

SIMON FRASER TOWNSHIP MASTER PLAN

prepared by  
Project Planning Associates Limited  
for

The Corporation of the District of Burnaby  
The City of Vancouver  
Simon Fraser University  
Webb & Krapp (Canada) Ltd.

May, 1964

PROJECT PLANNING ASSOCIATES LIMITED

40 IRWIN AVENUE  
TORONTO 5, ONTARIO  
TELEPHONE 925-4315

May 25, 1964

The City of Vancouver  
The Corporation of the District of Burnaby  
Simon Fraser University  
Webb & Knapp (Canada) Ltd.

Dear Sirs:

We are pleased to submit our report which proposes a comprehensive land use Master Plan for the development of the Simon Fraser Townsite on Burnaby Mountain. Its design has been based on field surveys, report analyses and traffic investigations of our team of town planners, civil and traffic engineers, landscape architect, architect, urban designer, geographer, sociologist and municipal analyst. The plan relates the land uses each to the other and the townsite as a whole to the mountain slopes and their environment.

The multiplicity of ownerships together with the problems created by topography and easements will require continual and close cooperation between all parties concerned with the development of the Townsite. The establishment of the Simon Fraser Townsite will provide the university with contiguous development compatible with the university environment; the Municipality with an economically viable utilization of lands, and the Greater Vancouver area with a model community.

Sincerely yours,



Macklin L. Hancock  
President

MLH:jag

#### ACKNOWLEDGMENTS

Grateful acknowledgment is made to all those organizations who generously assisted in the preparation of this study. These include:

British Columbia Department of Highways

The City of Vancouver

Erickson Massey Architects

Lower Mainland Regional Transportation Board

Simon Fraser University

Webb & Knapp (Canada) Limited

LETTER OF TRANSMITTAL

ACKNOWLEDGMENTS

TABLE OF CONTENTS

PREFACE

INTRODUCTION

METROPOLITAN VANCOUVER

Location  
Climate  
Population  
Transportation & Employment  
Roads  
Mass Transit  
Railways  
Airports  
Water Supply  
Sewerage & Drainage Facilities

BURNABY

Topography  
Industry  
Open Spaces  
Commercial  
Residential  
Population Growth  
Roads  
Mass Transit  
Railways  
Airports  
Water Supply  
Sanitary & Storm Sewerage  
Electricity, Gas, Telephone, Garbage  
Police & Fire Protection  
Service Requirements

SIMON FRASER UNIVERSITY

History of Proposals  
Boundaries  
Anticipated Population  
Access & Site Circulation  
Services

STUDY AREA

Geology & Soils  
Topography  
Ownership  
Easements  
Existing Development  
Circulation & Access  
Zoning

PROPOSED DEVELOPMENT PLAN

- (a) Design Concept
- (b) Land Uses
  - Open Space
  - Residential
  - Industry
  - Schools
  - Institutional
  - Commercial Centres
- (c) Traffic & Transportation
  - Street Classification
  - University Access Roads
  - Major Arterial Streets
  - Minor Arterial Streets
  - Mass Transit
- (d) Services
  - Water Supply
  - Sanitary Sewerage
  - Storm Drainage
  - Electricity & Gas
  - Telephone
  - Fire Protection
- (e) Phasing

TABLES

Population Growth  
Percentage Annual Increase in Population  
Population Metro Vancouver  
Estimated Percentage Distribution of Labour Force  
Housing Starts By Dwelling Type - Metropolitan Vancouver  
Burnaby Population  
Population Growth

PLATES

Regional Transportation & Commercial Centres  
Master Plan Concept  
Model - plan view  
Model - oblique views  
Model - detail

## PREFACE

The Macdonald Report 1962 on higher education in British Columbia outlined the need to create a second university in the Greater Vancouver area to serve the growing population of the western lower Fraser Valley. After investigation of four potential sites it was determined to locate the new university on municipally owned land on the summit of Burnaby Mountain. In May 1963 the Premier announced the decision to hold an open Architectural Competition among B.C. architects which was to produce a scheme exploiting to the fullest capacity the natural features of the site and to develop a campus for an ultimate enrolment of 18,000 students.

In July, 1963 the Development Plan proposed by Erikson-Massey was adopted and a report published by that firm in September, 1963 indicated the detailed physical aspects of the scheme and proposed the staging for its development.

As a result of the wider implications of the proposed university on the contiguous undeveloped lands surrounding the university site, Project Planning Associates Limited were retained in September, 1963 to prepare a general land use plan for this area to be based on an analysis of the existing site conditions in their context of both the future development of the municipality and its role in the future development of the Metropolitan Region.

It is evident that the land use requirements of a community to be located in close physical proximity to such a specialized and extensive development as a university of 18,000 persons will require careful consideration as to both the disposition and type of land use proposals to be made. A university is a distinct social entity: its staff and students have time schedules, attitudes and behaviour which are sometimes at odds with the accepted norms of the middle-class community which surrounds them. In this respect not only such apparent effects as the traffic volumes generated by an automobile oriented university site must be investigated but equally the ideal distribution of land uses which will maximize

the areas of contact and minimize the areas of conflict which can occur between town and gown. The result must provide certain isolation yet allow areas of integration which will permit the presence of the university to enrich the community as a whole.

The land which is available for the creation of such a community is in varied ownerships with existing land uses which must be integrated into an overall and comprehensive scheme. Such a Plan will order the growth of the community adjoining the university and permit it to serve as a model for other such communities which will become increasingly common as university programmes expand across Canada.

Because of existing topography and land uses, the proposed community has implications of a wider scope. Mountains and land reserved for parks to the north-east of the site assure its insulation from the effects of urban expansion in this direction. Moreover the difficult soil conditions, arterial highways and railway in the valley effectively isolate, in a community sense, North from South Burnaby. The careful and comprehensive development of the Simon Fraser University townsite will permit it to serve as a nodal point for the major existing residential areas in North Burnaby, as well as areas of Port Moody and Coquitlam which are situated on the western boundary of the study area.

## INTRODUCTION

The planning study has been designed with the objective of producing a land use plan for the Municipality of Burnaby which would indicate the optimum land uses and their disposition within the study area. The plan has been designed to meet the development pressures on the area created by the growth of Greater Vancouver and Burnaby within it, as well as the specialized imminent land use requirements created by the contiguous establishment of a large university. The study indicates the methods by which such an optimum disposition of land uses can be obtained, their tentative staging and illustrates in detail a specific design scheme.

The financial implications of land use proposals have not been considered in detail. Further study must ascertain public works programming, detailed costings and revisions of assessment. Similarly the report does not deal with the mechanisms for implementation of the proposals nor with by-laws or alterations to existing methods of development control.

The study examines the developments of Greater Vancouver in the past, its projected population growth and land use pattern and evaluates the implication of these factors for the Municipality in its total urban context. The study then examines the past and projected population growth and land use in the Municipality of Burnaby and evaluates the implication of these factors for the future development of the study area. The proposals for Simon Fraser University are then considered for their effect on the Study Area and the Municipality in its relationship to Metro Vancouver. A detailed site investigation of the Study Area examines existing zoning, tenure, land use, services, access and communications.

Land use proposals are made on the basis of these studies and a tentative staging plan developed for their implementation. These proposals are specific and detailed in the case of the Study Area and generalized with regard to changes which will be required in the overall land use pattern in the Municipality.



## METROPOLITAN VANCOUVER

### Location

Metropolitan Vancouver is located in the south-west corner of British Columbia and occupies approximately 32 square miles of the Fraser River delta. Its topography varies considerably from the peat and silt areas of the delta to the steep lower slopes of the mountains on the North Shore.

**Climate:** The Vancouver area experiences a maritime climate having a yearly regime of moderate temperatures and abundant rainfall. The lack of extremes is for the most part due to the surrounding mountains which protect the Lower Mainland Region against outbreaks of cold arctic air from the continental interior and against the direct onslaught of storms moving off the Pacific Ocean. In addition, the mountains are largely responsible for the region's large annual precipitation totals. Moist air moving off the Pacific is lifted by the coastal mountains so that the resultant condensation falls on the Vancouver Area.

Downtown Vancouver records an average annual temperature of 50° F, with a low of 36.3° F in January and high of 63.8° F in July. Extremes of very low and very high temperatures, though occasionally occurring, are rare. This in large measure reflects the pleasant climate for which Vancouver has become noted.

Because of the controlling role of the surrounding mountains, precipitation totals vary throughout the Metropolitan Area depending primarily on distance from the highlands. As a result, average annual totals vary between 56.86 inches in downtown Vancouver to 40.50 inches at the airport. In both places, snowfall is light and, in the long term view, insignificant. Winter (and especially December) is the rainy season.

**Population:** The growth of Metropolitan Vancouver has been as most other metropolitan areas in Canada, extremely rapid. Since 1941 the population has almost doubled from 394,000 to 790,000 in 1961. This increase represents approximately 48 percent of the total population growth of British Columbia (see Table 1). The average annual increase in the Metropolitan Area has kept pace over the last two

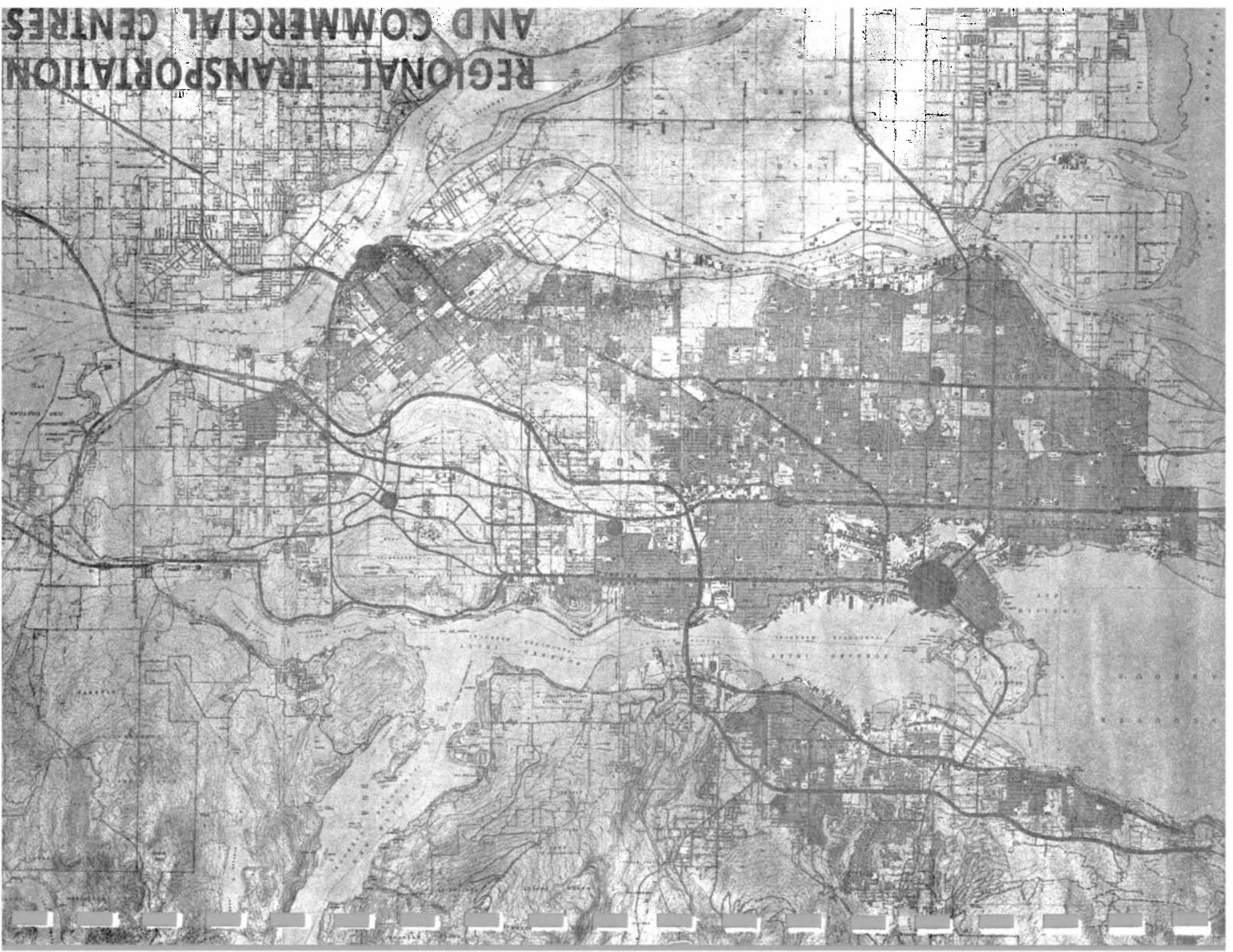
decades with the provincial growth rate but has not exceeded it as has, for example, Metropolitan Toronto (Table 2). In this respect it should be noted that Metropolitan Vancouver, with almost half of the provincial total population has the highest ratio of urbanized provincial population. In spite of the rapid development in the northern and interior parts of the province this ratio is holding firm. The prominence of Vancouver consequently, in all likelihood, will go unchallenged in the future, but its proportion of the provincial population total should show signs of decline as development elsewhere continues.

Growth in the Metropolitan Area has not been uniform throughout the various municipalities comprising the metropolitan complex. The City of Vancouver has long held the bulk of the population. In 1951 it accounted for 61 percent of the total but as its available land was progressively developed the continued population growth spilled over into the municipalities. While the city increased in absolute numbers it contained a lesser share of the Metropolitan population. In 1956 it comprised 55 percent of the total and further declined to 48.7 percent in 1961.

The rate of population growth accelerated in the last half of the decade in the municipalities. Between 1956 and 1961 (Richmond and Delta showed increases of 66 percent, Port Moody, Port Coquitlam over 75 percent against the city's increase of only 5 percent (Table 3).

As population grew, development spread initially following the major lines of communication and then filling the interstices of undeveloped land. In areas where the pace of growth was beyond the municipalities' ability to cope with development problems, urban sprawl was produced. Along the north shore pressure forced development up the mountain slopes and housing began to appear like the terraced rice paddles of south east Asia. In all areas housing developed in single family form with a concomitant extensive use of land. Apartment development was concentrated primarily in Vancouver City where proximity to places of employment and other facilities of the central area could more readily command their absorption into the housing market.

# REGIONAL TRANSPORTATION AND COMMERCIAL CENTRES



An examination of Central Mortgage & Housing Corporation housing statistics over the last six years indicates the distinct trend towards multiple dwellings. In 1958 only 25 percent of all housing starts in the Metropolitan Area were apartment or terrace houses. By 1963 this figure had risen to 54 percent in the Metropolitan Area and 83 percent in Vancouver City. This trend towards increased residential densities especially in central urban areas has been paralleled in most North American cities in the last decade.

Projections of population growth indicate the continuing growth of the Metropolitan Area. In 1976 its population is estimated to reach 1,157,350 (Table 1) and for the City of Vancouver 425,000. Vancouver's share of the total population will continue to decline and approximate some 37 percent by 1976. This population increase will ensure a steady demand for housing accommodation. Moreover as land close to the central city is now largely occupied and the difficulties of commuting and traffic congestion are compounded, proximity to the central city with its employment opportunities and services will become more valuable resulting in a more intensive use of land mainly through apartment construction.

Transportation and Employment: With the expansion of our cities, both in area and population, the problems of urban transportation have become more acute. The spread of development over the low density suburbs has contributed much to the problems of urban transportation as distance to centres of employment, recreation, and culture increases. Most important, however, is the relationship between transportation and centres of employment. It is now well established that by far the bulk of all urban movement is travel between home and work. The relationship between areas of employment to areas of residence is, therefore, of prime importance in the assessment of any present or future transportation problem.

The percentage distribution of the labour force in the Vancouver Metropolitan Areas, as estimated by the Technical Committee for Metropolitan Highway

Planning is shown in Table 4 for the years 1955 and 1976. It can be seen that by far the bulk of all job opportunities is located in Vancouver City, especially in the downtown area. In 1955, it accounted for 70.2 percent of all employment, yet in 1956 the city contained only 55 percent of the metropolitan population. By 1976, as population increases and decentralization proceeds, Vancouver City's share of employment will fall to 49.4 percent of the total, still about one-half of all job opportunities in the Metropolitan Area.

The downtown area of Vancouver contains the main shopping and commercial facilities of the city as well as being the principal centre for employment and recreation. In most respects, it represents the central city core for the surrounding Metropolitan Area. This is indicated by the fact that in 1955, some 22 percent of all working people in the Metropolitan Area were employed "downtown".

**Roads:** An extensive system of arterial streets serves the metropolitan area of Vancouver. A report prepared in 1959 by the Technical Committee for Metropolitan Highway Planning foresees a freeway network for the metropolitan region. Basically, this system will have a concentration of freeways in the downtown area with four freeways leading to this concentration. Two freeways are proposed from the north - one across the First Narrows and one across the Second Narrows; one freeway from the south (Delta) across the Municipality of Richmond; and one freeway from the south east (Surrey), a section of the Trans-Canada Highway which will cross the District of Burnaby. In addition to these four, a short fifth spur is proposed, leading to and from the west. This spur is to be located somewhere in the area west of the intersection of 16th Avenue and Arbutus Street.

The only completed section of the freeway system is the link to the south, between the North Arm of the Fraser River and Provincial Highway No. 10. The Trans-Canada Highway section (south east free-



way) is to be opened shortly.

**Mass Transit:** The B.C. Electric operates the mass transit system in the Greater Vancouver area, using bus and trolley bus lines. The report on freeways recommends a freeway bus service as a means to introduce rapid transit to Vancouver. These buses would operate as express buses on the freeway system and would be co-ordinated with a local bus system.

**Railways:** Greater Vancouver is served by the following railways: Canadian National, Canadian Pacific and Great Northern. These railways provide adequate service to the region.

**Airports:** The Vancouver International Airport, located at Sea Island, approximately six miles south of downtown, is the main airport of the region. A few small municipal and private airports additionally serve the region.

**Water Supply:** The Greater Vancouver Water District, a corporate body created by Act of Legislature in 1924, supplies all domestic water for the Greater Vancouver area with the exception of the City of North Vancouver and the settlement of Caulfield in West Vancouver. The sources of water are the mountain lakes and streams in the Coast Range north and east of the Burrard Inlet. The water is supplied to the member communities by gravity through a major distribution system owned by the District. Each member community is responsible for the local distribution. The domestic water is supplied in bulk by the District, which has also the right to sell water outside its legally constituted boundaries.

**Sewerage and Drainage Facilities:** The Greater Vancouver Sewerage and Drainage District is responsible for the major sewerage and drainage facilities of most of the Vancouver area. This includes trunk and intercepting sewers, main

pumping stations, treatment and disposal works and main drainage facilities. The local sewerage and drainage facilities are the responsibility of the various member municipalities.

## BURNABY

The Municipality of Burnaby is situated between the Burrard Inlet and the North Arm of the Fraser River with its geographic center approximately seven and one half miles from downtown Vancouver.

**Topography:** The north and south portions of the Municipality fall along two high ridges and the central portion lies in a valley separating the two ridges. Burnaby Lake, a slow draining and swampy area lies in this valley which consists, for the greater part, of peat lands. The difficult building conditions of the peat have deterred development in the valley while the relatively flat land has prompted the location of the major lines of communication: the arterial Lougheed Highway, the Great Northern Railway and the Burnaby Throughway - a portion of the Trans-Canada Highway presently nearing completion.

The communication routes and the absence of development have effectively severed the Municipality in a social as well as physical sense to a degree where residents distinguish themselves as belonging to North or South Burnaby. Separate Lions Clubs and newspapers have developed accentuating the social bipolarization. Burnaby is administered by a reeve and eight councillors elected at large with a Town Manager and various departments. No official plan exists.

**Industry:** A total of 4,360 acres of land in Burnaby are presently zoned for industry. The two major concentrations of industrial zoning are in the central Valley and in the Big Bend area on the North Arm. Twenty-seven hundred acres of the total are situated on peat land. The new industrial estate of Lake City begun in 1957 is located north of the Lougheed Highway in the Study Area and is 650 acres in extent.

**Open Spaces:** Existing major parks are located in the south west of the Municipality (Central Park),



in the centre around Burnaby Lake and on Burnaby Mountain. Most of the Municipality's parks are undeveloped. Burnaby has followed a policy of developing schools immediately adjacent to parks and most school sites are located on small parks.

**Commercial:** The major concentrations of commercial facilities in the Municipality have grown along the major routes. Hastings Street in the north and the Kingsway and Grandview Douglas Highway in the south are typical of the commercial ribbon development in most large Canadian cities. North Burnaby has the large (350,000 square feet) shopping center of Brentwood near its western boundary and South Burnaby centers along the Kingsway. In addition South Burnaby is served by the downtown area of New Westminister.

**Residential:** With the exception of the Big Bend Area and institutional areas in South Burnaby, the Central Valley and the Study Area the major part of the Municipality is zoned residentially. In 1961 approximately 13,000 acres gross were residential with a density of 8.4 persons per acre - almost three times the 1946 density.

Of the 27,000 housing units noted in the 1961 census almost 17,000 or 62 percent were built between 1946 and the survey, 81 percent were in good condition, 85 percent were single family detached. This extremely rapid post-war growth of detached houses parallels growth in the majority of suburban centres across Canada. Similar too is the increase in the construction of multiple dwellings: apartments, row, terrace and garden court houses. Between 1961 and 1963 the stock of multiples almost doubled from 1,700 units to 2,900 clearly reflecting a change in market attitude towards multiple rental accommodation.

**Population Growth:** The population rose between 1951 and 1961 from 58,000 to 100,000 - a 72 percent increase. Burnaby has a predominant majority of

Anglo-Saxons - over 65 percent were enumerated as having ethnic origin or affiliation with the British Isles. There are few single person households in the Municipality which is predominantly a single family dwelling area. Between the census years there was a 61 percent increase in the number of households which grew in average size from 3.3 to 3.5 persons.

The Lower Mainland Regional Planning Board projects a continuous growth of the population of the Municipality to 132,000 by 1971 (Table 7) which indicates that its rate of growth will decline from the 71 percent increase it exhibited in the decade 1951 - 1961 to about a 32 percent increase in the next decade.

Roads: Most of the main arterial streets of the Municipality of Burnaby run from east to west. Hastings Street (Barnet Highway) is an artery which connects to Port Moody and provincial highway No. 7 in the east and the City of Vancouver in the west. The Lougheed Highway connects the Municipality of Coquitlam and Provincial Highway No. 7 in the east with the City of Vancouver in the west. The Grandview Highway connects to New Westminster and principal highways No. 1 and 99 in the south east and the City of Vancouver in the west. The Kingsway runs more or less parallel and south of Grandview Highway. Marine Drive is the most southerly artery, connecting New Westminster with the City of Vancouver.

Only three streets can be considered as north-south arteries in Burnaby at present. These are:

- Boundary Road which runs along the western boundary of Burnaby,
- Sperling Avenue which connects Hastings Street with the Kingsway in the centre of the Municipality and,
- the North Road which is located at the west limit of Burnaby and connects New

Westminster with the Barnet Highway via Clarke Road.

The most important east-west link across Burnaby is the Trans-Canada Highway, which is to be opened in the near future. It runs south of Burnaby Lake more or less parallel to Brunette River and Still Creek and leads to a connection with Provincial Highway No. 1 near Abbotsford in the east and to the Cities of Vancouver and North Vancouver in the west and north west. The heightened accessibility which this road will provide can be expected to give considerable economic impetus to the Municipality.

Arterial street constructions, improvements and realignments are proposed throughout Burnaby. The purpose of these proposals is to improve the entire arterial street network in both east-west and north-south directions. The rapid growth of the Municipality makes these improvements mandatory.

Mass Transit: B.C. Electric serves the entire Municipality by buses. The only areas not serviced are undeveloped districts around the Burnaby Mountain, around the Burnaby Lake and an area in the south on the Fraser River.

Railways: Three east-west railways cross Burnaby. The Canadian Pacific Railway which runs along the shore on the north limit of the Municipality of Burnaby, the Great Northern Railway located north and parallel to Brunette River and Still Creek, and the Canadian National Railway north of the North Arm of the Fraser River.

Airports: No airports are located in Burnaby. The Vancouver International Airport is situated about seven miles west of the south-west corner of the Municipality.

Water Supply: The Greater Vancouver Water District trunk mains, which supply the local water mains of

the Municipality enter the area on the west boundary, where 42" and 36" mains run in north-south direction. Basically three trunk mains serve Burnaby. A 42" in the north, 24" in the central area and a 36" in the south. These trunks are interconnected in the eastern and south-eastern areas of the Municipality. These local watermains are a gravity system which covers the entire Municipality. The pipe sizes range from 28" down to 3" and smaller.

**Sanitary and Storm Sewerage:** There is at present a relatively wide network of trunk sewers of the Greater Vancouver Sewerage and Drainage District in Burnaby. However, the areas serviced by local sanitary and combined systems are unevenly distributed and by the end of 1963, sewered areas represented still less than half of the area of the Municipality. The bulk of the sewered areas is located in the western and southern parts of Burnaby. The remainder of the Municipality depends on septic tanks. No sewage treatment facilities exist.

With the exception of some districts, where storm and combined sewers exist, the storm drainage is handled by ditch drainage and open watercourses.

**Electricity and Gas:** The British Columbia Hydro is responsible for the supply and distribution of electric power and gas in the Municipality of Burnaby.

**Telephone:** Telephone service is provided by the British Columbia Telephone Company.

**Garbage Collection:** The Municipality collects garbage in Burnaby. The present dump is located south of the Lougheed Highway, west of Sperling Avenue.

**Police Protection:** Police protection is provided by the Royal Canadian Mounted Police. In Burnaby

there is one police station, located at the intersection of Kingsway and Edmonds Street.

**Fire Protection:** There are at present four firehalls in the Municipality, each with a pumper company and one with a ladder company. The radius of each protection area is 1.5 miles, which is adequate for the predominantly low density residential uses.

**Service Requirements for Undeveloped Areas:** Basically, the following services are required for undeveloped areas according to By-law 3609, which regulates the subdivision of land:

- Roads: to be cleared, graded, gravelled or rocked in accordance with the instructions, specifications, and requirements of the Municipal Engineer.
- Drainage: Adequate street and lane drainage facilities, including all necessary bridges and culverts, shall be provided to the satisfaction of the Municipal Engineer.
- Sanitary Sewers: Sewer accommodation shall be provided within the Subdivision area to each of the parcels being created in the Subdivision.
- Water Supply: Watermains shall be installed within the Subdivision, sufficient to permit the adequate supply of domestic water to each of the parcels being created within the Subdivision.

Under this legislation, all services required are to be paid for by the Subdivider.

## SIMON FRASER UNIVERSITY

History of Proposals: The Macdonald Report on higher education in British Columbia outlined the growth of population in the Lower Fraser Valley and projected that, in the next decade, over 60 percent of the provincial pool seeking education would come from this region. The report indicated that while further expansion of the University of British Columbia was unavoidable, the accommodation of close to 30,000 students on the Point Grey campus was "beyond reasonable acceptance" and would "create a situation which would critically distort the whole structure of the University, ... (not) in the best interests of higher education". (page 59)

The report concluded that a new four-year college would be required immediately and recommended that the college should be located on the new Trans-Canada Freeway near the Stormont Interchange to serve metropolitan populations who were not readily accessible to the U.B.C. campus. Such a location would provide ready automobile access to students from North Vancouver, Surrey and Langley municipalities. The provincial legislature established Simon Fraser University with the passing of the Universities Act, 1963. Four possible sites were initially selected which would meet locational and other siting factors. From these, the summit of Burnaby Mountain was finally chosen as the university site.

Boundaries: On its north side the site includes the major portion of the north face to the Barnet Road. The most easterly portion of the boundary runs along North Road while on the south-easterly slope it approximates the 500 feet contour level. The south boundary includes lands to the north of the Trans Mountain tank farm and the west boundary follows the proposed alignment of Arden Road. The total area circumscribed approximates 1,200 acres. The proposed university development is sited on the east-west axis of the summit ridge. Student residential facilities are located at the western end of the campus and academic facilities on the east.

Anticipated Population: The Macdonald Report projects a freshman enrolment of 2,000 in 1965, 7,000 in the four-year programme by 1971, and an ultimate enrolment of 18,000. Faculty and staff population have been estimated on the basis of the University of British Columbia's 1962-1963 staff-student ratio where staff is 21 percent of student enrolment. Such projections produce total approximate daytime populations of 2,500 in 1965, 8,500 in 1971 and an ultimate of 22,000. Resident population projected on the basis of existing U.B.C. resident - non-resident ratios in 1962-1963 might be expected to reach approximately 3,500 persons in the ultimate phase. It is difficult to make accurate projections of resident population at this juncture. Policy decisions made by the university in respect to graduate schools, changes of curricula and the ability of the university to attract faculty will all have a direct bearing on a resident population in a university initially conceived to serve a population within commuting distance. The competition programme foresees dormitory accommodation for 2,400 students in addition to faculty housing.

Access and Site Circulation: Topographic limitations impose on the proposed location and design of the university vehicular access from three directions only. One access road from the west connects Hastings Street with the proposed campus. A second road from the south connects the campus with the Stormont Interchange of the Trans-Canada Highway, while a third access road from the east is proposed along the boundary of Port Moody and the Municipality of Coquitlam. This new road joins the proposed north-south access road from the Stormont Interchange just south-east of the University site and connects at Port Moody townsite with the Barnet Highway. Within Burnaby, these proposed access roads run through more or less undeveloped land. Their main design difficulty is with the problem of grades on the steep slopes.

Initially the proposed university depends almost

exclusively on automobile and bus commuters who will have to travel through Burnaby to reach the access roads. This means that an additional traffic load will be added to the arterial streets system of the Municipality in this area. Adequate street capacity will have to be provided for this traffic.

The circulation within the university site is based on a perimeter road, which encircles the mountain top and the campus proper. This road is partially a one-way street and gives access to the various parking facilities of the proposed university.

Services: Water will be supplied to the local system of the university by the Municipality of Burnaby. The sanitary sewerage system of the university will be connected to the Burnaby system with a pipe on the south side of the Mountain. For storm drainage, piped storm sewers and open watercourses and lined channels are proposed. Most of the site will drain to the south. The storm drainage has to be carefully designed to avoid erosion problems on the mountain slopes due to considerably increased run-off. Electrical power will be provided by the B.C. Hydro. The possibility of producing power by generators operated by internal combustion engines is under study.



## STUDY AREA

The study area of approximately 4,000 acres constitutes the eastern half of North Burnaby. This area roughly extends around the base of Burnaby Mountain (elevation 1,200 feet) and is bounded by the Lougheed Highway on the south, North Road on the east, Barnet Road and the Burrard Inlet on the north and Duthie Road on the west. The north face of the mountain drops steeply to the Barnet Road and the inlet while the other slopes vary in grade from about 5 percent to 30 percent. The major portion of the area is heavily wooded with mixed deciduous and coniferous second-growth forest cover.

**Geology and Soils:** The surficial geology of the study area is divided in four major areas. The first of these covers the mountain top and the area north to the Burrard Inlet. The surficial geology consists of tertiary sandstone, siltstone, shale and conglomerate at or within ten feet of surface, commonly overlain by till.

The second area is located on the southern slopes of the mountain and consists of Bose Gravel (raised marine shore deposits) and beach gravels to a depth of 25 feet. These also occur throughout the area as a thin mantle up to ten feet in depth, but generally less than three feet thick of wave-washed lag gravels overlying Newton Stony Clay deposits and Surrey Till.

The third area comprises the remainder of the study area with the exception of the south-east corner. It consists of Newton Stony Clay and Surrey Till (glacio-marine and glacial deposits); sandy to silty till up to 75 feet thick but generally less than 25 feet, overlain in most places by glacio-marine stony clay silt and till-like mixtures up to 25 feet thick and generally less than ten feet. Throughout the area these deposits are mantled by Bose Gravel.

The south-east corner of the study area consists

of marine and non-marine deposits; sand up to 25 feet thick of the Salish and Capilano Group and Sapperton Sediments (marine, deltaic, and glacio-marine deposits of gravel, sand, silt, clay and till-like mixtures up to 50 feet thick).

**Topography:** Burnaby Mountain is an individual landform running approximately east-west and lying between the Burrard Ridge (approximately 400 feet in height) and the Coast Mountains. The mountain itself reaches a maximum elevation of 1,200 feet and slopes steadily on the south face, but falls abruptly on the north face. The southern slopes are cut by numerous small watercourses which drain into the two principal ravines; Stoney Creek on the south-west slope which passes through the Government Road Area and empties into Burnaby Lake, and Eagle Creek on the south-east slope which empties into the Brunette River.

The constant sloping nature of the south face is interrupted in only two areas; a wet plateau on the western site boundary between Duthie Road and Stoney Creek and a basin on the south-eastern slope through which Eagle Creek passes.

**Ownership:** The summit of Burnaby Mountain, its north face and the higher elevations of the southern face have been established as the universal site and constitute a total of approximately 1,200 acres. In the central portion of the southern slope an area of about 240 acres has been developed as an oil tank farm and is owned by the Trans-Mountain and Shell Oil Companies. Immediately adjoining the eastern boundary of the Trans-Mountain Pipe Line tank farm is a site of approximately 171 acres owned by the City of Vancouver which had been previously considered as a cemetery site.

On the southern portion of the site and fronting the Lougheed Highway is the Lake City Industrial Estate of 650 acres which is owned by Webb and Knapp. The western end of this estate has been developed and, in the eastern and northern portions

approximately 250 acres remain undeveloped. Except for an area of approximately 150 acres on the north east corner of the study area and some small holdings on its western perimeter, the major portion of the remaining lands are owned by the Municipality of Burnaby.

**Easements:** There are many easements and rights-of-way within the study area. These are primarily located in the south-east corner near the B.C. Hydro transmission station on the alignment of Broadway. These include a storm sewer in the Eagle Creek ravine and Hydro towers through the ravine to the transmission station and then around the mountain along North Road. This service is duplicated approximately 800 feet to the west by a second power line on pylons. A Standard and Shell Oil pipeline crosses the study area through the Trans-Mountain tank farm and forks in the south-east corner of the area with one branch passing above and one below the transmission station.

**Existing Development:** Low density housing has been developed along the western boundary and in the south east corner of the study area. In 1951 its population was approximately 2,700 and in 1961 4,300. The greater portion of the remainder of the area is undeveloped with the exception of the industrial estate on the south boundary and the two tank farms in the middle of the southern slope. There are a few shops along the North Road and the Burnet Highway and several small recreational areas including the pavillion on the western summit.

**Circulation and Access:** At present the boundary roads of the study area existing provide the only means of access. On the north the Burnet Road cannot give access to the site due to the impassable grades of the north face of the mountain and future access must be provided from the other three boundaries.

Lougheed Road on the south is a major highway connecting Mallardville, small settlements of the

Fraser Valley with downtown Vancouver and parallels the Trans-Canada Highway now under construction which is located on the southern edge of the Central Valley. On the east boundary the grid pattern of roads ends sharply at North Road, and on the west boundary. This grid dissolves into the undeveloped southern slopes of the mountain within several blocks of Duthie.

Zoning: Burnaby's present zoning by-law was adopted in 1948 and has since been frequently amended. The Municipality has undergone development in this period which has changed it from a semi-rural fringe municipality to a highly populated and developed suburb of Metropolitan Vancouver. The study area has retained both the development characteristics and the zoning of the semi-rural municipality due to topographic conditions which did not facilitate the construction of roads and services required to initiate urbanization.

Approximately 50 percent of the total area is zoned for Small Holdings which require minimum lot sizes of one acre and favour land uses primarily related to agriculture, animal husbandry and institutions. Approximately one thousand acres of the study area have been zoned for the Burnaby Mountain Park which will now be included in the campus of the proposed university. The remaining portion of the study area is divided into industrial and single and two family residential zones with several commercial lots set aside to establish adequate shopping facilities. The industrial areas are located along the Lougheed Highway (Lake City Industrial Estate) and the Burrard Inlet. The residential areas are at the north west and south east corners of the study area. It is evident that, in the light of the far reaching proposals for the university on the summit of Burnaby Mountain, existing by-laws for the study area have to be reviewed and amended.

## PROPOSED DEVELOPMENT PLAN

### Design Concept

The design of the Simon Fraser Townsite provides the lands contiguous to the university site with a comprehensive land use plan; a systematic organization of land uses and circulation systems related to site topography, climatic conditions and housing needs which has been predicated on a particular relationship between a university and its surrounding urban environment.

An urban university has an unique opportunity to provide a mutual enrichment of both student and city life. As North America continues to urbanize at an increasing rate, and to require that its citizens achieve higher educational levels, it becomes increasingly important that a closer relationship between town and gown comes into being. Higher education no longer remains the privilege of the elite. A university must encourage not only intra-departmental contact but contact with the community within which it exists.

In this respect Simon Fraser is in a similar position to the University of British Columbia. Both sites have the geographic facility to intensify the isolation which can exist between campus and community life. Undoubtedly some degree of isolation can be of benefit to university students. An atmosphere of isolation is conducive to innovation and research. Total isolation, however, would impoverish both the city and the university. The city would lose youth in its centre and the dissociation from social realities. Some measure of isolation must permit a large daytime population with a different kind and degree of stake in the community the maximum social flexibility within a permanent and more heterogeneous population. The degree of integration should allow the student the choice in leisure time between campus and townsite.

With these factors in mind the plan located a major cultural and commercial town centre proximate enough to the university that it could minimize the degree of isolation inherent in a mountaintop university. This location was based on a consideration of topo-

graphic features and feasible circulation patterns on the mountain and within the Municipality. It was considered that the development of a centre in the middle of the southern slope, where distances from the university were in between pedestrian and vehicular scales, would permit some measure of isolation without prejudicing contact, and that the area between the centre and the university boundary could be used to house population which could be proximate to both centre and university.

The plan provides a series of neighbourhood units, each preserving a distinct relationship with access to local and regional transportation systems and each linked to its own elementary school by pedestrian walkways. A continuous park and open space system is proposed which ascends the slope from the Central Valley, through the major ravines and watercourses of the mountain, to the town centre, and continues past it to the campus and park on the summit.











The southern slopes are basically bisected by the tank farms. The scheme proposes a small convenience sub-centre in the western sector which is strategically located so that the western slopes of the site are oriented towards the major focus of the community in the eastern sector. The wedge of industry formed by the tank farms has been buffered from the western residential sector by a golf course and park system and from the eastern sector by research industry and a wide swath of forest. All housing proposing contiguous to industry is in horizontal multiple form so that is immediate environment can be controlled by careful orientation.

Aside from acting as a buffer between heavy industry and residential uses, research industry is intended to relate places of work within the townsite with university research functions which are carried out in conjunction with private enterprise. The site is close to residence, shopping facilities and offices and will provide an industrial use of this site which can take optimum advantage of its location in a university townsite.

The proposed circulation system has been designed to provide a comprehensive network of roads related to the existing regional pattern outside the study area and to provide the townsite with a cohesive structure

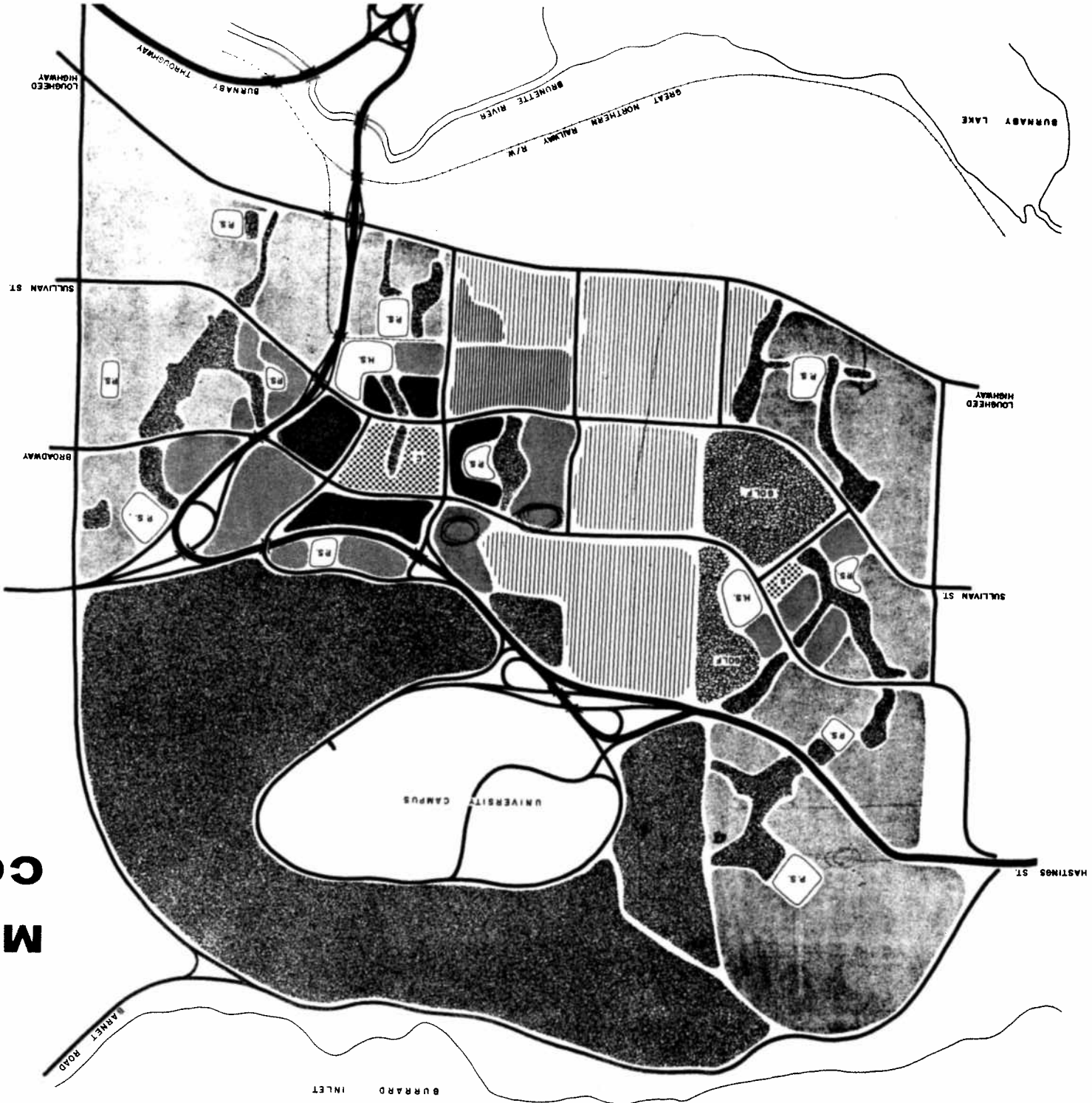
# MASTER PLAN CONCEPT

LEGEND

-  PARK & OPEN SPACE
-  PUBLIC SCHOOL
-  HIGH SCHOOL
-  SHOPS
-  CENTRE
-  LOW DENSITY
-  MEDIUM DENSITY
-  HIGH DENSITY
-  RESEARCH INDUSTRY
-  INDUSTRY



PROJECT PLANNING ASSOCIATES LIMITED

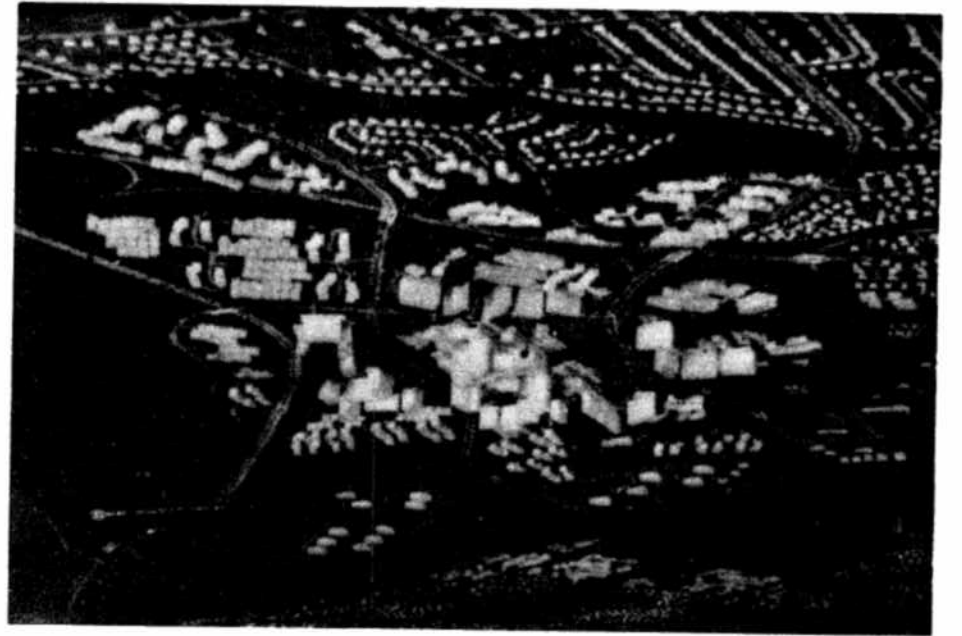
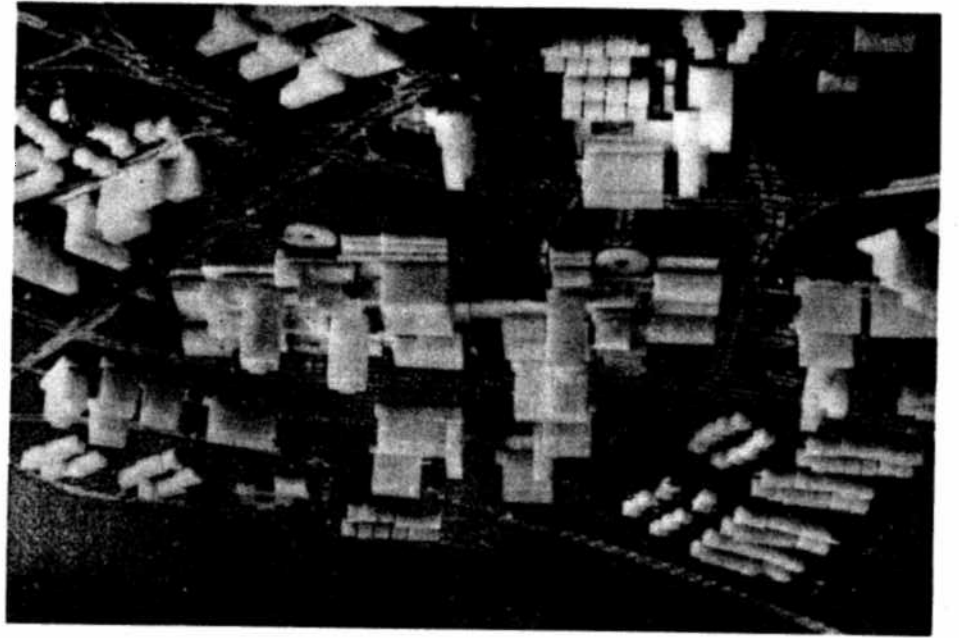
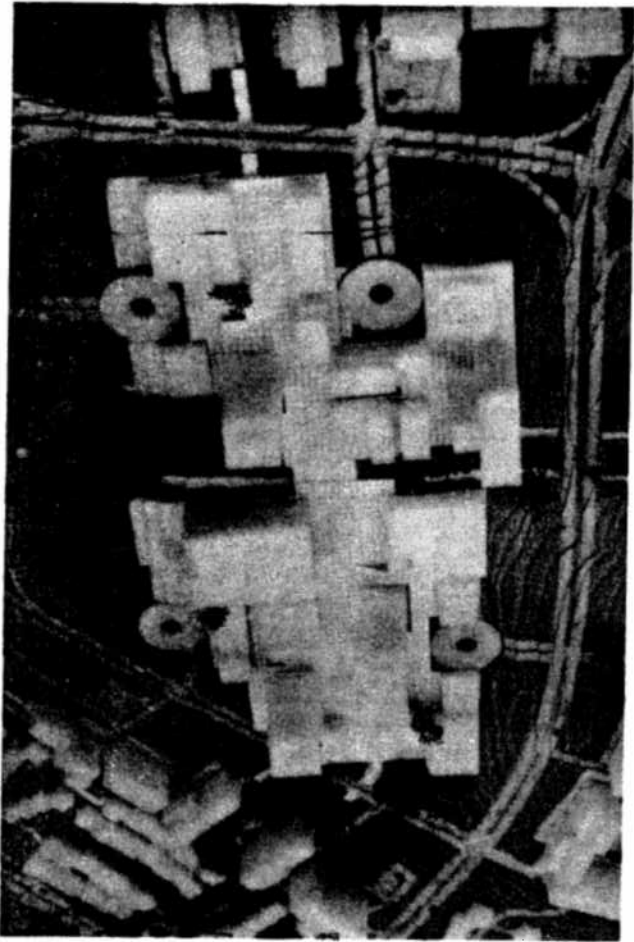






SIMON FRASER TOWNSITE  
THE CORPORATION OF THE DISTRICT OF SURREY





for land uses. Roads are related to topography and form a clear hierarchy; local roads serve residential areas, local collectors move traffic to arterials and the arterials act as the major structural routes which converge at the town centre and connect to the freeway. The freeway and arterials are the major approach roads to the town centre and university and offer a continuous series of changing dramatic views of both.

#### Land Uses

**Commercial Centres:** The town centre is located between the two major arterial roads which form the spine of the proposed townsite. The site is approximately 33 acres in extent and slopes between 10-15 percent with a ravine passing through its centre. The proposed scheme locates a central mall at level 460 feet with two secondary malls at 475 feet and 445 feet. Within it are located two supermarkets, a department store on five floors, a hotel, three office towers, a curling rink, cinema and such smaller shops as clothing stores, book shops, coffee houses and art galleries which can thrive in the atmosphere of a university town.

In the initial stages of its development car parking will be primarily on the surface but the ultimate scheme envisages complete servicing and car parking in structures below the commercial development. This form of development can be facilitated by careful siting and optimum utilization of the sloping site. Car parking has been provided at a ratio of between 3 and 4:1. Access is provided from the four surrounding arterial streets by means of ramped approaches.

The sub-centre in the western sector is centrally located in the sector to provide convenience shopping and local communal facilities such as clubs and churches. Approximately three acres has been allocated as a site for these uses.

**Open Space:** Three basic criteria have determined the disposition of open spaces in the plan for the Simon Fraser Townsite; existing topography, proposed school locations and location providing maximum effective

buffering of existing industry from residential uses. The scheme provides a comprehensive system of linked open spaces resulting in a network of pedestrian routes which unite places of work, residence, shopping and leisure. On the west boundary of Lake City the ravine forms a park of about 20 acres which will separate the proposed residential area from existing industry. This park is linked with the golf course which has been relocated to provide the entire western sector with the maximum potential buffering from the existing oil tank farms. Present plans for a course on Burnaby Mountain do not form part of a comprehensive approach to the use and disposition of open spaces on a large undeveloped mountain slope site which is on the verge of rapid urbanization. The proposals consider that the continuity of an open space system and the use of topography to form an effective screen to the tank farms requires that the location of this course be reconsidered. The plan provides an 18 hole course of approximately 100 acres. The golf course links with the summit park on the upper south west slopes on which the Pavilion is sited maintaining views over Burnaby and towards downtown Vancouver.

This major park system in the western sector is complemented by a secondary open space spine which ascends the slopes and links the elementary schools, the high school and the convenience shopping centre. It is intended that these two systems unite and continue south of the Loughheed Highway to Burnaby Lake.

In the eastern sector two major park systems originating at Burnaby Lake in the area of the Stormont Interchange follow the major watercourses up through the residential areas, past the high and elementary schools, converge at the town centre and continue up to the higher slopes of parkland which surround the university. Their alignments accommodate the major B.C. Electric Hydro easement.

These open space links which begin at the university and continue through both sectors of the proposed townsite are intended to form a part of an overall park system for the Municipality which has as its fulcrum the Burnaby Lake Park. Major municipal recreational and administrative facilities should be located in this park in order to provide the

total land uses in the Municipality with a unifying element.

The lands in the eastern sector which lie above the university access road have been retained as park-land. It is considered at this time that the access road should act as the definition between university and townsite. These lands should be acquired by the university and retained to be utilized at a future date. The retention of these lands will allow the university flexibility to accommodate land uses neither presently needed nor recognized at such an early stage of its growth.

**Residential:** The basis for the design of the residential areas of the Simon Fraser Townsite has been the formation of neighbourhoods, which will permit school children pedestrian access to elementary schools without the need to cross major arterial streets. The vehicular and pedestrian systems unite these neighbourhoods and relate them to the other proposed land use functions of the townsite. Seven neighbourhoods are proposed in the eastern sector and four in the western sector.

The part of Burnaby in which the townsite lies is a middle income area. Contiguous subdivisions are producing single family detached housing marketing between \$18,000-\$25,000. Multiple housing represents a very small proportion of total housing units in Burnaby and the resultant overall municipal density is only 2.4 persons per net residential acre. Significant, however, is the acceleration rate of apartment construction. Apartment stock has doubled in the last two years indicating that saturation of residential land has pushed development into higher density solutions. There can be little doubt but that the development of the university on Burnaby Mountain will create higher land values and that the change in the characteristics of population attracted to the area to serve and staff the university will produce a much greater demand for multiple forms of rental housing.

Residential development has been proposed which offers a range of housing forms from single family to horizontal multiple and high rise apartments. The disposition of residential land uses concentrates higher buildings and higher densities of population

proximate to the community's centres.

Unit densities have been calculated at five single family detached houses per acre, 20 town houses per acre in 2, 3 and 4 storey forms, and 55 units per acre in high rise apartments mostly 11 storeys high. High rise buildings surround the town centre with 20 percent of their parking open and 80 percent covered. The plazas enclosed by these buildings are connected to the town centre by major pedestrian walkways. Medium density housing by major pedestrian dictated very strongly by the direction of the slope. Thirty percent of horizontal multiples are in two storey form, forty percent in three storey terraced houses and thirty percent four storey maisonettes. Sixty percent of all town housing has been grouped with parking structure below grade and pedestrian areas above.

In the western sector the zoning of over 690 acres for low density housing and 20 acres for medium density would produce approximately 3,500 units of single family houses and about 400 units in terrace form. In the eastern sector 420 acres of low density housing, 120 acres of horizontal multiples and 75 acres of high density zoning would produce approximately 2,100 units of single family houses, 2,400 units of town and terrace houses and 4,100 units of high rise.

Occupancy rates have been projected at 3.7 persons per unit in single family houses, 3.2 persons per unit in horizontal multiples and 2.8 persons per unit in high rise apartments. These rates generate a population of approximately 14,000 in the western sector and 27,000 in the eastern sector or a total of approximately 40,000 persons in the total townsite residential areas.

Industry: The proposed plan rezones approximately 130 acres of land from industrial to residential use. At the time of the survey 4,360 acres of land were industrially zoned in the Municipality. Of this total 2,700 acres were on peat lands. Excluding peat areas zoned for industry, 1,660 acres of land could be developed for industrial use. Between 1950 and

1962 a total of 560 acres of land were utilized in Burnaby for industry i.e. at an annual rate of 46 acres. Excluding peat lands, if the rate of utilization were constant it would take 36 years to utilize the present municipal supply of industrial land.

The plan considers that in the interests of the highest and best land uses on the Simon Fraser Townsite the expansion of heavy industry should be curtailed. As an alternative the plan proposes that 65 acres of land south of the town centre be set aside for the development of research industry. Industrial growth of this nature is considered more compatible both with the residential areas on its boundaries and the development of the university. Although the tank farms have been retained in the proposals they cannot be considered as desirable ultimate land uses. While their presence has been recognized in the design of the proposed townsite, should the oil companies relocate their plant, the land should be utilized for higher density residential development.

**Schools:** Elementary schools have been located on pedestrian open space systems to serve neighbourhood units without requiring school children to cross major arterial roads. These locations allow for 15-20 classroom schools with 30-35 students per class. Residential densities have been projected to generate elementary school populations of 0.7 persons in single family detached units, 0.4 persons in terrace and garden court units and .05 in high rise units. High schools have been centrally located in both sectors on arterial roads to facilitate access by public transport.

**Institutional:** In order to concentrate all communal activities sites for churches and club facilities have been located within both the sub-centre in the western sector and the town centre itself. These facilities can additionally be located at the inter-sections of local collectors with arterial roads. The need for these land uses can be more closely ascertained as development proceeds.

Because of their special nature two further land use

studies should be made which are not considered in this report. Investigation should be initiated into the use of Lot 13, DL 213 as a potential marina. The development of this facility could serve equally, both functions of the university such as boating clubs, and those of the Municipality. The closer linking of the university with the town centre with some means of transport in between motor car and pedestrian scale should be investigated.

Potential alignments for a cog rail or monorail system have been safeguarded in the proposed design with their point of access to the town centre at the bridge link between the two parts of the centre. The economic feasibility and projected volumes of this facility should be ascertained in a special report at an early date.

## Traffic and Transportation

The planning of the proposed University Townsite requires a careful design of the major street system to serve two principal functions. It must both provide sufficient street capacity for the efficient movement of vehicles and act as a skeleton for the urban area by defining neighbourhoods, land uses and the town centre.

The "Study on Highway Planning" prepared by the Technical Committee for Metropolitan Highway Planning as well as volume forecasts obtained from the Municipality of Burnaby and independent traffic estimations undertaken by Project Planning Associates were used to determine the street requirements of the proposed Townsite. Possible solutions for the access roads to the Simon Fraser University were also obtained from the Municipality of Burnaby.

The location of the proposed development in the north-east corner of the Municipality with the Burrard Inlet defining the northern boundary of the site, places it in the path of east-west through traffic from areas east of Burnaby between Port Moody and the Fraser River to the City of Vancouver in the west. In addition the overall traffic pattern on the site must provide both adequate access to the university and accommodate internal traffic flows.

The new Trans-Canada Highway has been designed to freeway standards and will siphon off a great portion of the east-west through traffic movement. This freeway runs south of the site in an east-west direction and, at the boundary between Burnaby and Vancouver turns north, crosses the Second Narrows and then turns west to connect to North and West Vancouver. Even though the Trans-Canada Highway will alleviate east-west flows it does not eliminate the need for east-west arterial streets at the site.

The university traffic will be handled by two main access roads, one from the south, connecting the Stormont Interchange of the Trans-Canada Highway with the university and one from the west,



connecting to Hastings Street.

The overall proposed arterial street system of the Simon Fraser Townsite runs from east to west connecting the arterials east of the site with the major street system to the west. These roads follow the contours and wrap around the lower slopes of Burnaby Mountain concentrating at the proposed Town Centre site. This system of the major streets allows for internal and through traffic as well as establishing an overall sense of orientation towards the Town Centre, the focus of the proposed community. The university access roads are superimposed on this system and are designed to expressway standards. These carry heavy peak hour loads and their main function is to provide access to the university from the entire metropolitan area of Vancouver. For this reason connections of these roads to the arterials of the Townsite are proposed only at a few carefully selected points, primarily near the Town Centre, in order to emphasize the relationship of the University Town with the campus.

The entire street network has been designed to stress the flowing character of traffic movements both with regard to alignment and, where possible, at intersections. The collector streets run generally at right angles to the arterial streets and feed the traffic of the local streets of the various neighbourhoods to the arterials.

**Street Classification:** The streets of the proposed townsite are classified in four categories; expressways, arterial streets, collector streets and local streets.

The south and west access roads to the university are expressways. Due to their high peak hour volumes, special design is required for their various sections and interchanges. Generally they are four lane facilities with a median of twenty feet.

For all major arterial streets a minimum right-of-way width of 100 feet has been proposed. These have four traffic lanes with two in each direction, separated by a twenty foot median. The pavement width for each

direction is 25 feet. Minor arterial streets also have four lanes without a median strip. The pavement from curb to curb is 48 feet, the right-of-way 82 feet. All arterials will require sidewalks on both sides with a minimum width of five feet.

Arterial streets connect the proposed townsite with the major street system outside the area, allow through traffic through the community and permit traffic movements to the main centres of the development. On these streets no parking should be allowed, since their main function is to move traffic rather than store vehicles.

The proposed right-of-way width of collector streets is 66 feet with a pavement width of 36 feet. They should be provided with five foot wide concrete sidewalks on both sides of the road. Collector streets connect the local streets with the arterials. Parking should be allowed during the off-peak periods of the day.

The right-of-way of local streets should be 66 feet and the pavement width 28 feet. Where required, five foot sidewalks should be provided. These streets serve mainly as access to land uses and parking should be permitted.

**University Access Roads:** The south access road runs from the Stormont Interchange in a northerly direction to Sullivan Street. Diamond interchanges are proposed to the Loughheed Highway and Sullivan Street. At Sullivan, the access road turns to the north-east, by-passing the Town Centre to a trumpet interchange with the proposed Port Moody connection. At this interchange the south access road turns to the west and north west to its interchange with the proposed University Ring Road, located south-west of the university itself. A half diamond connection with the Town Centre is proposed on this stretch of the road.

The west access road runs from the intersection of Barnet Highway and Hastings Street in an easterly direction to the interchange at the University Ring Road. Intersections with three collector streets are proposed.

Major Arterial Streets: The major arterial streets of the proposed townsite are Shellmont, Sullivan, Brighton and two new roads linking Shellmont and Sullivan: the west link immediately west of Lake City Way and the east link immediately east of Brighton. Shellmont and Sullivan Streets are the main east-west arterials. These connect with each other and with the Loughheed Highway, which forms the south boundary of the site, by Brighton Avenue, and three minor arterial streets. They also form together with the north part of Brighton Avenue and the east link, a ring around the Town Centre.

Shellmont Street is connected in the west with Hastings Street and in the east with Como Lake Avenue, while Sullivan Street connects Halifax with the east limit of the site (North Road). This street can be extended eastwards and form a major street south of Como Lake Avenue.

On the north side of the mountain, the Barnet Highway forms a major arterial link between Port Moody and Hastings Street.

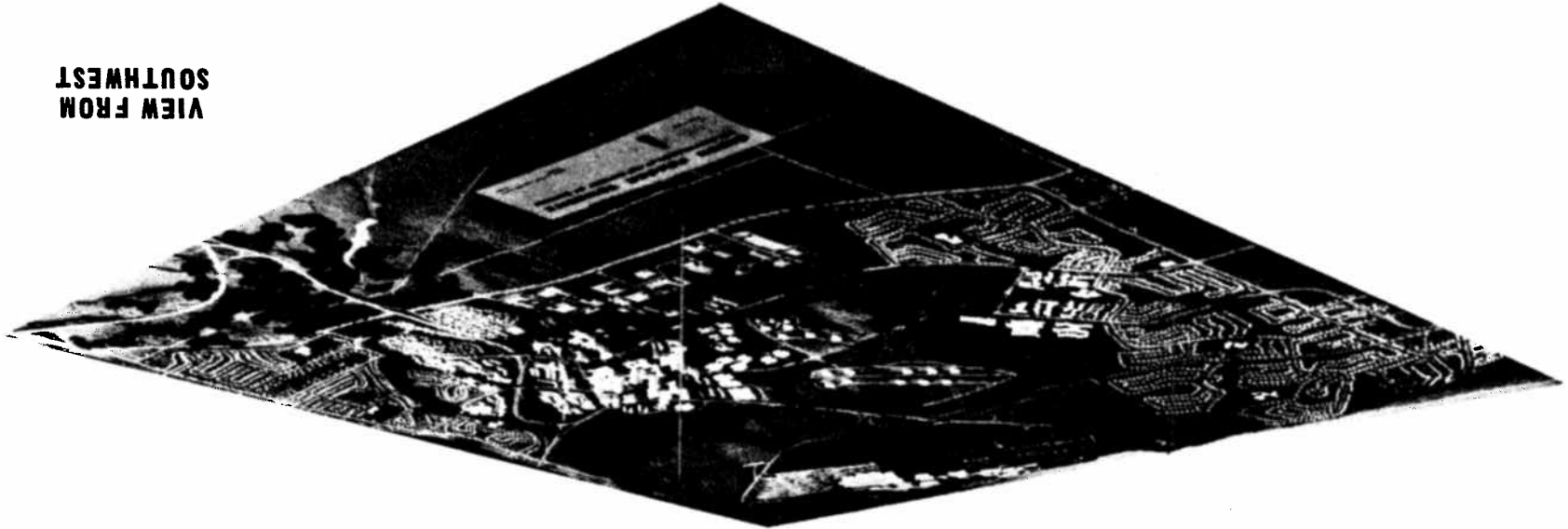
Minor Arterial Streets: The proposed minor arterial streets all run from north to south. These include Duthie Avenue on the western boundary of the study area, Lake City Way, Underhill Avenue, and North Road on the east limit of the site. Duthie Avenue connects the Loughheed Highway with Sullivan Street, Underhill Avenue the Loughheed Highway with Shellmont Street, and North Road the Loughheed Highway with the Barnet Highway.

The collector street system has been designed to provide optimum local circulation and lotting, and is sympathetic to the site contours.

Mass Transit: The extension of the existing bus service to the new townsite is feasible. Express bus service is probably required for the service of the university. These buses will use the Trans-Canada Highway and the south access road to bring students from the metropolitan area of Vancouver to their destination.



VIEW FROM  
SOUTHEAST



VIEW FROM  
SOUTHWEST



## Services

**Water Supply:** The Greater Vancouver Water District supplies the water to the area. The local distribution of the water supply for the university and the townsite is the responsibility of the Municipality of Burnaby. Since most of the Burnaby Mountain cannot be served by gravity, it is proposed to provide four "pumped zone" areas or pressure districts, each covering about 200 vertical feet. Zone one covers the top of the mountain, zone four the lower parts above the 450 foot contour line. Each zone will have one or more storage tanks.

The areas of the proposed townsite between contours 250 and 450 are served by gravity and are called the "Hastings Zone"; areas below contour 250 are gravity areas of the "Central Valley Zone". For local water mains a minimum main size of 6" diameter will be provided.

**Sanitary Sewerage:** Most of the site is served by septic tanks at the present time, with the exception of the industrial area north of the Loughheed Highway and the residential area at the south-east corner of the site.

In the future the southern two-thirds of the study area will be drained to the south to the Burnaby Lake North Interceptor by a series of sub trunks. The interceptor drains into the Trunk Brunette Sanitary Interceptor which discharges untreated sewage into the Fraser River.

The north-western areas of the site will drain to the Burrard Inlet through the existing Westridge Trunk. The areas at the north limit of the site, along the Barnet Highway will have their sanitary outfalls directly into the inlet. The extent of this development will be small.

Local sanitary sewerage facilities for the entire townsite have been proposed.

**Storm Drainage:** Due to the site topography, drainage problems might arise in connection with the develop-

ment of the area. Increased run-off may create erosion on the steep slopes and existing culverts might not have sufficient capacity. New culverts and concrete lined ditches may be required.

It is recommended to provide a complete storm sewerage system for the newly developed areas. The storm outfalls will have to be directed to three major water courses, which drain to the south to the Burnaby Lake and Brunette River. This system will cover the southern two-thirds of the site while the northern third will drain to the Burrard Inlet.

**Electricity and Gas:** Since the British Columbia Hydro supplies electric power and gas in the Municipality, it will also be responsible for the new townsite. All electrical distribution mains in the new university town, including the main transmission high tension lines have been placed underground.

**Telephone:** The British Columbia Telephone Company is responsible for service to the new townsite. All telephone lines have been buried in the proposed development.

**Fire Protection:** Two fire halls have been proposed by the Planning Department of the Municipality in their "Report on Fire Hall Needs in Burnaby" (April 1961) which can serve the new townsite. These are to be located at Cliff and Hastings and on the Lougheed Highway at Lake City and will supplement the existing hall on Duthie north of Broadway. While the western side of the townsite will be well served the higher density of development in the eastern sector may require additional facilities to be provided within the commercial centre. This must be reviewed as population builds up within the eastern sector.

## Phasing

Careful staging of the development of the Simon Fraser Townsite is essential to the build-up of land values which will create the form of development which has been proposed, and which will maintain a high standard of design throughout the development phases.

Development should be initiated in the western sector immediately above the Loughheed Highway and west of the Lake City Industrial Park. This should be followed by the development of the single family housing area at the diamond intersection of Loughheed and the south access road to the university. The establishment of these two areas will complete the southern approaches to the townsite along the heavily trafficked Loughheed Highway.

The third phase should complete single family housing in the western sector between Shellmont and Sullivan and initiate the higher density multiples in this area as well as the convenience sub-centre. This should be followed by development of the neighbourhood located between these same two arterials in the eastern sector as well as the single family housing to the north of Shellmont Street and west of the North Road.

At this stage the optimum values for the residential sites on the slopes of the upper south west face of the mountain north of Shellmont and the west university access road can be realized. Their development should be followed by the construction of the higher density housing located between the centre and the south access road.

The growth of population at this stage will enable the first phase of the centre's development to begin. Its growth from east to west should commence with the first of the supermarkets and the smaller mall shops. At this stage the major portion of car parking can be open at grade. Consideration at this point of the future of the oil tank farms will enable decisions to be made regarding the locations of oil pipe lines. If the farms are not to be relocated pipe lines should be realigned so that they will not prejudice development of higher density areas. At this stage too, the relocation of the transformer station immediately south of the trumpet interchange to a site further



along the North Road will enable its present site to be put to a higher and better use.

As infilling takes place in the higher density residential areas around the centre it can expand to accommodate the departmental store and develop the other supermarket on the opposite side of the ravine. The final stage of town centre expansion should cross the small ravine to consolidate growth around the second supermarket and to include the speciality shops and cultural facilities which are university oriented, and finally develop the hotel and office towers.

The overall plan should be reviewed constantly during the growth of the townsite and the phasing has been designed to allow a great degree of flexibility in the development of the latter density land uses.

TABLE 1

## Population Growth \*

Place	1941	1951	1956	1961	1966	1976
Canada	11,506,655	14,009,429	16,080,791	18,238,247	NA	NA
British Columbia	817,861	1,165,210	1,398,464	1,629,082	1,900,000	2,750,000
Metro Vancouver	394,588	561,960	655,017	790,165	910,650	1,157,350
City of Vancouver	275,353	344,833	365,844	384,522	414,000	425,000

\* Source: D.B.S. - Census of Canada and Lower Mainland Regional Planning Board Report, 1961.

TABLE 2

## Percentage Annual Increase In Population \*

Place	1941/51	1951/56	1956/61
Canada	2.2	3.0	2.7
British Columbia	4.3	4.0	3.3
Metro Vancouver	4.3	3.6	3.8
City of Vancouver	2.5	1.2	1.02

\* Source: D.B.S. - Census of Canada

TABLE 3

Population \*  
Metro Vancouver

Place	1956	1961	% increase in five years
Burrard Peninsula and Richmond			
Vancouver City	365,844	384,522	5.1
Burnaby	83,745	100,157	19.6
New Westminster	31,665	33,654	62.8
Coquitlam District	20,800	29,053	39.6
Port Coquitlam	4,632	8,111	75.1
Port Moody	2,713	4,789	76.8
University Endowment Lands	2,999	3,272	9.12
Richmond	25,978	43,323	66.8
Fraser Mills	216	165	- 23.6
North Shore			
West Vancouver	19,197	25,454	32.7
North Vancouver District	26,252	38,971	48.5
North Vancouver City	19,951	23,656	18.6
Fraser River South	8,752	14,597	66.7
Delta	49,366	77,291	56.6
Others	2,907	3,150	8.35
Total Metropolitan Vancouver	665,017	790,165	8.73

\* Source: D.B.S. - Census of Canada

TABLE 4

## Estimated Percentage Distribution of Labour Force \*

Place	1955	1976
	%	%
Vancouver City	70.2	49.4
Burnaby	6.5	11.5
New Westminster	8.5	10.0
North Shore	4.8	3.1
Other	10.0	26.0
Total	100.0	100.0

\* Source: Technical Committee for Metropolitan Highway Planning Technical Report No. 1, and Vancouver Planning Board

TABLE 5

## Housing Starts by Dwelling Type -- Metropolitan Vancouver \*

Dwelling Type	1958	1959	1960	1961	1962	1963
Single Family	8,697	6,733	3,481	3,215	3,525	3,788
Two Family	524	258	72	54	82	86
Apartments, Row and Terrace Houses	3,078	2,519	1,122	2,319	3,780	5,067
Total	12,299	9,510	4,675	5,588	7,387	9,743

\* Source: C.M.H.C., Canadian Housing Statistics, 1963.

TABLE 6

Burnaby - Population  
Households by Type \*

Total households	27,395
Total family households	24,574
Total one family households	23,736
Family of household head total	23,562
Family of household head without additional persons	21,108
Family of household head with additional persons	2,454
Family other than that of household head	174
Two or more family households - Total	838
Two or more family households including family of household head	831
Two or more family households with no family of household head	7
No family households - total	2,821
- one person only	2,145
- two or more persons	676

\* Source: D.B.S. - 1961 Census of Canada

TABLE 7

Population Growth						
1921 - 1981 *						
1921	1931	1941	1951	1961	1971	1981
12,883	25,564	30,328	58,376	100,157	132,000	162,000

\* Source: D.B.S. - Census of Canada, Lower Mainland Regional Planning Board Report, 1961.

BIBLIOGRAPHY

Census of Canada, 1951, 1961  
Dominion Bureau of Statistics  
The Queen's Printer, Ottawa

Population Trends 1921-1981 for the Lower Mainland Region  
Lower Mainland Regional Planning Board  
New Westminster, British Columbia, 1962

Surficial Geology of New Westminster Map Area, British Columbia  
J.E. Armstrong,  
Department of Mines and Technical Surveys  
Ottawa, Ontario, 1957

Surficial Geology of Vancouver Area  
J.E. Armstrong  
Department of Mines and Technical Surveys  
Ottawa, Ontario, 1956

North-East Burnaby Soil Survey  
P.M. Cook  
Vancouver, British Columbia, 1957

The Climate of Vancouver  
K.F. Harry & J.B. Wright  
Department of Transport  
Canada 1957

Climatology of Burnaby Mountain Area  
J.D. Chapman  
Planning Department  
Corporation of the District of Burnaby  
British Columbia, 1957

Observations and Report, Preliminary Survey Burnaby Mountain Area  
Weston Agricultural Services, 1957

The Dynamics of Industrial Land Settlement  
The Lower Mainland Regional Planning Board  
New Westminster, British Columbia, 1961

Industrial Land Prospects  
Lower Mainland Regional Planning Board  
New Westminster, British Columbia, 1961

Salary and Wage Rate Survey, 1962, 1963  
Bureau of Economics and Statistics  
Victoria, British Columbia

Regional Shopping Centre Site Evaluation --- Market Analysis  
Burnaby, B.C.

Larry Smith & Co.  
Seattle 4, Washington, 1957

Lake City Shopping Centre Analysis Burnaby, British Columbia  
Larry Smith & Co.  
Seattle 4, Washington, 1957

Burnaby Industrial Land Study  
Lower Mainland Regional Planning Board  
New Westminster, British Columbia, 1962

Planning for New Growth - New Jobs  
U.S. Department of Commerce  
U.S. Government Printing Office  
Washington, 1962

Ninth Annual Report  
Greater Vancouver Metropolitan  
Industrial Development Commission, 1960

Future Development of Port Moody  
Associated Engineering Services Limited, Vancouver  
and Community Planning Division, Vancouver, 1962

Federal Building Location Factors  
The Corporation of the District of Burnaby, 1961

Future Development of North East Burnaby  
Planning Division and Engineering Department  
Corporation of the District of Burnaby,  
British Columbia, 1956

Burnaby, British Columbia - Tender for Debentures  
Burnaby, British Columbia, 1963

By-law No. 1991  
Corporation of the District of Burnaby, 1948

By-law No. 3375 (Sale of Tax Sale Lands)  
The Corporation of the District of Burnaby, 1953

By-law No. 3609 (Subdivision of Land)  
The Corporation of the District of Burnaby

Zoning and Development By-laws No 3575  
City of Vancouver, British Columbia, 1963



Canadian Housing Statistics, 1963  
Central Mortgage and Housing Corporation  
Ottawa

Report on Firehall Needs in Burnaby  
The Corporation of the District of Burnaby  
Planning Department, 1961

Land for Leisure  
Lower Mainland Regional Planning Board  
New Westminster, British Columbia, 1961

Boat Launching Station  
Planning Department of the Corporation  
of the District of Burnaby, 1960

University Endowment Lands  
Project Planning Associates Limited  
Maclean-Hunter Press, Toronto, 1961

Higher Education in British Columbia  
John B. Macdonald  
University of British Columbia, 1962

Simon Fraser University (Preliminary Siting Report)  
The Corporation of the District of Burnaby  
Planning Department

Burnaby School Sites  
The Corporation of the District of Burnaby  
and the Board of School Trustees  
District No. 41, 1961

Report on the Development Plan University of British Columbia  
Thompson, Berwick and Pratt (Architects)  
Vancouver, British Columbia, 1959

Elementary and Secondary School Boundaries  
Board of School Trustees, School District 39  
Vancouver, British Columbia, 1961

Sewer & Sewerage Treatment Facilities  
Joseph E. Howes, Director of Research  
Metropolitan Joint Committee  
Vancouver, British Columbia, 1959

A Study on Highway Planning (Part 1) Surveys  
Technical Committee for Metropolitan Highway Planning  
Vancouver, British Columbia, 1955-56

A Study on Highway Planning (Part 2) Freeways with rapid  
transit  
Technical Committee for Metropolitan Highway Planning  
Vancouver, British Columbia, 1958-1959

A Study on Highway Planning (Part 2) The Analysis and  
Forecast of Motor Vehicle Travel  
Technical Committee for Metropolitan Highway Planning  
Vancouver, British Columbia, 1958-1959

A Study on Highway Planning (Part 2) Population and  
Land Use Forecasts  
Technical Committee for Metropolitan Highway Planning  
Vancouver, British Columbia, 1958-1959