ● ●	See Existing IR5
HOTEL/ CONV'N	MOTEL HOTEL CONVENTION	○ ② -	○ ○ -	○ ② -	- ○ ②	● ● ●	
MISC. COMM'L.	BUS. & GOV'T. OFFICES COMM'L. SERVICES BANKS	- ○ ○	② ○ ○	- ② ○	- ② ○	● ● ●	
CULTURAL	THEATRE PERFORMING ARTS EXHIBITION HALL LIVE THEATRE LITTLE THEATRE MUSEUMS MUSICAL GROUPS DANCE GROUPS OUTDOOR THEATRE RELIGIOUS ETHNIC	- - - ① ② ③ - - - ②	○ ○ - ① - - - - - ①	- - - ① - - ② - ②	- - - - - - - - ○	● ● ● ● ● ● ● ● ● ●	Nb. Provide For Within Educ'n. Facilities
WATERFRONT ACTIVITIES	MARINA RIVERSIDE RETAIL PUBLIC ACCESS	○ - ②	○ - -	○ - ②	- - -	● ● ●	
TRANS'PTN	BUS TERMINAL FUTURE L.R.T. STN.	○ ②	② ○	○ ○	- -	● ●	
SERVICES	GAS STATION LIGHT INDUSTRY OFFICE INDUSTRIAL	○ ② ②	○ ○ ○	○ ○ ○	- - -	● - -	See NVn & Dist See NVn & Dist

CHECKLIST OF SERVICE FACILITIES

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

SERVICE FACILITIES

Through a review of various planning literature and an analysis of the North Shore, a list of service facilities, as illustrated on the left, was prepared. This list has been utilized as a checklist of service facility components which ideally should be available to all residents of the North Shore. Besides identifying what facilities are available and where, the list has been useful in determining what facilities should be incorporated into the program for IR5.

	BRIEF DESCRIPTION	COMPARATIVE INFORMATION									GENERAL ASSESSMENT
		Building S.F.			Office S.F. (000,000)	Comm. S.F. (000,000)	Housing Units (No.)			Pop'n.	
		New	Exist.	Total			Low Rise	High Rise	Total		
OPTION 1	18.5 million S.F. F.A.R. of 1.0 - Maximum intensity - Phase out Villages - Large land area of new development	17.5	2.0	18.5	3.08	1.48	3,534 (28%)	8,802 (72%)	12,336	25,780	Extremely high density Limited community facility space
OPTION 2	12.6 million S.F. F.A.R. of .68 - Less intense than Option 1 - Phase out Villages - Same land area for new development as Option 1	10.6	2.0	12.6	2.50	1.05	3007 (44%)	3788 (56%)	6795	15,139	Reduced densities Emphasis on mixed housing Adequate community facility space Requires relocation of both villages
* OPTION 3	10.5 million S.F. F.A.R. of .57 - Same intensity as Option 1 - Retain Village east of Pipeline Road - Smallest land area of new development	8.5	2.0	10.5	2.50	0.94	2424 (47%)	2755 (53%)	5179	11,527	Identical to 2nd option re: density and commun- ity facilities but, preserves: a) more park space b) more existing Band housing

NOTE: The above noted F.A.R. has been based on a land area of 498.85 acres less an allocation for major and roadway uses of 71.43 acres (eg. Low Level Road - 14.38 Ac.; Pipeline Road - 2.05 Ac.; Marinas - 40.00 Ac.; Estuary - 15.00 Ac.) = 427.42 Acres. * Selected Option

DESCRIPTION OF MAIN OPTIONS

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

EVALUATION CRITERIA	IMPACT ON THE BAND			LAND REQUIREMENTS			
	Preservation of existing life style for I.R.5 residents	Diversity of housing for Band	Revenue potential	Cut-offs	Foreshore control and land reclamation	Air-rights	Space for community facilities
DESCRIPTION OF PRINCIPLES AND/OR OBJECTIVES	Maintain oppor- tunity to retain existing life style	Provide variety of housing oppor- tunities e.g. single family town houses, etc.	Maximize return within the limits of good planning	Plan assumes that cut-off lands to be returned	Assume that foreshore is available. However plan must not depend on this	Assume that use of Air-Rights is possible	Adequate community facilities must be provided within any development
DESCRIPTION OF OPTIONS	1 Villages 'A' and 'B' relocated to new river site focus	Medium density Indian housing on river site	Maximum return but highest density	Comprehensive utilization of cut-off lands	Extensive use of foreshore for water related development	Air-rights essential for development strip	Limited range of community facilities
	2 As per Option 1	As per Option 1	Moderate return.	As per Option 1	As per Option 1	As above but moderate use of air-rights	Broader range of community facilities
	3 As above but Village 'B' retained indefinitely	Range from single family to medium density	Moderate return.	As per Option 1	As per Option 1	As above but reduced needs in the Ambleside area.	As per Option 2
ASSESSMENT OF OPTIONS	1 ○	○	●	●	●	○	○
	2 ◐	◐	◐	●	●	◐	●
	3 ●	●	◐	●	●	●	●
COMMENTS	Option 3 is the least disruptive to Capilano residents	Option 3, provides the broadest range of Indian housing opportunities.	Option 3 produces the least revenue only by a narrow margin	Majority of cut- offs utilized as public amenity.	Foreshore and reclaimed land are utilized for marinas and public walkways	Options 2 and 3 more realistic. Majority of dev- elopment on Band controlled land	Options 2 and 3 greater emphasis on "Quality of Environment"

○ POOR ◐ BETTER ● BEST

(B1)

E. J. GABOURY & ASSOCIATES
ARCHITECTS & URBAN DESIGNERS

EVALUATION CRITERIA	REGIONAL DEVELOPMENT POLICIES AS OUTLINED IN THE G.V.R.D. LIVABLE REGION PLAN					MARKET-ABILITY	PUBLIC OPINION
	Population	Employment	Urban Centres	Transportation	Open Space		
DESCRIPTION OF PRINCIPLES AND/OR OBJECTIVES	Reduce development on the North Shore	Promote a balance of jobs to population	North Shore Municipal Centres in lieu of a single Regional Town Centre	Limited public transportation improvements are planned eg. ferry, fast bus and commuter rail	Increase public access to open space and the waterfront	Provide diversified program to maximize market appeal	Increase public access to amenities. Minimize high rise development. Provide family accommodation.
DESCRIPTION OF OPTIONS	1 Approximately 25,780 people	more office space than the established target	Scale of urban development would dominate the North Shore	Requires major transportation improvements earlier	Moderate open space	Limited market appeal due to high density	Highest density. Greatest impact.
	2 Approximately 15,139 people	A balance between office jobs and population	IR 5 would be one of the major North Shore focal points.	Requires major transportation improvements ultimately	Extensive open space	Broad market appeal due to extensive high and low density	Moderate development
	3 Approximately 11,527 people	As per Option 2	As per Option 2	As per Option 2	As per Option 2 but also includes more open space in Ambleside Pk.	As per Option 2	As per Option 2
ASSESSMENT OF OPTIONS	1 2 3	○ ◐ ●	○ ● ●	○ ● ●	○ ◐ ●	◐ ● ●	○ ◐ ●
COMMENTS	Option 3, with the least development is the most compatible with regional policy	Option 2 and 3 provide the most desirable job-to-population balance	I.R.5 was not identified by the G.V.R.D. as a major North Shore Centre.	Option 2&3 are the most compatible with Regional transportation planning.	Each Option provides a similar amount of open space.	Both Option 2 and 3 should appeal to a greater portion of the market than Option 1	Option 3 provides the lowest density and the most open space. All provide excellent public access to amenities.

○ POOR ◐ BETTER ● BEST

ASSESSMENT

EVALUATION CRITERIA		HOUSING MIX POTENTIAL	SITE CONDITIONS	SERVICING NEEDS	STAGING	INTER COMMUNICATION PATTERNS		
						Bus and Rail	Private vehicles and parking	Pedestrians
DESCRIPTION OF PRINCIPLES AND/OR OBJECTIVES		Provide both family and non-family housing	Respond to unique site features	Provide adequate service	Insure that development can be staged	Provide for bus and rail transportation service	Provide adequate facilities for automobiles	Provide auto-free pedestrian system
DESCRIPTION OF OPTIONS	1	30% family 70% non-family	Emphasis on water. Limited tree preservation.	Extensive development	Immediate development possible	Heavily dependent on mass transit	Excessive number of vehicles (27,519 cars)	Pedestrian network implied
	2	44% family 56% non-family	Emphasis on water. Extensive tree preservation.	Moderate development	As per Option 1	North of forest: auto oriented South: transit	Moderate number of vehicles (20,848 cars)	As per Option 1
	3	47% family 53% non-family	As per Option 2 but with more park preserved	Slightly less development than in Option 2	As per Option 1	As per Option 2	As in Option 2 (19,087 cars)	As per Option 1
ASSESSMENT OF OPTIONS	1	○	○	○	◐	○	○	●
	2	◐	◐	◐	●	◐	◐	●
	3	●	●	●	●	◐	◐	●
COMMENTS		Option 2 and 3 provide good opportunities for both family and non-family accommodation	All Options reflect natural features of the site but in varying degrees	All Options imply extensive utility systems but in varying degrees	In all Options development can begin immediately on Band controlled land	All Options greatly enhanced by major bus and rail transportation (Option 1 - essential)	Option 2 and 3 have reduced parking and traffic loads	Major facilities for pedestrians are provided in each Option

○ POOR ◐ BETTER ● BEST

(B2)

E. J. GABOURY & ASSOCIATES
ARCHITECTS & URBAN DESIGNERS

The following is a detailed list of Non Residential Uses which are proposed for IR5. This summary is to be read in conjunction with the Service Facilities diagram on page 35 (left)side).

For cross reference purposes, the numbering system employed throughout this summary (eg. Sector 1, Group A, etc.) relates to the "Sector Numbers" and "Facility Letters" utilized to designate components shown on the Service Facilities diagram on page 35.

SECTOR 1

Group - A (Existing Park Royal Regional Shopping Centre)

	Approx. S.F.	Acres
Existing Centre	318,450 s.f.	56.62
incl. - twin theatre		
- bowling alley		
- Rickey's Restaurant		
- Shopping Centre		
Existing Kap '100' Office Bldg.	142,000 s.f.	1.75
Park Royal Proposed Expansion	276,880 s.f.	---
Future Potential Within Lease Area:		
- assumed commercial uses	200,000 s.f.	---
- assumed office development	284,000 s.f.	---

Group - B

Commercial	4,000 to 7,500 s.f.	7,500	.12 (assume)
- Convenience Retail 2,500 to 5,000 s.f.			
e.g. drug, laundry, cleaners, Mac's type grocery, barber, beauty shop, shoe shop, etc.			
- Local Offices 1,500 to 2,500 s.f.			
e.g. doctor, dentist, Insurance agents, public service agencies			

Primary School (K2)

- 50 to 80 students	3,750 to 6,000 s.f.	6,000	.44 (assume)
---------------------	---------------------	-------	-----------------

Recreation Facilities

- Sub Sector Facility (serves 1,500 to 3,000 people)			
Sitting area and meeting area w/shelter			
Free play field			
Mini sport field e.g. softball			
Mini court games e.g. shuffleboard			
Regular court games e.g. tennis			
Swimming pool (indoor/outdoor)	4,000 s.f.	4,000	
Recreation centre (incl. teen centre)	7,200 s.f.	7,200	

- Neigh Core Facility (serves 500 - 2,000 people)			*
Structured Play 6 - 12 yr			
Unstructured play 6 - 12 yr e.g. open area			
Wading pool			
Free play field (Neigh Common)			

Group - C

Recreation Facilities

- Sub Sector Facility (serves 500 - 2,000 people)			*
Club house 6 - 12 yr	300 s.f.	300	
Structured play 6 - 12 yr			
Unstructured play 6 - 12 yr			
Wading pool			
Adult social centre	3,000 s.f.	3,000	
Outdoor sitting area w/shelter			
Subteen centre and Neigh Common			

- Housing Cluster Facility (serves 150 - 400 people)			*
--	--	--	---

Structured play 0 - 5 yr
Adventure play 0 - 5 yr

Group - D

Recreation Facilities

- Housing Cluster Facility (serves 150 - 400 people)
 - Sitting area
 - Shelter
 - Wading pool
 - Structured play 0 - 5 yr
 - Adventure play 0 - 5 yr
 - Other e.g. small court games

Note: provide 6 - 10 Housing cluster
Level recreation facilities

Variety in characteristics of various sites,
mix of facilities and design is desirable

Miscellaneous Other Uses

Forest	7.32
Capilano River Walkway	1.23
Cemetery	.49
Low Level Road	4.20
Local Vehicular Circulation re: Housing located south of P. Royal lease area	.56

Total excl. P. Royal Towers and Res. south of shopping centre.
(total incl. such res. areas = 73.21 + 9.43 + 2.40 = 85.04 Ac)
(P.R. Towers) (Res. south of P.R.)

* It is assumed that these recreation facilities will be provided within the Park Royal lease area in conjunction with housing development therein and in the area to the south.

SECTOR 2

Group - A (Preliminary Ideas)

Indian Culture and Crafts Centre and Riverside Retail	115,000	3.57
- Long house plus associates open space	20,000 s.f.	
- Community Workshop, carving, weaving, etc.	8,000 s.f.	
- Sales display area	2,000 s.f.	
- Permanent Design Exhibition space	5,000 s.f.	
- Lecture space	3,000 s.f.	
- Temporary Exhibition Space	2,000 s.f.	
- Crafts centre office and administration	4,000 s.f.	
- Art material supply shops	1,000 s.f.	
- Auction pavilion and weekend hobby sales	10,000 s.f.	
- Miscellaneous riverside retail and specialty shops e.g. boutiques, ethnic eating operations, pubs, ice cream parlors, grocery, bike rentals, canoe rentals, etc.	20,000 s.f.	
- Performing Arts building	10,000 s.f.	
- Associated open space - assume size	---	1.95
- Parking - assume 1 car/500 ϕ = 170 cars at 350 ϕ	---	1.36
- Bandshell and outdoor theatre - assume 500 seats.		1.25
Parking - assume 1 car/4 seats = 125 cars at 350 ϕ		
- Picnic/park area - assumed size		4.00
Band Administration Centre	20,000	1.32
- associated open space - assume 20,000 s.f.		
- parking - assume 1 car/400 s.f. = 50 cars at 350 ϕ = 17,500 s.f.		

SUPPORT FACILITIES

Group - B

Recreation Facilities



- Sub Sector Facility (serves 500 - 2,000 people)

Club House 6 - 12 yr

Structured play 6 - 12 yr

Unstructured play 6 - 12 yr

Wading pool

Adult social centre

Outdoor sitting area w/shelter

Subteen centre and Free play field (Neigh Common)



- Housing Cluster Facility (serves 150 - 400 people)

Structured play 0 - 5 yr

Adventure play 0 - 5 yr

Other e.g. small court games

Group - C

Recreation Facilities



- Housing Cluster Facility (serves 150 - 400 people)

Sitting area

Shelter

Wading pool

Structured play 0 - 5 yr

Adventure play 0 - 5 yr

Miscellaneous other uses

Forest

Capilano River Walkway

Low Level Road

Lions Gate Bridge R.O.W.

Landscape Buffer to Marine Dr.
& Lions Gate Bridge traffic

Local vehicular circulation re: Housing

Total excl. Res. (total incl. Res. = 31.40 + 9.20 = 40.60 Ac)
(res. ac.)**SECTOR 3**Office DevelopmentAssume 30% of proposed new office space total (excluding Park
Royal office development), (30% x 1,716,000 s.f. = 600,000 s.f.)Group - A

Commercial

- Convenience Retail re: Residential 36,500 - 43,000

Convenience grocery 10,000 - 12,000

Drug/variety 6,000 - 8,000

Beauty/barber 2,000 - 2,500

Other 18,500 - 20,500

e.g. dry clean & pick up

laundry

bank

post office

shoe repairs

candy & gift shop

ice cream & carry out food(s)

restaurant(s)

Approx. S.F. Acres

300

.75
(assume)

3,000

.25
(assume).5
(assume)

2.00

1.48

2.47

2.86

5.49
(assume)

2.15

31.40

600,000

5.50

77,250

1.84

66,500 to 77,250 s.f.

(NB Total for Sector
3 = 73,500 - 88,750)(NB Total for Sector 3 =
42,000 - 52,000 s.f.)snack bar(s)
photography
liquor & wines
flower, etc.
movie theatre

- Convenience Retail re: Office (+ 3,000 workers)

Pub(s) restaurant(s) ± 5,000 s.f.

Snack bar/delicatessen 500 s.f.

Bank(s) 2,000 s.f.

Other 3,000 s.f.

e.g. Stationery

Specialty shops, etc.

10,500 s.f.

(NB 100% of Sector 3's
total)

- Local Office re: Residential Pop'n

Doctors clinic 5,000 - 5,500

Dentist(s) 2,000 - 2,500

Legal 2,000 - 2,500

Insurance, travel agents, etc 2,500 - 3,500

Social Services Centre 2,000 - 2,500

other 7,500 - 9,750

19,500 - 23,750 s.f.

(NB Total for Sector
3 = 21,000 - 26,250)

Hotel (assume 50 rooms at 500 s.f.)

25,000 s.f.

25,000

1.00
(assume)Group - B

- Convenience Retail re: Res. Pop'n

e.g. Mac's type grocery

1,500 to 2,000 s.f.

2,000

.04

Elementary School

469 - 868 students (at assumed 75 s.f./student)

35,175 to 65,100 s.f.

65,100

6.00
(assume)

Recreation Facilities

- Sub-Sector Facility (serves 1,500 - 3,000 people)

Sitting area and meeting area w/shelter

Free play field

Sport field e.g. softball, football (see Elem School above)

Mini court games e.g. shuffleboard (2), paddleball (2)

Regular court games e.g. tennis (2) basketball (4)

Swimming pool (indoor/outdoor)

assume 4,000 s.f.

4,000

Recreation centre (incl. teen centre)

assume 7,200 s.f.

7,200

- Neigh Core Facility (serves 500 - 2,000 people)

Structure Play 6 - 12 yr

Adventure Play 6 - 12 yr

Wading Pool

Free Play Field (Neigh Common)

1.03

Group - C

- Convenience Retail

e.g. Mac's type grocery

1,500 to 2,000 s.f.

2,000

.04

- Primary School (K - 2)

87 to 168 students (at 75 s.f. /student) (assume)

6,525 to 12,600 s.f.

12,600

.55
(assume)

Recreation Facilities

- Neighborhood Facility (serves 500 - 2,000 people)

Club House 6 - 12 yr

300 s.f.

300

Structure play 6 - 12 yr

Unstructured play 6 - 12 yr

Wading pool

Adult social centre

3,000 s.f.

3,000

Outdoor Sitting area

Sub-teen centre and free play field (Neigh Common)

- Housing Cluster Facility (150 - 400 people)

Structured play 0 - 5 yr

Adventure play 0 - 5 yr

.21

C1

**E. J. GABOURY & ASSOCIATES
ARCHITECTS & URBAN DESIGNERS**



Group - D		Approx. S.F.	Acres
Commercial	4,000 to 7,500 s.f.	7,500	.18
- Convenience Retail re: Res. Population 2,500 to 5,000 s.f. e.g. drug, laundry, cleaners, Mac's type grocery, barber, beauty, shoes, etc.			
- Local Officer re: Res. Population 1,500 to 2,500 s.f. e.g. doctors office, dentist, Insurance, etc. plus public service agencies			
Recreation Facilities			
- Sector Facility (serves 3,000 - 7,000 people)			2.70
Sitting areas w/shelter			
Amphitheatre			
Recreation Centre (incl. adult & teen centres)	50,400 to 72,950 s.f.	50,000	
Day care approx. 90 students (6 Rms at 15) at assume	4,500 s.f.	4,500	
	50 s.f./child		
Sculpture garden			
- Sub Sector Facility (serves 1,500 - 2,000 people)			3.70
Free play field			
Mini sport field (e.g. softball) - see Elem. school site (group 3-b)			
Mini court games (e.g. handball, shuffleball, horseshoe, paddlball)			
Regular court games (e.g. tennis (4), basketball (2))			
Swimming pool	8,000 - 12,000 s.f.	12,000	
Group - E Note: Provide 10 - 14 of these - assume 3,500 - 2,500 s.f. site each)			
Housing Cluster Facility (serves 150 - 400 people)			1.20
Sitting area			
Shelter re: sitting and play			
Wading pool and/or			
Structure play 0 - 5 yr			
Adventure play 0 - 5 yr			
Miscellaneous other uses			
Forest			12.29
Low Level Road			5.31
Lions Gate Bridge R.O.W.			2.86
Landscape Buffer and Land Reserve			5.00
e.g. buffer to Marine Dr. & Lions Gate Bridge traffic			
Pipeline Road R.O.W.			2.95
Gas Station - assume 2 at 1,500 s.f. each		3,000	.68
Local vehicular circulation			8.37
Total excl. Res. (total incl. Res. = 64.61 + 40.22 = 104.83 Ac)			64.61
			(res. ac.)

SECTOR 4

Group - A			
Band Nursery School	assume 2,500 s.f.	2,500	2.34
e.g. similar facility to existing Nursery school in Village 'A' area			(assume)
Recreation Facilities			1.98
- Neighborhood Facility (serves 500 - 2,000 people)			(assume)
Club House 6 - 12 yr	300 s.f.	300	
Structure play 6 - 12 yr			

SUPPORT FACILITIES



Unstructured play 6 - 12 yr			
Wading pool			
Adult social centre	3,000	3,000	
Outdoor sitting area w/shelter			
Subteen Centre and Free play field (Neigh Common)			
- Housing Cluster Facility (serves 150 - 400 people)			
Structured play 0 - 5 yr			
Adventure play 0 - 5 yr			
Other e.g. small court games			
Group - B Note: Provide approx. 2 of these			
Housing Cluster Facility (serves 150 - 400 people)			1.00
Sitting area			(assume
Shelter re: sitting & play areas			.5 Ac ea.
Wading pool			
Structure play 0 - 5 yr			
Adventure play 0 - 5 yr			
Other e.g. small court games			
Miscellaneous other uses			
Plaza International (apartment/Hotel)		560,000	4.54
Forest			6.12
Low Level Road			2.40
McGuire Easement			2.05
Local Vehicular Circulation re: Housing			3.18
Total excl. Res. (total incl. Res. = 23.61 + 28.69 = 52.30 Ac)			23.61
			(res. ac.)

SECTOR 5

Marina			
Approx. 200 boats			8.00
Hotel			
Approx. 200 rooms plus support facilities e.g. restaurants, etc.		190,000	5.50
Miscellaneous other uses			
Capilano River Walkway			1.15
Park/Golf course			20.23
B.C. Rail R.O.W.			4.00
Total		190,000	38.88

SECTOR 6

Marina			
Approx. 800 boats			32.00
Hotel			
Approx. 500 rooms plus support facilities e.g. restaurants, shops, etc.		480,000	7.87
Convention Centre			
		500,000	8.18

Miscellaneous other uses	Approx. S.F.	Acres
Capilano River Walkway		1.15
Burrard Inlet Walkway		6.38
B.C. Rail R.O.W.		2.52
Lions Gate Bridge R.O.W.		3.45
Total	980,000	61.55

SECTOR 7/8

Department of Environment

Program as initially proposed by D.O.E. (summer 1975)

Office Development

Assume balance of proposed new office space total of 1,716,000 (excl. P. Royal office Development) therefore 1,716,000 s.f. - 600,000 s.f. (sector 3)

Group - A

Commercial	44,530 to 51,530 s.f.	51,530 (84% of this sector's total)	.69
- Convenience Retail re: Residential	18,500 to 23,000 s.f.	(NB total for sector 7/8 = 21,000 - 28,000 s.f.)	
Convenience grocery	6,500 - 8,000		
Drug	3,000 - 4,000		
Beauty/barber	1,000 - 1,500		
Other uses	8,000 - 9,500		
e.g. dry clean & pick up			
laundry			
Bakery			
Gift/candy shop			
Ice cream & carry out foods			
Bank			
Restaurant, snack bar, etc.			
- Convenience Retail re: Office (± 4,865 workers) (see group - b retail re: balance of 715 workers)	17,030	(NB total for sector 7/8 = 19,530 s.f.)	
Pub(s), snack bar/deli	± 3,000		
Restaurant(s)	6,000		
Bank(s)	2,000		
Other	5,030		
e.g. Post office, printing, stationery, etc.			
- Local Offices re: Res. Population	9,000 - 11,500 s.f.		
Doctors clinic	2,500 - 3,000	(NB total for sector 7/8 = 10,500 - 14,000)	
Legal	1,500 - 2,000		
Dentists	500 - 800		
Insurance agents	1,000 - 1,200		
Social Services Centre	1,000 - 1,500		
Other	2,500 - 3,000		
e.g. Community info			
Travel agent			
Etc.			

Elementary School
209 - 314 students 15,675 to 23,550 s.f.

Recreation Facilities

- Sector Facility (serves 3,000 - 7,000 people)			
Sitting areas w/shelter			
Amphitheatre			
Recreation Centre (incl. adult & teen centres)	24,500 to 37,000 s.f.	24,500	
Day Care approx. 60 students (4 rooms at 15)			
at assume 50 s.f./child	3,000 s.f.	3,000	
Sculpture garden			



- Sub Sector Facility (serves 1,500 to 2,000 people)
Free play field
Mini sport field (e.g. free play area)
Mini court games
Regular court games e.g. tennis, basketball
Swimming pool (indoor/outdoor) 6,000 to 10,000 s.f.

Group - B



Commercial 6,500 to 10,000 s.f. 10,000
(16% of this sectors total)
- Convenience Retail re: Res. Population 2,500 - 5,000 s.f.
e.g. drug, laundry, cleaner, Mac's type
grocery, barber, beauty, shoes, etc.
- Convenience Retail re: Office Population (± 715 workers) 2,500 s.f.
(see group - a retail re: balance of 4865 workers)
Restaurant(s)
Delicatessen, snack bar
Post Office, etc.
- Local Office re: Res. Population 1,500 - 2,500 s.f.
e.g. doctors office, dentist, Insurance agents,
etc. plus public service agencies

Recreation Facilities



- Sub Sector Facility (serves 1500 - 3000 people)
Sitting area and meeting areas w/shelter
Free play field and mini sport field e.g. softball
Mini court games e.g. shuffleboard and regular court games
Swimming pool (indoor/outdoor) 4,000 s.f. 4,000
Recreation centre (incl. teen centre) 7,200 s.f. 7,200



- Neigh Core Facility (serves 500 - 2,000 people)
Structure play 6 - 12 yr
Unstructured play 6 - 12 yr e.g. open area
Wading pool
Neigh Common - free play field

Group - C



Recreation Facilities

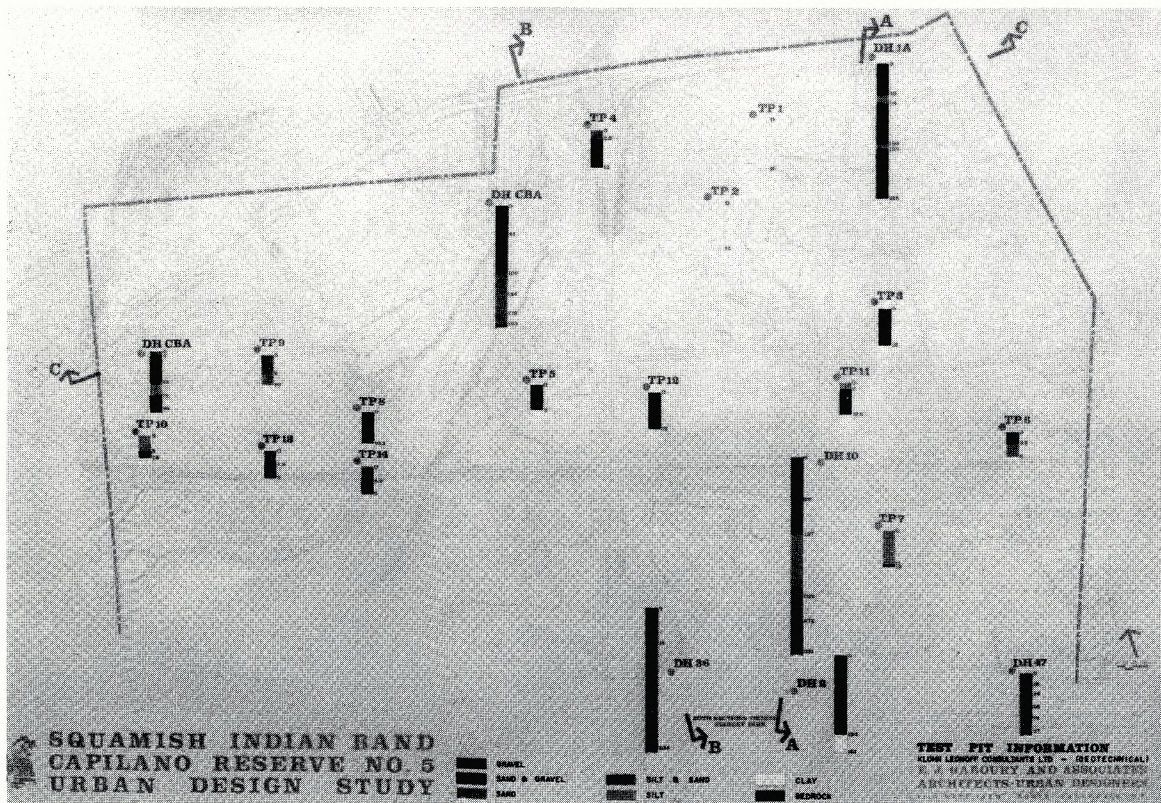
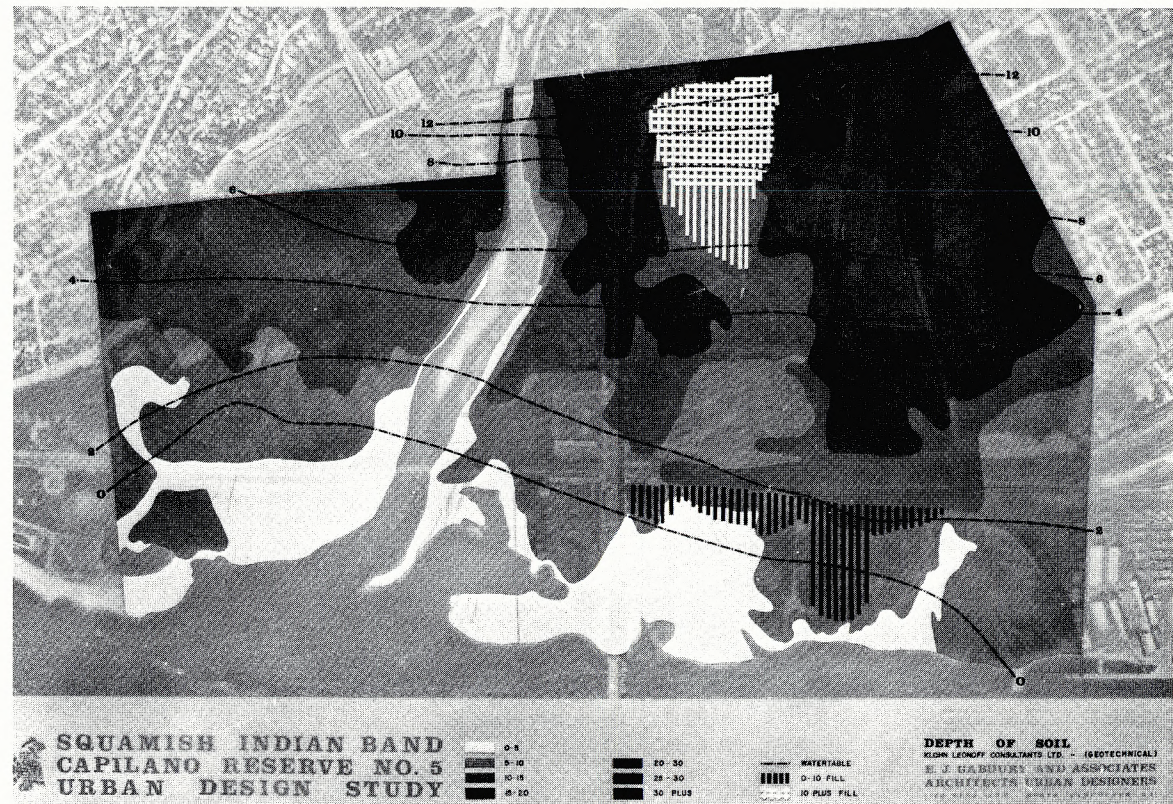
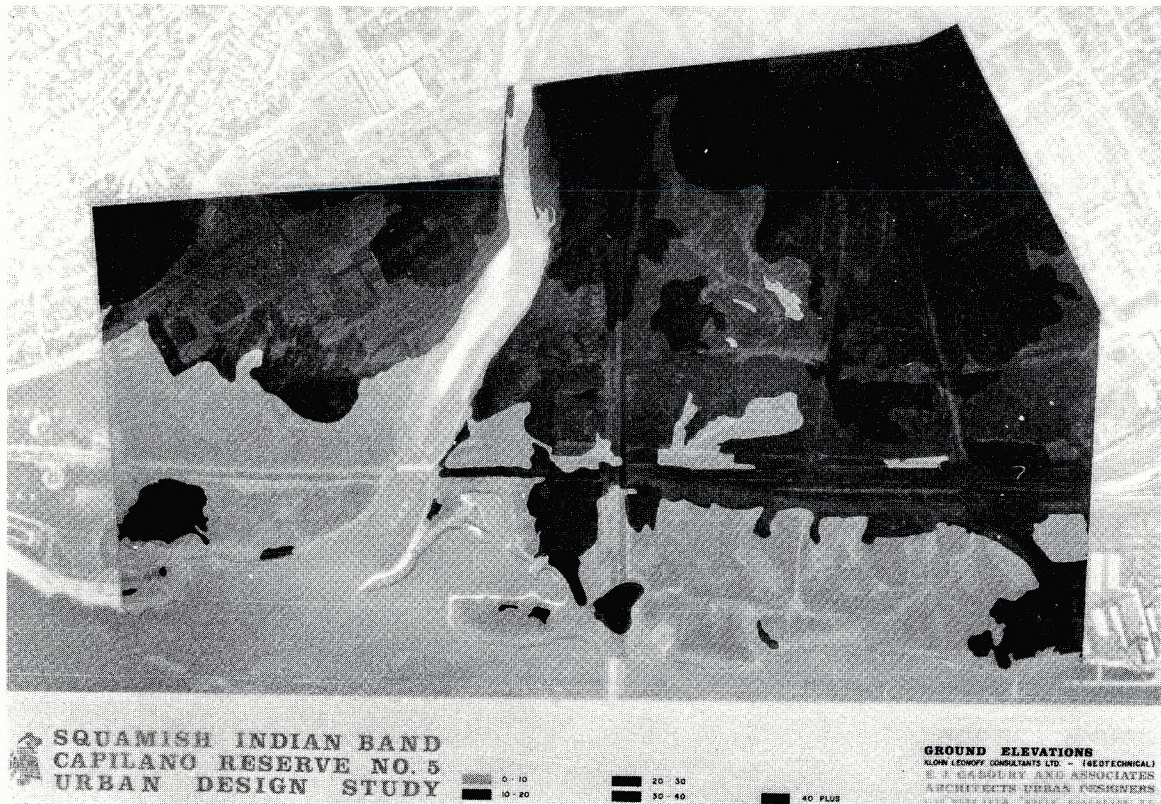
- Housing Cluster Facility (serves 150 - 400 people) Note: Provide 8 - 12
Sitting area
Shelter
Wading pool
Structured play 0 - 5 yr
Adventure play 0 - 5 yr
Other e.g. small court games

Miscellaneous other uses

Burrard Inlet Walkway	9.19
Lions Gate Bridge R.O.W.	3.45
B.C. Rail R.O.W.	13.22
Low Level Road grade interchange	1.00
Local vehicular circulation re: Housing	.65

Total excl. Res. (total incl. Res. = 93.38 + 22.27 = 115.65 Ac)
(res. ac.)

* A land area of 2.75 and 2.83 Ac has been assigned to Ed. and Recreation respectively. This is under programmed because it is assumed that space on "deck" over B.C.R. will also be available for school related open space and recreation uses. See miscellaneous uses below. "B.C.R. - 13.22 Ac."



GEOTECHNICAL STUDY

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

TECHNICAL RESEARCH

During the course of the study, a great deal of technical research was carried out by the multi-disciplinary planning team. Such research has formed the basis for transforming initial development concepts into a detailed development plan. Each of the following investigations, with the exception of the analysis of education, resulted in a report being submitted to the Band. However, in order to provide the reader with an overview of these technical studies, the following summary is provided.

GEOTECHNICAL

RESEARCH CARRIED OUT BY: Klohn Leonoff Consultants Ltd.
Civil and Geotechnical Engineers

PURPOSE OF RESEARCH:

To undertake a geotechnical study of soils and drainage conditions on IR5, in order to provide background information as a basis for over-all site planning.

DESCRIPTION OF SITE FORMATION:

Historically, a major portion of the present reserve, was a part of the Burrard Inlet waterway. As the sea fell with respect to the land, the present delta type land form emerged at the mouth of the Capilano River.

SUMMARY OF MAJOR FINDINGS:

Overview

The illustrations on the left describe various geotechnical aspects of the site as follows:

Upper left - ground elevations

Lower left - a description of available test pit information

Upper right - depth of surface soil, depth of water table, and locations and depth of fill where applicable

Lower right - soil bearing capacities, depth to bedrock below the surface, and past channel locations of the Capilano River.

In general, soil in the northern portions of the Reserve is superior in bearing capacity because it consists of dense, coarse gravel and sand.

Further, it has, during recent geologic time, been consolidated beneath many feet of deposits which have since been washed away. Near the inlet, the situation is believed less favourable, although still satisfactory for development if adequate precautions are taken.

Bedrock

Generally, bedrock appears to be so deep that it will not enter into the consideration of foundations in relation to conventional building types.

The Capilano River

Steps to protect against river bank erosion are required. Also, a program to establish flood control requirements should be developed to protect existing and future developments along the river.

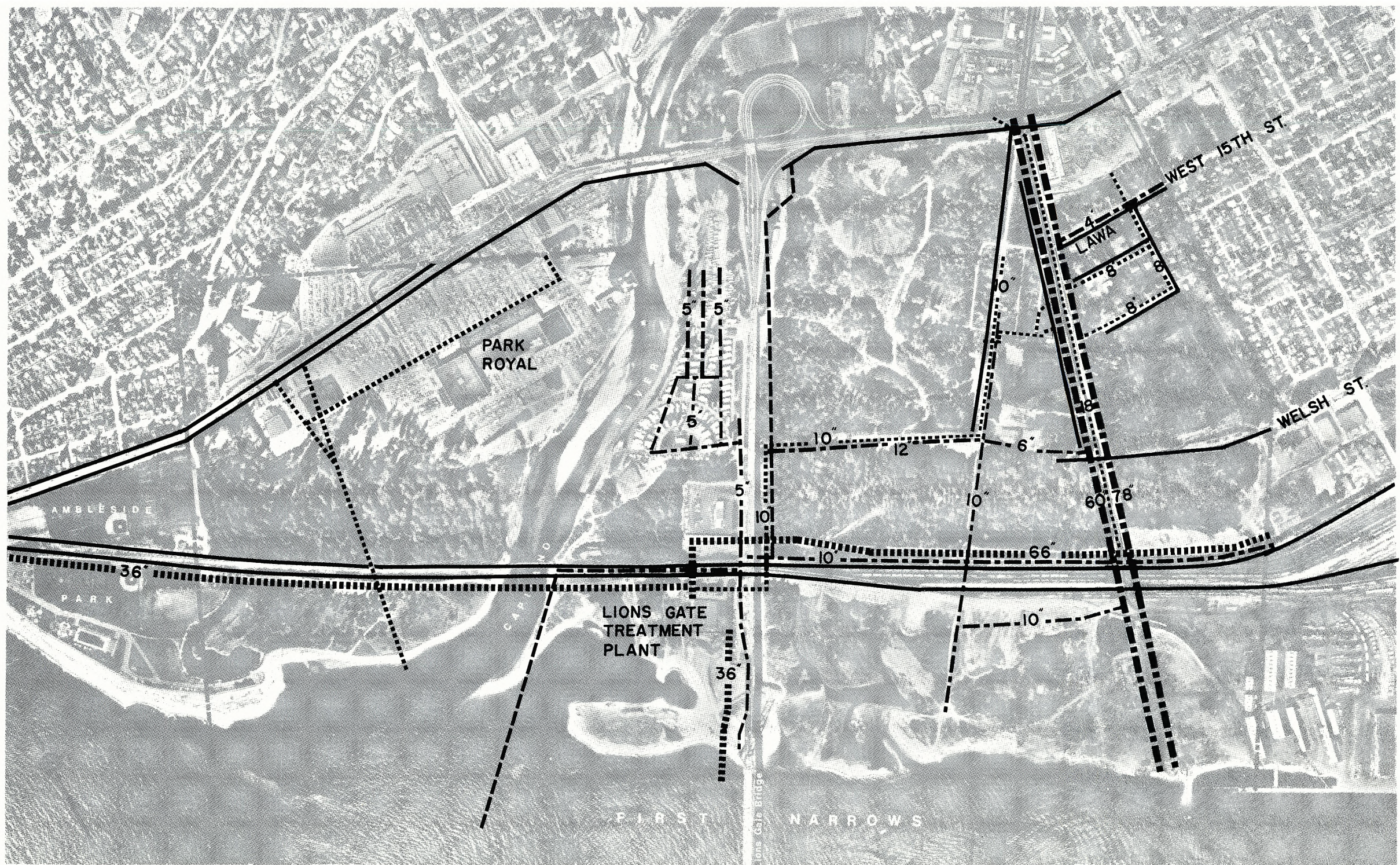
Earthquake

The normally consolidated sand and gravel that exists south of the B.C. Rail right of way, might liquefy and slide or readjust readily, when subjected to a quake of the severity that might occur in the area. It is therefore recommended that appropriate precautions be taken for foundation design. Soil deposits north of the B.C. Railway right of way contain sand strata, where in general, the material is better confined, and is not liable to slide if disturbed.

Foundations and Bearing Capacity

The bearing capacity of the soil varies widely over the reserve, because of the combination of water table and soil. The most competent soils are found near Marine Drive, in the northeast corner of the reserve. The soils near the Capilano River and Park Royal have somewhat less bearing capacity. Toward the railroad, the soils are loose, the water table is near the surface, and the bearing capacity is believed to be considerable less.

South of the railway, the soil is coarse and very loose. Because of the possibility of earthquake shocks leading to movement of the ground in this area, caution is recommended in designing bearing values. Aside from this consideration, it is believed that the area could readily support low-rise structures of up to four storeys high (as an alternate, high-rise structures could be constructed but with more expensive foundations). Because of the geotechnical history of the site, detailed examination for all future buildings is recommended. Buried channels could lead to excessive settlement if loaded with fill or buildings.



..... SEWER
 - - - - WATER
—— B.C. HYDRO

UTILITIES

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
 DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

UTILITIES

RESEARCH CARRIED OUT BY: Associated Engineering Service Ltd.

PURPOSE OF RESEARCH:

To assess existing utilities and future requirements in order to accommodate the phased development of IR5.

SUMMARY OF MAJOR FINDINGS:

Overview

The Capilano Reserve is extremely well situated with regard to the supply of services. The only completely new service that will have to be made available is a storm run-off sewer system. All other services are available and the new development can readily be tied into same. Also, no excessively long utility extensions will have to be built in order to get services to development sites.

Water Supply

Existing - two large pipelines along new Pipeline Road
- take-off at Welch and Lawa Roads
- supply at Park Royal

Required - make connection at Welch Road and possibly also at new Pipeline Road (for development east of Capilano River)
- in future, if required, augment water supply services to the area west of Capilano River, by tying into the system which will be developed to serve the east side

Sanitary Sewerage

Existing - 10 inch diameter sewer serving village
- 18 inch diameter sewer from North Vancouver, running along new Pipeline Road
- 36 inch diameter Hollyburn interceptor on west side, paralleling B.C. Railway lines
- 66 inch diameter North Vancouver interceptor on east side, paralleling B.C. Railway lines
- Park Royal sewerage system

Required - on west side, either tie into West Vancouver trunks or directly into Hollyburn interceptor.
- on east side, utilize 10 inch diameter sewer and possibly tie into 18 inch diameter down New Pipeline Road.
- alternately, or at a later stage in the development, tie into North Vancouver interceptor possibly with a utility corridor in conjunction with air rights development over the B.C. Railway. A separate collection system, complete with pumping station may be required for development south of the tracks.

Wastewater Treatment

Existing - GVS and DD's Lions Gate Primary Treatment Plant
Required - negotiate for use of the above

Storm Drainage

Existing - storm drain on Marine Drive
Required - provide storm drainage facilities either into Capilano River or Burrard Inlet. (For those areas where it is not practical to tie into the existing system serving Park Royal.)

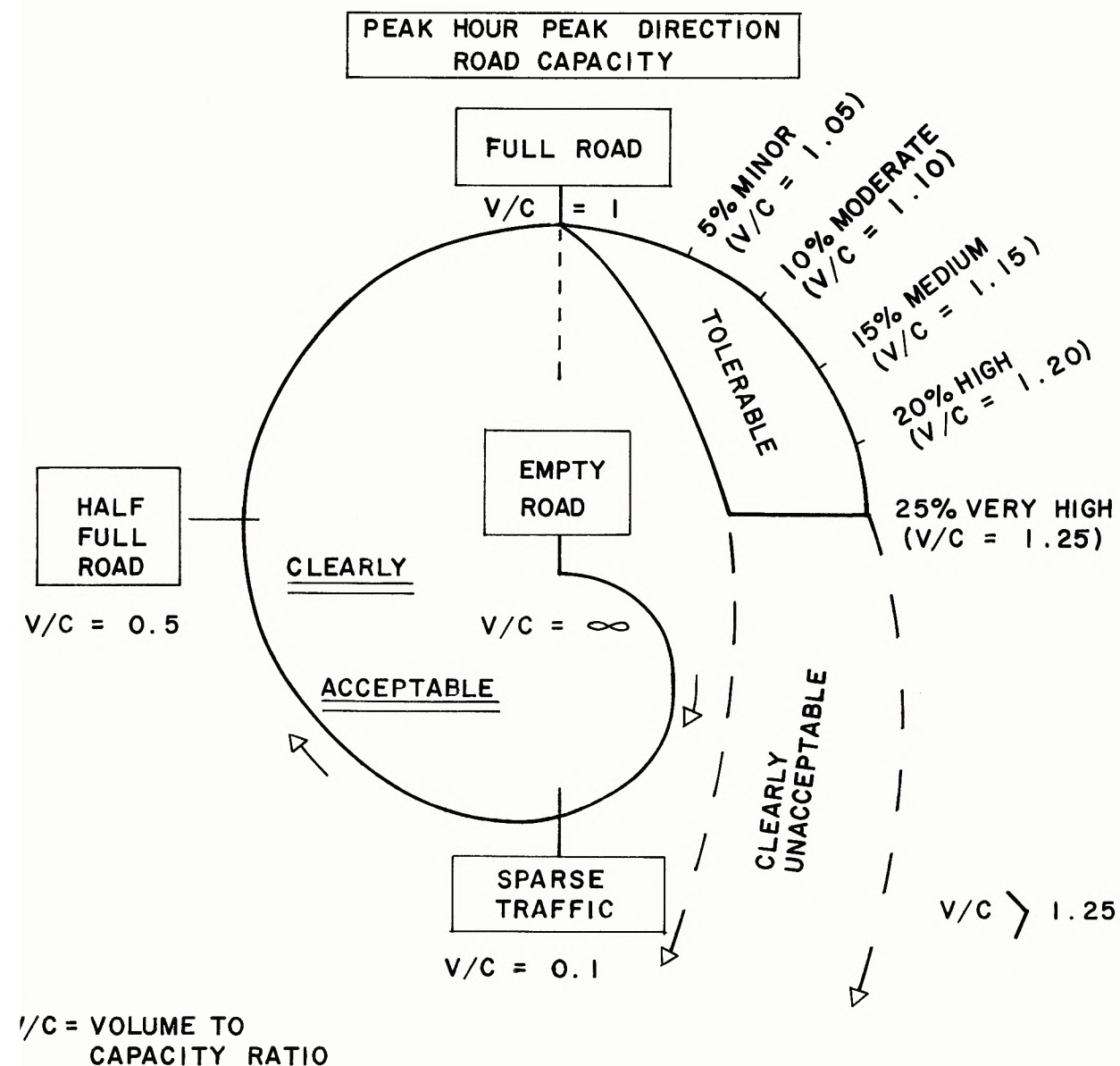
Electric Utility

Existing - 60 kv line and 12 kv line paralleling B.C. Railway line
- 12 kv line down Mathias Road
- Norgate substation just east of IR5
Required - relocation of line down Mathias Road
- west side; take-off from lines paralleling railway or tie into system serving Park Royal
- east side; tie into lines paralleling railway
- possibly upgrade 12 kv line paralleling railway in future

Telephone and Cablevision

It is assumed these utilities are obtainable, provided that data regarding future demand is supplied.

IMPACT RATING DIAGRAM



		STAGE 1		STAGE 2		STAGE 3 & 4
		PRESENT PARK ROYAL EXPANSION	BALANCE OF STAGE 1	25% OF STAGE 2	BALANCE OF STAGE 2	
TRANSPORTATION ASSUMPTIONS	1	EXISTING ROADS	○	○	○	○
	2	MID-CROSSING OF CAPILANO RIVER CONNECTING ROADS	●	◐	○	○
	3	DITTO PLUS FOUR LANE LOWER LEVEL ROAD		●	◐	○
	4	GRADE-SEPARATION OF CRITICAL INTER-SECTIONS MINUS LOWER LEVEL ROAD		◐	◐	○
	5	GRADE-SEPARATION OF CRITICAL INTER-SECTIONS PLUS 4 LANES LOWER LEVEL ROAD		●	●	○
	6	DIRECT CONNECTION LIONS GATE TO UPPER LEVELS ROAD				○
	7	MASS TRANSIT RIDERSHIP 20% 40% 50% (PLUS NEW ROAD)	NOTE: A 6-LANE LOWER LEVEL ROAD IS ASSUMED TO CONTAIN 2 EXCLUSIVE BUS LANES OR EQUIVALENT			● 50% ◐ 40% ○ 20%

ZOLTAN J. K. KUUN, P.ENG.

TRANSPORTATION IMPACT ASSESSMENT

SQUAMISH INDIAN BAND - CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B. C. REGIONAL PLANNING

TRANSPORTATION

RESEARCH CARRIED OUT BY: Zoltan Kuun Associates
Consulting Engineers
Transportation, Traffic & Parking

PUPROSE OF RESEARCH

To assess road and mass transit requirements, in relation to the ultimate development as proposed for IR5.

To indentify the transportation requirements, in relation to the development of the uncommitted lands (approximately 104.83 acres of presently undeveloped land).

To assess the following specific items:

- ultimate role for a new Mid-Crossing Bridge over the Capilano River
- internal road pattern proposal
- parking ratio requirements
- road, width and lane requirements
- what intersections should ultimately be grade separated
- phasing concepts

SUMMARY OF MAJOR FINDINGS:

Overview

Recurring peak hour congestion exists on the existing road network surrounding IR5. Since any development either on the Reserve or elsewhere on the North Shore will contribute to this congestion, improvements of and additions to the existing system will be required. Further, new transportation facilities as well as changes in work hours (staggered) will be warranted so as to manage the anticipated growth.

The diagram on the extreme left illustrates the method utilized for rating the transportation network and assessing the need for and impact of change. In general, within individual phases, there are tolerable levels for overloading the road network. However, when these become too high and are 'clearly unacceptable', the network must be changed to achieve more acceptable levels of usage.

The table on the immediate left identifies the relationship between anticipated transportation changes (transportation assumptions) and associated development potentials (Stage 1,2,3 and 4). An appreciation of this relationship is necessary in order to develop a meaningful phasing plan - one which proposes development only within the tolerable limits of the transportation system at any given time.

Transportation Requirements for Development of Uncommitted Lands

The proposed Mid-Crossing Bridge over the Capilano River will reduce some of the current congestion along Marine Drive in the vicinity of the reserve. This in turn will enable a limited amount of new development to take place in Sector Three. In order to complete the balance of the program for the uncommitted lands, however, it is recommended that the Lower Level Road and grade separation of the Taylor Way/Marine Drive and the Capilano Road/Marine Drive intersections take place.

Transportation Requirements for Ultimate Development

The ultimate development of IR5 is estimated to be not closer than 20 years. However, in order to support this ultimate development and that projected to occur elsewhere on the North Shore within the same time frame, major mass transit facilities on the North Shore are deemed to be required.

ASSESSMENT OF SPECIFIC ITEMS:

Ultimate Role for the Mid-Crossing Bridge

Four possible roles ranging from a main regional transportation corridor to a pedestrian only bridge were examined. While a local orientation is considered the most desirable, it is recommended that all options be kept open until a complete and final alignment and specification of 'role' has been developed and agreed to by all parties for the future Lower Level Road.

Assessment of Internal Road Patterns

The traffic consultant has endorsed the road patterns for overall and first stage area development. The roads for overall development are as illustrated on Overall Development Plan, Page 23. Internal road patterns for the first stage areas are illustrated on diagrams of Short Term Circulation and Long Term Circulation, Pages 38 and 39 respectively.

PARKING RATIOS

Parking ratios, as recommended by the transportation consultant, are:

Residential

Townhouses	(1200 S. F.)	1.3 cars per dwelling unit (1.46)
Walk-Up Apartments	(1000 S. F.)	1.1 cars per dwelling unit (1.21)
High-Rise Apartments	(800 S. F.)	1.0 cars per dwelling unit (1.10)
Visitors		add 10% to each of the above.
		The effect of this on the above standards is as noted in brackets.

Other

Hotel		1.0 cars per room
Retail	Regional . . .	5.0 cars per 1000 S. F. (Net Leasable)
	Local	8.0 cars per 1000 S. F. (Net Leasable)
Office		2.5 cars per 1000 S. F. (Net Leasable)
Recreation		1.25 cars per 1000 S. F. (Across Area)
Entertainment5 cars per seat
Education	Elementary.	.5 cars per classroom plus .5 cars per teacher
	Secondary.	1.0 cars per classroom plus .7 cars per teacher

LANE REQUIREMENTS

The suggested number of lanes for various road types are as follows:

Road Type	No. of Lanes
Major Arterial	
- New Pipeline Road	4 (15 to 25 Ft. median is also desirable)
- Lower Level Road	6 (15 to 25 Ft. median is also desirable)
Collector Roads	4 (landscaped median is also desirable)
Local Roads	2 to 4 lanes
Service Roads	20 feet wide plus adequate shoulders for emergency vehicles

Note: space in addition to the above should be provided for turning lanes.

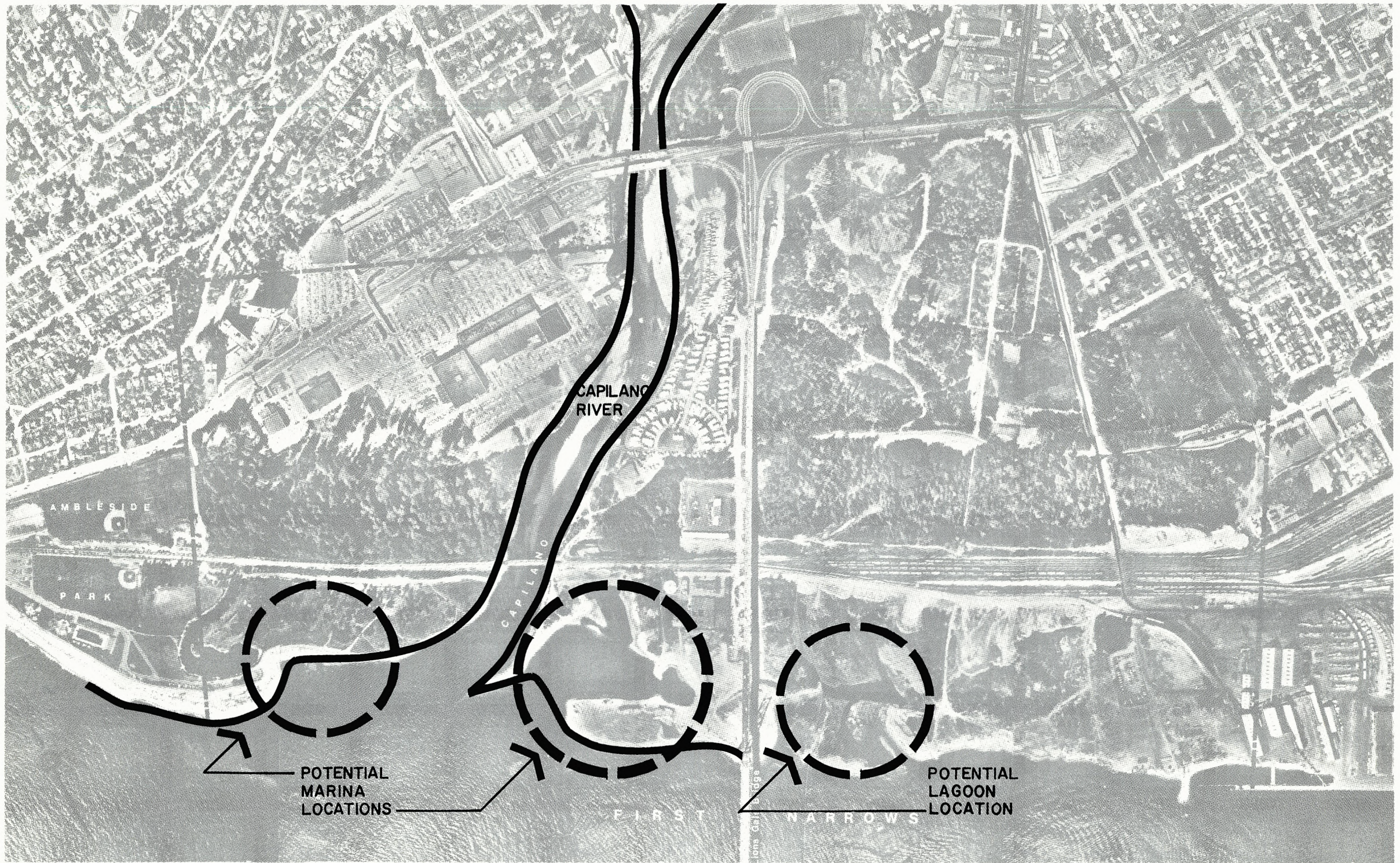
GRADE SEPARATION REQUIREMENTS

The suggested locations for eventual grade separated roadway crossings are as follows:

- Taylor Way/Marine Drive
- Capilano Road/Marine Drive
- Pipeline Road/Lower Level Road (also bridge over B.C. Railway)
- North-South access road below the Lions Gate Bridge/Lower Level Road (also bridge over B.C. Railway)
- possibly an access road under the B.C. Railway to Ambleside Park area (south of Park Royal)

PHASING

The principle of phasing development in conjunction with various transportation improvements is recommended. This relationship between development and transportation is as summarized in the table on the immediate left. The proposed phasing is also illustrated further by the Overall Phasing Plan on Pages 40 and 41.



AREAS OF ENVIRONMENTAL ASSESSMENT

SQUAMISH INDIAN BAND-CAPILANO IR5 URBAN DESIGN STUDY
DEPARTMENT OF INDIAN AFFAIRS - B.C. REGIONAL PLANNING

ENVIRONMENTAL

RESEARCH CARRIED OUT BY: TERA Consultants Ltd.
Environmental Resource Analyst

PURPOSE OF RESEARCH:

- 1) To assess the Lower Capilano River and its transformation into a major amenity area within the Indian Reserve
- 2) To assess the marina potential at the mouth of the Capilano River
- 3) To assess the possibility of locating a lagoon in the area immediately east of Lions Gate Bridge and south of the B. C. Railway line

SUMMARY OF MAJOR FINDINGS:

Capilano River

The development of the lower stem of the Capilano River is the most complex of all three development concepts outlined above. The engineering of a river channel and mouth which can accommodate the needs of fish and man is possible. However, the feasibility of this endeavour during potentially high peak flows from the Cleveland Dam of the Greater Vancouver Water District, creates the need for an extensive flood protection to ensure high safety margins.

Present bank erosion on the east bank of the Capilano River makes bank protection such as riprapping a first priority. However, continued aggradation of the stream bed will necessitate further stream bank protection.

In general, because of the importance of stream management for the Capilano River, it is recommended that all representatives having an interest in the river coordinate their planning endeavours accordingly.

Marina - East side of Capilano River

The viability of the marina will depend on the following:

- 1) navigational safety for the approaches of the proposed marina
- 2) the marina would integrate into the estuary of that river
- 3) annual dredging of the First Narrows by the National Harbours Board would be combined with dredging of the proposed marina approaches

It is recommended that Item 1, navigational safety, be determined immediately. For Item 2, it will be necessary to build and construct a marina with the least interference of the rearing, feeding, spawning, and acclimatization needs of fish entering and leaving the river system to have access to the Capilano Hatchery. Most of these requirements can be met with the provision of fresh-water flushing from the Capilano River into the boat basin, and state of the art cleanliness provided by the marina operators. Item 3 should be clarified with the Department of Public Works, through the National Harbours Board.

Marina - West side of Capilano River

The construction of a marina on the west bank of the Capilano River would necessitate protective dykes to prevent wave action from entering the boat basin. The need for these dykes would constrict the mouth of the Capilano River. The sediment transportation of Ambleside Beach is in an easterly direction and meets the sediment bed load of the Capilano River to deposit both marine and alluvial sediments approximately where the west bank marina would be located. This will result in comparatively high costs for dredging and continuous maintenance dredging for this marina.

Lagoon

The primary focus of the proposed lagoon to be located directly east of the Lions Gate Bridge between the leased lands of Environment Canada and the Lions Gate Bridge, would be basically as a visual amenity for surrounding urban projects. However, some attraction for waterfowl and fish could be realized.

Based on an analysis of tidal and controlled lagoon options, it is recommended that the controlled water level lagoon is the most feasible, with the option of introducing fresh-water in the future. Basically, this provides the opportunity to provide the best water focus with the least expense.

AIR SPACE
DEVELOPMENT POTENTIAL



± 27 FT. HT. REQ'D.

EXISTING
RAILROAD
(200 FT.)

EXISTING SITUATION (CROSS SECTION)

CONV'L
DEVT

PKG.

AIR SPACE
DEVELOPMENT

CONVENTIONAL
DEVELOPMENT

PKG.

EXISTING
RAILROAD

ALT 1- COMPLETE DEVELOPMENT OVER RAIL

CONV'L
BLDG.

PARKING STRUCTURE

CONVENTIONAL
BLDG.

EXISTING
RAILROAD

ALT 2- PARKING STRUCTURE OVER RAIL

CONV'L
BLDG.

PKG.

DECK (eg. PEDESTRIAN
& RELATED USES)

CONVENTIONAL
BLDG.

PKG.

EXISTING
RAILROAD

ALT 3- DECK OVER RAIL

RAILROAD AIR SPACE UTILIZATION CONCEPTS

STRUCTURAL

RESEARCH CARRIED OUT BY: Bogue Babicki and Associates Ltd.
Consulting Structural Engineers

PURPOSE OF RESEARCH

- 1) To investigate, from a structural point of view, alternate concepts for bridging office, commercial, residential and related parking development, over the approximate 200 foot wide expanse of B.C. Railway marshalling yards on IR5 (see Sector 7 and 8).
- 2) To analyze the potential, again from a structural standpoint, of building over the GVS and DD's Lions Gate Primary Sewerage Treatment Plant (see Sector 6).

SUMMARY OF MAJOR FINDINGS:

Building over the railway tracks

To evaluate the concept structurally, a series of building arrangements, as illustrated on the left, were developed and analyzed. These arrangements vary in complexity from complete buildings spanning over the tracks, (alternative 1), to a simple deck only, (alternative 3). The second alternative, which utilizes parking to span the tracks, represents a moderate approach.

Of these three approaches, alternative 3 was determined to be by far the most economical and practical. The plaza deck would be designed for vertical loads only, with lateral forces being transferred to adjacent buildings, where they can be handled more efficiently. If the cost of the deck, (approximately 2400 feet by 200 feet) was added to the cost of the adjacent parking structures or to the cost of the entire development strip, the estimated increased costs to the adjacent structures would be:

- a) if added to the adjacent parking structures (2000 cars) - increases parking structure cost by approximately 70%.
- b) if added to the entire development strip (2.7 M.S.F.) - increases development strip building cost by approximately 3.2%.

Not reflected in the above, is the enhanced value to the property adjacent to the tracks. This is estimated to be significant in relation to the relatively low structural cost additions noted above.

Building over the GVS and DD's Lions Gate Primary Treatment Plant

Within the site area of approximately 550 feet by 420 feet, elevated structures would be required for an area of about 300 square feet in order to cover the treatment plant. It must be noted, however, that any proposal for building over this facility must take into account any future expansions of the treatment plant.

The preliminary investigation suggests there will be no serious problem in covering this area, since problems of noxious fumes and methane gas can be handled mechanically. In addition, potential column positions can readily be found. A clear height of approximately 40 feet and column spacing of not less than 50 feet will be required. In addition, light weight structures covering the area, with perimeter structures for lateral support, appear suitable and represent a cost of about \$12.00 per square foot at today's prices.

The economy of this undertaking depends mainly on the land value. In this regard, it is believed that covering the treatment plant will enhance the adjacent land value tremendously, and therefore make major development attractive and feasible.

ECONOMIC (AIR-RIGHTS)

RESEARCH CARRIED OUT BY: David G. Sparks
Professional Economist
Department of Indian and
Northern Affairs

PURPOSE OF RESEARCH:

To assess the economic viability of the concept of air rights utilization with regard to the B.C. Railway marshalling yards, located on the Capilano Indian Reserve.

SUMMARY OF MAJOR FINDINGS:

The basic concept of air space utilization appears to be sound. However, in the context of the total potential that exists for development within IR5, the proposed use of air space should only commence as part of the latter phases of development (for example, approximately year 2000). The acquisition of air rights, and in turn their development, should only take place when improved access to the proposed development strip area is available (for example, a new Lower Level Road and/or mass transit, etc.).

Housing Types	School Population Standards per Housing Unit		
	North Vancouver School Board	Edmonton, Alta. School Board*	Standard Utilized for IR5
Single Family	.50 to .84	.67	.40 to .67
Walk up Apartment	.14 to .86	.24	.14 to .24
Townhouse	.22 to .68	.67	.30 to .60
High-rise Apartment	-	.16	.08 to .16

SCHOOL POPULATION STANDARDS - Number of elementary school children per housing unit.

Accommodation only for elementary school age children (815 to 1430 students) is proposed within IR5. Provision of secondary school space is not recommended because:

- a) there is an increasing amount of space available in many existing secondary schools, due to declining enrollments in parts of North and West Vancouver.
- b) IR5 is within easy commuting distance to a number of existing secondary school facilities.
- c) the estimated secondary school population for IR5 is under 800 students, and this number would not be reached until after approximately 20 years. One thousand students is typically regarded as the desired number of students to support a secondary school.

Within the proposed program of accommodation for elementary school age children, it is planned that some primary schools be included. That is, small facilities for some of the students in the kindergarten through grade two group. These K-2 schools will enable the central elementary facilities to remain relatively small in size, and ensure that school facilities are close to home, particularly for the youngest children. The recommended number and distribution of schools is illustrated on the Service Facilities Plan, Page 35, left side.

* Edmonton, Alberta school population standards for grades 1 to 6 were adjusted to reflect the K to 7 elementary grade split of B.C.

EDUCATION

PURPOSE OF RESEARCH

To establish standards for estimating school age population in relation to the proposed development of IR5.

To identify the type and number of schools that should be provided within the Reserve, in order to adequately serve the future population.

METHOD OF INVESTIGATION AND FINDINGS:

School age population standards were obtained from and reviewed with Mr. Norman Fulton of the North Vancouver School Board. An accurate estimate of future school age population, Mr. Fulton cautioned, will depend on a number of very specific factors (e.g. housing management policy, housing cost, size and amenity characteristics). Accordingly, the standards which are noted below have been developed and used as a "guide" only.