

A STUDY OF THE DESIGN DETERMINANTS OF  
FIVE CANADIAN "NEW TOWNS"

A Thesis

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*Ross Norris,  
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## INTRODUCTION

This thesis is an investigation of the design determinants of five wholly new planned communities on Canada's resource frontier. These communities are established to house and service the workers of industrial enterprises engaged in the extraction and/or processing of raw materials: petroleum, timber wood and pulp, minerals and hydro-electric power. These communities are wholly new and planned as a result of two major trends today: the continued exploitation of resources which are far from existing settled portions of the country, and the greater urban amenities that are required to attract and retain the skilled workers from the urbanized populated areas of southern Canada. Because these communities are usually dependant upon a single industrial resource development company, they are called "single-enterprise communities".

The intent of the thesis is the identification and explanation of the role of design determinants in the planning and development of such communities from the large scale of townsite location to the small scale of house orientation. The communities studied are Kitimat, British Columbia; Drayton Valley, Alberta; Thompson, Manitoba; Elliot Lake, Ontario; and Schefferville, Quebec. The location of the case study communities and their relationship to the Physiographic Regions and the populated zones of Canada are shown on Map. 1.

A study of design determinants for such communities is timely. Firstly, it is believed, but unknown, that the rate of development of such communities has declined from the peak activity reached between

1950 and 1960. In that decade, approximately 20 such communities were developed. It is to be expected that a great many more such communities will have to be built in the future to continue Canada's role as an important source of raw materials for the world. In the present "pause" in the building of new communities on the resource frontier, analysis of past experience should be made to prevent repetition of past mistakes.

Secondly, this new form of community represents a vast improvement over the transient shacktowns which characterized resource extraction operations previously. Nevertheless, many of the inhabitants of these towns, as well as members of the Planning Profession have been critical of not only the new towns and their planning, but also the planners' goals of development for the towns and the lack of basic in-depth knowledge of the needs of such communities. It may be added that of the five case studies, only Kitimat had a written, in-depth discussion of the design determinants and the rationale of Kitimat's planning process. The other case studies had to be researched in journal articles, correspondence, and where possible, personal interviews.

Thirdly, the Central Mortgage and Housing Corporation and the University of Manitoba, in September 1967, jointly established an Interdisciplinary Research Centre for the Long-range Study of the Settlements on Canada's Resource Frontier. This thesis, as an outgrowth of the author's interest in "new towns", has been limited to single-enterprise communities which are wholly new and planned "new towns" to assist that centre in its efforts to determine the problems and potentials of such centres in Canada.

Fourthly, such new towns are free of many of the usual constraints of developed areas such as land ownership and vested interest in land.

These new towns could be used as "test-labs" for new ideas and theories which would be impossible to test in developed areas. In the past, the "Service Centre" of Kitimat became the "Industrial Park" of the south. Many planners are of the opinion that future new towns could test many more new ideas.

Lastly, many previous studies have viewed the design influence of one factor only; this thesis attempts to incorporate the prime determinants which acted in totality in the design of the communities studied.

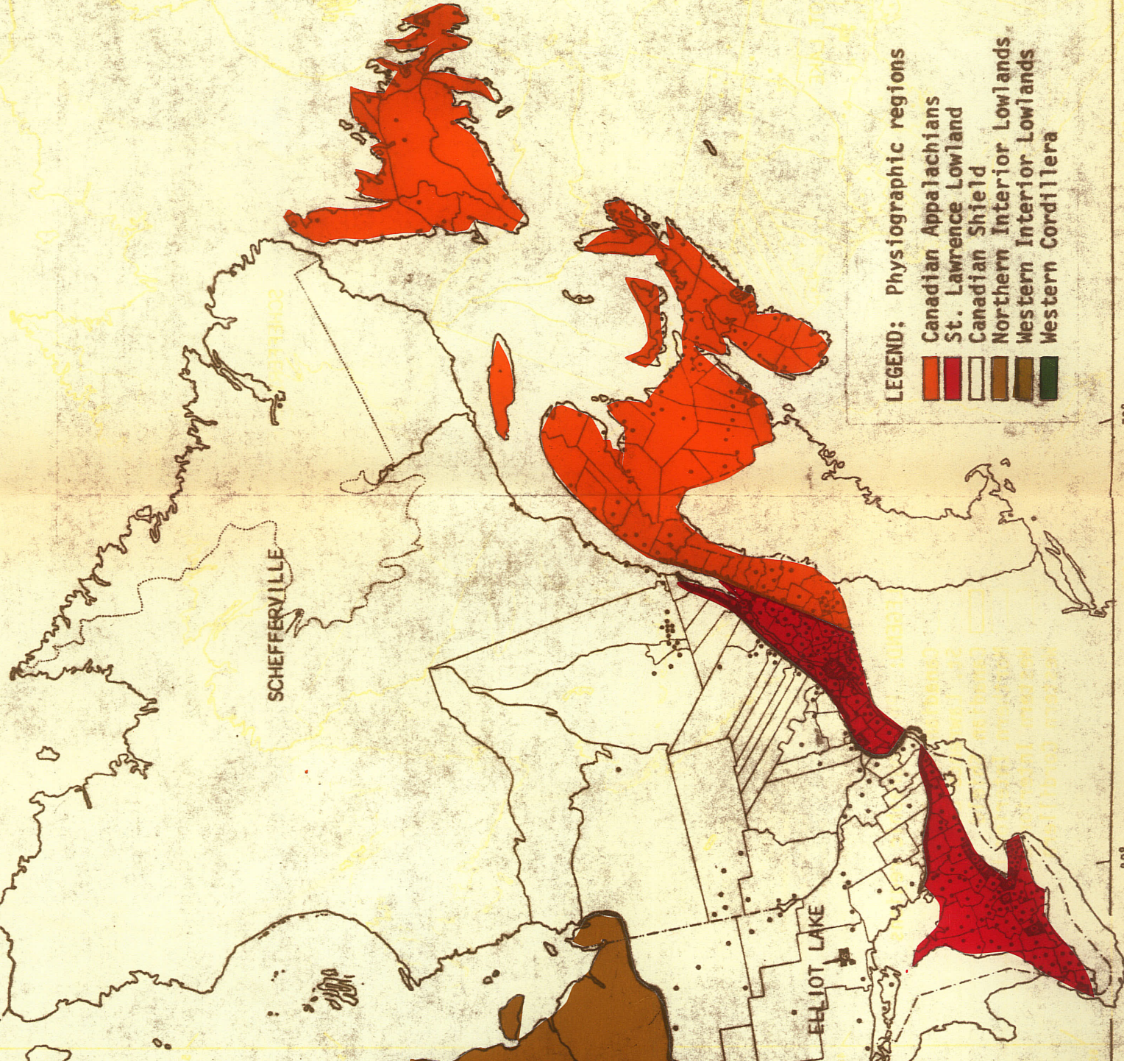
To examine these new towns, the thesis is organized into five chapters. Chapter I considers the socio-politico-economic context of resource frontier communities in Canada. Chapter II focusses on the five specific case studies and the role of the design determinates in their planning. Chapter III compares and contrasts the importance of each of the design determinants and its influence on the final plan. Chapter IV is a critical analysis of the findings of Chapters II and III, and it ranks the design determinants in order of importance. The final chapter relates the findings of the case studies to the general context of their development in Canada. Desirable changes in the Planning Process and the role of the individual design determinants are discussed.



# CANADA

## CASE STUDY TOWNS

IN RELATION TO PHYSIOGRAPHIC REGIONS  
AND EXISTING POPULATION BELT







**EXPLANATION**

Canada's population (18,238,247 in 1961 Census) is represented on the map by dots, each of which is equal to 10,238 or 0.1% of the total population. The population of each metropolitan area is indicated by a numeral which represents the number of dots. The number of dots plus these numerals equals 1,000 so that the sum of the dots and numerals in a given territorial division would indicate the percentage of Canada's population living in this area.

The territorial divisions of the map are counties or census divisions. In areas of low population density a dot may represent the centre of population spread over a large area. Thus, the map provides the correct representation of Canada's population but the distribution is more generalized in areas of sparse population.

**LEGEND - LÉGENDE**

Total number of dots	1,000	Nombre de points
Percentage value of each dot	0.1%	Valeur pourcentage de chaque point
Numerical value of each dot	18,238	Valeur numérique de chaque point
Number of dots in an M.A.		Nombre de points dans une R.M.

**EXPLICATION**

La population du Canada (18,238,247, recensement de 1961) est représentée sur la présente carte par des points dont chacun équivaut à 18,238 personnes ou 0.1 p. 100 de la population totale. La population de chaque région métropolitaine est indiquée par un chiffre correspondant au nombre de points. Le nombre de points plus ces chiffres égaie 1,000, de sorte que la somme des points et des chiffres dans un territoire donné représente le pourcentage de la population du Canada pour ce territoire.

Les divisions territoriales de la carte sont les comtés ou les divisions de recensement. Dans les secteurs où la densité de population est faible, un point peut représenter le centre de population d'une grande zone. Ainsi, la carte donne une représentation exacte de la population du Canada, mais la répartition est plus généralisée dans les régions où la population est clairsemée.



## CHAPTER I

### BACKGROUND AND PRELIMINARY CONSIDERATIONS

New Town! The term elicits either a vision of a bright new world of urban living or a series of questions. Such questions can be: are new towns found in Canada, what is such a thing, what types of new towns exist in Canada, what is their purpose, are they important, how are they planned and built, and are they successful and good places in which to live?

Before answering the foregoing questions, a clarification of terms used in this paper is of importance.

The term "community" means a congregation of individuals who share some interests, and aspirations and who live in a cohesive physical and economic environment.

The term town is used to denote a sense of status of the community in the hierarchy of village, town city and metropolis. A town usually has a population in excess of 1000 individuals, although the number varies according to provincial statute.

A single enterprise community is a congregation of individuals and the physical urban facilities to house and service them which is based primarily on a single major industrial enterprise. The industry is usually involved in the extraction and/or processing of a natural resource and is usually remote from areas of continuous settlement.

The term company town indicates a single enterprise community which is developed and administered by the resource enterprise. The



enterprise usually exerts direct control over the residential, commercial and recreational land uses and may exert influence on the transportation and communications media.

A mining centre or a multi-enterprise centre is a single urban area which houses and services the workers of several resource based extracting and/or processing operations.

A regional centre is a multi-function urban area which provides commercial, industrial, governmental and professional services for its regional hinterland. It houses and services the personnel required for these functions.

The term temporary refers to an intended short period of "life" or "existence" of structures, with a consequent razing after a specified period of time or usefulness.

The term "new town" can be best defined by reference to a set of characteristics:<sup>1</sup>

1. It is built as a complete community with a balance of retail, residential, industrial and recreational land uses.
2. Its distance from existing urban centres promotes its independent "identity", having a character of its own.
3. The site of the new town is large and under single ownership..
4. The town is built on raw, unserviced and underdeveloped land which allows designers and planners maximum freedom of design.
5. The site plan and the physical structure of the town are usually designed by planners, architects and the allied design professions so that there is a high degree of profession talent and competence in their planning design.

### New Town Types in Canada.

Within the above characteristics, many new towns of different types are found in Canada. Firstly, there are the serviced native enclaves like Akudlik, Manitoba.

These centres are used to concentrate native peoples of Canada into compact clusters primarily for efficient governing by Federal and local administrations. They are also used as centres for the administration of programs in Education, Health and Welfare. Clustering may also encourage greater socialization and native cultural development. A similar scheme is employed by the Newfoundland Government for the same purposes with the fisherman; in both cases, balanced communities having new town characteristics are developed.

A second type of new town is that of the private development undertaken for private gain by the developer. These developments are a reflection of the growth and scale of the operations of development companies which have grown from single houses, to whole suburban developments to the "new town" scale. The scale of development of residential facilities and the cost of land have forced the developers to turn the addition of valuable commercial and industrial areas and facilities to offset the residential development costs. To reduce its involvement in the new town development upon its completion, the developer encourages municipal incorporation under provincial statutes as rapidly as possible. Examples of this type are Bramalea and Don Mills Ontario.

A third type is the new town built to house and service workers of governmental administrations, research operations, defence production centres and defence installations. Ajax and Deep River Ontario, Aklavik

in the Yukon, and Gander in Newfoundland are examples. At this writing, the government has not sponsored any new towns which are built to encourage decentralization from existing population centres which are overly congested. The suggestion has been made<sup>2</sup> that such a program be undertaken in the Toronto-Hamilton area.

The majority of new towns in Canada are associated with the extraction and/or processing of raw resources; timber, pulp and paper, mineral ores, petroleum and hydro-electric power. These centres are based primarily on one industry and are single-enterprise communities. It is with the development of the resource that wholly new communities have to be built so that the workers may be housed and serviced. In the last three decades, these communities have been largely developed as permanent urban centres and the town site has been "planned" in great detail before its construction. It is these planned "new towns" based on a single industry which extracts and/or processes a raw resource that the thesis will concern itself. The question may now be asked, why are permanent towns built on resources which are depletionary in nature?

#### Why Are Planned, Permanent Single Enterprise Communities Built?

"About half the population in Canada lies not further than 100 - 125 miles from the United States border, and about 90 percent not further than 200 - 225 miles. One can speak of a broad ribbon of habitation just over the United States northern border."<sup>3</sup> Further, this population is not equally distributed, but is concentrated in the St. Lawrence Lowlands of Ontario and Quebec, and the west coast lowlands of British Columbia around Vancouver.

The prime sources of raw resources lie far to the north of this populated ribbon of development. Though the resources be below the surface of land and water, or at the surface, they are associated primarily with two physiographic regions: the Canadian Shield in Ontario and Quebec, and the Cordillera of British Columbia and Alberta.

Because of the lack of settlement and the consequent shortage of labour in these regions, it has been necessary to create wholly new communities to house and service the workers and families of the industrial enterprise developing the raw resource.

Secondly, the "complexion" of the resource extraction and/or processing operations has changed since the 1930's and especially since World War Two. Prior to those dates, the operations concerned with resources development were characterized by small, independent companies which abandoned their operation when the resource was depleted or uneconomical to continue operation. The level of skills required by such operations was confined largely to heavy manual labour of a simple nature. Such labour accepted primitive sleep camps, harsh living conditions and the transient life.

After 1930, and increasingly in the post-World War Two period, the development of raw resources has been characterized by large scale, vertically integrated, highly capitalized industries whose investments are large because the intention of development is long term. These companies have utilized advanced technology in locating, extracting, processing and transporting the resource materials. Further, they have tended to use the most advanced machinery available to obtain high productivity rates. The result has been an increased stability of the resource operations, and the new machinery has fostered a need for skilled, stable labour. The

shortage of such manpower in the north has forced the recruitment of skilled labour from the urbanized portions of southern Canada.

Not only the recruitment of such labour, but also its retention in long term employment, has forced the resource development companies to offer housing accomodation, community facilities and services, urban amenities and utilities which far exceed the standards of similarly sized communities "to the south". Further, to reflect the increased stability of the resource development community, to discourage the "boom or transient" types of development, the resource development companies have undertaken the expense of permanent, planned towns.

Federal and Provincial governments have also played a role in the encouragement of permanent, new town development. Public funds have been used to finance some of the facilities in these new towns, as well as link the towns to existing developments by road and rail. The use of public funds has been accentuated by the companies which prefer to allocate their scarce capital into productive "hardware" of the operation. The companies have also attempted to avoid the stigma of "company town" by minimizing their role in the development and operation of the town. Thus, the use of public funds in the development of these communities has increased since the 1930's. To protect the public interest, the governments at the Federal and Provincial levels have developed a comprehensive set of policies and regulations; these policies have also contributed to the establishment of permanent communities at the resource development sites.<sup>4</sup>

#### The Importance of Single Enterprise New Towns in Canada.

Van der Valk<sup>5</sup>, in discussing the development of Canada and the United States, compared the settlement pattern as a wave which travelled

slowly west at the same rate in both countries for many decades. The pattern changed when the west coast was reached; while United States had developed and was settled across its full latitude, Canada had developed only in a narrow band so that the suburban fringe in the established centres in United States constituted the "frontier" and the northern fringe of settlement in Canada became its "frontier." In the early 1900's, the development pattern along this northern development fringe did not advance smoothly as it had formerly, but began a "leap-frogging" to the new resource development sites with little consolidation of the former frontier settlements. Since 1930, this pattern of development of the north has been accentuated due to airborne geophysical devices and aerial photography.

The resource developments were undertaken to provide raw materials or "staples" which Canada traded for manufactured goods or used for domestic consumption. "Historically, Canadian development has followed a basic pattern of heavy reliance upon export of staple commodities. Fish, fur, wood and wood products, wheat, non-ferrous metals, and, more recently, other minerals, destined to the industrial centres of the world have all played key roles at one time or another in Canadian development. In fact, virtually the whole of what is significant in Canadian History is to be understood in terms of the interplay between Canada and the other countries of the North Atlantic Economy, notably the United Kingdom and the United States."<sup>6</sup>

In 1900, the primary sector of the economy (agriculture, fishing, mining, forestry, trapping) accounted for 33 per cent of Canadian Gross National Product.<sup>7</sup> By 1958, only 11 percent of the G.N.P. at factor cost originated in the primary sector. As Goodman notes, however, "A significant proportion of the activities in secondary and tertiary industries

however, consists in the processing distribution of primary products... the key to the dynamics of the Canadian economy has lain, and continues to lie in the primary sectors. Major growth trends have been dominated either by exploitation of natural material resources or by closely related activities".<sup>8</sup>

The major growth in the exploitation of raw materials in Canada is due to the United States. That country was a net exporter of natural resources in the period before 1930, thereafter it became a net importer of many such materials. Canada was favoured as a source of supply due to its proximity of supplies to the main United States markets, its large and accessible reserves, its plentiful supply of water for processing, power and transport, and a favourable political and institutional environment by Governments and its agencies in both Canada and United States.<sup>9</sup>

Consequently, Canada with a population of only two-thirds of 1 percent of the world's population<sup>10</sup> commanded and continues to command a world position in raw resources production as shown below:

TABLE I

Significance of Canada in the Field of Primary  
Production in the World 1964\*

Product	Rank of Canada in World Producers	Canadian Production as a Percentage of World Production
Pulp	1	16.9
Newsprint	1	42.0
Gold	2	9.4
Silver	4	12.8
Copper Ore	5	10.6
Iron Ore	3	6.8
Zinc	2	19.2
Nickel	1	67.0
Asbestos	1	63.4
Paper other than Newsprint	7	2.6

\*(after 1965 United Nations Statistical Yearbook, p. 183)

The production of raw resources, with its attendant requirement for workers and the urban areas in which they live has prompted one writer to call Canada, "...the land of new towns".<sup>11</sup> The latest study (1957) of single enterprise communities<sup>12</sup> estimated that there were 155 in Canada according to the definition; 75 percent were located in the provinces of Ontario, Quebec, and British Columbia. If other criteria of single enterprise communities were used, they numbered in excess of 252.<sup>13</sup> The present number is unknown. A member of the University of Manitoba Interdisciplinary Research Centre<sup>14</sup> which is studying such settlements indicated that the lack of current information on such settlements makes determination of their number impossible. A further complication is caused by the possible non-incorporation of such settlements and their absence from census data.

One fact is certain, the number of such centres will continue to grow rapidly in the future, as the United States becomes ever more dependant upon Canada for raw materials. "Although there is little evidence that the overall real cost of American Resource output has increased or will increase ... specific shortages and rising real costs of particular resource outputs have occurred and will occur, thus encouraging importation of lower cost foreign supplies, perhaps at an even faster rate in the future than in the past."<sup>15</sup>

A.A.Shea, in a condensation of the Gordon Commission Report, indicated that Canada would increase its 1955 production, by the year 1980: five-fold in iron ore, four-fold in aluminium, two-fold in nickel and zinc, two-fold in newsprint and pulp, 60 percent in lumber, and a 50 percent increase in lead ores.<sup>16</sup> No mention is made in the Gordon Commission of potash production as it had not been discovered. It is



presently known that Canada has 50 percent of the world's known reserves and is expected to become the world leader in its production by the early 1970's.<sup>17</sup>

#### How Are the Planned Permanent Resource-based New Towns Planned and Built?

The planning and building of these communities will be discussed at length in the next chapter, but it is important to briefly examine the general process. The British North America act specifies that municipalities are under Provincial jurisdiction; further, the Provinces have undertaken extensive geological research to encourage development of their raw resources, so it is not surprising that Provincial Planning Agencies have designed four of the five communities under examination. When the Province has attracted a resource development company, consultations are held by the Planning Branch of the Province with the company and the other Departments of the Province. These consultations determine such planning factors as the site of the development, the work force anticipated, the regional linkages by road and rail, and special problems. These special problems may include the problems of development of the wildlife and forests and streams of the region, the difficulties of road and rail construction, the construction difficulties of the site, and the provision of utilities to the townsite.

When the special problems are solved, the work of planning the townsite commences. From the expected work force population statistics, the estimates of the total town population and the facilities that are required can be derived. After the facility requirements of the site are known, the planning staff allocates them in a pattern of land uses and road systems. These requirements can include the number and type of

dwelling units, the number of commercial outlets and their type, the number of schools and playground acreage required, and the number of service industries.

Throughout this planning process, the planning staff conducts liason with the other departments of the Provincial and Federal Governments concerned to keep them abreast of developments and to ensure that the townsite proposal is in accordance with their requirements.

The Master Plan is usually a map showing the site and the proposed development by land use type, character and location. The Master Plan also contains textual information which explains the premises and calculations of the plan, the goals of development, and the rationale behind the plan.

Further, the Master Plan may contain measures and policies which aid in the implementation of the plan's development proposals. Zoning bylaws, Capital Investment Programs, building regulations and covenants may be some of the measures and policies.

The planning of the townsite does not end with the submission of the plan to the company. The planning agency may be requested by the Company or the Provincial Legislation to implement the plan. Further, the projections about expected populations and required facilities rarely correspond to reality, hence re-evaluation of population and facility estimates must be undertaken to allow smooth adaptation of the townsite to the new and unforeseen circumstances.

#### Are Such New Towns Successful in Their Planning?

The answer to this question cannot be calculated neatly, the answer must be found in the reactions to it by not only its inhabitants,

but also by the visitors and professional city planners who have visited them. These reactions are very comprehensive in scope, including all facets of the personality. Thus, reactions may include observations on factors which are not necessarily part of the planning-design process, but which are nevertheless attributed, by the inhabitants and the visitors, to the planning of the townsite.

In Elliot Lake for example, "more citizens are satisfied with the pattern...[of roads]...than dissatisfied"<sup>18</sup>, although some persons find the unaccustomed loops and cul-de-sacs "crazy" as compared with the grid pattern to which they have been accustomed. Helling reports that, "Many interviewees think Elliot Lake is a far better place than a haphazardly grown mining community, but people expect more from a planned community. Many people think that home rule can only be taken away when the end result is far superior to that they would have achieved themselves. People of Elliot Lake have no influence in the planning, and, therefore, they tend to be more critical. If the planners had gone into the community and discussed their plans with the citizens of the community, the people would have been satisfied and considered the plan their own."<sup>19</sup>

This disillusionment has been more succinctly expressed by an anonymous poet in the Deep River local paper:

"Although the town is trim and neat,  
With cozy houses on every street,  
Though saying so is indiscreet  
I hate it!"<sup>20</sup>

The reactions of professional city planners to these communities has been mixed but largely critical. Ira M. Robinson has noted that the planned permanent community serving a resource based industry has largely eliminated the "shacktown" and the "boom town" with their social problems.

But, as Robinson also notes, "While the achievements should not be minimized, the fact is that in one important respect, planning for these towns must be termed a failure. With few exceptions, the plans do not reflect the special social, geographical, economic or governmental circumstances under which they are built; for example, their unbalanced social structure; their dependance upon a single industrial enterprise; their harsh local climate and the rugged terrain of the areas in which they are located. The plans have differed little from those being carried out in the more developed urban areas in southern Canada. In short, there has been no original or specially adapted solutions equal to the individual problems of site and situation that these northern Canadian towns face."<sup>22</sup> Robinson's comments sum many of the observations of other city planners who have examined these new towns.<sup>23</sup>

The planned, single-enterprise community is the first "link" in an "economic chain" of great consequence to Canada. These communities are also very expensive to construct as permanent facilities, yet they are economically based on the extraction of a resource which has a finite time-span. Further, these communities are based on one industrial enterprise which extracts a resource whose economic usefulness is extremely vulnerable to changes in technology, tariff protection or removal, world demand changes, shifts in the policies of the nations, and the effects of product substitution. These communities, because of their location and isolated character create social problems for the families and constituent members of families that live in them.

The lack of continuous, in-depth study of these communities, and the lack of basic knowledge of the problems and potentials of these communities has prohibited the formulation of principles and concepts of

their development and their systematic improvement with time. As a consequence, "the northern town has yet to find its soul."<sup>24</sup>

## FOOTNOTES:

- 1 after T. B. Augur, "Toward Better New Communities on the Urban Fringe", American Institute of Planners Proceedings, 1963, p. 163.
- 2 Norman Pearson, "Planning Mississauga", Regional and Resource Planning in Canada, (Toronto: Holt, Rinehart and Winston of Canada, 1963), pp. 33 - 38.
- 3 Henry Van der Valk, The Economic Future of Canada, (Toronto: McGraw-Hill, 1954), pp. 4 - 5.
- 4 D. W. Slater, The Political Economy of Urban Changes in Canada, Queen's Quarterly, Volume LXVIII, #4, pp. 586 - 604.
5. H. Van der Valk, op. cit., pp. 4 - 8.
- 6 Bernard Goodman, Industrial Materials in Canadian-American Relations, (Detroit: Wayne State University Press, 1961), p. 14.
- 7 Ibid., pp. 16 - 18.
- 8 Ibid., p. 16.  
See also the graph in the article by Barb Henneberry called "Canada's Impressive Economic Recovery", Conference Board Business Record, Vol. 16, August 1959, pp. 362 - 363. The graph relates the boom in the primary sector the growth rates in the secondary and tertiary sectors.
- 9 B. Goodman, op. cit., pp. 180 - 181.
- 10 H. Van der Valk, op. cit., p. 40.
- 11 I. M. Robinson, in his forward to V. J. Parker's "The Planned Non-Permanent Community", University of British Columbia: Department of Urban and Regional Planning, 1959, p. ii.
- 12 K. G. Crawford, Single-Enterprise Communities in Canada, (Queen's University: Institute of Local Government, 1957), p.
- 13 Ibid., p. 7. Other Criteria for Single Enterprise Communities
  - (1) communities with one major, but not sole, employer;
  - (2) communities of historical significance which no longer are in existence;
  - (3) recently abandoned townsites, including ghost towns and uninhabited townsites with buildings and other structures still standing.
  - (4) armed forces housing developments attached to naval stations, army camps, and air force stations;
  - (5) projected new towns that are on the drafting board or in the conception stage.

- 14 Mike Archer, Assistant to the Director, Interdisciplinary Settlement Studies Research, in conversation on February 14, 1968.
- 15 B. Goodman, op. cit., p. 23.
- 16 A. A. Shea, Canada: 1980 (a Digest of the Gordon Report), (Toronto: McClelland and Stewart, 1960), p. 3.
- 17 "The Big Rush is on to Tap Canada's Wealth", United States News and World Report, Vol. 61, July 25, 1966, pp. 92 - 94.
- 18 R. A. Helling, Elliot Lake ... Beginning, (Windsor: University of Windsor, 1960), pp. 6 - 9.
- 19 Ibid., p. 9.
- 20 Peter C. Newman, "Deep River: Almost the Perfect Place to Live", Maclean's Magazine, September 13, 1958, p. 68.
- 21 I. M. Robinson, loc. cit., p. ii.
- 22 Ibid, p. ii.
- 23 See also:  
S. D. Lash, "Planning of Recent New Towns in Canada", Engineering Journal, March 1958), pp. 45 - 53.  
N. Pearson, "Elliot Lake: Experiment in Conformity", Town and Country Planning, Vol. 27, (May 1959), pp. 199 - 203.  
Peter and Cornelia Oberlander, "Critique: Canada's New Towns", Progressive Architecture, Vol. VIII, (August, 1956), pp. 113 - 119.  
Nigel Richardson, "A Tale of Two Cities", Plan, Vol. 4, # 3, pp. 111 - 125.
- 24 S. D. Lash, op. cit., p. 49.

## CHAPTER II

### CASE STUDIES OF THE FIVE NEW TOWNS

#### Introduction.

The previous chapter has outlined the general background of new towns in Canada, and the relevant considerations.

This chapter is concerned with the five specific new towns based on resource developments on Canada's resource frontier: Kitimat, B.C.; Drayton Valley, Alta.; Thompson, Man.; Elliot Lake, Ont.; and Schefferville, Quebec. Each is examined in detail as a "case study".

Each case study is concerned with the prime design determinants, and their interaction and influences. The determinants and their influence can be conceptualized as given in Diagram I.

The large square represents the "universe" of possible solutions and choices to the housing and servicing of the workers and their families. Possible solutions may include any imaginable structures and their arrangement from, say, mud huts to a single concrete structure. Each circle, within the universe of solutions, represents a design determinant as labelled and also represents the smaller choice of solutions left to the planner when the determinant has been included in the planning process and adequately considered. For example, the circle depicting Building Technology and its component part which is Utility Technology may limit the choice of site to a flat, well-drained site composed of easily tilled soil if the present buried utilities are to be



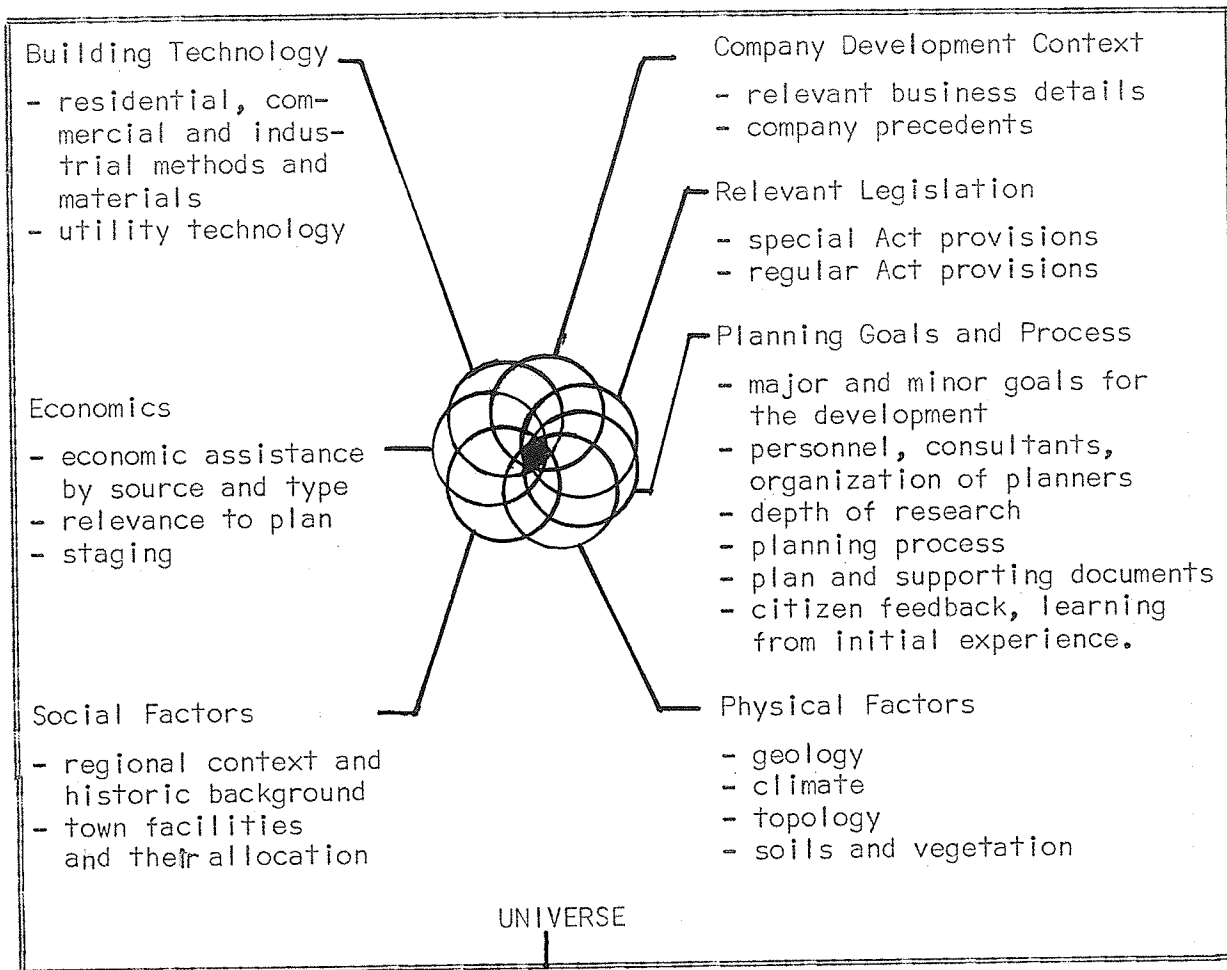


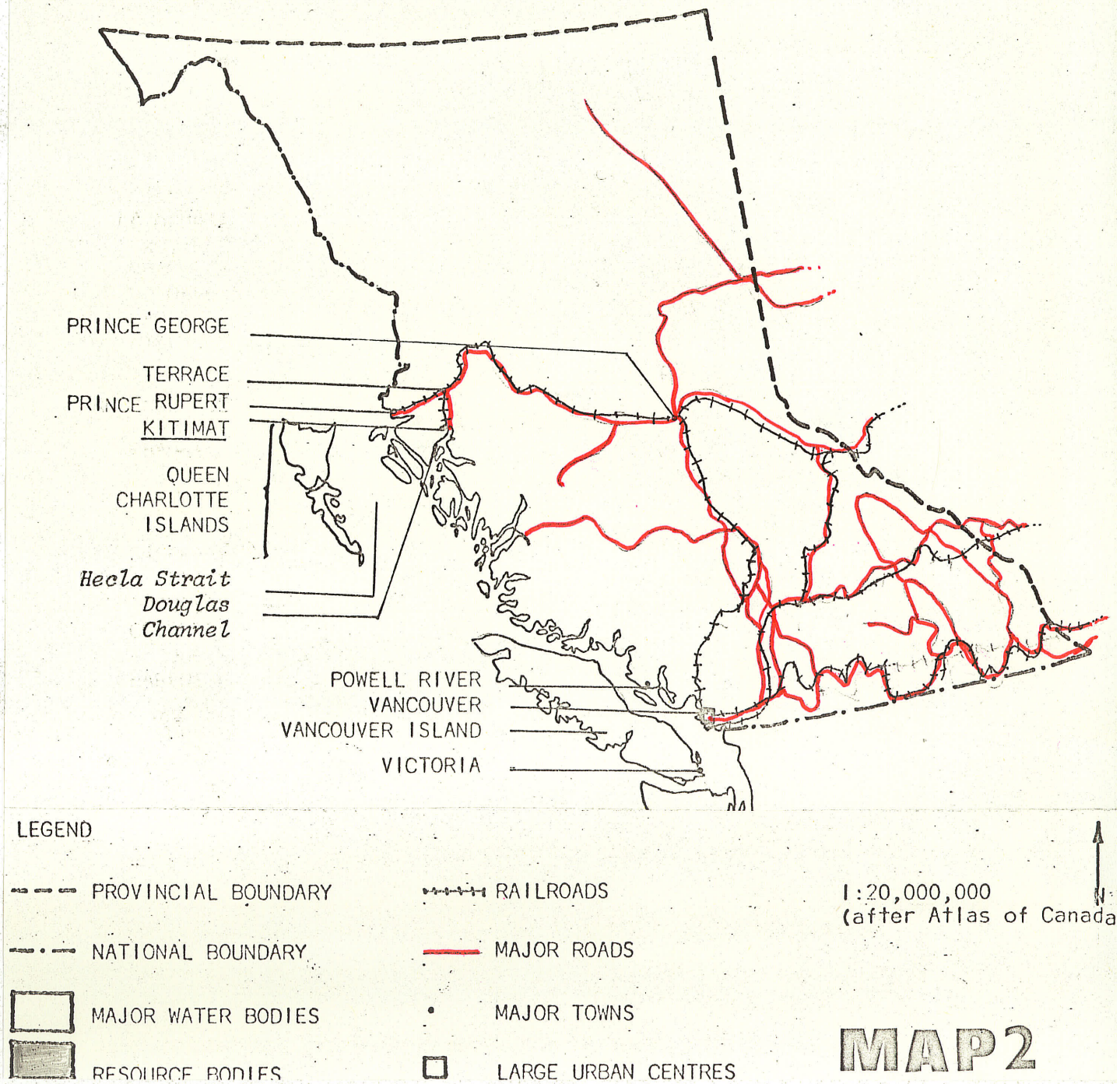
Diagram 1

installed. Such sites as rocky promontories, sloped sites which have a slope of greater than 10 degrees, and poorly drained sites can not be considered.

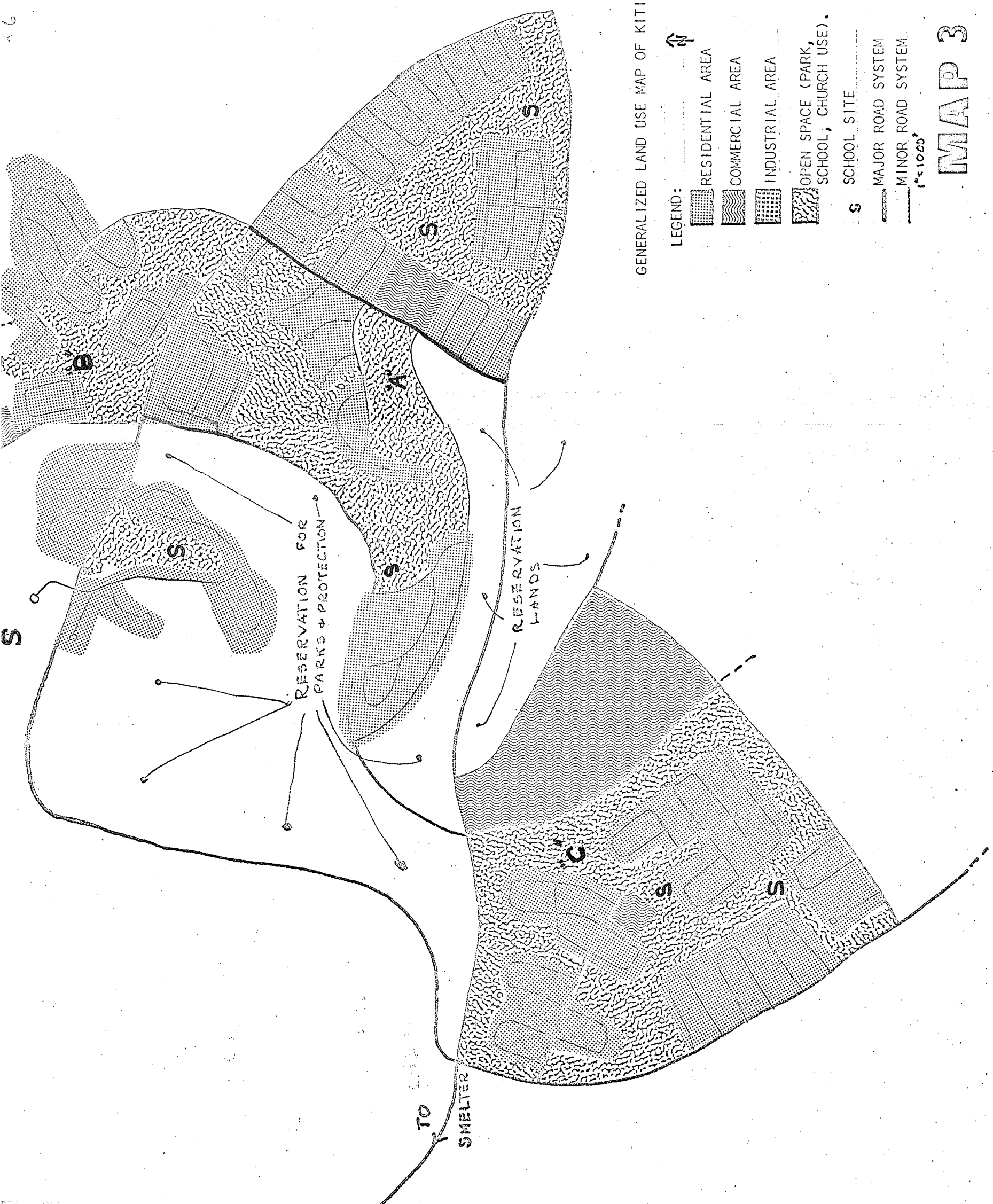
Lastly, the overlap area of all circles represents the area of possible choices and solutions when all the determinants have been included in the planning process and given due consideration.

Is this range of choice too limited? Will there always be flat, well drained sites composed of easily tilled ground? Do planners of these new towns give "due consideration" to these factors when the town is being designed? Should new solutions be attempted, based on the experience of the past?

## REGIONAL CONTEXT OF KITIMAT, BRITISH COLUMBIA







GENERALIZED LAND USE MAP OF KITIMAT

LEGEND:

- RESIDENTIAL AREA
- COMMERCIAL AREA
- INDUSTRIAL AREA
- OPEN SPACE (PARK, SCHOOL, CHURCH USE).
- SCHOOL SITE
- MAJOR ROAD SYSTEM
- MINOR ROAD SYSTEM
- 1" = 1000'

MAP 3

## KITIMAT, BRITISH COLUMBIA

Company Development Context

In the late 1930's, The Aluminium Company of Canada, or Alcan, commenced a search for a remote source of hydro-electric power with which to expand their smelting capacity. Alcan required very low cost hydro power with few competitors and these needs had forced the Company into exploration and development of such sites. Further, the Company needed easy access to the ocean so that transfer of the Jamaican bauxite could be made directly from ship to smelter.

Alcan had previously confined its development of power sources to the Province of Quebec. Commencing with Shawinigan Falls in 1900, and later developing the sites known as Arvida, Isle Maligne, Shipshaw, and Beauharnois, Alcan had steadily retreated into the remote, uninhabited regions as their power sources attracted other commercial enterprises. These enterprises had, by their consumption of power, at once raised the cost of power, and limited the future growth of Alcan. This advance into the remote regions of Quebec had proven costly; at each development, Alcan had developed power dams, town sites and smelter facilities at its own expense.

At the request of the Government of British Columbia in the late 1930's, Alcan made preliminary investigations into the power potential of various sites in that province. World War II interrupted those studies, but Alcan returned in 1948.

The two sites best suited to the needs of Alcan were Chilcoo on the Fraser River, and the Kitimat River site at the end of Douglas

Channel. Kitimat was chosen due to its superiority of power potential (2.5 million horsepower), its topography better suited to the development of smelter and townsite, its superior ocean access and its distance from existing developments.<sup>1</sup> The decision was made in 1949 to develop the Kitimat site.

Shortly after this decision, Alcan allocated \$1,000,000 for detailed surveys and plans.<sup>2</sup> The surveying commenced in 1949. In two years, the planning and engineering of the production facilities had been completed and the construction crews were moved into the site in June of 1951. In the same year, the townsite planning staff and assistants were selected and flown in to begin their work. On July 1st, 1954, the Duke of Edinburgh tapped a pot and poured the first ingot of Kitimat. At that time, only 400 homes on the townsite had been completed, of an intended 2,000 dwelling units planned for that date. That a portion of the townsite was completed in the time available is awe inspiring since the project was the largest private undertaking in the world at a value of \$329 million.<sup>3</sup>

#### Relevant Legislation.

In March, 1953, Kitimat was incorporated as a fully-fledged district municipality by a special act of the Provincial Legislature. This Act specified that all provisions of the Municipal act would apply, except as otherwise noted. The main exceptions were provisions which recognized the special circumstances under which Kitimat was developed. Unlike normal municipalities which develop their municipal services and utilities slowly, and which can finance these operations over long intervals, Kitimat had to be developed rapidly in an isolated area which required large capital outlays for many different services and

utilities at the same time.

The Act specified that the district council of Kitimat could borrow up to \$50,000 as operating expenses until the municipal revenues for 1953 were made available. Further, provisions for borrowing up to \$5,000,000 for large capital expenditures were included in the Act.

Due to the shortness of time for development of a comprehensive body of municipal bylaws concerning the development of the town, the Kitimat District Council was granted, by the Act, the right to pass one comprehensive general bylaw covering all matters within the jurisdiction of the Municipal Council. This comprehensive bylaw ensured development as the planning team specified.

In all other respects, the planners of Kitimat were guided by legislation as defined by the Planning and Municipal Acts and their provisions.

#### Goals of Development and Planning Process.

The general goals of Alcan, with respect to the townsite were defined by the Planning Coordinator, C. S. Stein:

"THE PURPOSE OF KITIMAT is the industrial success of the plant. That success will depend upon the degree that workers are content, that they will like living in Kitimat. Unless the town can attract and hold industrial workers, there will be continuous turnover and difficulty, interfering with dependable output... It must become the place they want as homeland, the town they are going to make their own. There is much to contend against making this possible; including Climate, Remoteness, Strangeness ... Family needs, above all else, form the basis of the Kitimat Plan."<sup>4</sup>

As Stein later noted, these general goals were conditioned by economics. While the company did not wish to be "extravagant" or "stingy" in their assistance to the development of the townsite, Alcan wished for the economics of planning to provide the optimum environment at the minimum

long term cost for the assistance that it could afford.

These general goals were further refined into increasingly specific goals and organized into a comprehensive planning framework.

The scope of work required to fulfill the general goals, as given above, was phrased by Stein in October, 1951:<sup>5</sup>

- I "Outlining the basic requirements for the comprehensive development and operation for the purpose of giving maximum liveability at minimum long term cost.
- II Formulating and outlining the program for each of the component fields of activity. In this connection, I am to recommend to Alcan for its approval, and retention of consultants in the various fields, to carry out in detail these programs under my direction. The resulting studies in each field will include: recommendations as to basic policy; organization and administration; relationship to other governmental, public and private agencies and services; financial policy and budget of operating cost and estimated returns; outline or diagrammatic description of building and equipment required to make each service function efficiently.

The functional and physical fields to be studied will include the following:

- (A) Local Government.
- (B) Housing and Housing Agency, for creating, marketing and operating residential and related development.
- (C) Community Organization and Facilities.
- (D) Education and Child Care.
- (E) Recreation.
- (F) Health.
- (G) Protection.
- (H) Commercial and Business Facilities.
- (I) Problems having to do with the surrounding area:
  - Control of water and flood dangers.
  - Land use affecting plant and town.
  - Transportation.
  - Regional recreation programs.
- (J) Other related fields for which programs or plans may be required.

- III Coordinating these special problems into a comprehensive, overall program and schedule, including definite recommendations for the physical master plan and the operation of the ultimate town and various stages of development.

- IV Choose and train an acceptable, young and experienced man to become the director of a planning department in Alcan in Montreal."

To accomplish these tasks, a unique planning organization was established by Stein. The consultant planners consisted of the Director and Coordinator, Mr. C. S. Stein. The general townsite planning studies into the functional and physical planning of the townsites were assigned to Mayer, Whittlesey and Glass, Architects, Engineers, and Town Planners.

These general planners were assisted by many specialized consultants as listed below:<sup>6</sup>

C. S. Asher	Legislation
M. W. Bernard	Health and Medical Care
P. S. Bonney	Timber and Forestry
J. C. Buckley	Traffic and Transportation
G. O. Butler	Recreation
R. I. Davidson	Building Materials and Methods
A. G. Dickson	Native Plant Materials
R. Eberlin	Site Engineering and Utilities
N. L. Englehardt	Education
D. Kiley	Landscaping
W. E. Kroening and	
L. H. Tucker	Government and Administration
H. E. Landsberg	Climatology
T. C. Lockwood	Transportation
B. MacKaye	Conservation
L. B. Murphy	Family and Communal Living
K. W. Moss	River Control
L. Smith	Commercial Facilities

Mr. C. S. Stein was the prime design determinant in Kitimat's planning. He had been a member in the planning process of the "greenbelt" towns in the United States in the 1930's. The towns of Greenbelt, Maryland; Greenhills, Ohio; and Greendale, Wisconsin. Stein had also participated in the planning for the forerunner of these towns, Radburn, New York. As a result, the town of Kitimat has common features with all of these developments and even appears like them. The characteristic



features and their distinctive use are: the "free form" of the major arterials which act as the neighbourhood boundaries, the use of the superblock with its separate pedestrian open space and pedestrian walkway systems, the horizontal and vertical separation of pedestrian and automobile, the "fronting" of the house onto the pedestrian walkways and the use of the road as the "service entry". These physical details represent a distinctive planning approach of Mr. Stein which bases all physical design on the needs of the inhabitant and his desires and preferences. Because Mr. Stein was the director of the planning operation, the town bears his distinctive "stamp", although the consultants provided the data, recommendations and policies which complemented and were incorporated into the general plan. For example, the sociologist determined that the snowfall of the region would prohibit child play outside; the homes were built larger than National Housing Code specifications so that there would be more child play space. Also, the schools were built with basements so that the children could spend the recess period playing indoors.

In addition to the consultants, there was a second planning staff who would implement the plan as the permanent staff of the Corporation of Kitimat. To ensure smooth take-over of planning responsibilities by this staff, and to encourage adherence to the plan during development, the permanent staff was involved in the original planning process.

The planning process was notable for its continued close liaison and cooperation between the planners, the governmental agencies involved and the company. Further, the consultants were involved in the program together, instead of sequentially. This method permitted a greater freedom and creativity in the preparation of the town plan because the

experts could examine the design determinants and their interaction to derive city functions and processes within the limitations imposed by the design determinants.

The Master Plan, of necessity, had to be done at once prior to the arrival of town inhabitants. While the desirable reevaluation of the total plan by the inhabitants could not be undertaken due to the rapidity of development of stage one, each future development could be reevaluated and replanned, based on the experience of the preceding developed stages.

Alcan's encouragement of the establishment of an independent municipal corporation, with its own planning staff, may be construed as a means of involving the citizen of Kitimat in the affairs of the town.

The development of Kitimat according to the plan was and is encouraged and enforced in many ways.

Firstly, the consultant planners have trained the permanent planning staff of the Municipal Corporation in the rationale of the plan to encourage adherence to it in its implementation.

Secondly, the Townsite Report is a summary of the many documents prepared by the experts, and explains the reasons for the development and its character.

Thirdly, the planning staff of Alcan reviews the development proposals to ensure conformity to the plan because Alcan retains control of the sale and leasing of land in the townsite.

Fourthly, the Master Plan is supported by law: zoning regulations, subdivision control regulations, and Municipal Building Regulations.

### Physical Factors.

The regional context of Kitimat is shown on Map 2. The British Columbia coast is a part of the Cordilleran Physiographic Region, which is characterized by ranges of mountains. Kitimat is located on the Kitimat Arm of Douglas Channel, a drowned fiord which is hundreds of feet deep and lined with mountainous sheer rock walls. Unlike the other fiords of the coast, Douglas Channel terminates in a 5 mile wide, flat valley that extends 40 miles inland, to the town of Terrace. The ocean access, and the hydro-electric power potential attracted Alcan to this site. At that time, electric power could not be transported economically over long distances, so the townsite and smelter had to be located as closely as possible to the source of power generation. Now conditions have changed with the electrical transmission lines carrying between 700,000 and 1,500,000 volts, and the location of the smelter can be placed where desired.<sup>7</sup> These gross physical features determined the location of the operation.

The townsite is characterized by rolling topography of the alluvial podzols composing it. In addition, the site is bisected by a gravel ridge with an elevation of 330 feet above mean sea level. The site is further divided by many gullies and steep slopes which are unsuitable for development. As a consequence, many cul-de-sacs have had to be built. See Map 3 for detail. Also, the town development is confined to the top of the gravel ridge because soil drainage is better, and the elevation reduces the air flow from the channel, making a better environment for town development.

The climate can be characterized as West Coast Maritime. The mean July temperature is 62°F, the mean January temperature is 25°F,

the mean annual temperature is 44°F. Mean annual precipitation is 92.9", the mean annual snowfall is 194.5", with the mean annual snow accumulation measuring 40" in depth. The mean annual hours of sunshine number 1343. The extreme summer and winter temperatures recorded are, respectively, 100°F and -20°F.<sup>8</sup> Generally, the winters are dull but mild with the overcast lasting through the spring and autumn. Summer is bright, sunny, warm but brief. To take advantage of the sun and minimize the effect of rainfall, the commercial centre was designed with free standing buildings linked by porticos.

The soils, climate, latitude and continental location have encouraged the growth of dense forests of spruce, pine, hemlock, western red cedar, yellow cyprus, fir and western white pine on the lower slopes of the region and the townsite.<sup>9</sup> When possible, the dense stands have been used as wind breaks.

#### Social Factors.

The Kitimat townsite was part of the forest preserve of the Kitimat Indians, who lived about 6 miles from the townsite on the north shore of the Kimimat Arm of Douglas Channel.

White settlers inhabited the valley and the townsite between 1905 and 1941, speculating that the Grand Trunk and Pacific Railway, (now part of the Canadian National System), would choose Kitimat as its western terminus. When Prince Rupert was chosen, the white settlers drifted away slowly, and the land reverted to the province through tax arrears.

These foregoing factors played only a small role in the design of Kitimat. The concern of Alcan and the consultants was the creation of

of a town which would attract and hold skilled personnel from Southern Canada for the industry. Surveys and estimates of the expected population were made by planners, knowing the expected work force of Alcan. These surveys of the population and its characteristics were used to estimate the needs of the inhabitants that the townsite and surrounding region would have to provide to meet the needs and desires of the inhabitants. It was established that the inhabitants would desire single family homes. This form of housing predominates.

These population and social requirements were then converted into functional and structural data, building programs and policies. Because of the limitations imposed by the site's climate and geography, these requirements had to be modified as necessary until a reasonable compromise was reached. The neighbourhood "A" was developed first because the soil could dry up faster, although "A" was further from the commercial centre than neighbourhood "C".

The functional and structural data and building programs and policies were then translated into physical plans by the physical planners and architects. The advantage of such an approach was that the requirements of the inhabitant, the company and the governmental agencies involved and the limitations of the site were as fully understood as possible before the planning and design of the town proceeded. On this knowledge, a more successful solution to the many needs and constraints could be formulated. Also by this method, the usual process of locating existing urban facilities and institutions was avoided, so that the functional analysis could place complementary functions in close proximity and separate those functions of a clashing nature. For example, the blighting influence of lumberyards, junk yards, warehouses, and automobile

repairing were relegated away from the residential areas of the town and placed in a "service centre". The single mens' dwelling units were placed near the central retail and governmental centre so that they could participate in the life of the community, and not be placed physically and socially out of the town.

### Economics.

Throughout the planning process, careful control of costs was measured by comparing the costs of a facility and the expected revenues to be gained. This method was in keeping with the goal of Alcan of providing maximum liveability with reasonable long term minimum cost.

Further, the town was organized to be developed economically. Each of the four stages of townsite development was keyed to the staged expansion in smelter capacity of Alcan. For each stage, a program of neighbourhood development was worked out according to economy in: length of roads and sewers, ease of clearance of trees, first cost, the use of existing schools and community facilities, and the desire to have a "complete" and compact appearing town at all stages of development.<sup>10</sup> Throughout the initial development of the townsite, Alcan underwrote the costs of roads, utilities, site preparation, school construction and equipment, and the endowment of cultural facilities. "All told, it is estimated that Alcan spent around \$10 million on town site development during the early stages."<sup>11</sup> These facilities were turned over to the municipal corporation at no cost at the time of municipal incorporation. Alcan also provided loans for municipal expenditures to the municipality. In these ways the company ensured that the standard of development of the community would be as planned.

But the costs of the town and the financial assistance of Alcan did not stop with incorporation. Alcan desired home ownership in its employees. To make it possible for employees to build houses, Alcan offered second-mortgage loans in order to substantially reduce down payments required by Central Mortgage and Housing Corporation. Secondly, a monthly bonus was paid towards home financing to make up for the differential of building costs between Vancouver and Kitimat. Thirdly, a repurchase plan was offered by the company who promised to buy-back the home for a period of 10 years, from the date of employee purchase, at a cost predetermined by the original cost minus annual depreciation. Thereafter, the home would have to be sold privately.

#### Building Technology.

The commercial, industrial and residential structures employed contemporary technology. Houses were built of wood frame construction, and the commercial structures were built of concrete, steel and wood.

The utility systems, water supply, sanitary and storm sewers, telephone and electrical power were of contemporary technology. The storm and sanitary drainage systems were located often the road right-of-way, which was designed to face the back of the house as the bulk of houses were built with the "front" of the house facing the green spaces in the middle of the blocks. Like-wise, the electrical power and telephone trunk lines were located along the poles planted in the road right-of-way. The utilities were located so that repairs could be made to either the road or the utilities without disturbance of other systems.

The use of conventional utility technology compelled the planners to place the townsite where the soil could be easily manipulated

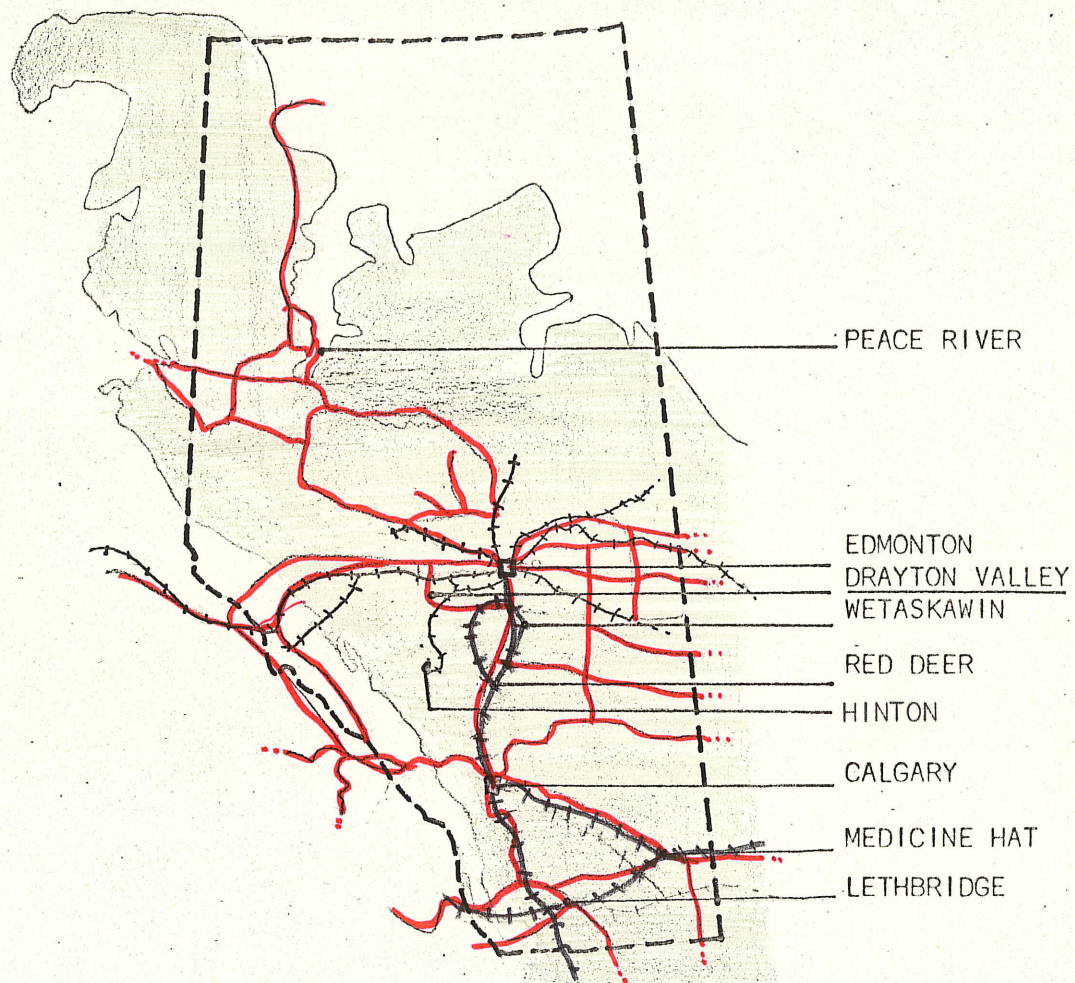
for the installation of these utilities. Because the plan incorporated large open spaces which were linked to other open spaces, Stein could place his utilities either beneath the road or this open space. Because the utilities were freed from the road right-of-way, the roads could be placed at will accounting for the "free-form" appearance of the road system.



## FOOTNOTES:

- 1 J. J. Brown, "New Industrial Might for Canada", Industrial Canada, XXXII, (December, 1951), p. 35.
- 2 Ibid, p. 35.
- 3 Paul Clark, "Kitimat: A Saga of Canada", Canadian Geographical Journal, XLIX (October, 1954), p. 153.
- 4 Municipal Corporation of Kitimat, Kitimat Townsite Report, (Kitimat, The Corporation, 1960), pp. 3 - 7.
- 5 Ibid., p. 1.
- 6 Ibid, p. 8.
- 7 Mr. Roy H. Fletcher, Director of Planning for Kitimat, correspondence of February 23, 1968.
- 8 N. H. Richardson, "The Kitimat Region", Resources for Tomorrow, (Ottawa: Queen's Printer, 1961), vol. 1, p. 447.
9. Ira M. Robinson, New Industrial Towns on Canada's Resources Frontier, (Chicago: Department of Geography, 1962), p. 19.
- 10 Kitimat Townsite Report, Section 6.0.
- 11 Ira M. Robinson, op. cit., p. 44.
- 12 Ibid., p. 46.

## REGIONAL CONTEXT OF DRAYTON VALLEY, ALBERTA



## LEGEND

— PROVINCIAL BOUNDARY

— NATIONAL BOUNDARY

MAJOR WATER BODIES

RESOURCE BODIES

RAILROADS

MAJOR ROADS

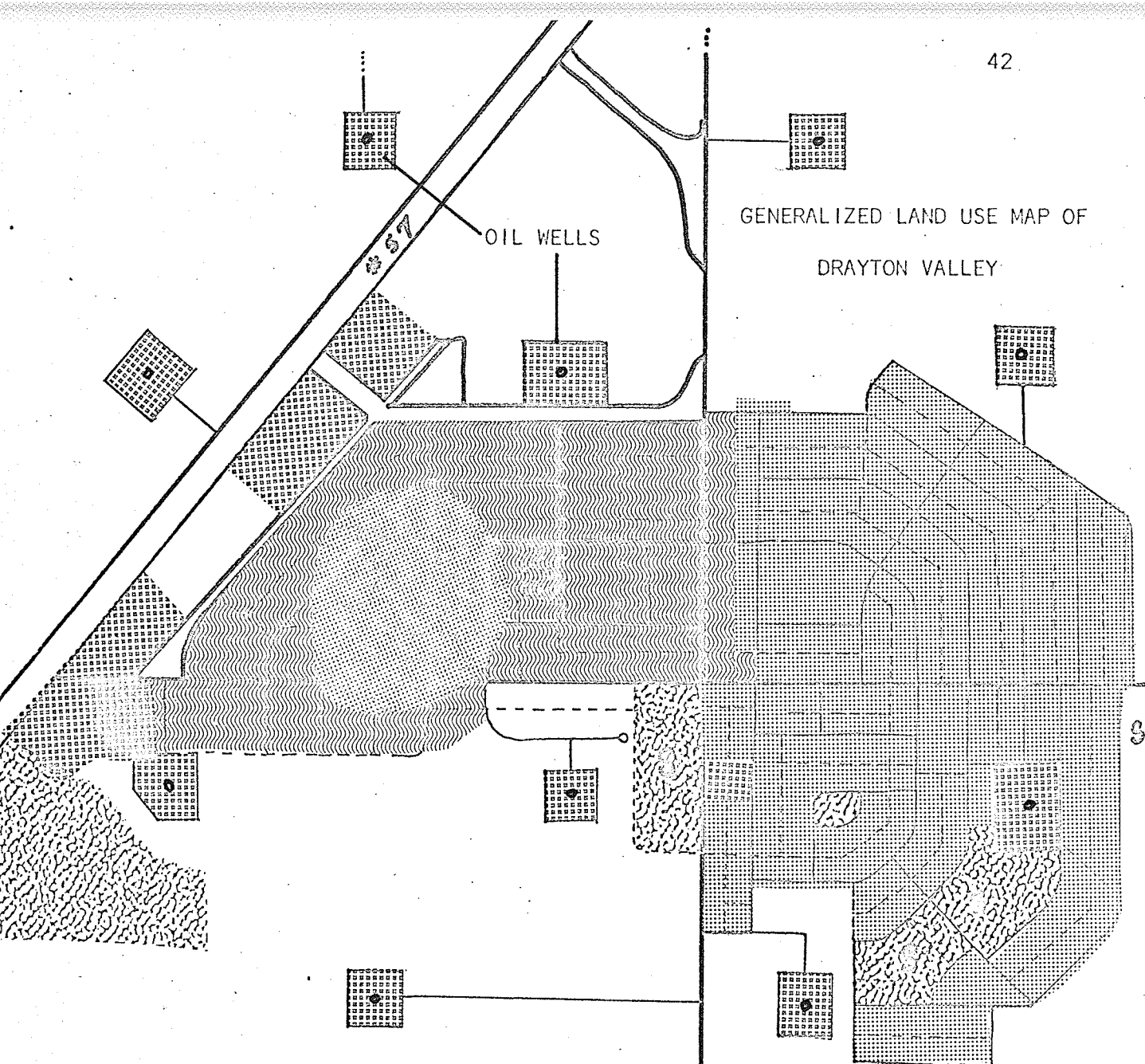
MAJOR TOWNS

LARGE URBAN CENTRES





1:20,000,000  
(after Atlas of Canada)


MAP 4


# GENERALIZED LAND USE MAP OF DRAYTON VALLEY



## LEGEND:

-  RESIDENTIAL AREA
-  COMMERCIAL AREA
-  INDUSTRIAL AREA
-  OPEN SPACE (PARK, SCHOOL, CHURCH USE).

 SCHOOL SITE

 MAJOR ROAD SYSTEM

 MINOR ROAD SYSTEM

1"=1000'

# MAP 5



## DRAYTON VALLEY, ALBERTA

Company Development Context

Drayton Valley was planned by the Alberta Provincial Planning Advisory Board (now called the Town and Rural Planning Branch of the Department of Municipal Affairs). It was planned at the request of several oil companies engaged in the extraction of petroleum in the vicinity of Drayton Valley. Such companies as Texaco Exploration, Pan American Petroleum, Mobil Oil of Canada, Goliad Oil and Gas, and Home Oil realized that the hamlet would prove inadequate for the development pressures generated by the needs of their employees. (See Map 4 for the regional context of Drayton Valley).

The hamlet of Drayton Valley consisted of 75 persons in 1952, prior to the exploration and drilling of the oil companies. It was lacking municipal government, water supply and sewers for storm water and sanitary waste, electric power and gas power systems; and it contained only a limited number of small homes, a two room school, a post office and two stores.

Further, its unincorporated status and the small population prohibited borrowing for capital expenditures on the scale required. The oil companies required decent accommodation and services for their employees working there. These companies, as well as the Province, wished to avoid the shack town that would result from such circumstances. As a consequence, the Province was requested to plan and organize an urban municipality by the oil companies, in 1953, after the first oil producer was "brought in" on May 2nd of that year. This oil well was the first of many in the "Pembina Controlled Area", which by 1956

became the largest oil producing field in Alberta.

The Minister of the Department of Municipal Affairs for the Province made a request to the Provincial Planning Advisory Board (now called the Town and Rural Planning Branch) on February 8, 1954, for the:

- "(a) ....preparation of a statement, which in accordance with the said section (Town and Rural Planning Act, 1953, section 64) shall be known as a general plan setting out the manner in which the Minister considers the development of the Improvement District should be carried out within a defined period of time, having regard to the considerations of orderliness, economy and convenience and setting out the means and steps necessary to ensure or to effect that manner of development,
- (b) the carrying out of such investigations, surveys and research and the preparation of such reports as may be necessary for the purpose of preparing the general plan"<sup>1</sup>.

#### Relevant Legislation

New towns in Alberta had been built previously to Drayton Valley; Devon and Redwater were two Alberta "new towns developed by the Imperial Oil Company in 1949. Drayton Valley was the first publicly planned new town which was to be built on privately owned lands in an inhabited area.

The townsite selected for the urban development was the existing hamlet called Drayton Valley. Because the land of the townsite was privately owned, and would become subject to price inflation

due to speculation, because the townsite was unincorporated and could not support nor acquire the funds required for capital investment for the required municipal services and because the townsite could not be controlled by the Province in a coordinated manner under the existing legislation, the Legislature was presented with, and accepted, "The Drayton Valley Townsite Act" on April 8, 1954.

Under this Act, the townsite was defined and all privately owned lands within the site were compelled to follow subdivision and development regulations as stipulated by the Minister of Municipal Affairs (who will hereafter be called simply the Minister). The Minister was further granted the power to make any agreements with any party in order to assist in, and provide for, the controlled development of the proposed townsite, including, the price control of the lots sold, the disposition of land, the standards and timing of construction of buildings and utilities. The Minister could also establish a trust or other accounts as required for the provision of such development. The Minister was held responsible for the development of the townsite, and the Minister was represented by the Provincial Planning Advisory Board at the local level.

One provision of the act specified that the purchaser of a lot must provide funds for the installation of utilities at the time of lot purchase and commence construction within a specified period of time, otherwise the purchase was not considered valid. The prepayment of utilities, according to a scale per land use and lot size, was expected to provide sufficient funds for the cost of installation of utilities. By the summer of 1955, it was realized that the plan would not work and a new system was required, because utility installation costs were

much greater than the revenue derived from the prepayment system.

In 1956, the announcement was made for the development of a new pulp mill at Hinton, and it was expected that a second new town would be required for urban development in the Pembina Controlled Area. Concurrently, the McNally Commission published its report on the development of Calgary and Edmonton which included recommendations for the planning and development of satellite cities around these two centres. The experience of Drayton Valley and the McNally Commission recommendations fostered the New Towns Act, or "An Act to Provide for the Planning and Development of New Towns in the Province". The Act was accepted in the Second Session of the Thirteenth Legislature in 1956.

Although the New Towns Act closely paralleled the Drayton Valley Townsite Act, there are differences which played a role in the planning of the townsite. In fact, the policies derived from the Drayton Valley experience were incorporated into the New Towns Act, but were much broader and comprehensive because they included the policies concerning determination of new town sites and the policies of development.

The Provincial Planning Board was charged with the determination of which areas should be given new town status, and it reviewed the proposed sites and made recommendations to the Provincial Cabinet. The Cabinet followed the Board's recommendations in every case.

The proposal for a new town could originate at the local or the provincial levels. The research into the proposal, undertaken by the Provincial Planning Board, was necessary to determine if the proposal was in the public interest. The research included facts demonstrating the need for development, surveys, maps, and aerial photographs, which

indicated the physical and topographical features of the proposed town and its regional context. Economic studies were submitted which covered the balance of land uses proposed for the town, and the costs and benefits of land acquisition and development.

Once the site was designated as a new town by an order of the Lieutenant-Governor in Council, and the Board of Administrators was appointed, the Board was responsible for the creation of a Plan of Development. This plan allocated needed land uses and required areas in a programmed manner which related the development costs, benefits, and resources in a time sequence. The plan could be prepared by the Provincial Planning Board, and submitted to the Board of Administrators for their approval. The Board of Administrators could not pursue development until the Plan was approved by the Provincial Planning Board.

The townsite development was controlled by subdivision regulations, and each plan of subdivision was subject to the approval of the Provincial Planning Director. The lands of the "new town" were controlled by a development control bylaw until the Comprehensive Plan was completed. When the Comprehensive Plan was completed, and a supporting Zoning Bylaw was adopted, the Development Control Bylaw became ineffective. In addition to these controls, the Board of Administrators could enter into agreements with land owners on the matters of servicing the land, the sale price of lots, the subdivision of the land, or land expropriation. The Board had wide powers of providing capital facilities such as roads, sewers, water connections, irrigation, conduits for wires and pipes along railroad systems, and the utility services of gas and electricity.

The new town status conferred the right to borrow for capital



expenditures as needed, without being limited by the customary debt limitation of 20 percent of the total assessed valuation of the municipality. The Lieutenant Governor in Council made loans, advances and grants up to one million dollars to the Board of Administrators for their needs in the development of the town. These loans were repayable to the Province within the period determined by the Lieutenant Governor in Council. The Board of Administrators was accountable to the Local Authorities Board in financial matters and had to submit an annual statement.

The Act specified that the planning of the municipality should be done by professionals, including consultants, the Town and Rural Planning Branch, or a local district planning commission which had jurisdiction over the area of the townsite. Drayton Valley was planned by the Town and Rural Planning Branch.

The town could revert from "New Town" status to that of a regular, fully incorporated municipality on order from the Lieutenant Governor in Council. Drayton Valley held the New Town status from February 8, 1954 to February 1, 1957, when it reverted to a fully autonomous town. In this period, the Town and Rural Planning Branch was actively involved in the affairs of the town; thereafter, the Branch rendered advice and planning assistance when requested by the Drayton Valley municipal council.

#### Planning Goals and Planning Process

The goals of development were largely summarized in the Minister's Order of February 8, 1954, when the Town and Rural Planning Branch was requested to commence study and planning of the town.

Basically, the goals of development were limited to the "...considerations of orderliness, economy and convenience". The Branch also stipulated in its General Plan that the buildings be permanently built and have some "Aesthetic merit".

The planning process consisted of much research into the townsite characteristics and regional context. The report produced was called the "Pembina Controlled Area General Plan Report". It consisted of three sections: the geographical background, and physical development of the region around Drayton Valley; the estimate of future population and economic growth and the urban facilities and areas required to serve the needs of this population; and the brief proposals for the future economic developments.

On the estimates and projections of the above report, the general plan and supporting documents were prepared. The development of Drayton Valley was divided into three stages, and these stages were developed in small subdivision parcels as private owners of the land sold it in accordance with the regulations of the Minister.

The rapidity of the development allowed only minimal research into the requirements of a new town. Drayton Valley grew from approximately 75 in 1952<sup>5</sup> to 2,588 in 1956<sup>6</sup>. At the same time, the Pembina Controlled Area grew from one oil well in May 2, 1953, to the largest oil field in 1956.<sup>7</sup>

The Town and Rural Planning Branch conducted liaison with the other Provincial Departments who were involved with the development of Drayton Valley. The only consultant hired to assist in the project was the Canadian Engineering Company, who provided the site engineering

costs required for the estimation of servicing costs and the utility prepayment fees.

Drayton Valley planners made only limited social estimates of the probable inhabitants and the facilities that they would require. However, the citizen was soon involved in the planning of the community because each development and land subdivision involved the owner of the land, the citizen, and the planner in a public discussion of the proposal and the needs of the community. Often, the planned land use was not immediately installed or built, but was preceded by a land use which was considered "temporary" and was allowed only a specified time in which to use the land. For example, trailers were allowed to be sited on land zoned for permanent housing under strict regulations, including a time limit. When the time limit was finished, the tenant of the trailer was required to remove the trailer and erect his own private house as specified or sell the land to another person or the Board of Administrators at a specified price, for the erection of a permanent house.

While the General Plan was being prepared, the land of the townsite was held under control of the Minister by Interim Development Control. When the General Plan was completed, it became the influential policy determinant of development in the townsite. Supporting the General Plan were a zoning bylaw and a series of zoning directives from the Minister. Further, all land sales and subdivision agreements were subject to the approval of the Minister. The civil servants who were part of the Board of Administrators also ensured conformity to the General Plan. (For details of the plan, see Maps 5 and 13)

### Physical Factors

The physical factors played only a minor role in the planning of Drayton Valley.

Geologically, the townsite lies in the Interior Plains Physiographic Region. This region is characterized by flat, sedimentary deposits which originally were formed by a shallow sea lying over most of the North American continent which supported a rich marine life.

The remains of this sea life are found in the oil bearing cardium formations in the Cretaceous Age Strata. Over this formation lie weathered grey and brown thick-bedded sandstones and shales of the Tertiary Age, and a 50-200 foot thick mantle of glacial clays, gravels and sands.

Climatically, the site is characterized as "prairie" with warm, sunny summers and cold, bitter winters. The annual precipitation averages 18.2", the mean temperatures for January and July are 23°F and 53°F respectively. The extreme temperatures recorded for the same months are -65°F and 95°F. The mean annual accumulated snowfall depth is 18". Drayton Valley has a mean annual hours of sunshine numbering 1200.

This climate has altered the glacial drift into the soil type known as Grey-Wooded. It is light in colour, contains little organic material, and is relatively infertile. The soil is easily worked.

The townsite has an elevation of approximately 2800 feet above mean sea level, and it lies in a flat, broad valley with little relief. The townsite is very flat, with local relief not exceeding 5 feet. It is well drained, with a gentle slope to the North Saskatchewan River to the South-west of the site.

## Social Factors

The above physical factors have conditioned the social use of the region. Prior to 1900, the area was a sparsely occupied land which supported fur trappers and a trading post at Rocky Mountain House. In the years 1907 - 1908, the region attracted many timber companies. In 1911, an English Syndicate proposed to build a power dam on the North Saskatchewan River approximately 6 miles south of the townsite. Due to World War I, the plan was abandoned and the timber industry retained dominance in the economy until 1945. At that time, the cleared lands became used for mixed agriculture which became predominant in the local economy. The population of the region had been declining since the late 1930's, and the trend continued until 1949.

Drayton Valley, in 1953, had been the service centre for the region because it lay at the intersection of two gravel roads which were important roads of the region.

The character of the hamlet has been described in the former section called "Company Development Context". With the impending oil development "boom" in the region, the Minister decided that one existing urban centre should be developed to provide a high level of urban government and services at a cost lower than the development of several small urban centres. The result of rapid regional development concentrated in one centre was the rapid growth of that centre, Drayton Valley, at a rate which confined research for its planning to the bare minimum. As the first publicly planned new town in Alberta, Drayton Valley was the prototype for the New Towns Act of 1956, and the later new towns to be developed under that act. As a consequence, many problems had to be

solved on the moment, with little real basis for the decision.<sup>8</sup>

Dwelling units in Drayton Valley were almost all single family homes and trailers. The duplexes and few rowhousing units have been added only recently. The General Plan for the period 1966 - 1986 calls for the percentages of single family units, duplexes and multiples to be respectively: 89.2, 5.9, and 4.9.<sup>9</sup>

The reason was a social one, the inhabitants of the province did not like multiple units, largely because the few units that had been built in the province had not been "commendable".<sup>10</sup>

### Economics

Provincial economic assistance had to be granted for townsite utility development because the municipality was unincorporated. This assistance was unlimited according to the Drayton Valley Townsite Act of 1954. Later, the town changed to the New Town Status which limited the provincial assistance for capital expenditures to one million dollars.

Housing assistance was meagre.<sup>11</sup> At that time, the Central Mortgage and Housing Corporation would grant loans on a fixed percentage of the value of the house. Further, private mortgage lenders were very reluctant to provide assistance. The single family homes thus were constructed largely according to the minimum regulations of the National Building Code so as to qualify for assistance at the least cost from C.M.H.C.

To ensure housing accomodation for their personnel, the oil companies provided homes and living subsidies. Housing provision was considered by the companies as a "necessary nuisance",<sup>12</sup> but the oil

companies rented the homes and subsidized their employees so that the cost of living would be equal to that of Edmonton.

To keep the costs of development of the townsite to a minimum, the townsite was developed in stages so that the services would be fully utilized as they were installed. As can be seen from Map 13, the town is small, compact and highly developed. The town is considering expansion, and the areas of development lie adjacent to the developed areas of the town as can be seen from the same map.

### Building Technology

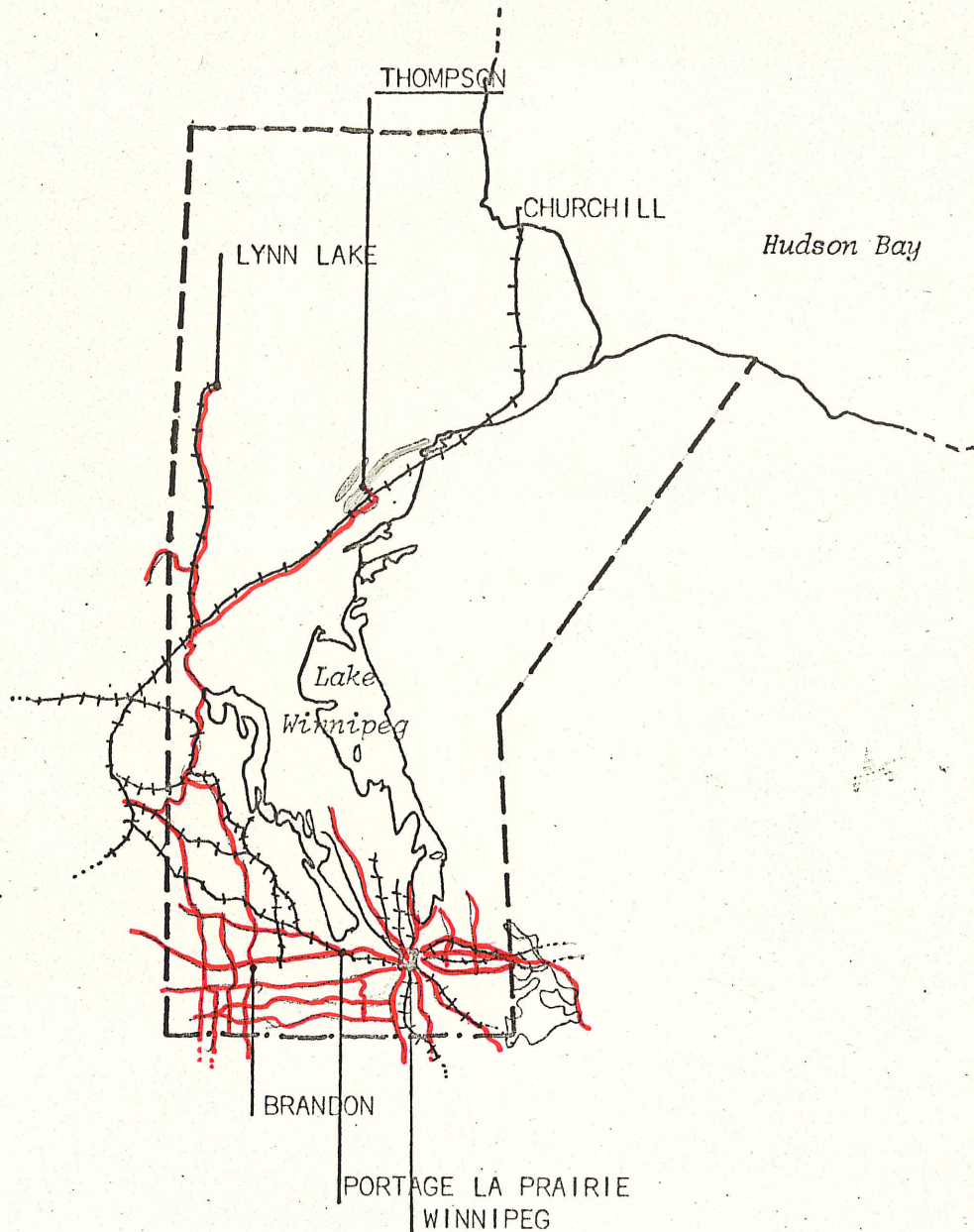
The residential, commercial and industrial buildings of the town employed conventional building materials and techniques. Similarly, the utilities have been conventional in materials and methods of installation. The water and sewer systems are laid below grade on the street right of way. The electrical services and telephone lines are supported above grade by telephone poles also on the street rights-of-way.

## FOOTNOTES

- 1 Interdepartmental correspondence, Town and Rural Planning Branch.
- 2 I. M. Robinson, op. cit., p. 33.
- 3 Legislature of Alberta, "Drayton Valley Townsite Act", assented to April 8, 1954, by the Legislature of the Province of Alberta.
- 4 Ibid.
- 5 MacKale, Holloway and Associates, General Plan Town of Drayton Valley, (Edmonton: MacKale, Holloway and Associates, 1967), p. 11.
- 6 Ibid., p. 11.
- 7 I. M. Robinson, op. cit., p. 30.
- 8 Louis Slipec, Planner with the Town and Rural Planning Branch, and who worked on Drayton Valley, in conversation on February 11, 1968.
- 9 MacKale, Holloway and Associates, op. cit., p. 38.
- 10 Louis Slipec, in discussion of February 11, 1968.
- 11 Louis Slipec, in discussion of February 11, 1968.
- 12 Louis Slipec, as above.



## REGIONAL CONTEXT OF THOMPSON, MANITOBA



## LEGEND

--- PROVINCIAL BOUNDARY

- . - NATIONAL BOUNDARY

MAJOR WATER BODIES

RESOURCE BODIES

RAILROADS

MAJOR ROADS

MAJOR TOWNS

LARGE URBAN CENTRES

1:20,000,000  
(after Atlas of Canada)

MAP 6

57  
Burndtwood River

GENERALIZED LAND USE MAP OF

THOMPSON

LEGEND:

- RESIDENTIAL AREA  
COMMERCIAL AREA  
INDUSTRIAL AREA  
OPEN SPACE (PARK,  
SCHOOL, CHURCH USE).  
S SCHOOL SITE  
MAJOR ROAD SYSTEM  
MINOR ROAD SYSTEM  
1" = 1000'

MAP 7

## THOMPSON, MANITOBA

Company Development Context

The International Nickel Company was the largest nickel producing company in Canada. Like most mining companies, I.N.C.O. had continued vigorous exploration programs while mining the large nickel deposits of the Sudbury Basin. The explorations covered Ontario portions of the Canadian Shield, but the discovery of nickel-copper at Lynn Lake in Manitoba, in 1946, encouraged I.N.C.O. to examine the Canadian Shield portion of Manitoba in greater detail. The company commenced land exploration in 1946 in Manitoba, and mapped portions of the province in 1948, but the search proved fruitless for the first three years. In 1949, a prospector, Walter Johnson, discovered nickel in abundance near the Moak Lake area. Encouraged, the I.N.C.O. company allotted one million dollars in 1950 to conduct intensive exploration, drilling and aerial photography in the following years. (For Thompson's regional context see Map 6)

By 1955, the Manitoba portion of the Canadian Shield had been fully aerially photographed by the company. At that time, more sensitive, aerially-borne geological instruments were available, and with these instruments twenty potential sites for detailed examination were pinpointed. In 1955, an exploration shaft was sunk at Moak Lake, about 30 miles north of the present Thompson townsite. The ore body, although relatively small, was extraordinarily rich in nickel content.

In 1956, the much larger, but slightly less rich ore body of the present Thompson operations was located. This body was very rich by nickel mining standards, having 2 - 3 percent nickel content, in a



volume that could be mined to produce 75 million pounds of nickel per year for 25 years plus.<sup>1</sup>

On December 5, 1956, the Honourable Duff Roblin, Premier of the Province, and Mr. H. J. Wingate, President of I.N.C.O., signed an agreement concerning the responsibilities of both parties over a 24 year period in the "development of the newly discovered ore bodies". The agreement is largely patterned after the Provincial agreement with the developers of Lynn Lake. The project and the townsite were named after Dr. John F. Thompson, honorary chairman of the Board at I.N.C.O.

There had been precedents for the townsite development by the company, because it had sponsored the company town of Lively, Ontario, in 1950. Neither the company, nor the Province wished for the development of a company town; thus the agreement specified that although the company's responsibility lay in designing and providing services to the settlement, the townsite must become fully incorporated and autonomous as rapidly as possible. Within a month after the agreement was signed, the construction of mining and transportation facilities was undertaken. In January 1957, the sled trains carrying men, materials and equipment started 'round-the-clock shuttle service to the site to take advantage of the frozen ground which would be impassable in the other seasons of the year. In addition, construction of the 31 mile railroad spur line connecting the industrial plant to the Churchill line was started, a temporary road from Provincial Trunk Highway #10 was undertaken, and the Province started the development of the Kelsey River Project which would supply the plant and the townsite with power.

### Relevant Legislation

Because the Province lacked legislation for such new towns, the Province exerted control over the town's development through the use of the agreement which defined the rights, duties and obligations of the Company and the Province. The relevant sections concerning the townsite development provided for the following:<sup>2</sup>

- (1) The establishment of Local Government District of Mystery Lake, which would affect some 975 square miles of relatively virgin lands lying some 400 miles north of Winnipeg.
- (2) The establishment of the townsite of Thompson which would be approximately 3,000 acres in area and lying some 2 miles distant from the plant site of The International Nickel Company of Canada Limited.
- (3) A sanitary area under the Public Health Act to be established in the townsite of Thompson, thus assuring adequate sanitation control in the first instance.
- (4) A plan for the development of the townsite of Thompson to be prepared by the Company at its own expense but in accordance with the Town Planning Act of the Province, the design to have regard to the contemplated population of approximately 8,000 persons to support the Mining Company's operations.
- (5) Lands within the townsite to be transferred to the Local Government District of Mystery Lake, the Company to be granted the Hospital site only.
- (6) All lands within the Local Government District of Mystery Lake to be reserved for use of the Local Government District except those to be conveyed to the company with respect to its mining and refining operations.
- (7) The Company, within a reasonable length of time and at its own expense, and in order to meet the requirements of a contemplated population of approximately 8,000 to:
  - construct townsite roads, lanes, and sidewalks to be vested in the Crown with no possession in the District:
  - construct an assembly hall and townsite offices and construct and equip necessary fire stations, all to be the property of the District:
  - construct and equip school buildings meeting the requirements of the Department of Education and provide

school sites as selected by the resident administrator, all to become the property of the School District, free of charge:

- install sewer and water mains in conformity with the regulations of the Public Health Act, and necessary pumping stations, treatment plants and so on, all to be vested in the District: and
  - construct and equip a private hospital, the hospital and site to remain the property of, and be operated by, the Company.
- (8) Electric power, its distribution system and street lighting to be supplied to the townsite.
- (9) The Province to provide telephone communications.
- (10) A resident administrator (acceptable to the Company) to be appointed by the Province, said resident administrator to administer sewer and water services, sell lands, be eligible for appointment to the position of official trustee of the School District and have full control over land use, building construction and so on.
- (11) All employees' families to reside in the townsite of Thompson, save certain mine employees who may require to reside at Moak Lake.
- (12) The resident administrator to sell lots to Company Personnel, Railway, Federal, Provincial, and similar Government employees and persons whom the resident administrator determines have just reason to reside in Thompson.
- (13) The District to provide all sites for Schools, parks, utilities, services and so on.
- (14) The purchase money received from the sale of lands to be used for capital expenditures in the townsite over and above the commitments of the Company."

These basic provisions and their many implications represented the legislative framework within which the planning of the townsite had to be done. The basic intent of the Agreement was the development of a town in which all parties concerned could be proud. In addition, the residential lots were to be sold to the Company's employees at the lowest possible cost as an incentive for the employees to become permanent residents.

### Goals of Development and Planning Process

The central goal of development of Thompson was the planning and building of, "....a community that the Province of Manitoba, the Company and its employees will be proud of and enjoy living in, at the same time realizing the physical characteristics of the area, the difficulties in engineering the required services and building foundations, and certainly the fact that a project of this scope must work within a budget."<sup>3</sup>

Prime concern of the Company, the Province and the planners of the townsite from the Metropolitan Planning Division was the avoidance of a "company town". I.N.C.O. wished to provide this incentive for its employees to purchase lots and build homes at the lowest possible cost. Further, the company wished to minimize employee dependance by encouraging employee ownership of their own homes, and encouraging municipal self government. Lastly, the Company realized from its experiences with Lively Ontario that it did not wish to be concerned with the day-to-day operation of the town.

The Company retained the planning services of the Metropolitan Planning Service, which was responsible for providing planning services to Manitoba communities. Hired in June of 1957, the Metropolitan Planning Commission was assisted by Underwood, MacLellan and Associates, Engineers and Town Planners, and the Materials Testing Laboratories of the National Research Council. With all concerned bodies, the Metropolitan Planning Commission conducted liaison and it was charged with the overall coordination of all phases of the townsite development program including the research of the consultants, the plans of subdivision, land use

control and the legislation required, and the staging and expansion of the townsite as deemed required.

The planning and site research program and design phase of the planning operation lasted from June 1957 to January 1958. On the basis of preliminary research, the design phase was commenced in September 1957. The townsite concept was completed to the satisfaction of all parties in October and November of 1957, in preparation for the townsite clearing, grubbing and burning in the Winter of early 1958.

The plan was based on workforce projections provided by the Company. Approximately 2,350 employees would be required for the mining and processing operations of I.N.C.O., and of this number, 35% were expected to be single and the remainder married. From an analysis of other mining communities' population characteristics, it was calculated that the ultimate population of the townsite would be 12,000 persons,, and this estimate was worked out in detail as to sex and age distributions. From these calculations, the facilities required and their acreages were determined and allocated on the townsite. From the ultimate population requirements, the stages of development were then programmed.

This process of planning operated within severe constraints which were as follows:<sup>4</sup>

- (1) The site location was fixed by the Agreement and therefore the physical factors with respect to vegetation, topsoil, sub-soil, permafrost and landslide conditions could not be avoided and had to be planned and engineered for.
- (2) The existing single-lane gravel truck road, which ran through the townsite area, was to stay operable throughout the project until a new route could be established, and allow gravel trucks to pass on their way between the plant and gravel pit every three minutes, twenty-four hours a day, seven days per week.



- (3) The main highway approach to the townsite was to be considered as part of a yet to be constructed Provincial Trunk Highway between The Pas and Churchill.
- (4) No rail facilities were to be brought into the townsite. A heavy industrial area, requiring rail facilities, was to be established at the railhead.
- (5) Two hundred serviced dwelling units were required for occupancy within twelve months.
- (6) The lack of monies available for apartment construction at Thompson and under the National Housing Act prohibited the possibility of constructing multiple-family dwellings during the initial stages of development.
- (7) The initial design was to accomodate approximately 8,000 persons, but was to be capable of relatively economic and physical expansion of the community should it grow to 12,000.
- (8) The townsite was not to be a "company town" for the provisions of the Agreement clearly established the climate for the individual and private development of residential, commercial and industrial sites.
- (9) The hospital site was to be readily accessible to the plant.
- (10) The townsite was to be capable of development in progressive stages, each stage to be more or less complete within itself.
- (11) Ample public park and recreation areas were to be provided.
- (12) The preservation of as many wooded areas as possible was to be attempted in the design and during construction.
- (13) The design of facilities was to keep in mind the fact that employees would be on shift work.
- (14) Shack development and temporary structures were to be avoided.
- (15) The opportunity was to be created for a happy community life and individual participation in development by the future property owners and residents.

Within the constraints of the above, and aware of the population demands for facilities and space, the planners included many features

in the town plan which are as follows:<sup>5</sup>

- (1) Major through traffic routes to by-pass townsite development rather than dissect it.
- (2) Major traffic collector routes to be limited access in design, with the greater part of the frontage to take the form of buffer zones left in a natural state.
- (3) Pedestrian circulation between dwelling areas, public school and park sites, the shopping centre and the civic centre to be segregated from vehicular traffic on major and minor collector routes by the development of a system of interior walks and parkways which were to be adequately lighted and maintained.
- (4) The central commercial area and civic centre to be in relatively close proximity to all dwelling units and not more than 1/2 to 3/4 mile distant, if possible.
- (5) The internal street pattern to be made free of through routes by the use of bay, crescent, cul-de-sac and super block layouts.
- (6) Dwelling areas to be so defined as to produce an ultimate population neither too little nor too great to be capable of supporting an elementary school of 12 - 16 classrooms, such areas to be easily recognizable neighbourhoods.
- (7) The multiple-family and hostel areas to be closely related to the central business area.
- (8) The production of a balance of single-family and multiple-family accommodation in each neighbourhood, each so designed and oriented as to avoid any encroachment of one use upon another, thus allowing harmony of design and function to prevail.
- (9) Heavy commercial and industrial areas to be served by the major thoroughfare systems, with no opportunity for conflict with the central commercial area or a residential neighbourhood to be remotely possible.
- (10) The hospital, high school and major recreation areas to be readily accessible to major thoroughfare and collector-route traffic.
- (11) The central commercial and civic centre area to develop as a focal point of community interest and activity.

- (12) Residential neighbourhood areas to be interrelated and in relatively equal proximity to the high school and major recreation areas.
- (13) The central commercial and civic centre area to be horizontal in design, with one-storey construction preferred. Off-street parking areas, financed by both the District and business community to provide at least two square feet of parking for each square foot of retail space. This ratio recognized the influence of shift work on shopping habits normal peak hour demands for parking.
- (14) Rear Service lanes to be avoided, except in the central commercial district.
- (15) River banks to be left in a natural state."

The townsite "concept plan" was developed in final detail, including site elevations, soil tests, basic survey work, utility and services' design, and the final subdivision designs. The planning of the townsite had taken approximately one year to complete, before the implementation of the plan was started.

With the appointment of the resident administrator, Mr. Carl Nesbitt, the Local Government District of Mystery Lake could now approve and register subdivision plans, adopt land use controls, issue building permits, and adopt municipal bylaws concerning the orderly development of the townsite.

The planning operation did not terminate with the summer of 1958. The planning team was retained to assist the local administrator and the company in the creation of bylaws and legal controls to ensure the implementation of the plan as "planned". Further, unforeseen problems demanded replanning, especially the traffic routes around the central commercial area.<sup>6</sup>

The plan is supported by subtle and legal means. Mr. D. G. Henderson is retained as a planning consultant to the town, his experience

with the initial planning of the town encourages continuity in the development and extension of the original plan. Further, Mr. A. J. Eaton, another member of the original planning staff, is employed by the Department of Municipal Affairs. In his capacity, he exercises discretion over the amendments of Official Plans for the Province's municipalities, including Thompson.

Throughout the planning of Thompson, there has been a constant "feedback" of information and reaction to the planners to their proposals. In this manner, the citizen has exerted his influence indirectly in the planning of the town. Consequently, the planning process has matured with the development of the town. (for the details of the town plan, see Maps 7 and 14)

### Physical Factors

The regional context of Thompson is shown on Map 6. It is located in the Canadian Shield Physiographic Region of Northern Manitoba, characterized by rugged topography, many lakes, and sub-arctic vegetation.

Geologically, the Thompson ore bodies lie in a fault belt separating the "Superior" and "Churchill" rock classifications. The belt is 60 miles in length, and is composed largely of intrusive peridotites and nickel ores. It is believed to be one of the largest nickel ore bodies in the World.<sup>7</sup>

The climate can be characterized as a Northern Interior which is very warm in summer and bitterly cold in winter. The mean January and July temperatures are -13°F and 60°F respectively. The extreme temperatures recorded for those months are -45°F and 100°F. The mean annual

temperature is 37°F. The mean annual precipitation is 32", and the mean annual accumulated snowfall is 20". The sun shines an average of 1800 hours per year.

The climate has weathered the glacial materials overtop of the bedrock into muskeg, and permafrost clays. The permafrost takes the form of ice lenses scattered randomly throughout the soil profile and the townsite. Because the ice melts when exposed to heat from building foundations, excavations, or the heat of the sun when the tree and moss cover is removed, great differences in volume occur.

The vegetation of the townsite, as determined by the above factors, consists of stunted black spruce, and poplar which grow and form dense thickets.

Further, these thickets are rooted not in the clay subsoils of the site, but the thick moss cover which ranges in depth from 6" to 24". Thus, they are very subject to "wind throw" and have to be cleared entirely off the sites near houses and roads.

### Social Factors

The region of Thompson was primarily a preserve of Indian fur trappers and trading posts until the Thompson project. In the 1930's the Churchill railroad line was installed, but the trains ran through the region with a few stops only to distribute goods to the isolated settlements.

To reduce the feeling of isolation within the town, and to facilitate business and communications, the town was linked into the Provincial Trunk Highway System with Highway # 391 connecting the

townsite to Highway #10. The railroad line to Churchill was linked to the town with a spur line to the eastern portion of the townsite. An airport, built to the north of the town, provides a flight per day to Winnipeg via Transair, and charter aircraft operate from the airport also.

These links with the urbanized portions of southern Canada are indicative of the concern for the attraction and well-being of the town inhabitants who were to be recruited from the urbanized portions of southern Canada. These inhabitants were assumed to be similar to those found in other mining communities such as Manitouwadge, Elliot Lake and some garden suburbs of Chicago.<sup>8</sup> On this premise, the calculations of total population and their needs were determined from the workforce estimates provided by the Company.

One of the prime social determinants proved to be the union representing the workers of the Company. The union specified, for example, that single family homes must be built for the workers because this form of housing was preferred. Since the company desired workers, it was compelled to accept the union request and for this reason, most of the dwelling units built are single family homes.<sup>9</sup>

The union also specified that the town was not to be company dominated. For this reason, in addition to the desires of the Company to avoid the operation of the townsite and the Province's wishes to avoid a company town development, the Agreement specified that the Local Government District of Mystery Lake would assume responsibility of the townsite as shortly as possible.

To further avoid the stigma of the "company town", the Company arranged for Central Mortgage and Housing Corporation to assist in the financing of single family housing. The Company was compelled to provide

funds equivalent to the mortgage values applied for, thus the C.M.H.C. organization basically acted as the mortgage lenders on behalf of the company with the funds derived from the company.

To reduce traffic-pedestrian conflicts, and to appear as a model town, the townsite was developed into large superblocks. Each superblock is a neighbourhood, and is defined from other neighbourhoods by high capacity arterial streets. Within these superblocks are smaller feeder streets, and these are in turn supplied with traffic from local streets of loops, cul-de-sacs, bays and crescents. In the interior of the block is a pedestrian walkway and open space system which is linked to the other superblock pedestrian and open space systems.

The residential and commercial land uses are segregated from the light industrial, heavy industrial, warehousing and service industry functions. They are located in the northeast portion of the townsite, adjacent to the railroad tracks, and across P.T.H. # 391 from the Commercial centre. This land use allotment again reflects the model town aspiration.

All governmental offices are located in the largest commercial center and town center. The clustering has been encouraged between the complementary uses and one-stop convenience for the shopper.

The hospital is not centrally located with respect to the town, but centred between the mine, refinery and town, reflecting the dangers of the mining and refining operations.

### Economics

The planners realized the desire of I.N.C.O. to develop a

townsite, "...within a budget". The townsite was created as a compact cluster on a single site, and it was logically staged so that each development could be added as required economically. Stage one also was to be composed of many multiple dwelling units clustered about the commercial centre, with the single family housing further out, so the high initial costs of services would be borne by many dwelling units instead of a few. Unfortunately, no monies were available for multiple units, from C.M.H.C., and only single family homes and the commercial center were built. The multiples were built later in stages two and three.

The municipality, by the provisions of the Agreement, received most of its municipal services and buildings "gratis" from the company in 1958-1959. The municipal taxes thus are very low and represent a subsidy to the employee from the employer.

### Building Technology

Thompson's residential dwelling units are largely conventional wood frame houses and concrete multiple units, above the foundation. Most of the foundations are of special construction to overcome the problems posed by the volume changes in the soil due to permafrost melting.

Three foundation systems are used.<sup>8</sup> Type 1 consists of an 18" - 24" layer of gravel on which four concrete beams around the perimeter of the house are laid. The beams are joined at the ends, making a rigid frame on which the basementless house sits. Type 2 consists of piles supporting a frame house alone or the house and its foundation. The piles are sunk into the ground on a 2' module. If the



house has no foundation, the house sits over an 18" insulating air space which is sealed from the outside air through the use of mock foundations insulated with styrofoam. The pile system is used not only for homes, but also the commercial stores and the industries.

Type 3 foundations, the "pad and pier", is used largely for multiple dwelling units. It consists of the gravel layer laid in the sub-soil and a concrete pad laid on top of it. On this pad sit adjustable lifting jacks supporting the concrete or wood frame building above them. Care is taken to insulate the pad of concrete and gravel from temperature differentials by the use of styrofoam insulation. Nevertheless, permafrost heaving does warp the pad, and the jacks are adjusted to reduce warping and heaving of the building.

The commercial stores use a combination of pile and pad and pier system, which uses hydraulic jacks instead of the manually adjusted jacks of the multiple dwelling unit type. The hydraulic system is self regulating so that stresses on the structure are kept to a minimum. This system had to be devised because Thompson was the first city in Canada to have a fully enclosed Mall, and the size of structure was very susceptible to permafrost heaving and damage. Above the foundation, the commercial mall structure is conventional with respect to materials and methods of construction.

The utility systems required special engineering.<sup>9</sup> Because of the permafrost in the soil, it was expected that the water and sewer lines connecting the house and the trunk lines under the road would freeze. To overcome this problem, the pipes were wrapped in heating wires and insulation. The lines could be heated by switching an electrical current from inside the house when desired.

The main water supply system was designed to prevent freezing due to the permafrost. The water supply system was laid out in loops, which is reflected in the house and street pattern, so that the water supply could be recirculated. Further, the water supply was heated to 50°F at the purification and pumping plant. The system had many valves controlled remotely from the pumping plant so that the water could be constantly heated and recirculated and could be channeled where desired in case of blockage or freezing.

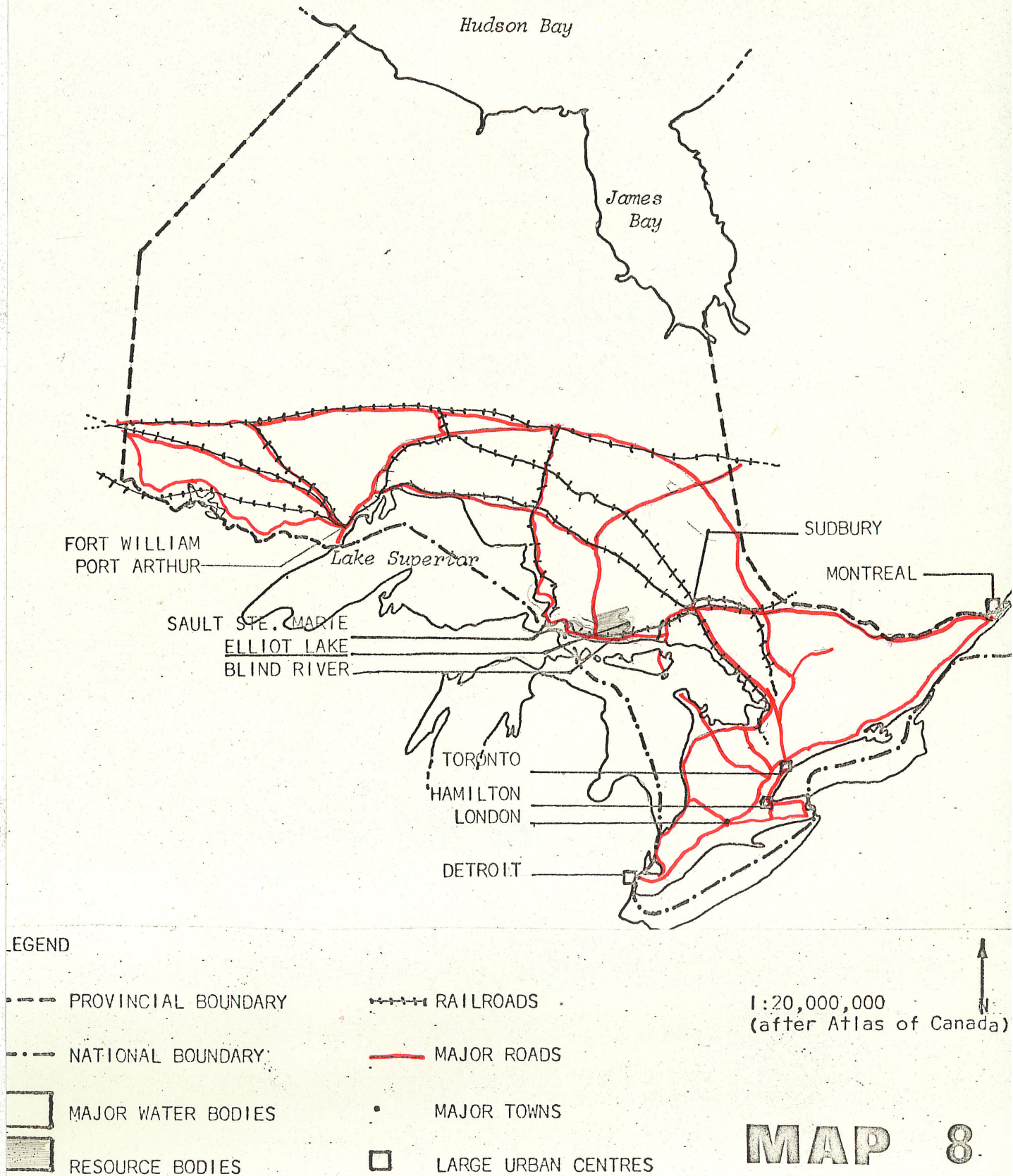
While the recirculation and heating feature was employed in the first years of the townsite, this feature has not been used in recent years because it is believed that the permafrost has been melted.<sup>10</sup>

The location of the utilities and services is conventional. The hydro and telephone lines are strung from poles along rear lot lines of the house lots, and only the electrical wiring for the street lamps is buried in the street right-of-way. The buried water and sewer pipes are located in the street rights-of-way.

## FOOTNOTES

- 1 Dave Chaddock, author of a Master's Thesis on Thompson, Manitoba, in discussion on January 16, 1968.
- 2 D. G. Henderson, "Community Planning of the Townsite of Thompson", The Canadian Mining and Metallurgical Bulletin, LXVII, (November 1964), p. 269.
- 3 Ibid., p. 269.
- 4 Ibid., p. 271.
- 5 Ibid., p. 272.
- 6 Dave Chaddock, in discussion of January 16, 1968.
- 7 H. D. B. Wilson and W. C. Brisbane, "Regional Structure of the Thompson-Moak Lake Nickel Belt", The Canadian Mining and Metallurgical Bulletin, Transactions, LXIV, (1961), p. 815.
- 8 Dave Chaddock, Discussion of January 16, 1968.
- 9 Dave Chaddock, Discussion of March 6, 1968.
- 10 Dave Chaddock, Discussion of January 16, 1968.

## REGIONAL CONTEXT OF ELLIOT LAKE, ONTARIO



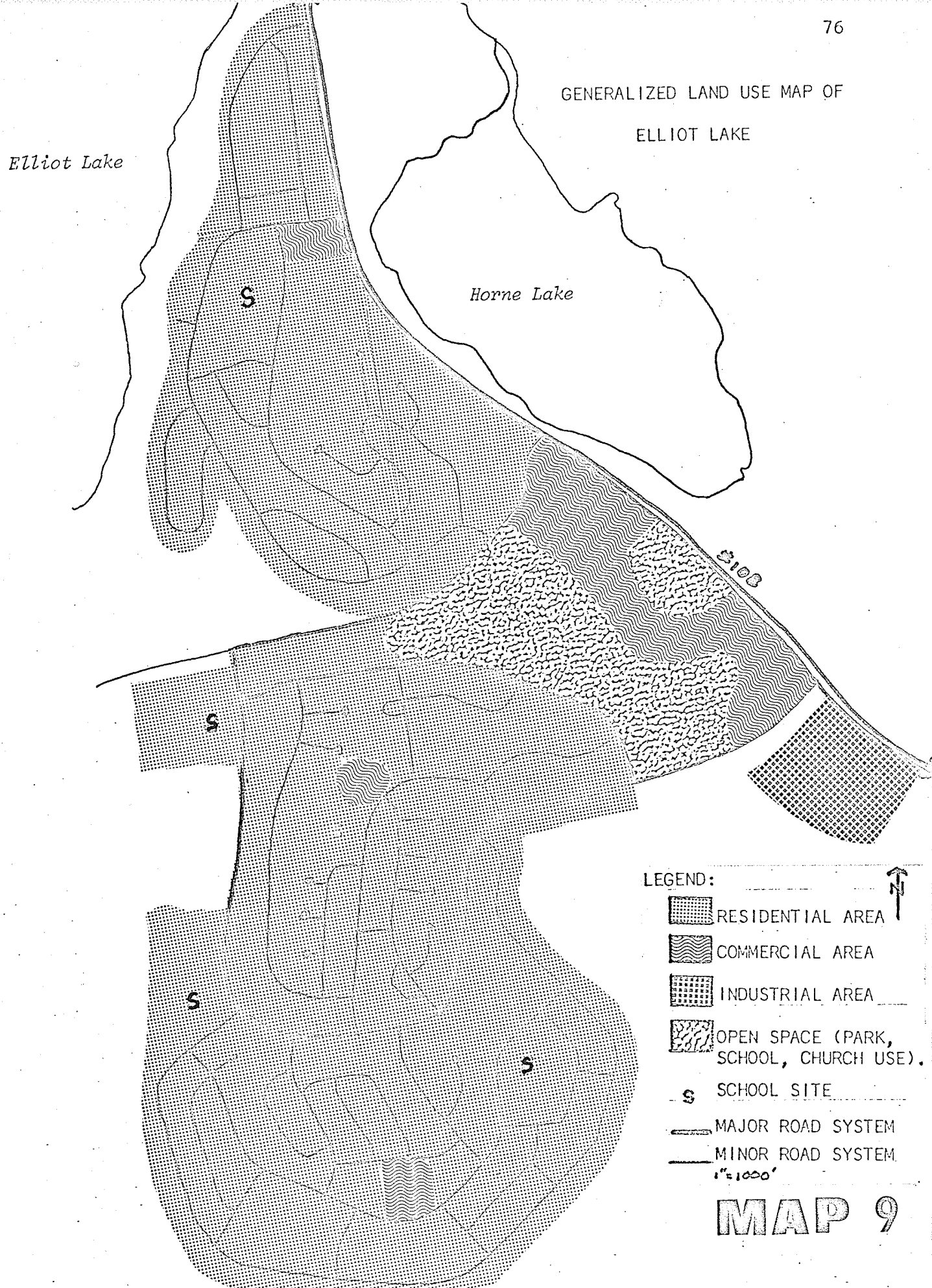


GENERALIZED LAND USE MAP OF  
ELLIOT LAKE

*Elliot Lake*

*Horne Lake*

LEGEND:

- 
- RESIDENTIAL AREA
- COMMERCIAL AREA
- INDUSTRIAL AREA
- OPEN SPACE (PARK, SCHOOL, CHURCH USE).
- S SCHOOL SITE
- MAJOR ROAD SYSTEM
- MINOR ROAD SYSTEM
- 1"=1000'

**MAP 9**

## ELLIOT LAKE, ONTARIO

Company Development Context

Elliot Lake was developed as a mining centre to house and service the workers of eight uranium ore extracting companies. The mining of minerals had fostered many mining towns in the Canadian Shield region of Ontario, but Elliot Lake was to become the most recent, publically planned new town. It relied on precedents such as Manitouwadge Ontario, planned in 1953, and borrowed from such older "new towns" as Kapuskasing Ontario, and the privately planned new towns as Marathon and Terrace Bay in Ontario, and Kitimat in British Columbia.

The development was based on the demand for Uranium ore. While pitchblende, a uranium ore, had been discovered and identified as early as 1847, the discovery aroused little interest until the period immediately after World War II. At that time, the ore acquired "glamour" as the power source of the future. (as J. Hirshorne, promoter of mining interests in Elliot Lake remarked, "its [uranium] like sex. Its got Glamour!"<sup>2</sup>) The widespread search for uranium in Canada and United States started in that period. In 1948, and onwards, attempts were made to discover the location of the early occurrence of pitchblende. The bulk of the exploration in Canada centred on the Sault Ste. Marie to Sudbury area where the early find was reputed to have originated. Franc Joubin, a Canadian prospector, was credited with its location in 1952.

While most Geologists were looking for surface deposits, Joubin determined that the ore was buried deeply, and he located the "z-shaped" boundary with which the ore was associated. Unable to complete the claiming and staking job alone, he was assisted by New York promotor,

J. Hirshhorn, who provided funds for a large team of geologists to work under Joubin. Done in great secrecy, the Joubin team claimed and staked in the months of May, June and July of 1953, and registered 1400 claims on July 11, 1953. The secret leaked out, and the Elliot Lake region became the focus of attention for prospectors the world over. Later it was determined that the deposits contained 94 percent of Canada's known uranium reserves. Shortly thereafter, the Federal Government announced that the crown corporation, Eldorado Mining and Refining Corporation, had received orders to deliver processed uranium worth in excess of one billion dollars, in the five year period, 1957 - 1962.

Following the announcement, the mining companies and the Province of Ontario established that one townsite was to be built to house and service the workers of the mining companies. There was great urgency about the mining and townsite development, especially since the contracts had to be met, beginning in 1957, and the community of an estimated population of 30,000 had to be planned and built in approximately four years.

#### Relevant Legislation

In Ontario, no special comprehensive legislation had been adopted for new town planning, control and development, but rather the Municipal Act had been amended to incorporate "Improvement Districts".<sup>4</sup>

The amendment had been accepted on March 24, 1954 after the experience of the Province in the planning, control and development of Manitouwadge, Ontario. The amendment preceded the commencement of the Elliot Lake planning project. The amendment basically defined the

organization, administration and financing of the new town and defined the roles of the Company or Companies involved and the Province.

A prime provision in the Improvement District amendment was the assumption of surface rights to mining claims by the Province through an Order-in-Council. Further, the claim to surface rights by the Province could be extended from the mining claim site so that the Province could exercise control over any lands which could conceivably be used for accomodating the labour forces of the industrial activities. In this manner, the Province hoped to exercise control over town developments, and prevent the shack towns which tend to be established just outside municipal boundaries. In all, 396 square miles came under the jurisdiction of the Improvement District of Elliot Lake, due to the great areal distribution of proved ore deposits which could be mined.

With the amendment to the Municipal Act, and the important provision of surface rights, new political machinery was formalized which had been developed during the planning of Manitouwadge. Policy for the Improvement Districts was determined by a "Cabinet Committee on Townsites" composed of the Cabinet ministers of the Departments of Mines, Lands and Forests, Municipal Affairs, and Planning and Development.

Under this committee, was an "Administrative Subcommittee on Townsites" which assumed the responsibility for the administration and research of the townsites. It was composed of four senior civil servants representing the Departments of the "Cabinet Committee on Townsites".

Local Administration of the Improvement District was undertaken by a three member "Board of Trustees" who were appointed by the Lieutenant Governor in Council. The Board members were authorized to be members of all local boards, except the Board of Health, the Separate



School Board and, under special circumstances, the District High School Board. This Board of Trustees appointed a Secretary-Treasurer who handled the duties of municipal clerk, treasurer, assessor, and collector of taxes in addition to his duties as Secretary-Treasurer of the Board. An experienced man for the job was required.

The members of the Board were chosen to represent major interests in the community: a representative of the company's management, a resident employee of the company, and a non-company resident.

The Board had all the rights, duties and obligations of the mayor and council of a fully incorporated municipality: in addition, the Board could acquire and hold land within the municipality for development purposes; prepare such land through surveying, clearing, grading and subdivision for development; undertake any schemes or developments which may be undertaken by a municipality within the legislation of any Act; sell, lease and dispose such land; and borrow money upon debentures for any of the above purposes.

Financially, the Province assisted the organization and operation of the townsite prior to incorporation. Further, the Province assisted the town by providing consultant services in surveying, planning, and law. With incorporation, the Crown turned over the land to the Municipality for a nominal fee. The sale of such lands and the taxation of the mining operations, buildings and lands was expected to provide for the municipal costs. Another reason for the rapid incorporation of the townsite into an Improvement District was the availability of financial assistance on the open market instead of reliance on the Provincial treasury.

## Planning Goals and Planning Process.

Planning for Elliot Lake commenced in the autumn of 1954. Because of the then recent Improvement District amendment, F. Joubin and J. Hirshhorn, the mining promoters intended that the planning of Elliot Lake be undertaken by Philip Johnson and Associates, a New York Architectural firm, in association with John B. Parkin and Associates, Architects and Engineers of Toronto.<sup>6</sup> Other mining companies of the area wished to provide "company towns" for their operations.

Because of the control of the land by the Province, the Province assigned the Community Planning Branch of the Ontario Department of Municipal Affairs to the planning of the townsite. This Branch, in association and liaison with the concerned departments of the Province commenced the planning and organization of the townsite. The goals of development were as follows:<sup>7</sup>

*"At the larger, regional scale the basic objectives were:*

- (1) To provide community facilities which would be so located and designed to facilitate the bringing into being, and to permit the effective operation of, the new industrial activity.
- (2) To provide the new community facilities in such a manner as to maximize the use of existing man-made resources (transportation, electric power, facilities, etc.)
- (3) To provide the new community facilities in such a position as to permit their utilization for as many development purposes as possible over the long range future -- a multiple industrial economic based community rather than one characterized by a single industrial activity.
- (4) To provide the new community facilities in such a manner as to supplement, rather than detract from existing population concentrations in the region.
- (5) To provide the new community facilities in such a manner as not to endanger natural resources -- forest fires, pollution, occupation of mining lands by non-mining uses.

*"At the more restricted, community level the main objectives were:*

- (1) To provide for high standards of passive and active recreational open space -- retain areas not suitable for urban development in natural state--hold lake frontages to public use.
- (2) Through location and design to secure a community which could be economically (a relative term only in the Canadian Shield) and rapidly constructed.
- (3) Through various methods of financing to establish a situation where persons desirous of building could secure serviced property at reasonable and realistic costs.
- (4) To provide for the construction of the full range of residential accommodation -- single family homes through to apartment buildings -- to provide the diversification of housing types appropriate to the anticipated diversified housing need.
- (5) To overcome, through various administrative techniques, the disadvantages of "company towns", or communities having limited economic bases.
- (6) To facilitate the introduction of private business into the townsite so as to:
  - give free (rather than monopolistic) access to the developing market,
  - permit a choice in retail and service outlet selection by the buyer.
 and to locate these business activities at points where the market might be conveniently served.
- (7) To provide a residential environment which would be:
  - safe in terms of pedestrian and vehicular movements,
  - sustain residential values,
  - convenient with respect to community facilities of recreation, education and shopping,
  - pleasant in its appearance,
  - quiet through the segregation of non-residential uses.

The planning process involved many persons and organizations.

The overall policies were determined by the Cabinet Committee on Townsites.

Further,

"A simple indicator ... of the numbers involved in the formulation of the principles upon which the townsite

was based was a meeting held in 1954 in the Pronto Dining Hall. Fifty or so very serious, and vocal, persons representing a wide range of interests and backgrounds -- both industry and government -- gathered together after a grueling trip into Quirke Lake to bring together their observations on the needs to be met, the different ways in which these needs could be met, the sources of capital, the relationships between government and industry, etc. In this broader meaning of the term "planned" I can honestly say that literally hundreds of people were involved -- sometimes as points of pressure which made others work faster; sometimes as surveyors of problems and sometimes ... as critics of others' proposals, and sometimes as the originators of ideas."<sup>8</sup>

The actual drafting of the plans, and the determination of the layout of the site and its land use allocation were done by the Community Planning Branch of the Department of Municipal Affairs.

The first, and very important step in the townsite planning process was the determination of the townsite. Criteria for the townsite selection were established, including site size, topography, surface geology, water supply and sewage disposal, location in relation to the prospective sources of employment, and location in relation to regional facilities and potentialities.<sup>9</sup> The survey area covered 50,000 acres, and the final site selected did not meet all the criteria selected.<sup>10</sup> The selected site was then examined in detail on land and by fresh aerial photos.

As a consequence, the townsite was developed as compactly as possible in neighbourhood clusters, separated by bedrock outcrops, precipitous slopes and low-lying peat and marsh areas. The result is a series of "...blotches of built-up area in a greenbelt rather than greenbelt interwoven into a built-up area as is more normal...".<sup>11</sup>

Within the neighbourhood, planning of the town was concerned with lot width, conventional road planning, housing types, set backs of

buildings, the allocation of required institutions as churches, schools, commercial areas, height control, and the preparation of conventional zoning bylaws and building regulations.

The planning process can be summed by Taylor's concluding remarks,<sup>12</sup> ... "Our intention here has been to design a community which is pleasant, safe and convenient and provide an environment which will satisfy the physical, aesthetic and intellectual needs of all its inhabitants -- only time will tell how successful our thinking has been." (for details of the town plan see Maps 9 and 15)

### Physical Factors

Elliot Lake can be placed in its regional context as shown in Map 8. The local region is part of the larger Canadian Shield Physiographic Region. It is the oldest rock of any in Canada, and is composed of rocks of volcanic origin.

The volcanic origin of the rocks has made the area rich in mineral such as nickel, zinc, copper, silver and gold.

Elliot Lake is centred on a "z-shaped" formation separating two of the oldest rock age groupings, with the bulk of uranium mines being located in the side of the younger Huronian-age rock. A thick mantle of glacially deposited overburden covers much of the bedrocks.

Climatically, Elliot Lake has mean January and July temperatures of 12°F and 60°F, with recorded extremes for those months of -42°F and 97°F, respectively. The annual precipitation averages 30 inches and the annual mean snowfall is 100 inches. Elliot Lake receives 1800 hours of sunshine annually. The climate is defined as a South Laurentian, with

severe but short winters and pleasant, warm and sunny summers.

The erratic disposition of the bedrock materials, in combination with the glacial materials which have been deposited erratically and shaped by the precipitation has produced a rugged landscape. These same factors have produced a thin, relatively infertile podzolic soil where there is adequate drainage, otherwise the topography consists of rock outcrops, peat, swamp, and muskeg.

The soil characteristics have shaped the vegetation which grows in the soil. The soils can be determined largely from the vegetation which grows on them; the podzols supporting stunted sub-alpine spruce, pine and tamarac species, and the other soil types supporting their characteristic shrubs and trees, stunted by the climate.

### Social Factors

Prior to 1820, the economy of the region depended upon the fur trade, and the Indians of the area gathered furs and traded the pelts for trinkets at the Blind River Hudson's Bay trading post.

After that date, Britain's timber requirements made the region grow in population as lumbermen harvested the timber crop and floated the logs down the many streams and rivers to Lake Huron and the sawing or packing operations at the river mouths. Many small towns were established at the mouths of rivers dependant upon supplies being carried by ship to them, so that they could be the service centres for the lumbering industries of the interior.

These towns grew slowly, until the Canadian Pacific Railroad laid trackage along the shoreline to take advantage of not only the low

gradients, but also the trade of the settlements found there. For the same reasons, Provincial Highway #17 was constructed parallel and close to the railroad trackage. Elliot Lake was linked to the region by Highway # 108. There were no rail roads or airport facilities installed. These towns and facilities as indicated in the Planning Goals, played a role in the determination of the townsite selection.

When the interest in uranium grew in the late 1940's, the region became the focus for intensive prospecting activities. Its accessibility, due to the railroad and highway, encouraged the exploration along the routes, hastening the development of the uranium ore production, and the town of Elliot Lake.

With the discovery of the ore, and the announcement of the contract with the United States, the region boomed and led to further discoveries. These later discoveries established that the uranium ores could be economically mined at an annual rate of 21,000 tons per year for a period of 20 - 30 years.<sup>13</sup> In addition, the deposits of rare earths, thorium and pyrites, could be extracted from the uranium production as valuable byproducts, to increase the value of annual production of uranium which was 400 million dollars.<sup>14</sup>

### Economics

The Province, in the early stages of townsite development, realized that the unincorporated improvement district could not secure funds for basic surveying, site research and planning. The Province made loans to the improvement district which were to be repaid from its annual taxes over an unspecified period of time.

The Improvement District could not obtain financial assistance on the open market while unincorporated, for this reason, incorporation of the Improvement District was undertaken as rapidly as possible.

The Province also provided professional services to the townsite free of charge. Surveying, planning and legal council were among the many services offered.

The Province wished to encourage the independence of the municipality whenever possible. For this reason, the land vested in the Crown by an Order-in-Council was sold at a nominal fee to the Improvement District on its incorporation on September 1, 1955. The land was subdivided according to the plans done by the Community Planning Branch, and then the Crown held auctions to sell the land. The land was sold as "serviced" with the cost of the lot set according to a scale which would approximately cover the cost of servicing the lot. The minimum cost of the lots were determined by the District starting the bidding at the minimum cost according to the scale.

The residential lots were sold, with the minimum cost bid of the District, covering 50 percent of the cost of servicing, preparing, administering and designing the lot. The commercial and industrial lots were priced so that the losses incurred in the selling and servicing of residential lots were "covered". The auctioning of the commercial and industrial lots exceeded the expected prices, and proved very lucrative for the Improvement District.

The system of land sale for residential uses, and the desire of the Crown to assist the Improvement District to financial independence, encouraged the construction of single family homes. Although more multiple dwelling units were planned, the single family home became the



predominant form of housing. R. N. Percival has indicated that the multiple dwelling unit, considered essential in the initial stages of planning, was largely abandoned later because:

- "- Provincial Law required direct vehicular access to each property.
- Provincial Law required registration of a lot, block, and road plan prior to the selling of any site.
- Neither the municipality, ... the Province nor the Federal Government were housing authorities. All houses were to be built by the mines or private enterprise and neither of these were even remotely interested in becoming land lords.
- There was, and is, a prejudice against the row house in Canada.
- There wasn't time to experiment, and no takers anyway, due in some part to the short-term nature of the uranium contracts".<sup>15</sup>

Thus the original one townsite had to be expanded into two, the eastern and western, to accomodate the single family housing. The town could not be developed as desired on one townsite, due to the constraints on development imposed by the physical factors.

Only the eastern townsite was developed. The peak activity and population in Elliot Lake was 1959, when 25,000 persons lived in the eastern townsite, planned for only 14,000 inhabitants. The eastern townsite was extremely over-crowded, when the announcement was made that the contracts for further orders of uranium ore had not been received. From that time forward, the population declined, and the plans for developing the western townsite were abandoned.

### Building Technology

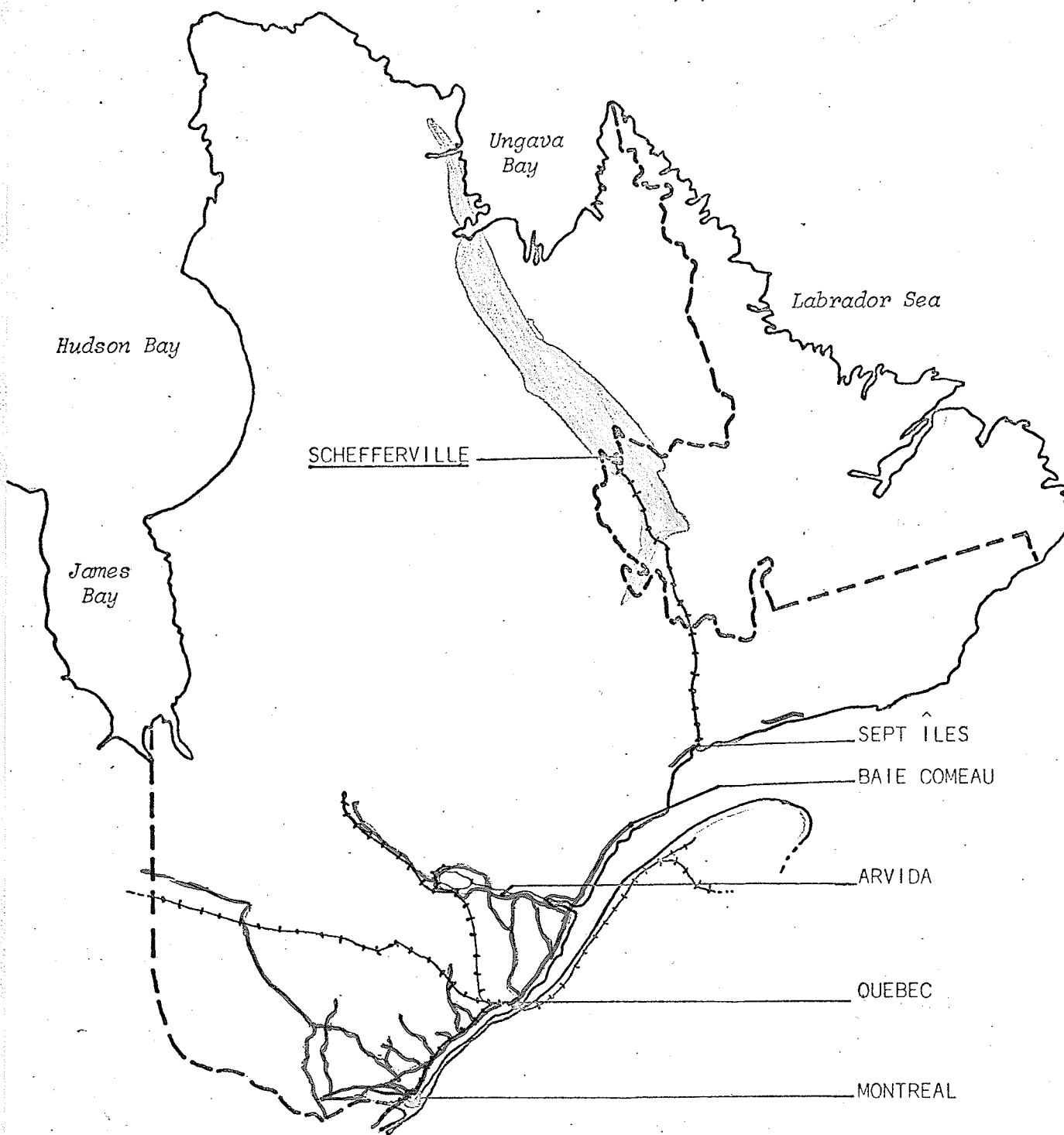
The building methods and materials were conventional. The utilities were placed all underground in road rights-of-way. Because of the rocky outcrops, portions of the rock had to be blasted to allow the proper drainage slopes for sewers. The uneven rock base also forced the staggered set-backs of some houses to allow for the foundations and

for proper drainage of sanitary sewers from the houses.

## FOOTNOTES:

- 1 D. F. Taylor, Community Planning Branch of the Department of Municipal Affairs, correspondence of February 14, 1968.
- 2 I. M. Robinson, op. cit. p. 27.
- 3 Ibid., p. 25.
- 4 Ontario Legislature, "Ontario Municipal Act", Statutes of Ontario, 1962, Chapter 249, sections 521 - 524.
- 5 D. F. Taylor, op. cit., correspondence of February 14, 1968.
- 6 Henry Sears, "Report on Elliot Lake", Journal of the Royal Architectural Institute of Canada, XXXV, (October, 1958), p. 393.
- 7 D. F. Taylor, op. cit.
- 8 Ibid.
- 9 D. F. Taylor, op. cit.
- 10 D. F. Taylor, op. cit.
- 11 Ibid.
- 12 Ibid.
- 13 I. M. Robinson, op. cit., p. 25.
- 14 F. R. Joubin, "No Reason for Timidity", Financial Post, (March 23, 1957), p. 28.
- 15 R. N. Percival, "Elliot Lake: Another View", Town and Country Planning, XXXV, (February, 1960), p. 62.

## REGIONAL CONTEXT OF SCHEFFERVILLE, QUEBEC



## LEGEND

--- PROVINCIAL BOUNDARY

-.- NATIONAL BOUNDARY

MAJOR WATER BODIES

RESOURCE BODIES

RAILROADS

MAJOR ROADS

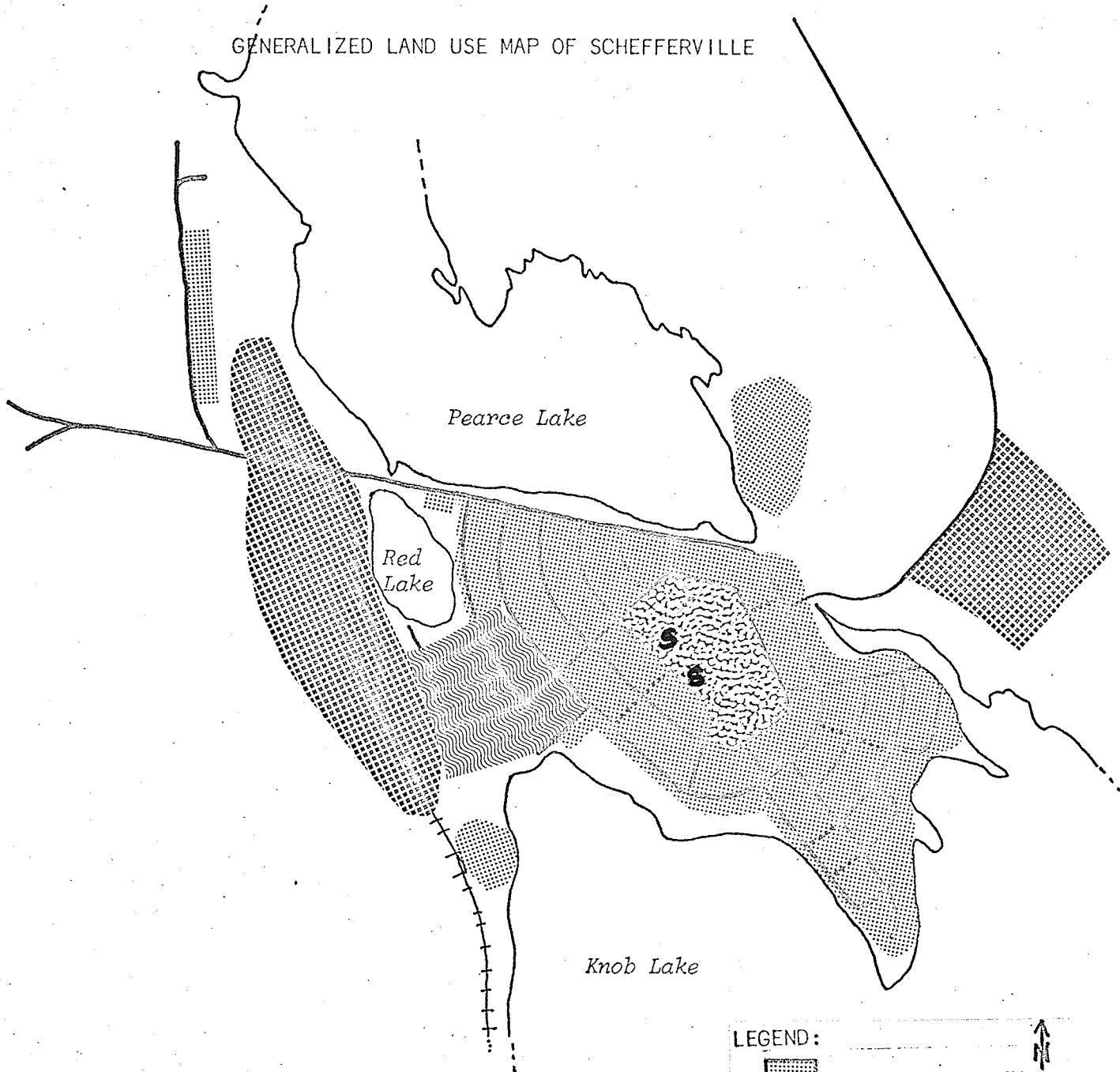
MAJOR TOWNS

LARGE URBAN CENTRES









 1:20,000,000  
 (after Atlas of Canada)

**MAP 10**

## GENERALIZED LAND USE MAP OF SCHEFFERVILLE



## LEGEND:

-  RESIDENTIAL AREA
-  COMMERCIAL AREA
-  INDUSTRIAL AREA
-  OPEN SPACE (PARK, SCHOOL, CHURCH USE).
-  SCHOOL SITE
-  MAJOR ROAD SYSTEM
-  MINOR ROAD SYSTEM
-  1" = 1000'

MAP II

## SCHEFFERVILLE, QUEBEC

Company Development Context

Schefferville, Quebec, was developed to house and service the workers of the Iron Ore Company of Canada, Limited. The Company was the result of an amalgamation of the parent company, Hollinger Mining Corporation, its affiliate, Hollinger North Shore, The Labrador Mining and Exploration Company, the M. A. Hanna Company and "several large United States steel producers".<sup>1</sup> The amalgamation was necessary to Hollinger because that company could no longer support the exploration of the Labrador Ungava region which Hollinger had explored since the early 1930's.

Another reason for amalgamation lay with the American steel interests. The prime source of iron ore during World War II was the Mesabi Range, located at the western tip of Lake Superior. Once considered inexhaustible, the range had been greatly depleted by the war effort, and by the mid-1940's, it was realized that the range had reserves sufficient for only another 5 - 20 years production.<sup>2</sup> Further, the decreasing quality of the ore had forced the mining companies to consider expensive, deep-mining methods and installation of costly beneficiation plants to improve the quality of the ore prior to shipment. A third alternative was the location of another ore body or range which would allow less total overhead costs when developed. The demands of the consumer market and the Korean War in the period 1948 - 1951, forced steel producers to turn to exploration to ensure that long-range supplies would be available.

The Labrador-Ungava region had supported bog iron ore production as early as 1732,<sup>3</sup> but the quantity of iron ore was not known or considered

important until 1895 when the Canadian geologist, A. M. Low, had completed five years of exploration in the area and had reported his findings in the Canadian Geological Survey Annual Reports for that period.<sup>4</sup> Exploration information in the area was so sparse that Hollinger in the 1930's had to use Low's reports as the base material. As can be seen from Map 10, the formation in which the ore is located is extremely large. It is measured in hundreds of miles in length, its width in miles and its depth in hundreds of feet. The ore body has other characteristics of the Mesabi Range: the deposit is composed of rich hematite deposits nearest the surface which can be shipped directly and manufactured into basic iron and steel with no intervening processing, the hematite deposits are underlain by taconite ores composed of 66 percent rock and 33 percent iron. Unlike the Mesabi Range, the Labrador Trough iron ore deposits are bedded horizontally so that the inexpensive strip-mining methods may be used in the extraction of the ores.<sup>5</sup> The "...400 million tons of direct shipping ore necessary to justify the investment ... [in its mining and development] ... was proved in 1950, and the plans for bringing the area into immediate production went into operation."<sup>6</sup>

Development of the railroad linking the town of Seven Islands and the Townsite commenced in the winter of 1950, as did the preparations for the mining operations. The Burnt Lake settlement, which was used as the base of operations and which was to be used as the townsite, was located five miles to the northwest of present Schefferville. This site would have been developed as intended but a chance drilling indicated an ore body of 10 million tons lay under the settlement. The townsite was moved to the present site of Schefferville which offered soil of a depth and character which would facilitate the installation of buried utilities.

The new townsite name honoured Bishop Scheffer, who has become a legend in the region. (for the regional context of Schefferville, see Map 10).

### Relevant Legislation

In Quebec, urban centres developed to house and service the workers and families of the industry were governed by three pieces of legislation: the Mining Act,<sup>8</sup> the Mining Villages Act,<sup>9</sup> and the Mining Towns Act.<sup>10</sup>

The first established general provisions and regulations applicable to any type of mining community, and the latter two specified the organization and administration of the two types of municipalities.

The Mining Act established that the Lieutenant Governor-in-Council had the authority to create villages and towns on lands under mining claim or mining development, without the obligation to pay indemnity to the parties having right to those lands. Further, the revenue derived from the sale of such lands was subject to the discretion of the Lieutenant Governor-in-Council for the purposes of organization of the townsite, provision of municipal utilities and services, the promotion of further land sales within the townsite, and the payment of indemnity to the former owners of the lands expropriated.

The Mining Towns Act specified that the responsibility for the town lay solely with the Provincial Department of Municipal Affairs (as contrasted with the Mining Villages Act which divided the responsibility between the Departments of Mining and Municipal Affairs of the Province).

Provisions in the Act specified that the monies loaned to the municipality by the Province must be repaid from the taxation income, but



no limits on the loan value or the term of repayment were established. In the case of Schefferville, these factors were of little importance as the Company installed all lands and facilities except, churches, government offices, private industrial enterprises or service industries, and the retail stores. "In short, Schefferville has turned out to be a 'company town' built under government supervision."<sup>11</sup>

### Planning Goals and Planning Process

There is no recorded rationale for the goals and the planning process of Schefferville, and the records of the Engineering Department of the Iron Ore Company are at best "spotty" on the subject.<sup>12</sup>

From the organization of the townsite, it appears that few goals for the community were considered, outside the provision of housing and servicing the employees of the Company.

The process also is relatively unknown. Records indicate that the Engineering Department hired a town planner since it had few resources to do the job. This planner, a Mr. M. Plant, worked on three draft plans of the settlement prior to the acceptance of the fourth by the Provincial Department of Municipal Affairs. The plan was undertaken after some houses had been built by the company, and it had to be "warped" to accommodate the completed housing. The three plans submitted, were rejected by the Department of Municipal Affairs largely because they did not provide enough open and institutional space.

No consultants were hired throughout the process, and the planning of the town started in the winter of 1953 and was completed a year later. Further, the development of the plan was largely completed

within two years of the start of the planning process. The size of the community, and the speed of development meant that the town was developed at "one stage". No plans for expansion were undertaken, and the town in recent years has suffered because of it.

The municipality had development and zoning bylaws and building regulations administered by the Company to ensure that development was in conformity with the plan. The authority of these bylaws was confined to the townsite proper, and weak controls were held by the municipality over the lands beyond the municipal boundary. As a result, several "shack towns" developed outside the municipal boundary.

The planning process appears to have been compressed into a one year exercise in planning, with little replanning and learning from the development. This is unknown, as records are very incomplete. Further, since the staff of the Engineering Department of the Company are all recently employed, no staff who worked on the townsite project were available for information.

#### Physical Factors.

Schefferville is located in the mid-Quebec portion of the Canadian Shield Physiographic Region. The town is located within, and economically based upon, the iron ore deposits of a Proterozoic geosyncline cradled in older Precambrian-age rocks of the Shield. Over these deposits lies a thick mantle of glacial drift.

Climatically, the mean January and July temperatures are  $-11^{\circ}\text{F}$  and  $56^{\circ}\text{F}$ , with recorded extremes of  $-60^{\circ}\text{F}$  and  $92^{\circ}\text{F}$ . The mean annual precipitation is 27 inches, and the mean annual snowfall is 144

inches. The mean annual accumulated snowfall is 40 inches and the town receives 1500 hours of sunlight annually.

The climate is defined as a North Laurentian, which is characterized by long, bitter winters and snow on the ground more than 50 percent of the year, and cool summers which are cloudy and buzzing with black flies.

The climate has weathered the glacial drift to a very infertile podzolic soil, which is interspersed with rock outcrops. Where drainage is inadequate, marshland, peat and swamp have formed.

The soil and climate have fostered a limited number of vegetation associations, all of which are composed of shrubs and trees of stunted growth. The associations are the lichen woodland, lichen heathland and lichen bog in which stunted willow and alder are predominant.

The vegetation cover is thick, and it has proved suitable for the thriving growth of fur-bearing animals.

### Social Factors

The formerly nomadic Indian tribes of the region, the Montaignais and the Waskaup, were involved in the exploitation of furs of the region in the early nineteenth century. The Hudson Bay Company established a post about 30 miles south of the present site of Schefferville in 1850, but it was soon abandoned as uneconomic.

The region was largely bypassed until the need for iron ore stimulated the development of Schefferville, and this development stimulated other industries to take advantage of the many natural resources of the region.

The planning process of the town considered only the anticipated workforce of the Company, and allocated sufficient space and facilities to accomplish this goal. The town "plant" was built like any town of the southern developed fringes of the Province of Quebec, but little, if any, consideration was given to the inhabitants. It is mere conjecture, but the twenty house styles all have three bedrooms, and this may be evidence of some consideration of the future inhabitants of the town. Further, the Department of Municipal Affairs of the Province did not assume the responsibility for the organization and administration of the townsite as provided for in the Mining Towns Act. No reason could be found for this exception to the legislation.

As indicated previously, Schefferville was developed as a company town.

### Economics

Because the Company developed the town, and took responsibility for its development, no assistance was required from the Province. The Company did assist its employees through paying extra wages for working in the town, and providing housing at a nominal rent in houses that had cost the Company 18,000 - 30,000 dollars.<sup>12</sup>

The cost of the town was very high for the number of inhabitants, estimates range between two and three million dollars<sup>13</sup>. The land had to be cleared of dense thickets of forest and then graded. The materials for the homes had to be shipped from Seven Islands, and since most of the settlement was built prior to the railroad completion in the summer of 1954, the materials were air-freighted. Further, the services had to be deeply buried to prevent freezing, and some services are buried as

deeply as 25 feet.<sup>14</sup>

The townsite, because of the small number of people it was to house, and because of the speed of development, was developed in "one stage". It is relatively compact, being clustered around a central park and institutional area. Refer to Map 11.

### Building Technology

The buildings of the town were conventionally built of conventional materials; the only exception was the requirement that the buildings be able to stand higher than normal wind and snow loads.

Utilities such as water, sanitary and storm sewer were buried, although they had to be buried more deeply than is the normal practice. Another difference to normal practice was the location of water and sanitary sewer lines at the rear lot lines because the insulative properties of the snow could allow the lines to be buried closer to the surface. Because the snow is cleared from the roads, the soil beneath the roads freezes to a greater depth, and road placement would have demanded much deeper burial.

Electrical and telephone lines are also located at the rear lot lines, although they are located above grade on poles.

## FOOTNOTES:

- 1 Graham Humphrys, "Schefferville, Quebec: A New Pioneering Town," Geographical Review, XLVIII (April, 1958), p. 153.
- 2 John Davis, "The Iron Ore Industry", Canadian Geographical Journal, XLIX (November, 1954), p. 207.
- 3 Ibid., p. 205.
- 4 A. P. Low, "Report on Explorations in the Labrador Peninsula... in 1892 - 93 - 94 - 95", Canadian Geological Survey Annual Report, Vol. VIII, Ottawa, 1895.
- 5 John Davis, op. cit., p. 208.
- 6 G. Humphrys, op. cit., p. 153.
- 7 I. M. Robinson, op. cit., p. 38.
- 8 Revised Statutes of the Province of Quebec, 1941, chapter 196.
- 9 Ibid., chapter 246.
- 10 1 - 2 Elizabeth II, Chapter 24 (1952 - 1953).
- 11 I. M. Robinson, op. cit., p. 57.
- 12 Keith Hilton, University of McGill Student studying settlements of Labrador-Ungava, in discussion of March 19, 1968.
- 13 Ibid.
- 14 Ibid.

## CHAPTER III

### NEW TOWN DESIGN DETERMINANTS: SIMILARITIES AND DIFFERENCES AS THEY INFLUENCE THE TOWN PLAN

#### Introduction

This Chapter compares and contrasts the influences of all the design determinants in each new town. The structure of this Chapter is the same as the discussion of each case study, for easy reference to the relevant sections of Chapter II. The intent of this Chapter is a clarification of the roles played by each determinant in the design, and a comparison of the determinants and their influences in each new town. It must be noted that design decisions were often based on several determinants, consequently some repetition of findings is necessary to indicate the roles of the design determinants.

#### Company Development Context

Each of the new towns is economically based on the extraction and/or processing of raw materials: aluminum, petroleum, nickel, uranium, and iron ore. Each resource industry and the towns serving them had to be developed at great speed, for the resource companies were operating in a highly competitive economic market. The towns of Kitimat and Thompson were built to process ores which also indicated a greater degree of permanence than simply mining or petroleum production because of the greater investment and the largeness of the total operation.

Kitimat was developed as part of a project that was the largest private undertaking in the world. The town was developed as a "model community", hewn out of a wilderness in Northern British Columbia.

Because of the past experience of the Alcan Company in new town developments, the establishment of a very clear goal for the townsite was deemed necessary. That goal was the creation of an environment which would attract and hold skilled men and would ensure the industrial success of the company. To transform this goal into a workable reality, the firm hired an experienced team of planners and consultants to the planners. The coordinator, Mr. C. S. Stein and the firm of Mayer, Whittlesey and Glass, Architects, Engineers and Town Planners, had all been involved in the planning of the "Greenbelt" towns of the Suburban Resettlement Administration in the United States in the 1930's. The company also decided that the employees would be largely married men, and it decreed that for these men and their families, the bulk of the housing would be single-family homes. For the single men, the company wished a combination of apartments and boarding establishments. The company wanted to avoid the "company town" stigma, and it later convinced the legislature of British Columbia, in 1953, to accept a special Act which incorporated the municipality and made it autonomous.

Drayton Valley was planned by the Town and Rural Planning Branch of the Department of Municipal Affairs of the Province. The oil companies of the area, inexperienced in the development of new towns, and wishing to avoid the costs of development of such centres, requested that the Province assist in the planning and development of a centre to house and service their workers. The growth of the Drayton Valley centre was spectacular between 1952 (75 persons) and 1956 (2,500 persons),



outpacing the speed of development and intensifying the problems of the inexperienced Planning Branch. As a result, the town, while relatively neat and orderly, soon exhibited what are now considered by the planning profession as "planning problems": mixed land use in its western half (which was the area developed first), many four-way intersections, instead of "T" intersections, a green space plan which was not linked, but was composed of dispersed open spaces, and a commercial area that was not concentrated but "dispersed".

Thompson, Manitoba was planned by the Metropolitan Planning Commission at the request of the International Nickel Company of Canada. The commission offered the Planning Service to Manitoba municipalities, and the planning of a new town like the Thompson Project was not new to the planners of the Planning Commission. Further, one member of the Planning Team, Mr. A. J. Eaton, had worked on the Elliot Lake Project. Both the planners, and the Company had had prior experience with resource based communities, and both parties wished a model community which would not have the company-town stigma, like the town of Lively, Ontario which had been developed by the Company. The Company formulated clear goals and defined them in the Agreement between the Company and the Province. (see the relevant portions of the Agreement on pages 60 -61). In the Agreement, the Company specified the townsite location. The active planning of the original townsite lasted from September 1957 to the summer of 1958, and reflected the speed of development of the town.

Elliot Lake was the largest mining centre planned and assisted by a Province in Canada. It was built to house and service the workers of eight mines extracting Uranium ores. The discovery of the ore was claimed in 1954, and contracts for ore supplies were announced shortly

thereafter. The uranium ores were to be supplied between the years 1957 and 1962. The planning of the townsite, undertaken by the Community Planning Branch of the Provincial Department of Municipal Affairs, was prepared in the period from 1954 to 1959. The planning of the eastern "townsite" had been completed by 1959, but the western townsite was being planned because the "eastern townsite" had a population of 25,000 and had been designed for only 14,000. With the announcement, in March of 1959, of the failure to secure future contracts after 1962, the planning of the western townsite was abandoned.

The promoters of the uranium mining ore claims, Messrs. F. Joubin and J. Hirshhorn, intended that two architect-planner firms, Philip Johnson and Company, and John B. Parkin and Associates, would design one large townsite. Three of the four mining company groups intended to develop three small company towns to house and service their workers. Because the Province controlled the surface rights to the mining claims, it decreed that its departments would plan the town and assist in its development. The Province had had experience in the planning of Manitouwadge, Ontario, prior to the planning of Elliot Lake.

Schefferville, Quebec was conceived as a company town with facilities sufficient to house and service the workers of the Iron Ore Company of Canada. The townsite was planned in the winter of 1953 and 1954, by the Engineering Department of the Company under the direction of a planner named Mr. M. Plant. The Company hired this man as it had no previous experience in new town planning or development. The Company chose to disregard the Quebec Mining Towns Act, which specified that the Province had jurisdiction over the land rights, and the authority over development and planning of the community. Ironically, the Company

wished provincial acceptance of its plans, hence it forwarded draft plans to the Quebec Department of Municipal Affairs for approval. The Province refused the first three plans, because of insufficient open and institutional space, but accepted the fourth draft plan. The draft plans were designed to incorporate houses built prior to the drafting of the plan; this indicated the speed of development of the site, and the Company's attitude toward the relevance of "planning" to the solving of problems of townsite development.

#### Relevant Legislation

The British North America Act assigned the exclusive power over the municipal institutions to the Provinces. Thus each Province has a Municipal Act which governs the administration, status and powers of the municipalities within its boundaries.

The new towns do not conform to the criteria of ordinary towns in settled areas as defined in Provincial Municipal Acts. Further, the new towns had very unique needs which could not be satisfied within the regulations of the Municipal Acts. For example, these new towns are not incorporated initially, they cannot borrow funds for the capital investments they require. Their growth rates in the first years are abnormal, often doubling every three to four years for the first six to eight years. In recognition of these problems, several Provinces passed special legislation for these new towns. This provided financial or professional assistance and rapidly incorporated them under special administrative control.

With Kitimat, the special Act accepted by the Legislature of British Columbia, provided for the incorporation of "The Corporation of

the District of Kitimat". The main provisions of the Act allowed for the borrowing of monies up to \$50,000 for the municipal administration of the town and the right to make loans up to \$5 million for capital expenditures. These provisions had little effect on the town plan, as the company had pledged itself to the construction of roads, utilities, school facilities, municipal offices, and the provision of communal facilities which would be turned over to the municipality on incorporation. The Act of Incorporation did, however, allow the municipal acceptance of a comprehensive set of regulations and policies which controlled the development, land use and building standards for the community. This comprehensive bylaw allowed, and encouraged, the development of the town as planned.

To prevent uncontrolled development and land speculation, the District was granted the control over 41,000 acres of land around the townsite.

The lands comprising the townsite of Drayton Valley were placed under provincial control by the Drayton Valley Townsite Act of 1954, to prevent rampant land speculation and uncontrolled development. Under the Act, the Minister of the Department of Municipal Affairs was empowered to regulate the development of the land within the townsite; its use, its subdivision, its sale price, and the time of its sale. The Minister was also granted the power to install whatever utilities were needed and he could undertake whatever measures he deemed necessary in the proper development of the townsite.

While the Minister controlled development within the townsite, the area outside the townsite was controlled by interim development controls, covering 1,000 square miles, in what was called the Pembina Controlled

Area. The townsite was selected by the Minister because it was deemed more socially useful to expand the hamlet of Drayton Valley than to build an entirely new site. Such factors as economy of surfacing existing gravel roads, the improved goods and services to the agricultural hinterland, as a result of town expansion, the broadening of the economic base to include oil production and service functions, and the centralization of population to support an enriched cultural life with improved goods and services, were among the reasons for the designation of the hamlet as the site for housing the workers of the oil companies. The Drayton Valley Townsite Act reflected the policies of the Alberta Department of Municipal Affairs in the prevention of uncontrolled development by Provincial Control and the encouragement of a better environment than would have occurred otherwise. Further, the policies "worked out" by the planning of Drayton Valley later became the legislation known as "The New Towns Act", passed in 1956.

Thompson, Manitoba was made subject to a Company-Province Agreement as the Province lacked legislation relevant to the development of new towns. In the Agreement, both parties expressed the desire to create a model community in which all could be proud.

The company determined the site of the town, which was specified in the Agreement. The Agreement also specified that a Local Government District would be established which would control development over a 975 square mile area in addition to the area of the townsite. In this manner, uncontrolled development would not be allowed in the District, and all development would be in accordance with the General Plan for the townsite and supporting documents (zoning bylaw, subdivision regulations, and municipal building code). The various documents simply enforced the

standard of development as laid out in the General Plan.

With Elliot Lake, an Amendment to the Municipal Act in 1954 enabled the Province of Ontario to secure surface rights to the mining claims by an Order-in-Council of the Lieutenant Governor. This amendment, accepted prior to the planning of Elliot Lake, ensured that the Province would control development within the townsite and within the district. The area controlled was 369 miles and was designated the Municipal Improvement District of Elliot Lake. By this control, the Improvement District could eliminate uncontrolled developments within its boundaries. In other respects the legislation had little effect on the planning of the townsite.

In Schefferville, Quebec, the programs and policies of the Provincial Government, as embodied in the Quebec Mining Towns Act and the Mining Act, were largely ignored, as the Company was allowed to develop a company town. But in one respect the Provincial legislation for such a community was followed. The boundaries of the town enclosed an area of 25 square miles in accord with section I of the Quebec Mining Towns Act. This area was placed under the control of the Town to prevent uncontrolled shack town developments, at the periphery of the townsite.

In retrospect, the policies and regulations to prevent uncontrolled development outside the sites of all towns, only limited the amount of such developments. Ironically, the fringe developments were caused in part by the stringent controls within the site. Building regulations imposed financial hardship on the part-time workers, the couples "just-starting-out", the "hangers-on", and the rebellious persons who wish no rules. Thus Kitimat has suffered from spotty developments along the Kitimat-Terrace Road, as Elliot Lake has suffered

from such development along Highway 108. Thompson has had problems of unserviced houses along the railroad on the east portion of the townsite, and Drayton Valley has had unserviced homes along the western boundary of the townsite on Highway 57.

### Planning Goals and Processes

Of the case study towns, Kitimat, Thompson, and Elliot Lake were planned to be "model towns", the other two were planned to provide neat, orderly and pleasing towns for the inhabitants. The goals for the townsites partially determined the "success" of the town, although other factors such as the experience of the planners, the legislative framework, the planning procedure, and the physical factors of the site also contributed to the results.

In Kitimat, Alcan had defined the goal of the community which was the development of a model town. To achieve this goal, the company hired an experienced team of planners and consultants.

The planning team redefined the goal of Alcan into working goals. The consultants made specialized studies into the functional aspects of the town and placed them in the overall context of the town goals, functions and requirements. From these studies, the working goals of the town were defined. On the basis of these functional studies and goals, the planning design of the townsite was started. The design process consisted of translating these goals and functional relationships into physical structures and the "visible" town. The scope of the studies included the institutions, the expected population characteristics and the social needs of the inhabitants. (for details, see Chapter II, pages 30 - 31)

It must be noted that the resulting townsite plan for Kitimat bears strong resemblance to the "Radburn" and "Greenbelt" towns. The planning coordinator, C. S. Stein, and the firm of Mayer, Whittlesey and Glass, had been involved in the Greenbelt towns developed in the 1930's under the Suburban Resettlement Administration of the United States. Stein had also been one of the team that developed the Radburn Plan. Thus the town design characteristics of Stein's former experience, and their distinctive use are to be found in Kitimat: an arterial road system which is "free-form" in appearance on maps; the use of the arterial roads in the enclosure of superblocks and neighbourhoods, with the auto traffic system on the periphery of the block, the pedestrian walkways and open spaces in the superblock interior, with the housing located between the two movement systems; the "fronting" of the houses toward the pedestrian walkways, with the service areas of the housing facing the roads; the vertical separation of the pedestrian and automobile systems where they intersect; and the creation of a residential town which is remote from the place of work.

Further, these visible characteristics of the town represented the detailed functional studies which were undertaken prior to the design of the town itself. The prime concern of the functional studies was the individual and the family, and all facilities were related to these "constants". These functional studies were undertaken at Kitimat in the same manner as the other towns on which Stein had worked.

The planners of Kitimat also prepared the zoning and subdivision regulations, as well as the municipal building code to ensure that the town would be developed as planned.

In Drayton Valley, the goal was the development of a town that



took into consideration the factors of orderliness, economy, convenience, permanence and "aesthetic merit". To meet these goals, the planning process consisted of allocating the land use areas required according to the method outlined in Chapter I. The land use allocation planning method was forced upon the planners primarily by the speed of development and growth of the population in Drayton Valley. It may have reflected the narrow limits of discretion imposed by the Minister's order to the Town and Rural Planning Branch. Since Drayton Valley was the first new town planned by the Branch, the narrow definition of Planning may have represented inexperience of the Branch in new town design. Consequently, the town exhibits what are normally considered "planning problems" such as mixed land uses of homes and industries, strip commercial development, and a road pattern which makes access to the centre of the town difficult.

With Thompson, Manitoba, the intent of the International Nickel Company and the Province was the creation of a model townsite in which all parties concerned could be proud. The planners took this prime goal and added working goals of their own. (see Chapter II, pages 63 - 66 for details). These goals were similar to the goals of Kitimat: auto-pedestrian separation, superblocks of neighbourhood size, separation of work place and residential area, "free-form" appearance of the arterial road system, a hierarchy of roads of different speed and capacity characteristics.

The planning process formulated these goals and then translated them into the physical plan. The planners made only a limited estimate of the social characteristics and needs of the expected inhabitants of the community. While the planners made only a limited estimate of the

social requirements to determine social goals for the community, they did undertake functional studies of the population within the townsite, and planned the townsite according to these functional studies. After the completion of the Plan, the planners created the supporting documents to ensure that the development would occur according to the Plan.

In Elliot Lake, the goals for the town were concerned primarily with its physical development. Only limited consideration was given to the expected population and its needs. This limited consideration was necessary solely to determine the physical structure sizes and the areas for serving the population's needs.

The planning of the townsite consisted of determining the areas and facilities required for the town, and then allocating these areas where possible. The allocation of space was difficult because of the limitations on development imposed by the rugged topography.

The planning of the townsite did not consist of determining the functional arrangements and relationships of the inhabitants and town "land uses". The plan was designed by the allocation of land uses of the more southerly subdivision arrangements. This "planning method" was a necessity due to the pressure of required housing and speedy development of the town.

The planners completed the planning of the townsite with the documents supporting the General Plan: the Zoning and Subdivision Control bylaws, and the Municipal Building Code.

The goal of development of Schefferville was confined to the creation of a pleasant town, to house and service the Company employees.

The planning process consisted of the drafting and redrafting of the General Plan until it was accepted by the Department of Municipal

Affairs of the Province of Quebec. This work required less than six months in the winter of 1953 - 1954. The planning was undertaken by the Engineering Department of the company, under the direction of a planner named Mr. M. Plant. The town was built in one stage due to its limited population, and no replanning of the town was undertaken as changes were required. (The town became the site of a Mid-Canada Line radar station, and a minor administrative centre for the Department of Indian Affairs of the Federal Government).

### Physical Factors

The physical factors of topography, geology, soil base and proximity to water were very influential in the planning of the case study towns. The climatic factors were influential on house construction, and in some cases, to the orientation of streets, generally however, very little consideration was made for the harsh climates of the case study towns.

The Kitimat townsite was placed on the gravel and clay moraine because the site was suitable for the development, and because it was the only site near the smelter which was free from the flooding of the Kitimat River. The site was free of smelter fumes because of the relationship of the plant, townsite and predominant wind direction. The wind also dictated the orientation of the street and house rows; to minimize the wind intensity and reduce snow drifting, the houses and streets were arranged at right-angles to the predominantly north-blowing wind.

The physical factors also determined the first stage of residential development. Neighbourhood "A" was chosen for development because its soil would dry out the fastest.

The physical factors played no role in the location or planning of Drayton Valley.

In Thompson, Manitoba, physical factors played a large role in the townsite planning. The company decided the location of the town because it knew that the geology of the site contained no valuable ores. Also, the site had sufficient slopes, soil depths and proximity to water to make a good townsite.

The permafrost in the soil forced the site engineers to create a water system in which the water supply was heated and recirculated to prevent water line freezing. To permit recirculation, the water supply system had to be built in loops. The loops determined the arrangement of houses, the loop road pattern as the water system was to be installed in the road right-of-way.

Because of the permafrost, the native tree cover of the site had to be carefully removed. The permafrost restricted root growth, and the trees were rooted in the soft moss covering the site. Because they were subject to "wind throw", the trees were allowed to be no closer than 80 feet to the houses or roads, because they presented a hazard to the inhabitants.

In Elliot Lake, the location of the townsite was determined primarily by the following requirements: that the land slopes for development would be less than 10 percent, that there would be 4,000 acres of land, of such a slope that a townsite of 12,000 to 15,000 could be established, that the site have easy access to a water for townsite supply, and that the geology of the site would have little economic potential.

The site having these characteristics was located, but it was

divided by land with slopes steeper than 10 percent, and rock outcrops. The townsite had to be developed in three neighbourhoods, each with its planned schools, churches, retail facilities, and residential areas.

Within these neighbourhoods, the limited land for development forced the planners to allocate much land for multiple family dwelling units, so that the expected population could live within the one site. While only 12 percent of the land area of the town was zoned for multiple family development, the number of inhabitants of this form of housing comprised 35 - 40 percent of the population.

Schefferville's location was chosen because its geology had no economic mining potential, and the topography and depth of its soils were suitable for the installation of buried utilities. Further, the townsite had easy water access for water supply and disposal.

### Cultural Factors

In all case studies, the detached single family house emerged as the predominant form of housing. In no cases were the streets and houses arranged in a grid-iron pattern, but they were arranged in the "superblock" and "modified-grid" patterns.

With the exception of Drayton Valley and Elliot Lake, the towns ignored their regional and historical context. The towns were planned for the proximity to the industry which were their "raison d'etre". In the cases of Drayton Valley and Elliot Lake, their locations were determined with consideration to the regional context which will be explained below.

Kitimat's housing was primarily single family houses, with only a limited number of multiple dwelling units. The emphasis on the

development of single family houses was made by way of the Company to stimulate a sense of civic and personal involvement and permanence in the expected inhabitants. Further, the company expected that the future inhabitants of the town would prefer this type of housing. The multiple dwelling structures were developed in the "A" neighbourhood to house the many single men needed in the initial development of the town, and for providing more tax-paying inhabitants in the town to help pay for the utilities and services.

The developed townsite is approximately 50 percent open space (in the form of parks, play areas, pedestrian walkways, and unbuildable gulleys and steep land) and was designed this way to provide "urban amenity". The open space is only one of the urban amenities offered in the town which was designed to provide a higher level of services and amenities than could be found in a town of similar size in the inhabited portions of Canada. To itemize the details of amenities would be impossible as the totality of the details of the plan were affected by the consideration that the inhabitant should be happy in the town.

Because the inhabitants of the town were to be attracted from the southern portions of the country, the local regional and historic context was largely ignored. The road and rail connections were installed to provide the linkage to the region. These transportation routes were also built to provide "escape" from the town.

Alcan did not wish to have Kitimat develop as a "company town". The company wished to avoid the ill-will of its employees, and minimize its role in the operations of the town so it could concentrate on its business. The company thus stipulated that the bulk of the housing should be single-family homes, owned by their inhabitants. The company

encouraged employee home ownership by providing low cost lots and home subsidies. It further offered second mortgages to its employees. The company exercised its influence in having the Legislature of British Columbia accept the special act of incorporation so that the town would become politically autonomous. By all these means, Alcan hoped to avoid Kitimat's development as a "company town".

In Drayton Valley, the regional context was the prime factor in the determination of the townsite. The hamlet served as the regional service centre for its agricultural hinterland for a radius of approximately 20 miles.<sup>1</sup> The oil exploration was initially centred around Drayton Valley, and the decision was made by the Minister to make Drayton Valley the housing centre for the oil companies. It was the policy of the Department of Municipal Affairs to utilize each new town as a multi-function urban centre.<sup>2</sup>

The predominant form of housing was the single-family house. This form of housing was a reflection of the experience and background of the inhabitants. The few multiple housing developments that had been built at the time of Drayton Valley were not "good", and the people of the Province preferred single family homes despite the advantages of multiple family units.<sup>3</sup>

The western portion of the townsite is laid out with the streets in the grid pattern. This portion of the townsite was developed first and was intended for industrial plants and service depots. For these land uses, the grid pattern was deemed very suitable. The eastern portion of the town, the residential area, the modified grid was used. The layout in this portion appears less than logical, because access to the town centre is difficult. Further, all traffic from the residential areas

is channeled down the main roads of the town which are 50th Avenue, and 50th Street, fostering traffic congestion at peak hours of travel.

In Thompson, Manitoba, the townsite was located by the company because of the physical factors pertinent to the operation of the company, and there was only limited consideration given to the regional context. The townsite was planned so that the Provincial Trunk Highway linking The Pas and Churchill would bypass the town on its eastern side. The town was placed beside the future highway so that the service and light industries and the storage warehouses would have direct access to the highway, and yet be in close proximity to the commercial centre.<sup>4</sup> Only in this respect was the regional context influential in the town design.

In Thompson, the predominant form of housing was the single-family house. The company was forced to provide a majority of this housing type because of demands of the union on behalf of the company's employees.<sup>5</sup> The employees wanted this type of housing because of its familiarity and symbolic "freedom". It is a matter of conjecture that the single-family house had some social prestige value to the employee.

The company wished to avoid the company town stigma and it encouraged the incorporation of the Local Government District of Mystery Lake; the District was fully incorporated in the spring of 1958. The company also supported the housing mortgages for its employees, using the Central Mortgage and Housing Corporation as the agency for providing assistance. Since the company had to provide funds equal to the mortgage requested, the company basically financed the housing of its employees.

Developed as a model community, the Thompson townsite was planned to appear as a suburb of more southerly latitude. As noted



previously, the houses and multiple dwelling units all appeared "conventional" and were built of conventional materials, although their foundations were drastically different. Further, the utility system had to be carefully engineered to overcome the permafrost problems. These costly problem solutions had to be undertaken to please the inhabitants, who came from the southern portions of Canada.

In Elliot Lake, the regional context was considered as a factor in the criteria for the location of the townsite. In reality, the townsite location was determined by the physical determinants of slope, drainage, geology, soil depth, and access to water supply.

The housing of Elliot Lake was to consist largely of multiple family units, but it became apparent that the majority inhabitants would prefer to live in single-family units. (see Chapter II for details) Although the majority of the inhabitants live in single family houses (60 - 65 percent), there is an extraordinary high percentage of inhabitants in multiple-family units (35 - 40 percent).<sup>6</sup>

The town was to be developed as a model community, and this term was defined in its result as the creation of a community which would appear as a suburb of the south although located in the mid-north, of the Province of Ontario. Thus all roads and residential neighbourhoods are "conventional" in appearance. The community and commercial centre had an initial design that was very striking and "model" in its functional and aesthetic characteristics. This design had to be drastically altered because the Provincial planning staff and the involved citizens found the proposal too startling and different.<sup>7</sup>

In Schefferville, Quebec, the road and house layout was conventional, and it has been suggested that the community was modelled

after suburban developments in the southern portions of that province.<sup>8</sup> The housing of the site all appears as single family units, although the housing types are single-family, duplex and four-plex units.

### Economics

In Kitimat, economics played an important role in the overall planning of the town, because all proposals were subject to a cost/benefit analysis. For example, there were two road types, the local roads and the arterials. In the superbloc layout, Stein had determined in the development of the Radburn concept that this form of road arrangement was more economical than the grid pattern or the other curvilinear and modified grid road systems. Economics also helped determine the community facilities within this road system; their location, their type and uses, and their design in size and materials.

Economics determined the types of dwelling units in the first stage of development which was in neighbourhood "A".<sup>8</sup> The single family and duplex housing units composed only 40 percent of the housing stock, the remaining 60 percent of the dwelling units were apartment, terrace and row housing units. This housing "split" was made because the first stage of development would have to bear the heavy costs of utilities and roads, attributable to the town as fully developed, but charged taxwise on a relatively small portion of the developed townsite.

In Drayton Valley, economics affected the overall plan only with respect to the fullness of development at each stage of subdivision. This fullness ensured the maximum use of the utility installations at the minimum cost.

Economics also determined the size and quality of the houses in

Drayton Valley. Because the Central Mortgage and Housing Corporation would grant financial assistance on only a fixed percentage of the value of the mortgage requested, and the high cost of home building, the majority of home owners were compelled to erect homes which barely conformed to the National Housing Code.

In Thompson, Manitoba, economics determined the staging of the townsite development. The commercial centre and the nearest residential neighbourhood were developed first, and the second to fourth stages were developed in a logical sequence thereafter. Although each stage could be served by simply extending the utility system, site development was not allowed to proceed in a "helter-skelter" fashion. Each stage was fully developed prior to the start of development of the succeeding stage.

To reduce the tax levy on each dwelling unit for the costly provision of utilities in the first stage, multiple dwelling units were planned around the central commercial centre. These units were not developed in stage one because of the lack of mortgage funds. They were developed in the second and third stages of residential development when the Central Mortgage and Housing Corporation had funds available for such development.

In Elliot Lake, the staging of the town was determined by economics of development. The stages were determined by the total costs of road and sewer for each stage.

The economics of development also played a part in the determination of the "housing split" by dwelling unit type. The site area for residential development was limited and the town had to be developed with a majority of multiple units or face the very costly single family development with long utility lengths buried in easements blasted

through the rock outcrops. A compromise was reached in which multiple family units comprised 35 - 40 percent of the housing stock.

Stages 1 and 2 have large areas devoted to the multiple family units so that the high cost of the initial utility expenditures would be borne by a larger number of households than would have occurred with solely single-family development.

In Schefferville, Quebec, the company assumed the total costs of development. The many compact duplex and four-plex units are indicative that the company was governed by economic considerations, but no records could be located to substantiate this observation.

#### Building Technology

In Kitimat and Drayton Valley, building and utility technology did not affect the planning process or result.

In Thompson, Manitoba, the water supply system and its re-circulation loop system determined the road and housing arrangements of the town. The special foundations for the housing units did not affect the planning of the townsite.

In Elliot Lake, the depth of soil for utility installation was a determinant of the location of the townsite. Further, the road layout and housing development within the townsite were determined by the local relief and local geology, and their effect on the ease of utility installation. Building technology had no effect on the planning of the townsite.

In Schefferville, the prime consideration in the location of townsite was the type and depth of soil for ease in utility installation.<sup>9</sup>

Since portions of the utility system were 25 feet below grade, the depth and character of the soils and subsoils were of significance. The building technology was not a consideration in the planning of the town.

## FOOTNOTES:

- 1 Louis Slipec, in discussion of Drayton Valley of March 11, 1968.
- 2 Ibid.
- 3 Mr. John Polonuk, member of Town and Rural Planning Branch, Department of Municipal Affairs, Edmonton, Alberta, in discussion on Drayton Valley, March 11, 1968.
- 4 Mr. A. J. Eaton, in discussion of Thompson on January 17, 1968.
- 5 Mr. D. G. Henderson, in discussion on Thompson on February 12, 1968.
- 6 R. N. Percival, "Elliot Lake: Another View", Town and Country Planning, XXVIII, (February, 1960), p. 64.
- 7 Ibid., p. 64.
- 8 Claude J. Langlois, "Nos Villes Minières: Un Échec?" Community Planning Review, VII, (March, 1957), p. 54.
- 9 "Industry Builds Kitimat -- First Complete New Town in North America", Architectural Forum, CI, (October, 1954), p. 155.
- 10 Graham Humphrys, "Schefferville, Quebec: A New Pioneering Town", Geographical Review, XLVIII (April, 1958), p. 153.

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## CHAPTER IV

### DETERMINANT RANKING AND A CRITICAL ANALYSIS OF THE STUDY

This chapter ranks the discussed design determinants, discusses design factors which were not considered, and makes a critical analysis of the findings of the study. The critical analysis will be the basis on which the recommendations of Chapter V are made.

#### Determinant Ranking

The hierarchy of the planning determinants discussed, emerges from the case study towns as found in Diagram 2 below.

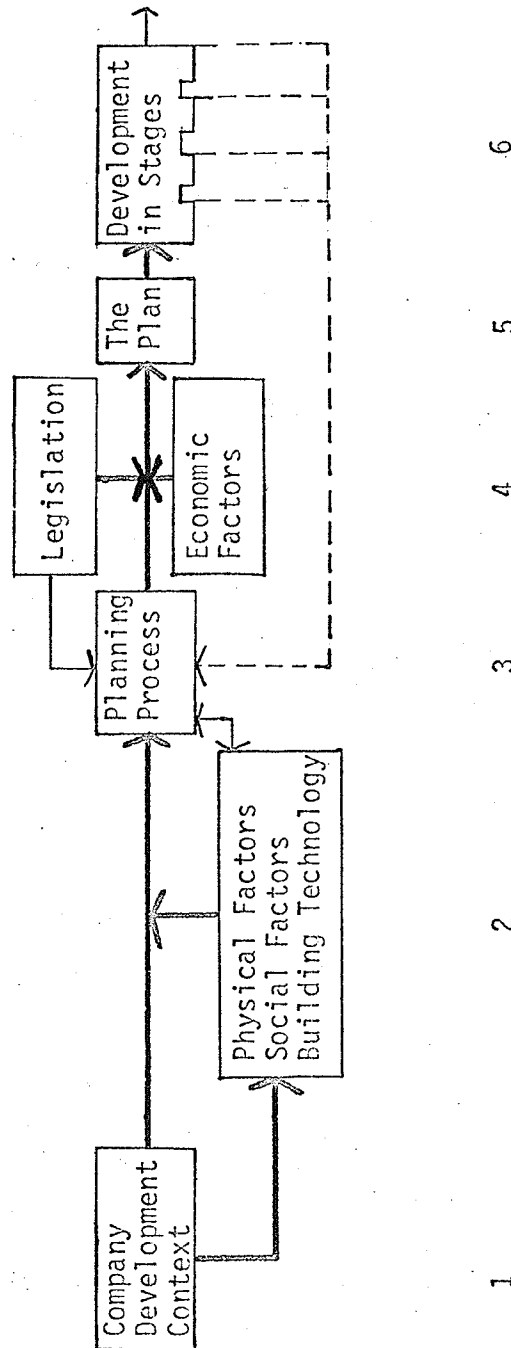
In Step 1, the company initiated the planning process for the townsite. As noted in Chapter III, the companies often had little or no experience in the planning of new towns, hence the planning process is shown as initiating with the company as a singular, isolated planning exercise.

In Step 2, the schematically represented planning factors were examined by the companies and then forwarded to the planners as the goals and constraints for the plan. (for details, see Chapter III).

In Step 3, the planners served primarily as the translators of the company's concept for the new town, largely within the constraints determined by the company. Because of the lack of information on past "new towns", the planners were limited also to the concepts of town planning expressed by company officials. Some reference was made by



DIAGRAM 2: The Generalized Organization of Design Determinants  
For the Case Study Towns.



the planners to the physical, cultural and technological factors, for the design of the town, but the reference was undertaken to design the town as closely as possible to the wishes of the company when the initial concept of the company was found to be unworkable. The double-headed arrow and light line were used to indicate that the planners slightly influenced, and were slightly influenced by the factors of Step 2.

Step 4's economic and legislative factors were used primarily after the plan had been conceived, to stage the plan and to ensure conformity to the plan in the development of the town. Legislation has a light line to the planning process to indicate that the existing legislation had a slight effect in determining the authority of the plans and in defining the range of possible design solutions.

In Step 5, the plan and its component stages of development were completed. Also completed were the legal measures to control the development of the townsite in accordance with the plan.

In Step 6, the plan was developed according to the stages of development in the plan. The light arrows are used to indicate the slight feedback of information to the planners on the development problems and successes of the plan. The light arrow at the right side of the scheme indicates that only little, if any, information on the planning and development experience was recorded and made available for the planners of other new towns.

#### Unconsidered Design Determinants

These factors can be summarized under the term "cultural inertia", that is, the resistance to change which is desirable or necessary.

Firstly, the companies who defined the allowable latitude of discretion of the planners could not conceive of housing other than those forms which presently exist. Thus, they decided the major issues of the plan, for example the predominance of the single-family house. The companies had to do so because they felt that the employees whom they wished to attract would wish such housing. In the case of Thompson, the union, on behalf of the employees, specified the type of housing accommodation to be developed. It may be argued that the planners also suffered from "cultural inertia" as in the case of the shopping centre for Elliot Lake (see footnote 7, Chapter III, for details).

The institutions who financially assisted the development of the new towns also exerted great influence. Because these institutions allowed assistance for building types which have proven to provide the "return" which they require, the allowable building types had to conform to those types for which assistance would be given. Newer building concepts, technologies, and combinations of buildings which would have provided great benefits for the inhabitants of the town thus could not be built.

The cultural inertia in the planning of new towns may also be attributed to the method of planning new towns. With the land allocation method, in which building types and building uses are arranged into a pattern, there is little reason to criticize the cost of the community development, because the costly road and utility structure is not questioned. If an alternative method of planning new towns could be derived, in which the costs of all aspects of community development were questioned, the result might be very different. Further, if several alternative plans were prepared and "measured" in terms of various

criteria, including cost, the benefits of present new town plans might be found to be inadequate.

### Criticism

A survey of articles, by professional planners and journalists, on single-enterprise new towns indicates one common theme: these new towns have prevented the worst developments of the past, yet they do not satisfy the needs or aspirations of their inhabitants, nor do they satisfy the hopes held for them by members of the planning profession. The criticism of the planning of these new towns can best be summarized as follows:

"While these achievements should not be minimized, the fact is that in one important respect, planning for the new towns must be termed a failure. With few exceptions, the plans do not reflect the special social, geographical, economic or governmental circumstances under which they were built: for example their unbalanced social structure; the dependence upon a single industrial enterprise; their harsh climate and the rugged terrain of the areas in which they are located. The plans have differed little from those being carried out in the more developed urban centres in southern Canada. In short, there have been no original or specially adapted solutions equal to the individual problems of site and situation that these northern Canadian towns face."<sup>1</sup>

The reasons for the "failure" of the planning profession to cope with the needs of these new towns can also be best explained by the same author:

"One of the major reasons for this situation, in the opinion of this writer, is that until recently, there has been a dearth of serious research on the structure of this special type of community and its problems and potentials...even though such towns have been built in Canada since the early 1900's...confronted by this lack of basic knowledge about these communities, it is natural for Canadian New Town Planners -- who themselves are primarily engaged in planning established urban centres...to apply those principles and concepts most readily available and with which they are most familiar. Clearly then, there is a need for more fundamental research on these special Canadian towns, out of which new solutions will emerge."<sup>2</sup>

Within these general criticisms, specific judgements should be made. These criticisms are of the factors which bear directly and indirectly on the design of the towns. The following are direct factors which influence the town design.

Firstly, the planners have been noted for their extreme optimism in the planning of these new towns. The permanent towns have been based on depletionary resources which have a finite economic life. Too often, the size and value of the resource led the planners and company personnel to overvalue the economic life of the resource in the competitive market of the world and the required population to exploit it. Elliot Lake is the foremost example, although all the case studies, Thompson excluded, have not reached their design population as predicted initially. Further, the failure of these towns to grow as expected has resulted largely from the competitive market situation which fostered their growth. In many cases automation has replaced manpower as a means of production, as has "substitution" for the resource.

The second major problem has been the goals for these towns. With the exception of Drayton Valley, these towns were created as single-enterprise communities, built to serve the industry involved in resource development. The companies involved specified the type of development desired to the planning staff who could at best, only make slight modifications in the translation of the concept of the company. Thus the new towns were limited in their goals of design prior to the arrival of the planning staff.

Further, the towns were generally designed to serve only the industrial company. The result has been that the communities have been under great strain when other functions have found the community useful

to their purposes. In Schefferville for example, the townsite was selected for its suitability for company purposes: when the Mid-Canada radar station was built, the townsite was too cramped to expand smoothly. As a consequence, the facilities for the station had to be located on undesirable lands to the north of the site which were very uneconomical to service with utilities. Further, the airport and rail connections have made Schefferville the central service centre for the northern Quebec-Labrador area, and the site is cramped for development space. In 1967, the Indian reservation, which was located 3 miles from the townsite, was condemned by Federal officers, and the population of the Indian reservation was moved into Schefferville, further complicating the space problem of the town.

Further, the goals of the townsites, as defined by the planners, were limited in their scope. The planners' goal of planning a "model community" was defined largely in terms of the southern Canadian suburban development. "An examination of the plans of Canadian new towns supports this view. They all appear to follow the urban patterns developed in much more temperate climates...This lack of sensitivity to environment may be partly a result of inexperience in planning and building new towns, and partly a sign of the tendency to conformity and to mass consumption characteristics of our age. The northern town has yet to find its soul."<sup>3</sup>

A third major problem is the lack of professional concern for the new town planning challenge. As noted, only one case study town, Kitimat, had an in-depth study done by a team of experts who then provided the planners with study materials for the development of a complete rationale on the planning of the town and the preparation of a townsite

report. The profession at large has professed a concern for the improvement of the techniques and standards of the profession, but no encouragement of the planners of new towns to describe the planning process has been made. Further, because of the dearth of professional opinions and papers on the new town planning rationale, the profession has not established an accepted method of planning such developments. Thus each new town development continues to make many "old mistakes". Another problem inherent in such a situation is that no "...critical and constructive evaluations of the design factors employed in new townsite development in relations to the final result"<sup>4</sup> have been developed. It may also be added that the organization for planning such towns has also been overlooked. Thus the planning team is largely limited to planners, at a time when, "There is absolutely no dialogue ... today between the people who have developed knowledge about people -- and the people who are designing and building the cities. We are not asking the right questions ... and so we are not getting the right answers."<sup>5</sup>

Another component of the professional problem is the reactionary attitude of the planners of these new towns. In Kitimat, the most deeply researched new town, the final result resembled the Radburn and Greenbelt concepts which date back respectively to the 1920's and 1930's. In Elliot Lake, one of the most creative works of architects, the civic centre and retail area, was rejected because of its "startling" concept and design to the planners and citizens.

A fourth major problem area was the legislative framework in which the planning of these new towns was undertaken. According to one architect reviewing the results of Elliot Lake:

"The planners worked very hard within the framework of existing legislation to produce a good plan. They were limited however to the making of subdivision plans, indicating lot limits and setback regulations ... No architectural control was permitted; no obligatory consultation of planners was required. The result is ... a series of buildings, many of which have great merit, but which lack in total visual cohesion. The carefully conceived central community area in many places falls far short of expectation because of the failure of individuals to concern themselves with the adjacent developments and with the total concept. Most of the single family housing seems somewhat inappropriate to the virile northern clime. They are anonymous houses which might be built anywhere, not houses created with climate, topography and character of the specific area as essential formative considerations."<sup>6</sup>

There are many design factors which are not directly influential in the design of these new towns, but which bear a part of the failure in their planning.

Firstly as noted in Chapter I, the economic bonds between Canada and the United States are very strong, with the latter purchasing the bulk of raw resource imports from the former. The conditions under which these transactions have taken place are controlled by Federal legislation. Since Canada is very dependant upon the sale of resource materials, it should follow that the country would create measures to increase stability in this field to ensure its steady growth. "The sad fact is that Canadian governments have recently been contributing to, rather than reducing, the uncertainties affecting investment in Canada. The failure of policy to deal effectively with short term fluctuations and a persistent unemployment gap since the late 1950's has raised doubts in the minds of Canadian businessmen as to the willingness and capacity of the Federal government to sustain high levels of prosperity. Until very recently, certain budget proposals were introduced to affect the extent of foreign ownership; these proposals have increased the



uncertainties of foreign investors and shaken up their confidence in Canada."<sup>7</sup> To advise on national economic policy, the Economic Council of Canada was established in 1963. The events of 1964 - 1967, if indicative of the effectiveness of this body, are augurs of a poor future, for Canada, and her resource industries, and her resource towns.

Secondly, the less than desirable coordination of policies at the Federal level is matched by poor coordination of Provincial policies with respect to resource based industries; their location, their economic assistance, their townsite legislation, their policies of development, and their coordination into the economic expansion of the Province and Nation. None of the Provinces, have established development plans by which this coordination and steady development can be established. The system is largely "ad hoc", and subject to extreme changes with the change of government parties.

Thirdly, the planners of new towns tend to be very reactionary. The prime cause is, in the opinion of the author, the education given to planning students. Planning is taught as a two-year professional course, unto its own, with only "lip-service" paid to inter-disciplinary studies, the new systems of research and organization, the development of a research methodology, the creation of more powerful tools of analysis and implementation, and the concern for the social and functional requirements of man and his machines in the community of the future. As a sad consequence, too often the planner is taught to fight "last year's war with the weapons of an earlier war."

A fourth major indirect determinant is the cost of researching and planning of new towns. In Kitimat, the cost of planning and research was approximately \$200,000.<sup>8</sup> This sum represented only 2 percent of

Alcan's initial investment in the development of the townsite (which covered roads, utilities, schools, municipal buildings, clearing the site, and community facilities). When the cost of housing is included, the cost of planning the site falls to less than 1 percent of the cost of the townsite. With the limited figures available for Elliot Lake and Thompson, this percentage for Kitimat is average for the other sites. From the foregoing criticism, the small percentage devoted to planning the site is inadequate for any creative planning to be undertaken, much less any significant improvements in the planning of new towns.

The fifth major indirect determinant is the dearth of research and development of new ideas and products for the urban centre, and the social research for knowing the "people" for whom planners "plan". Lacking knowledge of the desires and trends of desires of people, planners of new towns as well as established centres, are prone to make mistakes. When urban centres such as Elliot Lake which cost \$402 million,<sup>9</sup> Kitimat and Thompson costing each about \$10 million (exclusive of housing costs, personal costs, private investments and expenditures) are built without the benefit of such research, the mistakes which may occur can prove very costly to the company, the inhabitant, and the taxpayer of Canada.

## FOOTNOTES:

- 1 I. M. Robinson, In the Forward to the Thesis of V. J. Parker, op. cit., p. 2.
- 2 Ibid., p. 2.
- 3 S. D. Lash, op. cit., p. 49.
- 4 D. G. Henderson, op. cit., p. 272.
- 5 "A New Approach to New Town Planning", Architectural Forum, CXX, August-September, 1964), p. 195.
- 6 Henry Sears, "Report on Elliot Lake", Journal of the Royal Architectural Institute of Canada, XXXV (October, 1958), p. 393.
- 7 H. E. English, "Scope for Economic Planning in Canada", Business Quarterly, XXVIII (Fall 1963), p. 57.
- 8 I. M. Robinson, New Industrial Towns on Canada's Resource Frontier, Chicago, Department of Geography, University of Chicago, 1962, p. 44.
- 9 "This is Elliot Lake", Financial Post, LIV (February 20, 1960), p. 3.

## CHAPTER V

### RECOMMENDATIONS

The general conclusion arising from this study is that the case study towns have not fulfilled the expectations of the city planners who have examined them. If the findings of R. A. Helling for Elliot Lake hold true for the other case study towns (see Chapter I for details), then the towns have failed to satisfy the expectations of the town inhabitants. With the exception of Kitimat, the planners of these towns have laboured on inadequate background data; little recorded past experience; and design determinants, including factors other than those discussed, which all have limited the scope of solutions to the problems raised by the new towns.

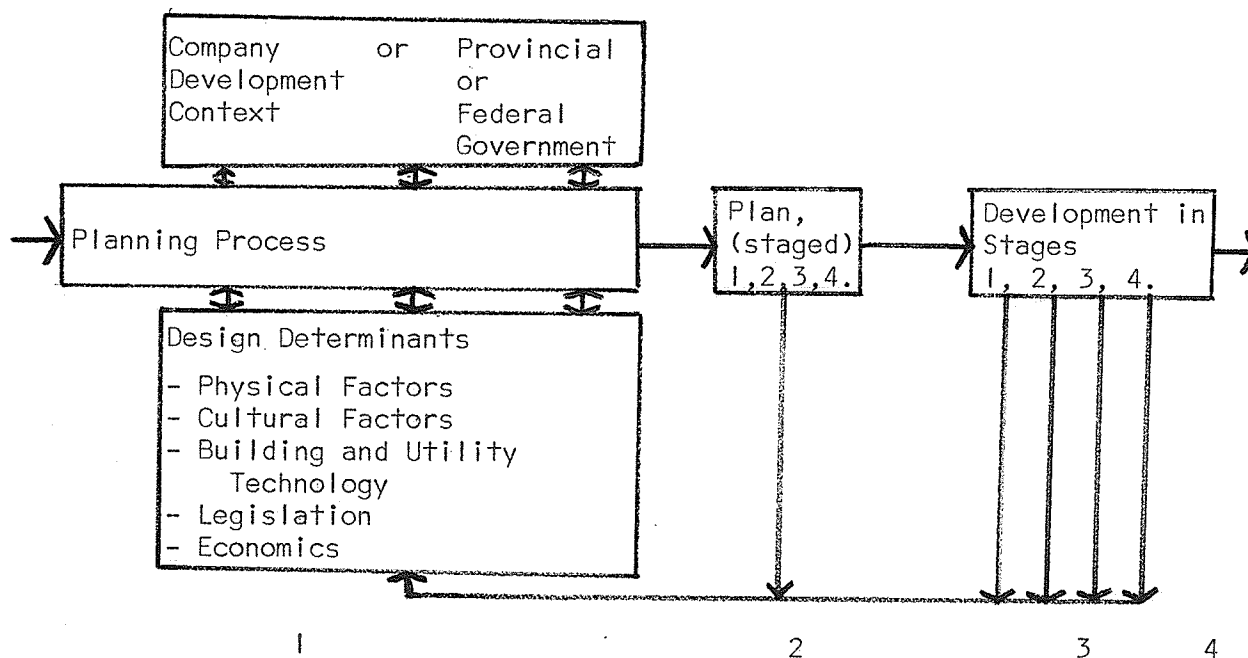
It is to be noted that the problems of insufficient data on the problems of these new towns is being remedied. The University of Manitoba's Interdisciplinary Research Centre for the Long-Range Study of Settlements on the Resource Frontier has undertaken a six to seven year study of the problems and existing principles of development for these settlements. At the end of the study, suggested planning and development principles will be offered.

In the interim period, from now to the Centre's final report, several suggestions may be made on the planning of resource-based new towns.

### Recommendation 1

Firstly, the specific organization of the proposed planning and development process of a new town will be outlined, with reference to Diagram 3 below, and then a detailed recommendation will be made for the planning and design process. Later, recommendations will be made for provincial and national roles in the planning and development of new towns on the resource frontier.

DIAGRAM 3 Proposed Organization of Planning Process



The planning process of a resource-based new town could be initiated by a resource development company or the Provincial or Federal Governments. If a resource development company initiates the townsite planning process, it should be subject to federal and provincial regional development policies and programs. If government sponsored, the town

development would be part of a regional development policy. (The reasons for government control will be stated later). The double-headed arrows indicate that the initiating organization should be in close liaison with the planning process throughout the planning of the townsite to provide the information needed by the planners such as workforce populations and any special requirements of the industry.

The arrow preceding the Planning process" indicates that the resources of the University of Manitoba Interdisciplinary Research Centre on Settlements on Canada's resources frontier should be used. While new towns will be developed prior to the completion of the studies and the final report of the Centre, the Centre will have collected much useful information on such settlements. Such information should be used in the planning of the specific new town.

Because no comprehensive planning and development principles have been established for this type of urban settlement, it is urged that the "planning process" should consist of not only city planners, but also experts in the fields which are closely allied with the design and planning of cities and towns. The range of expert advice should be similar to those employed in the research for Kitimat. These experts should examine the design determinants of the townsite, and should formulate goals and policies which would assist the planners in the planning of the townsite. Further, the allied professions could act as sounding-boards for the planners' proposals. In this manner, the plan for the townsite could be objectively judged and improved where necessary prior to finalization and development. In this manner, possible costly mistakes could be largely eliminated. The double-headed arrows are used to indicate that the "planning process" is affected by, and affects, the "design determinants";

this idea will be more fully explored in Recommendation 6.

In Step 2, the finalized plan for the town is "staged" for development and the legal controls for the development of the town according to the plan are prepared.

In Step 3, the development of the plan is undertaken. Analysis should be made of each stage of development, and a "feedback of information" on the merits and problems of each stage should be made to the "design determinants". The feedback returns there, instead of the "planning process" because this information should be considered as extra design data. Also, the feedback of information may indicate that some other design determinant should be altered; for example, the legislative framework within which this new town is developed.

In Step 4, the arrow is used to indicate that the planning rationale should be recorded and made available to the planning team of future new towns. The planning rationale should include the townsite social goals, the alternative means to these goals, the reasons for the choice of means to these goals, the separate design determinants discussed in detail and the policies derived by experts in allied fields, the discussion of these determinants, and the organization for the planning of the new town. In this manner, a comprehensive body of literature on the planning and development of new towns could be established to make new town planning an evolutionary process, instead of the present, isolated planning exercise which it is. An existing example of such a report is the Kitimat Townsite Report.

As indicated previously, the planning process itself would be discussed in detail. First, some preliminary considerations must be given.

It is a truism to state that city planning is concerned with social and economic objectives, as it always has been. City planning has limited its field of concern to the physical aspects of these objectives; the use of the land, the allocation and zoning of land use types, the regulation of building standards and the concern with the relationships between land uses.

Within the last 10 years, a subtle change in planning philosophy has been noted. The profession has been emphasizing the social aspects of city planning, and devoting less concern to its physical aspects. The very phrase "social planning" which is in use indicates a growing dissatisfaction with the present range of planning objectives and the present range of means of achieving these objectives.<sup>1</sup> Paul Davidoff has phrased the change succinctly,<sup>2</sup> "The fact that many of us have called for ... social planning is, I believe, a way of asserting that we think it time ... to take a more active role in correcting the abuses which plague our society."

The following statement would substantiate the above, and could also apply directly to the planning of new towns in Canada, "The prime concern of the physical planner is to understand the physical environment and help shape it to serve the community purposes ... A systematic consideration of the inter-relationships between urban forms and human objectives would seem to lie at the theoretical heart of City Planning work. ...

Where has ... there been any systematic evaluation of the possible range of urban forms in relation to the objectives men might have? ... Not only are goals put in confused or conflicting form, but also the physical forms decided upon have very little to do with goals.



Choice of form is most often based upon customs, or intuition, or in the superficial abstraction of simplicity. Once constructed, forms are rarely later analyzed for their effectiveness in achieving the objectives originally set."<sup>3</sup>

As another prominent city planner has stated, "Too often the planners, despite their talk of "goals" have been excessively preoccupied with means. They are devoted to standards without regard to the purposes of these allocations ... Indeed, this very assault on the traditional distinction between means and ends may open the way for a more general examination of ends and perhaps for a more considered and even more "scientific" method of ethics and value formation. In such possibilities rest the hopes of humanist planning."<sup>4</sup>

## Recommendation 2

The analysis of the adequacy of the traditional "land use allocation method", as outlined in Chapter I, has been found less than adequate. (Note, for example, the use of the detached buildings, commercial, residential, and institutional which imposes extreme hardship on the inhabitants in the winter which lasts about seven or eight months in the case study towns.) This inadequacy may be traced to the largely "intuitive" method of "land use allocation" as outlined in Chapter I. In its place, the "goal-form method" of new town planning is proposed. "This method consists in ordering form analysis and definition of objectives so that their inter-relationship can be considered in a rational manner".<sup>5</sup> The vital difference between the proposed method and the former is that all objectives, major and minor, and the alternative

means to fulfilling these goals are made explicit. This explicitness also makes the preparation of a report on the planning of the town very simple.

This method and its various steps will be outlined as based on the work of a British new town planner.<sup>6</sup> The method is explained as briefly as possible to indicate the complexity of new town planning.

The component steps of the method are as follows:<sup>7</sup>

- 1) identification of design parameters
- 2) identification of independent variables
- 3) identification of dependent variables
- 4) identification of the relationships among parameters and variables.
- 5) prediction of values of independent variables
- 6) identification of constraints governing dependent variables
- 7) identification of constraints governing design parameters
- 8) identification of values of design parameters
- 9) identification of expected values of dependent variables
- 10) investigation of consistency of values, relationships, and constraints
- 11) comparison of, and selection from, alternative sets of parameter values.

These terms are abstract, but some very crude and simple examples can be given to indicate the steps, described above, in the planning of a new town. In Step 1, the design parameters can be termed as controllable causes, such as the anticipated work force of the town and the expected total population of the town. In Step 2, the independent variables can be considered as those properties of the urban system which are beyond the control of the planner; the physical and cultural traits of the town inhabitants, economic policies of governments, the physical factors of the site etc. The third step, the identification of dependent variables includes those variables determined by either or both of the design parameters and independent variables: the density of the townsite as determined by the land area available and the expected

population could be an example. In Step 4, the identification of the relationships between the parameters and variables relates these factors into a system in which all are linked in a manner such that a change in one affects the values of the others; the area of the town depends on the population expected, the number and size of dwellings, the individual attitudes towards family size, the tolerance of the inhabitants towards overcrowding, etc. When the relationships among parameters and variables have been determined, the prediction of values in the independent variables is undertaken. (Step 5) The town will be in existence for many decades, and it should be known how accommodate social changes based on existing trends. For example, it can be determined that there is one automobile for each 2.4 persons in Canada (a hypothetical set of numbers) in 1967, but by the year 2000 there will be one automobile for each 1.5 persons, which must be accommodated in the new town design. In Step 6, the constraints governing the dependent variables must be determined, and these constraints usually define an acceptable range of values for the dependent variables for proper functioning. For example, the ranges of acceptable traffic capacities of various road widths in the town should be known, so that the proper road widths can be installed; otherwise the town is burdened with excessive costs for "under-used" roads, or the road user is forced to waste time because of "overuse" of the road. In Step 7, the constraints governing the design parameters must be determined. For example, the designer may determine that elementary school children should not have to walk further than 1/4 mile to school, hence all housing which might have elementary school children should be no further than 1/4 of a mile from the school. Steps 8, 9, and 10 can be illustrated best by an example from Elliot Lake. On the designated lot size for a single

family home (a design parameter), and the expected population and number of inhabitants per household (expected values of dependent variables based on work force estimates for the mines), the total land area required for residential uses exceeded the suitable land areas for such development. (consistency of values, relationships and constraints) Thus the Elliot Lake planners were forced to accomodate a high percentage of the population in denser, multiple-family housing units. The final activity is the comparison of, and selection from alternative sets of parameter values. In other words, the best design has to be selected from the alternative solutions and is chosen because it satisfies best all the design objectives and constraints.

Throughout the goal-form design method, the planning goals are reflected in the values of constraints, and the values of design parameters. In this manner, many possible alternative town designs or components of the town design are eliminated, so that the many alternatives left are in conformity with the goals established for the town.

This method has many advantages over the traditional method.<sup>8</sup> Firstly, the goal-form method of planning is more suitable for research and establishing theories because it is more rational and scientific in its approach. Secondly, the method specifies goals against which the results can be more readily "measured". The effectiveness of the planners can be better determined by the process. Thirdly, the goal-form method is a comprehensive approach which offers the prospect of a general theory or urban form, instead of being composed of fragmentary notions of traffic networks, separation or integration of land uses, or the organization of neighbourhoods. Lastly, and most importantly, the system focusses directly on the needs of the inhabitants of the

town, instead of concerning itself with the "secondary" allocation of land uses. Because it focuses on human needs as the basis of the town plan, the goal-form method can be used for any ethnic group to satisfy its needs. In contrast, the land allocation method encourages planners to force their standards or the standards with which they are familiar onto the ethnic group for which they are planning.

It should be noted that the above "goal-form method", when organized, graphically, appears similar to the diagrams for the Program and Evaluation and Review Technique, and the Critical Path Method (often denoted in the short forms, respectively, PERT and CPM). The Town and Rural Planning Branch of the Alberta Department of Municipal Affairs is using a CPM diagram as a means of organization for the planning of the new town of Fort McMurray. Although it is beyond the scope of this thesis, the derivation of such an organization for new towns could prove a most useful thesis topic and field of investigation.

### Recommendation 3

At the provincial level, the greater coordination of economic development and social development of new towns in the north should be made. One author<sup>9</sup> has noted that the provinces participate in the mineral exploration and survey of their resources, prepare and assist resource development companies that request assistance, provide professional talent to assist the company in the planning of the townsite, and assist the resource company by the provision of transportation and power to the townsite and yet do little in determining the best location of the townsite in terms of regional development. "Really successful new town planning, in short, is inextricably bound up with regional planning and

economic planning, and regional and economic planning are but two sides of the same coin ... planning of this coherent and comprehensive kind cannot be expected from private enterprise ... It follows therefore, that if future regional development based on exploitation of the natural resources of the north is not to be a hit or miss process that it has been in the past; if the tapping of natural riches is to provide the basis for permanent and stable settlement providing the best possible way of life for the entire regional community, then public participation will be required in very considerable measure."<sup>10</sup>

#### Recommendation 4

At the national frame of reference, these resource based towns play an important role in the economic health of the country, as outlined in Chapter I. As there noted, the resource based industries are subject to many forces which alter the demand for the resource. The federal government can influence two of these factors: tariffs and shifts in government policy with respect to northern and mineral development. As noted in Chapter IV, the record of the federal government in the encouragement of foreign investment (the resource based industries are developed primarily by foreign interests) and the stability of economic growth in Canada has been less than desirable. It is urged that a comprehensive and coordinated statement of policy be prepared to guide the future course of the economy. Within this statement should be a section which concerns the federal government's attitude towards the development of northern resources.

"In other words, the development of Canada's frontier regions should not be a hit or miss affair dictated by the inclinations of

industrial private corporations ... but based on the simultaneous, coordinated regional development of natural resources. By this means, it might be possible in some cases to at least create stable communities free from dependence upon a single firm or a single resource and permit the rapid development of a sizeable town to serve as a regional centre rather than a scattering of small or medium sized one-industry towns."<sup>11</sup>

#### Recommendation 5

If the federal government makes the decision to undertake a coordinated, comprehensive regional development program in the north, it should establish the priority of resource development regions for maximum regional and national benefit. It should also underwrite the costs for an expanded and continuing research program into the needs, problems and solutions of northern development and habitation. "...Canada is probably the most backward of the Arctic powers ... Canada lags behind the United States which has a much smaller Arctic territory in Alaska for nearly half a century."<sup>12</sup> Further, "...relatively little intelligent, cohesive planning and effort by southern decision makers have gone into discovering and filling the special needs of the north."<sup>13</sup>

#### Recommendation 6

In the past, the bulk of urban decisions were made by individuals in response to markets, prices and profits with the social costs of these decisions largely ignored. Governmental response at the federal and provincial levels consisted of negative planning and development regulations.

It is urged that the premises of development be changed so that social goals and benefits be the prime motivating framework within which individuals can operate. The federal and provincial governments should assume more direct control of the planning and development of these communities. Further, the new towns should be treated as experiments which are used as "test-labs" for the development of new urban legislative, organizational, developmental and planning tools.

While the British new towns have been developed under different circumstances for different purposes, the results of that experience should be examined for their relevance to the Canadian situation. About the British experience with new towns it has been stated that, "The new town experience is cheap instruction, if we care to use it, at many points. The failures, as well as the success'..."<sup>14</sup> In addition, "We are getting and probably shall continue to get valuable insights about the development and overhead costs, problems of growth and industrial location, the provision of shopping centres, community and recreational facilities, and the difficulties of exploiting the economic and technical advantages of large scale building of whole new towns. We ought to learn much about the initial pioneering difficulties, the problems of social organization and participation, the handling and effects of large scale civic design. Quite aside from other considerations, this program is exciting because of the tremendous possibilities it opens as a field laboratory for research on these and many other questions."<sup>15</sup>

Such experiments in the housing and servicing of inhabitants of northern communities could have a direct application in the southern urban areas in Canada. It has been estimated that in the next two decades in Canada, "Public and private investment within this time will amount to



some 250 billion dollars and will involve 2000 square miles of new urban development."<sup>16</sup> As has been noted in a recent report,<sup>17</sup> Canada's record in the provision of housing, as one aspect of urban development, has been less than successful.

There is another reason for this recommendation. The volume of required development in the United States in the next two decades has fostered deep research into the means of accomodating such development at reasonable cost. In a report of the President's Commission on Urban American Prospects, it was stated that, "Our existing urban centres, no matter how revitalized, cannot accomodate the urban Aermicans of the next generation..."<sup>18</sup> The recommended solution was the development of "new towns".

While the American experience is not directly applicable to Canada, it has limited relevance. The fastest growing centres in Canada, and the largest, are suffering from expensive land speculation on their fringes. For example, in Toronto, Montreal, and Vancouver, the cost of single-family homes has risen above the financial capacity of a vast majority of the population. To reduce the costs of housing the populations of these centres, the new town offers great advantages, as the President's Commission determined.

Thus, the research into new town concepts and tools, worked out on the resource frontier of Canada, could have great relevance to the development of new towns in the urbanized portions of southern Canada.

#### Recommendation 7

If such a program of research and development is acceptable to the federal government, studies should be made in depth on the experiences

of other countries deeply involved in new town development: England, Holland, and Sweden. By utilizing their experiences, and learning from their mistakes, the new town experience in Canada could be implemented more smoothly in Canada.

## FOOTNOTES:

- 1 A. J. Guttentberg, "The Social Uses of City Planning", PLAN IX, (March, 1968), p. 12.
- 2 Paul Davidoff, "The Role of the City Planner in Social Planning", Proceedings of the 1964 Annual Conference, American Institute of Planners, p. 127.
- 3 Kevin Lynch and Lloyd Rodwin, "A Theory of Urban Form", Journal of the American Institute of Planners, XXIV, (November, 1958), p. 201.
- 4 John Dyckman, "Advancing Technology and its Implication for Urban Life", Proceedings of the 1963 Annual Conference, American Institute of Planners, p. 222.
- 5 Kevin Lynch and L. Rodwin, op. cit., p. 211.
- 6 P. H. Levin, "The Design Process in Planning: An Exploratory Study", Town Planning Review, XXXVII, (April 1966), pp. 5 - 20.
- 7 Ibid., p. 9.
- 8 K. Lynch and L. Rodwin, op. cit., p. 213.
- 9 Nigel H. Richardson, "The Kitimat Region", Resources for Tomorrow, Ottawa; Queen's Printer, 1961), p. 452.
- 10 N. H. Richardson, "Tale of Two Cities", PLAN, IV, (December 1963), p. 120.
- 11 N. H. Richardson, "The Kitimat Region", op. cit., p. 452.
- 12 W. E. Senior, "The North Just Won't Go Away", Macleans, LXXVII, (October 3, 1964), p. 90.
- 13 Ibid., p. 18.
- 14 John M. Gaus, in the foreward to The British New Towns Policy, by Lloyd Rodwin, (Cambridge: Harvard University Press, 1966), p. ix.
- 15 Ibid., p. 169.
- 16 George Nordman, "Shortage of Town Planners", Town Planning Institute of Canada News, XI, (April 15, 1966), p. 2.
- 17 The Ontario Association of Housing Authorities, Good Housing for Canadians, 1964, (no data).
- 18 As reported in United States News and World Report, "New Towns: Answer to Urban Sprawl?", LX, (February 14, 1966), p. 114.

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